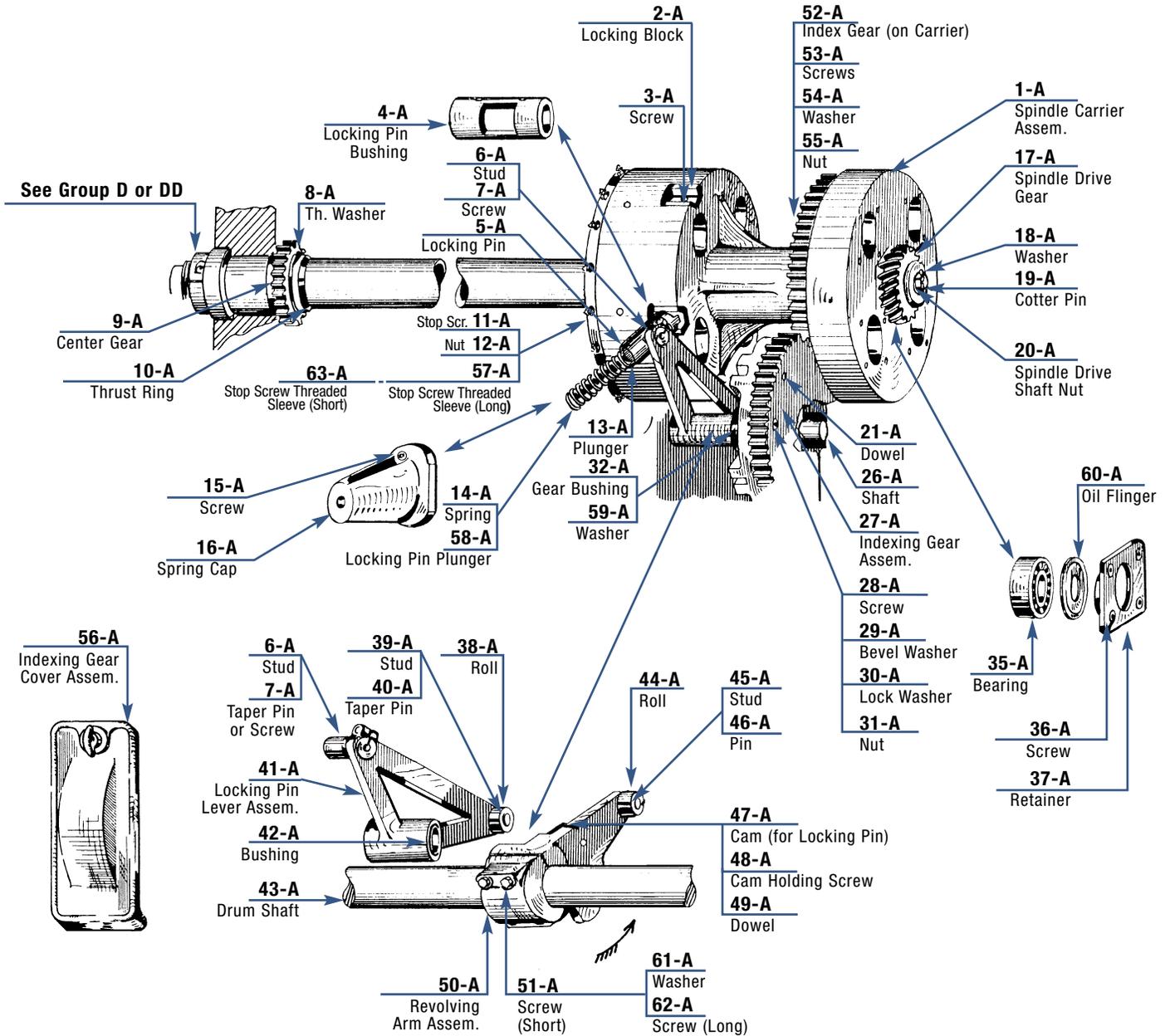


Spindle Carrier and Indexing

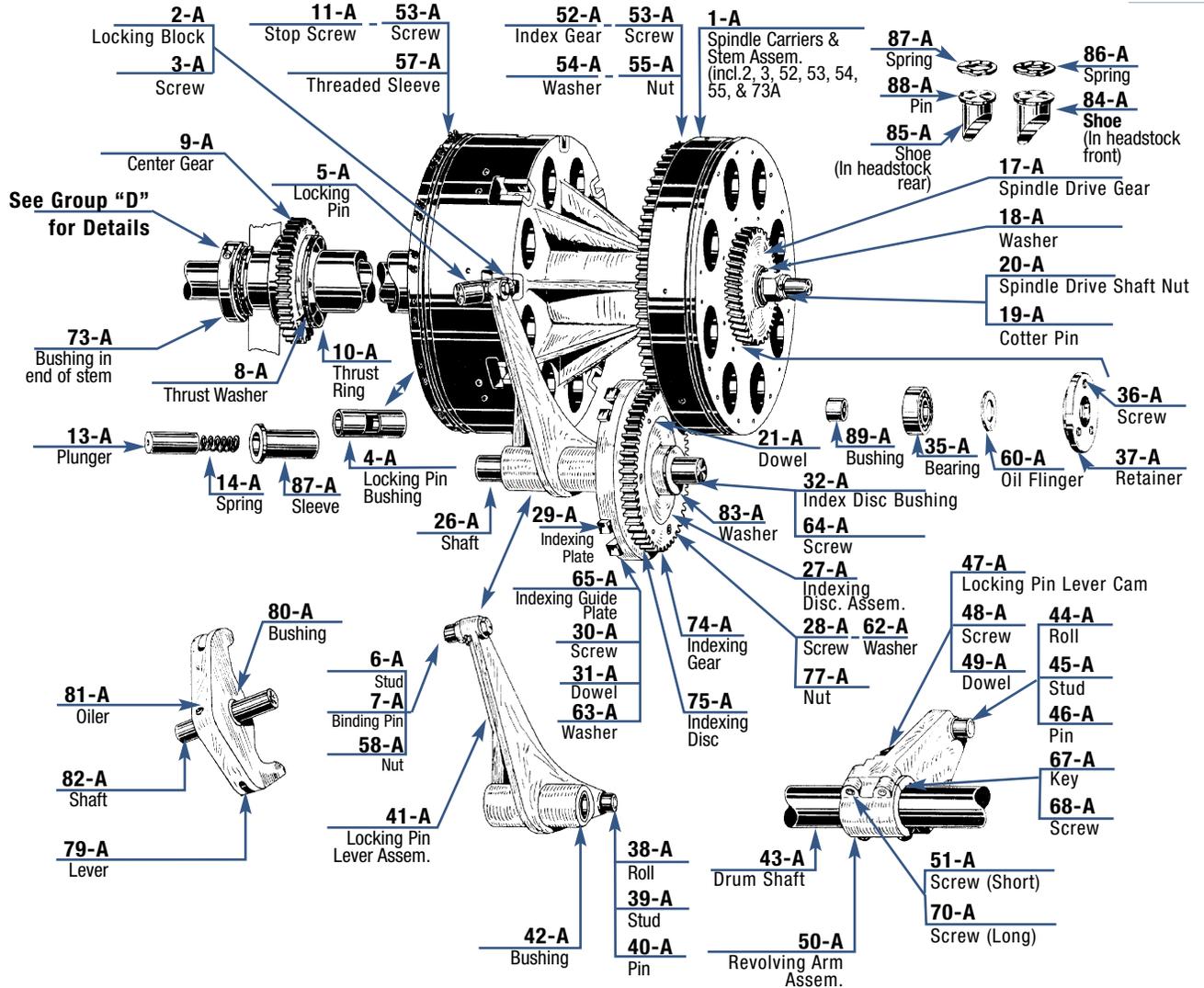
For Machines
 7/16 RA-6
 9/16 RA-6
 1" RA-6
 3/4 RA-8
 1-1/4 RA-6



Spindle Carrier and Indexing

For Machines

- 1 1/4 RB-8
- 1 5/8 RBN-8
- 1 5/8 RB-8
- 2" RB-8
- 2 5/8 RB-6
- 2 5/8 RB-8
- 3 1/2 RB-6
- 3 1/2 RB-8



HIGH SPEED INDEX KITS AND COMPONENTS



SPINDLE CARRIER INDEXING KIT

Spindle Carrier Indexing Kits are designed for easy retrofit of the slower, less efficient Geneva mechanism. This allows faster indexing to give higher yields, but at the same time reduces wear and tear on the screw machine.



- Index up to 25% faster
- Decrease idle time up to 33%
- Requires 75% less torque
- Less shock load and wear
- Easy Installation, direct replacement

Kits available from:

**CYCLO
INDEX**



Logan Clutch Corporation[®]
Productivity enhancements
for the screw machine industry.

Spindle Carrier and Indexing

2-A LOCKING BLOCK

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18622
5/8 RN-6	FC-16622
9/16 RA-6, 1" RA-6	206222
1-1/4 RA-6, 3/4 RA-8	706220
1-1/4 RB-8, 1-5/8 RBN-8	BM-82622
1-5/8 & 2" RB-6, 1-5/8 & 2" RB-8	A-86622
2-5/8 RB-6, 2-5/8 RB-8	
3-1/2 RB-6, 4" RB-6, 8" RPA-6 & 8	
4" RB-8	BU-88622



2-A Locking Block

4-A LOCKING PIN BUSHING 5-A LOCKING PIN

MACHINE SIZE	PART NUMBER 4-A BUSHING	PART NUMBER 5-A PIN
7/16 RA-6	185010	185013
5/8 RN-6	FC-16091	FC-160920
9/16 RA-6 O.S.	20091	200921
9/16 RA-6, 1" RA-6	A-22091	A-220920
3/4 RA-8	BD-700910	BD-70092
1-1/4 RA-6 O.S.	70091	700920
1-1/4 RA-6 N.S.	70091	700921
1-1/4 RB-8, 1-5/8 RBN-8	AM-40091	AM-40092
1-5/8 RB-6, 2" RB-6	AM-40091	A-40092
2-5/8 RB-6	B-820910	B-82092
1-5/8, 2" RB-8	B-820910	BM82092
2-5/8 RB-8, 3-1/2 RB-6	AM-40091	A-94092
3-1/2 RB-8	BM-94091	BM-94092
4" RB-6	82091	820921
4" RB-8	BU-88091	BU-88092



4-A Locking Pin Bushing



5-A Locking Pin

6-A STUD

MACHINE SIZE	PART NUMBER
7/16 RA-6	018508
5/8 RN-6	FC-16102
9/16 RA-6, 1" RA-6	22102
1-1/4 RA-6, 3/4 RA-8	201020
1-1/4 RB-8, 1-5/8 RBN-8	A-82102
1-5/8 RB-6, 2 RB-6	A-401020
1-5/8 & 2" RB-8, 2-5/8 RB-6	A-82102
2-5/8 RB-8, 3-1/2 RB-6 & 8	
4" RB-6	
4" RB-8	BM-881020



6-A Stud

Spindle Carrier and Indexing

GROUP - 11-A STOP, 12-A NUT, 57-A STOP SCREW THREADED SLEEVE



11-A Stop

11-A STOP (WITH 12-A & 57-A)

MACHINE SIZE	PART NUMBER
7/16 RA-6	1631
5/8 RN-6	1638
9/16 RA, RAN-6, 1" RA, RAN-6	0196855
1-1/4 RA-6, 3/4 RA-8	2105
1-1/4 RB-8 through 4" RB-6	2105
6" RB-6	2117



12-A Nut

12-A NUT (WITH 11-A & 57-A)

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-5163
9/16 RA, RAN-6, 1" RA, RAN-6	
1-1/4 RA-6, 3/4 RA-8	51163
1-1/4 RB-8 through 4" RB-6	
6" RB-6	51479



57-A Stop Screw Threaded Sleeve

57-A STOP SCREW THREADED SLEEVE

MACHINE SIZE	PART NUMBER
5/8 RN-6	A-615
1-1/4 RA-6, 3/4 RA-8	
1-1/4 RB-8 through 4" RB-6	44267



14-A Index Spring

14-A INDEX SPRING

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-382
5/8 RN-6	S-161
9/16 RA, RAN-6, 1" RA, RAN-6	2337
3/4 RA-8	XA38
1-1/4 RA-6	3306
1-1/4 RB-8 & 1-5/8 RBN-8	A44515
* 1-5/8, 2" RB-6	XA22, A44515, 454700
1-5/8 & 2" RB-8, 2-5/8 RB-6	2360
3-1/2 RB-6, 4" RB-6, 8" RPA-8	
2-5/8 RB8, 4-3/4 RB-4	2296
3-1/2 RB-8, 5-1/8 RB-4	XA-103
4" RB-8	XA-476
5-1/4 RAC-6	3306
6" RB-6	XA390

* Serial number required

Spindle Carrier and Indexing

GROUP - 26-A SHAFT, 32-A BUSHING, 59-A WASHER

26-A SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18099
5/8 RN-6	FC-16099
9/16, 1" RA-6	200991
1-1/4 RA-6, 3/4 RA-8	70099
1-1/4 RB-8, 1-5/8 RBN-8, 1-5/8 & 2" RB-6	A-40099
1-5/8 & 2" RB-8, 2-5/8 RB-6	A-84099
2-5/8 RB-8, 3-1/2 RB-6	A-82099
3-1/2 RB-8	BM-94099
4" RB-6	BA-92099
4" RB-8	BM-88099



26-A Shaft

32-A BUSHING

MACHINE SIZE	PART NUMBER
5/8 RN-6	17180 (2)
9/16 RA, RAN-6 1" RA, RAN-6	17024
1-1/4 RA-6 3/4 RA-8	17071
1-1/4 RB-8, 1-5/8 RBN-8	52839
1-5/8 RB-6, 2" RB-6	52840
1-5/8 RB-8, 2" RB-8	52184
2-5/8 RB-6	52850
2-5/8 RB-8, 3-1/2 RB-6 & 8, 4" RB-6	17311
4" RB-8	



32-A Bushing

59-A WASHER

MACHINE SIZE	PART NUMBER
7/16 RA-6	B-449250 (B-36) B-448270 (B-37)
5/8 RN-6	50843
9/16 RA, RAN-6 1" RA, RAN-6	15832
1-1/4 RA-6, 3/4 RA-8	16017
1-1/4 RB-8, 1-5/8 RBN-8	15916 (2 PCS.)
1-5/8 RB-6, 2" RB-6	15850
1-5/8 RB-8, 2" RB-8	XA-1220
2-5/8 RB-6	15982
2-5/8 RB-8, 3-1/2 RB-6, 4" RB-6	B-44850
3-1/2 RB-8	B-44670
4" RB-8	



59-A Washer

Spindle Carrier and Indexing

42-A BUSHING

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-17446
5/8 RN-6	52130 (2)
9/16 RA, RAN-6 1" RA, RAN-6	17183
1-1/4 RA-6, 3/4 RA-8	52824
1-1/4 RB-8, 1-5/8 RBN-8	52199
1-5/8 RB-6, 2" RB-6	
1-5/8 RB-8, 2" RB-8	52804
2-5/8 RB-6	52184
2-5/8 RB-8, 3-1/2 RB-6, 4" RB-6	52850
3-1/2 RB-8	C17243
4" RB-8	17311



42-A Bushing

44-A ROLL 45-A STUD

MACHINE SIZE	PART NUMBER	PART NUMBER
	44-A ROLL	45-A STUD
7/16 RA-6	XA-5180	XA-5346
5/8 RN-6	51393	3180
9/16 RA, RAN-6 1" RA, RAN-6	14204	10182
1-1/4 RA-6, 3/4 RA-8	14204	14369
1-1/4 RB-8, 1-5/8 RBN-8	14258	XA-5331
1-5/8 RB-6, 2" RB-6	14258	14428
1-5/8 RB-8, 2" RB-8	XA-5102	XA-5301
2-5/8 RB-6	14234	14387
2-5/8 RB-8	14269	14429
3-1/2 RB-6 & 8	14269	14372
4" RB-6	14269	14428
4" RB-8	14274	14435
4-3/4 RB-4, 5-1/8 RB-4	14255	14401



44-A Roll



45-A Stud

Spindle Carrier and Indexing



47-A Cam



50-A Revolving Arm Assembly

47-A CAM 50-A REVOLVING ARM ASSEMBLY

MACHINE SIZE	PART NUMBER 47-A CAM	PART NUMBER 50-A REVOLVING ARM
7/16 RA-6	C-180901	C-189620
5/8 RN-6	FC-160900	FC-16094
9/16 RA, 1" RA-6	200900	229623
9/16 RAN-6, 1" RAN-6	209347	0235812
3/4 RA-8	BD-70090	BD-70094
1-1/4 RA-6	70090	709623
1-1/4 RB-8, 1-5/8 RBN-8	AM-40090	AM-40962
1-5/8 RB-6, 2" RB-6	A-40090	A-400940
1-5/8 RB-8, 2" RB-8	BM-82090	BM-820940
2-5/8 RA-6	A-96090	A-84014
2-5/8 RB-6	A-84090	B-840940
2-5/8 RB-8	A-960900	A-960940
3-1/2 RB-6	A-94090	A-940940
3-1/2 RB-8	BM-940500	BM-94094
4" RB-6	BA-92090	BA-920940
4" RB-8	BM-88090	BM-88094



57-A Stop Screw Threaded Sleeve

57-A STOP SCREW THREADED SLEEVE

SEE CHART ON PAGE 6



59-A Washer

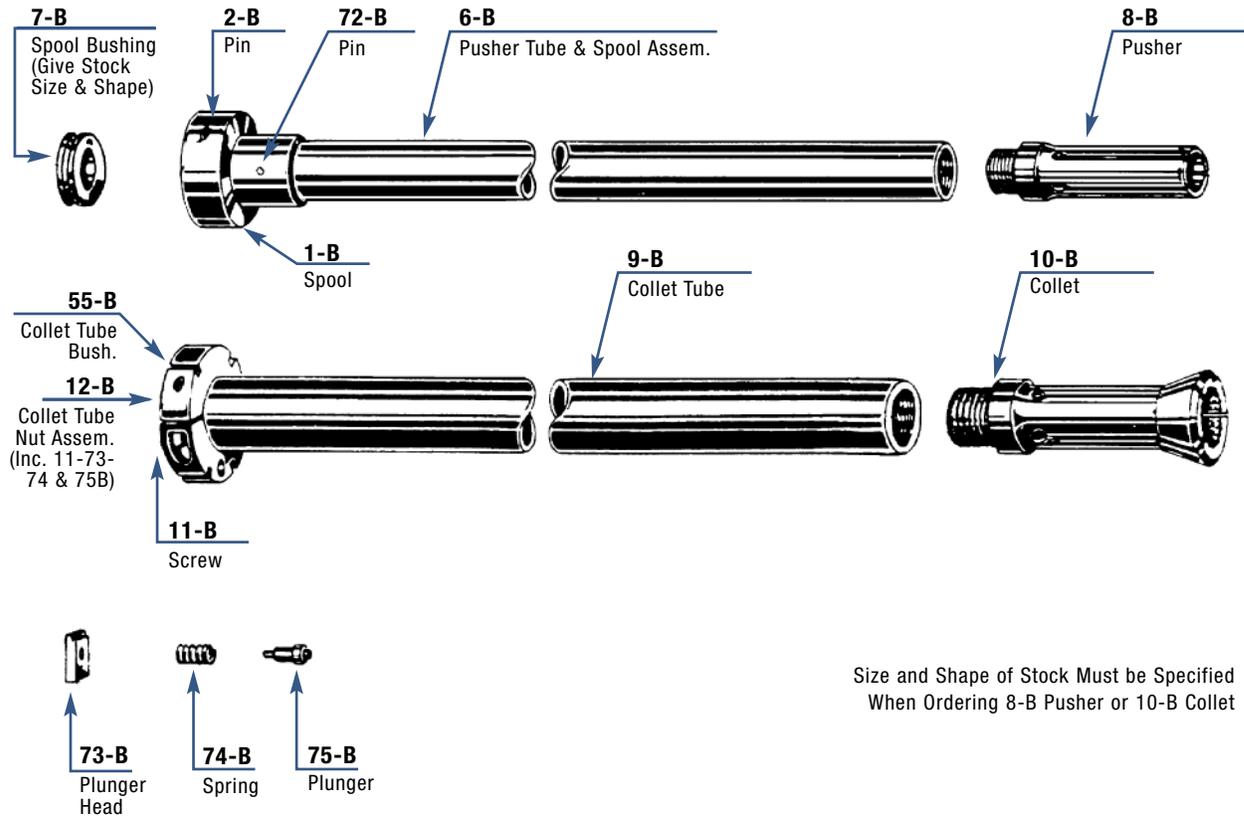
59-A WASHER

SEE CHART ON PAGE 7

Collet Tubes - Pusher Tubes

B

For Machines
All Machines

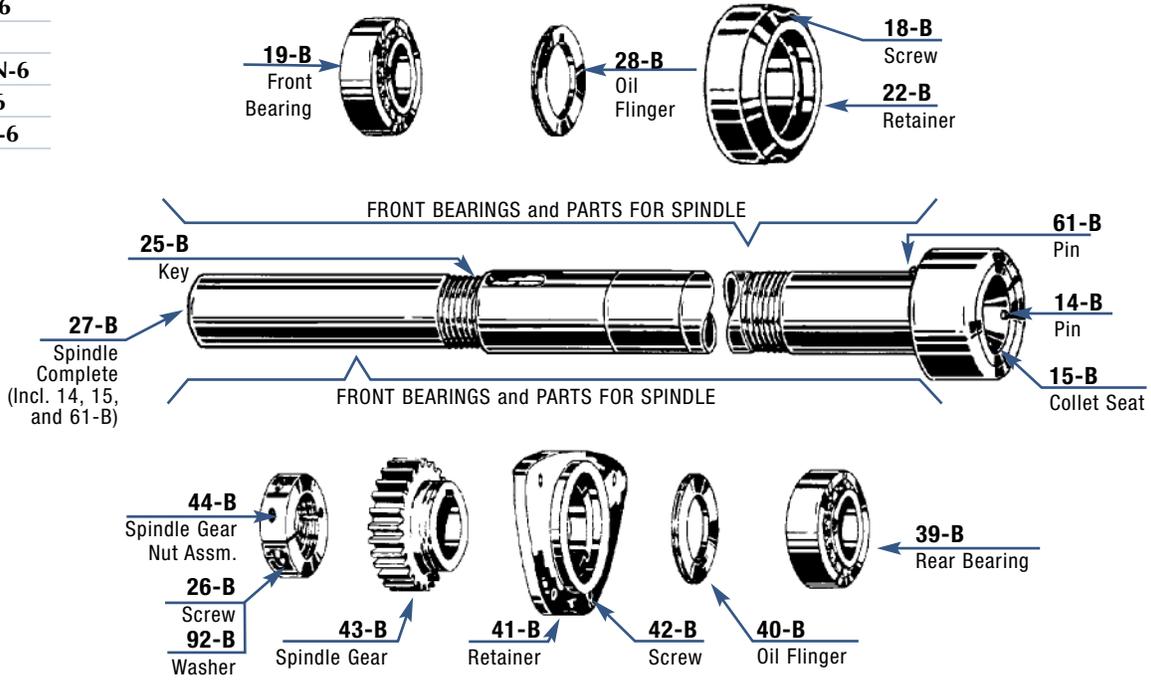


Size and Shape of Stock Must be Specified
When Ordering 8-B Pusher or 10-B Collet

Spindle Assembly

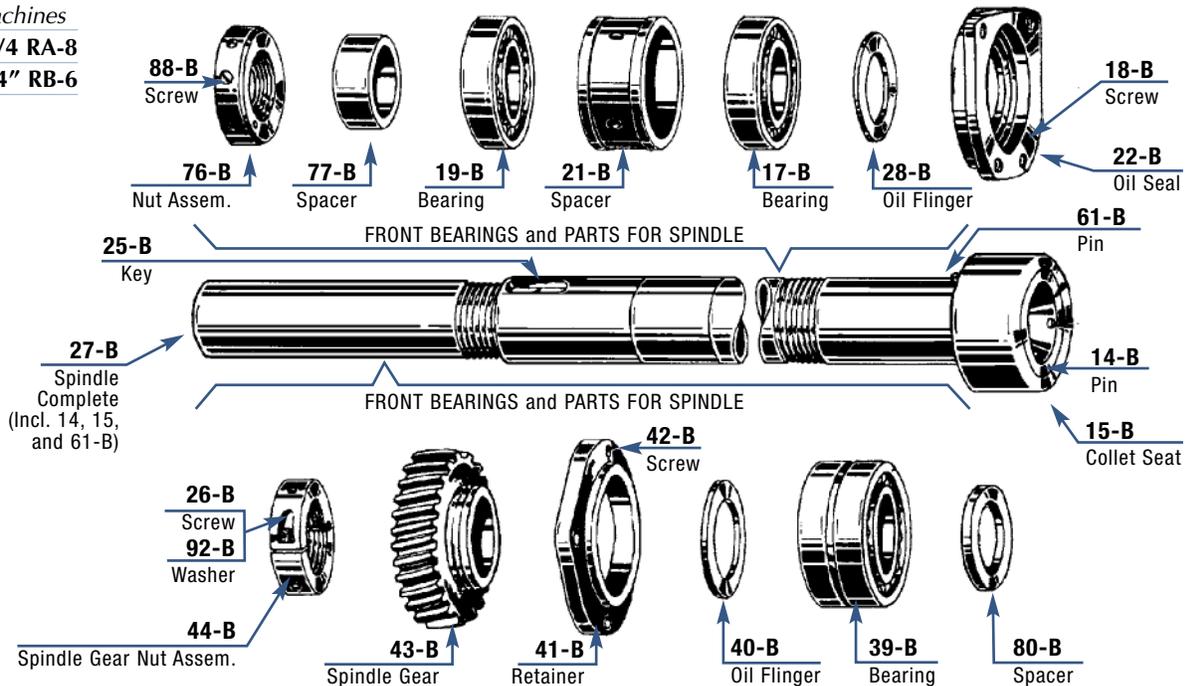
For Machines

- 7/16 RA-6
- 5/8 RN-6
- 9/16 RA-6
- 1" RA-6
- 9/16 RAN-6
- 1" RAN-6
- 1-1/4 RA-6



For Machines

- 3/4 RA-8
- 4" RB-6



Spindle Assembly

B

For Machines

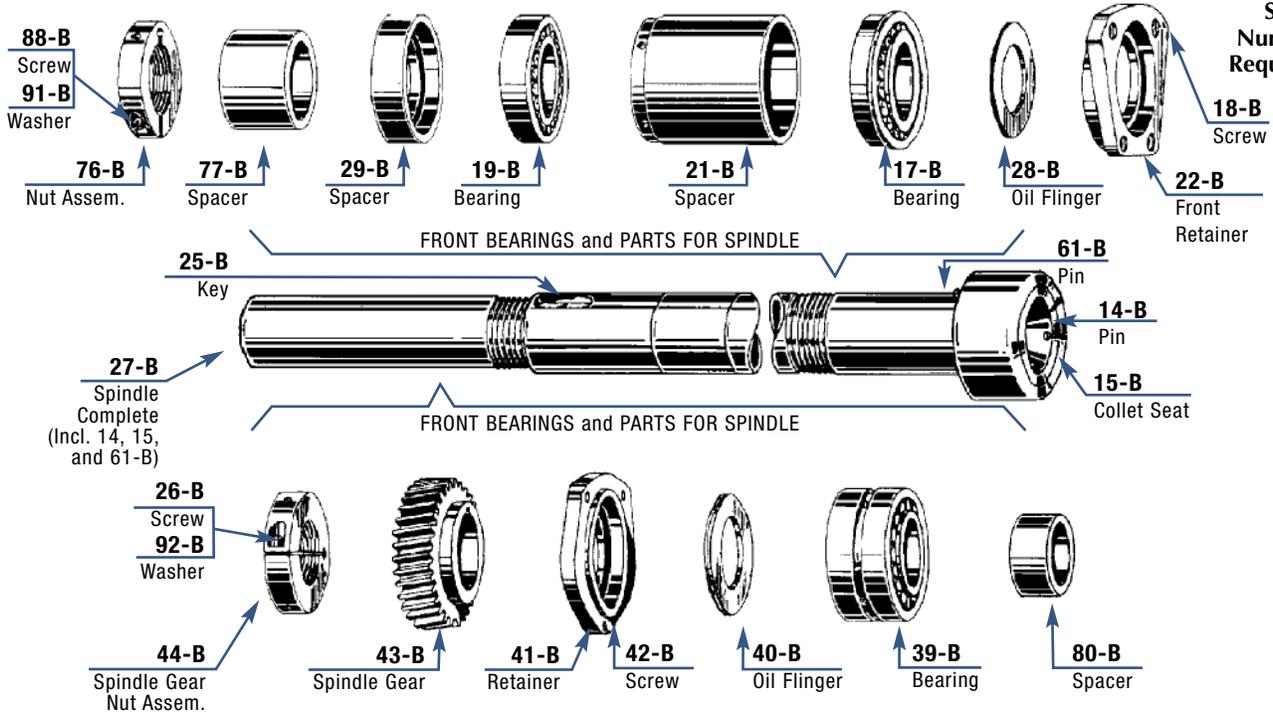
1-1/4 RB-8

1-5/8 RBN-8

1-5/8 RB-8

2" RB-8

Serial
Number
Required

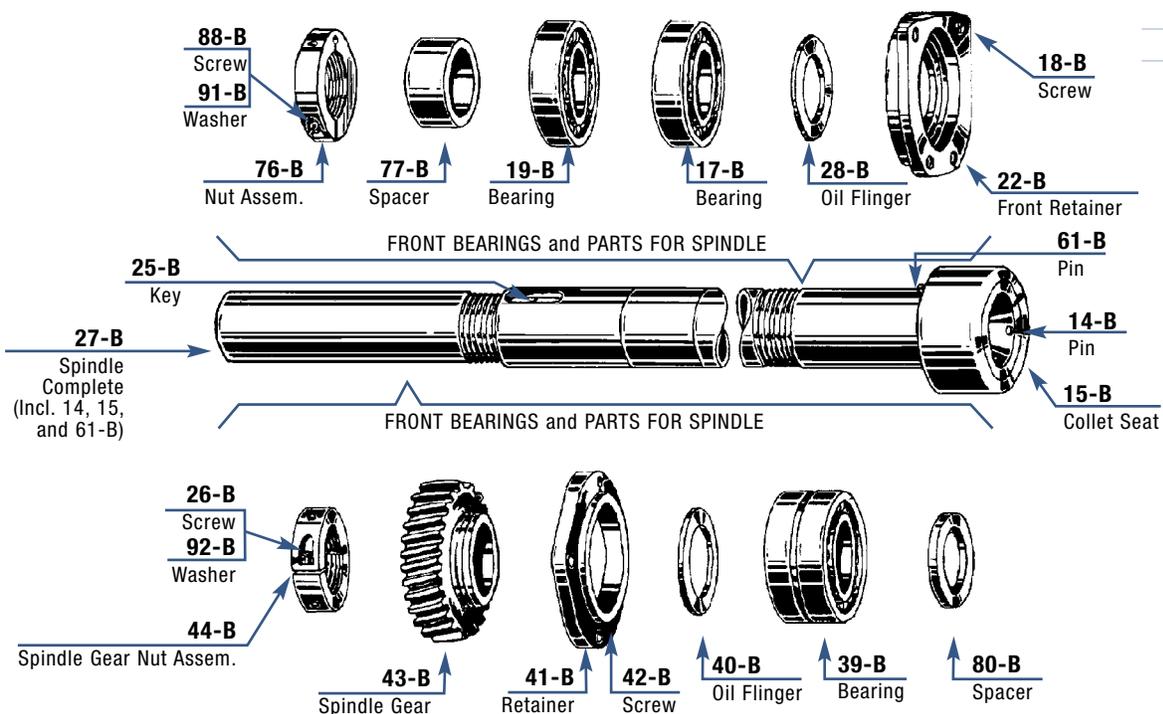


For Machines

1-5/8 RB-8

2" RB-8

Serial
Number
Required



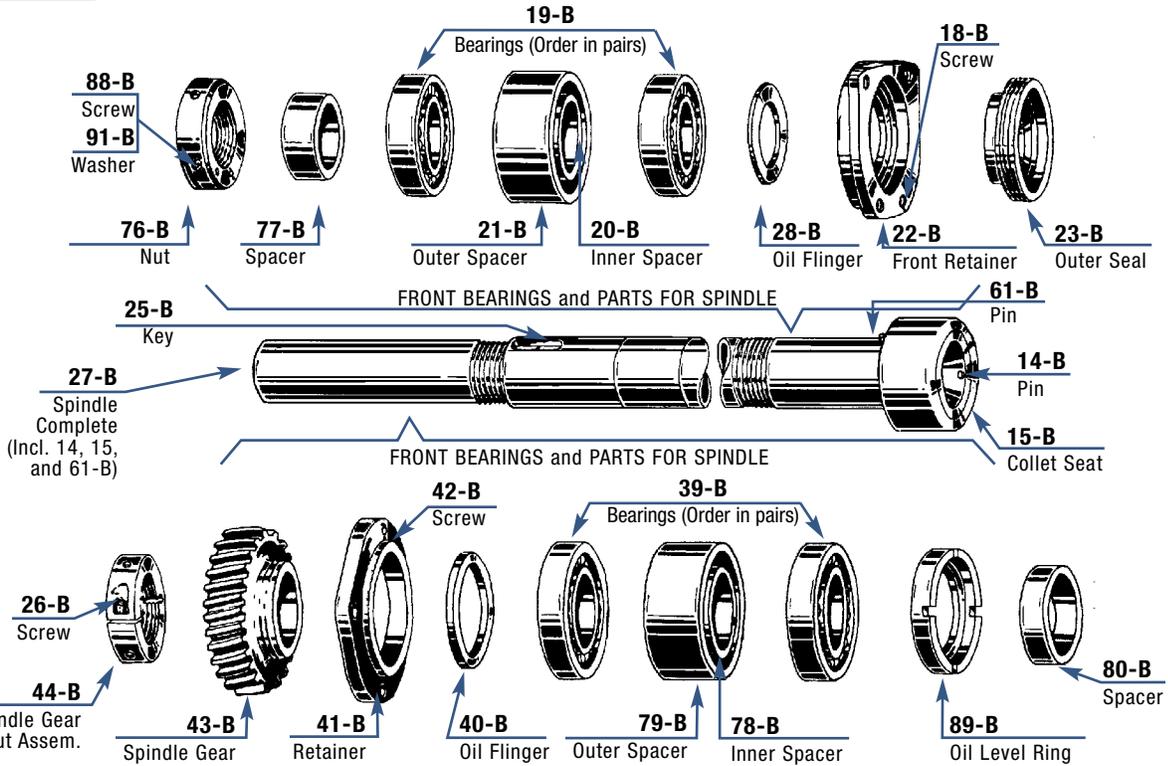
Spindle Assembly

For Machines

1-5/8 RA-6

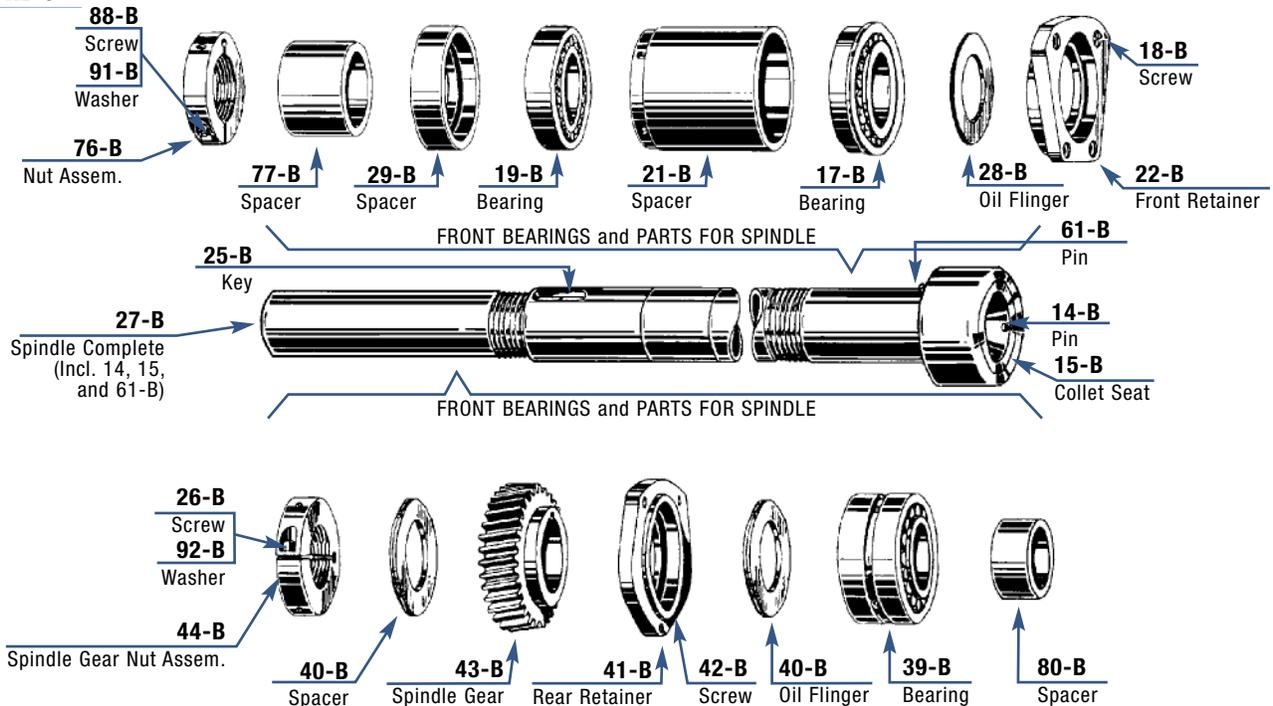
1-5/8 RB-6

2" RB-6



For Machines

2-5/8 RB-6

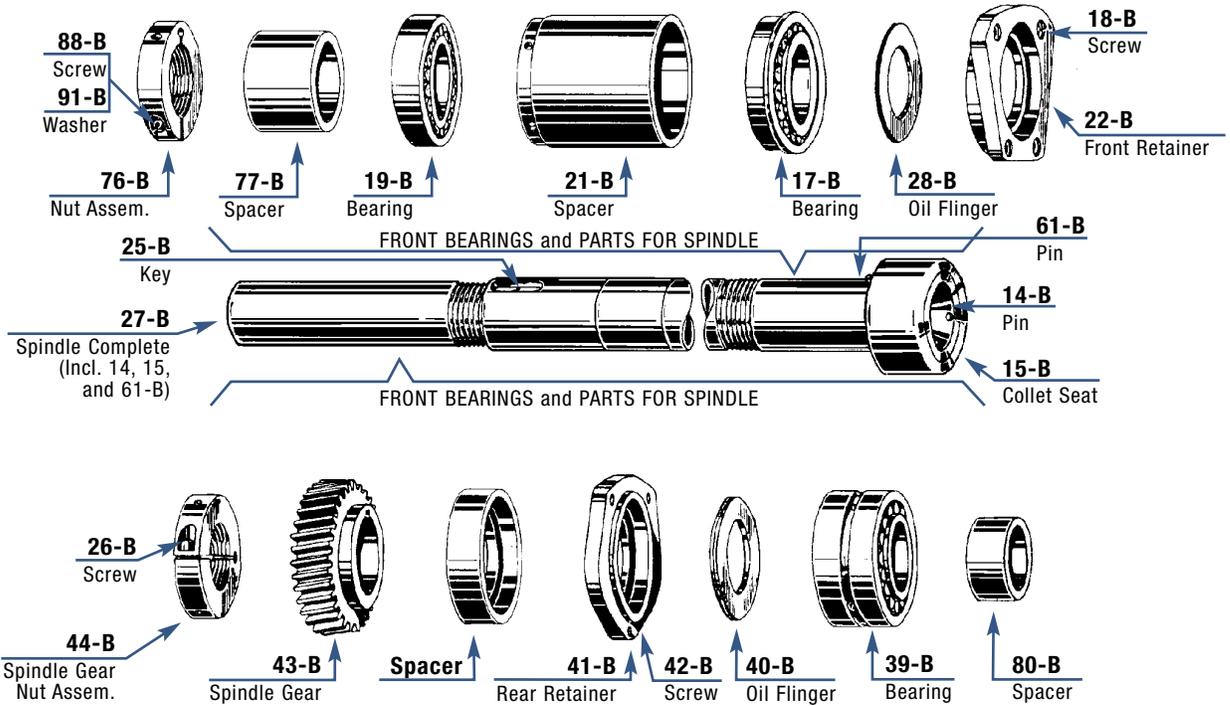


Spindle Assembly

B

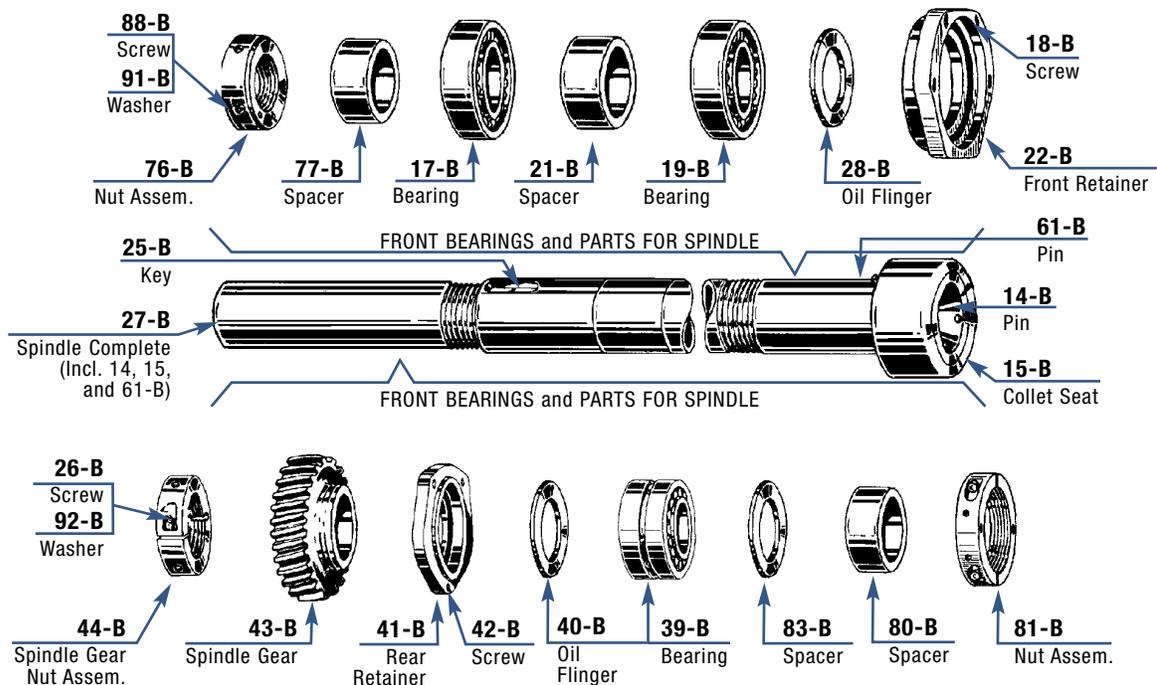
For Machines

2-5/8 RB-8



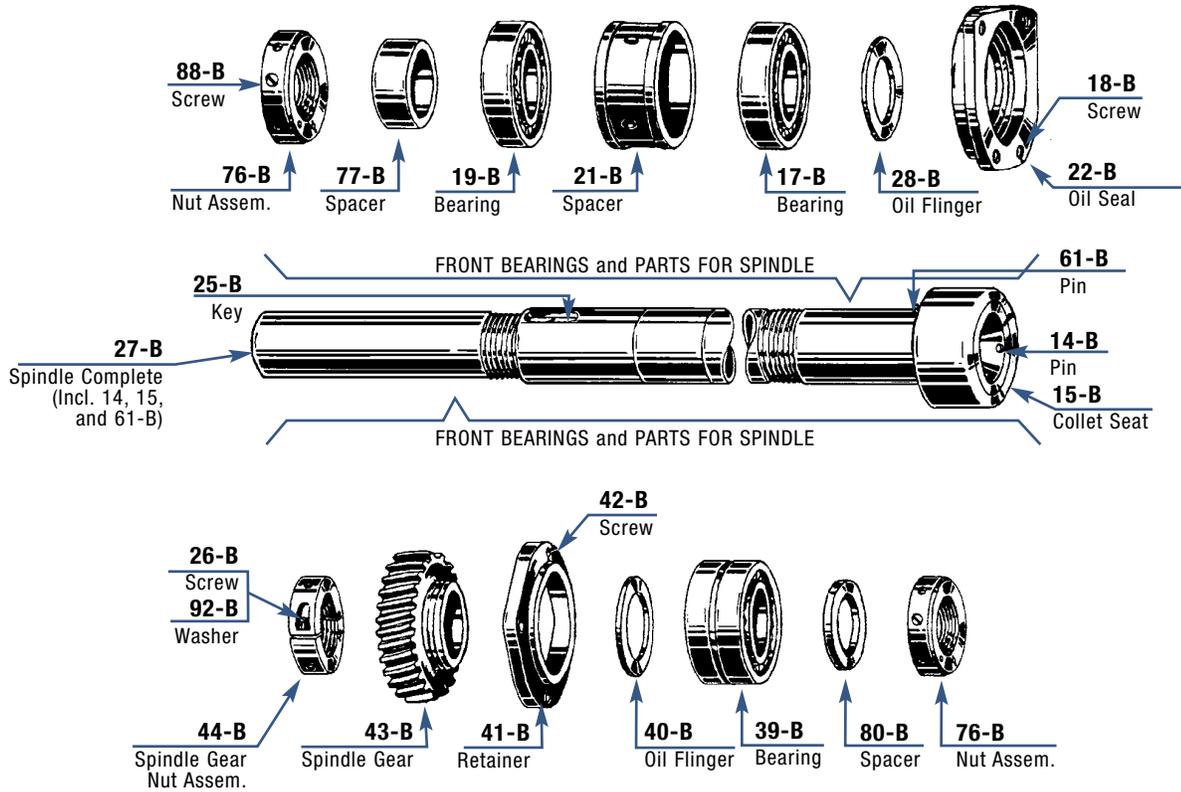
For Machines

3-1/2 RB-6



Spindle Assembly

For Machines
3-1/2 RB-8

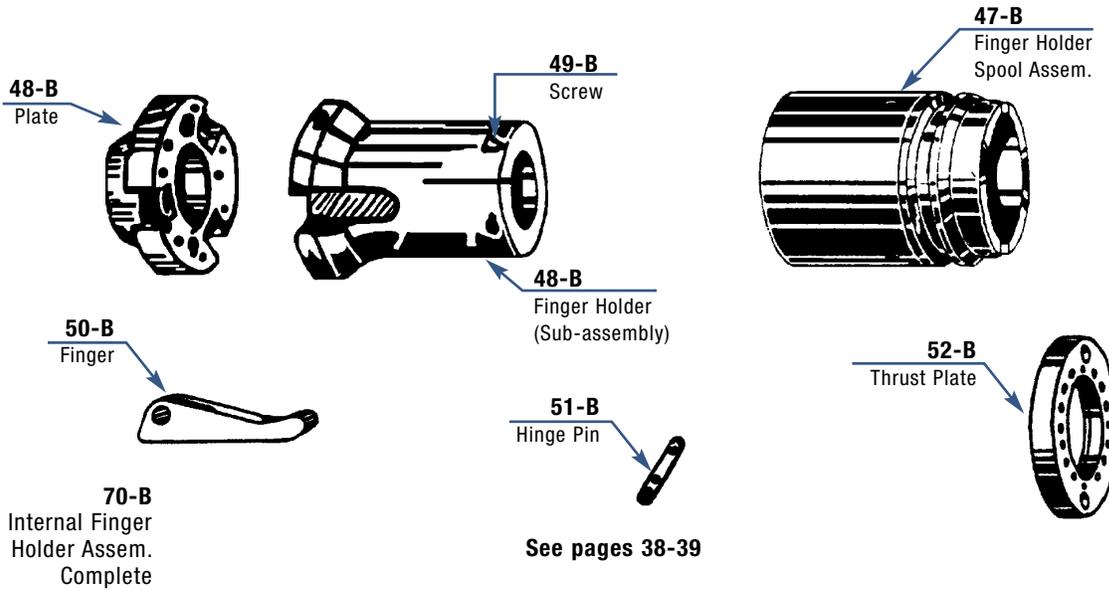


Finger Holder Layout

B

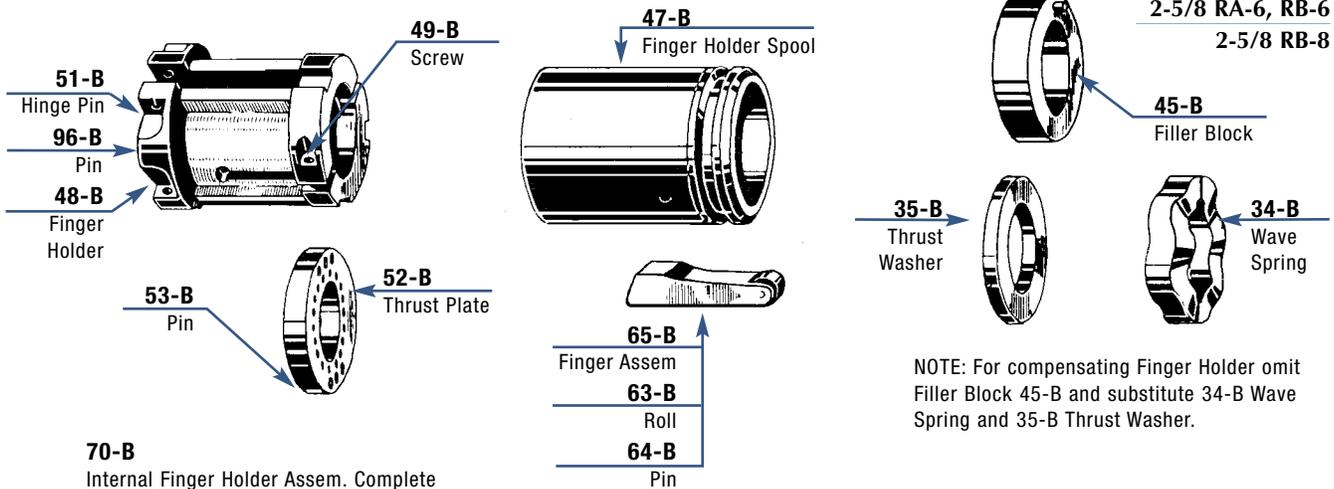
For Machines

7/16 RA-6
9/16 RA-6,
RAN
5/8 RN-6
3/4" RA-8
1" RA-6
1" RAN-6
1-1/4 RA-6
1-1/4 RB-8



For Machines

1-5/8 RA-6, RB-6
2" RA-6, RB-6
1-5/8 RB-8
1-5/8 RBN-8
2-5/8 RA-6, RB-6
2-5/8 RB-8



Finger Holder Layout

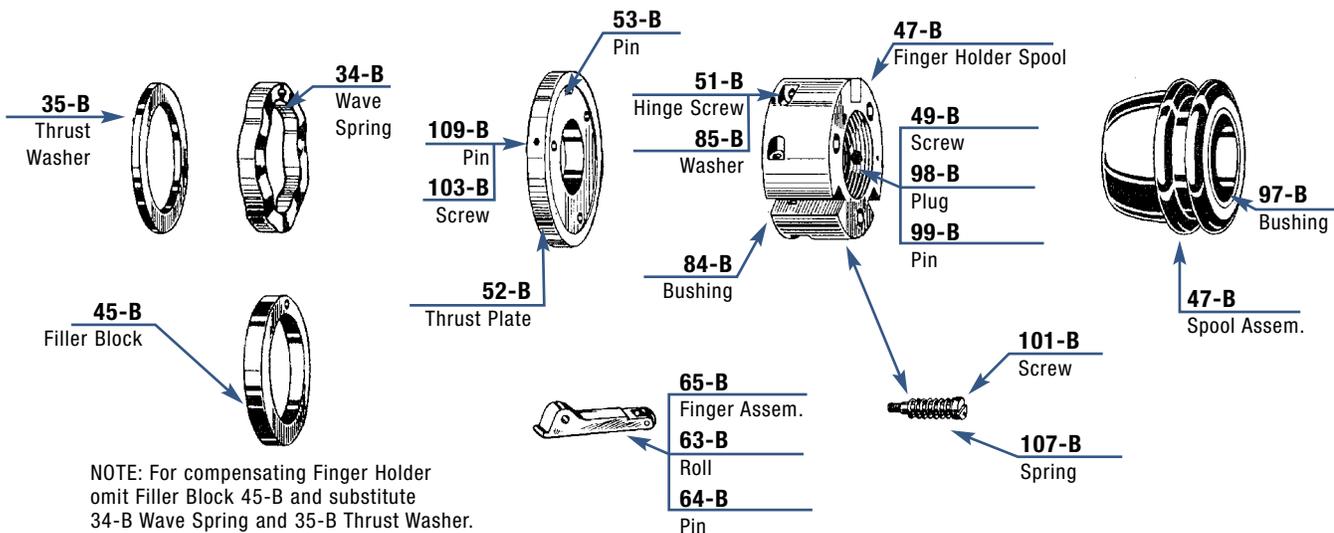
For Machines

3-1/2 RB-6

3-1/2 RB-8

4" RB-6

4" RB-8



NOTE: For compensating Finger Holder omit Filler Block 45-B and substitute 34-B Wave Spring and 35-B Thrust Washer.

70-B
Internal Finger Holder Assem. Complete

See page 41



7-B Pusher-Pusher Tube Combo

7-B SPOOL BUSHINGS

see page 226 for a complete description of these items



7-B Spool Bushings

7-B PUSHER-PUSHER TUBE COMBO

see page 226 for a complete description of these items



Pusher-Pusher Tube Combo

8-B PUSHERS
PUSHER PADS

see page 225-229 for a complete description of these items



8-B Pusher Pads

Pusher Tubes



6-B Pusher Tube & Spool Assembly

6-B PUSHER TUBE & SPOOL ASSEMBLY

S.S.= Machine with spindle stops

MACHINE SIZE	MANUFACTURING NUMBER - LAST 4 INDICATE OAL	PART NUMBER	RETAINING RING SPOOL BUSHING
7/16 RA-6	1062-13.31	C-18971	2500-15
7/16 RA-6 S.S.	1062-14.68	C-18791	2500-15
9/16	1063-22.00		2500-18
9/16 RA-6 & RAN-6	1063-24.00	22971	2500-18
9/16 RA-6 S.S.	1063-27.00	239710	2500-18
5/8 RN-6	1061-19.50		2500-18
5/8 RN-6	1061-20.12	FC-16971	2500-18
5/8 RN-6	1061-23.50		2500-18
3/4 RA-8	1533-21.56	BD-709710	2500-23
3/4 RA-8 S.S.	1533-24.75	SM-719710	2500-23
1" RA-6 & RAN-6	1065-23.64	219710	2500-36
1" RA-6 S.S.	1064-26.00	S-239712	2500-36
1"	1065-29.00		2500-36
1-1/4 RA & RB-6	1066-24.50	719710	2500-36
1-1/4 RA-6 S.S.	1066-27.50	S-719710	2500-36
1-1/4 RB-8	1066-31.62	AM-40973	2500-36
1-1/4	1066-33.62		2500-36
1-1/4 RB-8 S.S.	1066-39.25	SM-40973	2500-36
1-3/8 RA-4	1067-26.50		
1-5/8 RA-4	1068-27.75		
1-5/8 AG-6	1622-28.18	AG-15945	
1-5/8 RA-4	1068-30.50		
1-5/8 RBN-8	1068-32.25	BM-40973	2500-46
1-5/8 RBN-8 S.S.	1068-32.25	SS-41973	2500-46
1-5/8 RA & RB-6	1068-35.81	A-409731	2500-46
1-5/8 RB-6 & 8 S.S.	1068-48.75	SM-92973 AS-409731	2500-46
1-5/8 RB-8	1068-38.18	BM-829731	2500-46
1-5/8	1068-41.50		2500-46

Continued on next page



6-B PUSHER TUBE & SPOOL ASSEMBLY

S.S.= Machine with spindle stops

MACHINE SIZE	MANUFACTURING NUMBER - LAST 4 INDICATE OAL	PART NUMBER	RETAINING RING SPOOL BUSHING
2" R-4	1069-29.00		2500-51
2" RB-6, RAS-6	1069-34.94	BH-389731	2500-51
2" RB-8	1069-37.25	BC-82973	2500-51
2" RAS-6	1069-40.00		2500-51
2" RB-6 S.S.	1069-44.47	BS-38971	2500-51
2" RB-8 S.S.	1069-45.81	SS-82773	2500-51
2" RB-8 S.S.	1069-48.06	SS-82973	2500-51
2-5/8 RB-4 (2-7/8 thd)	1071-34.44	A-369730	2500-59
2-5/8 RB-4 (3" Thd)	1618-34.44	A-369730	2500-59
2-5/8 RA & RB-6 & 8	1071-38.88	B-849730	2500-59
2-5/8 RB-8 S.S.	1071-50.00	SM-96973	2500-59
2-5/8 RB-6 S.S.	1071-52.00	SM-84973	2500-59
3-5/16 R-4	1072-37.50		
3-1/2 RA-4	1073-35.12		2500-73
3-1/2 RA & RB-6	1073-35.81	B-829710	2500-73
4"	1074-37.50		
4" RB-6	1074-40.75	BA-929732	
4-3/4 RA-4	1289-36.06		
4-3/4 RA-4	1289-37.31	A-909732	
5-1/8	1290-37.25		
5-1/8	1290-38.25	B-929732	
5-1/8	1290-39.31		
5-1/2 RB-4 (Old Style)	1518-35.50		
5-1/2 RB-4 (Old Style)	1518-38.50		
5-1/2 RB-4 (New Style)	1578-35.50		
5-1/2 RB-4 (New Style)	1578-38.50		
6" RB-6	1283-44.66	BC-88973	
6" RB-8	1283-47.00	BC-889730	
7-1/4	1292-50.25		
7-3/4	1294-63.88	BX-88629	



6-B Pusher Tube & Spool Assembly

Collet Tubes



9-B Collet Tubes

9-B COLLET TUBES

S.S.= Machine with spindle stops

MACHINE SIZE	MANUFACTURING NUMBER LAST 4 INDICATE OAL	PART NUMBER	55-B BUSHING
7/16 RA-6	1062-13.31	C-18971	
7/16 RA-6	5152-11.94	C-186240	
7/16 RA-6 S.S.	5152-13.38	SM-186240	
9/16 RA-6 & RAN-6	5153-21.47	22624	
9/16	6806-22.38		
9/16 RA-6 S.S.	5153-24.00	236240	
5/8 RN-6	5151-16.88	FC-166240	
5/8 RN-6	9096-17.00	02683-77	
5/8 RN-6	5151-17.44	FC-16624	
5/8 RN-6 S.S.	5151-20.38	SC-176240	
3/4 RA-8	6803-20.00	BD-706240	
3/4 RA-6, RA-8	6803-20.62	BD-70624	
3/4 RA-6, RA-8	6803-21.25		
3/4	6803-23.00		
3/4 RA-6 & 8 S.S.	6803-23.00	SM-716240	
7/8	5154-20.50		
7/8 RA-4	5154-22.38		
1" R-4, RA-6, RAN-6	5155-21.88	21624	6039
1"	5155-23.25		6039
1" RA-6 S.S.	5155-24.56	S-21629	6039
1-1/4 RA-6	5156-24.00	716240	6452
1-1/4 RB-6 S.S.	5156-26.75		6452
1-1/4 RA-6 S.S.	5156-27.25	S-719702	6452
1-1/4 RB-8	5156-28.50	AM-40629	6452
1-1/4	5156-31.00		6452
1-1/4 RB-8 S.S.	5156-38.00	SM-40624	6452
1-1/4	5156-39.12		6452
1-5/8 R-4	1039-25.50	33275	6453
1-5/8 RAS-4	1039-27.50		6453
1-5/8 RBN-8	1039-30.00	BM-40629	6453
1-5/8 RA-6	1039-33.56	A-40629	6453
1-5/8 RB-8	1584-35.00		6453
1-5/8 RA & RB-8	1039-35.50	BM-826290	6453
1-5/8 RBN-8	1039-39.25	SS-41629	6453
1-5/8 RB-8 S.S.	1039-46.38	SM-82629	6453

Continued on next page



9-B COLLET TUBES

S.S.= Machine with spindle stops

MACHINE SIZE	MANUFACTURING NUMBER LAST 4 INDICATE OAL	PART NUMBER	55-B BUSHING
2" RA, RB, RAS-6	1040-32.94	BH-38629	6047
2" RA, RB-8	1965-35.00	BC-82629	6047
2" RB-8 S.S.	1965-45.88	SS-82629	6047
2"	1040-36.38		6047
2-1/4 R-4	5157-27.62		
2-1/4	5157-33.25		
2-1/4 R-6 & RA-6	5157-36.31	84629	
2-3/8 HSC	8885-18.88	0297093	
2-5/8 RA-6 & 8, 2-5/8 RB-6	1041-37.12	AU-84629	6054
2-5/8 RB-6	1041-41.00		6054
2-5/8 RB-6, RB-8 S.S.	1041-47.62	SM-96929	6054
3 RA-4 & RB-4	6786-31.25		
3-1/2 RA-6	1043-36.00	A-946290	6055
3-1/2	1043-37.75		6055
4" RB-6	1044-37.31	BA-92629	6057
4" RB-8	1044-41.00	BM-88629	6057
4-3/4 RA & RS-4	1288-35.88	A-906291	7200
5-1/8 RB-4	3239-36.25		7999
5-1/8 RB-4	3239-38.00	B-92629	7999
5-1/2 RB-4	3302-37.44	BD-92629	7207
6" RB-6	3234-42.38	BC-88629	8012
6" RB-6	3234-43.81	02322-7	
7-3/4 RA-4, 8, RB-4	1293-44.56	BX-88629	



9-B Collet Tubes

10-B COLLETS COLLET PADS

see page 224-229 for a complete description of these items



10-B Collets
Collet Pads

Spindle Carrier Components

12-B COLLET TUBE ADJUSTING NUTS, INCLUDING ASSY COMPONENTS



12-B Collet Tube Adjusting
Nuts. Including Assy
Components



73-B Plunger Head



74-B Spring



75-B Plunger

MACHINE SIZE	PART # 12-B COLLET NUT ASSY	PART # 73-B HEAD	PART # 74-B SPRING	PART # 75-B PLUNGER
7/16 RA-6	C-186320	44514	44513	15302
9/16 RA-6 & RAN-6	226320	44514	44513	15302
5/8 RN-6	FC-16659, FC-166320	44514	44513	15302
3/4 RA-6 & RA-8	BD-70632	44514	44513	15302
7/8 RA-6	1527	5642	5644	5640
1" RA-6 Old Style 1" RA-6 & RAN -6 New Style	A-22632 (2 finger, some early 3 finger) A-44902, B-20632	44524	44523	15308
1-1/4 RA-6 Old Style	70632	A44901	4993	14556
1-1/4 RA-6, RB-8 New Style	B-706320	A-44901	4993	14536
1-1/4 RA & RB-8	B-706320 TG980818 (special)	A-44901	4993	14536
1-5/8 RBN-8	BM-40632	C-44180	44523	C-44181
1-5/8 RA & RB-6	A-406320	5553	5554	5555
1-5/8 RB-8	BM-82661	44524	44523	15318
2" RA-6 & RB-6, 1-5/8 & 2" RAS-4	386321	5553	5554	5555
2" RB-8	BC-82632	5553	5554	5555
2-5/8 RA & RB-6 & N 8	AT-966320	5553	5554	5555
3-1/2 RA & RB-6 & 8	A-946321	5553	5554	5555
4" RB-6 & 8	BA-92632	5553	5554	5555
4-3/4 RA & RB-4	XA-1801	5553	5554	5555
5-1/8 RB-4	B-92661	5553	5554	5555
5-1/8 RB-4 Compensating	1743			
5-1/2 RB-4	BD-92661	5553	5554	5555
6" RB-6	BC-88066	5553	5554	5555
6" RB-6 Compensating	02322-6	5553	5554	7667
7-3/4 RB-4	1669			

Note: Collet tube nuts for compensating type finger holders also available

14-B COLLET SEAT PIN 15-B COLLET SEAT

MACHINE SIZE	PART NUMBER 14-B COLLET SEAT PIN	PART NUMBER 15-B COLLET SEAT
7/16 RA-6	XA-3416	C-18658
5/8 RN-6	441861	FC-16658
9/16 RA & RAN-6	441861	226582
3/4 RA-8	C-44161	BD-70658
1" RA & RAN-6	XA-3417	A-226580
1-1/4 RA-6, 1-1/4 RB-8	XA-3402	71658
1-5/8 RA & RB-6, 1-5/8 RA & RB-8	44424	A-406580
1-5/8 RBN-8	XA-3418	A-406580
2" RB-6 & RB-8	44512	BH-386580
2-5/8 RA-6	44346	A-84658
2-5/8 RB-6	44346	A-846580
3-1/2 RB-6 & RB-8	441840	441831
4" RB-6 & RB-8	XA-3409	BA-92658
4-3/4 RB-4	442790	
5-1/8 RB-4	XA-3401	B-926580
5-1/2 RB-4	XA-3419	AD-116580
6" RB-6	XA-3414	



14-B Collet Seat Pin



15-B Collet Seat

25-B SPINDLE KEY

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-5778
5/8 RN-6	XA-5856
9/16 RA & RAN-6	2739
3/4 RA-8	2739
1" RA & RAN-6	2743
1-1/4 RA-6, 1-1/4 RB-8	3816
1-5/8 RBN-8	2600
1-5/8 RB-6, 2" RB-6	2627
1-5/8 RB-8, 2" RB-8	2662
2-5/8 RB-6, 2-5/8 RB-8	1789
3-1/2 RB-6 & RB-8	2765
4" RB-6 & RB-8	1856



25-B Spindle Key

Spindle Assembly



27-B Spindle



17-B Front Bearing



39-B Rear Bearing



39-B Rear Bearing
(3/4 RA-8)

27-B SPINDLE, 17-B FRONT BEARING, 19-B CENTER BEARING, 39-B REAR BEARING

MACHINE	27-B SPINDLE	DESCRIPTION	17-B FRONT	19-B CENTER	39-B REAR
7/16 RA-6	C-186030		A-17883		A-17883
	C-186031		D-17042		D-17042
	C-186032				
	C-186033		D-17035 (2)		D-17278 (2)
7/16 RA-6 S.S.	SM-18603	spindle stop			
	SM-186030	spindle stop			
	SM-186031	spindle stop	A-17883		A-17883
	SM-186032	spindle stop			
	SM-186033	spindle stop	D-17035 (2)		D-17278 (2)
5/8 RN-6	FC-166030		D-17869		
	FC-166030		D-17322		D-17321
	FC-166031				
5/8 RN-6 S.S.	SC-176030	spindle stop	D-17869		
9/16 RA-6	B-226030	small frame serial # 22XXX	A-17092		A-17093
9/16 RA & RAN-6	B-226030	on 1" frame serial # 23XXX	A-17736		A-17781
9/16 RA-6 S.S.	236035	spindle stop	A-17602		A-17093
9/16 RAN-6 S.S.					
3/4 RA-8	BD-706030		A-17238	A-17238	D-17256
	BD-706031		A-17238	A-17238	D-17256
3/4 RA-8 S.S.	SM-716031	spindle stop	A-17238	A-17238	D-17256
1" RA-6 O.S.	013573	one thread, no step, grooves	A-17217		A-17217
1" RA-6 N.S.	A-226031	two threads, step, grooves			
1" RAN-6	A-226031				
1" RA-6 S.S.	S-216033	spindle stop			
	S-216034	spindle stop			
1-1/4 RA-6	716032	no grooves in head	A-17139		A-17139
	716033	grooves in head	A-17118		A-17117
1-1/4 RA-6 S.S.	S-716030	spindle stop	A-17118		A-17117

Continued on next page



27-B Spindle



22-B Front Retainer



28-B Front Flinger



40-B Rear Flinger



41-B Rear Retainer

22-B FRONT RET., 28-B FRONT FLINGER, 40-B REAR FLINGER, 41-B REAR RET.

MACHINE	22-B FRONT RET.	28-B FRONT FLINGER	40-B REAR FLINGER	41-B REAR RET.
7/16 RA-6	C-18606	C-18653	C-18653	C-18617
	C-186060	C-186530	C-186530	C-186170
	C-186062	C-186531	C-186541	C-186171
7/16 RA-6 S.S.	C-18606	C-18653	N/A	N/A
	C-186062	C-186531		
5/8 RN-6	FC-16606	FC-16653	FC-16654	FC-16617
5/8 RN-6 S.S.			N/A	N/A
9/16 RA-6	226063	226530	22654	226173
9/16 RA & RAN-6	226065	226531	22654	B-22617
9/16 RA-6 S.S.	226065	226531	N/A	N/A
9/16 RAN-6 S.S.	226065	226531		
3/4 RA-8	BD-70606	BD-70653	BD-70654	BD-706170
	BD-70606	BD-70653	BD-70654	BD-706170
3/4 RA-8 S.S.	BD-70606	BD-70653	N/A	N/A
1" RA-6 O.S.	A-226062	A-22653	A-22654	A-226271
1" RA-6 N.S.	A-226063	A-226530	A-22654	A-226171
1" RAN-6	A-226063	A-226530	A-22654	A-226173
1" RA-6 S.S.	A-226063	A-226530	N/A	N/A
	A-226063	A-226530	N/A	N/A
1-1/4 RA-6	706063	70653	70654	706173
	706064	706530	706540	706174
	706065	706531	706540	706174
1-1/4 RA-6 S.S.	706065	706531	16580	N/A

Spindle Assembly



27-B Spindle



17-B Front Bearing



19-B Center Bearing



39-B Rear Bearing

27-B SPINDLE, 17-B FRONT BEARING, 19-B CENTER BEARING, 39-B REAR BEARING

MACHINE	27-B SPINDLE	DESCRIPTION	17-B FRONT	19-B CENTER	39-B REAR
1-1/4 RB-8	AM-40603 AM-406030 AM-406031		A-17332	A-17332	A-17708
1-1/4 RB-8 S.S.	SM-406032	spindle stop	A-17332	A-17332	A-17708
1-5/8 RBN-8	BM-406031		A-17149	A-17149	D-17236
1-5/8 RBN-8 S.S.	SS-416032	spindle stop	A-17149	A-17149	D-17236
1-5/8 RA-6	A-40603	ball bearing machine	17421		17422
1-5/8 RB-6	A-406032 A-406034		A-17423	A-17423	A-17155
1-5/8 RB-6 S.S.	AS-406034	spindle stop	A-17423	A-17423	A-17155
2" RB-6	BH-386032		A-17423	A-17423	A-17155
1-5/8 RB-8	BM-826032		A-17005	A-17365	A-17004
1-5/8 RB-8 S.S.	SM-826032	spindle stop	A-17005	A-17365	A-17004
2" RB-8	BC-826031		D-17177	D-17177	A-17500
2" RB-8 S.S.	SS-826030 SS-826031	spindle stop spindle stop	D-17177 D-17177	D-17177 D-17177	A-17500 D-17925
2-3/8 HSC-6	0296527	push or pull type	D-17382		A-17238
2-5/8 RB-6	B-846030 AU-846031		17492	17492	A-17106
2-5/8 RB-8	AT-966034		A-17527	A-17527	A-17528
2-5/8 RB-8 S.S.	SM-966030	spindle stop	A-17527	A-17527	A-17528
3-1/2 RB-6 & RB-8	A-946031		17417	17418	17416
4" RB-6	BA-926030 BA-926031		A-17510	A-17511	A-17512
4" RB-8	BM-88603		A-17510	A-17511	A-17512



27-B Spindle



22-B Front Retainer



28-B Front Flinger



40-B Rear Flinger



41-B Rear Retainer

22-B FRONT RETAINER, 28-B FRONT FLINGER, 40-B REAR FLINGER, 41-B REAR RETAINER

MACHINE	22-B FRONT RETAINER	28-B FRONT FLINGER	40-B REAR FLINGER	41-B REAR RETAINER
1-1/4 RB-8	AM-40606	AM-40653	B-706540	AM-40617
1-1/4 RB-8 S.S.	AM-40606	AM-40653	B-706540	AM-40617
1-5/8 RBN-8	BM-406060	BM-40653	BM-40654	BM-40617
1-5/8 RBN-8 S.S.	BM-406060	BM-40653	N/A	SS-41617
1-5/8 RB-6	A-40606	A-40653	A-40654	A-40617
1-5/8 RB-6	A-406060	A-40653	A-40654	A-406170
1-5/8 RB-6 S.S.	A-406060	A-40653	AS-40654	AS-406170
2" RB-6	A-406060	A-40653	A-40654	A-406170
1-5/8 RB-8	BM-82606	BM-82653	BM-82654	BM-82617
1-5/8 RB-8 S.S.	BM-82606	BM-82653	SM-82654	SM-82617
2" RB-8	BC-82606	BC-82653	BC-82654	BC-82617
2" RB-8 S.S.	BC-82606	BC-82653	BC-82654	SS-82617
	BC-82606	BC-82653	SS-82607	SS-82617
2-3/8 HSC-6	27415 / H-58606	H-58653	H-58654	H-58617
2-5/8 RB-6	AU-84606	AU-84653	AU-846540	AU-84617
2-5/8 RB-8	A-966060	A-96653	A-966540	AT-966170
2-5/8 RB-8 S.S.	A-966060	A-96653	A-966540	SM-96617
3-1/2 RB-6 & RB-8	A-94606	A-94653	A-94654	A-94617
4" RB-6	BA-92606	BA-92653	BA-92654	BA-92607
4" RB-8	BM-88606	BA-92653	BA-92654	BA-92607

Spindle Gear



43-B Spindle Gear

43-B SPINDLE GEAR

MACHINE SIZE	DESCRIPTION	PART NUMBER
7/16 RA-6	21 teeth	C-186180
	21 teeth	C-186181
5/8-RN-6	30 teeth	FC-16618
9/16 R, RA, RAN-6	34 teeth	226181
9/16 RA-6 S.S.	34 teeth	7373
9/16 RA-6	36 teeth	0162526
9/16 RA-6	36 teeth	226183
3/4 RA-8	42 teeth	BD-70618
1" R-6	34 teeth	226180
1" RA, RAN-6	34 teeth	A-226180
1" RA-4	34 teeth	A-22618
1-1/4 RA-6 S.S.	41 teeth	716180
1-1/4 RA-6	41 teeth	706182
1-1/4 RA-6 OS	41 teeth	706181
1-1/4 RA-6 SYN	36 teeth	TF-975609
1-1/4 RA-8	39 teeth	AM-40618
1-3/8 AG-6		AG-13618
		AG-136180
1-5/8 RB-6	54 teeth	A-40618
1-5/8 RB-8	39 teeth	7585
	48 teeth	BM-82618
1-5/8 RBN-8		BM-40618
2" RB-6		A-40618
2" RB-8	48 teeth	BC-82618
2-3/8 HSC-6	38 teeth	H-586180
2-5/8 RA-6	56 teeth	AU-846180
2-5/8 RB-6		
2-5/8 RA	56 teeth	AU-84618
2-5/8 RB-8	48 teeth	A-96618
		A-966180
3-1/2 RB-6 inner (straight)	55 teeth	A-946181
3-1/2 RB-6 outer (offset)	55 teeth	A-946160
3-1/2 RB-8	70 teeth	BM-94616
3-1/2 RB-8	100 teeth	BM-94198
4" RB-6	74 teeth	BA-92618
4-3/4 RB-4		A-92618
5-1/8 RB	60 teeth	BE-92618
6" RB-6	58 teeth	013937

44-B SPINDLE GEAR NUT 76-B CENTER ADJ. NUT

MACHINE SIZE	PART NUMBER 44-B SPINDLE GEAR NUT	PART NUMBER 76-B CENTER ADJ. NUT
7/16 RA-6	C-186191 C-186192	
5/8 RN-6	226190	
9/16 R, RA, RAN-6	226190	
3/4 RA-8	BD-706190	BD-70655
1" RA, RAN-6	A-22619	
1-1/4 RA & RB-6, RB-8 (1-1/4 RB-8 Only)	706190	AM-40655
1" & 1-1/4 R-4		
1-5/8 RBN-8	BM-40619	BM-40655
1-5/8 RB-6, 2" RB-6	846190	A-406551
1-5/8 RB-8	15362	BM-82655
2" RB-8	15362	BC-826550
2-5/8 RB-6	AU-84619	B-84655
2-5/8 RB-8	AT-96619	AT-96687
3-1/2 RB-6	A-94619	A-94655
3-1/2 RB-8	BM-94619	A-94655
4" RB-6	BA-92619	BA-926550
4" RB-8	BM-88619 BM-88090	BA-926550 BM-88094



44-B Spindle Gear Nut



76-B Center Adj. Nut

46-B FINGER CAM - OLD 2 FINGER CHUCK

MACHINE SIZE	PART NUMBER
9/16 RA-6	226370
1" RA-6	A-22637
1-1/4 RA-4	70637
1-5/8, 2 RA-6	386370
3-1/2 RA-6	A-946370



46-B Finger Cam - old 2 finger chuck

Finger Holder Components



50-B Finger

50-B Finger

MACHINE SIZE	PART NUMBER	DESCRIPTION
7/16 RA-6	C-18641	
5/8 RN-6	FC-16641	
9/16 & 1" RA-6, RAN-6	B-20641	5/16 dia hole
	TC-981501	3/8 dia hole
9/16 & 1" RA-6 old 2 finger chuck	9276	5/16 dia hole
	TC-981501OS	3/8 dia hole
1-1/4 RA-6, 1-1/4 RB-6	B-70641	3/8 dia hole
	6792	13/32 dia hole
1-1/4 RA-6 old 2 finger chuck	78059	3/8 dia hole
	6223	7/16 dia hole



51-B Finger Hinge Pin or Hinge Screw

51-B FINGER HINGE PIN OR HINGE SCREW

MACHINE SIZE	PART NUMBER	DESCRIPTION
7/16 RA-6	XA-5511	1/4 X 1.06 W/Flat
5/8 RN-6, 2-3/8 HSC-6	XA-1972	5/16 X 1.37 W/Flats
9/16 & 1" RA-6, RAN-6	XA-4079 (standard)	5/16 X 1.62 W/Flats
	6130	3/8 X 1.62 W/Flats
9/16 & 1" RA-6 old 2 finger chucks	6129	5/16 X 1.56 Peen Type
	5092	5/16 X 1.75 Peen Type
	5093	3/8 X 1.62 Peen Type
3/4 RB-8	XA4079	5/16 X 1.62 W/Flats
1-1/4 RA-6, 1-1/4 RA-8	XA-4066 (standard)	3/8 X 2.25 W/Flats
1-1/4 RB-6, 1-1/4 RB-8	6939	7/16 X 2.25 W/Flats
1-1/4 RA-6, 1-1/4 RB-6 old 2 finger chucks	5095	3/8 X 2.31 Peen Type
1-5/8 & 2" RA & RB-6 2-5/8 RA & RB-6 2-5/8 RB-8	XA-4065 (standard)	7/16 X 2.50 W/Flats
	6804	7/16 X 2.50 Peen Type
1-5/8 & 2 RB-8, 1-5/8 RBN-8	A-44465	7/16 X 2.25 W/Flats
3-1/2 RB-6, 4" RB-6 & RB-8, 6" RB-6 4-3/4 & 5-1/8 RB-4	9882 hinge screw	5/8 dia.
7-1/4, 7-3/4, 8 RA & RB-4	1189 hinge screw	3/4 dia.
3-1/2 RB-8	1224 hinge screw	5/8 dia.



52-B Thrust Plate old 2 finger chuck

52-B THRUST PLATE OLD 2 FINGER CHUCK

MACHINE SIZE	PART NUMBER
1" RA-6	B-206380
1-1/4 RA-6	B-706380

54-B INSERT RING USED WITH 46-B FINGER CAMS IN OLD 2 FINGER CHUCK

MACHINE SIZE	PART NUMBER
9/16 RA-6	22646
1" RA-6	B-20646
1-1/4 RA-6	706460 old style B-70646 new style



54-B Insert Ring used with 46-B finger cams in old 2 finger chuck

65-B FINGER ASSEMBLY 64-B PIN (PEEN TYPE) 63-B ROLL

MACHINE SIZE	PART NUMBER 65-B Finger Assy.	PART NUMBER 64-B Pin (Peen)	PART NUMBER 63-B Roll
1-5/8, 2" RA & RB-6 & 8	60080	33281	14294
1-5/8 RBN-8	BM40641		
2-5/8 RA, RB-6 & 8	XA-4758	33281	14294
3-1/2 RA, RB-4 & 6	680801	15154 5/16 dia. x 1.50	51699
4-3/4 RA-4	680801		14253
4" RB-6	1275	6129 5/16 dia. x 1.56	XA-5127
4-3/4 RB, RS-4	A-90641	15254	14253
5 RB-4, 5-1/8 & 5-1/4 RA, RB-4	BA-90641	15254	14292
5-1/2 RB-4	BD-92641	15254	14292
6" RB-6	BC-886410	15254	14253
7-1/4, 7-3/4, 8 RB-4	BD-88641	XA-3940	14295



65-B Finger Assembly



64-B Pin (Peen Type)



63-B Roll

Finger Holder Assembly



70-B Finger Holder Assembly



47-B Spool



48-B Body



48-B Plate



49-B Screw



50-B Finger



51-B Pin



52-B Thrust Plate



Key

70-B FINGER HOLDER ASSEMBLY

MACHINE SIZE	CODE	PART NUMBER		
7/16 RA-6	70-B assembly	C-189682		
	47-B spool	C-18636		
	48-B body & plate	C-186261		
	49-B screw	A-540		
	50-B finger	C-18641		
	51-B pin	XA-5511		
	52-B thrust plate	C-186380		
	key	XA-5791		
	9/16 RA & RAN-6	70-B assembly	229687	
		47-B spool	226362	
48-B body & plate		229690		
48-B body only		226800		
48-B plate only		226810		
49-B screw		1321		
50-B finger		B-20641		
51-B pin		XA-4079		
52-B thrust plate		226383		
key		2675		
5/8 RN-6	70-B assembly	FC-169680		
	47-B spool	FC-166430		
	48-B body & plate	FC-169690		
	48-B body only	FC-166800		
	48-B plate only	FC-166810		
	49-B screw	XA-6808		
	50-B finger	FC16641		
	51-B pin	XA-1972		
	52-B thrust plate	FC-166380		
	key	2675		
3/4 RA-8		NEW STYLE	OLD STYLE	
	70-B assembly	BD-709680	BD-70968	
	47-B spool	BD-70643	226362	
	48-B body & plate	BD-709690		
	48-B body only	BD-706800	BD-70680	
	48-B plate only	BD-706810	BD70681	
	49-B screw	A571		
	50-B finger	B-20641	B-20641	
	51-B pin	XA-4079	XA-4079	
	52-B thrust plate	BD-706380	BD-706380	

Continued on next page

70-B FINGER HOLDER ASSEMBLY

MACHINE SIZE	CODE	PART NUMBER
1" RA & RAN-6 *	70-B assembly	A-229685 stepped ID A-229684 straight ID
	47-B spool	B-206361
	48-B body & plate	A-229692
	48-B body only	A-226802 stepped ID A-226801 straight ID
	48-B plate only	B-206810
	50-B finger	B-20641
	51-B pin	XA-4079
	52-B thrust plate	B-206380
	49-B screw	1328
	key	51301
<i>* Specify straight ID or stepped ID style</i>		
1-1/4 RA, 1-1/4 RA-6, RB-6, 1-1/4 RB-8	70-B assembly	B-709682
	47-B spool	B-706361
	48-B body & plate	B-709692
	48-B body only	B-706802
	48-B plate only	B-706810
	49-B screw	1164
	50-B finger	B-70641
	51-B pin	XA-4066
	52-B thrust plate	B-706380
	52-B thrust plate	B-70649
key	51325	
<i>* Not included in std 70-B assembly</i>		
2-3/8 HSC-6	70-B assembly	0297085
	47-B spool	0296523
	48-B body & plate	0297084
	49-B screw	02963-26
	50-B finger	029771
	51-B pin	XA-1972
	52-B thrust plate	0297091
	key	2675
1-5/8 RA, RB-6, RAS-4	70-B assembly	A-409684
	47-B spool	A-406360
	48-B body & plate	A-409692
	48-B body only	A-406802
	48-B plate only	A-406812
	49-B screw	1319
	65-B finger assembly	60080
	51-B pin	XA-4065
	52-B thrust plate	A-406380
	54-B insert ring	15137
key	5160	
bushing	17279	



70-B Finger Holder Assembly



47-B Spool



48-B Body



48-B Plate



49-B Screw



50-B Finger



51-B Pin



52-B Thrust Plate



Key

Continued on next page

Finger Holder Assembly



70-B Finger Holder Assembly



47-B Spool



48-B Body



48-B Plate



49-B Screw



50-B Finger



51-B Pin



52-B Thrust Plate



Key

70-B FINGER HOLDER ASSEMBLY

MACHINE SIZE	CODE	PART NUMBER	
1-5/8 RB-8	70-B assembly	BM-829685	
	47-B spool	BM-826362	
	48-B body & plate	BM-829690	
	48-B body only	BM-826800	
	48-B plate only	BM-826810	
	49-B screw	A-570	
	65-B finger assembly	60080	
	51-B pin	A-44465	
	52-B thrust plate	BM-826381	
	key	51606	
	1-5/8 RBN-8	70-B assembly	BM-40968
		47-B spool	BM-40636
		48-B body & plate	
48-B body only		BM-40680	
48-B plate only		BM-40681	
49-B screw		A-272	
65-B finger assembly		BM-40641	
51-B pin		A-44465	
52-B thrust plate		BM-406380	
key		51606	
2" RA, RB-6, RAS-4	70-B assembly	BH-389684	
	47-B spool	A-406360	
	48-B body & plate	A-409692	
	48-B body only	A-406802	
	48-B plate only	A-406812	
	49-B screw	1319	
	65-B finger assembly	60080	
	51-B pin	XA-4065	
	52-B thrust plate	386381	
	54-B insert ring	15137	
2" RB-8	70-B assembly	BC-82968	
	47-B spool	BM-826362	
	48-B body & plate	BC-82969	
	48-B body only	BC-82680	
	48-B plate only	BC-82681	
	49-B screw	14570	
	65-B finger assembly	60080	
	51-B pin	A-44465	
	52-B thrust plate	BC-82638	
	key	51606	
2-5/8 RA, RB-6 & 8	70-B assembly	AT-969685	
	35-B thrust washer	AT-96628	
	47-B spool	AT-966361	
	48-B body & plate	AT-969691	
	48-B body only	AT-966800	
	48-B plate only	AT-966810	
	49-B screw	2165	
	65-B finger assembly	XA-4758	
	51-B pin	XA-4065	
	52-B thrust plate	AT-966380	
	54-B insert ring	XA-204	
	key	51606	

70-B FINGER HOLDER ASSEMBLY

MACHINE SIZE	Part Number	Old Part Number	Description
3-1/2 RA-4 & 6	3146	A-946264	finger holder body assembly
	5436	N-946264	finger holder body only
	5437	C-17069	finger holder body bushing
	5438	4424	plug
	6994	993	screw
	5560	A-946383	thrust plate
	5561	A-94628	thrust washer
	1397	A-94645	chuck operating spool assembly
	6535	N-94645	chuck operating spool only
	6532	C-17067	chuck operating spool bushing
3-1/2 RB-8	1554		finger holder body assembly
	6990		finger holder body only
	7012		finger holder body bushing
	6998		retaining band
	7010		plug
	6994	993	screw
	6988		thrust plate
	1553	BM-94626	chuck operating spool assembly
	6989		chuck operating spool only
	7152		chuck operating spool bushing
4" RB-6 & RB-8	3404	BA-92645 (1)	chuck operating spool assembly
		BA-92641 (3)	Finger assembly
		BA-926400 (1)	compensating spring
		BA-92628 (1)	thrust washer
		BA-92638 (1)	thrust plate assembly
		51350 (3)	brass step
		1401 (3)	screw
		2069 (3)	screw-thrust plate
		XA-302 (3)	spring
		BA-92626 (1)	finger holder & bushing assembly
		9882 (3)	screw-finger
		2547 (3)	lockwasher
		XA-1741 (1)	dowel pin
4-3/4 RS-4	3162	A-90626	finger holder body assembly
	7153		finger holder body only
	6523	17221	finger holder body bushing
	3163	A-90645	chuck operating spool assembly
	7154		chuck operating spool only
	6522	17222	chuck operating spool bushing

Continued on next page

Finger Holder Assembly

70-B FINGER HOLDER ASSEMBLY

MACHINE SIZE	Part Number	Old Part Number	Description
5-1/8 RB-4	3308		chuck operating spool assembly
	7065		chuck operating spool only
	7066		chuck operating spool bushing
5-1/2 RB-4	3502		chuck operating spool assembly
	7773		chuck operating spool only
	7066		chuck operating spool bushing
5-1/2 RB-4	3409		chuck operating spool assembly
	7882		chuck operating spool only
	7883		chuck operating spool bushing
6" RB-6	1648	023228	finger holder assembly compensating type
	3391	0232213	spool assembly - compensating type

76-B CENTER ADJ. NUT

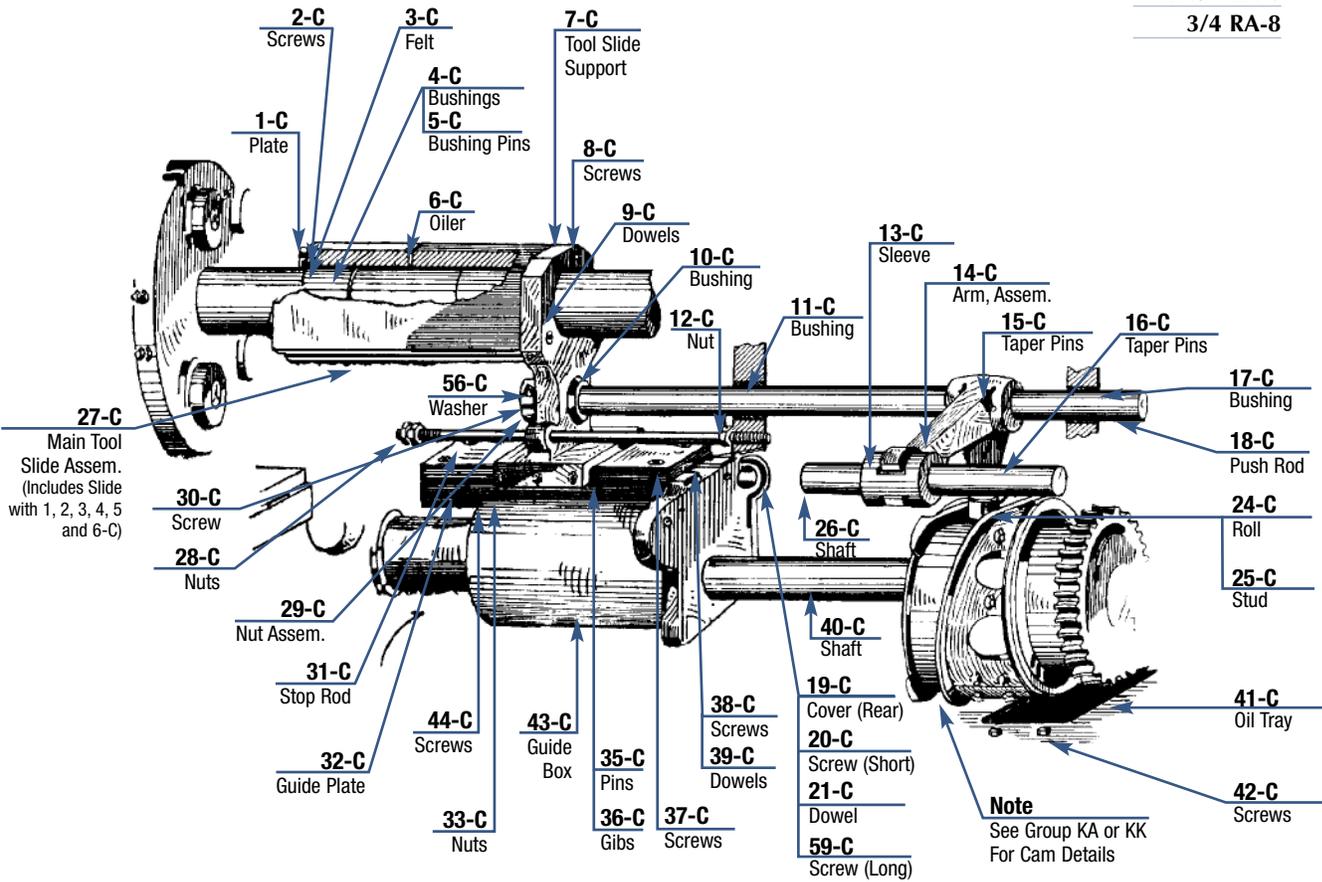
LISTED WITH 44-B

SEE CHART ON PAGE 35

Main Toolslide and Guide

For Machines

- 7/6 RA-6
- 5/8 RN-6
- 9/16 RA-6
- 1" RA-6
- 9/16 RAN-6
- 1" RAN-6
- 1-1/4 RA-6
- 3/4 RA-8



Main Toolslide and Guide

For Machines

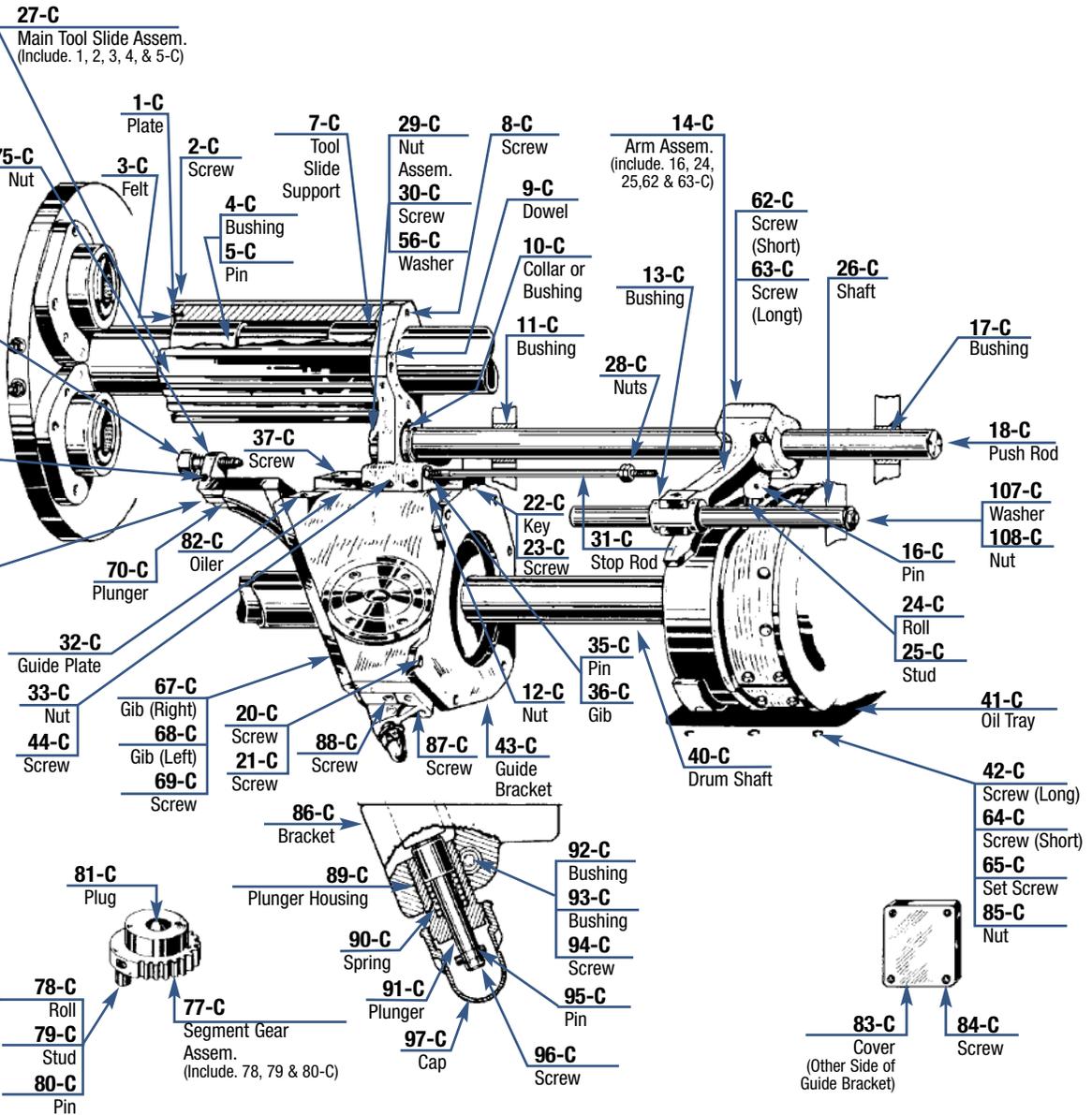
- 1-1/4 RB-8
- 1-5/8 RBN-8
- 1-5/8 RB-6
- 2" RB-6
- 1-5/8 RB-8
- 2" RB-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-6
- 3-1/2 RB-8
- 4" RB-6
- 4" RB-8

- | | |
|------------------|--------|
| 3-1/2" RB-4 Only | |
| 110-C | 111-C |
| Lock Stud | Washer |
| 110-C | 113-C |
| Nut | Pin |

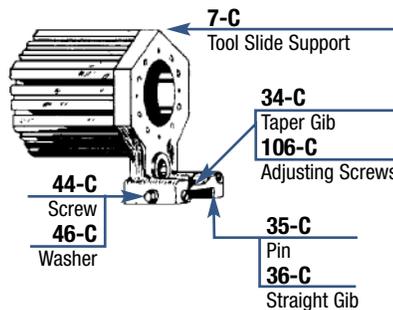
- 71-C Stop Bracket (See Note Below)
- 72-C Screw

Note: With 4" return cams bracket 104-C and stock stop 109-C is used on the 2-5/8" RB-6 and 3-1/2" RB-4 machines.

- 101-C Screw
- 76-C Screw
- 74-C Retaining Ring



Tool Slide Support Gib Arrangement
for 2-5/8" RB-6 and 3-1/2" RB-4



3-C SEAL FELT
3-C SEAL GARLOCK
4-C BUSHING

MACHINE SIZE	PART NUMBER 3-C SEAL FELT	PART NUMBER 3-C SEAL GARLOCK	PART NUMBER 4-C Bushing
7/16 RA-6		XA-5450	0147366
5/8 RN-6		XA-6278	C-174910
9/16 RA-6 serial # 22XXX	9143	01201-3	0147349
3/4 RA-8		01201-1	0147358
9/16 - 1 RA-6	9143	01201-3	0147357
1-1/4 RA-6	8377	01201-1 01201-2	0147350
1-1/4 RB-8, 1-5/8 RBN-8		01201-5	0147351
1-5/8 RB-6, 2" RB-6		01201-5	0147351
2-5/8 RB-6	9114	01201-5	0147351
2" RB-8		01201-4	0147352
2-5/8 RB-8, 3-1/2 RB-6 & 8		01201-9	0147353
4" RB-6		01201-9	0147353
4" RB-8		01201-7	0147354



3-C Seal Felt



3-C Seal Garlock



4-C Bushing (Two required)

10-C BUSHING
11-C BUSHING
17-C BUSHING

MACHINE SIZE	PART NUMBER 10-C BUSHING	PART NUMBER 11-C BUSHING	PART NUMBER 17-C BUSHING
7/16 RA-6	C-17423 (2)	N/A	C-17432
5/8 RN-6	C-17064 (2)	N/A	C-17093
3/4 RA-8	BD-704410	C-17065 (2)	17320
9/16 RA-6, 1" RA-6 9/16 RAN-6, 1" RAN-6	56136	C-17219	C-17053
1-1/4 RA-6	601360	C-17065	17320
1-1/4 RB-8, 1-5/8 RBN-8	AM-40441	C-17341	C-17340
1-5/8 RB-6, 2 RB-6	A-40441	C-17221	C-17057
1-5/8 RB-8, 2 RB-8	BM-82441	C-17261	C-17262
2-5/8 RB-6	15795	C-17218	C-17060
2-5/8 RB-8	15795	C-17218	C-17060
3-1/2 RB-6	15795	C-17218	C-17060
3-1/2 RB-8	15795	C-17218	C-17059
4" RB-6	XA-2301	C-17218	C-17060
4" RB-8	B-88441	C-17250	17311



10-C Bushing



11-C Bushing



17-C Bushing

Main Toolslide and Guide

C



13-C Guide Bushing



14-C Push Rod Roll Arm



18-C Push Rod

13-C GUIDE BUSHING 14-C PUSH ROD ROLL ARM 18-C PUSH ROD

MACHINE SIZE	PART NUMBER 13-C BUSHING	PART NUMBER 14-C PUSH ROD ROLL ARM	PART NUMBER PUSH ROD
7/16 RA-6	C-18219	C-189560	C-18222
5/8 RN-6	202190	FC-16956	FC-162220
3/4 RA-8	202190	BD-71956	BD-70222
9/16 RA-6, 1" RA-6	202190	209561	202222
9/16 RAN-6, 1" RAN-6	C-44984	209562	202222
1-1/4 RA-6	202190	70956	70222
1-1/4 RB-8, 1-5/8 RBN-8	82219	AM-409560	AM-40222
1-5/8 RB-6	82219	A-402233	A-402220
1-5/8 & 2" RB-8	82219	BM-822231	BM-82222
2-5/8 RB-6	82219	A-822230	B-84222
2-5/8 RB-8	82219	A-962232	A-96222
3-1/2 RB-6	82219	A-942231	A-94222
3-1/2 RB-8	82219	BM-94224	BM-94222
4" RB-6	82219	BA-942230	A-94222
4" RB-8	B-82219	B-882230	B-882230



24-C Roll



25-C Stud

24-C ROLL 25-C STUD

MACHINE SIZE	PART NUMBER 24-C ROLL	PART NUMBER 25-C STUD
7/16 RA-6	XA-5180	XA-5355
5/8 RN-6	3019	3179
3/4 RA-8	8543	8544
9/16 RA, RAN-6	3019	1091
1" RA, RAN-6	3019	1091
1-1/4 RA-6	8543	8544
1-1/4 RB-8, 1-5/8 RBN-8	8543	XA-5336
1-5/8 RA-6, 1-5/8 RB-6, 2" RB-6	8543	8544
1-5/8 RB-8, 2" RB-8, 2-5/8 RB-6	8543	8544
3-1/2 RB-6, 2-5/8 RB-8	14286	14418
4" RB-6	14286	14418
4-3/4 RB-4, 5-1/8 RB-4	14286	14418
4" RB-8	14275	14421

26-C SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18208
5/8 RN-6	XA-847
3/4 RA-8	70208
9/16 RA-6, 1 RA-6	202080
9/16 RAN-6, 1 RAN-6	
1-1/4 RA-6	70208
1-1/4 RB-8, 1-5/8 RBN-8	A-82208
1-5/8 RB-6, 2" RB-6	B-90208
1-5/8 RB-8, 2" RB-8	
2-5/8 RB-6, 2-5/8 RB-8	
3-1/2 RB-6, 4" RB-6	
4" RB-8	B-882080



26-C Shaft

28-C NUT

MACHINE SIZE	PART NUMBER
7/16 RA-6	51159
5/8 RN-6	261
3/4 RA-8	263
9/16 - 1 RA-6, RAN-6	50313
1-1/4 RA-6	263
1-1/4 RB-8 thru 4" RB-6	264
4" RB-8	51188



28-C Nut

29-C NUT ASSEMBLY

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-1871 (2)
5/8 RN-6	XA-1892 (2)
9/16, 1 RA-6, RAN-6	53525
1-1/4 RA-6, 3/4 RA-8	XA-1861
1-1/4 RB-8, 1-5/8 RBN-8	15376
1-5/8 RB-6, 2" RB-6	15495
1-5/8 RB-8, 2" RB-8	16450
2-5/8 RB-6, 2-5/8 RB-8	53531
3-1/2 RB-6 & 8, 4" RB-6	15424
4" RB-8	15380



29-C Nut Assembly

Main Toolslide and Guide

C



36-C Taper Gib



36-C Straight Gib



71-C Stock Stop Bracket

36-C GIB

MACHINE SIZE	PART NUMBER TAPER GIB	PART NUMBER STRAIGHT GIB
7/16 RA-6	C-18283	C-18282
5/8 RN-6	FC-16283	FC-16282
9/16 RA-6, 1" RA-6*	56127	56127
9/16, 1" RA-6 *	22283	22282
9/16, 1" RA-6, RAN-6*	A22283	A-222820
1-1/4 RA-6, 3/4 RA-8	70283	702820
1-1/4 RB-8, 1-5/8 RBN-8	AT-36219	A-382820
1-5/8 RB-6, 2" RB-6		
1-5/8 RB-6, 2" RB-6 Before s/n 41573-A	A-40219	A-38282
1-5/8 RB-8, 2" RB-8	BM-822830	BM-822820
2-5/8 RB-6*	XA-401 B-92283	B-84282 B-84282
2-5/8 RB-8	A-80279	AT-96282
3-1/2 RB-6	A-86279	A-86282
3-1/2 RB-8	BM-94283	BM-94282
4" RB-6	B-92283 B-92283	B-90282 B-84282
4" RB-8	B-883201 B-883201	B-88282 B-882820

*Serial number required

71-C STOCK STOP BRACKET

SMALLER MACHINES SEE KA AND KK GROUP

MACHINE SIZE	PART NUMBER BRACKET	PART NUMBER PNEUMATIC ASSY
1-1/4 RB-8, 1-5/8 RBN-8	AM-401101	TG-909882
1-5/8 RB-8, 2" RB-8	A-381101	RA-381101
*1-5/8 RB-6, 2" RB-6	A-40110	TG-909882
*1-5/8 RB-6, 2" RB-6	AM-401101	TG-909882
2-5/8 RA-6, 2-5/8 RB-6	A-841100	RA-841100
2-5/8 RB-8	A-961100	RA-961100
3-1/2 RB-6	A-941100	
3-1/2 RB-8	BM-941100	
4" RB-6	BA-921100	
4" RB-8	BM-881100	

*Serial number required

73-C STOCK STOP 75-C SCREW

MACHINE SIZE	PART NUMBER	PART NUMBER	PART NUMBER
	73-C STANDARD	73-C REVOLVING	75-C NUT
1-1/4 RB-8 thru 3-1/2 RB-8	XA-2525	A-969880	51209
3-1/2 RB-4	N/A	XA-2506	51209
4-3/4 RB-4, 5-1/8 RB-4	N/A	XA-2506	51209



73-C Standard



73-C Revolving



75-C Nut

78-C ROLL 79-C STUD

MACHINE SIZE	PART NUMBER	PART NUMBER
	78-C ROLL	79-C STUD
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 RB-6 & 2" RB-6	3019	10182
1-5/8 & 2" RB-8	14246	14407
2-5/8 RB-6	14246	14381
2-5/8 RB-8, 3-1/2 RB-6 & 3-1/2 RB-8	14246	14407



78-C Roll

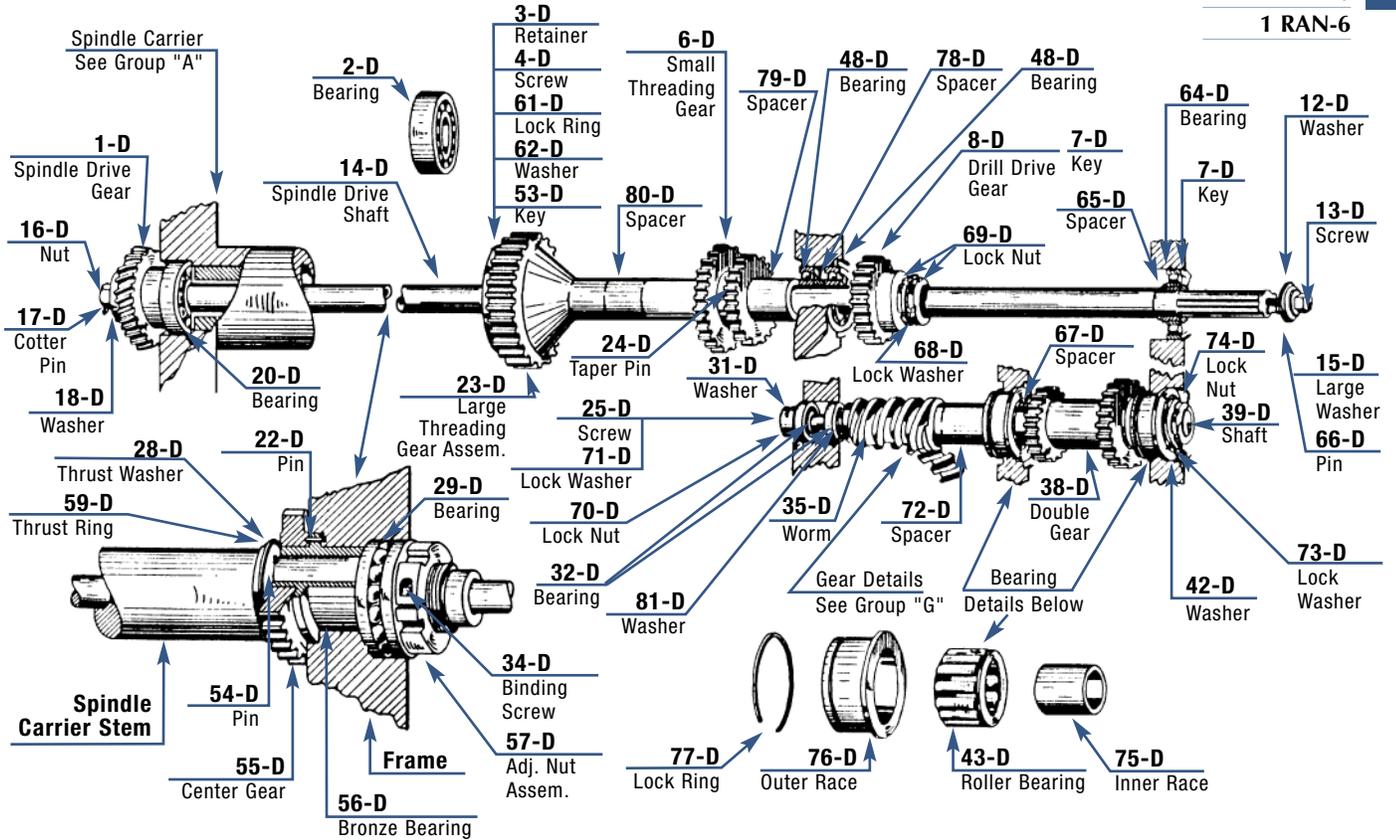


79-C Stud

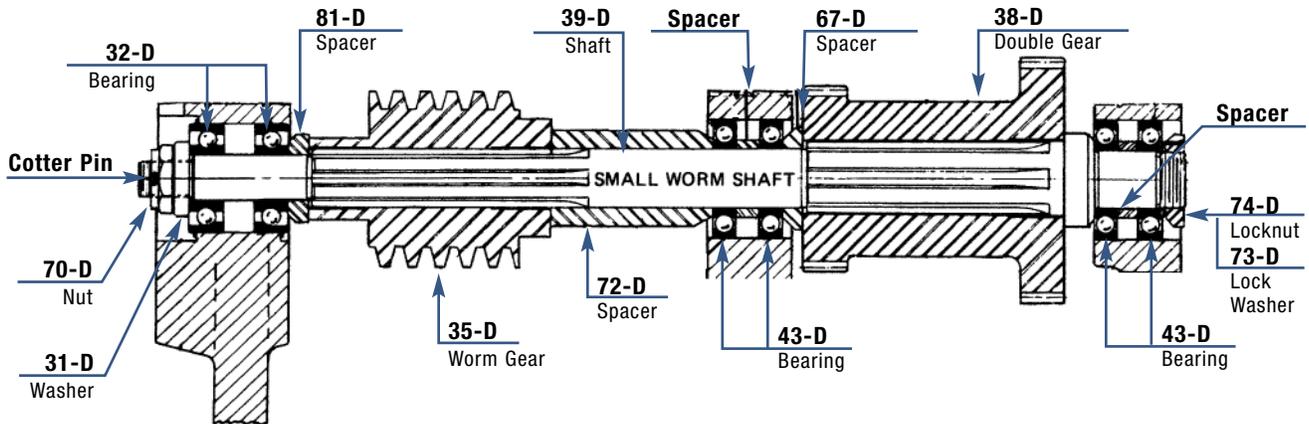
Spindle Drive Shaft, and Worm Shaft for Slow Feed

For Machines
 7/16 RA-6
 9/16 RA-6
 9/16 RAN-6
 5/8 RN-6
 1 RA-6
 1 RAN-6

D
SMALL



NEW STYLE SMALL WORM SHAFT



Spindle Drive Shaft, and Worm Shaft for Slow Feed

D
SMALL



1-D Spindle Drive Gear

1-D SPINDLE DRIVE GEAR

MACHINE SIZE	PART NUMBER	DESCRIPTION
7/16 RA-6	C-18198	
7/16 RA-6 S.S	SM-18198	
9/16 RA-6	201982	46 Teeth, splined I.D.
9/16 RA-6 S.S.	236742	46 Teeth, S.S. bell type 1-1/4 - 6 spline
9/16 RA & RAN-6	221980	54 Teeth, tapered bore, first s/n A23789
9/16 RA-6	22198	54 Teeth, 1-1/4 - 6 spline
9/16 RA-6 S.S.	6126	54 Teeth S.S. bell type, 1-1/4 - 6 spline
9/16 RA-6 S.S.	236474	54 Teeth, S.S. bell type, tapered bore
5/8 RN-6	FC-16198	
1 R, RA-6	A-22198	38 Teeth splined
1 RA, RAN-6 S.S.	S-236470	38 Teeth S.S. tapered bore
1 RA, RAN-6 S.S.	S-236471	54 Teeth synchronized S.S.
1 RAN-6	S-236472	
1 RA-6 S.S.	S-23647	38 Teeth, S.S. bell type, 1-1/4 - 4 spline
1 RA-6 & RAN-6	A-221980	38 Teeth, tapered bronze first S/N A23789
1 RA, RAN-6	A-221981	54 Teeth synchronized tapered bore
1 RA, RAN-6	A-22998	54 Teeth, synchronized splined

Notes: SS denotes machines with Spindle Stop Mechanism



2-D Bearing

2-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	17999
1 RA-6, RAN-6	17999



6-D Threading Gear

6-D THREADING GEAR

MACHINE SIZE	PART NUMBER
9/16 RA-6 old style	221621
9/16 on 1 Frame	221623 & 225030
1 RA-6 Sync	221623 & 225030
1 RA-6	A-221623 & A-22503



8-D HSDA Gear

8-D HSDA GEAR

MACHINE SIZE	PART NUMBER
9/16 RA-6	221610
9/16 RAN-6, 1 RA-6, RAN-6	A-221611

Spindle Drive Shaft, and Worm Shaft for Slow Feed

12-D LOCK WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	50968
1 RA-6, RAN-6	50968



12-D Lock Washer

D
SMALL

14-D SPINDLE DRIVE SHAFT

MACHINE SIZE	PART NUMBER	DESCRIPTION
7/16 RA-6	C-181560	
9/16 RA-6	A-22156	Splined end
9/16 RA-6	A-221560	Tapered end
5/8 RN-6	FC-161562	
1 RA-6	A-22156	Splined end
1 RAN-6	A-221560	Tapered end



14-D Splined



14-D Tapered

15-D LARGE WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	9862
1 RA-6, RAN-6	9862



15-D Large Washer

16-D NUT

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	2803
1 RA-6, RAN-6	2803



16-D Nut

17-D COTTER PIN

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	51663
1 RA-6, RAN-6	51663



17-D Cotter Pin

18-D WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	50922
1RA-6, RAN-6	50922



18-D Washer

20-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	17571
1 RA-6, RAN-6	17571



20-D Bearing

29-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	32559
1 RA-6, RAN-6	32559



29-D Bearing

Spindle Drive Shaft, and Worm Shaft for Slow Feed



32-D Bearing

32-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	17565
1 RA-6, RAN-6	17565



35-D Worm Gear

35-D WORM GEAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-181811 (4 Start)
7/16 RA-6	C-181812 (4 Start)
9/16 RA-6	201824 (2 Start)
9/16 RAN-6	201826 (3 Start)
5/8 RN-6	FC-16182 (4 Start)
1 RA-6	201824 (2 Start)
1 RAN-6	201826 (3 Start)



38-D Double Gear

38-D DOUBLE GEAR

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	201991
1 RA-6, RAN-6	201992



39-D Small Worm Shaft

39-D SMALL WORM SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-181811 (OS)
7/16 RA-6	C-181812 (NS)
9/16 RA-6	A-22181 (OS)
9/16 RAN-6	A-221810 (NS)
5/8 RN-6	FC-161810
1 RA-6	A-22181 (OS)
1 RAN-6	A-221810 (NS)



42-D Washer

42-D WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16069
1 RA-6, RAN-6	16069



43-D Bearing

43-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, 1 RA-6	17656
9/16 RAN-6, 1 RAN-6	A-17566

Spindle Drive Shaft, and Worm Shaft for Slow Feed

D
SMALL

48-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	A-17271
1 RA-6, RAN-6	A-17271



48-D Bearing

56-D GEAR BUSHING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	A-22230
1 RA-6, RAN-6	A-22230



56-D Gear Bushing

64-D BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	17910
1 RA-6, RAN-6	17910



64-D Bearing

65-D SPACER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16284
1 RA-6, RAN-6	16284



65-D Spacer

67-D SPACER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16288
1 RA-6, RAN-6	16288



67-D Spacer

68-D LOCK WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	27915
1 RA-6, RAN-6	27915



68-D Lock Washer

69-D LOCK NUT

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	27910
1 RA-6, RAN-6	27910



69-D Lock Nut

Spindle Drive Shaft, and Worm Shaft for Slow Feed

D
SMALL



70-D Locking Nut

70-D LOCKING NUT

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	44788
1 RA-6, RAN-6	44788



71-D Cotter Pin

71-D COTTER PIN

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	51659
1 RA-6, RAN-6	51659



72-D Spacer

72-D SPACER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16287
1 RA-6, RAN-6	16287



73-D Lock Washer

73-D LOCK WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	27919
1 RA-6, RAN-6	27919



74-D Lock Nut

74-D LOCK NUT

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	27920
1 RA-6, RAN-6	27920



75-D Inner Race

75-D INNER RACE

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16290
1 RA-6, RAN-6	16290



76-D Outer Race

76-D OUTER RACE

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	44168
1 RA-6, RAN-6	44168

Spindle Drive Shaft, and Worm Shaft for Slow Feed

77-D LOCK RING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	2324
1 RA-6, RAN-6	2324



77-D Lock Ring

D

79-D SLEEVE

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	202271
1 RA-6, RAN-6	202271



79-D Sleeve

81-D SPACER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	16286
1 RA-6, RAN-6	16286



81-D Spacer

Spindle Drive Shaft, and Worm Shaft for Slow Feed

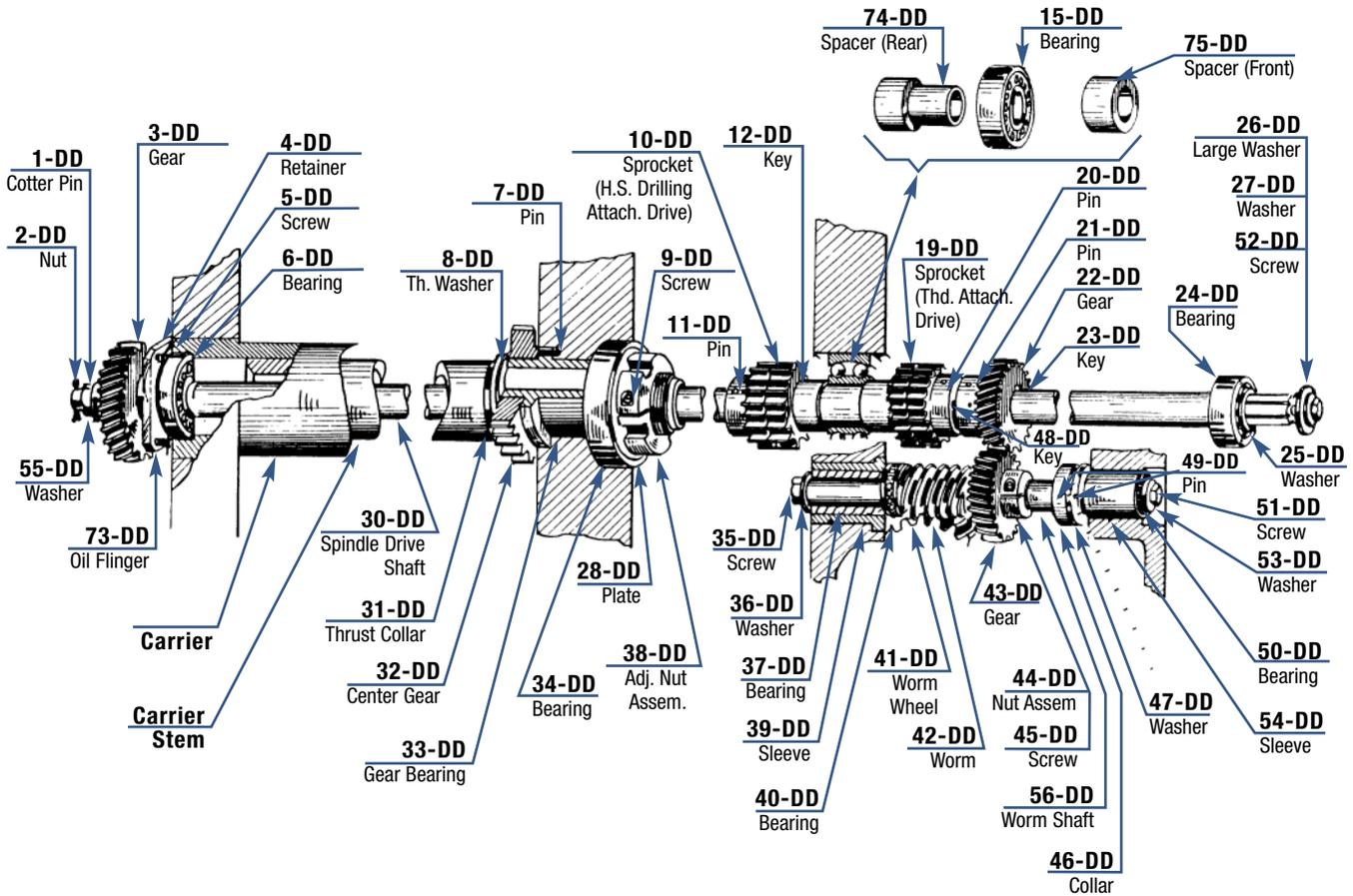
For Machines

3/4 RA-8

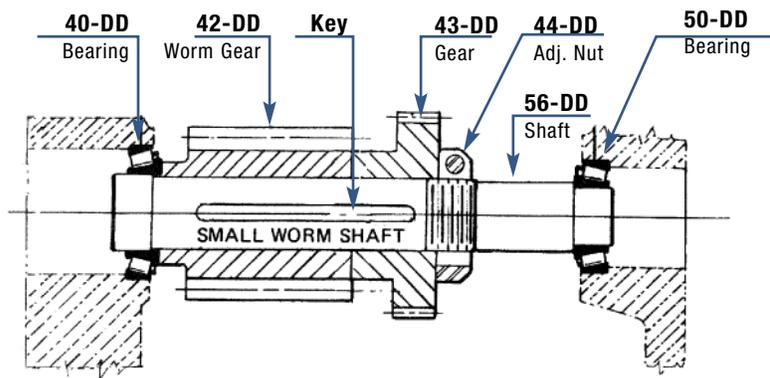
1-1/4 RA-6

5-1/4 RAC-6

DD



NEW STYLE SMALL WORM SHAFT



Spindle Drive Shaft, and Worm Shaft for Slow Feed

DD

MACHINE SIZE	PART NUMBER	DESCRIPTION
2-DD NUT		
	2805	
3-DD SPINDLE DRIVE GEAR		
3/4 RA-8	BD-70198	84 Teeth
3/4 RA-8 S.S.	SM-71647	84 Teeth S.S.
1-1/4 RA-6	70198	47 teeth, splined
	701981	47 teeth, tapered
	716740	47 teeth SS splined
	716471	47 teeth SS tapered
	TF-975611	54 teeth sync
	TF-902419	54 teeth sync tapered
	TF-975613	54 teeth SS sync splined
	TF-920223	60 teeth sync
	2575	key for taper gear
4-DD RETAINER		
1-1/4 RA-6	706210	
6-DD BEARING		
1-1/4 RA-6	27925	
15-DD BEARING		
1-1/4 RA-6	17677	
24-DD BEARING		
1-1/4 RA-6	17614	
25-DD WASHER		
1-1/4 RA-6	16021	
26-DD LARGE WASHER		
1-1/4 RA-6	2449	
27-DD WASHER		
1-1/4 RA-6	50968	
30-DD SPINDLE DRIVE SHAFT		
3/4 RA-8	BD-70156	tapered end
1-1/4 RA-6	701560	splined end
1-1/4 RA-6	701561, 71156	tapered end
34-DD BEARING		
1-1/4 RA-6	17644	
36-DD WASHER		
1-1/4 RA-6	14903	
37-DD BEARING		
1-1/4 RA-6	17641	
38-DD ADJUSTING NUT		
1-1/4 RA-6	53532	
39-DD SLEEVE		
1-1/4 RA-6	38237	

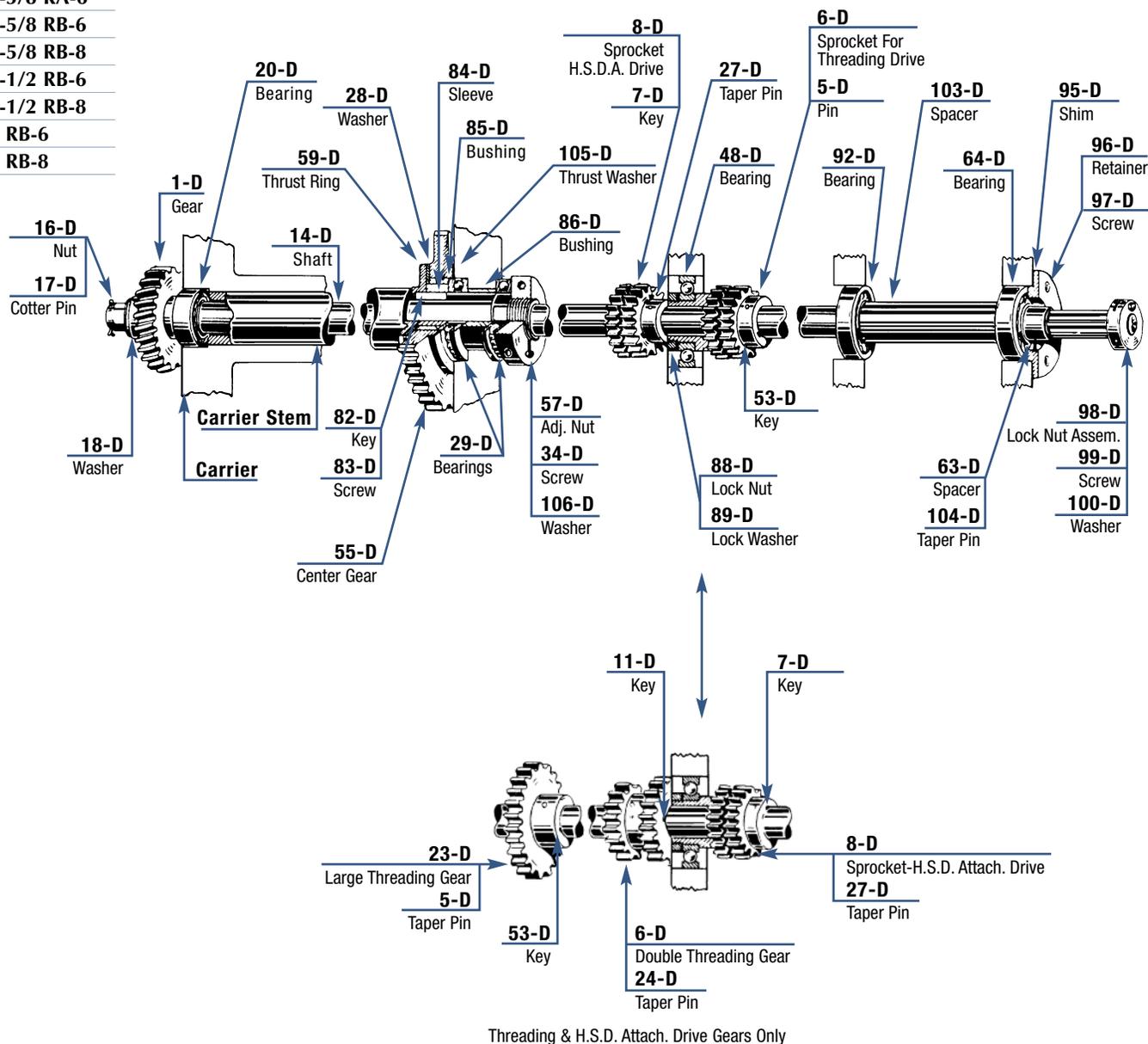
MACHINE SIZE	OLD STYLE	NEW STYLE
40-DD BEARING		
1-1/4 RA-6	D-17232	A-17439
41-DD GEAR		
1-1/4 RA-6	70176	
42-DD WORM GEAR		
1-1/4 RA-6	70182	701820
43-DD GEAR		
1-1/4 RA-6	701990	701991
KEY FOR GEARS		
1-1/4 RA-6	51590	51302
44-DD ADJ. NUT		
1-1/4 RA-6	15483	XA-6569
46-DD COLLAR (replaced by spacer)		
1-1/4 RA-6	A-44055	
47-DD WASHER (replaced by bearing)		
1-1/4 RA-6	A-17199	
50-DD BEARING		
1-1/4 RA-6	17641	A-17747
51-DD SCREW		
1-1/4 RA-6	96	
52-DD SCREW		
1-1/4 RA-6	1527	
53-DD WASHER		
1-1/4 RA-6	14903	
54-DD SLEEVE		
1-1/4 RA-6	38237	
55-DD WASHER		
1-1/4 RA-6	50948	
56-DD WORM SHAFT		
1-1/4 RA-6	70181	701810
73-DD OIL FLINGER		
1-1/4 RA-6	16546	splined
1-1/4 RA-6	XA-6076	tapered
75-DD SPACER		
1-1/4 RA-6	161790	

Spindle Drive Shaft, and Worm Shaft for Slow Feed

For Machines

- 1-1/4 RB-8
- 1-5/8 RB-6
- 1-5/8 RB-8
- 1-5/8 RBN-8
- 2 RB-6
- 2 RB-8
- 2-5/8 RA-6
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-6
- 3-1/2 RB-8
- 4 RB-6
- 4 RB-8

D
LARGE



Spindle Drive Shaft, and Worm Shaft for Slow Feed

1-D SPINDLE DRIVE GEAR KEY - TAPERED GEAR

MACHINE SIZE	PART NUMBER - DESCRIPTION			
	1-D			
	SPLINED	TAPERED	TEETH	KEY
1-1/4 RB-8	AM-40198	AM-401980	78 Teeth	1789
1-5/8 RB-6	A-401980	A-401981	58 Teeth	1789
1-5/8 RB-8	BM-82198		86 Teeth	
1-5/8 RBN-8	BM-40198	BM-401980	75 Teeth	1789
1-5/8 AG-6	AG-132301		78 Teeth	
2 RB-6	A-401980	A-401981	58 Teeth	1789
2-3/8 HSC-6	H-58198		42 Teeth	
2-5/8 RA-6	B-84198		62 Teeth	
2-5/8 RA & RB-6	B-841980	B-841982	62 Teeth	1789
2-5/8 RB-8	96198	A961981	63 Teeth	XA-5865
2-5/8 RB-8	961980	A961981	63 Teeth	XA-5865
3-1/2 RA-6	A-94198		55 Teeth	
3-1/2 RB-6	A-941981	A-941982	50 Teeth	XA-5865
4 RB-6	BA-92198	BA-921980	80 Teeth	XA-5865
4 RB-8		BM-88198		1871
5-1/8 RB-4	BE-92198		44 Teeth	
5-1/4 RAC	BW-70198		47 Teeth	
7-3/4 RB-4	BX-88198		52 Teeth	
10 RPA-4	AC-86198		50 Teeth	
10 RPA-6	A-801982		74 Teeth	



1-D Spindle Drive Gear

D
LARGE

6-D SPROCKET FOR THREADING DRIVE 8-D SPROCKET FOR HSDA DRIVE

MACHINE SIZE	PART NUMBER	
	6-D	8-D
1-1/4 RB-8	AM-401630	AM-40161
1-5/8 RB-6	A-40163	A-40161
1-5/8 RB-8	BM-821630	BM-82161
1-5/8 RBN-8	BM-40163	BM-40161
2 RB-6	A-40163	A-40161
2 RB-8	BM-821630	BM-82161
2-5/8 RA-6	A-84162	A-84161
2-5/8 RB-6	A-84162	A-84161
2-5/8 RB-8	A-961620	A-961611
2-5/8 RB-8	A-961630	A-961611
3-1/2 RB-6	A-961630	A-961611
3-1/2 RB-8	BM-94163	BM-94161
4 RB-6	BA-92162	BA-92161
4 RB-8	BM-88912	BM-88161
4 RB-8	BM-88913	BM-88161



6-D Sprocket for Threading Drive



8-D Sprocket for HSDA Drive

Spindle Drive Shaft, and Worm Shaft for Slow Feed

D
LARGE



14-D Splined



14-D Tapered

14-D SPINDLE DRIVE SHAFT

MACHINE SIZE	PART NUMBER	
	SPLINED	TAPERED
1-1/4 RB-8	A-38156	BM-401560
1-5/8 RB-6	A-38156	A-381560
1-5/8 RB-8	A-96156	
1-5/8 RBN-8	A-38156	BM-401560
2 RB-6	A-38156	A-381560
2 RB-8	A-96156	
2-5/8 RA-6	A-90156	
2-5/8 RB-6	B-841560	B-841561
2-5/8 RB-8	A-941560	A-941561
3-1/2 RB-6	A-941560	
3-1/2 RB-8	BM-94156	
4 RB-6	A-941560	A-941561
4 RB-8		BM-881561



16-D Nut



17-D Cotter Pin



18-D Washer

16-D NUT 17-D COTTER PIN 18-D WASHER

MACHINE SIZE	PART NUMBER		
	16-D	17-D	18-D
1-1/4 RB-8	2808	51667	2409
1-5/8 RB-6	2808	51667	2409
1-5/8 RB-8	2841	51667	14753
1-5/8 RBN-8	2808	51667	2409
2 RB-6	2808	51667	2409
2 RB-8	2841	51667	14753
2-5/8 RA-6	2808	51667	2409
2-5/8 RB-6	2808	51667	2409
2-5/8 RB-8 splined	2841	51667	14753
2-5/8 RB-8 tapered	15404	n/a	B-44763
3-1/2 RB-6 splined	2841	51667	14753
3-1/2 RB-6 tapered	15404	n/a	B-44763
3-1/2 RB-8	2841	51667	14753
4 RB-6 splined	2841	51667	14753
4 RB-6 tapered	15404	n/a	B-44763
4 RB-8	15490	n/a	n/a

Spindle Drive Shaft, and Worm Shaft for Slow Feed

20-D BEARING
48-D BEARING
64-D BEARING
92-D BEARING



20-D Bearing

D
LARGE

MACHINE SIZE	PART NUMBER			
	20-D	48-D	64-D	92-D
1-1/4 RB-8	17424	17429	17840	17564
1-5/8 RB-6	17424	17429	17840	17564
1-5/8 RB-8	17479	A-17151	17555	17550
1-5/8 RBN-8	17424	17429	17840	17564
2 RB-6	17424	17429	17840	17564
2 RB-8	17479	A-17151	17555	17550
2-5/8 RA-6	17517	27616	17555	17550
2-5/8 RB-6	A-17235	A-17151	17555	17550
2-5/8 RB-8 splined	17479	C-17116	A-17111	A-17931
2-5/8 RB-8 tapered	D-17922	C-17116	A-17111	A-17931
3-1/2 RB-6 splined	17479	C-17116	A-17111	A-17931
3-1/2 RB-6 tapered	D-17922	C-17116	A-17111	A-17931
3-1/2 RB-8	A-17408	C-17430	A-17111	A-17931
4 RB-6 splined	17479	C-17116	A-17111	A-17931
4 RB-6 tapered	D-17922	C-17116	A-17111	A-17931
4 RB-8	A-17552	C-17296	D-17084	n/a

28-D WASHER
59-D THRUST RING
105-D THRUST WASHER



28-D Washer

MACHINE SIZE	PART NUMBER		
	28-D	59-D	105-D
1-1/4 RB-8	15923	A-38565	44429
1-5/8 RB-6	15923	A-38565	44429
1-5/8 RB-8	44540	A-86565	A-86231
1-5/8 RBN-8	15923	A-38565	44429
2 RB-6	15923	A-38565	44429
2 RB-8	44540	A-86565	A-86231
2-5/8 RA-6	15990	A-82565	n/a
2-5/8 RB-6	15860	B-82565	A-823370
2-5/8 RB-8	15999	A-96565	A-962310
3-1/2 RB-6	15999	A-96565	A-962310
3-1/2 RB-8	15999	A-94565	A-962310
4 RB-6	15999	A-94565	A-962310
4 RB-8	44610	B-88565	B-88231



59-D Thrust Ring



105-D Thrust Washer

Spindle Drive Shaft, and Worm Shaft for Slow Feed

D
LARGE



29-D Bearing

29-D BEARING
57-D ADJUSTING NUT
86-D BUSHING
TOOLSLIDE STEM ID BUSHING



57-D Adjusting Nut



86-D Bushing

MACHINE SIZE	PART NUMBER			
	29-D	57-D	86-D	Bushing
1-1/4 RB-8	(2) 17927	15417	17280	17213
1-5/8 RB-6	(2) 17927	15417	17280	17213
1-5/8 RB-8	(2) 17378	A-866380	C-17005	17255
1-5/8 RBN-8	(2) 17927	15417	17280	17213
2 RB-6	(2) 17927	15417	17280	17213
2 RB-8	(2) 17378	A-866380	C-17005	17255
2-5/8 RA-6	(2) 17442	15490	17270	17213
2-5/8 RB-6	(2) 17442	AU-84619	C-17024	17213
2-5/8 RB-8	(2) 17936	A-962840	17295	C-17117
3-1/2 RB-6	(2) 17396	A-962840	17295	C-17117
3-1/2 RB-8	(2) 17396	A-962840	17295	C-17431
4 RB-6	(2) 17396	A-962840	17295	C-17117
4 RB-8	(2) A-17506	B-88638	17314	



55-D Center Gear

55-D CENTER GEAR
82-D KEY/PIN
84-D SLEEVE
85-D BUSHING



84-D Sleeve

MACHINE SIZE	PART NUMBER			
	55-D	82-D	84-D	85-D
1-1/4 RB-8	AM-40229	1749 pin	A-38447	A-38230
1-5/8 RB-6	A-40229	2602 key	A-38447	A-38230
1-5/8 RB-8	A-86229	1748 pin	A-86447	A-86280
1-5/8 RBN-8	AM-40229	1749 pin	A-38447	A-38230
2 RB-6	A-40229	2602 key	A-38447	A-38230
2 RB-8	A-86229	1748 pin	A-86447	A-86280
2-5/8 RA-6	A-84229	2636 key	A-824470	A-822300
2-5/8 RB-6	B-84229	1749 pin	B-82447	B-82230
2-5/8 RB-8	A-962290	1749 pin	A-964470	A-94230
3-1/2 RB-6	A-94229	1749 pin	A-964470	A-94230
3-1/2 RB-8	BM-94229	1749 pin	A-964470	A-94230
4 RB-6	BA-92229	1749 pin	A-964470	A-94230
4 RB-8	BM-88229	1747 pin	B-88447	

Spindle Drive Shaft, and Worm Shaft for Slow Feed

88-D LOCK NUT 89-D LOCK WASHER

MACHINE SIZE	PART NUMBER	
	88-D	89-D
1-1/4 RB-8	17965	17964
1-5/8 RB-6	17965	17964
1-5/8 RB-8	44204	44203
1-5/8 RBN-8	17965	17964
2 RB-6	17965	17964
2 RB-8	44204	44203
2-5/8 RA-6	44204	44203
2-5/8 RB-6	44204	44203



88-D Lock Nut



89-D Lock Washer

D
LARGE

98-D LOCK NUT ASSEMBLY

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	15368
1-5/8 RB-6	15368
1-5/8 RB-8	15368
1-5/8 RBN-8	15368
2 RB-6	15368
2 RB-8	15368
2-5/8 RA-6	15440
2-5/8 RB-6	15368
2-5/8 RB-8	15377
3-1/2 RB-6	15377
3-1/2 RB-8	15377
4 RB-6	15377
4 RB-8	15404



98-D Lock Nut Assembly

103-D SPACER

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	44421
1-5/8 RB-6	44421
1-5/8 RB-8	A-82437
1-5/8 RBN-8	44421
2 RB-6	44421
2 RB-8	A-82437
2-5/8 RA-6	A-82437
2-5/8 RB-6	A-82437
2-5/8 RB-8	AT-96406
3-1/2 RB-6	AT-96406
3-1/2 RB-8	B-44883
4 RB-6	AT-96406
4 RB-8	n/a



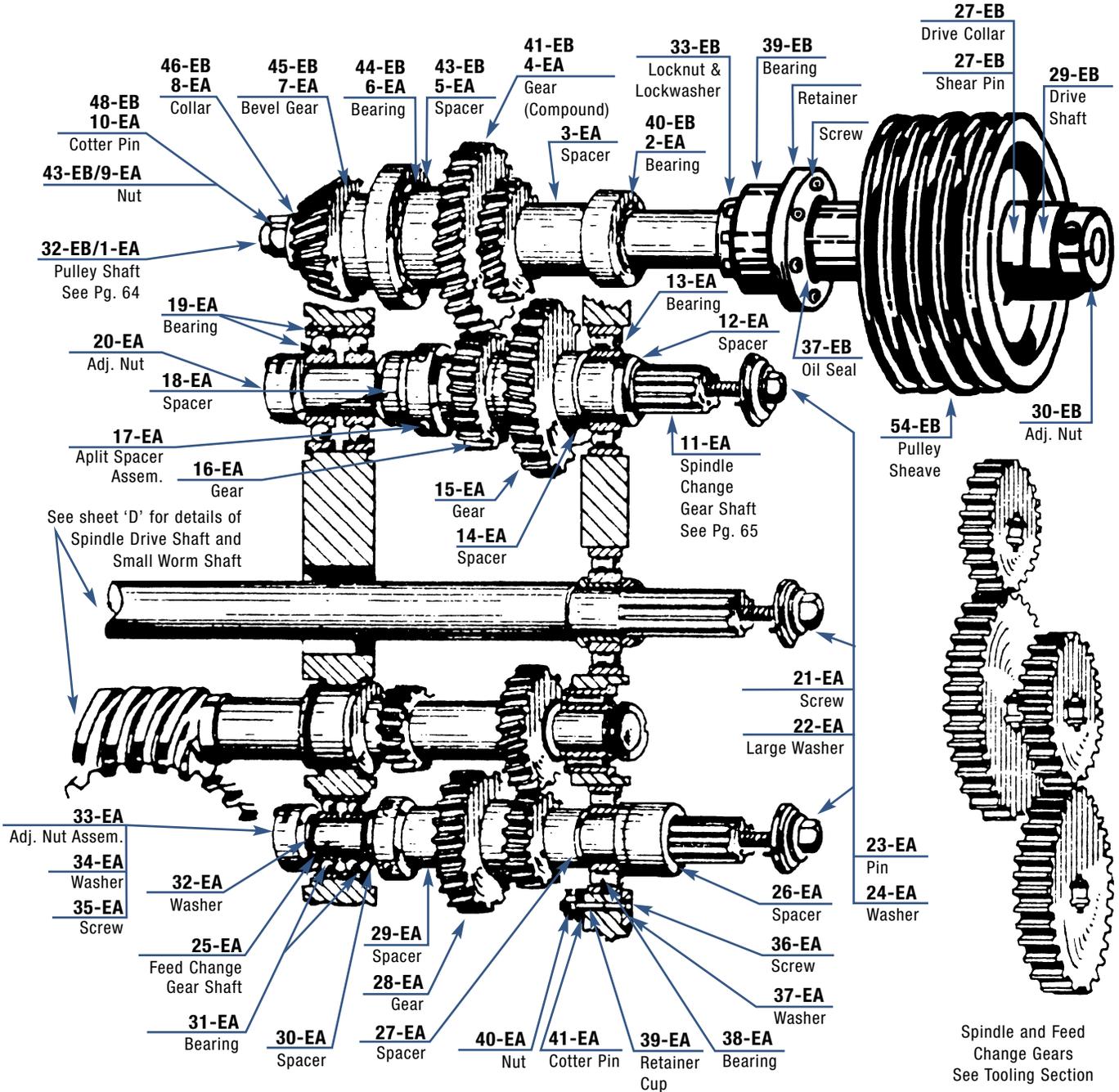
103-D Spacer

Pulley Shaft - Change Gear Shafts

Reference page for part numbers see pages 64-66

For Machines
 9/16 RA
 9/16 RAN-6
 1" RA
 1" RAN-6

EA/EB



Spindle and Feed Change Gears See Tooling Section

Pulley Shaft Assy.

For Machines

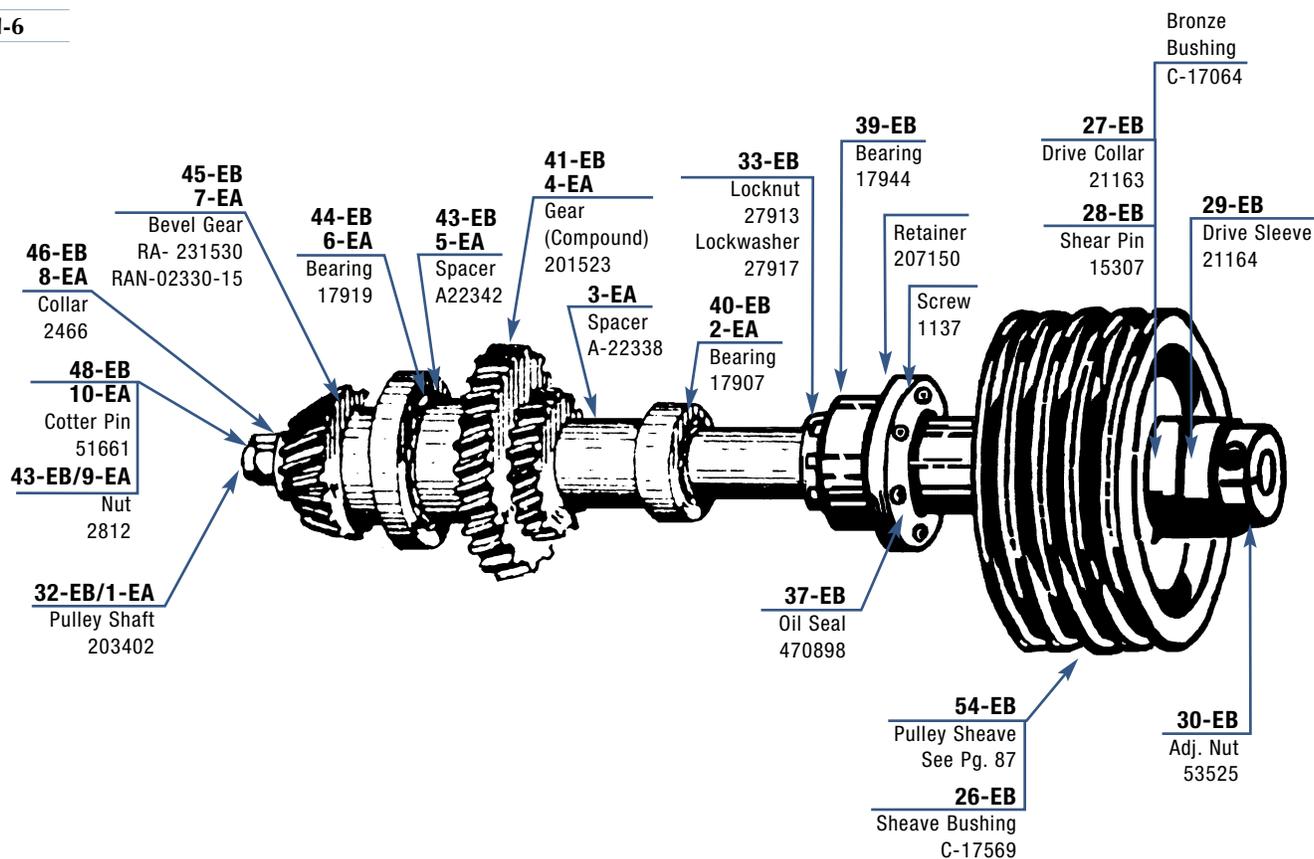
9/16 RA

9/16 RAN-6

1" RA

1" RAN-6

EA/EB



Spindle Change Gear Shaft Assy.

For Machines

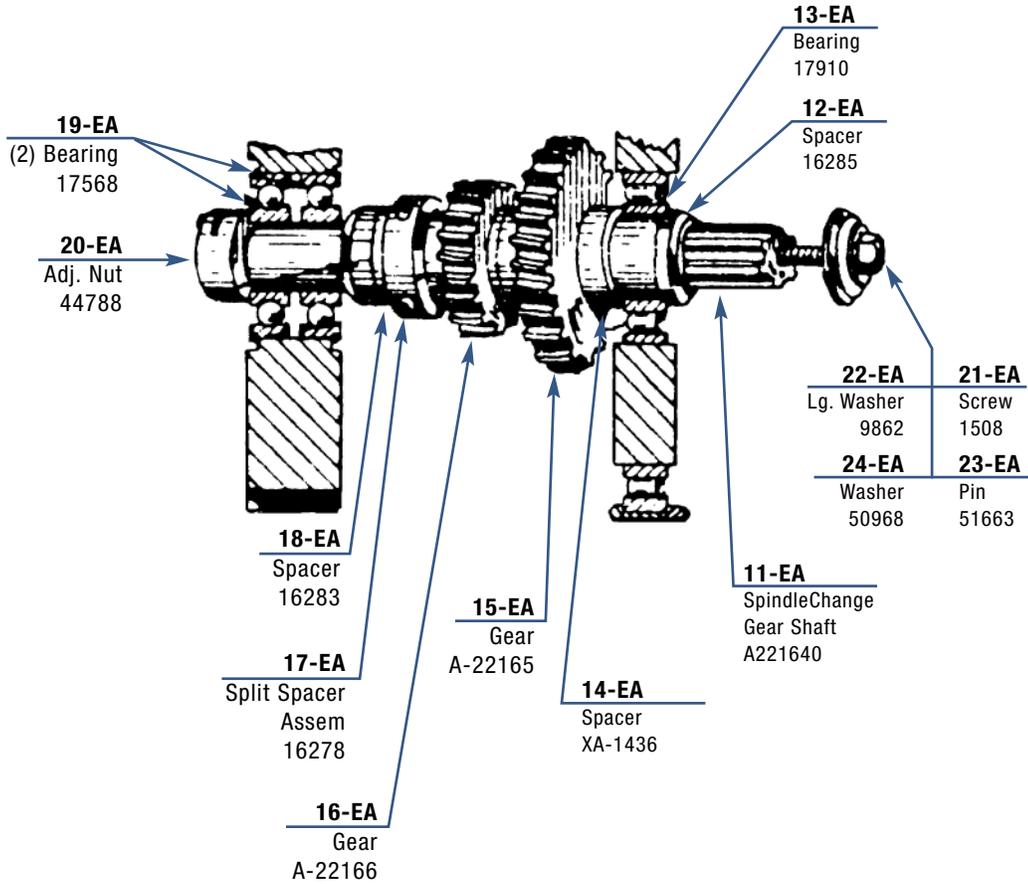
9/16 RA

9/16 RAN-6

1" RA

1" RAN-6

EA/EB



Feed Change Gear Shaft Assembly

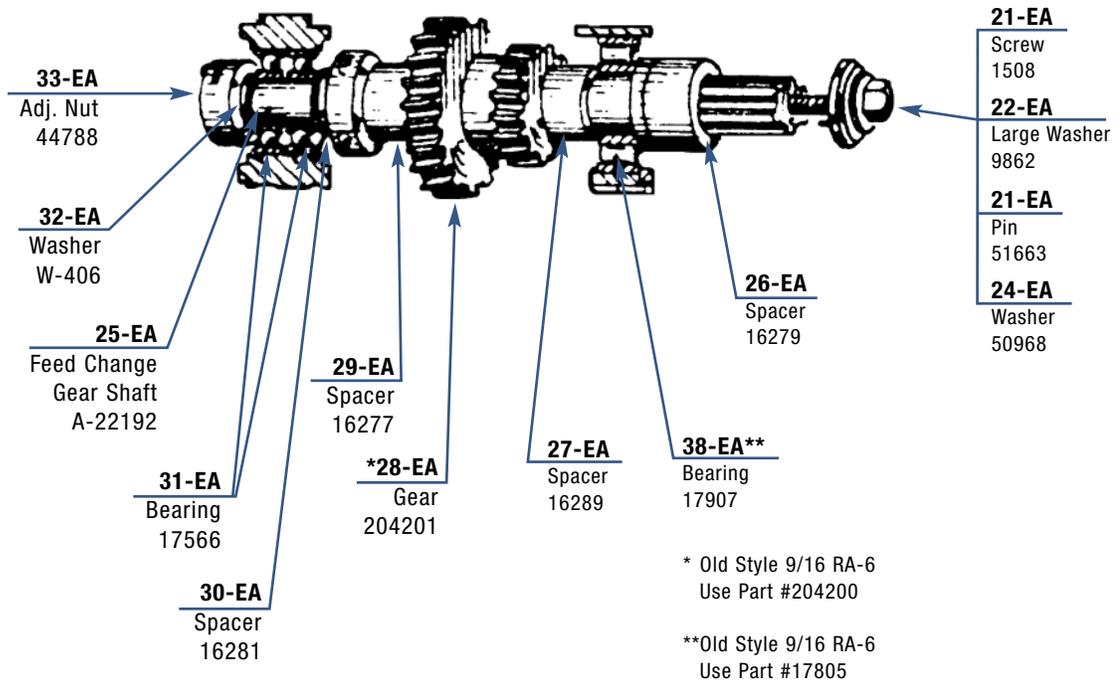
For Machines

9/16 RA

9/16 RAN-6

1" RA

1" RAN-6



Pulley Shaft - Change Gear Shaft

Reference page - for part #'s see pages 68-69

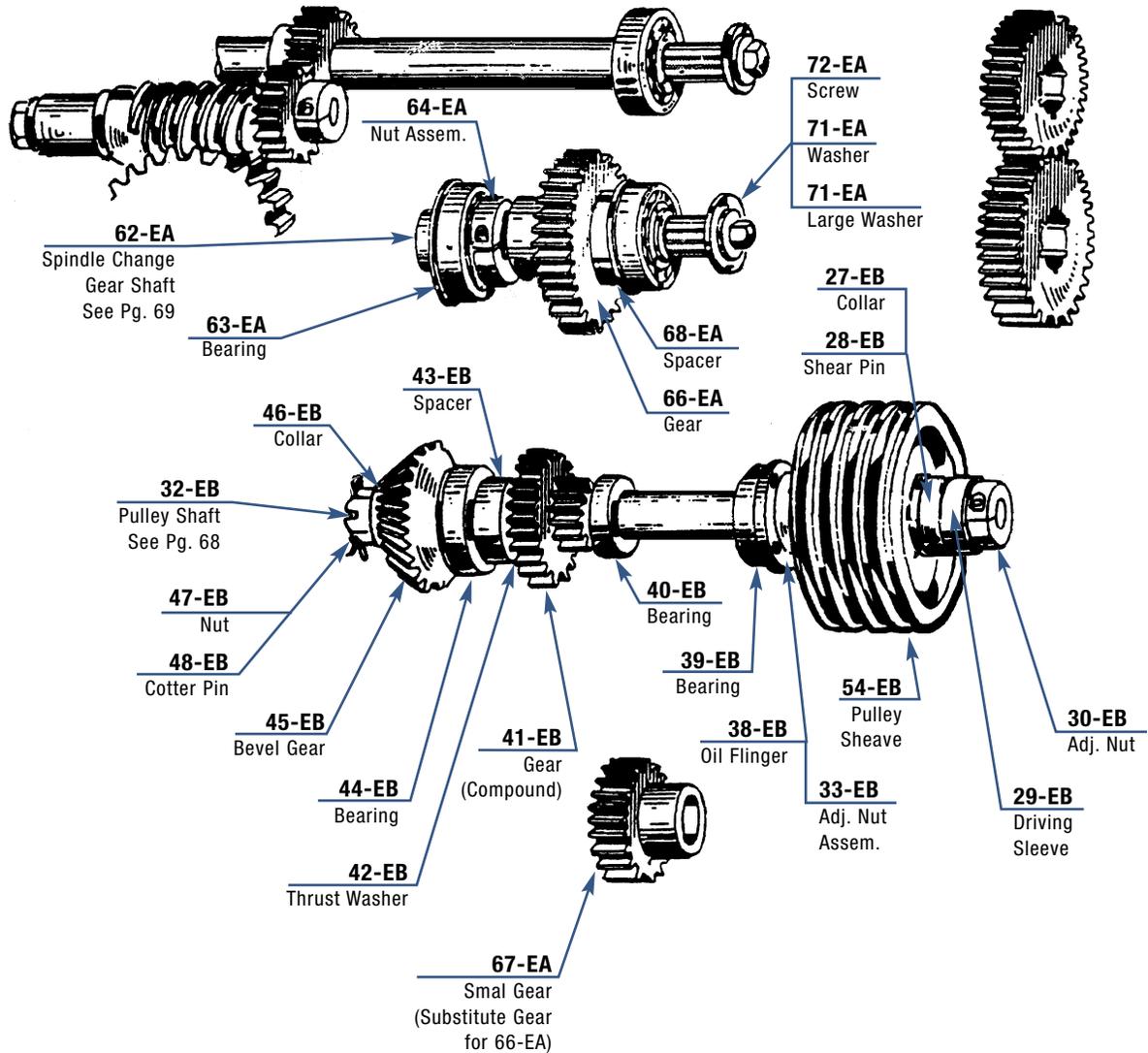
For Machines

1-1/4 RA-6

3/4 RA-8

Spindle Change
Gears
See Tooling
Section

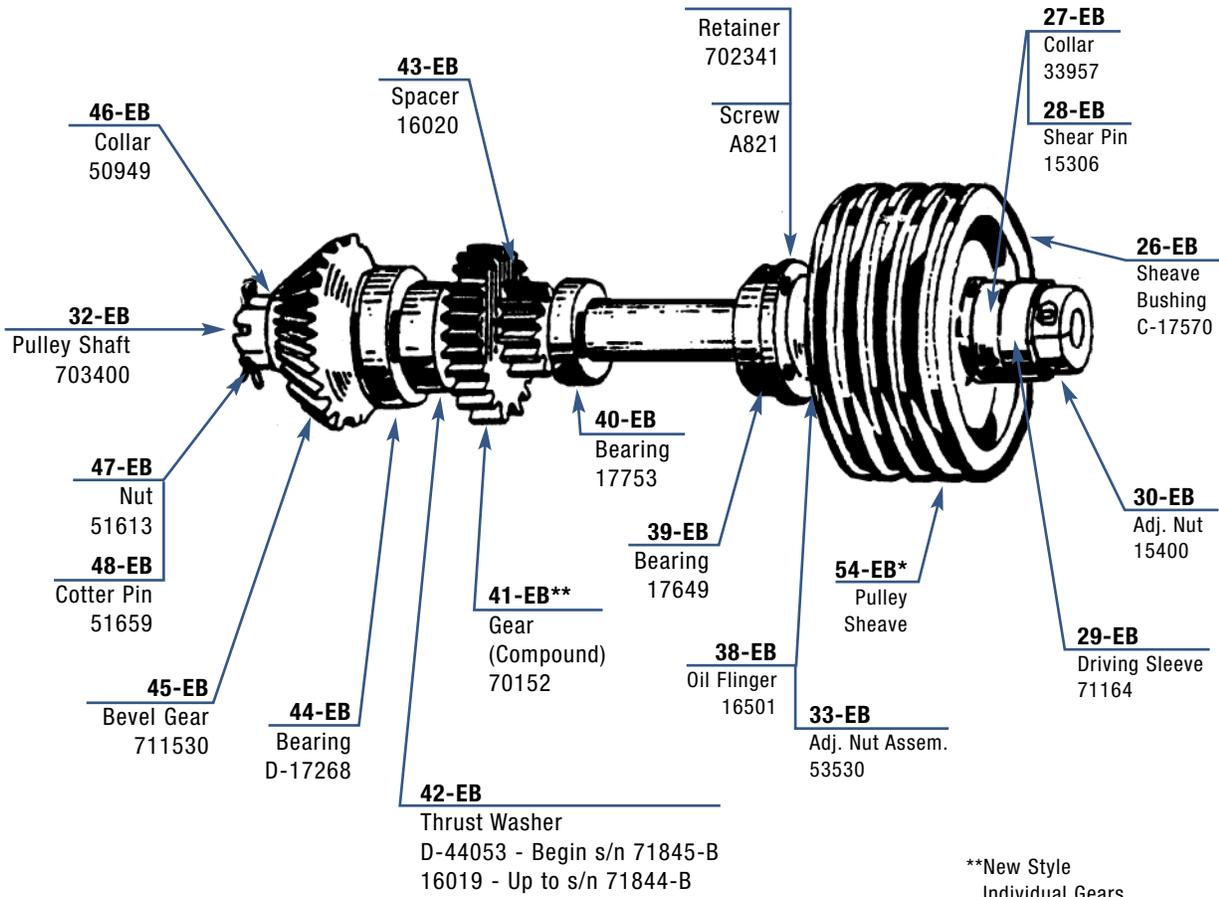
EA/EB



Pulley Shaft Assy.

For Machines
1-1/4 RA-6
3/4 RA-8

EA/EB



**New Style
 Individual Gears
 70499 (20 Teeth)
 701520 (35 Teeth)

* See Diagram on page 87

Spindle Change Gear Shaft Assy.

For Machines

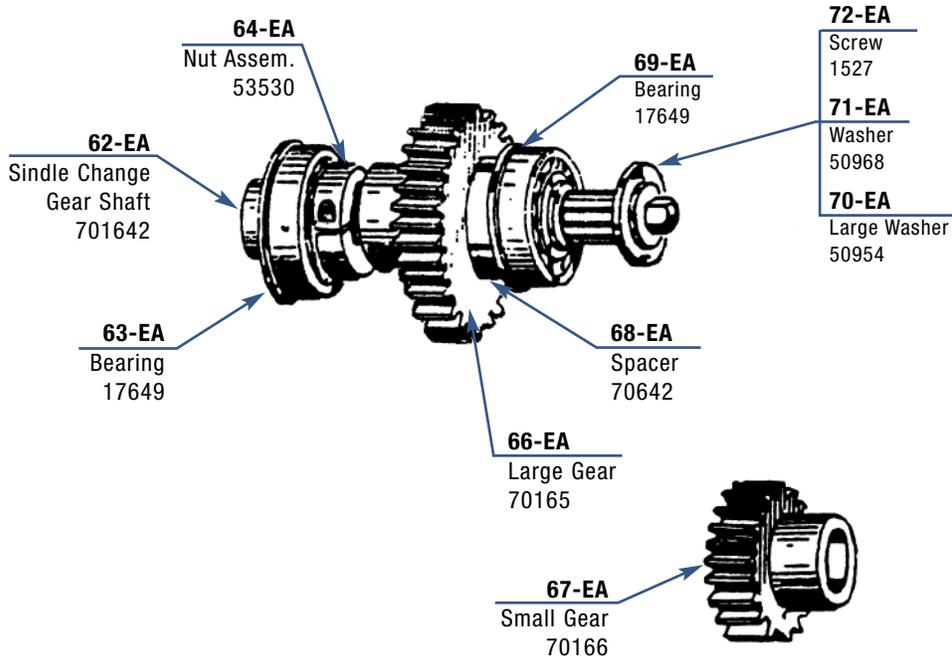
1-1/4 RA-6

3/4 RA-8

EA/EB

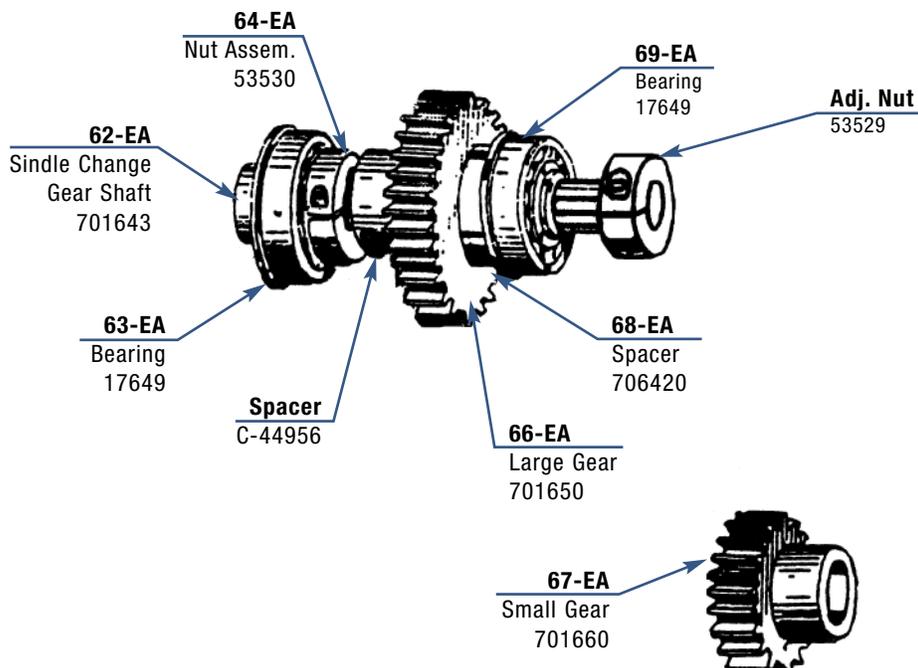
Old Style

Up to s/n 71844-B



New Style

Begin s/n 71845-B



Main Drive

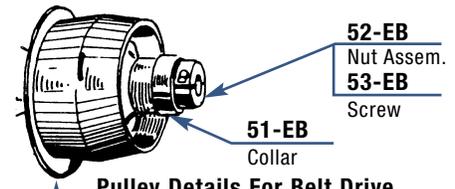
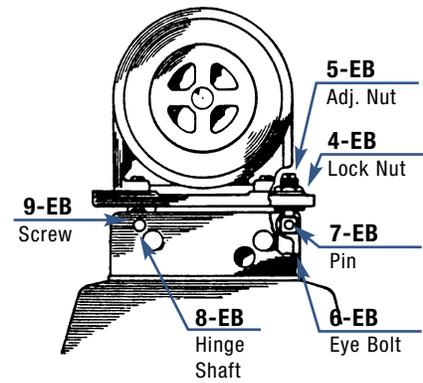
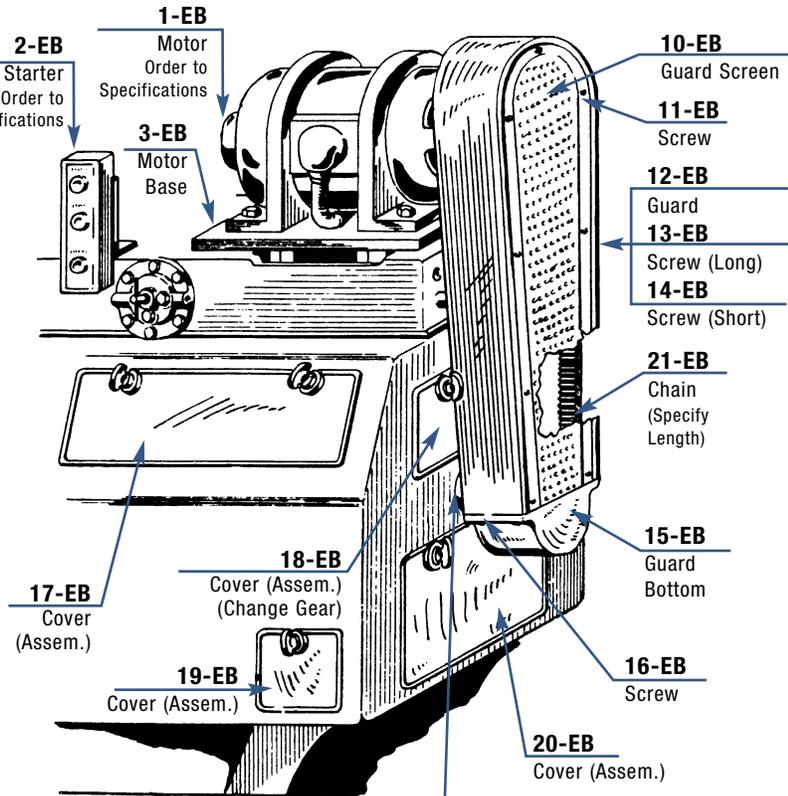
For Machines

9/16 RA-6

1" RA-6

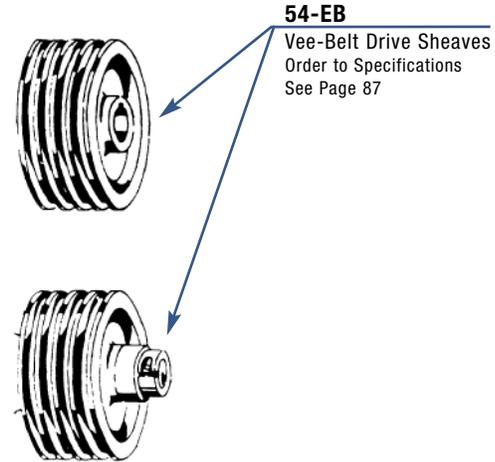
1-1/4 RA-6

3/4 RA-8



- 22-EB Retaining Plate
- 23-EB Screw
- 36-EB Bearing Adaptor

- 50-EB Key
- 49-EB Pulley (Specify Diameter)



Bevel Gear Chart

For Machines

All Machines



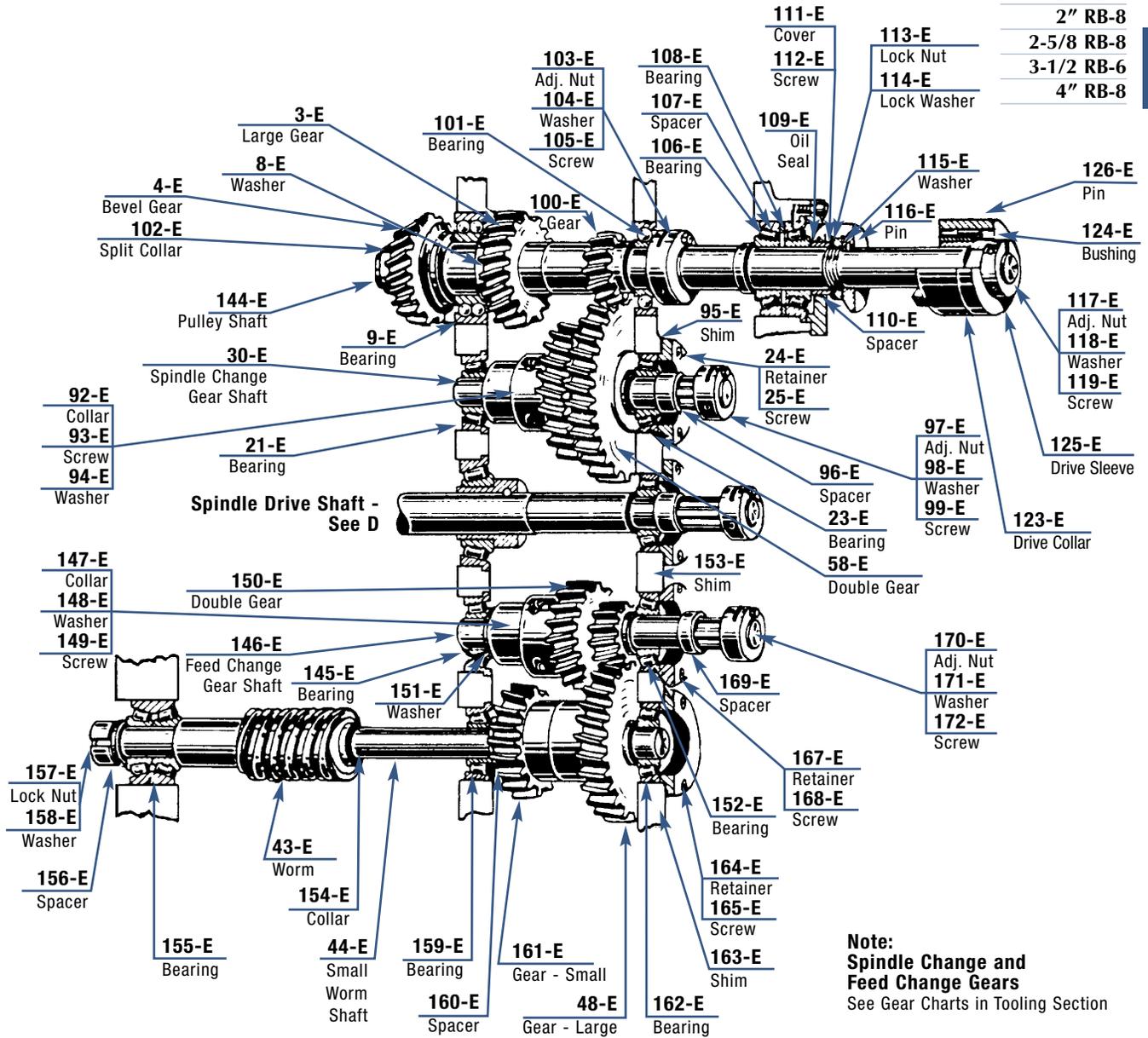
EA/EB

MACHINE	4-E	18-F	BEVEL GEAR SET
9/16 & 1" RA-6	231530	231540	231530231540
9/16 & 1" RAN-6	02330-15	02330-14	233014233015
1-1/4 RA-6 3/4 RA-8	711530	711540	711530711540
1-1/4 RA-6 Cyclo Index	0304437	0304438	3044-37-38
1-1/4 RB-8 1-5/8 RBN-8	AM-40153	AM-40171	Gears are sold individually or in sets. Specify when ordering.
1-5/8 RB-6 2" RB-6	A-381531	A-381710	
1-5/8 RB-8 2" RB-8	A-961531	A-961710	
2-5/8 RB-6	A-821531	A-821710	
2-5/8 RB-8 3-1/2 RB-6	A-961531	A-961710	
3-1/2 RB-8	A-821531	A-821710	
4 RB-6	A-961531	A-961710	

Pulley Shaft - Change Gear Shafts

For Machines

1-1/4 B-8
1-5/8 RB-6
1-5/8 RB-8
2-5/8 RB-6
3-1/2 RB-6
4" RB-6
1-5/8 RBN-8
2" RB-6
2" RB-8
2-5/8 RB-8
3-1/2 RB-6
4" RB-8



Note:
Spindle Change and Feed Change Gears
 See Gear Charts in Tooling Section

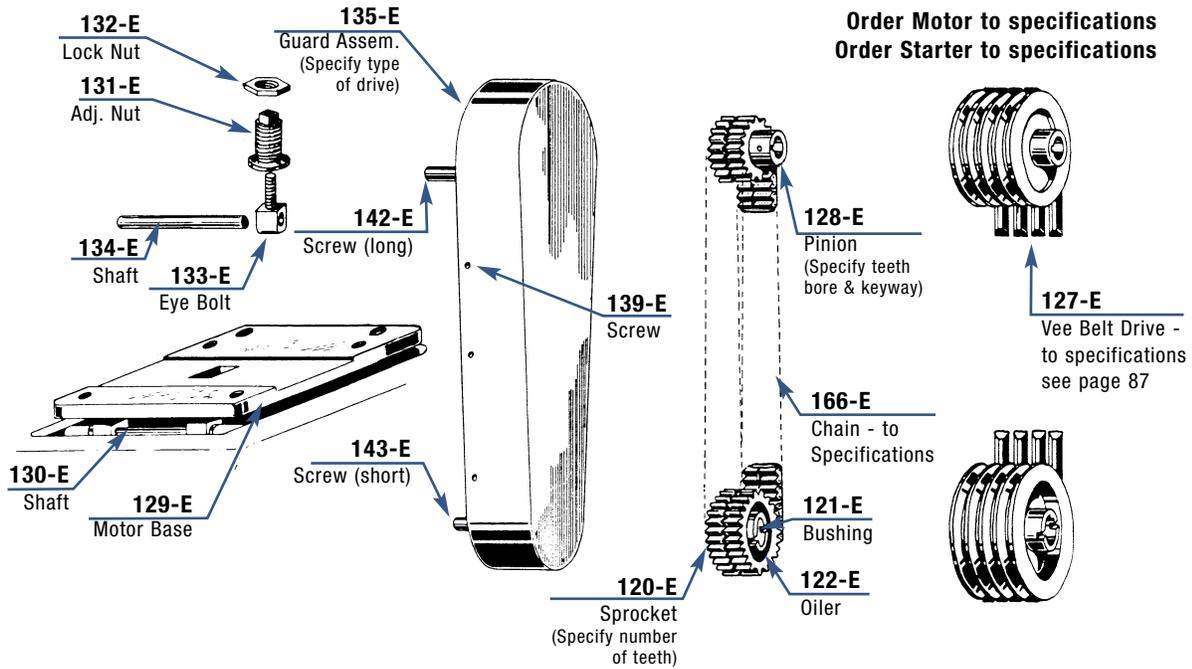
For Part Numbers see pages:

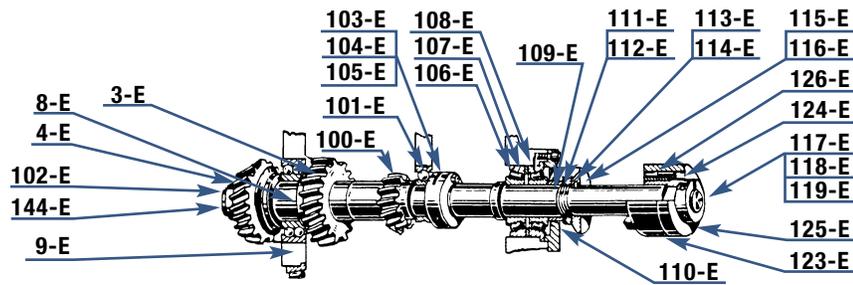
Pulley Shaft	75-80
Spindle Change	81-82
Feed Change	85-86
Worm Shaft	83-84

Main Drive

Duplicate Machines From Page 73

E





3-E GEAR LARGE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38152
1-5/8 RB-6	A-38152
1-5/8 RB-8	A-821521
1-5/8 RBN-8	A-38152
2 RB-6	A-38152
2 RB-8	A-821521
2-5/8 RB-6	A-821521
2-5/8 RB-8	A-821521
3-1/2 RB-6	A-821521
3-1/2 RB-8	BM-94152
4 RB-6	A-821521



3-E Gear Large

4-E BEVEL GEAR 18-F BEVEL GEAR

MACHINE SIZE	PART NUMBER	
	4-E	18-F
1-1/4 RB-8	AM-40153	AM-40171
1-5/8 RB-6	A-381531	A-381710
1-5/8 RB-8	A-961531	A-961710
1-5/8 RBN-8	AM-40153	AM-40171
2 RB-6	AM-40153	AM-40171
2 RB-8	A-961531	A-961710
2-5/8 RB-6	A-821531	A-821710
2-5/8 RB-8	A-961531	A-961710
3-1/2 RB-6	A-961531	A-961710
3-1/2 RB-8	A-821531	A-821710
4 RB-6	A-961531	A-961710



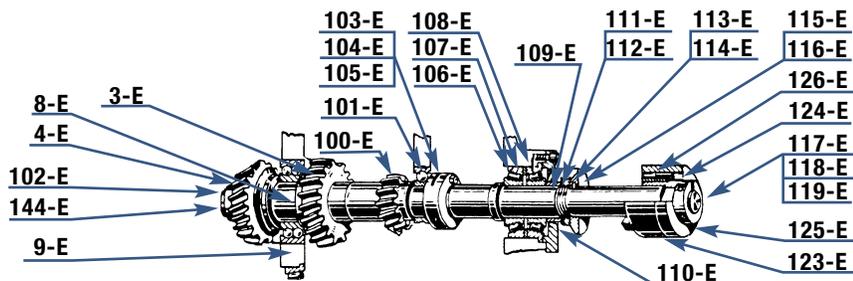
4-E Bevel Gear



18-F Bevel Gear

Continued on next page

Pulley Shaft Assy.



9-E, 101-E, 106-E, 108-E Bearing

9-E BEARING 101-E BEARING 106-E BEARING 108-E BEARING

MACHINE SIZE	PART NUMBER			
	9-E	101-E	106-E	108-E
1-1/4 RB-8	17429	17430	n/a	17431
1-5/8 RB-6	17429	17430	n/a	17431
1-5/8 RB-8	A-17840	17443	17762	17432
1-5/8 RBN-8	17429	17430	n/a	17431
2 RB-6	17429	17430	n/a	17431
2 RB-8	A-17840	17443	17762	17432
2-5/8 RB-6	A-17840	17443	17762	17432
2-5/8 RB-8	A-17840	17443	17762	17432
3-1/2 RB-6	A-17840	17443	17762	17432
3-1/2 RB-8	A-17840	17443	n/a	A-17149
4 RB-6	A-17840	17443	17762	17432



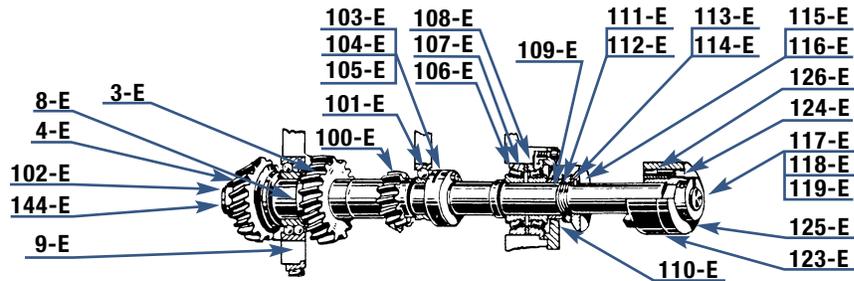
100-E Gear

100-E Gear

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38148
1-5/8 RB-6	A-38148
1-5/8 RB-8	A-821480
1-5/8 RBN-8	A-38148
2 RB-6	A-38148
2 RB-8	A-821480
2-5/8 RB-6	A-821480
2-5/8 RB-8	A-821480
3-1/2 RB-6	A-821480
3-1/2 RB-8	A-821480
4 RB-6	A-821480

Continued on next page

Pulley Shaft Assy.



E

113-E LOCK NUT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17962
1-5/8 RBN-8	
1-5/8 RB-6	
1-5/8 RB-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
3-1/2 RB-6	
2-5/8 RB-8	
2-5/8 RB-8	
3-1/2 RB-6	17957
3-1/2 RB-8	
4 RB-6	17962



113-E Lock Nut

114-E WASHER

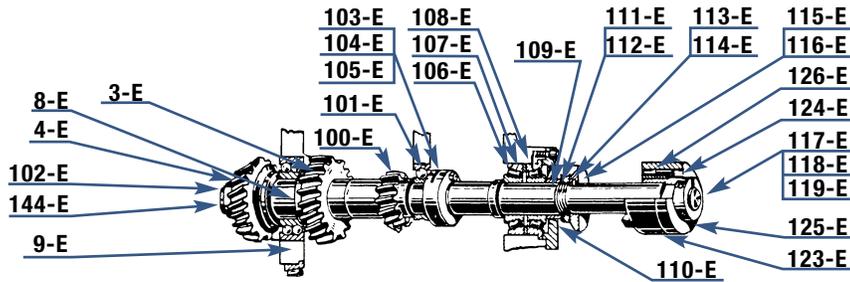
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17963
1-5/8 RBN-8	
1-5/8 RB-6	
1-5/8 RB-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
3-1/2 RB-6	
2-5/8 RB-8	
2-5/8 RB-8	
3-1/2 RB-6	27617
3-1/2 RB-8	
4 RB-6	17963



114-E Washer

Continued on next page

Pulley Shaft Assy.



117-E Adjusting Nut

117-E ADJUSTING NUT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	15400
1-5/8 RBN-8	
1-5/8 RB-6	
1-5/8 RB-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
3-1/2 RB-6	
2-5/8 RB-8	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	15413
4 RB-6	15400

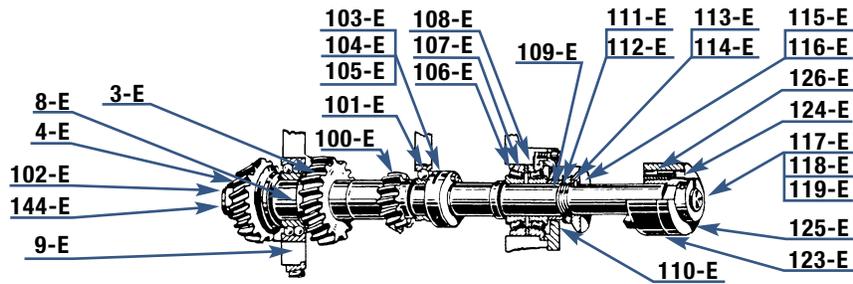


121-E Bushing for Pulley

121-E BUSHING FOR PULLEY

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	C-17568
1-5/8 RB-6	
1-5/8 RB-8	
1-5/8 RBN-8	
2 RB-6	
2 RB-8	
2-5/8 RA-6	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8		C-17119 (2)
4 RB-6	C-17568

Continued on next page



123-E DRIVE COLLAR

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	B-91163
1-5/8 RB-6	
1-5/8 RB-8	
1-5/8 RBN-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
4 RB-6	
3-1/2 RB-8	BM-89163



123-E Drive Collar
(Bronze Bushing - C-17066)

125-E DRIVE SLEEVE

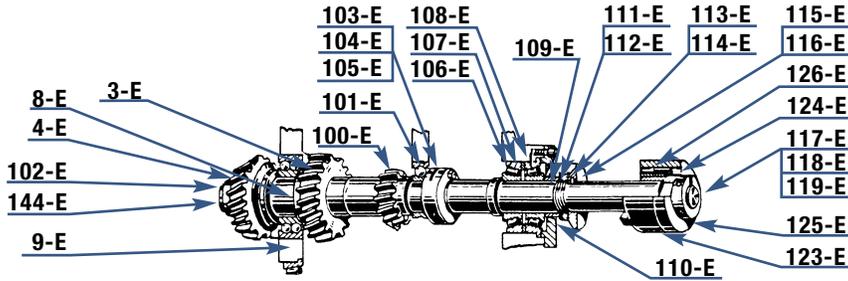
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	B-91164
1-5/8 RB-6	
1-5/8 RB-8	
1-5/8 RBN-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
4 RB-6	
3-1/2 RB-8	BM-89164



125-E Drive Sleeve

Continued on next page

Pulley Shaft Assy.



126-E Drive Pin

126-E DRIVE PIN

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	XA-1615
1-5/8 RB-6	
1-5/8 RB-8	
1-5/8 RBN-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
4 RB-6	
3-1/2 RB-8	XA-6027

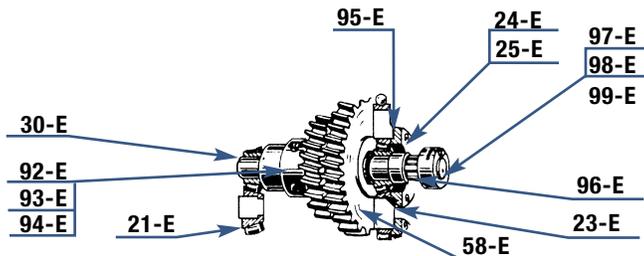


144-E Pulley Shaft

144-E PULLEY SHAFT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38340
1-5/8 RB-6	
1-5/8 RBN-8	
2 RB-6	A-823400
1-5/8 RB-8	
2 RB-8	
2-5/8 RB-6	
3-1/2 RB-6	
4 RB-6	
4-3/4 RB-4	
5-1/8 RB-4	BM-94340
3-1/2 RB-8	

Spindle Change Gear Shaft Assy.



21-E BEARING 23-E BEARING

MACHINE SIZE	PART NUMBER	
	21-E	23-E
1-1/4 RB-8	17369	17425
1-5/8 RBN-8		
1-5/8 RB-6	17369	17425
2 RB-6		
1-5/8 RB-8	17554	17555
2 RB-8		
2-5/8 RB-6	17554	17555
2-5/8 RB-8		
3-1/2 RB-6	A-17110	A-17111
3-1/2 RB-8	A-17110	A-17111
4 RB-6	A-17110	A-17111



21-E, 23-E Bearing

30-E SPINDLE CHANGE GEAR SHAFT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38164
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	
1-5/8 RB-8	A-821640
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	A-941640
3-1/2 RB-6*	A-94164, A-941640
3-1/2 RB-8	A-941640
4 RB-6	A-941640

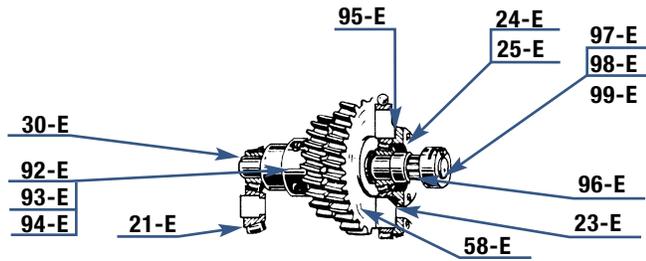


30-E Spindle Change Gear Shaft

*check s/n

Continued on next page

Spindle Change Gear Shaft Assy.



58-E Double Gear

58-E DOUBLE GEAR

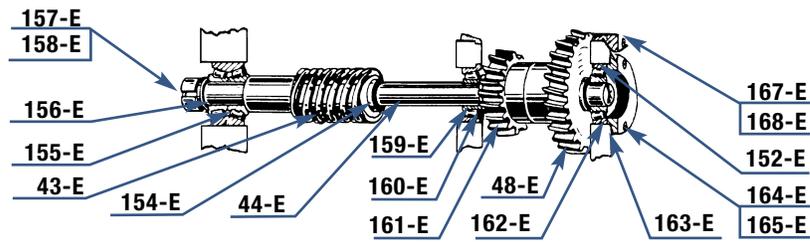
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-381650
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	
2 RA-4	A-381650
2 1/4 RA-4	
2-5/8 RA-4	
1-5/8 RB-8	A-821652
2 RB-8	
2-5/8 RA, RB-6	
3-1/2 RA-4	A-941650
2-5/8 RB-8	
3-1/2 RA-6	
3-1/2 RB-6	
3-1/2 RB-8	BM-94165
4 RB-6	A-941650



97-E Adjusting Nut

97-E ADJUSTING NUT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	15368
1-5/8 RB-6	15368
1-5/8 RB-8	15368
1-5/8 RBN-8	15368
2 RB-6	15368
2 RB-8	15368
2-5/8 RB-6	15368
2-5/8 RB-8	15377
3-1/2 RB-6	15377
3-1/2 RB-8	15377
4 RB-6	15377



48-E LARGE GEAR

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38203 (46T)
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	
1-5/8 RB-8	A-82203 (58T)
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	A-82203 (58T)
3-1/2 RB-6	A-82203 (58T)
3-1/2 RB-8	A-82203 (58T)
4 RB-6	A-82203 (58T)



48-E Large Gear

155-E BEARING

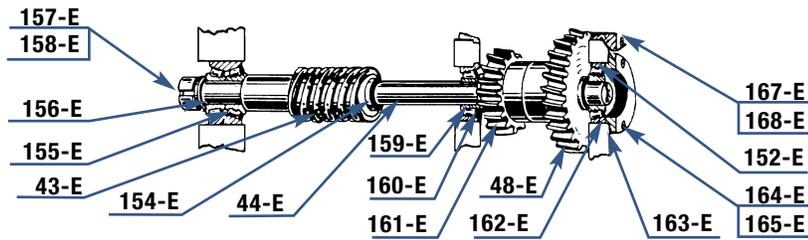
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17824
1-5/8 RB-6	17824
1-5/8 RB-8	17552
1-5/8 RBN-8	17824
2 RB-6	17824
2 RB-8	17552
2-5/8 RB-6	17552
2-5/8 RB-8	17552
3-1/2 RB-6	17552
3-1/2 RB-8	17552
4 RB-6	17552



155-E Bearing

Continued on next page

Small Worm Shaft Assy.



159-E Bearing

159-E BEARING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17369
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	
1-5/8 RB-8	17551
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	17551
3-1/2 RB-6	17551
3-1/2 RB-8	17551
4 RB-6	17551



161-E Small Gear

161-E SMALL GEAR

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-38199 (29T)
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	
1-5/8 RB-8	A-82199 (36T)
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	A-82199 (36T)
3-1/2 RB-6	A-82199 (36T)
3-1/2 RB-8	A-82199 (36T)
4 RB-6	A-82199 (36T)

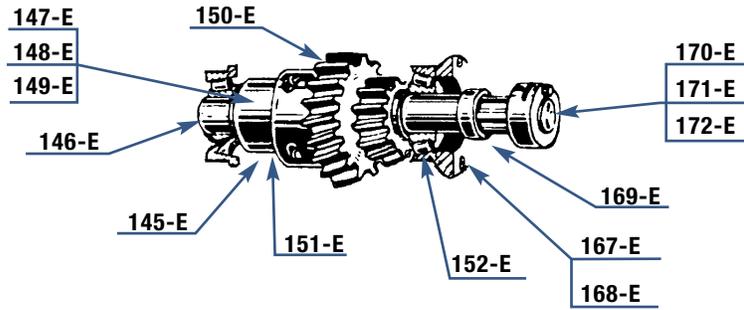


162-E Bearing

162-E BEARING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17427, 17426
1-5/8 RBN-8	
1-5/8 RB-6	
2 RB-6	17556
1-5/8 RB-8	
2 RB-8	17556
2-5/8 RB-6	17556
2-5/8 RB-8	17556
3-1/2 RB-6	17556
3-1/2 RB-8	17556
4 RB-6	17556

Feed Change Gear Shaft Assy.



145-E BEARING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17369
1-5/8 RBN-8	
1-5/8 RB-6	17426
2 RB-6	
1-5/8 RB-8	17554
2 RB-8	
2-5/8 RB-6	
3-1/2 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4 RB-6	



145-E Bearing

146-E FEED CHANGE GEAR SHAFT

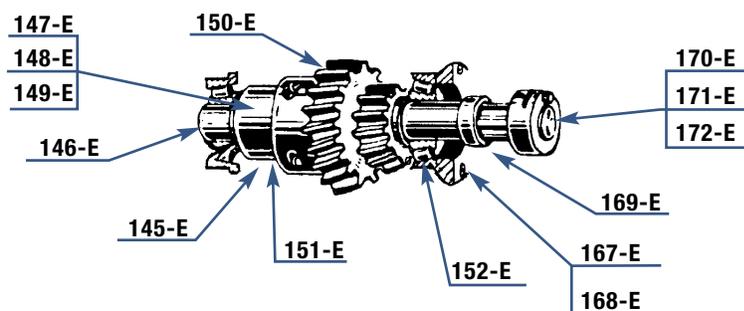
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-381920
1-5/8 RB-6*	A-38192
1-5/8 RB-6*	A-381920
1-5/8 RB-8	A-821920
1-5/8 RBN-8	A-381920
2 RB-6*	A-38192
2 RB-6*	A-381920
2 RB-8	A-38192
2-5/8 RB-6	A-821920
2-5/8 RB-8	A-941920
3-1/2 RB-6	A-941920
3-1/2 RB-8	A-941920
4 RB-6	A-941920



146-E Feed Change Gear Shaft

* = check s/n

Feed Change Gear Shaft Assy.



150-E Double Gear

150-E DOUBLE GEAR

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	A-384200
1-5/8 RB-6*	A-38420
1-5/8 RB-6*	A-384200
1-5/8 RB-8	A-824200
1-5/8 RBN-8	A-384200
2 RB-6*	A-38420
2 RB-6*	A-384200
2 RB-8	A-824200
2-5/8 RB-6	A-824200
2-5/8 RB-8	A-824200
3-1/2 RB-6	A-824200
3-1/2 RB-8	A-824200
4 RB-6	A-824200

* = check s/n



152-E Bearing

152-E BEARING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	17928
1-5/8 RB-6	17928
1-5/8 RB-8	17556
1-5/8 RBN-8	17928
2 RB-6	17928
2 RB-8	17556
2-5/8 RB-6	17556
2-5/8 RB-8	A-17111
3-1/2 RB-6	A-17111
3-1/2 RB-8	A-17111
4 RB-6	A-17111

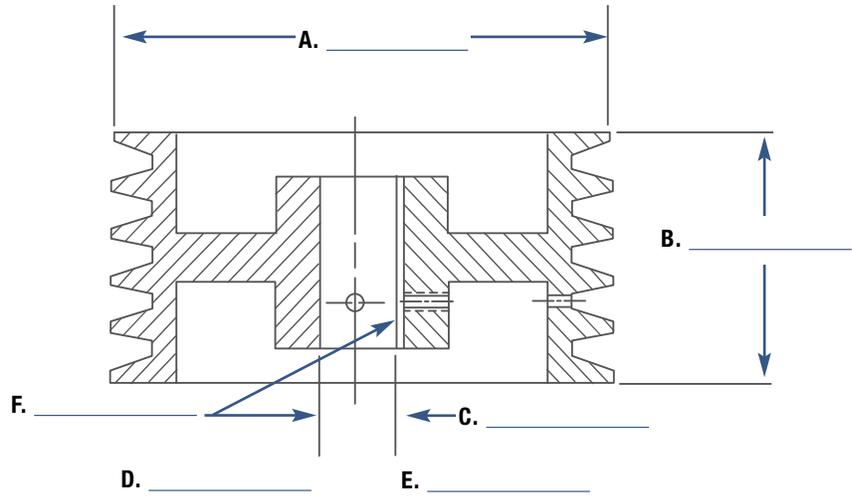
54-EB, 127-E V-BELT DRIVE SHEAVES • CHOOSE A CHART

Provide Machine Make, Model and Serial Number

MOTOR SHEAVE

Specify-

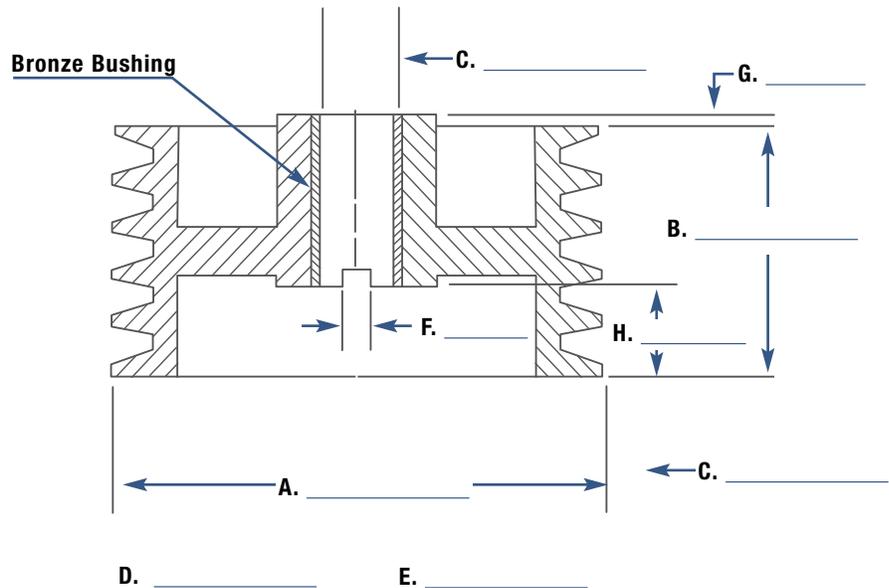
- A. Sheave O.D.
- B. Sheave width
- C. Sheave I.D. (Shaft O.D.)
- D. Belt type (A,B,C, etc.)
- E. Number of belt grooves
- F. Keyway width



PULLEY SHAFT SHEAVE

Specify-

- A. Sheave O.D.
- B. Sheave width
- C. Sheave I.D. (Shaft O.D.)
- D. Belt type (A,B,C, etc.)
- E. Number of belt grooves
- F. Keyway width
- G. Hub offset
- H. Hub offset



Constant Speed Shaft and High Speed Lever

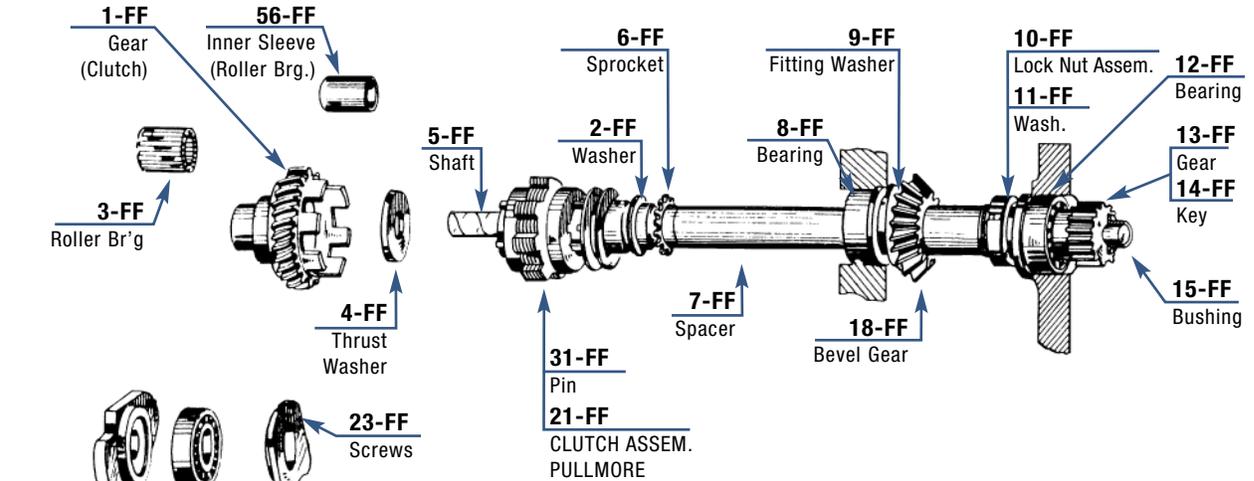
For Machines

9/16 RA-6

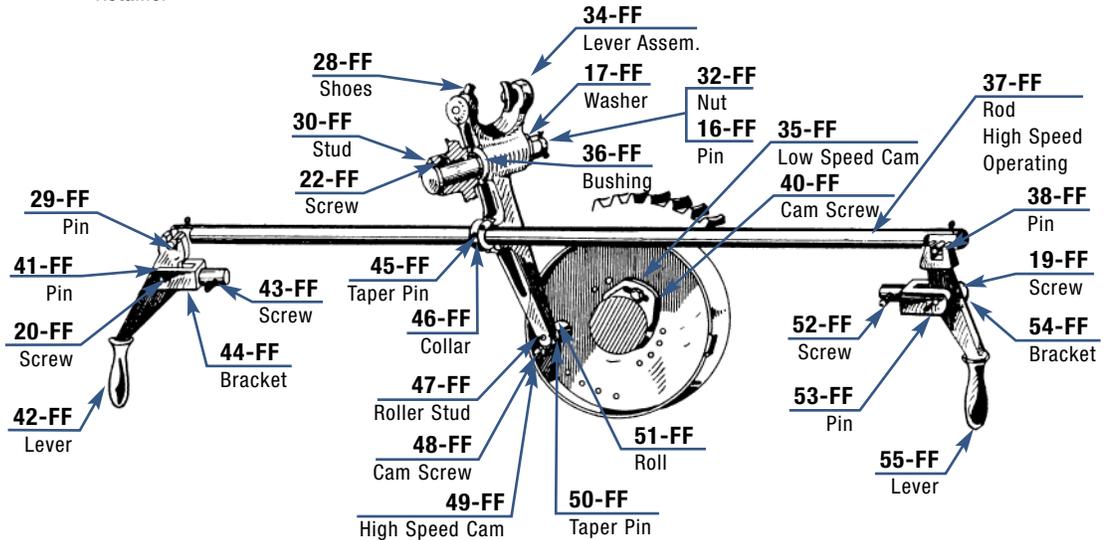
9/16 RAN-6

1" RA-6

1" RAN-6



For Clutch Details See Group J



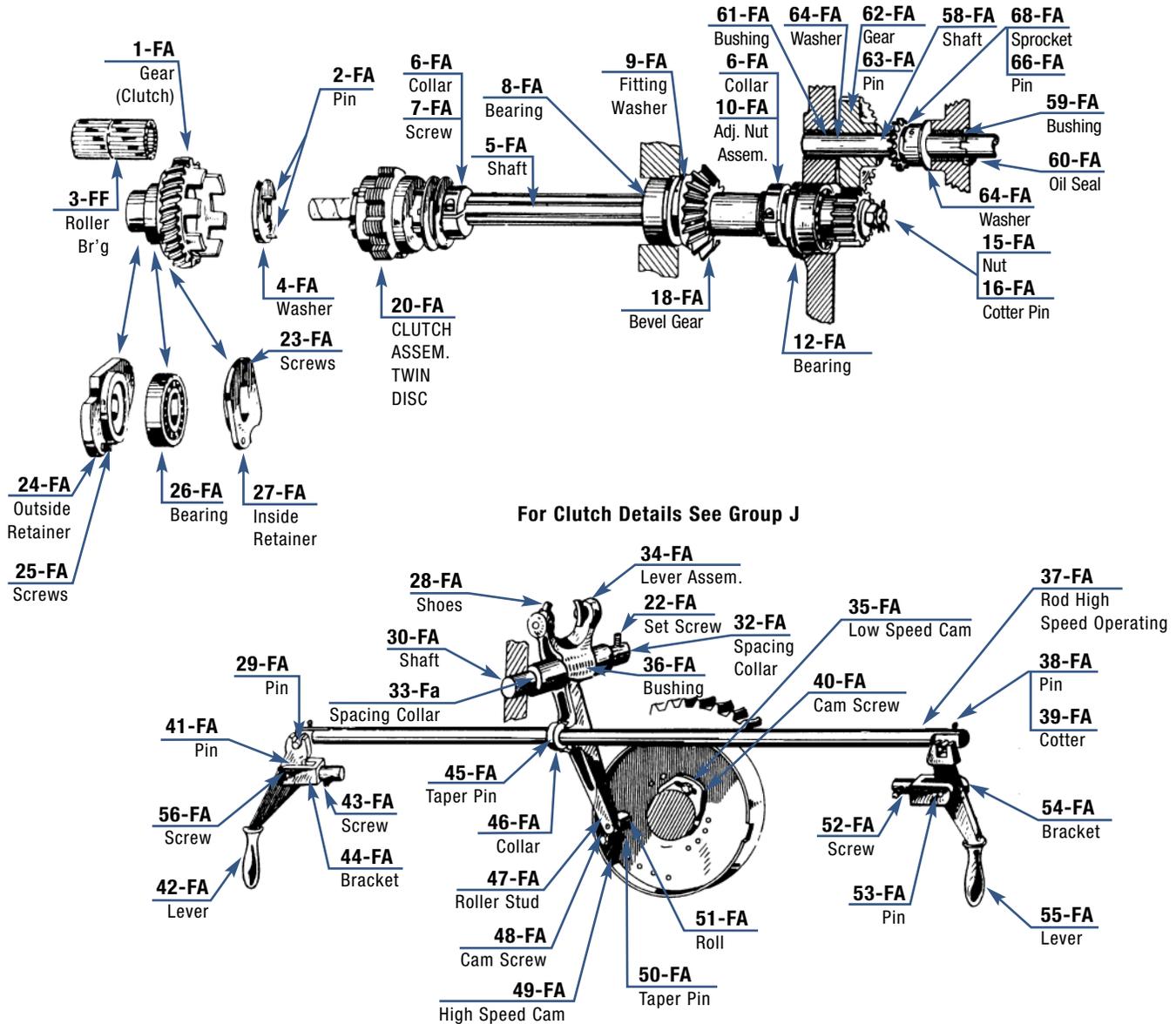
Constant Speed Shaft and High Speed Lever

For Machines

1-1/4 RA-6

3/4 RA-8

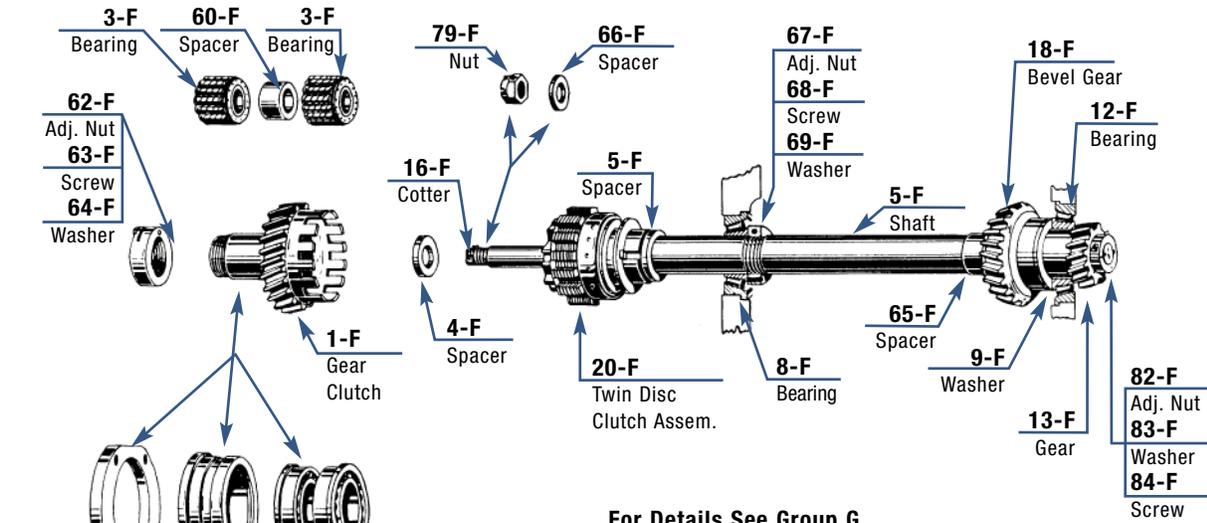
FA



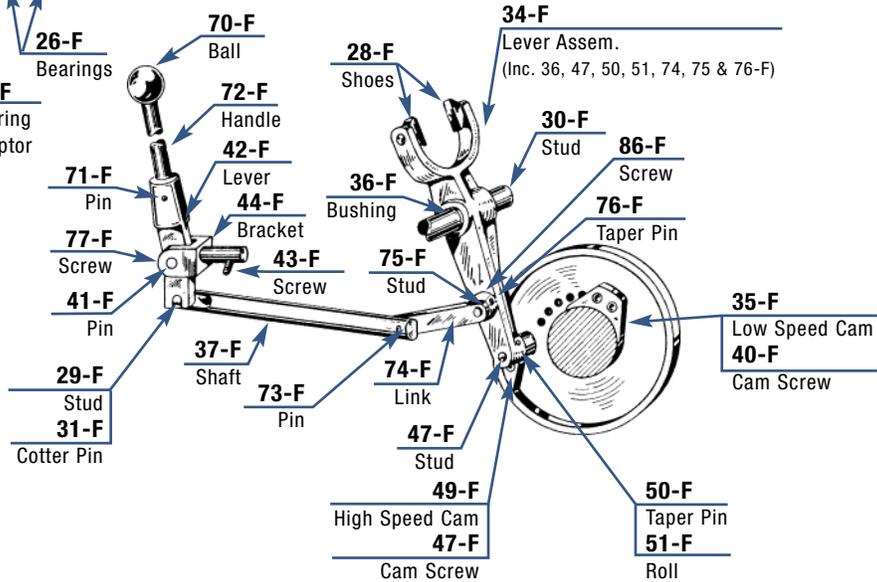
Constant Speed Shaft and High Speed Lever

For Machines

- 1-1/4 RB-8
- 1-5/8 RBN-8
- 1-5/8 RB-6
- 2" RB-6
- 1-5/8 RB-8
- 2" 2B-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-6
- 3-1/2 RB-8
- 4" RB-6
- 4" RB-8



For Details See Group G



Constant Speed Shaft



1-FF, FA, F Clutch Gear

1-FF, FA, F CLUTCH GEAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18170
9/16 RA-6, RAN-6	19170 (42T)
5/8 RN-6	FC-161700
3/4 RA-8	70170
1 RA-6, RAN-6	19170 (42T)
1-1/4 RA-6	70170
1-1/4 RB-8	A-38170
1-5/8 RB-6	A-38170
1-5/8 RB-8	A-82170
1-5/8 RBN-8	A-38170
2 RB-6	A-38170
2 RB-8	A-82170
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	
4" RB-8	



3-FF, FA, F Bearing

3-FF, FA, F BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	17807
1 RA-6, RAN-6	17656 (2)
3/4 RA-8	
1-1/4 RA-6	
1-1/4 RB-8	
1-5/8 RB-6	
1-5/8 RBN-8	17734
2 RB-6	
1-5/8 RB-8	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	
4" RB-8	

FF
FA
F

Constant Speed Shaft

4-FF, FA, F THRUST WASHER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	15943
3/4 RA-8 1-1/4 RA-6	15954
1-5/8 RB-6 2 RB-6	15920
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	16087



4-FF, FA, F Thrust Washer

5-FF, FA, F CONSTANT SPEED SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18167
9/16 RA-6	201673
9/16 RAN-6	B-22167
5/8 RN-6	FC-16167
3/4 RA-8	701671
1 RA-6 (OS)	201673
1 RAN-6 (NS)	B-22167
1-1/4 RA-6 (OS)	701670
1-1/4 RA-6	701671
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	A-38167
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	B-92167



5-FF, FA, F Constant Speed Shaft

FF
FA
F

Constant Speed Shaft



8-FF, FA, F Bearing

8-FF, FA, F BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	A-17255
3/4 RA-8 1-1/4 RA-6	17649
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	17998
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-4 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	17654



12-FF, FA, F Bearing

12-FF, FA, F BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	A-17271
3/4 RA-8 1-1/4 RA-6	17649
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	17502
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-4 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	17865

FF
FA
F

13-FF, FA, F GEAR

MACHINE SIZE	PART NUMBER
9/16 RA-6	201722
1 RA-6	
3/4 RA-8	401720
1-1/4 RA-6	
1-1/4 RB-8	A-38172
1-5/8 RB-6	
1-5/8 RBN-8	
2 RB-6	
1-5/8 RB-8	B-84172
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	B-92172
3-1/2 RB-4	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	B-92172
4" RB-8	



13-FF, FA, F Gear

18-FF, FA, F BEVEL GEAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18154
9/16 RA-6	231540 (31T)
9/16 RAN-6	0233014
5/8 RN-6	FC-16154
3/4 RA-8	701711
1 RA-6	231540 (31T)
1 RAN-6	0233014
1-1/4 RA-6	711540
1-1/4 RA-6 equipped with Cyclo Index	3044-38
1-1/4 RB-8	AM-40171
1-5/8 RB-6	A-381710
1-5/8 RBN-8	BM-40171
1-5/8 RB-8	A-961710
2 RB-6	A-381710
2 RB-8	A-961710
2-5/8 RB-6	A-821710
2-5/8 RB-8	A-961710
3-1/2 RB-4	B-821710
3-1/2 RB-6	A-961710
3-1/2 RB-8	A-821710
4" RB-6	A-961710



18-FF, FA, F Bevel Gear

For Gear Sets see page 71

FF

FA

F

Constant Speed Shaft



26-FF, FA, F Bearing

26-FF, FA, F BEARING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	17808
3/4 RA-8 1-1/4 RA-6	17655
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	17439
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	17549 (2)



27-FF, FA Inside Retainer

27-FF, FA INSIDE RETAINER

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	19168
3/4 RA-8 1-1/4 RA-6	70168



28-FF, FA, F Clutch Shoe

28-FF, FA, F CLUTCH SHOE

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	18213
3/4 RA-8 1-1/4 RA-6 1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	382130
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	82213

FF
FA
F

Constant Speed Shaft and High Speed Lever

34-FF, FA, F HIGH SPEED CLUTCH LEVER

MACHINE SIZE	PART NUMBER	
	LEVER ONLY	ASSEMBLY
7/16 RA-6	C-182140	C-189140
9/16 RA-6, RAN-6	202142	209141
5/8 RN-6	FC-16727	
3/4 RA-8	702140	709140
1 RA-6, RAN-6	202142	209141
1-1/4 RA-6	702140	709140
1-1/4 RB-8	A-38214	A-38914
1-5/8 RB-6		
1-5/8 RBN-8		
2 RB-6	A-82214	A-82914
1-5/8 RB-8		
2 RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
3-1/2 RB-8		
4 RB-6		
4" RB-8		
5-1/2 RB-4		



34-FF, FA, F High Speed Clutch Lever

FF
FA
F

35-FF, FA, F LOW SPEED CAM

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	202051
1 RA-6, RAN-6	
3/4 RA-8	
1-1/4 RA-6	70205
1-1/4 RB-8	A-38205
1-5/8 RB-6	
1-5/8 RBN-8	
2 RB-6	82205
1-5/8 RB-8	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	
4" RB-8	



35-FF, FA, F Low Speed Cam

Constant Speed Shaft



36-FF, FA, F Bushing

FF
FA
F

36-FF, FA, F BUSHING

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	C-17078
3/4 RA-8 1-1/4 RA-6 1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	C-17093
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	C-17132



49-FF, FA, F High Speed Cam

49-FF, FA, F HIGH SPEED CAM

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	202061
3/4 RA-8 1-1/4 RA-6	70206
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RB-8 1-5/8 RBN-8 2 RB-6 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	382060

Constant Speed Shaft and High Speed Lever

47-FF, FA, F ROLL STUD

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	3185
3/4 RA-8 1-1/4 RA-6	3182
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6	3180
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	10182



47-FF, FA, F Roll Stud

FF

FA

F

51-FF, FA, F ROLL

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6 1 RA-6, RAN-6	14245
3/4 RA-8 1-1/4 RA-6	3095
1-1/4 RB-8 1-5/8 RB-6 1-5/8 RB-8 1-5/8 RBN-8 2 RB-6 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 3-1/2 RB-8 4" RB-6 4" RB-8	3019



51-FF, FA, F Roll

56-FF INNER SLEEVE

MACHINE SIZE	PART NUMBER
9/16, 1 RA-6, RAN-6	16146



56-FF Inner Sleeve

Constant Speed Shaft and High Speed Lever



58-FA Pump Drive Shaft

58-FA PUMP DRIVE SHAFT

MACHINE SIZE	PART NUMBER	
	7-7/8" OAL	9" OAL
3/4 RA-8, 1-1/4 RA-6	70361	703610



59-FA Bushing

59-FA BUSHING

MACHINE SIZE	PART NUMBER
3/4 RA-8, 1-1/4 RA-6	C-17028



61-FA Bushing

61-FA BUSHING

MACHINE SIZE	PART NUMBER
3/4 RA-8, 1-1/4 RA-6	C-17093



62-FA Gear

62-FA GEAR

MACHINE SIZE	PART NUMBER
3/4 RA-8, 1-1/4 RA-6	401860



75-F Stud

75-F STUD

MACHINE SIZE	PART NUMBER
1-1/4 RB-8	14472
1-5/8 RB-6	
1-5/8 RB-8	
1-5/8 RBN-8	
2 RB-6	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	
4" RB-8	



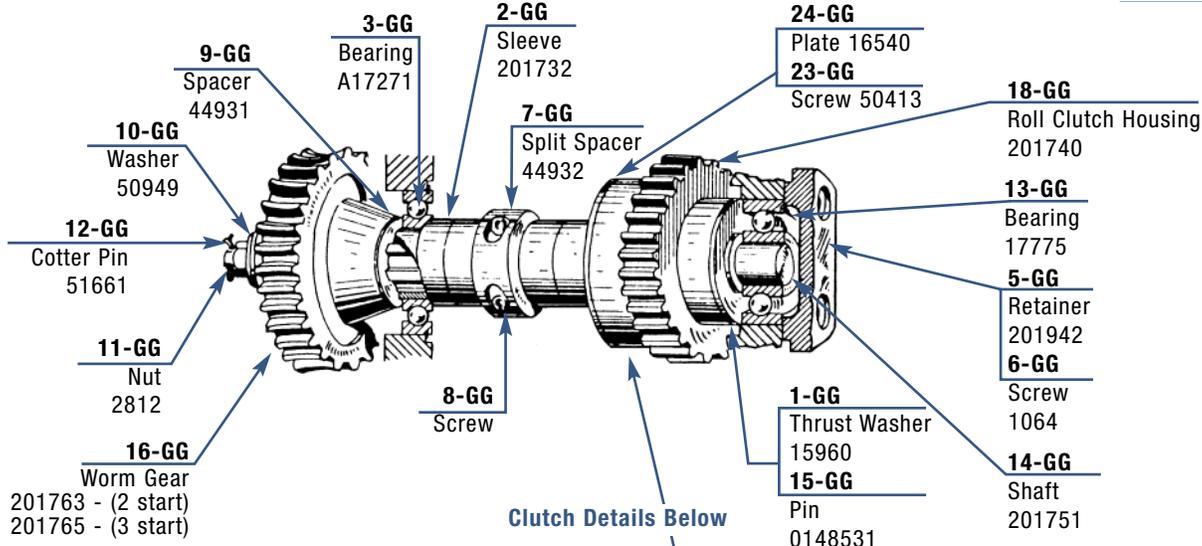
82-F Adjusting Nut

82-F ADJUSTING NUT

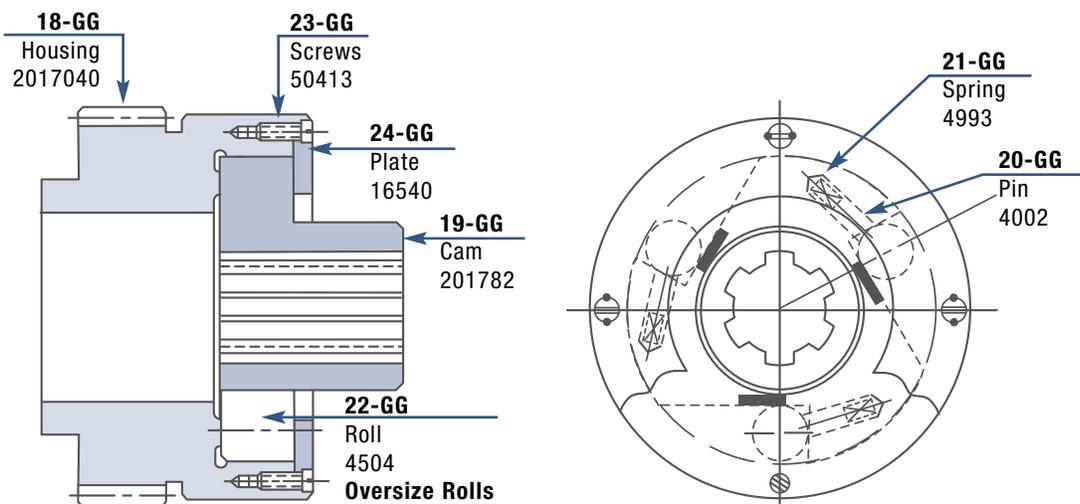
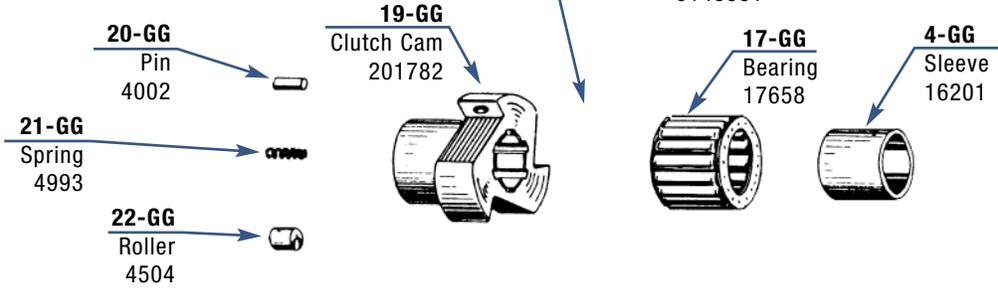
MACHINE SIZE	PART NUMBER
1-1/4 RB-8	53527
1-5/8 RB-6	
1-5/8 RBN-8	
2 RB-6	
1-5/8 RB-8	53526
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	
4" RB-8	

Feed Worm Gear Shaft

For Machines
9/16 RA-6
9/16 RAN-6
1" RA-6
1" RAN-6



Clutch Details Below



- Oversize Rolls**
- 003 TC-922344
 - 005 TC-922984
 - 007 TF-933632
 - 010 98607

Roll Clutch Complete – **25-GG**
 209100



Feed Worm Gear Shaft and Clutches

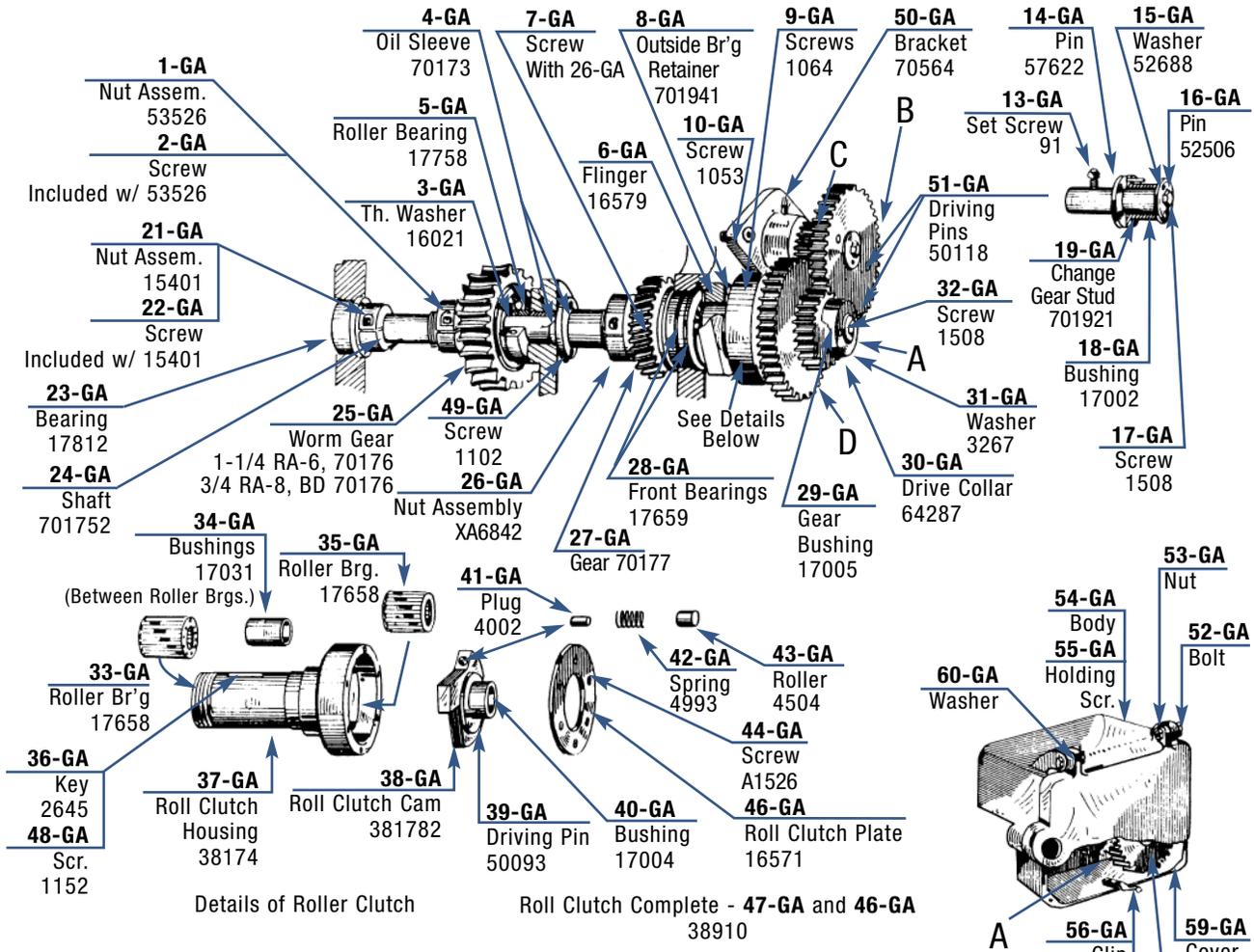
For Machines

1-1/4 RA-6

3/4 RA-8

5-1/4 RAC-6

GA



- Oversize Rolls**
- 003 TC-922344
 - 005 TC-922984
 - 007 TF-933632
 - 010 98607

Feed Worm Gear Shaft and Clutches

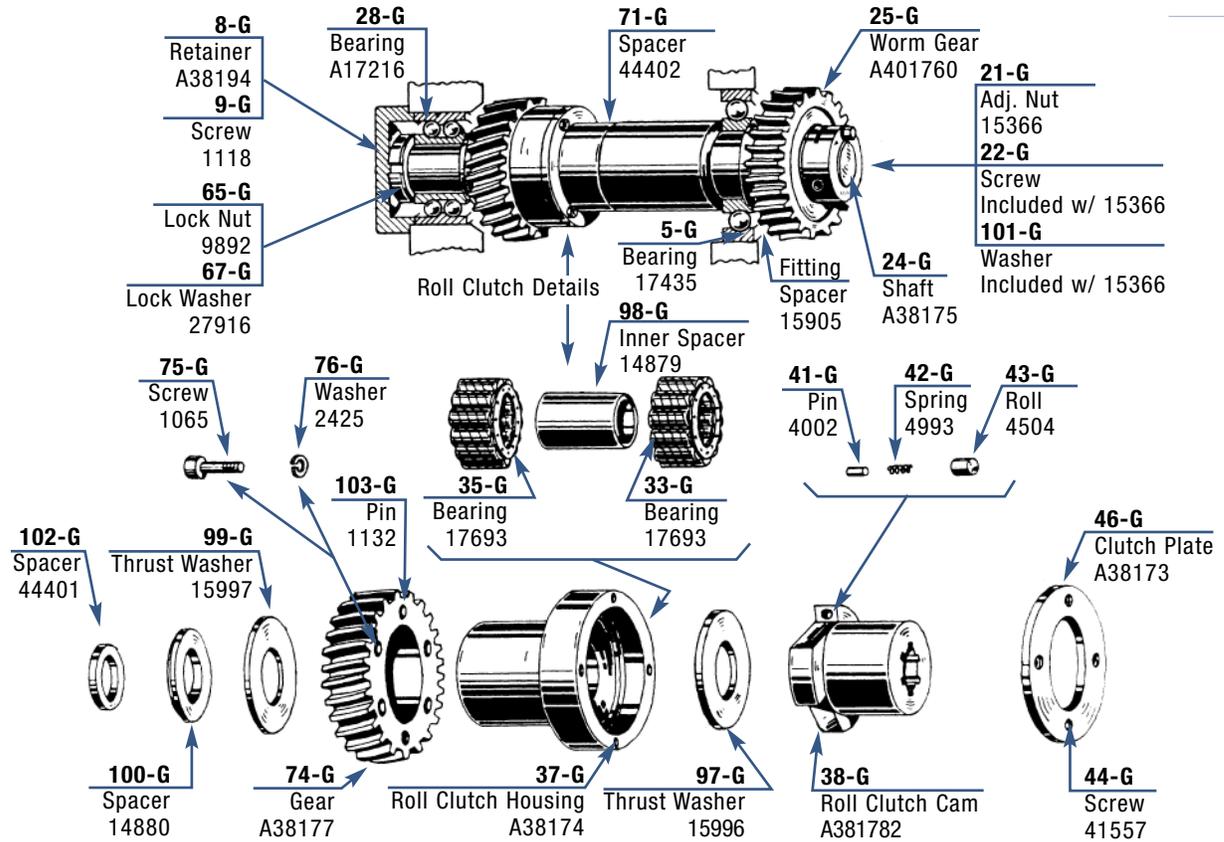
For Machines

1-1/4 RB-8

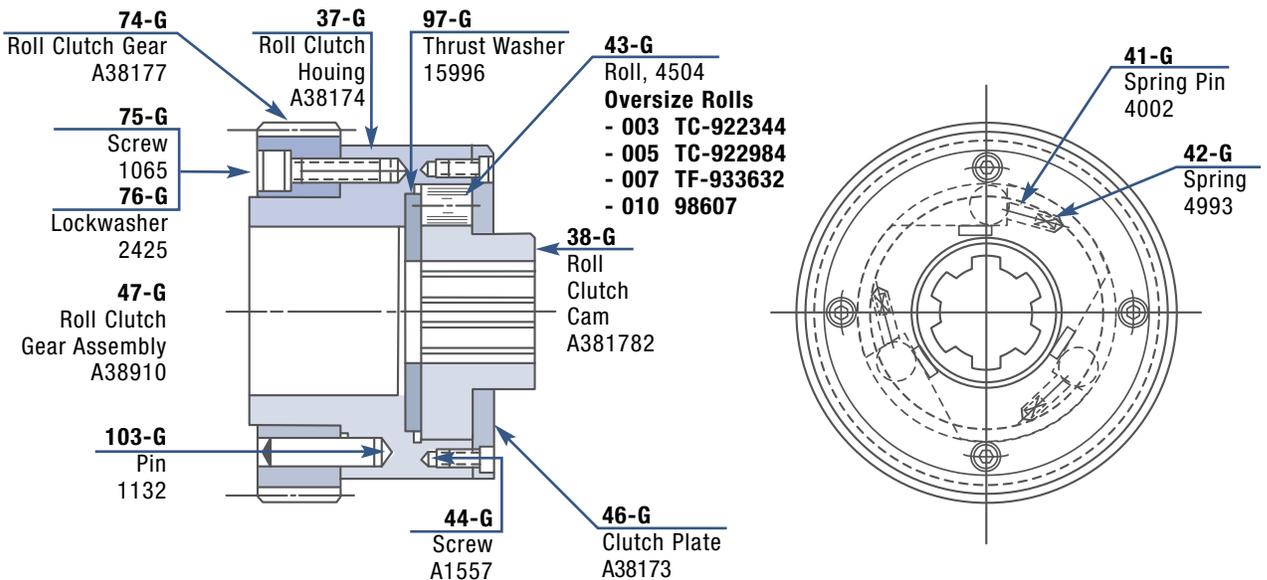
1-5/8 RBN-8

1-5/8 RB-6

2" RB-6



47-G Roll Clutch Complete
A38910



Feed Worm Gear Shaft and Clutches

For Machines

1-5/8 RB-8

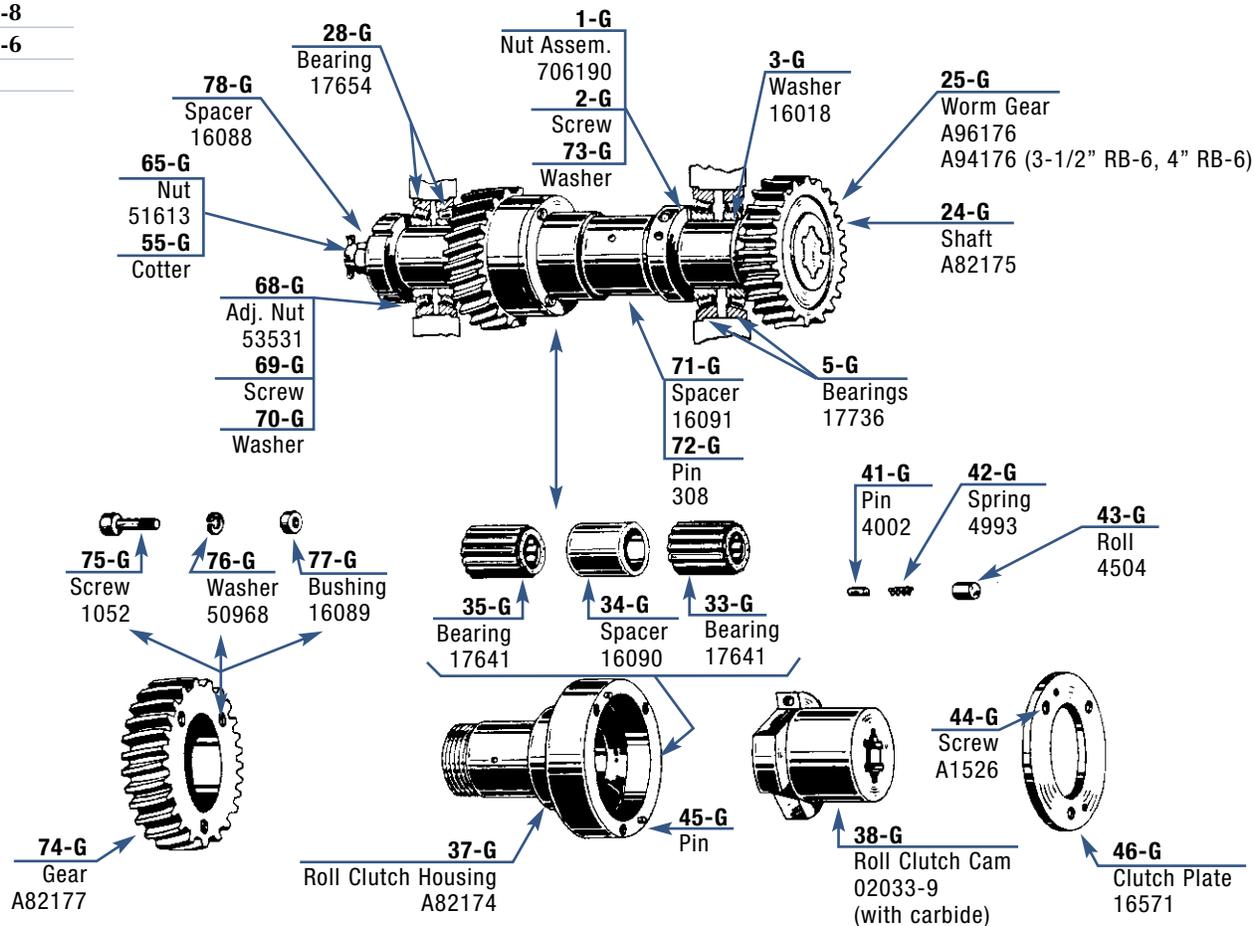
2" RB-8

2-5/8 RB-6

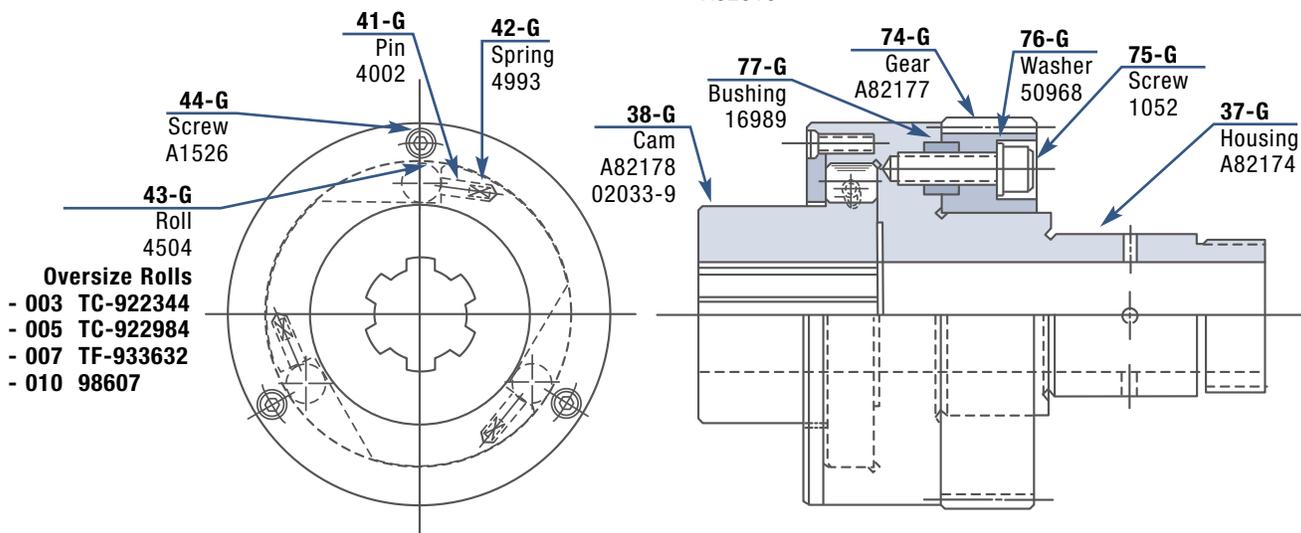
2-5/8 RB-8

3-1/2 RB-6

4" RB-6



47-G Roll Clutch Complete
A82910



Worm Wheel Drive Shaft (Long)

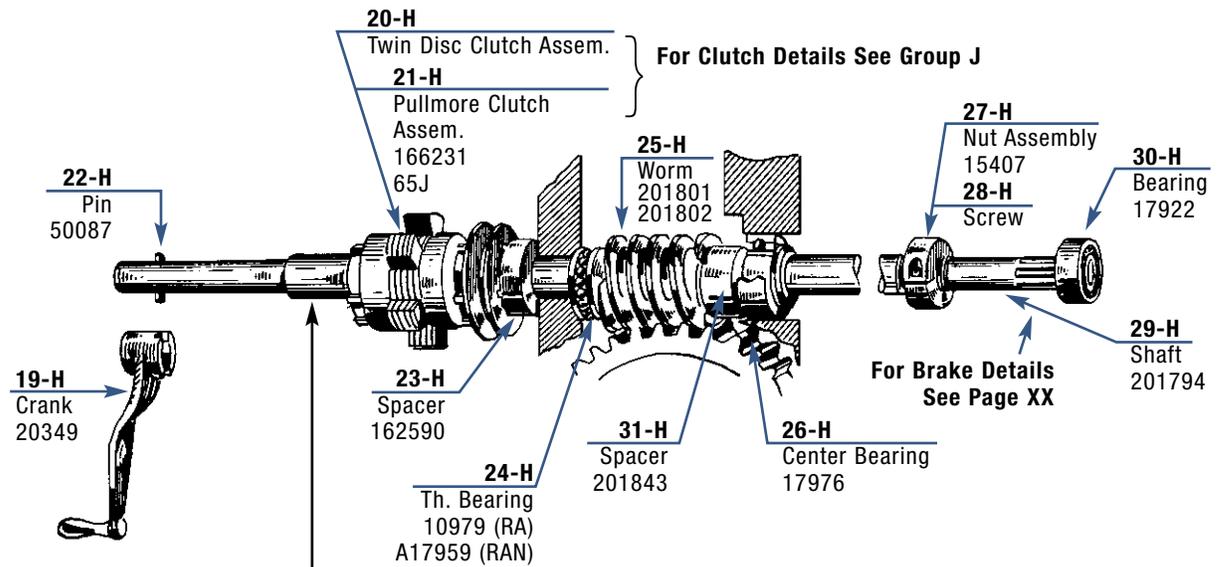
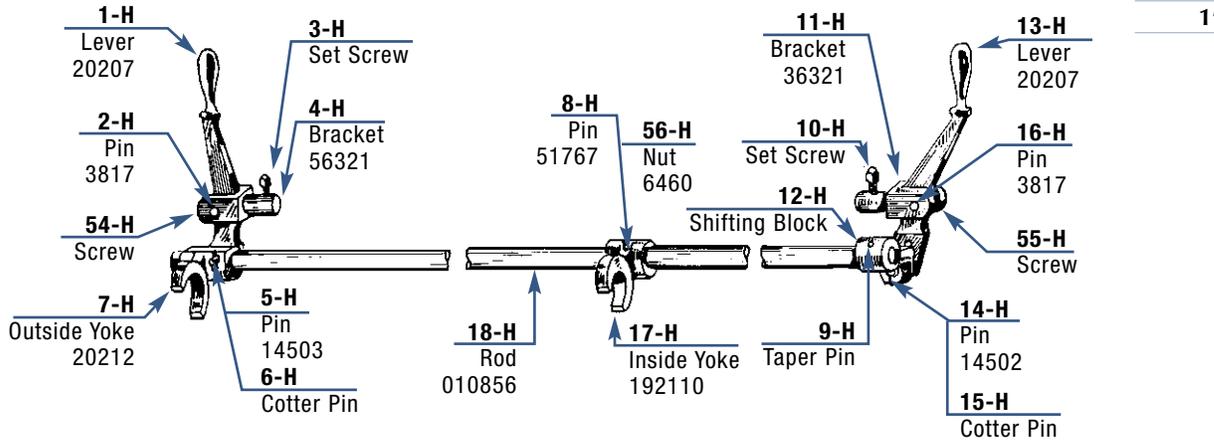
For Machines

9/16 RA-6

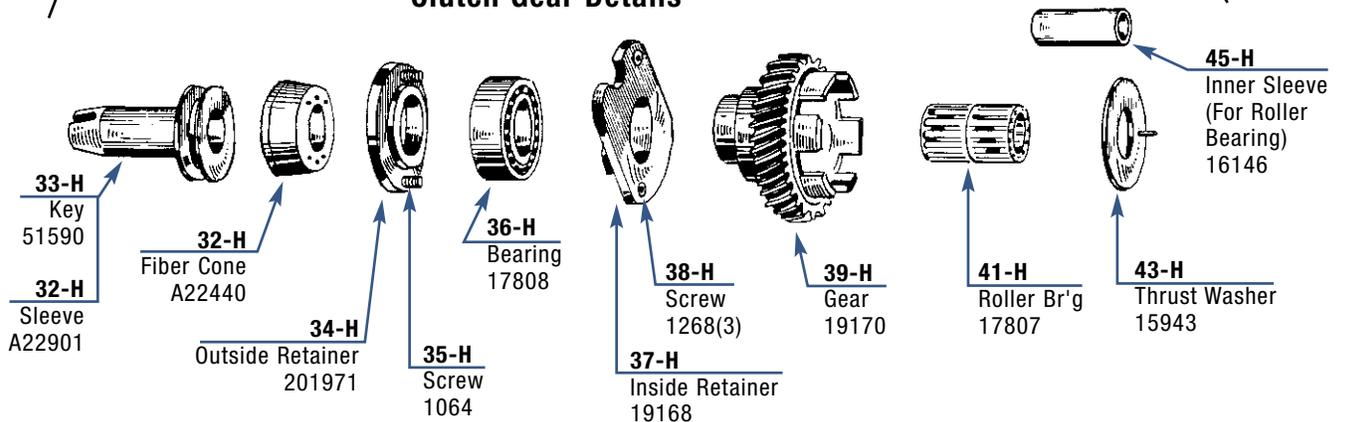
9/16 RAN-6

1" RA-6

1" RAN-6



Clutch Gear Details

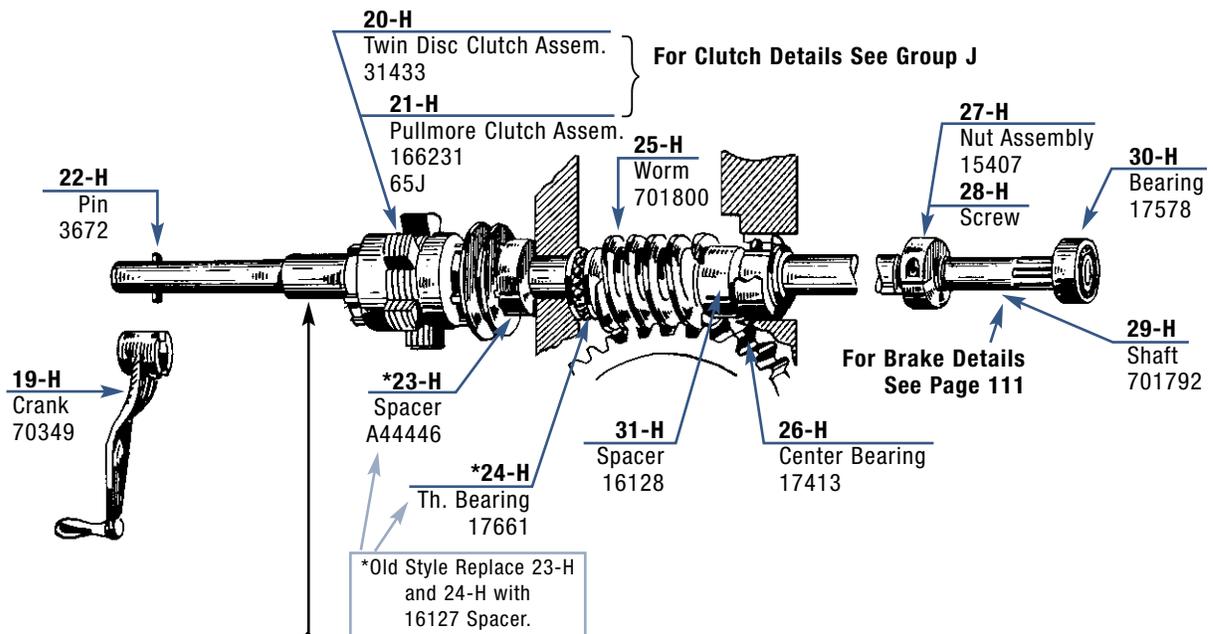
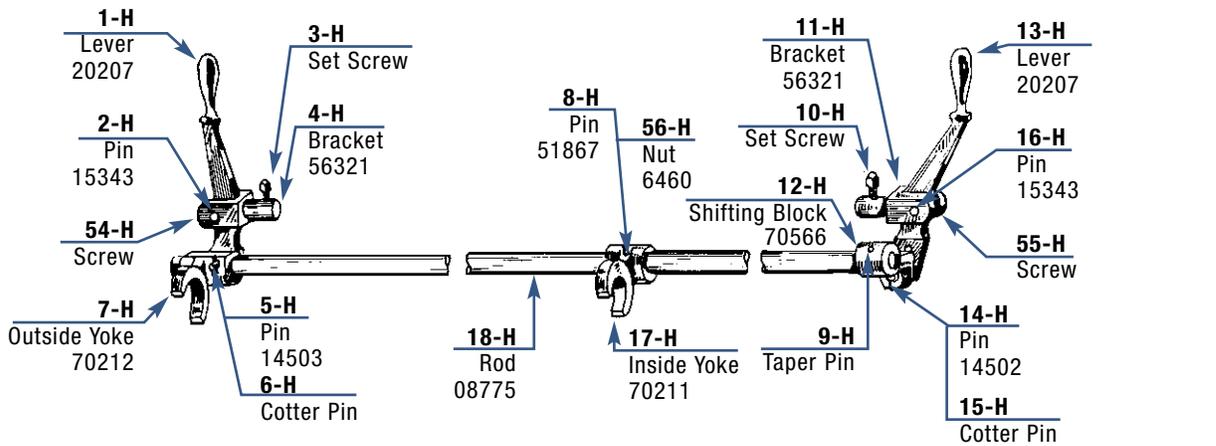


Worm Wheel Shaft Drive (Long)

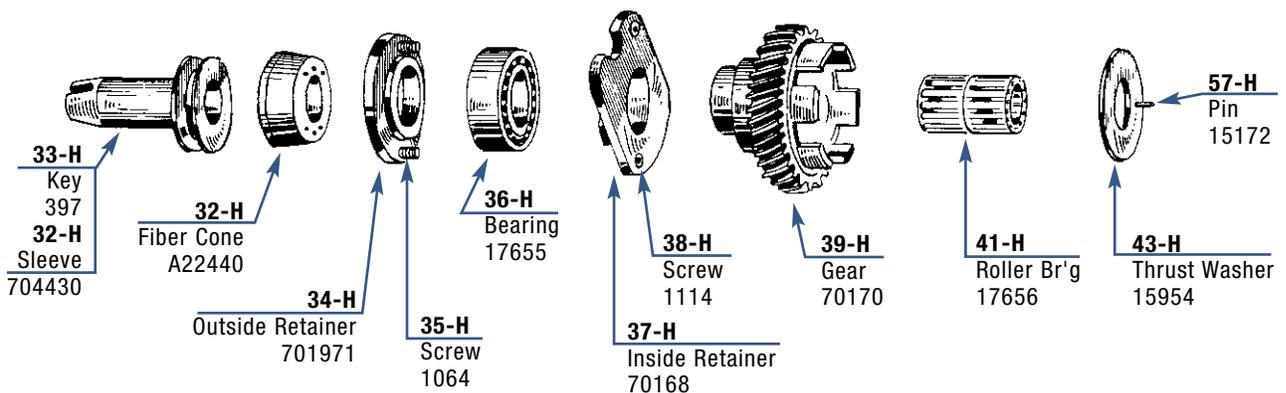
For Machines

3/4 RA-8

1-1/4 RA-6



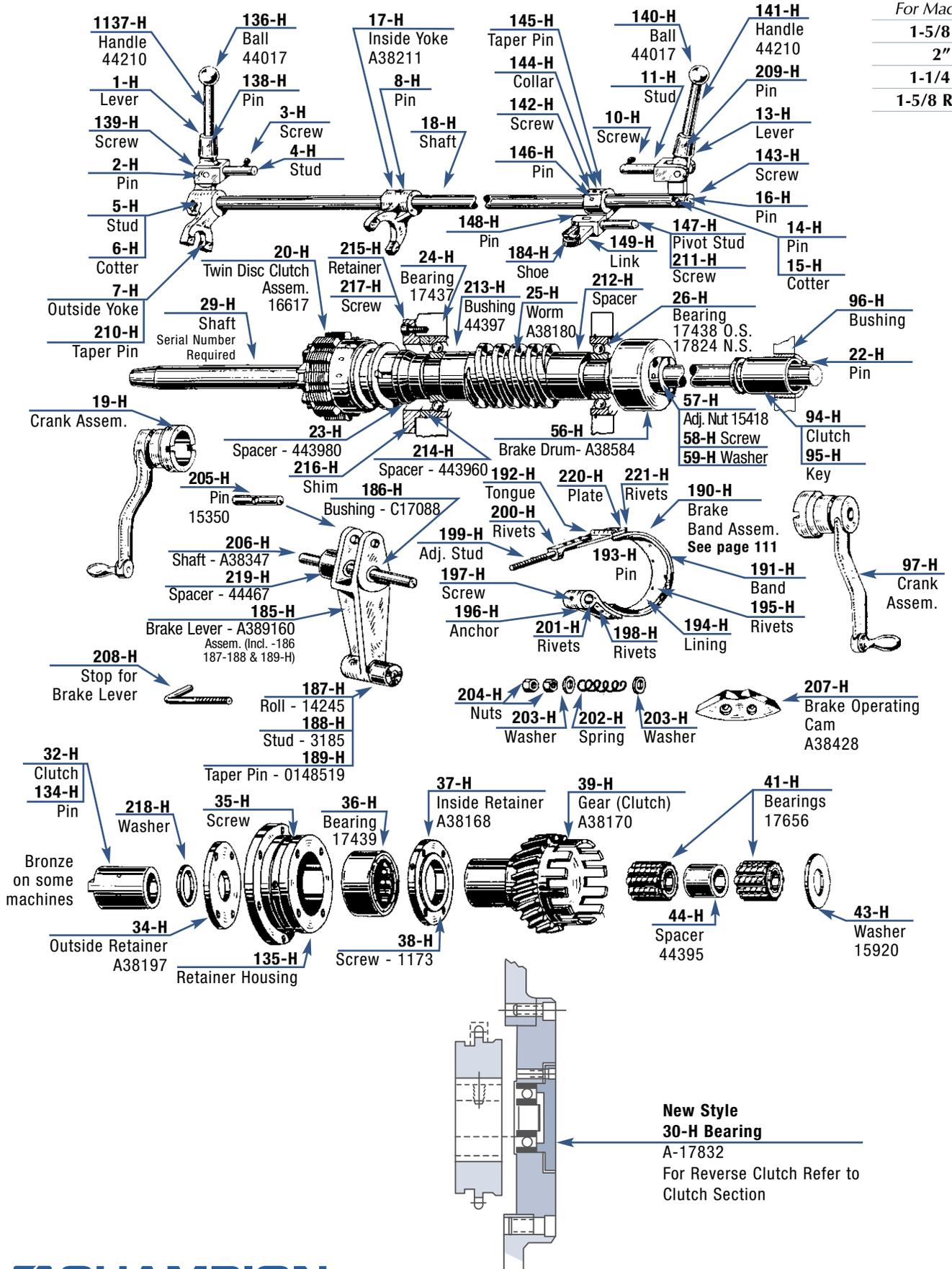
Clutch Gear Details



Worm Wheel Drive Shaft and Brake

For Machines

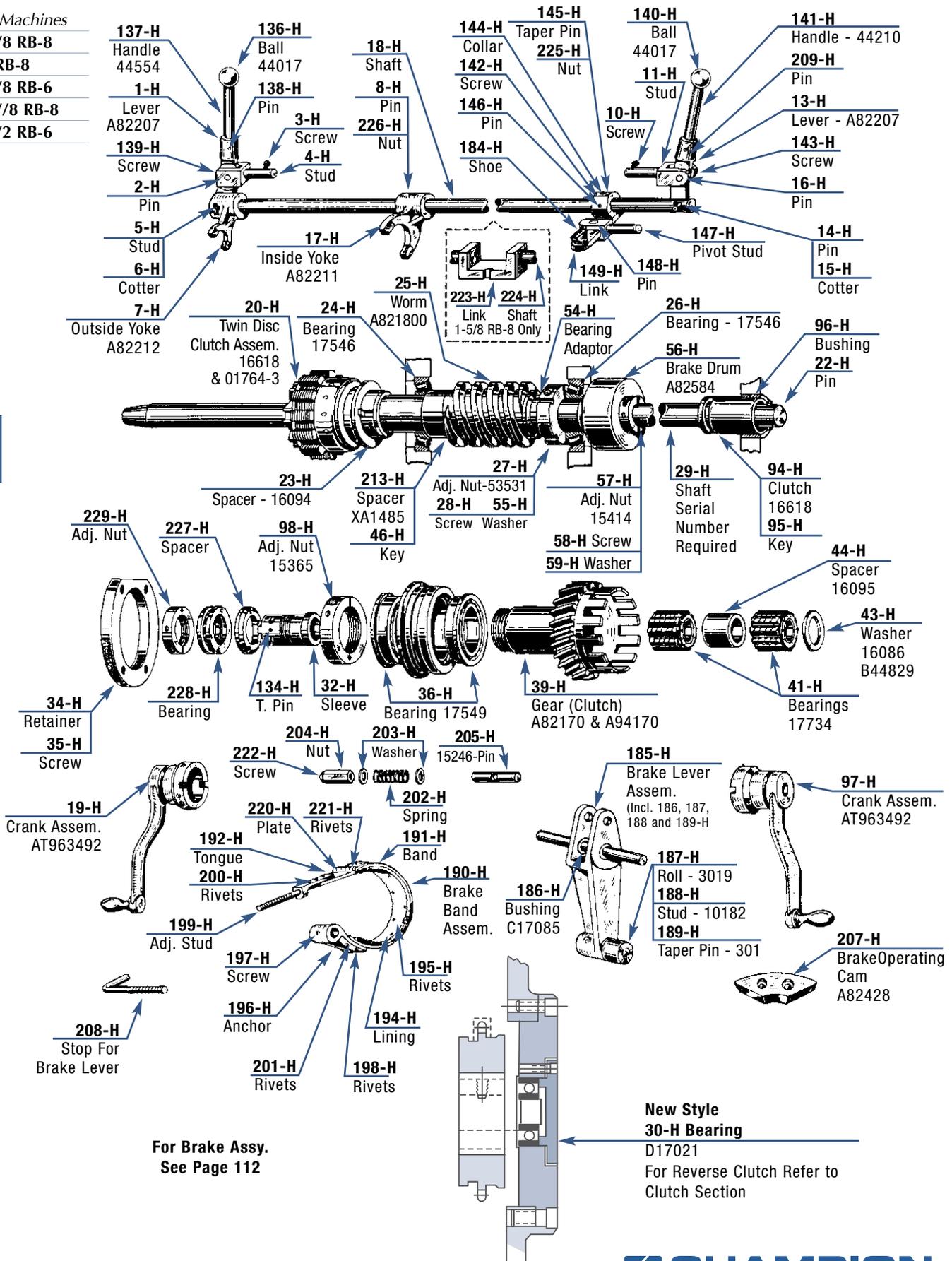
- 1-5/8 RB-6
- 2" RB-6
- 1-1/4 RB-8
- 1-5/8 RBN-8



Worm Wheel Drive Shaft, Feed Clutch Levers and Brakes

For Machines

- 1-5/8 RB-8
- 2" RB-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-6



Brake

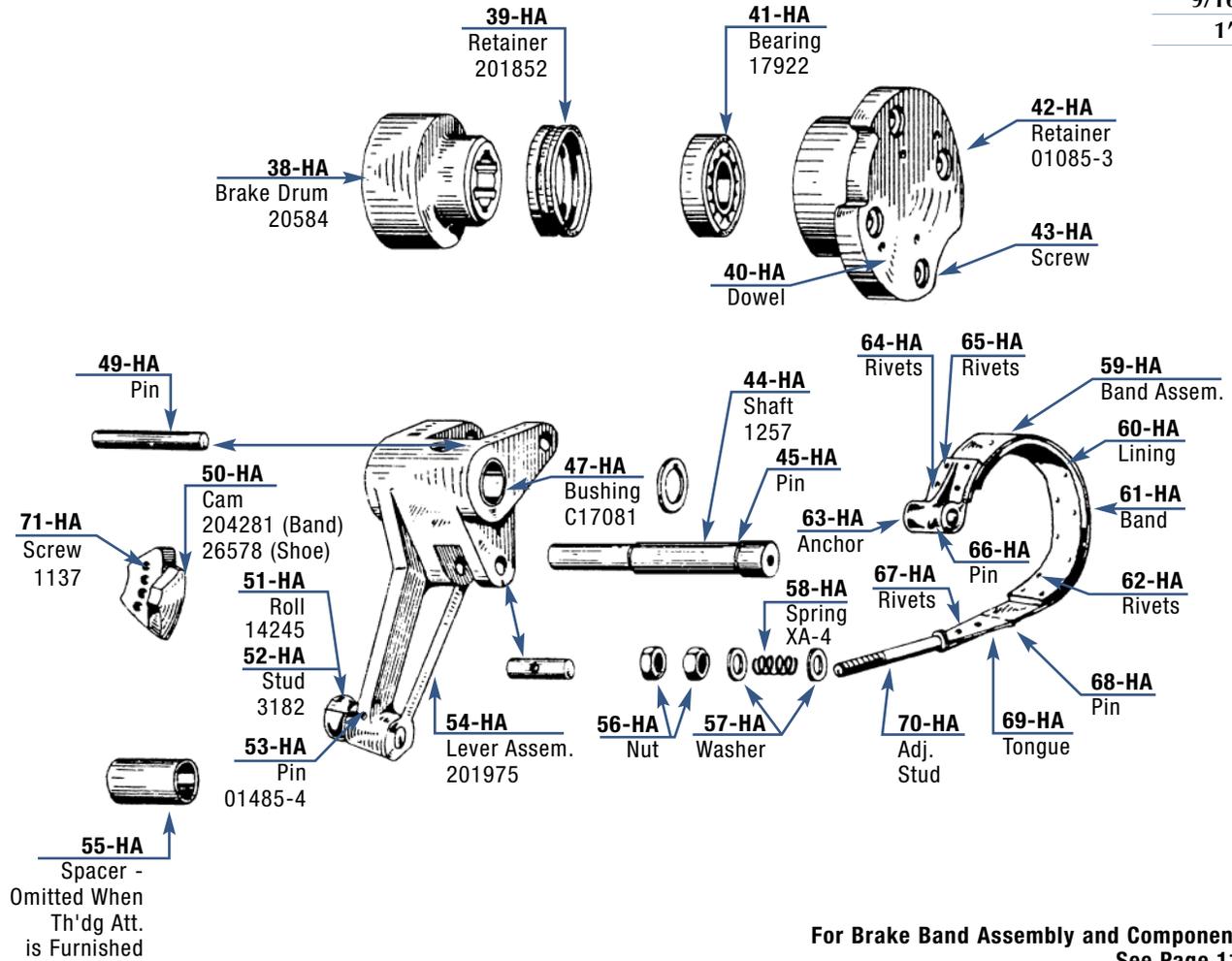
For Machines

9/16 RA-6

1" RA-6

9/16 RAN-6

1" RAN-6



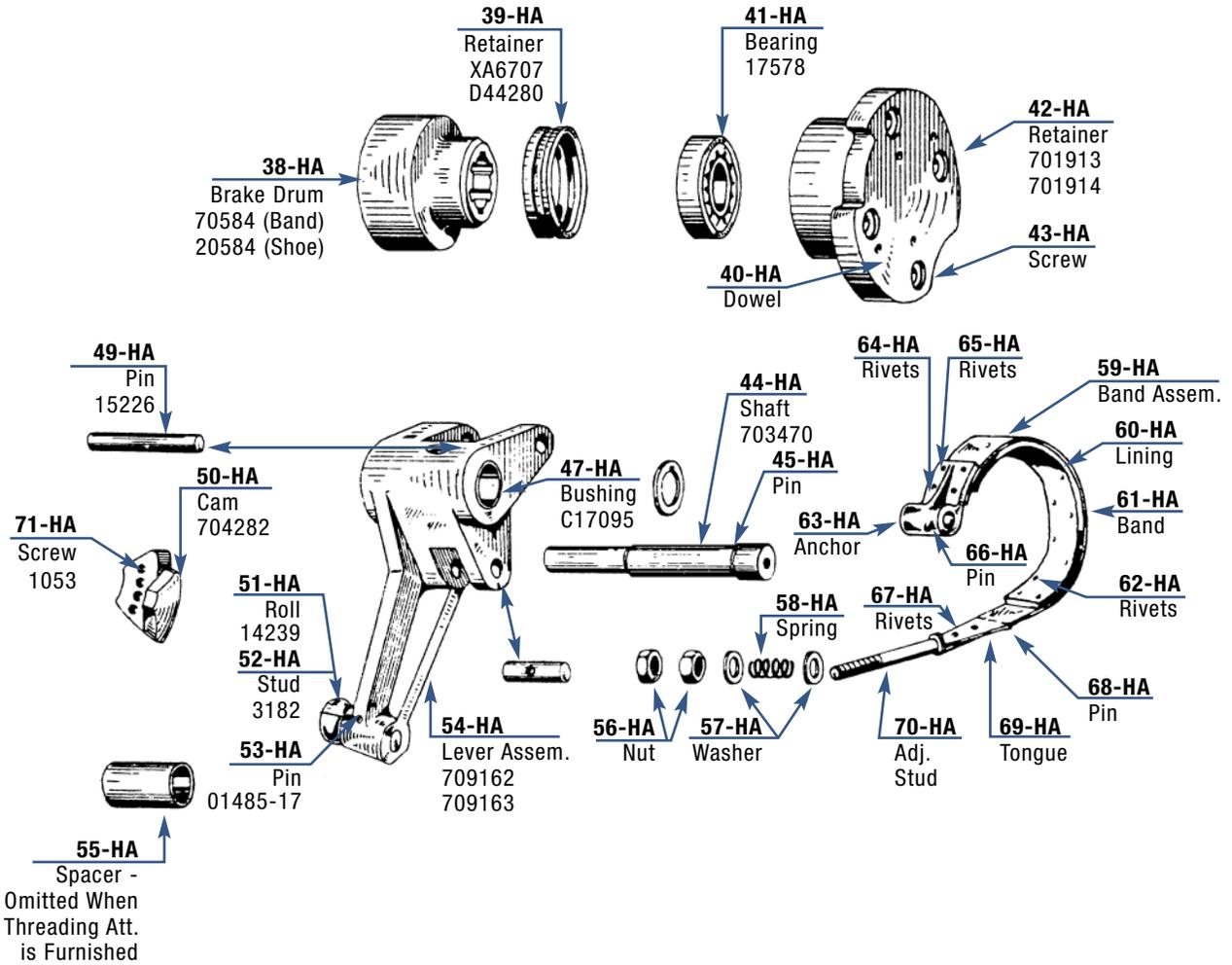
HA

Brake

For Machines

1-1/4 RA-6

3/4 RA-8

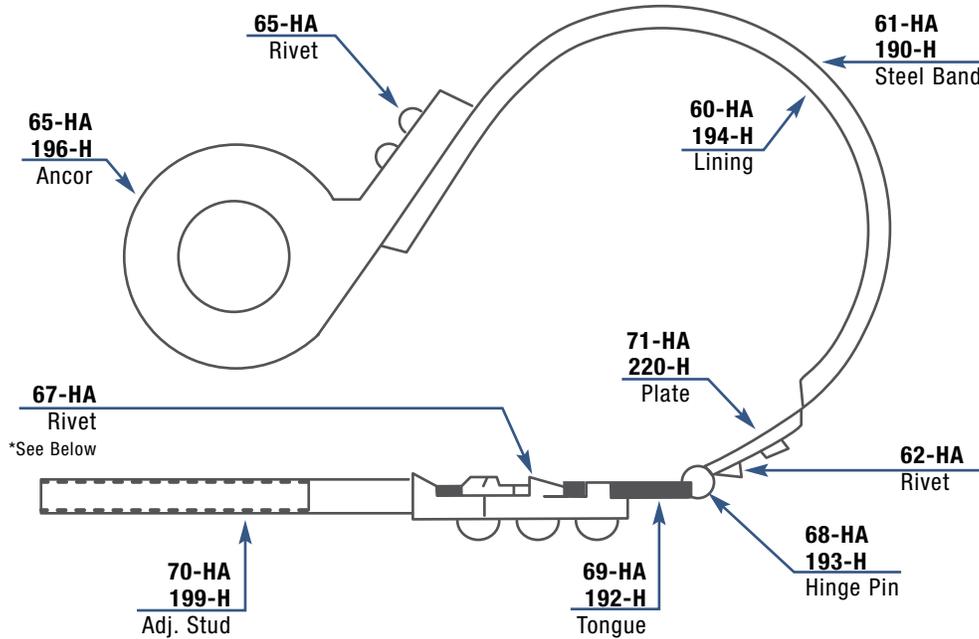


For Brake Band Assembly and Components
See Page 111

Brake Band Assembly

For Machines

9/16 RA-6
1" RA-6
3/4 RA-8
1-1/4 RA-6
1-1/4 RB-6
1-5/8 RAS-4
2" RAS-4
5-1/4 RAC-6
1-1/4 RB-8
1-5/8 RBN-8
1-5/8 RB-6
2-5/8 RA-4
2" RB-6



HA

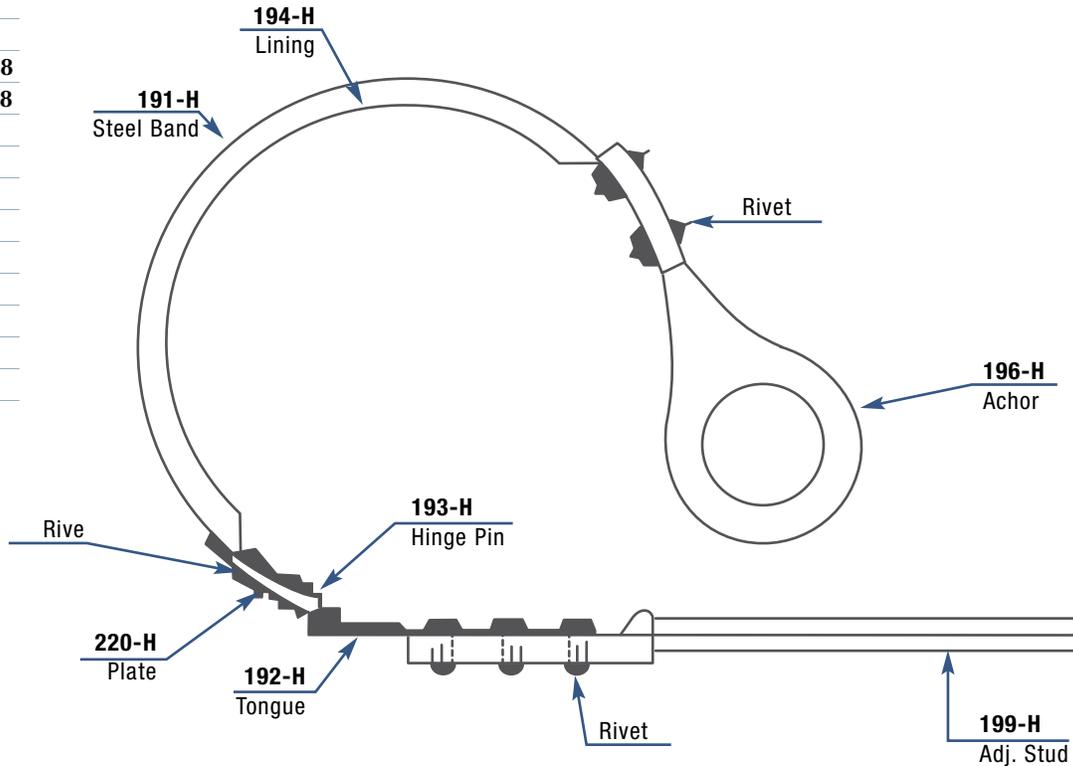
MACHINE SIZES

	9/16 RA-6 1 RA-6		3/4 RA-8, 1-1/4 RA-6, 1-1/4 RB-6, 1-5/8 RAS-4 2 RAS-4 5-1/4 RAC-6		1-1/4 RB-8 1-5/8 RBN-8		1-5/8 RB-6 2-5/8 RA-4 2 RB-6	
DESCRIPTION	CODE # REF.	PART #	CODE # REF.	PART #	CODE # REF.	PART #	CODE # REF.	PART #
Brake Band Assembly	59-HA	209191	59-HA	709192	190-H	A409191	190-H	A38919
Lining	60-HA	204890	60-HA	704890	194-H	A404890	194-H	L864890
Steel Band	61-HA	204902	61-HA	204902	191-H	A40490	191-H	L864900
Anchor	63-HA	204880	63-HA	44137	196-H	A384880	196-H	A38488
Hinge Pins	68-HA	50058	68-HA	50058	193-H	15103	193-H	50058
Tongue	69-HA	204910	69-HA	204910	192-H	A40491	192-H	L86491
Plate	71-HA	20500	71-HA	20500	220-H	A40500	220-H	70500
Adj Stud	70-HA	44950	70-HA	44136	199-H	44502	199-H	44502
Rivets	62-HA	2543	62-HA	1568				
Rivets	65-HA	XA4797	65-HA	2568				
Rivets	67-HA	51648	67-HA	51648				
Nuts	56-HA	50313	56-HA	50313	204-H	50313	204-H	50313
Washers	57-HA	973	57-HA	973	203-H	973	203-H	973
Springs	58-HA	XA4	58-HA	44452	202-H	44452	202-H	44452
Neoprene Snubber	58-HA	XA4040	58-HA	XA6182	202-H	XA4040	202-H	XA4040
Steel Cups	NA	A44545	NA	A44545	NA	A44545	NA	A44545

Brake Band Assembly

For Machines

- 1-5/8 RA-8
- 1-5/8 RB-8
- 2-5/8 RA-6 & 8
- 2-5/8 RB-6 & 8
- 3-1/2 RA 4, 6, & 8
- 3-1/2 RB-4, 6, & 8
- 4 RB-6
- 4-3/4 RB-4
- 5-1/8 RB-4
- 6 RB-6
- 7-3/4 RB-4
- 6 RPA-8
- 8 RPA-6
- 8 RPA-8
- 10 RPA-4



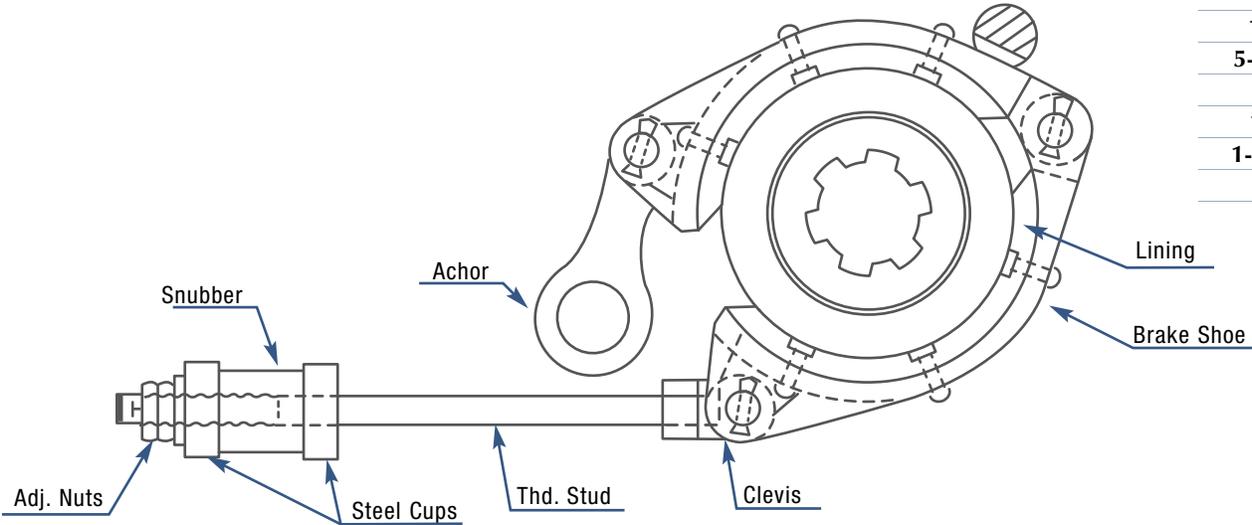
MACHINE SIZES

DESCRIPTION	CODE # REF.	PART #	CODE # REF.	PART #	CODE # REF.	PART #
Brake Band Assembly	190-H	A829190	190-H	B889191	190-H	L869193
Steel Band	191-H	L864900	191-H	B88490	191-H	L864900
Tongue	192-H	L86491	192-H	B88491	192-H	L86491
Hinge Pin	193-H	50058	193-H	15333	193-H	5005
Lining	194-H	L864890	194-H	B88489	194-H	L864890
Anchor	196-H	44216	196-H	B884881	196-H	44206
Adjusting Stud	199-H	44502	199-H	44502	199-H	44950
Spring	202-H	44452	202-H	44452	202-H	52861
Washer	203-H	973	203-H	973	203-H	973
Nuts	204-H	50313	204-H	50313	204-H	50313
Plate	220-H	70500	220-H	B88500	220-H	70500

Brake Shoe Assembly

For Machines

- 9/16 RA-6
- 9/16 RAN-6
- 1 RA-6
- 1 RAN-6
- 3/4 RA-8
- 1-1/4 RA-6
- 5-1/4 RAC-6
- 1-1/4RB-8
- 1-5/8 RB-6
- 1-5/8 RBN-8
- 2 RB-6



MACHINE SIZES

DESCRIPTION	PART #	PART #	PART #
	9/16 RA-6 9/16 RAN-6 1 RA-6 1 RAN-6	3/4 RA-8 1-1/4 RA-6 5-1/4 RAC-6	1-1/4 RB-8 1-5/8 RB-6 1-5/8 RBN-8 2 RB-6
Brake Shoe Assembly	209192	709193	A409193
Brake Shoe	0265754	0265754	AM409170
Lining	026573	026573	A404891
Clevis	026575	026574	A40642
Anchor	026574	0265713	A384881
Threaded Stud	A936	A942	0265719
Neoprene Snubber	XA4040	XA4040	XA4040
Steel Cups	A44545	A44545	A44545
Adjusting Nuts	261	261	261
Hinge Pin	XA6624	XA6624	0265721

Air Cylinder Assembly

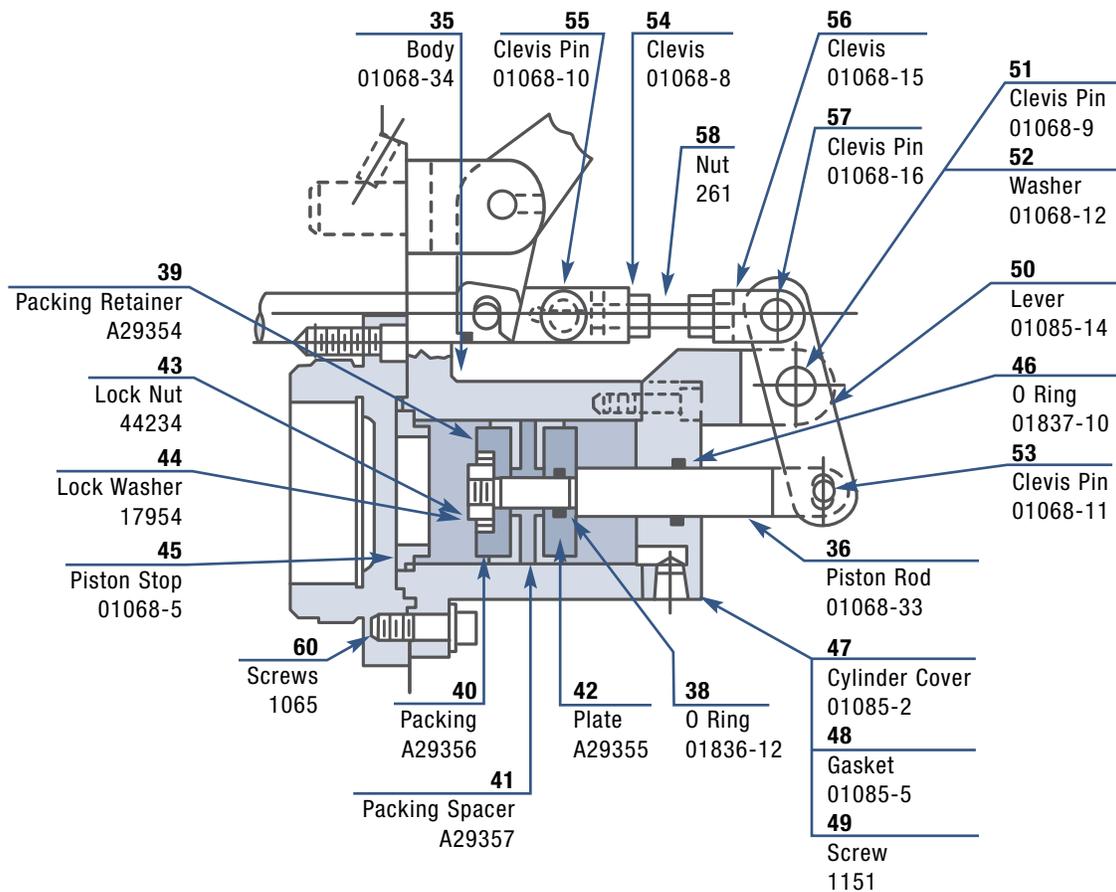
For Machines

9/16 RA-6

1" RA-6

9/16 RAN-6

1" RAN-6



MACHINE SIZES

9/16 RA-6, 1" RA-6, 9/16 RAN-6, 1" RAN-6

CODE	DESCRIPTION	QTY.	PART #
34	Air Cylinder	1	01085-22
35	Body	1	01068-34
36	Piston Rod	1	01068-33
37	O Ring	1	01837-36
38	O Ring	1	01836-12
39	Packing Retainer	1	A29354
40	Packing	2	A29356
41	Packing Spacer	1	A29357
42	Plate	1	A29355
43	Lock Nut	1	44234
44	Lock Washer	1	17954
45	Piston Stop	1	01068-5
46	O Ring	1	01837-10
47	Cylinder Cover	1	01085-2

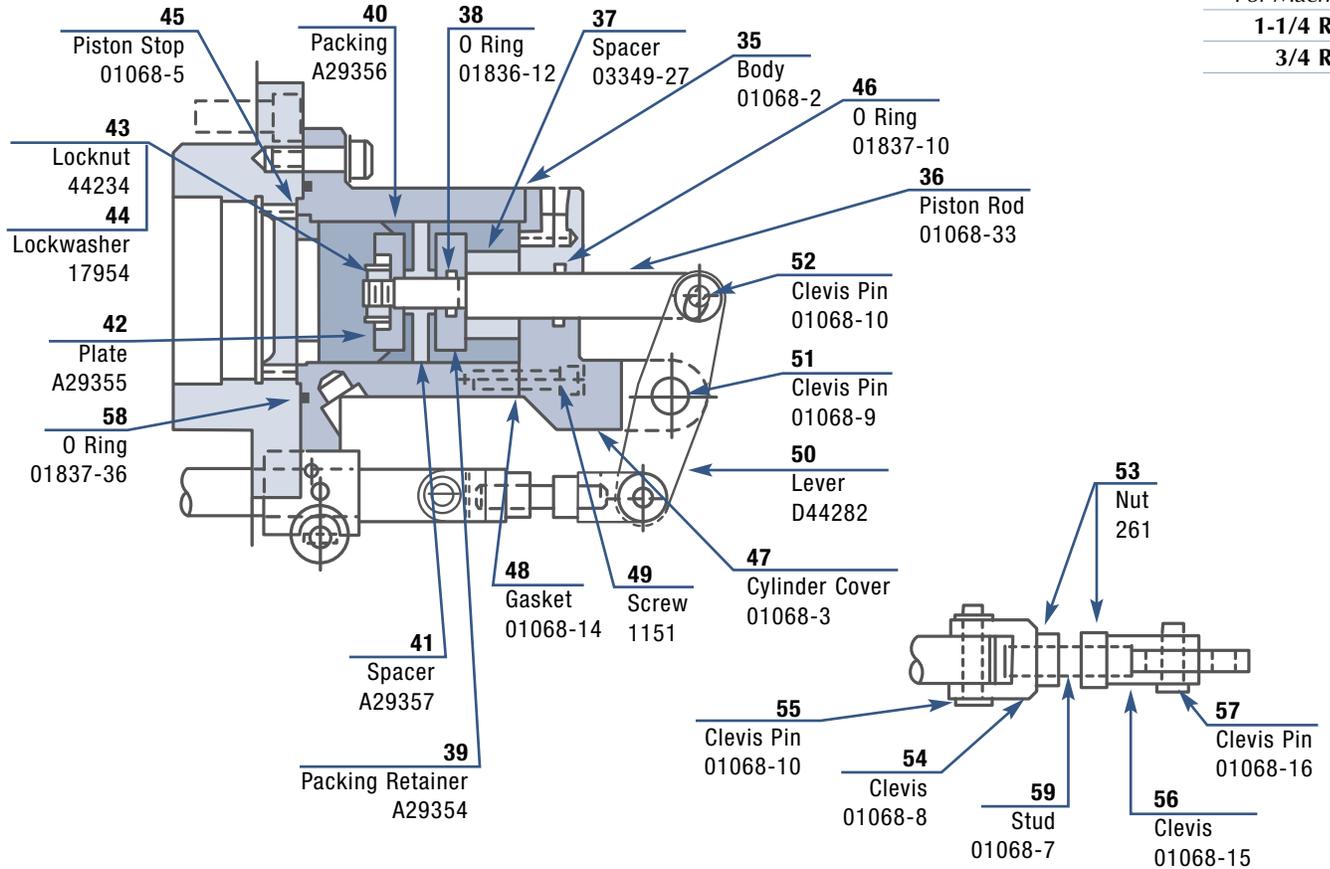
CODE	DESCRIPTION	QTY.	PART #
48	Gasket	1	01085-5
49	Screw	6	1151
50	Lever	1	01085-14
51	Clevis Pin	1	01068-9
52	Washer	1	01068-12
53	Clevis Pin	1	01068-11
54	Clevis	1	01068-8
55	Clevis Pin	1	01068-10
56	Clevis	1	01068-15
57	Clevis Pin	1	01068-16
58	Nut	2	261
59	Adjusting Rod	1	01068-7
60	Screws	4	1065

Air Cylinder Assembly

For Machines

1-1/4 RA-6

3/4 RA-8



MACHINE SIZES

1-1/4" RA-6, 3/4 RA-8

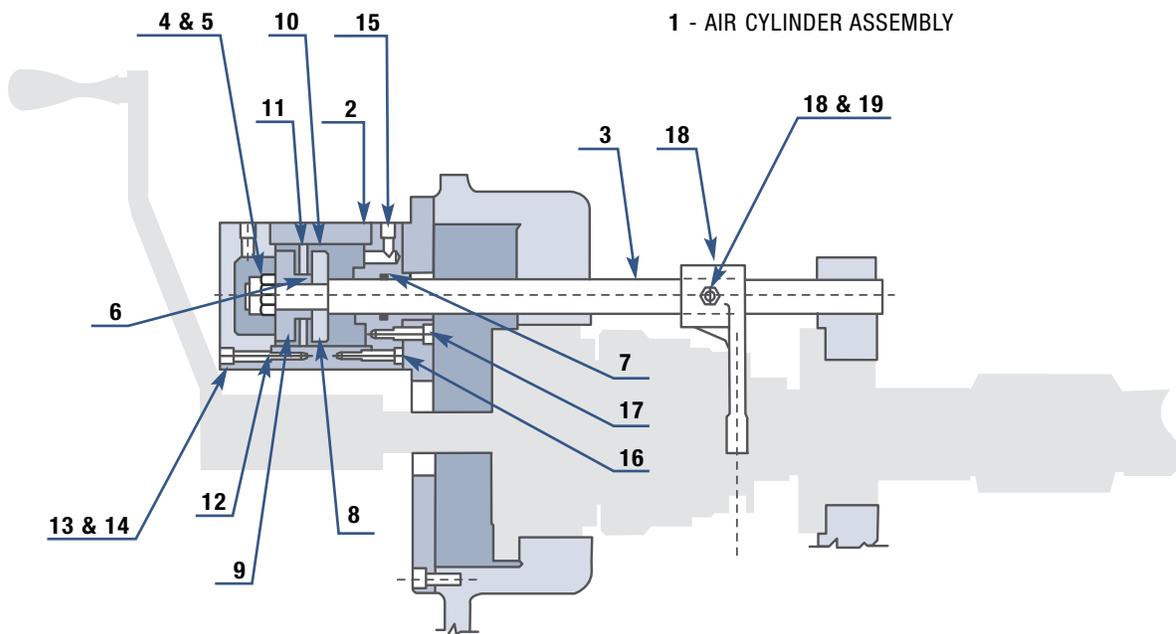
CODE	DESCRIPTION	QTY.	PART #
34	Air Cylinder Assembly	1	01068-32
35	Body	1	01068-2
36	Piston Rod	1	01068-33
37	Spacer	1	03349-27
38	O Ring	1	01836-12
39	Packing Retainer	1	A29354
40	Packing	2	A29356
41	Spacer	1	A29357
42	Plate	1	A29355
43	Locknut	1	44234
44	Lockwasher	1	17954
45	Piston Stop	1	01068-5
46	O Ring	1	01837-10

CODE	DESCRIPTION	QTY.	PART #
47	Cylinder Cover	1	01068-3
48	Gasket	1	01068-14
49	Screw	6	1151
50	Lever	1	D44282
51	Clevis Pin	1	01068-9
52	Clevis Pin	1	01068-10
53	Nut	2	261
54	Clevis	1	01068-8
55	Clevis Pin	1	01068-10
56	Clevis	1	01068-15
57	Clevis Pin	1	01068-16
58	O Ring	1	01837-36
59	Stud	1	01068-7

Feed Clutch Air Cylinder

For Machines

- Start S/N
- AM-40048
- 1-1/4 RB-8
- 1-5/8" RBN-8
- 1-5/8 RB-6
- 2" RB-6
- 1-5/8 RB-8
- 2" RB-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-6
- 3-1/2 RB-8
- 4" 4B-6



MACHINE SIZES

CODE #	DESCRIPTION	QTY.	PART #	PART #	PART #
1	Cylinder Assembly	1	A29475	A29468	A294670
2	Body	1	A29476	A29337	A29337
3	Piston Rod	1	A29478	A29470	A29470
4	Nut	1	2803	2803	2803
5	Cotter Pin	1	51662	51662	51662
6	O Ring	1	01837-10	01837-10	01837-10
7	O Ring	1	01837-14	01837-14	01837-14
8	Plate-Cup Packing	1	A29343	A29343	A29343
9	Retainer-Cup Packing	1	A29342	A29342	A29342
10	Cup Packing	2	A29345	A29345	A29345
11	Packing Spacer	1	A29344	A29344	A29344
12	Gaskets - Cap and Head	2	XA3689	XA3689	XA3689
13	Cap	1	A29339	A29339	A29339
14	Screw	6	1284	1284	1284
15	Head	1	A29477	A29469	A29469
16	Screw	6	1110	1110	1110
17	Screw	3	1106	1106	1106
18	Yoke (Feed Clutch)	1	A38211	A942110	B922110
19	Threaded Taper Pin	1	2535	2535	2535
20	Nut	1	51159	51159	51159

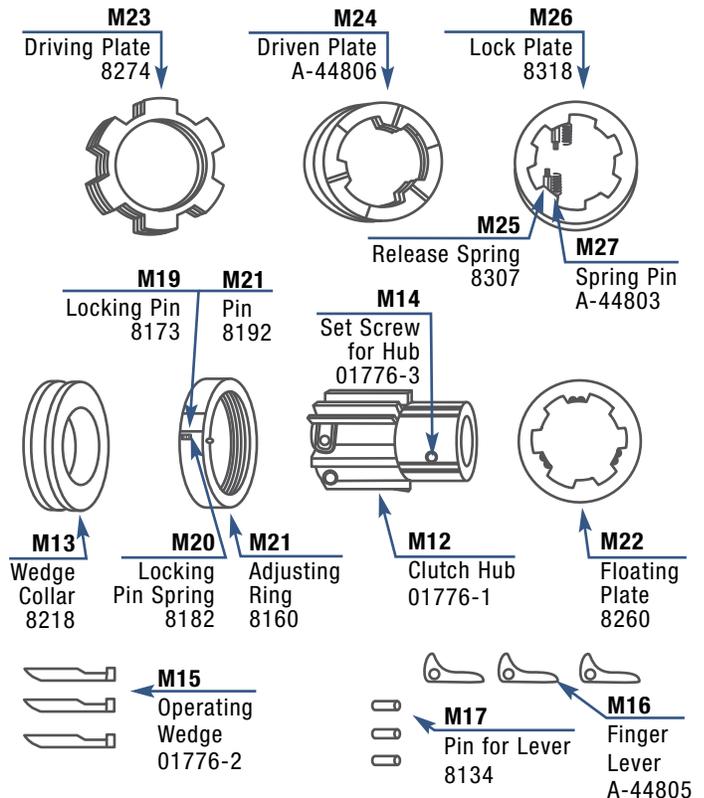
Clutches

For Machines
7/16 RA-6

7/16 RA-6 CLUTCH - LARGE WORM SHAFT

M11 ASSEMBLY 01776

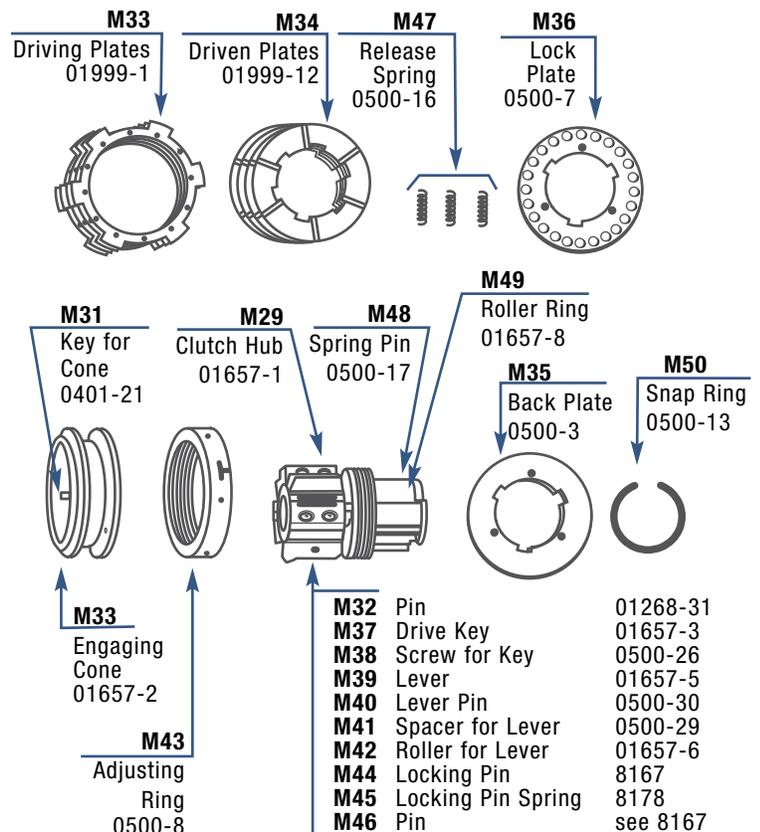
CODE	DESCRIPTION	PART #	QTY.
M12	Clutch Hub	01776-1	1
M13	Wedge Collar	8218	1
M14	Set Screw for Hub	01776-3	2
M15	Operating Wedge	01776-2	3
M16	Finger Lever	A-44805	3
M17	Pin for Lever	8134	3
M18	Adjusting Ring	8160	1
M19	Locking Pin	8173	1
M20	Locking Pin Spring	8182	1
M21	Pin	8192	1
M22	Floating Plate	8260	1
M23	Driving Plate	8274	5
M24	Driven Plate	A-44806	4
M25	Release Spring	8307	6
M26	Lock Plate	8318	1
M27	Spring Pin	A-44803	6



7/16 RA-6 CLUTCH - PULLEY SHAFT

M28 ASSEMBLY 01657-12

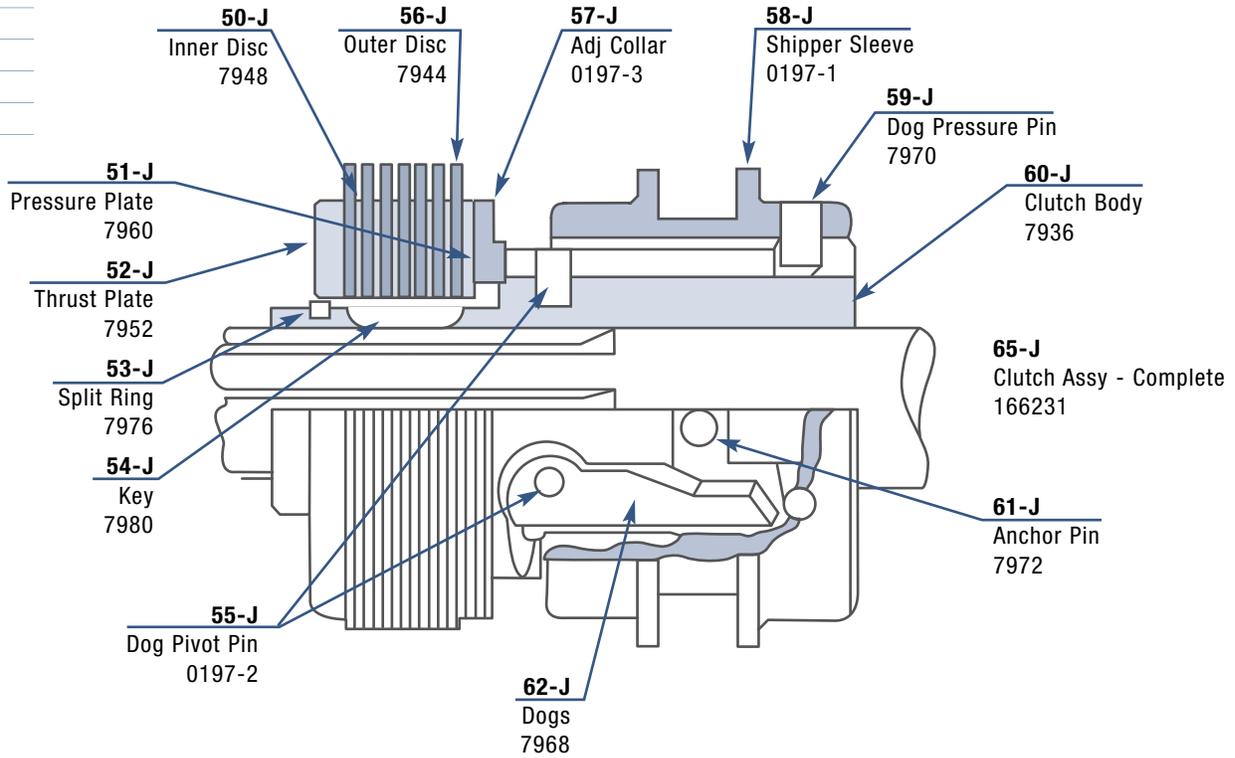
CODE	DESCRIPTION	PART #	QTY.
M29	Clutch Hub	01657-1	1
M30	Engaging Cone	01657-2	1
M31	Key for Cone	0401-21	1
M32	Pin (not part of actual clutch)	01268-31	4
M33	Driving Plates	01999-1	4
M34	Driven Plates	01999-12	3
M35	Back Plate	0500-3	1
M36	Lock Plate	0500-7	1
M37	Drive Key	01657-3	3
M38	Screw for Key	0500-26	3
M39	Lever	01657-5	6
M40	Lever Pin	0500-30	3
M41	Spacer for Lever	0500-29	3
M42	Roller for Lever	01657-6	3
M43	Adjusting Ring	0500-8	1
M44	Locking Pin	8167	1
M45	Locking Pin Spring	8178	1
M46	Pin (roll pin in M44 lock pin)	see 8167	
M47	Release Spring	0500-16	3
M48	Spring Pin	0500-17	3
M49	Roller Ring	01657-8	1
M50	Snap Ring	0500-13	1



Clutches

For Machines

- 9/16 RA-6
- 9/16 RAN-6
- 1" RA
- 1" RAN-6



PULLMORE CLUTCH
 CONSTANT SPEED SHAFT
 WORMWHEEL DRIVE SHAFT

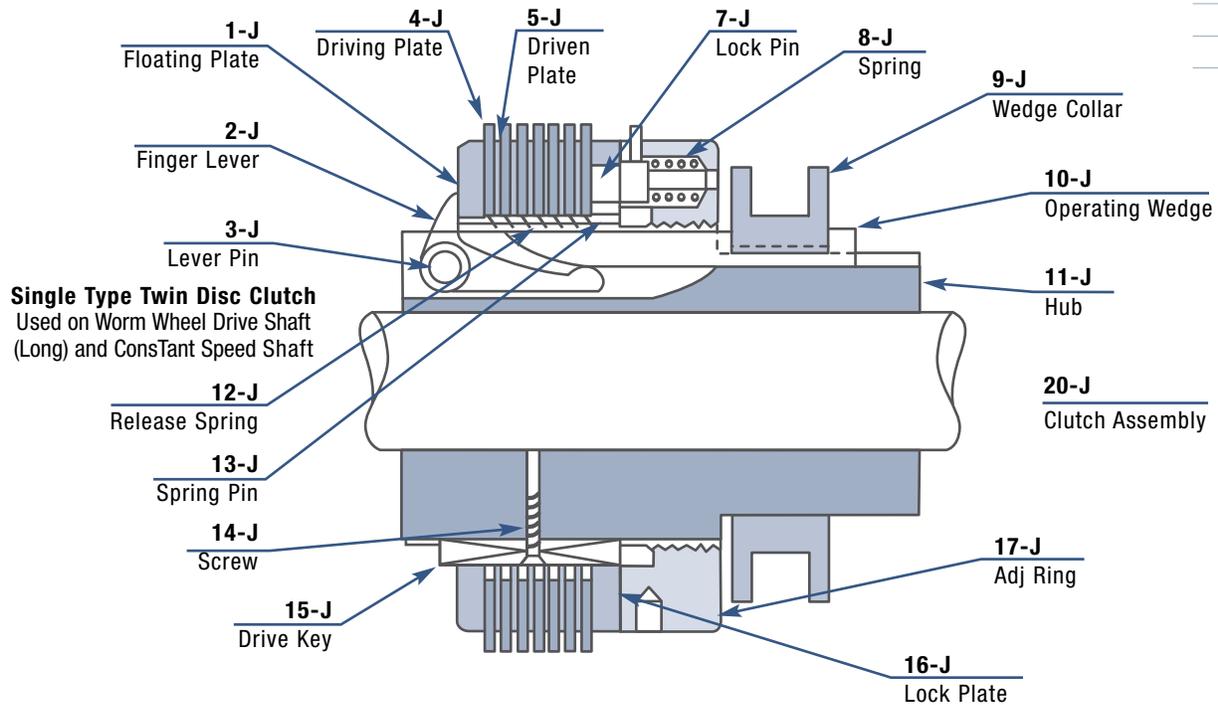
MACHINE SIZE
 9/16 RA-6, 9/16 RAN-6
 1 RA-6
 1 RAN-6

QTY.	DESCRIPTION	CSME PART #	PART #
1	Clutch Assy - Complete	65-J	166231
3	Dogs	62-J	7968
1	Anchor Pin	61-J	7972
1	Clutch Body	60-J	7936
4	Dog Pressure Pin	59-J	7970
1	Shipper Sleeve	58-J	0197-1
1	Adj Collar	57-J	0197-3
7	Outer Disc	56-J	7944
3	Dog Pivot Pin	55-J	0197-2
3	Key	54-J	7980
1	Split Ring	53-J	7976
1	Thrust Plate	52-J	7952
1	Pressure Plate	51-J	7960
6	Inner Disc	50-J	7948
3	Spring Pin		7984
3	Separating Springs	PM330	7978

For Machines

3/4 RA-8

1-1/4 RA-6



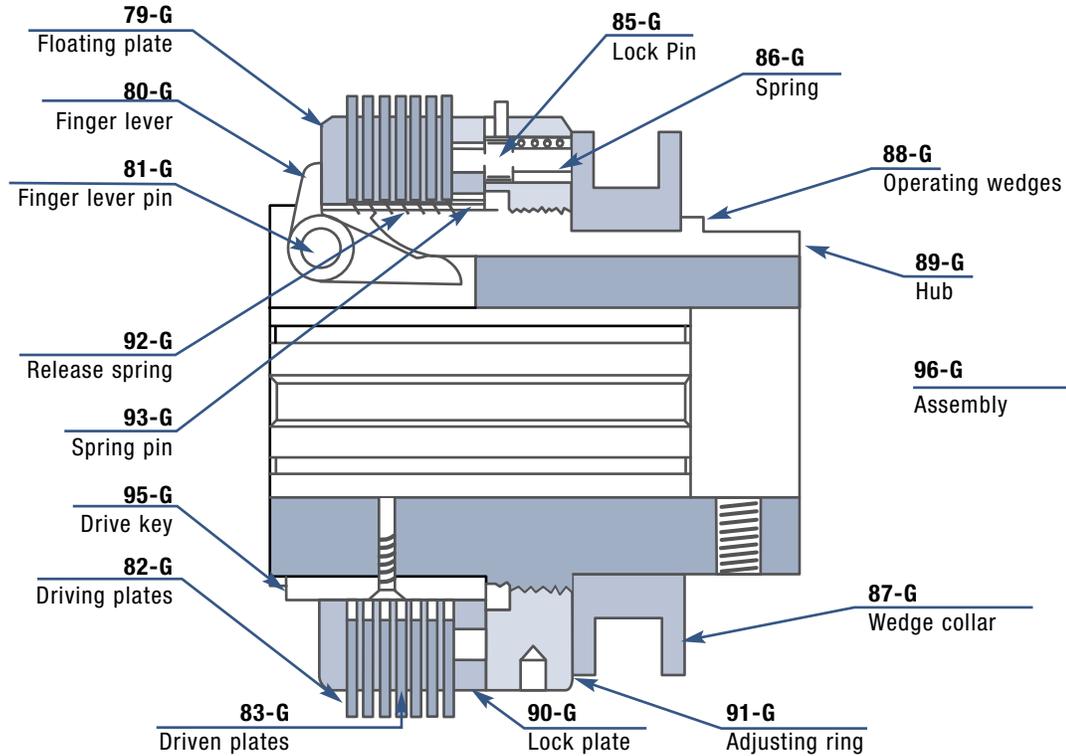
20-FA CONSTANT SPEED CLUTCH
 20-H LARGE WORM SHAFT CLUTCH
 L-4 LARGE WORM SHAFT CLUTCH

		MACHINE SIZE
		3/4 RA-8
		1-1/4 RA-6
QTY.	DESCRIPTION	PART #
	20-J Clutch Assembly	16621
1	17-J Adj Ring	8163
1	16-J Lock Plate	8321
3	15-J Drive Key	8118
3	14-J Screw	0401-26
6	13-J Spring Pin	0404-17
6	12-J Release Spring	8304
1	11-J Hub	8110
3	10-J Operating Wedge	8237
1	9-J Wedge Collar	8222
1	8-J Spring	8179
1	7-J Lock Pin	8168 (Assy)
1	6-J Pin	8190 (Included in 7J)
5	5-J Driven Plate	01999-26
6	4-J Driving Plate	01999-4
3	3-J Lever Pin	8135
3	2-J Finger Lever	8126
1	1-J Floating Plate	8263

Clutches

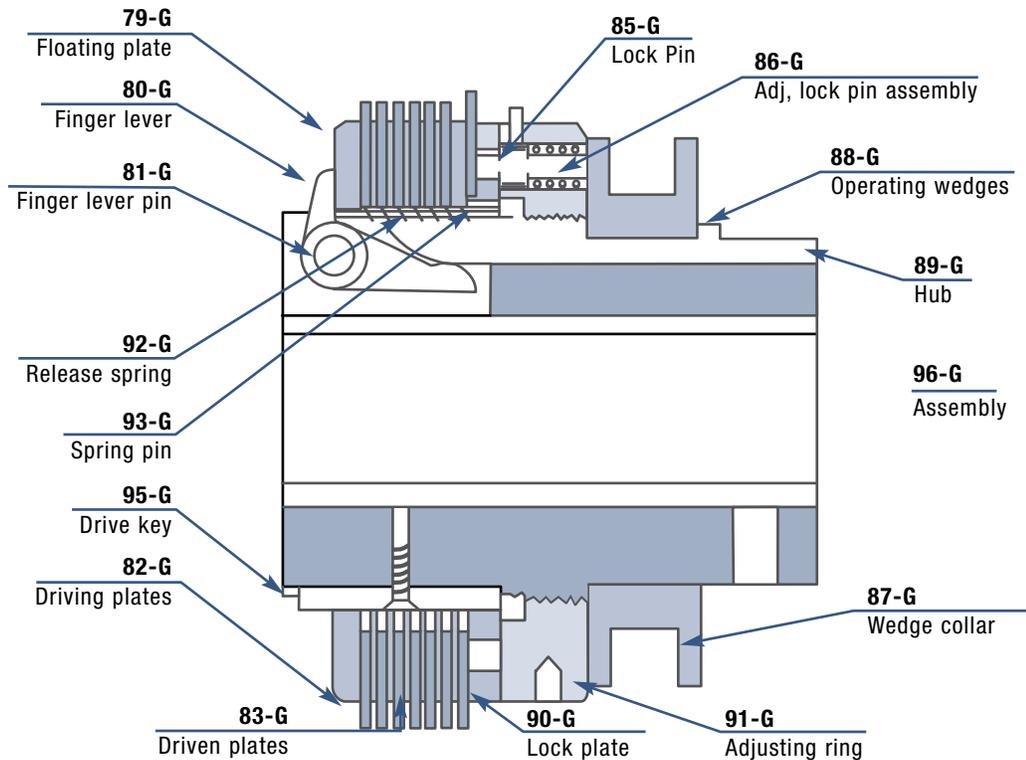
For Machines

- 1-1/4 RB-8
- 1-5/8 RB-6
- 1-5/8 RBN-8
- 2 RB-6
- 2-5/8 RB-4
- 1-5/8 RB-8
- 2" RB-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2 RB-4
- 3-1/2 RB-6
- 3-1/2 RB-8
- 4 RB-6
- 5-1/2 RB-4



20-H AND 20-F CLUTCH ASSEMBLY

		20-F Constant Speed Shaft (High and low speed clutch)	20-F Constant Speed Shaft (High and low speed clutch)		
		20-H Large Worm Shaft (Feed clutch)	20-H Large Worm Shaft (Feed clutch)		
		MACHINE SIZE	MACHINE SIZE		
		1-1/4 RB-8, 1-5/8 RB-6, 1-5/8 RBN-8, 2 RB-6, 2-5/8 RB-4	1-5/8 RB-8, 2 RB-8, 2-5/8 RB-6, 2-5/8 RB-8, 3-1/2 RB-4, 3-1/2 RB-6, 3-1/2 RB-8, 4 RB-6, 5-1/2 RB-4		
CODE #	DESCRIPTION	QTY	PART #	QTY	PART #
96-G	Assembly		16617		16618
95-G	Drive key	3	8117	3	8116
	Drive key screw	3	0401-26	3	0401-26
93-G	Spring pin	6	0404-17	6	8320
92-G	Release spring	6	8304	6	8306
91-G	Adjusting ring	1	8161	1	8162
90-G	Lock plate	1	8319	1	A44811
89-G	Hub	1	8108	1	8109
88-G	Operating wedges	3	8233	3	8234
87-G	Wedge collar	1	8220	1	8221
85-G	Adj lock pin assembly	1	8169, 8191	1	8169, 8191
83-G	Driven plates	5	8293, 01999-27	6	01999-28
82-G	Driving plates	6	8275, 01999-5	7	01999-6
81-G	Finger lever pin	3	8135	3	8133
80-G	Finger lever	3	8126	3	8124
79-G	Floating plate	1	8261	1	8262
86-G	Spring	1	30244	1	30244



20-H CLUTCH, LARGE WORM SHAFT

20-H
Clutch, Large Worm Shaft

MACHINE SIZE
1-5/8 RB-8, 2 RB-8,
2-5/8 RB-6, 2-5/8 RB-8,
3-1/2 RB-4, 3-1/2 RB-6, 3-1/2 RB-8,
4 RB-6, 5-1/8 RB-4

CODE #	DESCRIPTION	QTY	PART #
20-H	Assembly		01764-3
95-G	Drive key	3	8116
	Drive key screw	3	0401-26
93-G	Spring pin	6	8320
92-G	Release spring	6	8306
91-G	Adjusting ring	1	8162
90-G	Lock plate	1	A44811
89-G	Hub	1	01764-37
88-G	Operating wedges	3	8234
87-G	Wedge collar	1	8221
86-G	Adj lock pin spring	1	30244
85-G	Adj lock pin assembly	1	8169, 8191
83-G	Driven plates	6	01999-28
82-G	Driving plates	7	01999-6
81-G	Finger lever pin	3	8133
80-G	Finger lever	3	8124
79-G	Floating plate	1	8262

Clutches

For Machines

1-5/8 RB-8

2 RB-8

2-5/8 RB-6

2-5/8 RB-8

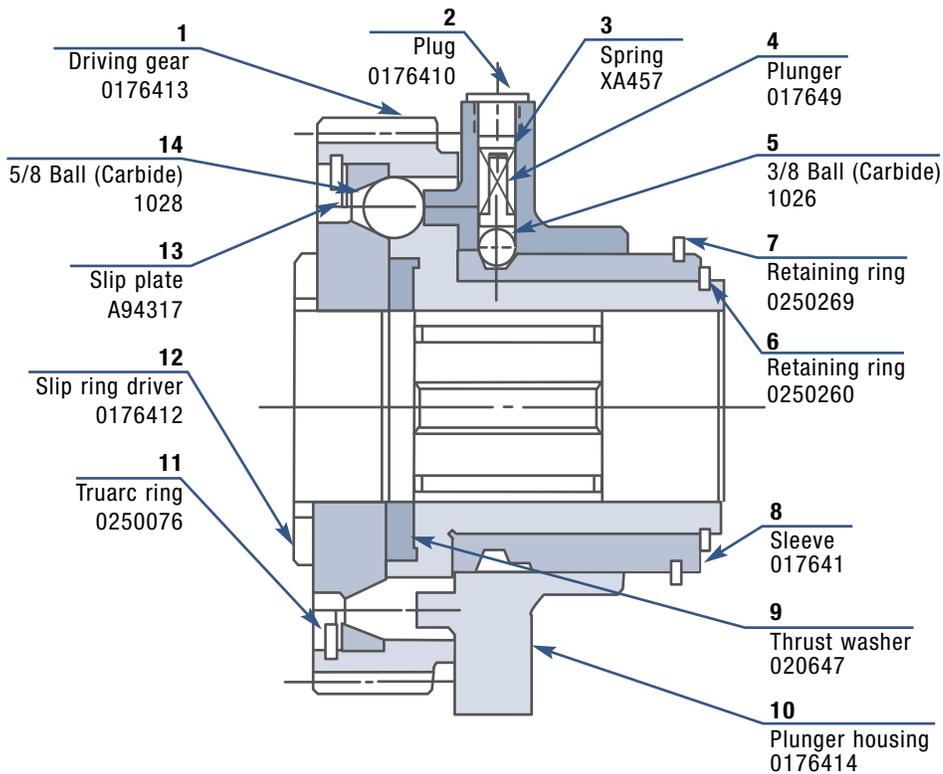
3-1/2 RB-4

3-1/2 RB-6

3-1/2 RB-8

4" RB-6

5-1/8 RB-4



0176416 SLIP CLUTCH ASSEMBLY

KEY #	DESCRIPTION	QTY	PART #	MACHINE SIZE
				1-5/8 RB-8, 2 RB-8, 2-5/8 RB-6, 2-5/8 RB-8, 3-1/2 RB-4, 3-1/2 RB-6 3-1/2 RB-8, 4 RB-6, 5-1/8 RB-4
1	Driving gear	1	0176413	
2	Plug	8	0176410	
3	Spring	8	XA457	
4	Plunger	8	017649	
5	3/8 Ball (Carbide)	8	1026	
6	Retaining ring	1	0250260	
7	Retaining ring	1	0250269	
8	Sleeve	1	017641	
9	Thrust washer	1	020647	
10	Plunger housing	1	0176414	
11	Truarc ring	1	0250076	
12	Slip ring driver	1	0176412	
13	Slip plate	1	A94317	
14	5/8 Ball (Carbide)	6	1028	

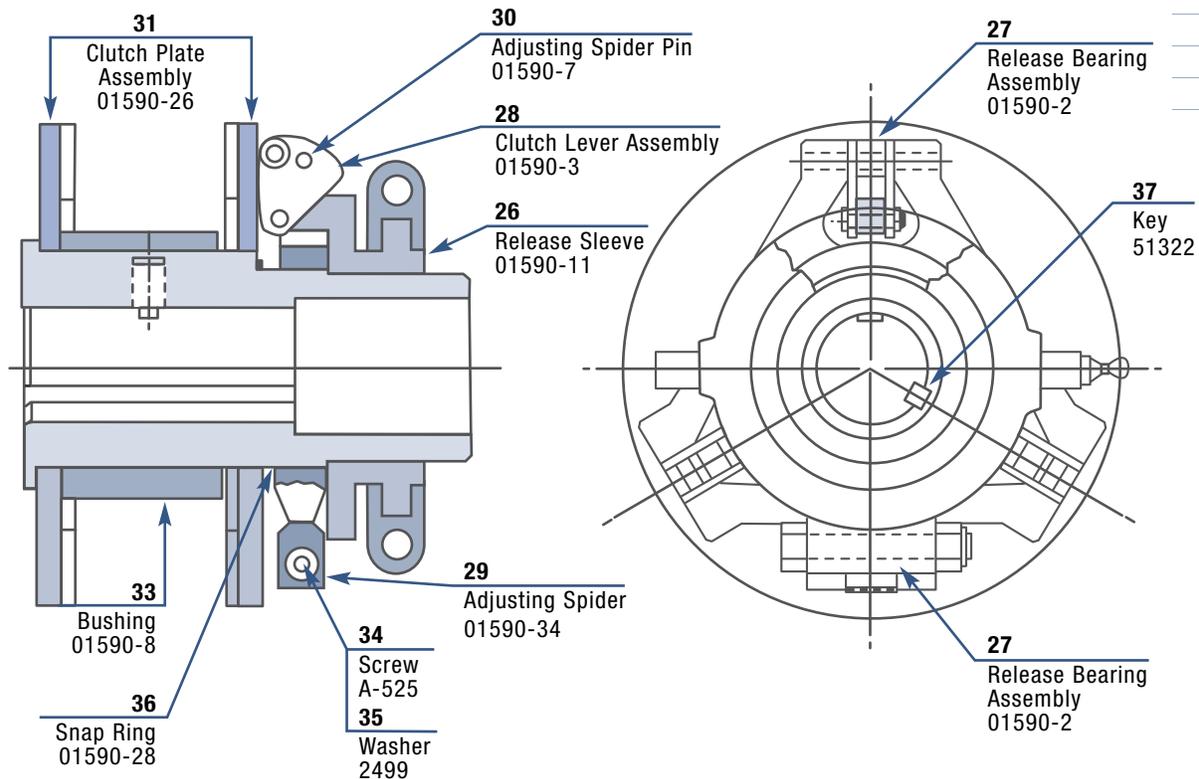
For Machines

1-1/4 RB-8

1-5/8 RBN-8

1-5/8 RB-6

2 RB-6



REVERSE CLUTCH

Code #	Description	MACHINE SIZE	
		Qty	Part #
25	Clutch Assembly	1	01590-12
26	Release Sleeve	1	01590-11
27	Release Bearing Assembly	1	01590-2
28	Clutch Lever Assembly	1	01590-3
29	Adjusting Spider	1	01590-34
30	Adjusting Spider Pin	3	01590-7
31	Clutch Plate Assembly	2	01590-26
32	Clutch Body Assembly	1	01590-1
33	Bushing	1	01590-8
34	Screw	1	A-525
35	Washer	1	2499
36	Snap Ring	1	01590-28
37	Key	1	51322

Clutches

For Machines

- 7/16 RA-6
- 5/8 RN-6
- 5/8 RN-6
- 9/16 RA-6
- 9/16 RAN-6
- 1" RA-6



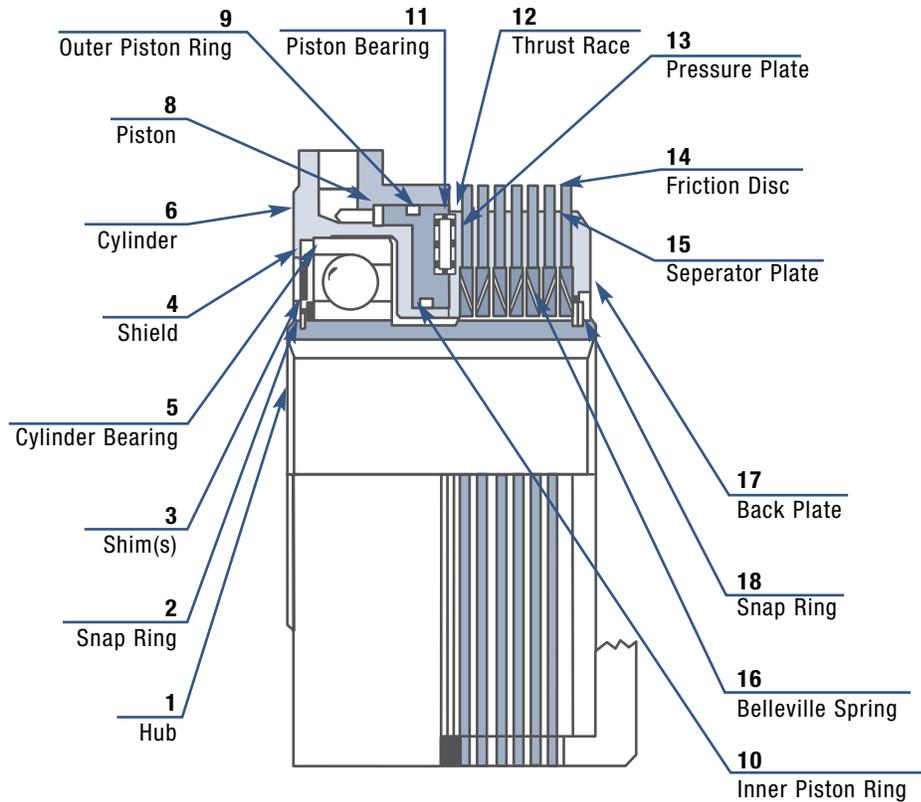
LOGAN: HI-LO CLUTCHES

	Machine	Clutch Part #	Steel Disc (teeth)	Description	Disc Kit	Bearing Kit	SealKit	Complete Repair Kit
1" RAN-6	7/16 RA-6	S30-0015		High Speed	501-3000	502-3000	503-3010	500-3020
3/4 RA-8		S25-003		Low Speed & Brake	501-2500	502-2500	503-2510	500-2520
1-1/4 RA-6								
5-1/4 RAC-6	5/8 RN-6	S35-0023		High & Low Speed	501-3500	502-3500	503-3010	500-3520
1-1/4 RB-8		Cone Brake	S30-0017		Brake	501-3000	502-3000	503-3010	500-3020
1-5/8 RBN-8								
1-5/8 RB-6	5/8 RN-6	S35-0023		High Speed	501-3500	502-3500	503-3010	500-3520
2" RB-6	Band Brake	S35-0029		Low Speed	501-3500	502-3500	503-3010	500-3520
1-5/8 RB-8		S35-0074		Brake	501-3512	502-3500	503-3510	500-3513
2" RB-8	5/8 RN-6	S35-0023		High Speed	501-3500	502-3500	503-3010	500-3520
2-5/8 RB-6	Band Brake	S35-0029		Low Speed	501-3500	502-3500	503-3010	500-3520
2-5/8 RB-8		S35-0074		Brake	501-3512	502-3500	503-3510	500-3513
3-1/2 RB-4								
4" RB-6	9/16 RA-6	S35-0035		High & Low Speed	501-3505	502-3500	503-3513	500-3525
6" RPA-8	9/16 RAN-6	T35-0005	32	Brake	501-3500	502-3504	503-3512	500-3524
8" RPA-6	1"RA-6	S35-0008	32	High & Low Speed	501-3500	502-3500	503-3510	500-3520
10" RPA-4	1"RAN-6	NS-350-000-038	33	High & Low Speed	501-3598	502-3500	503-3510	n/a
		T35-0005	33	Low Speed	501-3598	502-3501	503-3500	500-3527
	3/4 RA-8	T45-0007	45	High Speed	501-4500	502-4504	503-4510	500-4511
	1-1/4 RA-6	T45-0006	45	Low Speed	501-4500	502-4504	503-4510	500-4511
	5-1/4 RAC-6	T35-0005	32	Low Speed	501-3500	502-3504	503-3512	500-3524
		T45-0007	22	High Speed	501-4598	502-4504	503-4510	500-4524
		T45-0006	22	Low Speed	501-4598	502-4504	503-4510	500-4524
		T35-0005	33	Low Speed	501-3598	502-3501	503-3500	500-3527
	1-1/4 RB-8	T45-0007	45	High, Low, & Brake	501-4500	502-4504	503-4510	500-4511
	1-5/8 RBN-8	T45-0011	45	Power Reverse	501-4500	502-4504	503-4510	500-4511
	1-5/8 RB-6	T45-0007	22	High, Low, & Brake	501-4598	502-4504	503-4510	500-4524
	2" RB-6	T45-0011	22	Power Reverse	501-4598	502-4504	503-4510	500-4524
	1-5/8 RB-8	S55-0002	42	High & Low Speed	501-5500	502-5500	503-5510	500-5520
	2" RB-8	S40-0008	42	Brake	501-4000	502-4000	503-4010	500-4020
	2-5/8 RB-6	S55-0010	42	Power Reverse	501-5500	502-5500	503-5510	500-5520
	2-5/8 RB-8	S55-0002	25	High & Low Speed	501-5598	502-5500	503-5510	500-5524
	3-1/2 RB-4	NS-550-000-038	25	High & Low Speed	501-5598	502-5500	503-5510	500-5524
	4" RB-6							
	6" RPA-8	S55-0002		High & Low Speed	501-5500	502-5500	503-5510	500-5520
	8" RPA-6	S40-0010			501-4000	502-4000	503-4010	500-4020
	10" RPA-4							

Disc kit includes: Clutch plates, release spring washers, and back plate retaining ring.

Bearing kit includes: Angular contact, needle, and thrust bearing with retaining ring.

Seal kit includes: Cylinder and Piston O-rings.



GENERAL PARTS REFERENCE FOR LOGAN OR CYCLO HI-LO

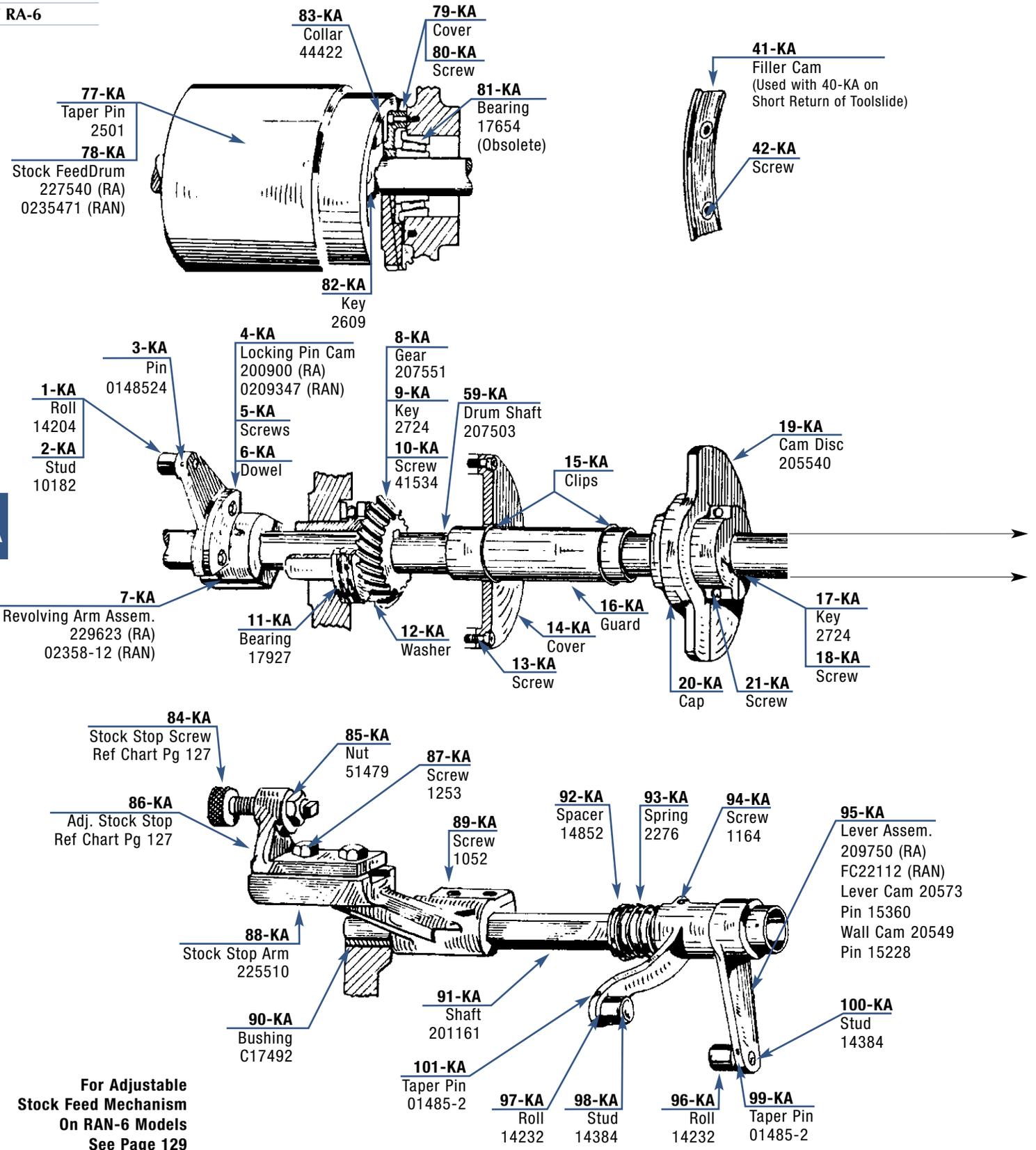
KEY #	DESCRIPTION
1	Hub
2	Snap Ring
3	Shim(s)
4	Shield
5	Cylinder Bearing
6	Cylinder
8	Piston
9	Outer Piston Ring
10	Inner Piston Ring
11	Piston Bearing
12	Thrust Race
13	Pressure Plate
14	Friction Disc
15	Seperator Plate
16	Belleville Spring
17	Back Plate
18	Snap Ring
19	Plug (not shown)

Main Drum Shaft and Stock Stop

For Machines

9/16 RA-6

1" RA-6



For Adjustable Stock Feed Mechanism On RAN-6 Models See Page 129

Main Drum Shaft and Stock Stop

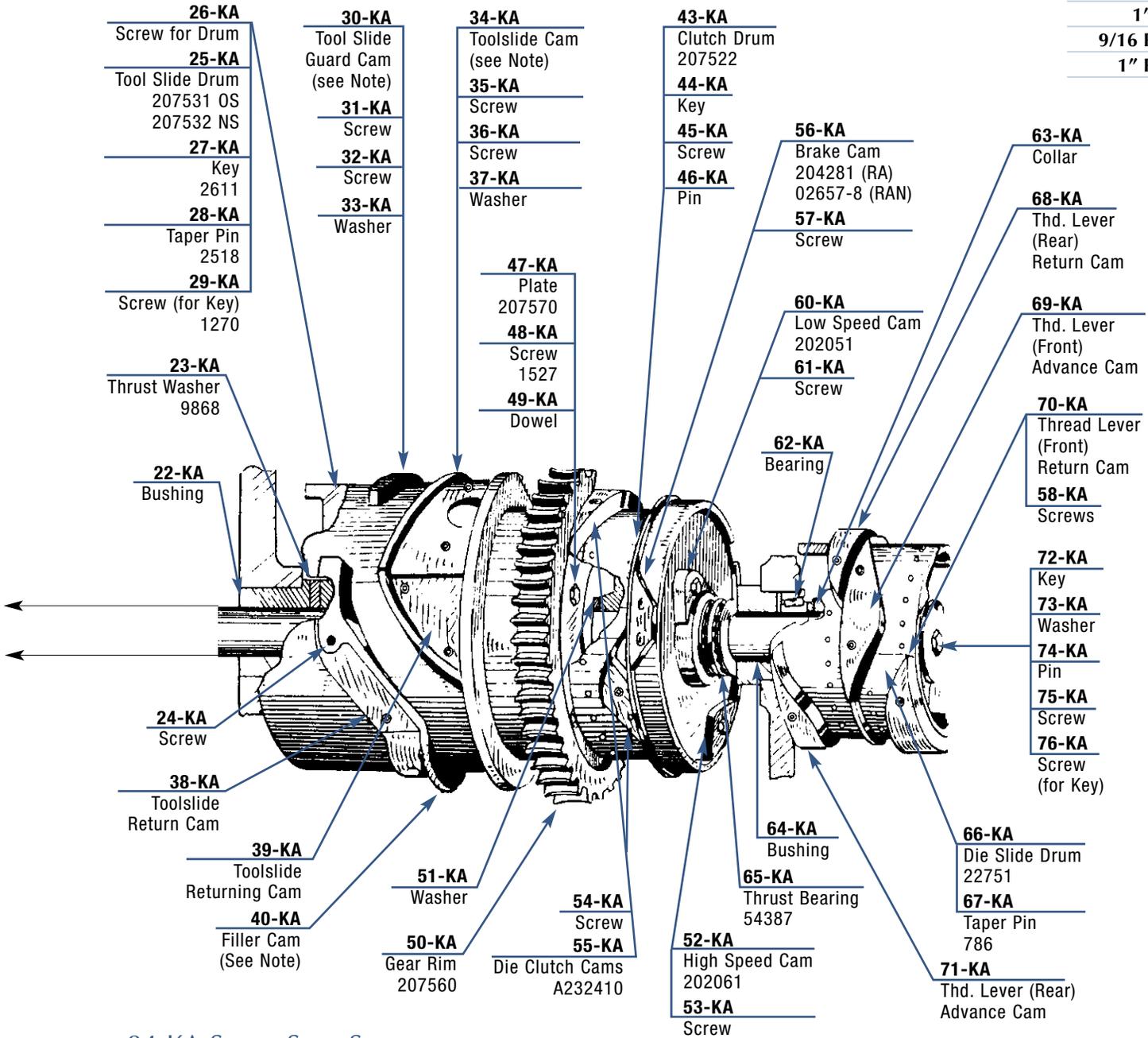
For Machines

9/16 RA-6

1" RA-6

9/16 RAN-6

1" RAN-6



84-KA STOCK STOP SCREW

MACHINE SIZE	PART NUMBER	DESCRIPTION
9/16 RA, RAN-6	XA-2528	Standard 1" Head
	XA-2428OSHD	Oversize 1-1/2" Head
1" RA, RAN-6	XA-2528REV	Revolving Head

86-KA STOCK STOP BODY

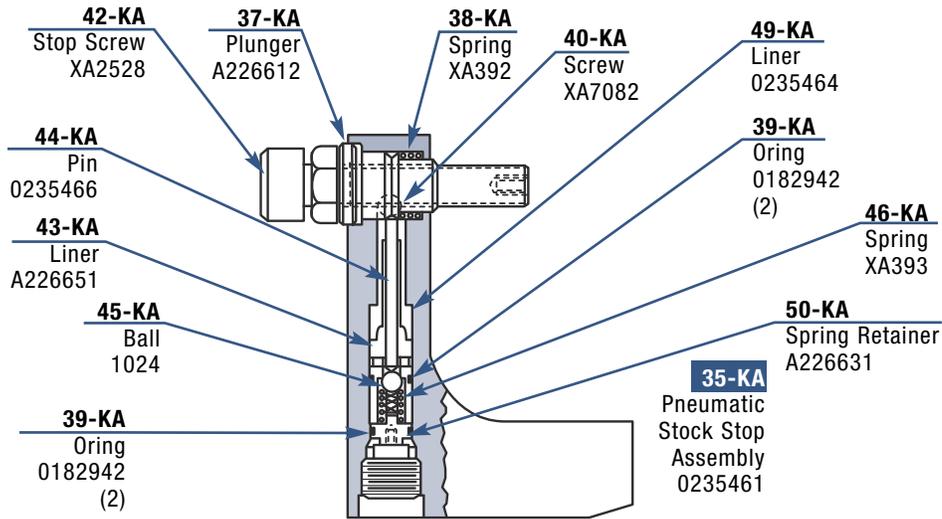
MACHINE SIZE	PART NUMBER
9/16 RA-6	201102
1" RA-6	A22110

Stock Stop and Pneumatic Depletion Signal

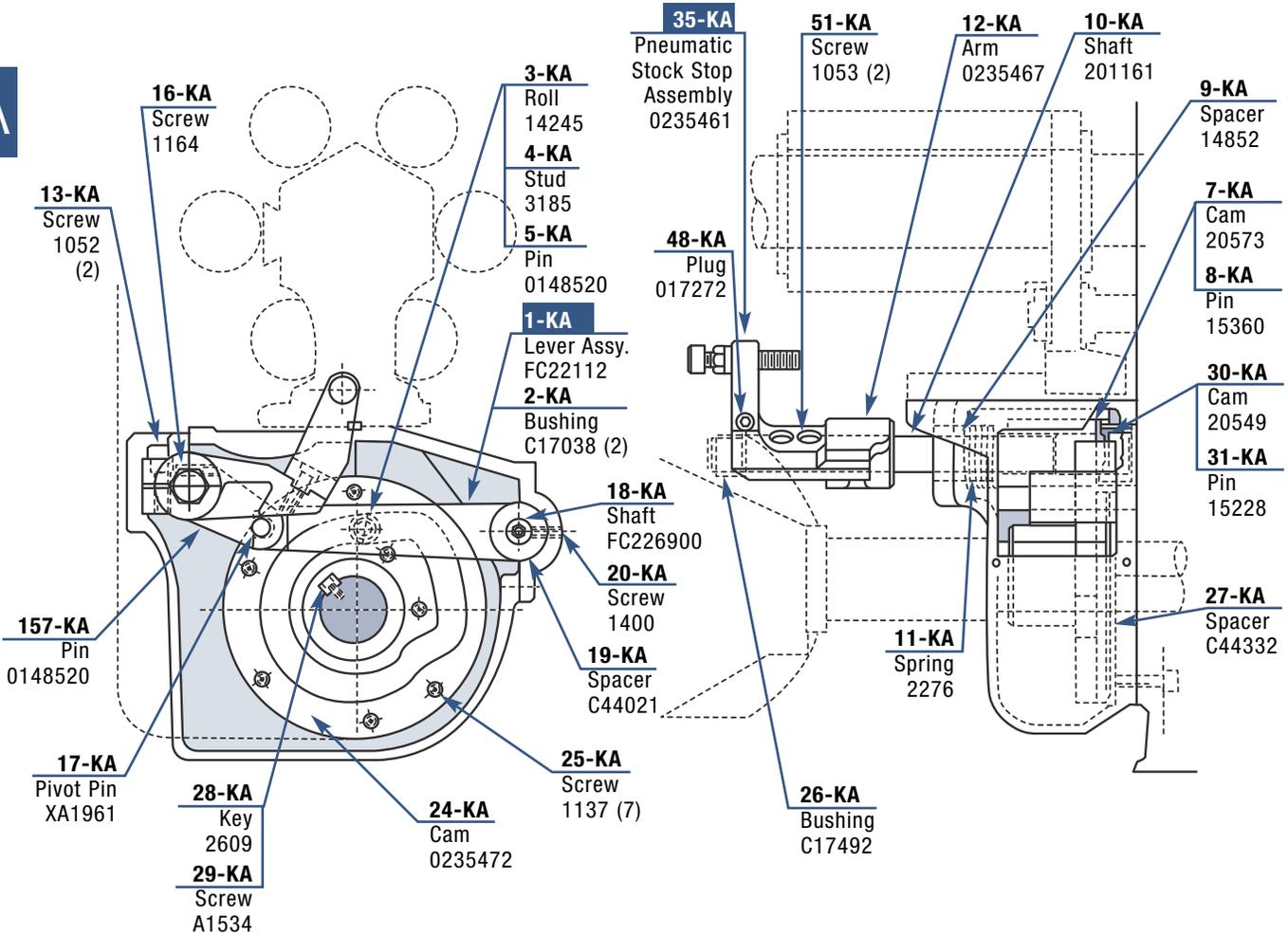
For Machines

9/16 RAN-6

1" RAN-6



KA

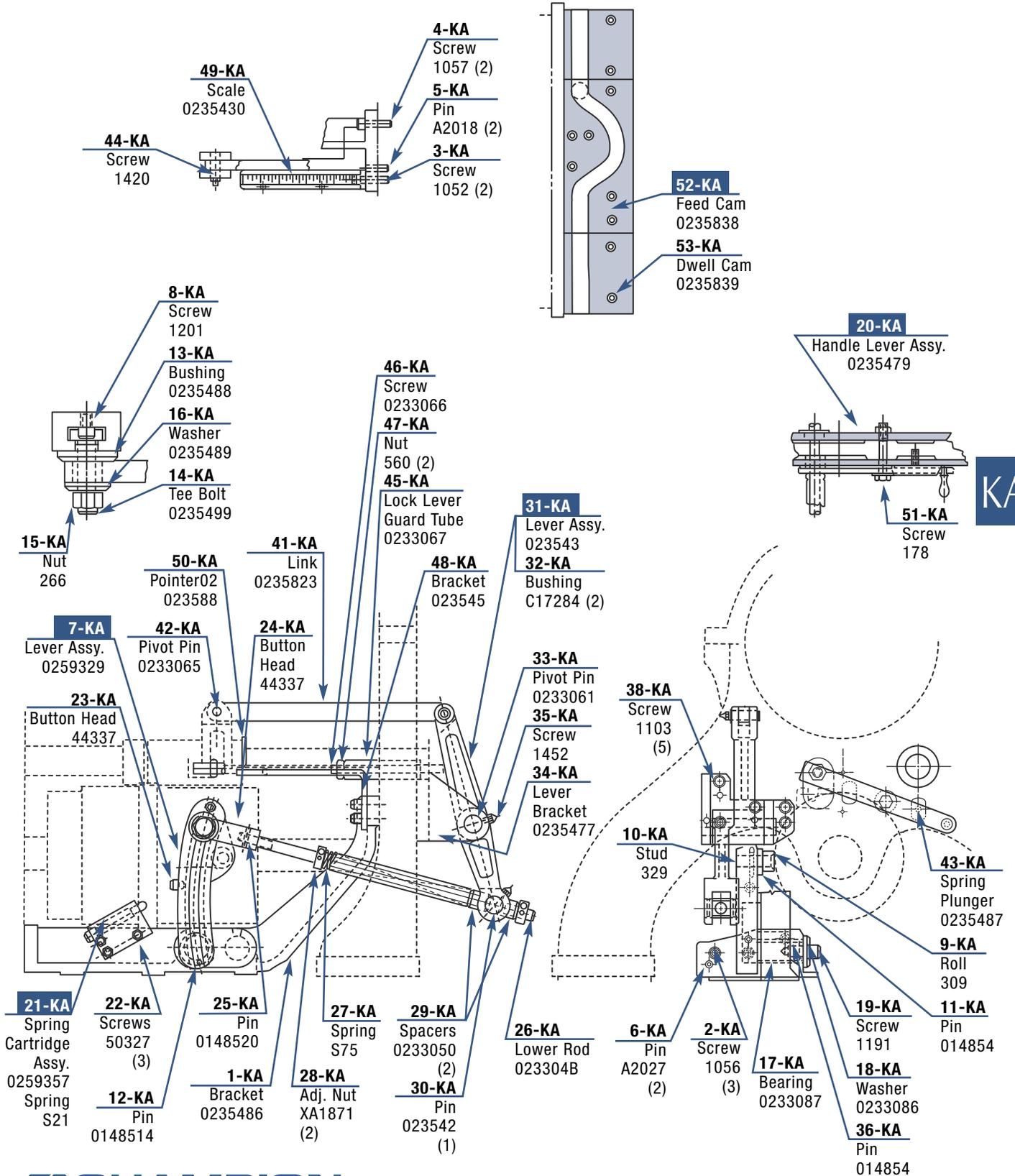


Adjustable Stock Feed Mechanism

For Machines

9/16 RAN-6

1" RAN-6



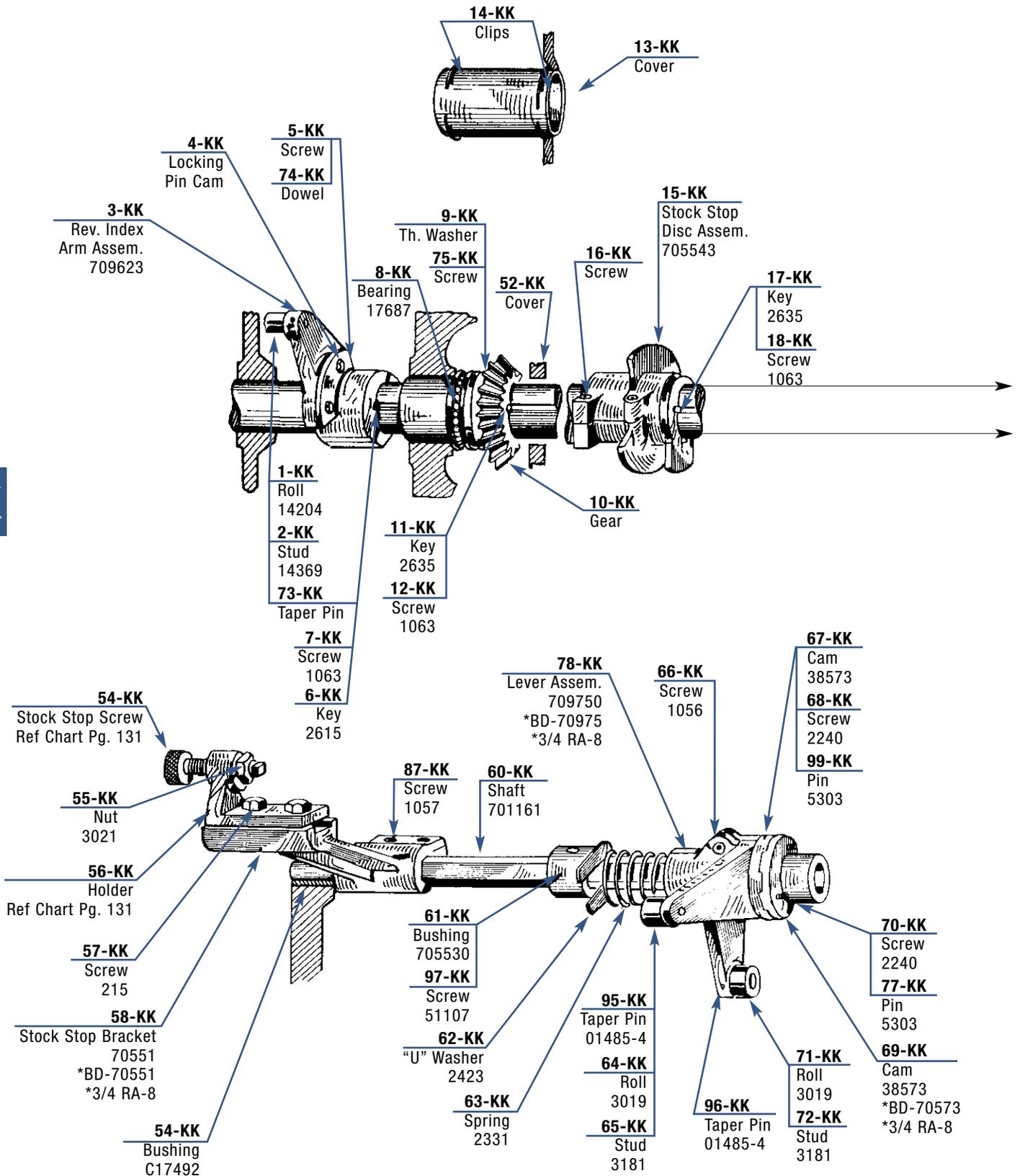
KA

Main Drum Shaft and Stock Stop

For Machines

1-1/4 RA-6

3/4 RA-8



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CHAMPION
SCREW MACHINE ENGINEERING, INC.

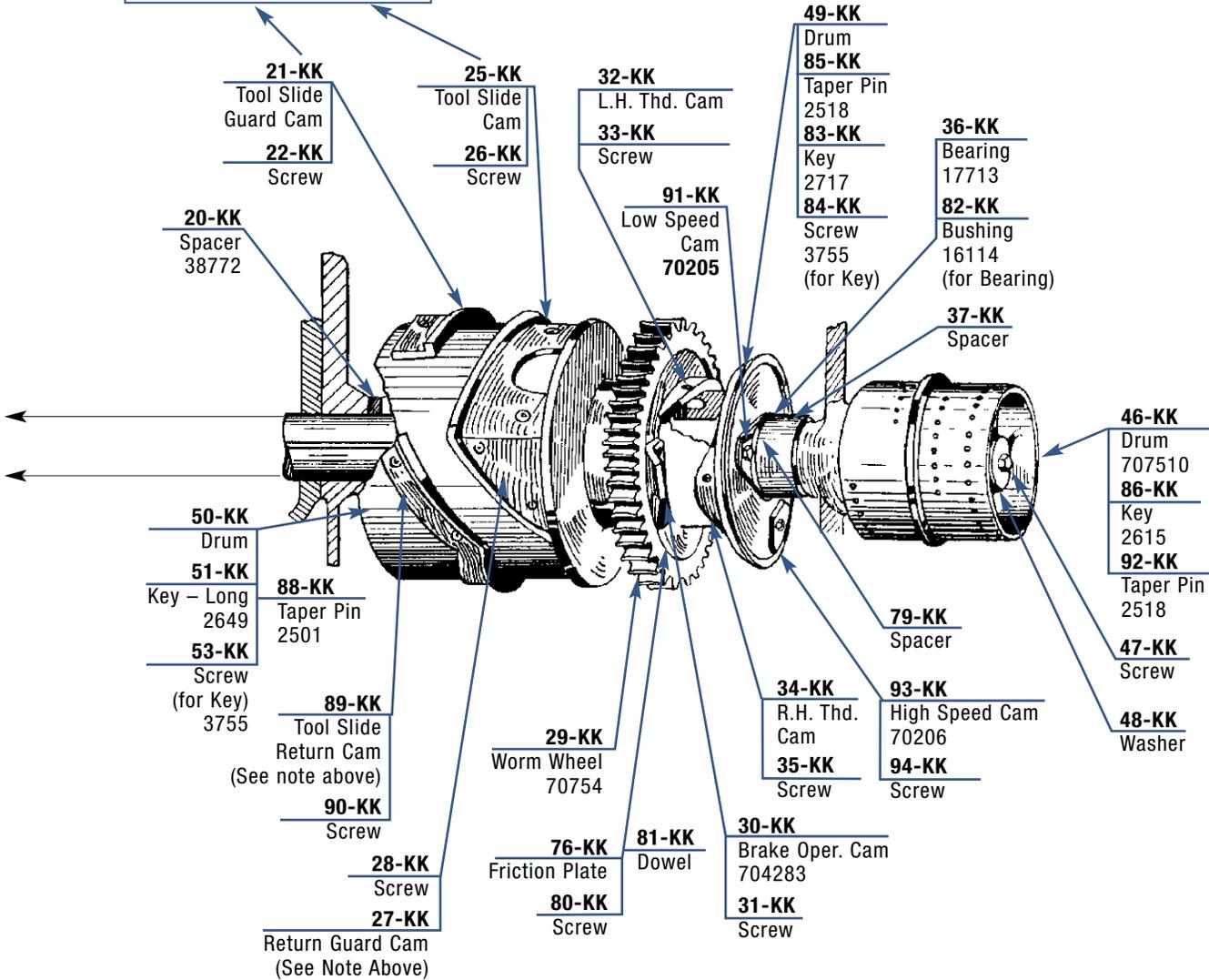
Main Drum Shaft and Stock Stop

For Machines

1-1/4 RA-6

3/4 RA-8

Note! When ordering cams
21-KK – 27-KK & 89-KK specify
whether full or short toolslide
return is used – for cam 25-KK
specify lead.



KK

54-KK STOCK STOP SCREW

MACHINE SIZE	PART NUMBER	DESCRIPTION
1-1/4 RA-6	XA-2507	Standard 1-3/8" Head
	XA-2507OSHD	Oversize 2" Head
	XA-2507REV	Revolving Head
3/4 RA-8	XA-2530	Standard Head

56-KK STOCK STOP BODY

MACHINE SIZE	PART NUMBER
1-1/4 RA-6	70110

Main Drum Shaft and Cam

For Machines

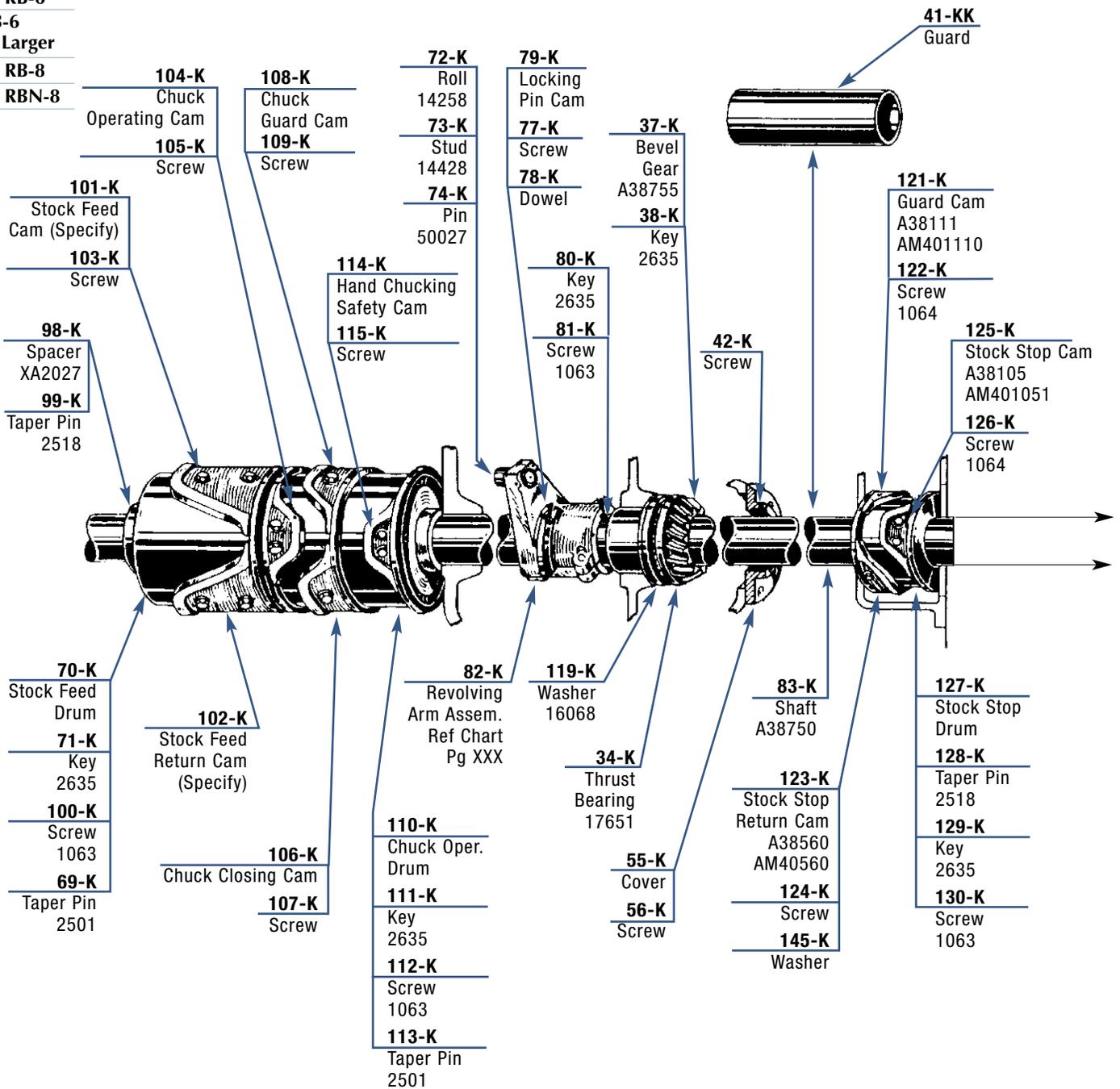
1-5/8 RB-6

2" RB-6

and Larger

1-1/4 RB-8

1-5/8 RBN-8



K

Main Drum Shaft and Cams

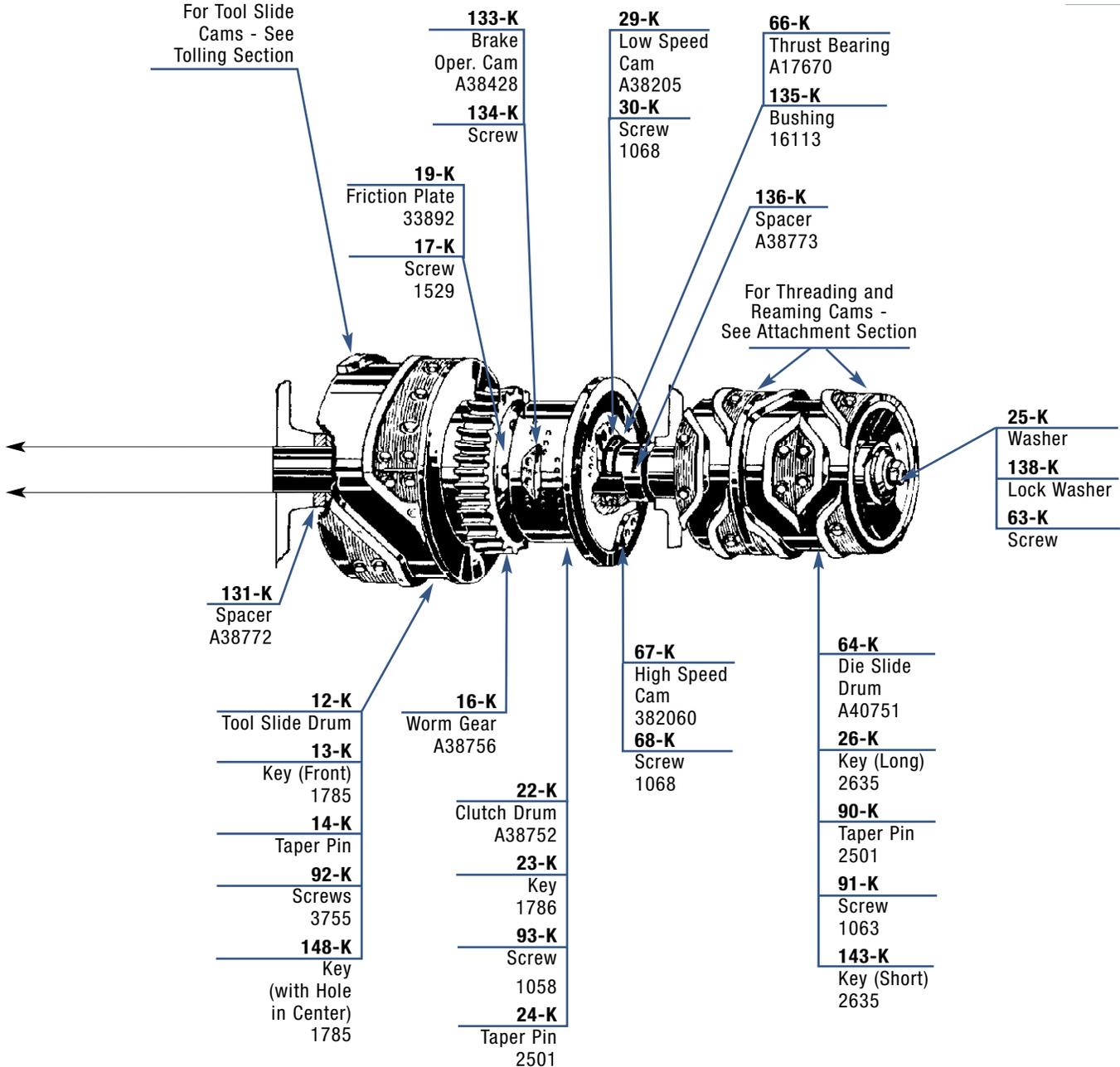
For Machines

1-5/8 RB-6

2" RB-6

1-1/4 RB-8

1-5/8 RBN-8



K

Main Drum Shaft and Cams

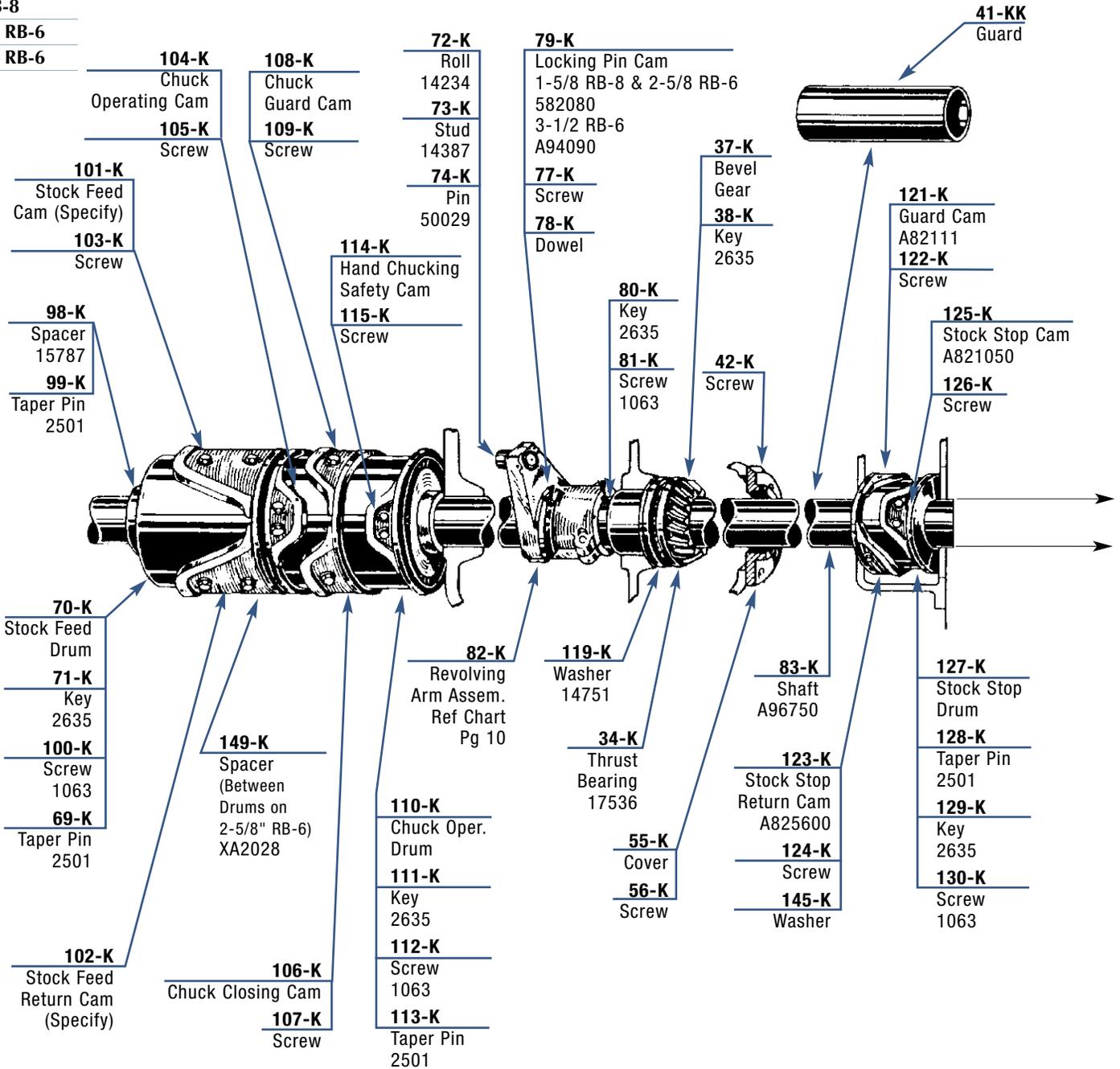
For Machines

1-5/8 RB-8

2" RB-8

2-5/8 RB-6

3-1/2 RB-6



K

Main Drum Shaft and and Cams

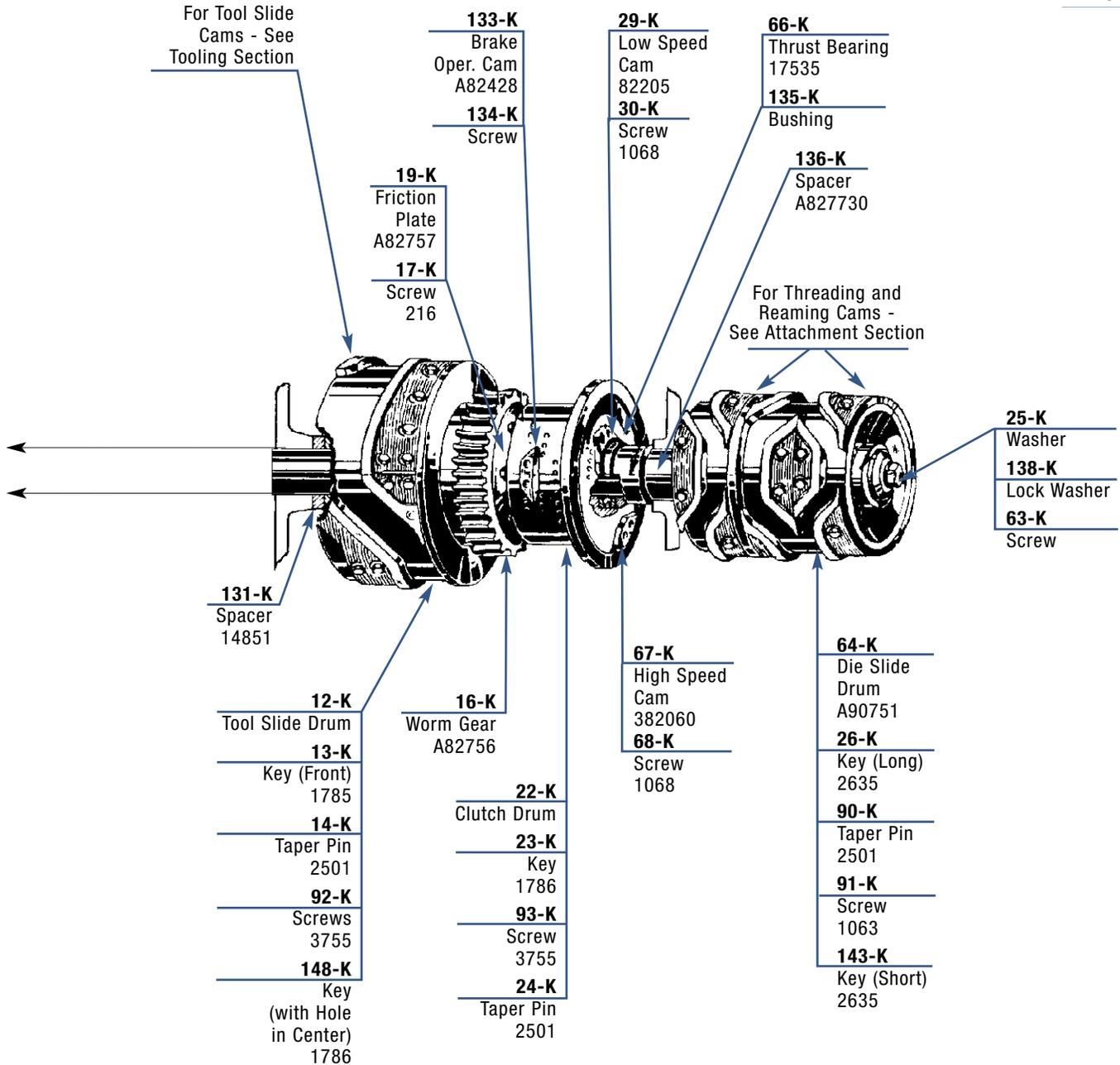
For Machines

1-5/8 RB-8

2" RB-8

2-5/8 RB-6

3-1/2 RB-6

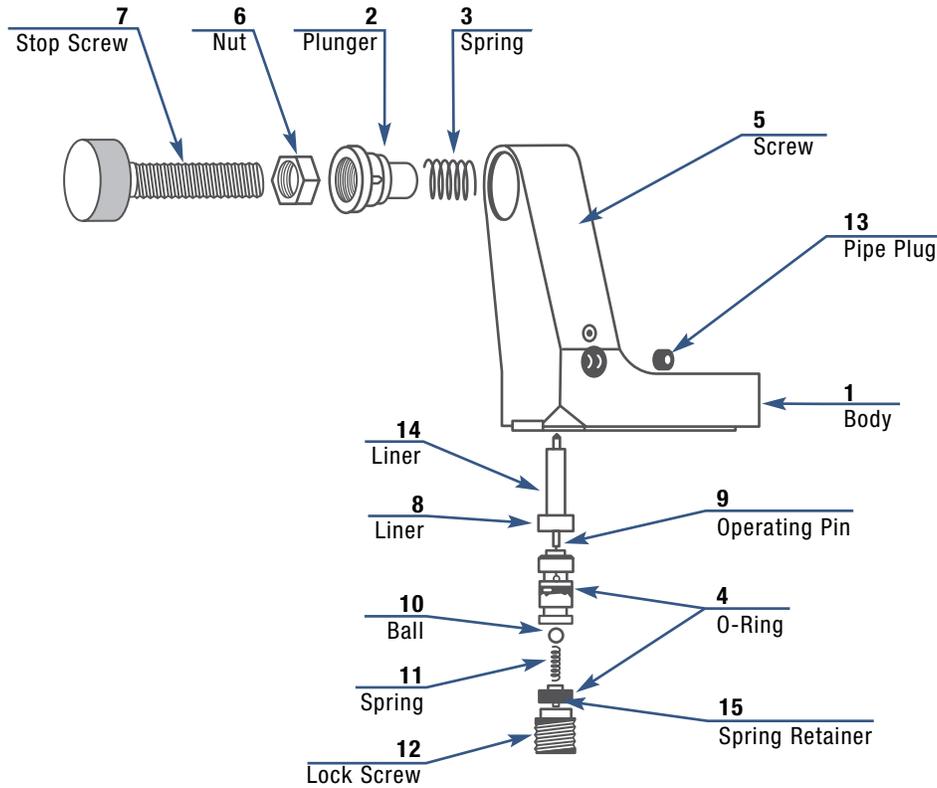


K

Air Operated Stock Stops

For Machines

- 3/4 RA-8
- 9/16 RA-6
- 1" RA-6
- 9/16 RAN-6
- 1" RAN-6
- 1-1/4 RA-6
- 1-1/4 RB-8
- 1-5/8 RBN-8
- 1-5/8 RB-6
- 2-5/8 RB-6



AIR OPERATED STOCK STOPS

KEY	DESCRIPTION	3/4 RA-8	9/16 RA-6 1" RA-6	9/16 RAN-6 1" RAN-6	1-1/4 RA-6	1-1/4 RB-8 1-5/8 RBN-8 1-5/8 RB-6	2-5/8 RB-6
	Assembly	BD-708641	A-228643	02354-61	708642	TG-909882	01752-32
1	Body	BD-701101	A-221106	02354-62	701103	TG-909883	01752-33
2	Plunger	A-226612	A-226612	A-226612	706611	706611	01752-26
3	Spring	XA-392	XA-392	XA-392	XA-370	XA-370	XA-370
4	O-Ring	01829-12	01829-12	01829-12	01829-12	01829-12	01829-12
5	Screw	XA-7082	XA-7082	XA-7082	XA-7082	XA-7082	XA-7082
6	Nut	3157	3157	51479	3021	51209	51209
7	Stop Screw	XA-2528	XA-2528	XA-2528	XA-2507	XA-2507	XA-2525
8	Liner	A-226651	A-226651	A-226651	A-226651	A-226651	A-226651
9	Operating Pin	XA-1582	XA-1582	02354-66	XA-1582	XA-1582	XA-1582
10	Ball	1024	1024	1024	1024	1024	1024
11	Spring	XA-393	XA-393	XA-393	XA-393	XA-393	XA-393
12	Lock Screw	52685	C-44688	52685	52685	52685	52685
13	Pipe Plug	01727-2	01727-2	01727-2	01727-2	01727-2	01727-2
14	Liner	02354-64	02354-64	02354-64	02354-64	02354-64	02354-64
15	Spring Retainer	A-226631	A-226631	A-226631	A-226631	A-226631	A-226631

NEW MATIC THE PIVOT STOP



- ✓ Solid construction
- ✓ No internal adjustments
- ✓ Simplified design
- ✓ Fewer wear parts
- ✓ Long service life
- ✓ Affordably priced

New-Matic Air Stock Stop

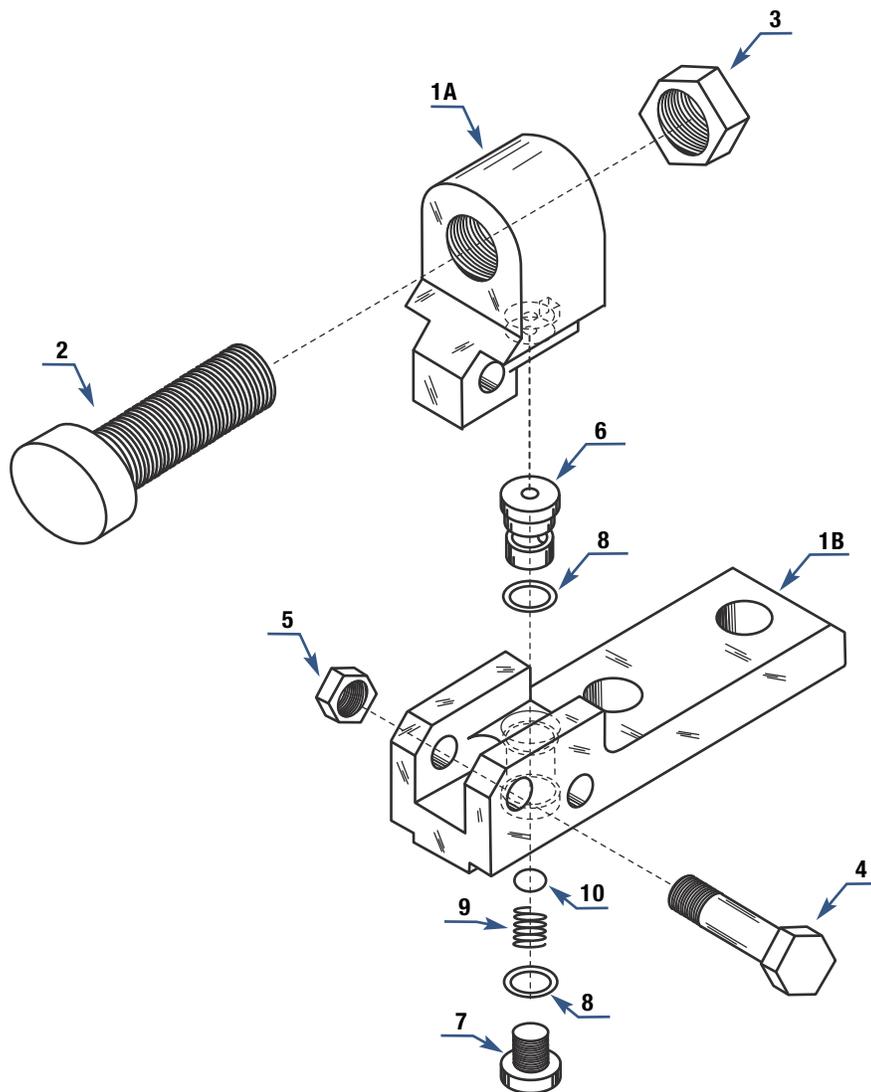
Tired of limping along with your old air stock stops because alternatives were too complicated or expensive? Thanks to the New-Matic you can say goodbye to those old, high maintenance units, and enjoy the benefits of stock depletion detection without all the headaches. And you can do it without breaking the bank.

The New-Matic utilizes a simple, patented design that enables the stop to provide reliable and efficient performance at a low per unit cost. Designed to be a direct replacement for the old Acme-Gridley air stock stop, the New-Matic has been thoroughly tested and qualified on Acme machines in the field.

The New-Matic offers everything you need in one package. The robust design provides long service life. In normal performance the unit is self cleaning. The internal components are easily replaced and low in cost. In short, the New-Matic is simply the best air stock stop money can buy.

Just call
CHAMPION 

New-Matic Pneumatic Stock Stop



K

New-Matic Pneumatic Stock Stop

NEW-MATIC PNEUMATIC STOCK STOP

Key No.	Description	9/16 RA-6	9/16 RA-6 1" RA-6	9/16 RAN-6 1" RAN-6	1-1/4 RA-6	1-1/4 RB-8 1-5/8 RBN-8	1-5/8 RB-6 2" RB-6
1	Complete Assy.	NM916*	NM1RA6	NM1RAN	NM1146	NM1586	NM1586
2	Standard Stop Screw	NM1000	NM1000	NM1000	NM11412	NM2000	NM2000
2	Oversize Stop Screw	NM1500	NM1500	NM1500	NM2000		
3	Nut, Stop Screw	NM58N	NM58N	NM58N	NM34N	NM34N	NM34N
4	Pivot Screw	NM1SB	NM1SB	NM2SB	NM3SB	NM4SB	NM4SB
5	Nut, Pivot Screw	NM1JN	NM1JN	NM1JN	NM2JN	NM2JN	NM2JN
Valve Assy.	includes parts below	NMV100	NMV100	NMV200	NMV200	NMV200	NMV200
6	Valve	NMVB1	NMVB1	NMVB2	NMVB2	NMVB2	NMVB2
7	Cap Screw	NMVS1	NMVS1	NMVS2	NMVS2	NMVS2	NMVS2
8	O-ring	NMOR	NMOR	NMOR	NMOR	NMOR	NMOR
9	Spring	NMSP	NMSP	NMSP	NMSP	NMSP	NMSP
10	Ball	NMBL	NMBL	NMBL	NMBL	NMBL	NMBL

Continued Below

* Same as NM1RA6 with addition of EL56R riser block.
Detail 1A & 1B are machined as a set and are not sold separately.

NEW-MATIC PNEUMATIC STOCK STOP

Key No.	Description	3/8 RA8	1-5/8RB8	2-5/8RB6	2-5/8RB8	3-1/2RB6
1	Complete Assy.	NM34RB8	NM1588	NM2586	NM2588	NM3126
2	Standard Stop Screw	NM11412	NM2000	NM2000	NM2000	NM2000
2	Oversize Stop Screw	NM2000				
3	Nut, Stop Screw	NM34N	NM34N	NM34N	NM34N	NM34N
4	Pivot Screw	NM3SB	NM3SB	NM3SB	NM3SB	NM3SB
5	Nut, Pivot Screw	NM2JN	NM2JN	NM2JN	NM2JN	NM2JN
Valve Assy.	includes parts below	NMV200	NMV200	NMV200	NMV200	NMV200
6	Valve	NMVB2	NMVB2	NMVB2	NMVB2	NMVB2
7	Cap Screw	NMVS2	NMVS2	NMVS2	NMVS2	NMVS2
8	O-ring	NMOR	NMOR	NMOR	NMOR	NMOR
9	Spring	NMSP	NMSP	NMSP	NMSP	NMSP
10	Ball	NMBL	NMBL	NMBL	NMBL	NMBL

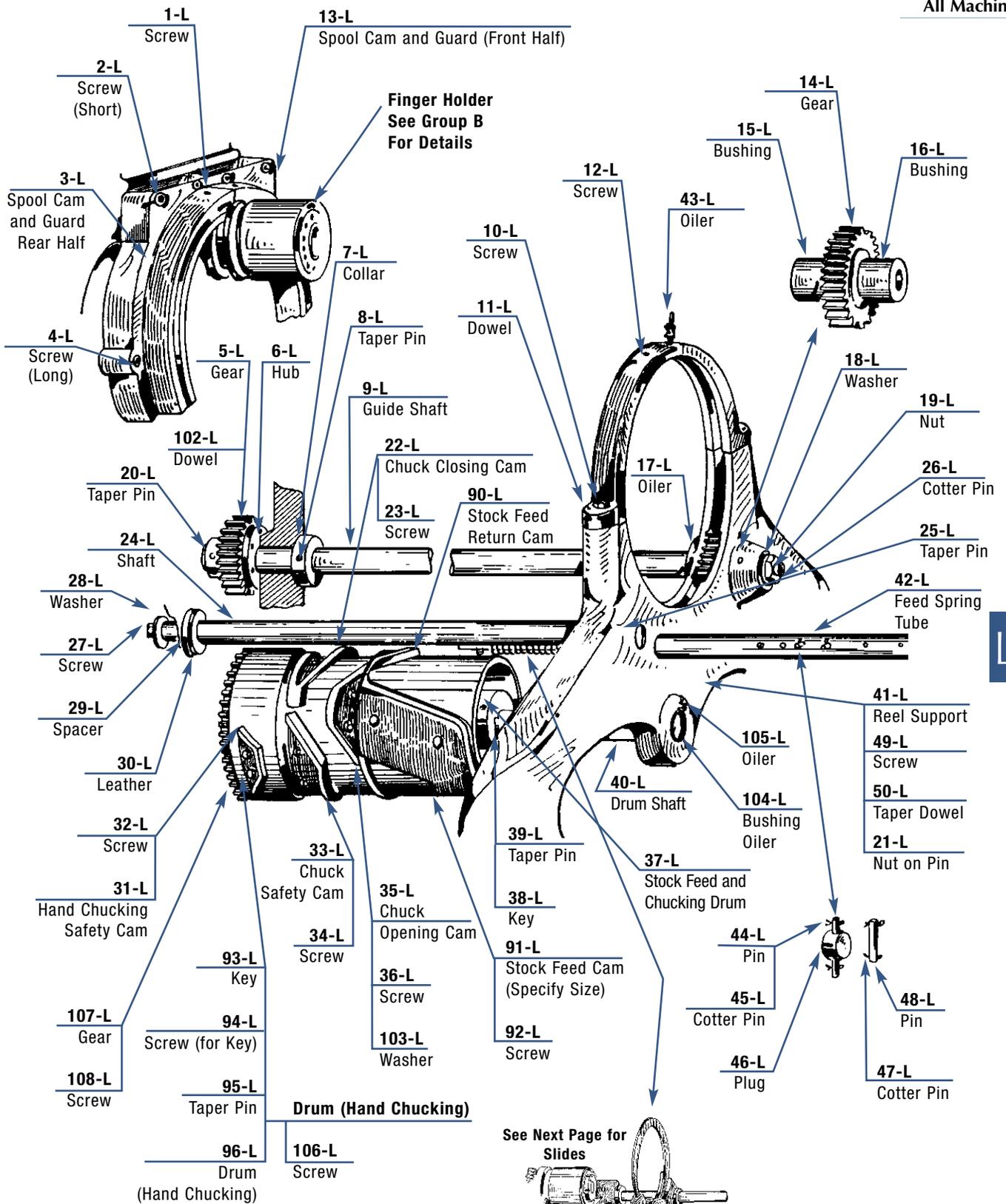
* Same as NM1RA6 with addition of EL56R riser block.

Detail 1A & 1B are machined as a set and are not sold separately.



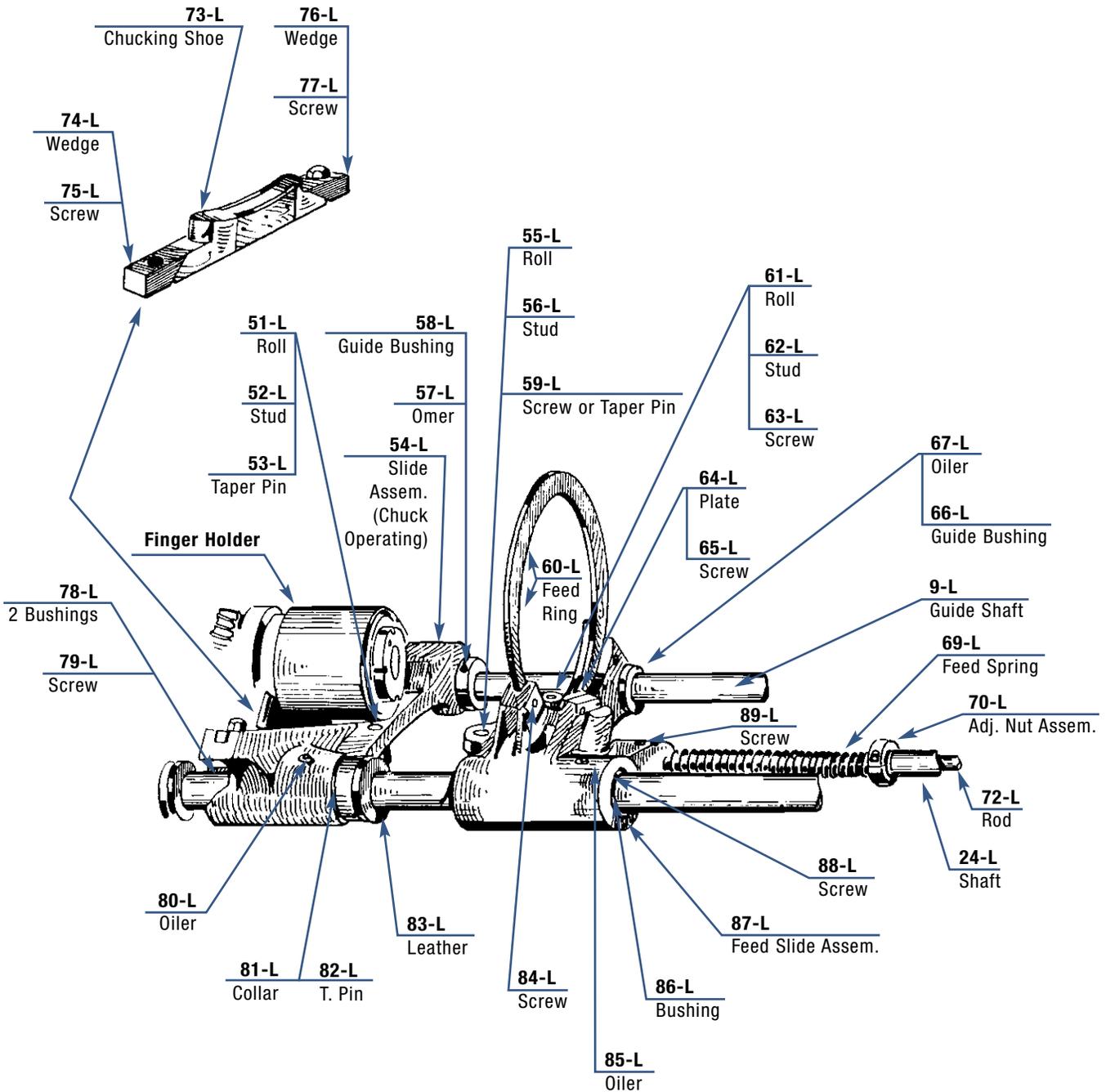
Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines



Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines



Spool CAM & Guard Assy. and Inserts

For Machines
All Machines

3-L & 13-L SPOOL CAM & GUARD ASSY. AND INSERTS

	SPOOL CAM & GUARD INSERTS FRONT & REAR ASSY	SPOOL CAM & GUARD INSERTS STEEL		SPOOL CAM & GUARD INSERTS TEXHIDE (FIBER)	
		FRONT	REAR	FRONT	REAR
7/16 RA-6	C-18133	C-18142	C-18142	C-18142-T	C-18142-T
9/16 RA-6, 1" RA-4 *	221332	1473-19	1473-19	1473-19-T	1473-19-T
9/16 RA-6, 1" Frame	221333	231431	231423	231431-T	231423-T
9/16 RAN-6	02354-35	231431	02664-15	231431-T	02664-15-T
9/16 RA-6 S.S.	231334	231471	231460		
9/16 RAN-6 S.S.	SS-231330	231471	S.S.-231460		
5/8 RN-6	FC-16133	FC-161420	FC-161420	FC-161420-T	FC-161420-T
1" RA-6	A-221331	A-231431	A-231422	A-231431-T	A-231422-T
1" RAN-6	0235492	A-231431	02664-14	A-231431-T	02664-14-T
1" RA, RAN-6 S.S.	SM-231331	S-231421	SM-231430		
1" RAN-6 S.S.*	SM-231332	S-231421	SM-231430		
3/4 RA-8	BD-701331	BD-71143	BD-701421	BD-71143-T	BD-701421-T
3/4 RA-8 S.S.	SM-71130	BD-71143	BD-701421	BD-71143-T	BD-701421-T
1-1/4 RA-6	701331	701420	701420	701420-T	701420-T
1-1/4 RA-6 S.S.	S-700822	S-711421	S-711430		
1-1/4 RB-8	AM-40133	AM-411420	AM-411420	AM-411420-T	AM-411420-T
1-5/8 RBN-8	BM-40133	AM-411420	AM-411420	AM-411420-T	AM-411420-T
1-5/8, 2 RA, RB-6	A-401330	A-411420	A-411420	A-411420-T	A-411420-T
1-5/8, 2 RB-8	BM-821331	BM-821421	BM-82145	BM-821421-T	BM-82145-T
2-5/8 RB-6	B-841330	B-841420	B-841420	B-841420-T	B-841420-T
2-5/8 RB-8	A-961330	A-971430	A-971420	A-971430-T	A-971420-T
3-1/2 RB-6	A-941332	A-95143	A-951420	A-95143-T	A-951420-T
3-1/2 RB-8	BM94133	BM941420	BM941420	BM941420-T	BM941420-T
4" RB-6	BA92133	BA921430	BA921420	BA921430-T	BA921420-T

* = Check Serial Number
S.S. = Spindle Stop Machine



3-L & 13-L Spool CAM & Guard Assy. and Inserts

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines

All Machines



5-L Gear

5-L GEAR

MACHINE SIZE	PART NUMBER
9/16, 1 RA-6, RAN-6	220643
1-1/4 RA-6 O.S.	700690
1-1/4 RA-6 N.S.	700691
1-1/4 RB-8, 1-5/8 RBN-8	AM-40069
1-5/8, 2" RB-6 O.S.	B-82069
1-5/8, 2 RB-6 N.S.	B-380690
1-5/8, 2 RB-8, 2-5/8 RB-6	B-820690
2-5/8 RB-8	A-960690
3-1/2 RB-6	A-940690
4" RB-6	BA-92069



7-L Collar

7-L COLLAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-180641
9/16, 1 RA-6, RAN-6	15702
1-1/4 RA-6	10823
1-5/8 & 2" RB-6	15735

L



9-L Guide Shaft

9-L GUIDE SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-181241
9/16, 1 RA-6 *	201244
9/16, 1" RAN-6 O.S. *	201245
5/8 RN-8 N.S. *	FC-16124
1-1/4 RA-6 O.S. *	701240
3/4 RA-8, 1-1/4 RA-6 N.S. *	701241
1-1/4 RB-8 S.S.	SM-40124
1-1/4 RB-8, 1-5/8 RBN-8	AM-40124
1-5/8, 2 RB-6	B-38124
1-5/8, 2 RB-8 *	B-821240
2-5/8 RA-6	A-82124
2-5/8 RB-6 O.S. *	B-82124
2-5/8 RB-6 N.S. *	B-84124
2-5/8 RB-8, 3-1/2 RB-6	A-94124
2-5/8 RB-8 S.S.	SM-96124
3-1/2 RB-8	B-92124
4" RB-6	B-92124

* = Check Serial #

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines

14-L GEAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-180641
9/16, 1 RA-6, RAN-6	220643
3/4 RA-8	BD-70064
1-1/4 RA-6	70064
1-1/4 RB-8, 1-5/8 RBN-8	A-94064
1-5/8, 2 RB-6	B-82064
1-5/8, 2 RB-8, 2-5/8 RB-6	B-82064
2-5/8 RB-8	A-96064
3-1/2 RB-6	A-94064
3-1/2 RB-8	B-92064
4" RB-6	BA-92064



14-L Gear

19-L NUT

MACHINE SIZE	PART NUMBER
7/16 RA-6	2802
9/16, 1 RA-6, RAN-6, 3/4 RA-8, 1-1/4 RA-6	2807
1-1/4 RB-8, 1-5/8 RBN-8	2810
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 & 3-1/2 RB-6	
2-5/8 & 3-1/2 RB-8	
4" RB-6	



19-L Nut

22-L, 31-L, 33-L, 35-L CHUCKING CAMS

MACHINE SIZE	PART NUMBER (FOR 35-L, 22-L, 33-L SET ADD S TO OPENING CAM NO.)			
	35-L OPENING CAM ASSY (INCLUDES 22-L, 33-L, 35-L)	22-L CLOSING CAM ONLY	33-L SAFETY CAM	31-L HAND SAFETY CAM
7/16 RA-6	C-187421	C-187431	C-187441	
9/16, 1 RA-6, RAN-6	A-22769	A-22771	A-22770	205760
3/4 RA-8	BD-70769	BD-70771	BD-70770	BD-70576
1-1/4 RA-6	707691	707710	70770	70576
1-1/4 RB-8	AM-407691	AM-407711	AM-407701	A-84770
1-5/8 RBN-8	A-94769	A-94771	A-82770	A-94770
1-5/8, 2 RB-6	A-94769	A-94771	A-82770	A-94770
1-5/8, 2 RB-8	A-94769	A-94771	A-82770	A-94770
2-5/8, 3-1/2 RB-6	A-94769	A-94771	A-82770	A-94770
2-5/8 RB-8	A-94855	A-94856	A-82770	A-84770
3-1/2 RB-8	BM-947690	BM-947710	BM-94770	
4 RB-6	BA-92769	BA-92770	BA-92771	B-92576



22-L, 31-L, 33-L, 35-L Chucking Cams

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines

All Machines



24-L Shaft

24-L SHAFT

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18127
9/16, 1" RA-6 O.S.	201271
9/16, 1" RA-6 N.S.	201272
5/8 RN-6	FC-22127
3/4 RA-8	701271
1-1/4 RA-6 O.S. *	701270
1-1/4 RA-6 N.S. *	701271
1-1/4 RB-8, 1-5/8 RBN-8	AM-401270
1-1/4 RB-8 S.S.	SM-401270
1-5/8, 2" RB-6	A-38127
1-5/8 RB-8, 2 RB-8 *	B-82127
2-5/8 RB-6 O.S. *	B-82127
2-5/8 RB-6 N.S. *	B-84127
2-5/8 RB-8	A-94127
2-5/8 RB-8 S.S.	SM-96127
3-1/2 RB-6	A-94127
3-1/2 RB-8	BM-94127
4" RB-6	B-92127

* = Check Serial #

S.S. = Spindle Stop Machine

30-L, 83-L LEATHER



30-L, 83-L Leather

MACHINE SIZE	PART NUMBER
7/16 RA-6	B-44855
9/16, 1 RA-6, RAN-6	15001
3/4 RA-8, 1-1/4 RA-6	15003
1-1/4 RB-8	15068
1-5/8 RBN-8	
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 & 3-1/2 RB-6	
2-5/8 & 3-1/2 RB-8	
4" RB-6	

51-L ROLL & 52-L STUD

MACHINE SIZE	PART NUMBER	
	51-L ROLL	52-L STUD
7/16 RA-6	XA-5157	XA-5347
9/16, 1 RA-6, RAN-6	3019	10182
3/4 RA-8, 1-1/4 RA-6	3019	1091
1-1/4 RB-8	14262	14406
1-5/8 RB-8		
1-5/8 & 2" RB-6		
1-5/8 & 2" RB-8		
2-5/8 & 3-1/2 RB-6		
2-5/8 & 3-1/2 RB-8		
4" RB-6		
4-3/4 RB-4		

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines

54-L CHUCKING SLIDE

MACHINE SIZE	PART NUMBER	
	SLIDE ONLY	ASSY.
7/16 RA-6	C-18120	
5/8 RN-6	FC-16120	
9/16 RA-6 O.S.	221200	229762
9/16-1" RA-6	A-22120	A-229761
9/16 RAN-6		02358-15
1" RAN-6	02358-29	02358-14
3/4 RA-8	BD-70120	BD-70141
1-1/4 RA-6	70120	709761
1-1/4 RB-8	AM-40120	AM-40976
1-5/8 RBN-8	AM-40120	AM-40976
1-5/8 RB-6, 2" RB-6	A-40120	
1-5/8 RB-8, 2" RB-8	BM-82120	
2-5/8 RB-6	A-84120	
2-5/8 RB-8	A-96120	
3-1/2 RB-6	A-941201	
3-1/2 RB-8	BM-94120	
4" RB-6	BA-92120	
4" RB-8	BU-88120	



54-L Chucking Slide

55-L ROLL & 56-L STUD

MACHINE SIZE	PART NUMBER	
	55-L ROLL	56-L STUD
7/16 RA-6	XA-5175	XA-5347
9/16, 1 RA-6, RAN-6	3019	10182
3/4 RA-8, 1-1/4 RA-6	3019	1091
1-1/4 RB-8	14262	14406
1-5/8 RB-8		
1-5/8 & 2" RB-6		
1-5/8 & 2" RB-8		
2-5/8 & 3-1/2 RB-6		
2-5/8 & 3-1/2 RB-8		
4" RB-6		
4-3/4 RB-4		



55-L Roll



56-L Stud

58-L & 66-L BUSHING

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-18138
9/16, 1 RA-6, RAN-6	20138
3/4 RA-8, 1-1/4 RA-6	70138
1-1/4 RB-8	45542
1-5/8 RB-8	45542
1-5/8, 2 RB-6	45542
1-5/8, 2 RB-8	45542
2-5/8, 3-1/2 RB-6	45542



58-L & 66-L Bushing

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines

All Machines



60-L Feed Ring

60-L FEED RING

MACHINE SIZE	PART NUMBER		
	# OF ROLL SLOTS	CSME PART #	PART #
7/16 RA-6	1	5524	C-18128
7/16 RA-6	2	7757	C-181280
9/16 RA-6	1	5045	22128
9/16 RA-6	2	6450	
9/16 RA-6	1	5422	221280
9/16 RA-6, RAN-6	2	5542	221281
5/8 RN-6	2	7641	02362-61
3/4 RA-8	2	7640	BD-70128
1 R-4	1	6752	21128
1 RA-6	0	5733	A-22128
1 RA-6	1	5046	A-221280
1 RA & RAN-6	2	5543	A-221281
1-1/4 RA-6	1	5047	70128
1-1/4 RA-6	2	5546	701280
1-1/4 RB-8	2	6224	AM-40128
1-5/8 RBN-8	2	6225	BM-40128
1-5/8 RA-6	1	5734	A-40128
1-5/8 RB-6	2	6226	A-104280
1-5/8 RA-8	1	6227	BM-82128
1-5/8 RB-8	2	6228	BM-821280
1-3/8 & 2 BSA	1	7209	
2 RA-6, RAS-4	1	7616	AC-72128
2 RA, RB-6	1	5905	BH-38128
2 RA, RB-6	2	6229	BH-381280
2 RB-8	2	7921	BH-82128
2-1/4 R-4 & 6	1	6302	
2-5/8 R-4	0	6113	83128
2-5/8 RA, RB-6	1	5916	AU-84128
2-5/8 RB-6	2	6230	AU-841280
2-5/8 RA-8	1	6231	AT-96128
2-5/8 RB-8	2	6232	AT-961280
3-1/2 R-4	0	6909	
3-1/2 RA-6	1	5918	A-94128
3-1/2 RB-6	2	6233	A-941280
3-1/2 RB-8	2	7915	
4 RB-6	2	5922	BA-92128
4-3/4 RA-4	1	5673	A-90128
5-1/8 RA-4	2	6704	
5-1/2 RB-4	2	7891	BE-92128
6 RB-6	2	7397	BC-88128
7-3/4 RB-4	2	7831	

L

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines

61-L ROLL & 62-L STUD

MACHINE SIZE	PART NUMBER		
	61-L ROLL	McGILL TYPE CAM	62-L STUD
7/16 RA-6	2054-76		2054-75
9/16 RA-6	14249		3184
3/4 RA-8	209215		3184
1" RA-6	14211		3184
1-1/4 RA-6	14214		14509
1-1/4 RB-8 THRU 3-1/2 RB-8	14244	A-17472	14509
4 & 6" RB-6, 4" RB-8		A-17468	
5-1/8 RB-4		A-17468	
4-3/4 RB-4 & RB-6	14254		14400



61-L Roll, McGill Type Cam

64-L FEED PLATE

MACHINE SIZE	PART NUMBER
7/16 RA-6	C18140
5/8 RN-6	02362-58
9/16 & 1 RA-6	201403
3/4 RA-8	BD-70140
1-1/4 RA-6	381401
1-5/8 R-6	381401
1-1/4 RB-8	AM-40140
1-5/8 RBN-8	A-82140
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
3-1/2 R-4, 3-1/2 RA-6	
3-1/2 & 4" RB-6	
4-3/4 RB-4, 6 RB-6	
2-5/8 RA & RB-6	A-84140



64-L Feed Plate

69-L FEED SPRING

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-349
9/16 RA-6 O.S.	2307
9/16, 1 RA-6 & RAN-6	XA-167
3/4 RA-8, 1-1/4 RA-6	XA-166
1-1/4 RB-8, 1-5/8 RBN-8	455490
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
3-1/2 RB-6 & RB-8, 4" RB-6	



69-L Feed Spring

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines

All Machines



70-L Adjusting Nut Assy.

70-L ADJUSTING NUT ASSY.

MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-1877
9/16, 1 RA-6 & RAN-6	53525
3/4 RA-8 & 1-1/4 RA-6	53530
1-1/4 RB-8 & 1-5/8 RBN-8	45852
1-5/8 & 2 RB-6	45852
1-5/8 & 2 RB-8, 2-5/8 RB-6	45852



73-L Chucking Shoe

73-L CHUCKING SHOE

MACHINE SIZE	PART NUMBER	
	BRONZE	TEXHIDE
7/16 RA-6	C-18136	C-18136-T
9/16 RA-6	18136	18136-T
9/16 RAN-6	02358-11	
9/16 RAN-6	02358-36	
9/16 RA-6 O.S. (RING CHUCK)	TB921486	
9/16 RA-6 N.S. (RING CHUCK)	TC915615	
5/8 RN-6	FC-16136	FC-16136-T
5/8 RN-6	CC-55117	CC-55117-T
3/4 RA-8	18136	18136-T
3/4 RA-8 (RING CHUCK)	20656	
1 RA-6	A-231360	A-231360-T
1 RA-6 (RING CHUCK)	TG-900782	
1 RAN-6	02354-80	
1 RAN-6	02358-30	02358-30-T
1-1/4 RA-6 (RING CHUCK)	TB-986373	
1-1/4 RA-6, 1-5/8 R-4 & 6, 2" R-4	38136	38136-T
1-1/4 RB-8, 1-5/8 RBN-8	381360	381360-T
1-5/8, 2, 2-5/8 RB-8		
2-5/8 RA-6, RB-6		
1-5/8 RA-6, RB-6	A-36136	A-36136-T
2 RA-6, 2 RB-6		
2 RA-4, RB-6, RAS-4	A-36136	A-36136-T
2-3/8 HSC-6	02970-44	
2-5/8 RA-4	A-36136	A-36136-T
3-1/2 RA & RB-4 & 6, RB-8	A-94136	A-94136-T
4 RB-6	BA-92136	BA-92136-T
4 RB-8	BM-88136	
4-3/4 RA & RB-4	A-82136	A-82136-T
5-1/8 RB-4	B-92136	B-92136-T
5-1/4 RAC-6	BW-705540	BW-705540-T
5-1/2 RB-4	A-82136	A-82136-T
6 RPA-6 (UPPER)	AD-86546	
6 RB-6, 7-3/4 RB-4, 8 RS-4	BU-88136	
6 RPA-8	A-86554, 01915-6	01915-6-T
8 RPA-6 & 8, 10 RPA-4 & 6		

L

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines
All Machines

74-L & 76-L WEDGE

MACHINE SIZE	PART NUMBER	
	74-L	76-L
7/16 RA-6	C-18137	XA-1757 (PIN)
9/16 RA-6, 3/4 RA-8	18139	56233
7/8 RA-4, 1 RA-6	20139	20137
1-1/4 RA-6, 2" R-4	38139	A-36137
1-1/4 RB-8, 1-5/8 RBN-8	A-36137	A-36137
1-5/8 & 2" RB-6		
1-5/8 & 2" RB-8	BM-82137	BM-82137
2-5/8 RB-6	B-84137	B-84137
2-5/8 RB-8	38137	A-96137
3-1/2 RB-6 & RB-8, 4" RB-6	A-94137	A-94137



74-L & 76-L Wedge

78-L & 86-L BUSHING

MACHINE SIZE	PART NUMBER
7/16 RA-6	C-17419
9/16 RA-6, RAN-6	17026
1" RA-6, RAN-6	
1-1/4 RA-6, 3/4 RA-8	17001
1-1/4 RB-8 & 1-5/8 RBN-8	45554
1-5/8 RB-6 & RB-8	
2" RB-6 & RB-8	
2-5/8 RB-6 & RB-8	
3-1/2 RB-6 & RB-8, 4" RB-6	



78-L & 86-L Bushing

81-L STOP COLLAR

MACHINE SIZE	PART NUMBER
7/16 RA-6	B-44856
9/16, 1 RA-6, RAN-6	15722
3/4 RA-8	
1 RA-6, RAN-6	
1-1/4 RA-6	
1-1/4 RB-8	15814
1-5/8 RBN-8	
1-5/8 RB-6, RB-8	
2 RB-6, RB-8	
2-5/8 RB-6	
2-5/8 RB-8, 4" RB-6	XA-2003
3-1/2 RB-6 & RB-8	



81-L Stop Collar

Stock Feed Slide, Chucking Slide and Stock Reel Drive

For Machines

All Machines



87-L Feed Slide

87-L FEED SLIDE ASSY.

MACHINE SIZE	PART NUMBER	
	SINGLE ROLL	DOUBLE ROLL
7/16 RA-6	C-18119	C-181190
5/8 RN-6		FC-16119
9/16 RA-6 O.S.	221190	229974
9/16 R-6		229774
1" RA-6	A-221190	A-229772
9/16 RAN-6		02358-18
1" RAN-6		02330-73
3/4 RA-8		BD-70119
1-1/4 RA-6		709773
1-1/4 RB-8		AM-40977
1-5/8 RBN-8		BM-40977
1-5/8 RB-6		A-40119
2" RB-6		BH-38119
1-5/8 RB-8, 2" RB-8		BM-82119
2-5/8 RA-6	A-84119	
2-5/8 RB-6		B-84119
2-5/8 RB-8		AT-96119
3-1/2 RB-6		A-941190
3-1/2 RB-8		BM-94119
4" RB-6		BA-92119
4" RB-8		BU-88119

L



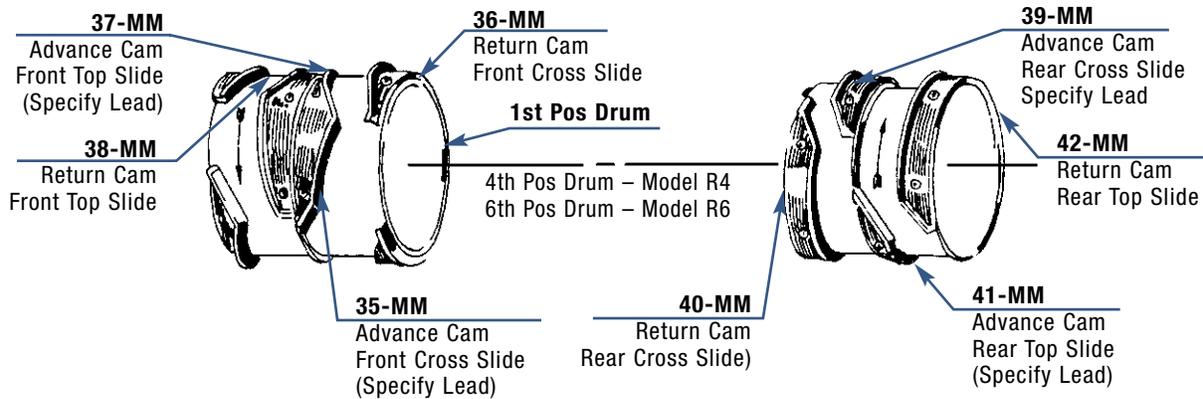
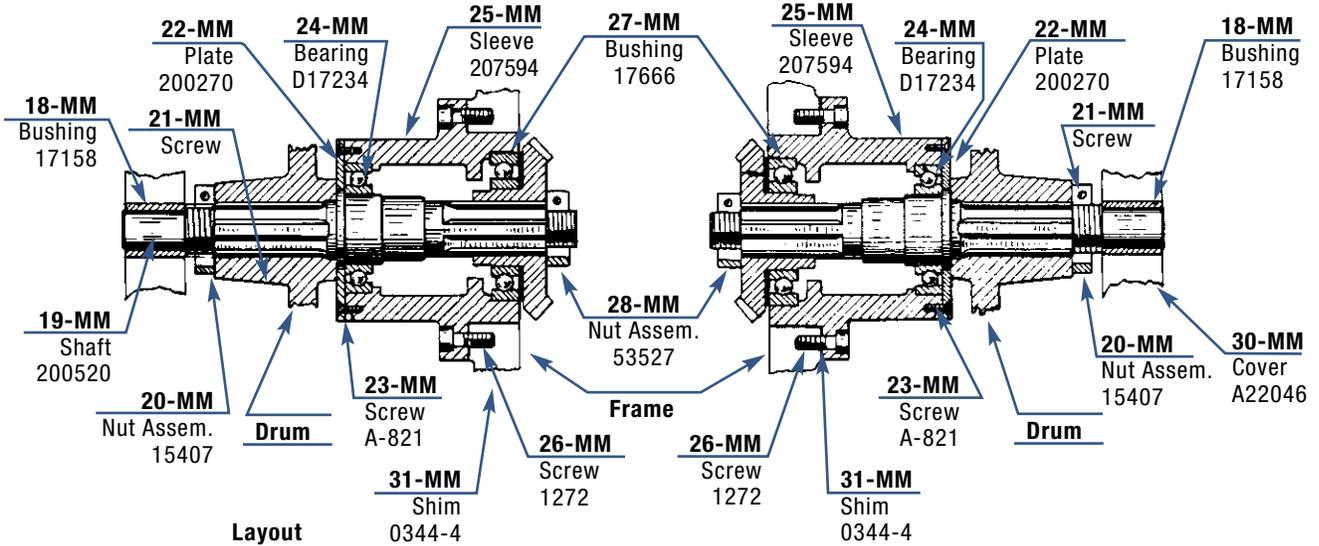
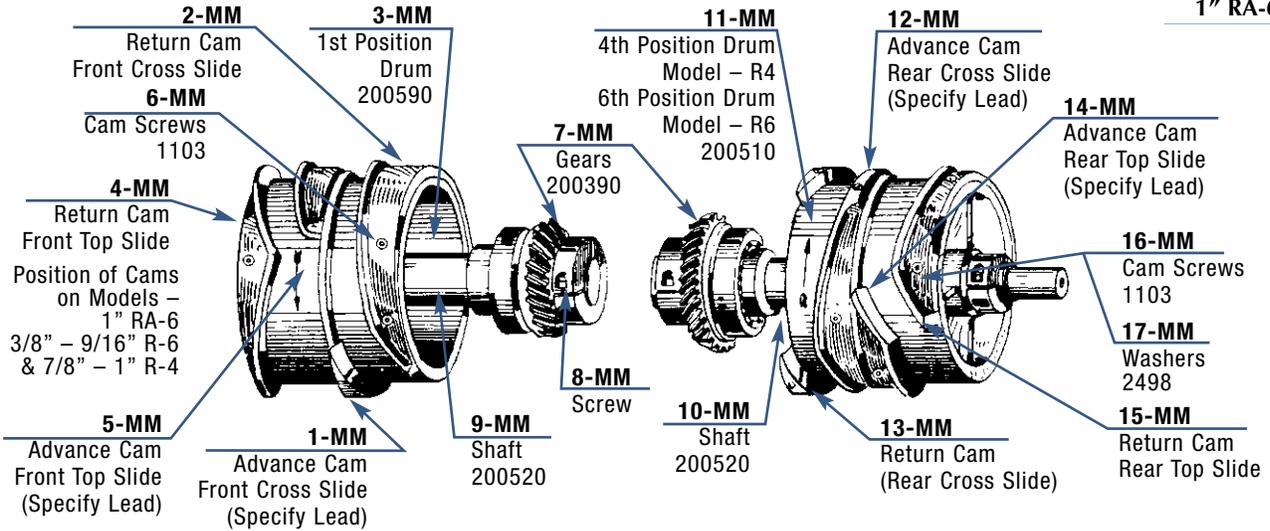
107-L Drive Gear for Independent Slides

107-L DRIVE GEAR FOR INDEPENDENT SLIDES

MACHINE SIZE	PART NUMBER
9/16 RA-6, RAN-6	23429
1 RA-6, RAN-6	23429
1-1/4 RA-6	71429

Cross Slide Shaft, Drums and Cams

For Machines
 9/16 RA-6, RAN-6
 1" RA-6, RAN-6



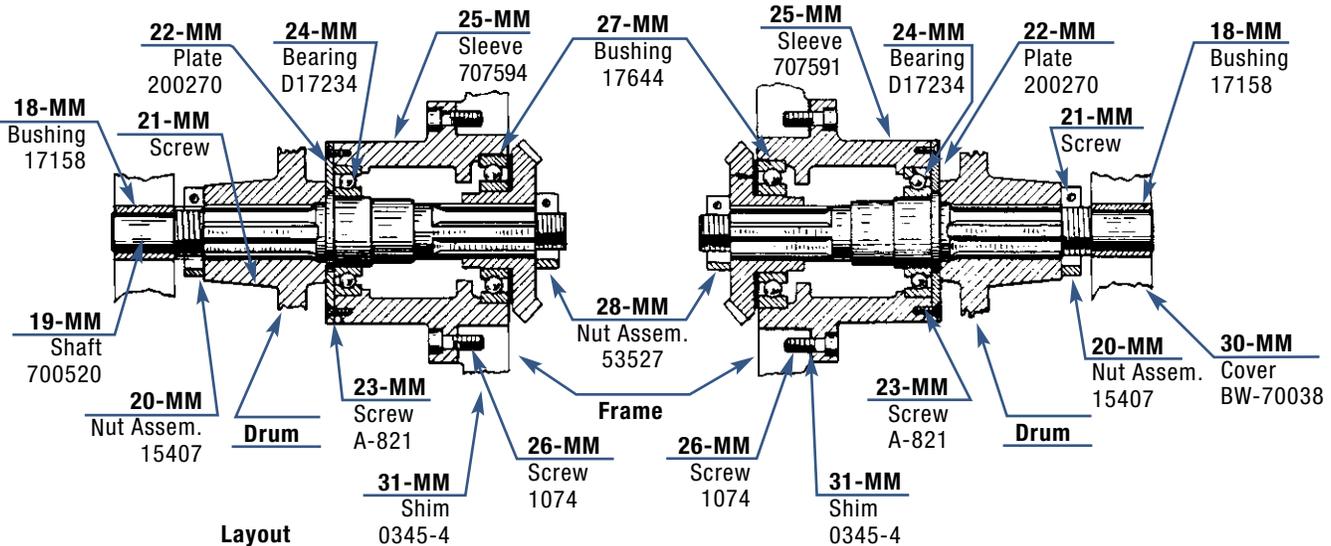
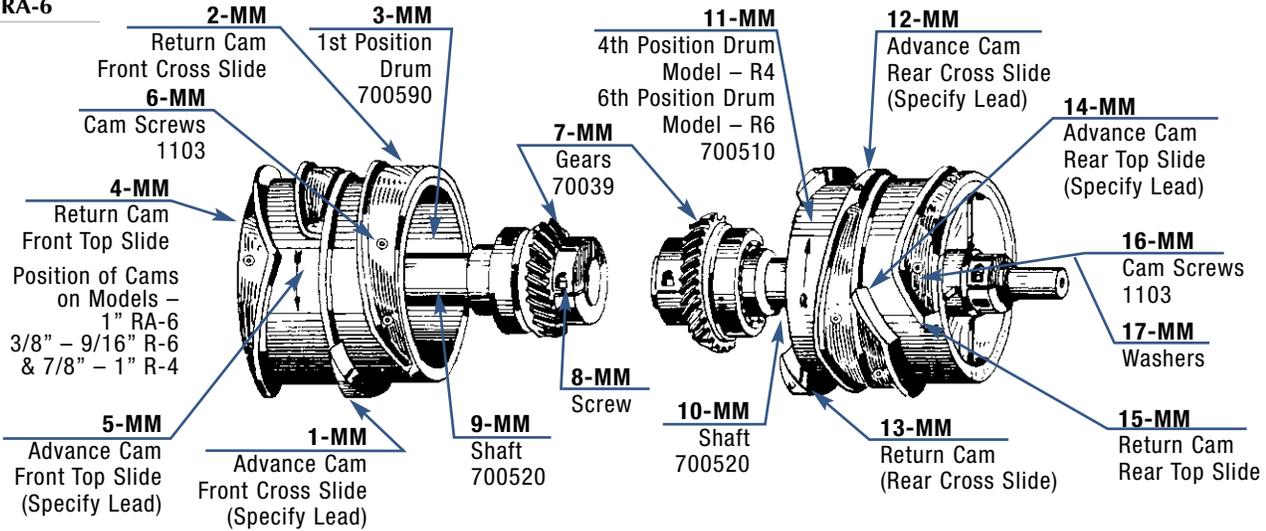
Position of Cams on Models
 1" – 1-1/4" R6 and 1-3/8" – 1-5/8" R6

Cross Slide Shaft, Drums and Cams

For Machines

3/4 RA-8

1-1/4 RA-6



MM

Lower Cross Slide Shaft, Drums and Cams

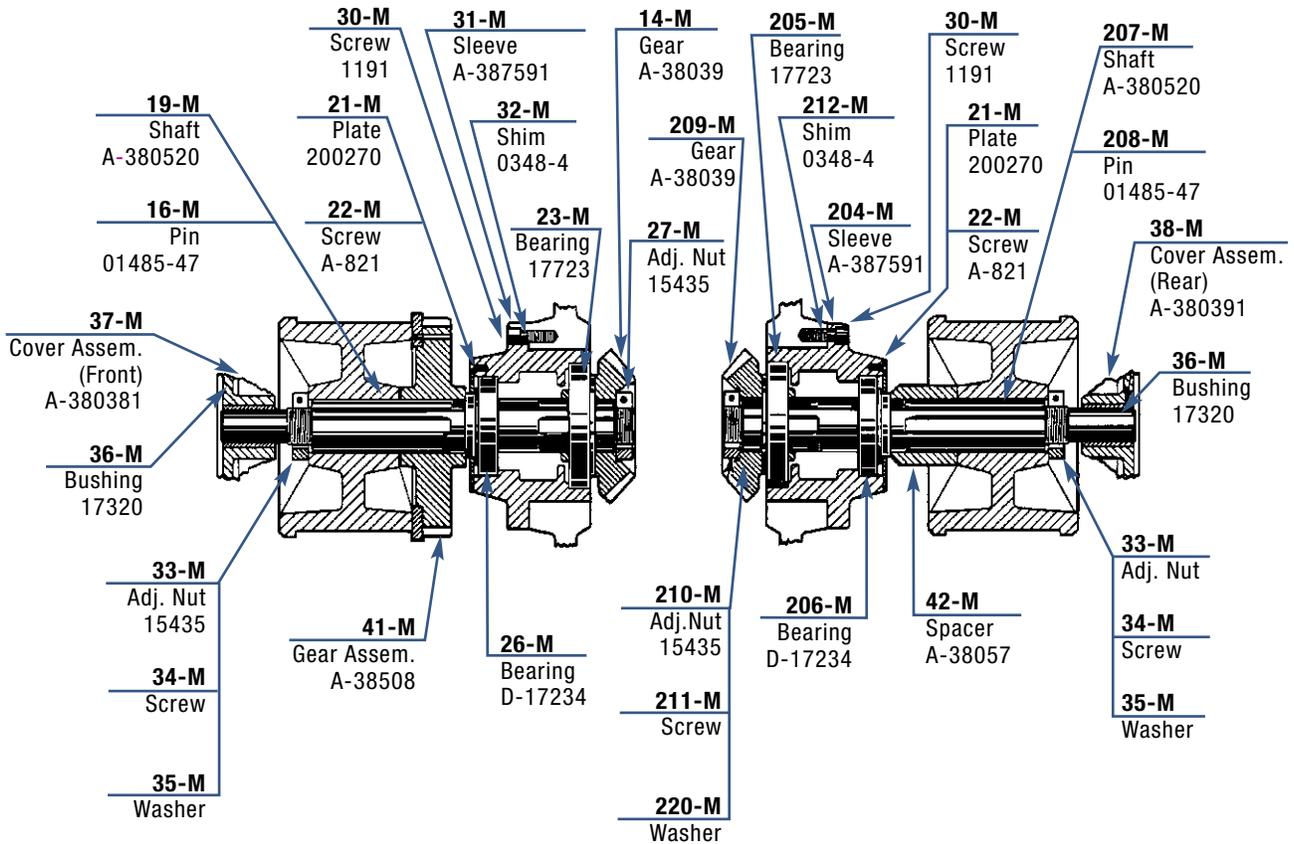
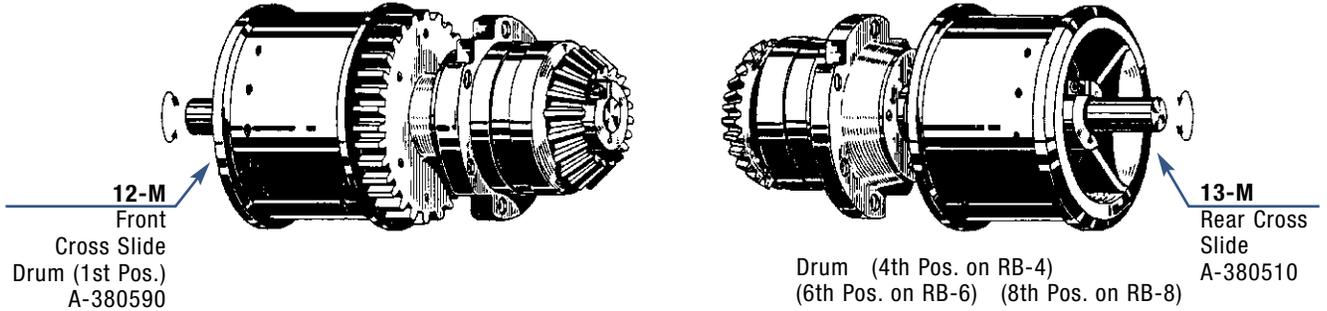
For Machines

1-1/4 RB-8

1-5/8 RBN-8

1-5/8 RB-6

2" RB-6



Top Slide and Cross Shafts, Slide Drums and Cams

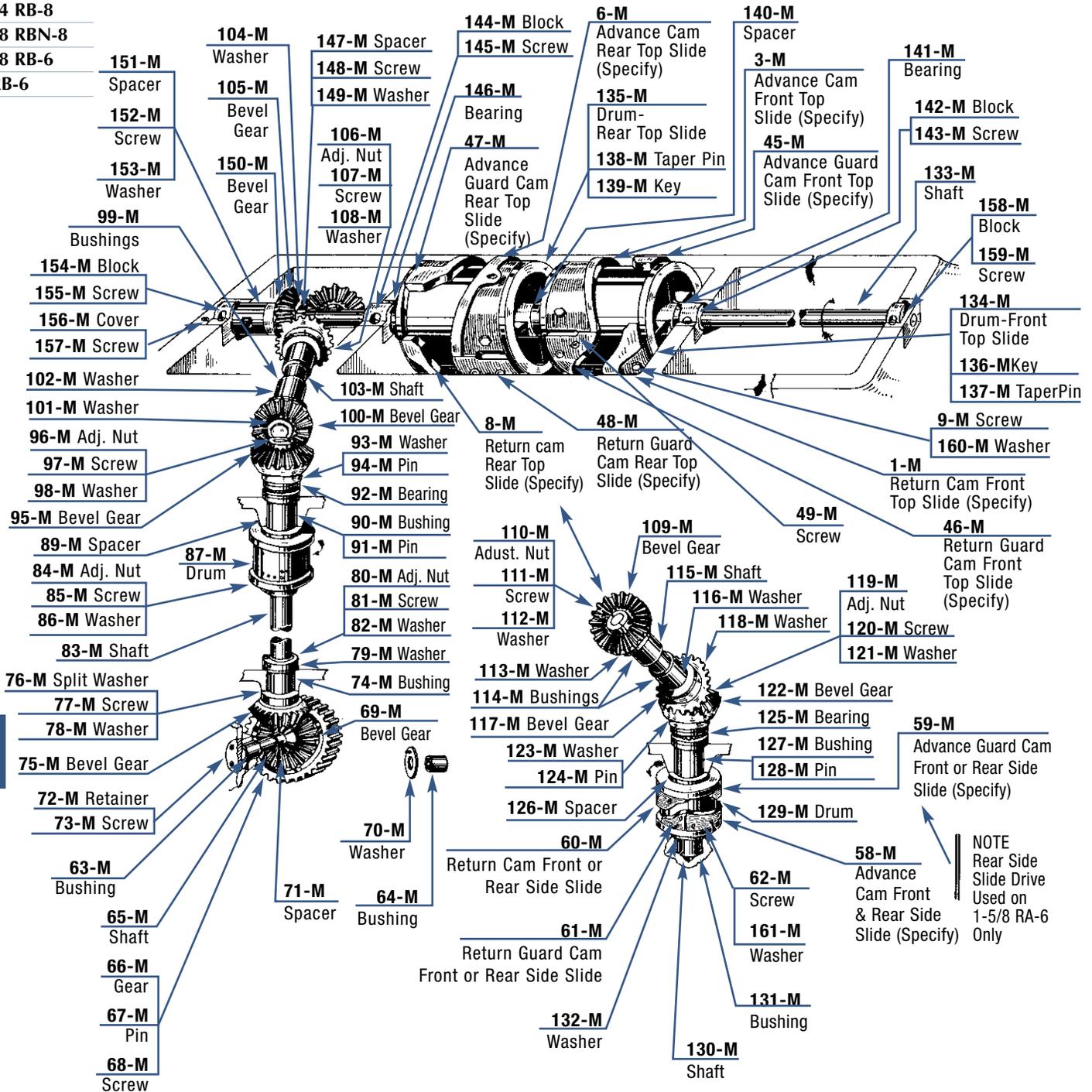
For Machines

1-1/4 RB-8

1-5/8 RBN-8

1-5/8 RB-6

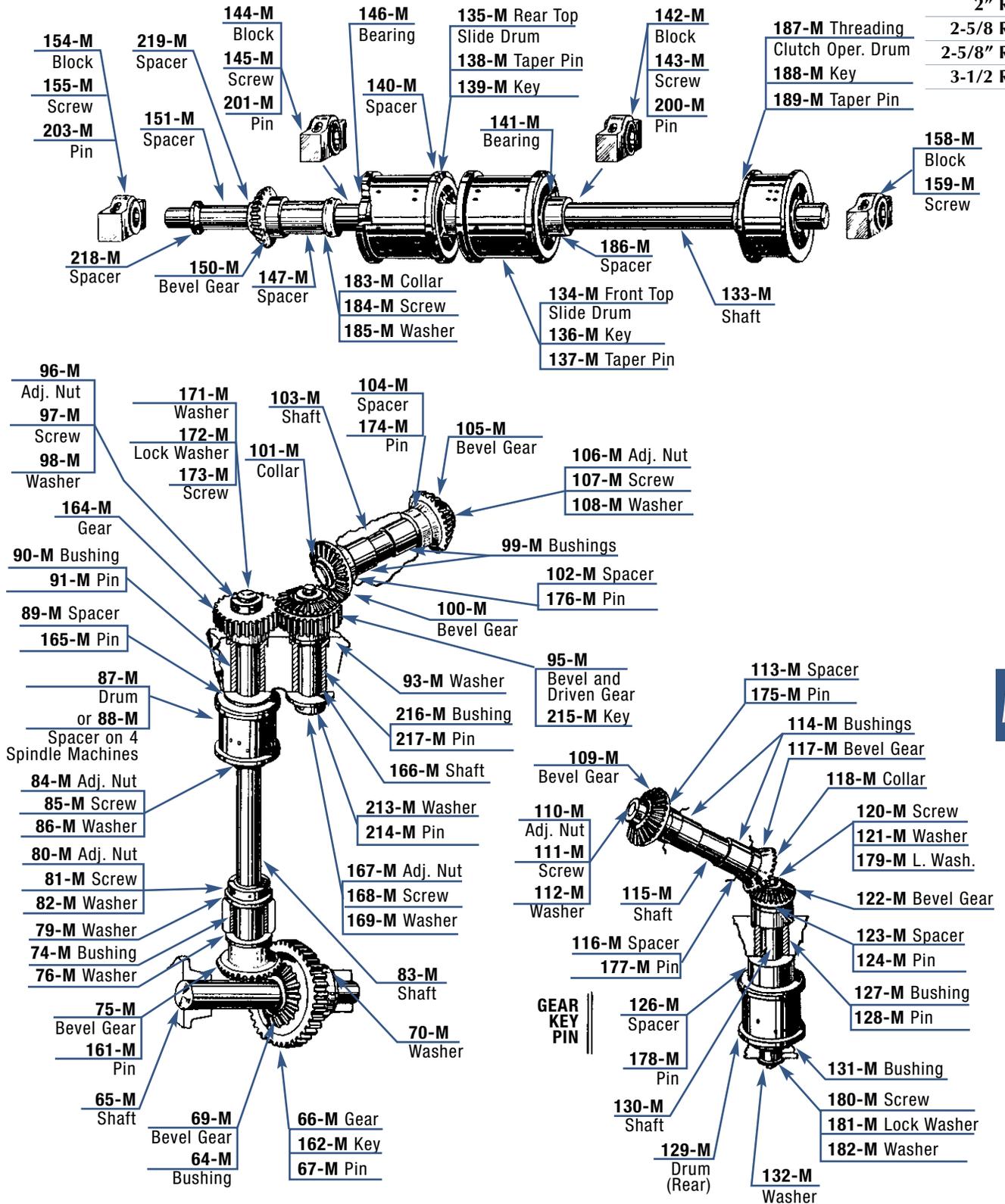
2" RB-6



Top Slide and Cross Slide Shafts, Drums and Cams

For Machines

- 1-5/8 RB-8
- 2" RB-8
- 2-5/8 RB-6
- 2-5/8" RB-8
- 3-1/2 RB-6



Cross Slide Shaft Components



3-MM & 12-MM Drum - 1ST Position

3-MM & 12-MM DRUM - 1ST POSITION

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	200590
1-1/4 RA-6, 3/4 RA-8	700590
1-1/4 RB-8, 1-5/8 RBN-8	A-380590
1-5/8 & 2" RB-6	
2-5/8 RB-6	B-820590
3-1/2 RB-6, 2-5/8 RB-8	A-96059



7-MM & 209-M Bevel Gear

7-MM & 209-M BEVEL GEAR

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	200390
1-1/4 RA-6, 3/4 RA-8	70039
1-1/4 RB-8, 1-5/8 RBN-8	A-38039
1-5/8 & 2" RB-6	
2-5/8 RB-6	B-82039
3-1/2 RB-6, 2-5/8 RB-8	A-96037



9-MM, 10-MM, 19-MM Shaft - 1ST, 6TH, 8TH Position

9-MM, 10-MM, 19-MM SHAFT - 1ST, 6TH, 8TH POSITION

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	200520
1-1/4 RA-6, 3/4 RA-8	700520
1-1/4 RB-8, 1-5/8 RBN-8	A-380520
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8 *	B-820520 (OLD STYLE) B-820521 (NEW STYLE)
2-5/8 RB-6 *	
2-5/8 RA-6 *	A-82052, A-852520
3-1/2 RB-6, 2-5/8 RB-8	A-960550

* serial number required



11-MM, 13-MM Drum - 6TH, 8TH Position

11-MM, 13-MM DRUM - 6TH, 8TH POSITION

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	200510
1-1/4 RA-6, 3/4 RA-8	700510
1-1/4 RB-8, 1-5/8 RBN-8	A-380510
1-5/8 & 2" RB-6	
2-5/8 RB-6	B-82051
3-1/2 RB-6, 2-5/8 RB-8	A-96051

MM/M

Cross Slide Shaft Components

18-MM, 36-M BUSHING

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	17158
1-1/4 RA-6, 3/4 RA-8	17320
1-1/4 RB-8, 1-5/8 RBN-8	
1-5/8 & 2" RB-6	C-17015
1-5/8 & 2" RB-8	
2-5/8 & 3-1/2 RB-6	



18-MM, 36-M Bushing

24-MM, 26-M, 206-M BEARING

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	D-17234
1-1/4 RA-6, 3/4 RA-8	
1-1/4 RB-8, 1-5/8 RBN-8	
1-5/8 & 2" RB-6 * O.S.	17928
1-5/8 & 2" RB-6 * N.S.	D-17234 s/N 40875-A
1-5/8 & 2" RB-8, 2-5/8 RB-6	A-17002
3-1/2 RB-6, 2-5/8 RB-8	17485

* serial number required



24-MM, 26-M, 206-M Bearing

27-MM, 23-M, 205-M BEARING

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	17666
1-1/4 RA-6, 3/4 RA-8	17644
1-1/4 RB-8, 1-5/8 RBN-8	17723
1-5/8 & 2" RB-6	A-17003
1-5/8 & 2" RB-8, 2-5/8 RB-6	
3-1/2 RB-6, 2-5/8 RB-8	17487



27-MM, 23-M, 205-M Bearing

28-MM, 27-M, 210-M NUT ASSEMBLY

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6 & RAN-6	53527
1-1/4 RA-6, 3/4 RA-8	15407
1-1/4 RB-8, 1-5/8 RBN-8	15435
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8, 2-5/8 RB-6	15435
3-1/2 RB-6, 2-5/8 RB-8	
4" RB-8	15422



28-MM, 27-M, 210-M Nut Assembly

Cross Slide and Top Slide (Front) - Position 1 & 3

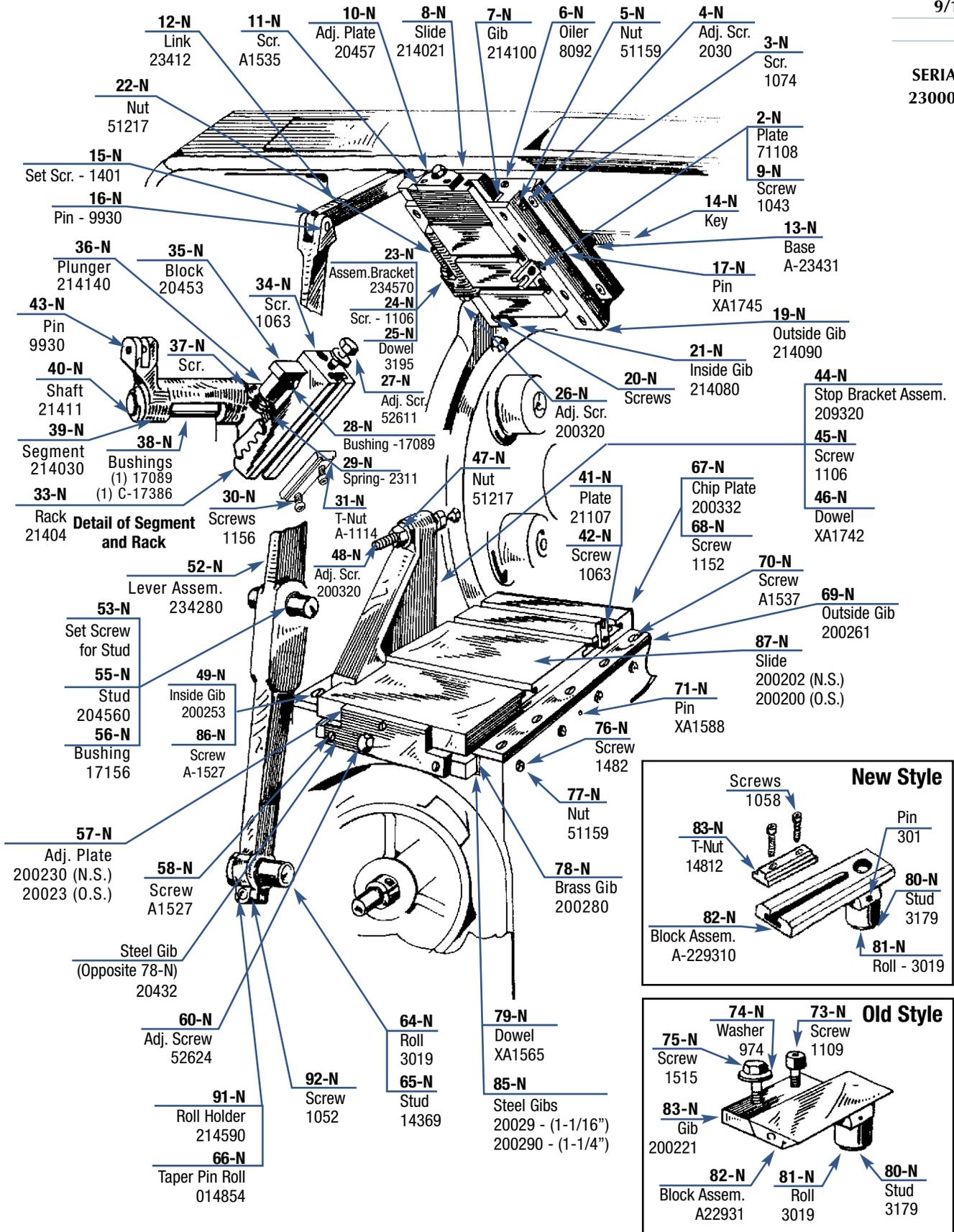
For Machines

9/16 RA-6

1-RA-6

SERIAL NOS.

23000 SERIES



Cross Slide and Top Slide (Front) - Position 1 & 3

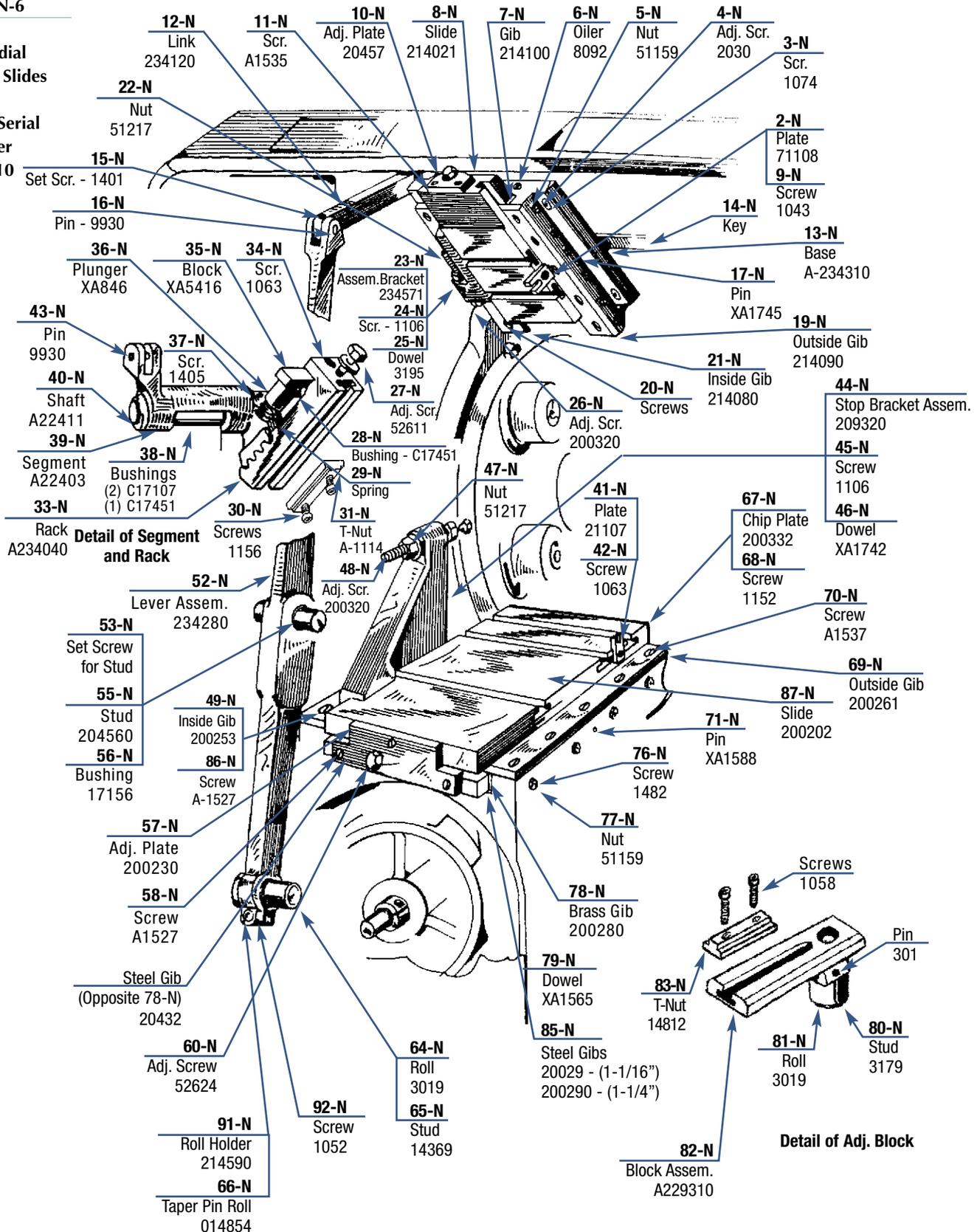
For Machines

9/16 RAN-6

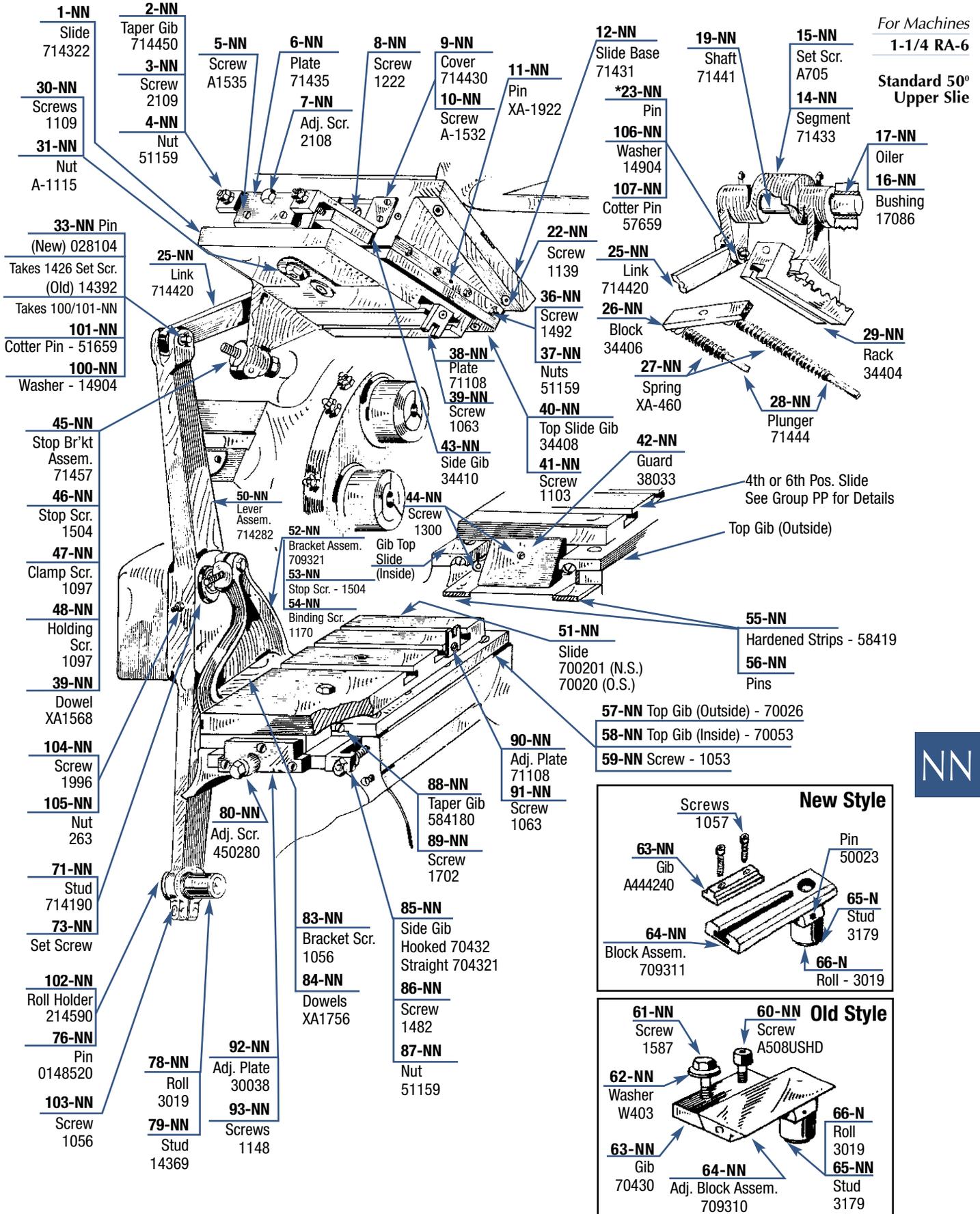
1" RAN-6

30° Radial
Upper Slides

Begin Serial
Number
B-23510



Cross Slide and Top Slide (Front) - Position 1 & 3



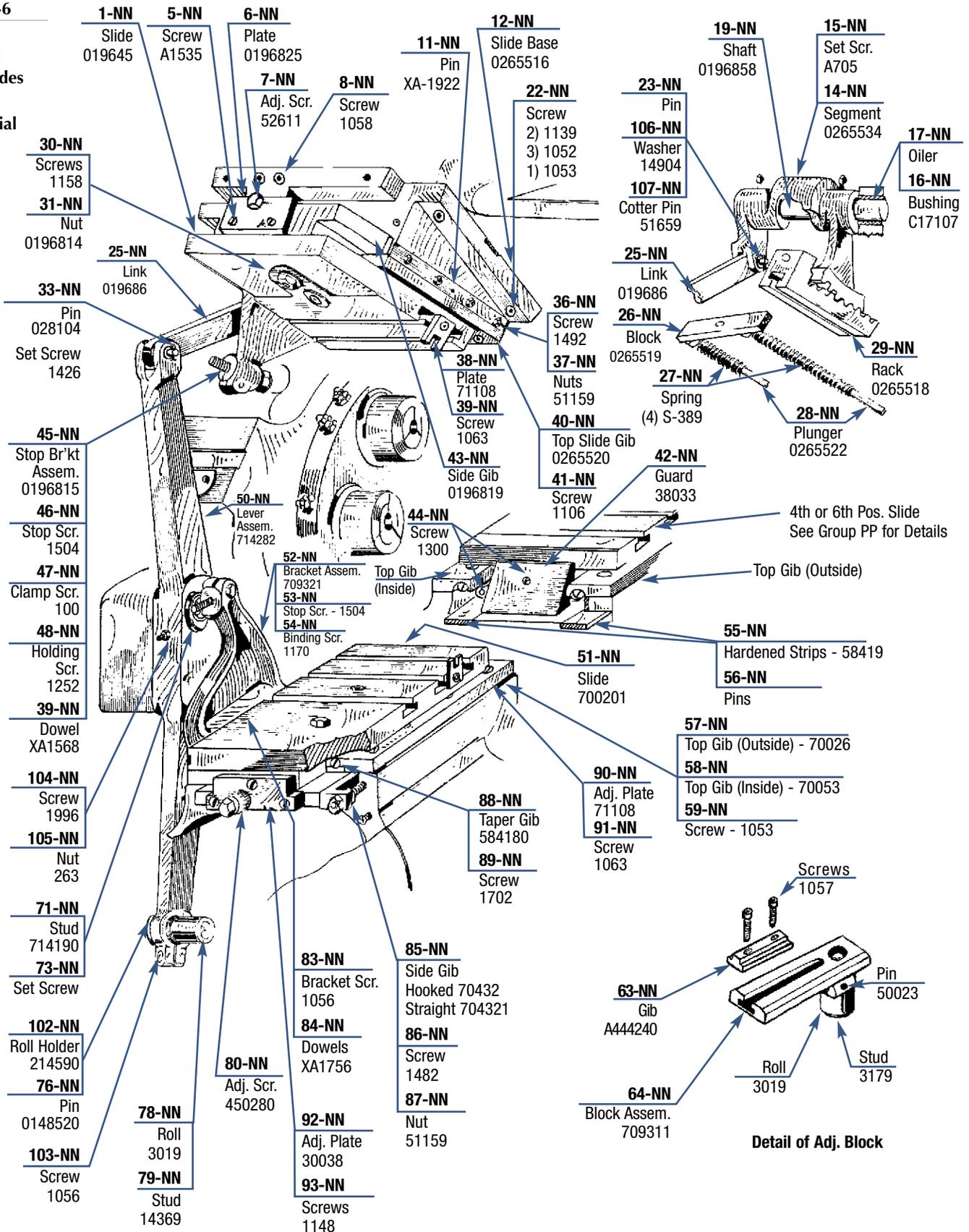
Cross Slide and Top Slide (Front) - Position 1 & 3

For Machines

1-1/4 RA-6

30° Radial
Upper Slides

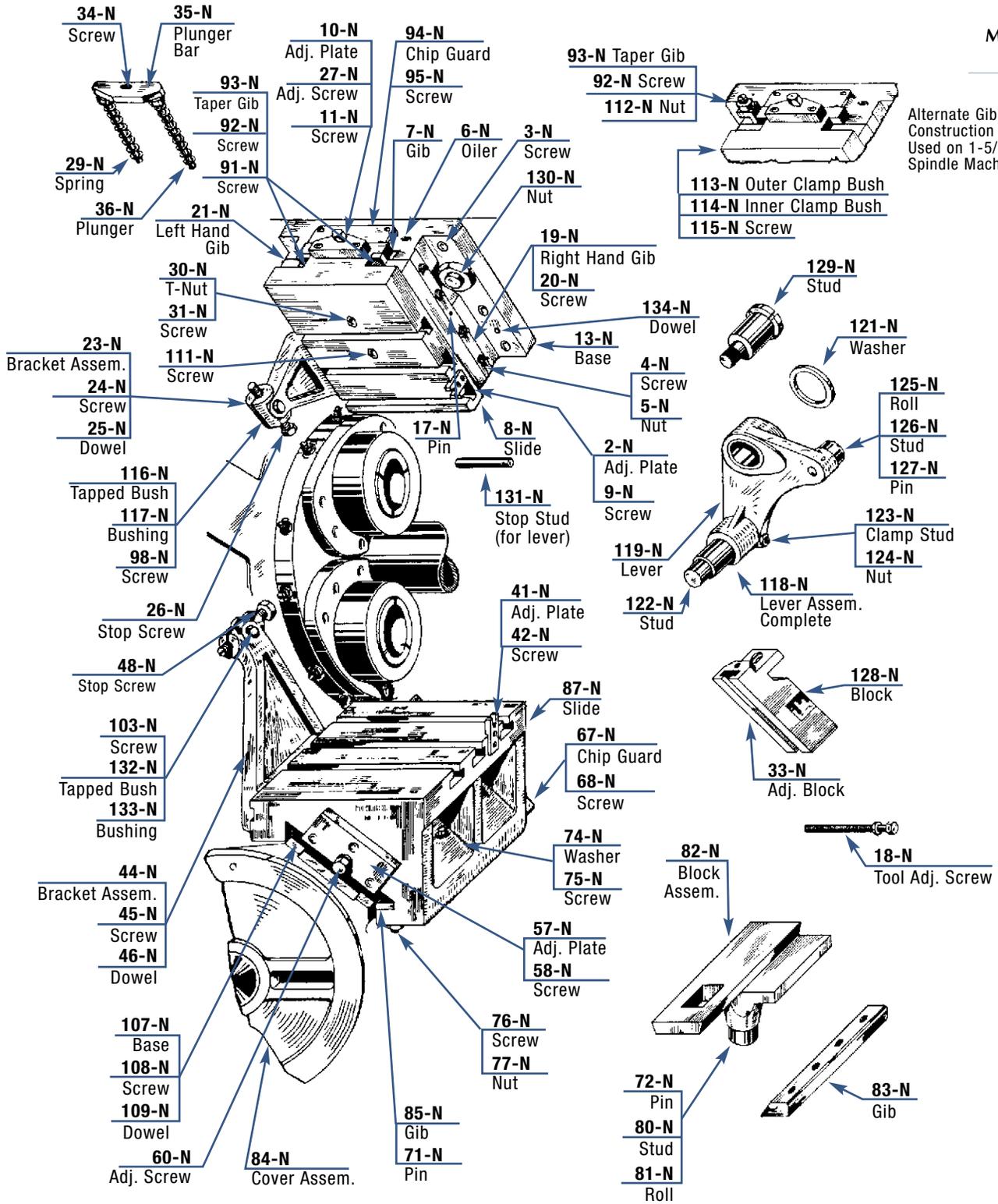
Begin Serial
Number
71634-B



NN

Cross Slide and Top Slide (Front)

For Machines
1-5/8 RB-6
Machines and
Larger



Cross Slide and Top Slide (Front)



7-N Gib Flat



7-N Gib Tapered



8-N Upper Slide



18-N Tool Adjusting Screw



26-N, 48-N Stop Screw

7-N GIB

MACHINE SIZE	PART NUMBER	
	FLAT	TAPERED
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41410	
1-5/8 & 2" RB-6	A-414102	A-414101
1-5/8 & 2" RB-8	A-414102	A-414101
2-5/8 RB-6	A-97410	
2-5/8 RB-8		
3-1/2 RB-6		

8-N UPPER SLIDE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-414020
1-5/8 & 2" RB-6	A-414021
1-5/8 & 2" RB-8	A-414021
2-5/8 RB-6	B-854021
2-5/8 RB-8	A-974021
3-1/2 RB-6	A-954020

18-N TOOL ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6	2135
9/16 & 1" RAN-6	
1-1/4 RA-6, 3/4 RA-8	
1-1/4 RB-8 & 1-5/8 RBN-8	
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	

26-N, 48-N STOP SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	1504
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	26-N 1504 48-N 38032
2-5/8 RB-6	38032
2-5/8 RB-8	XA-6810
3-1/2 RB-6	38032

N

Cross Slide and Top Slide (Front)

27-N ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	2178
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 RB-6	2234
2-5/8 RB-8	2178
3-1/2 RB-6	



27-N Adjusting Screw

29-N SPRING

MACHINE SIZE	PART NUMBER	
1-1/4 RB-8 & 1-5/8 RBN-8	XA-182	
1-5/8 & 2" RB-6	XA-458	
1-5/8 & 2" RB-8	2312	
2-5/8 RB-6	XA-458	
2-5/8 RB-8	2312 O.S.	XA-303 N.S.
3-1/2 RB-6		



29-N Spring

30-N T-NUT & 31-N SCREW

MACHINE SIZE	PART NUMBER	
	T-NUT	SCREW
1-1/4 RB-8 & 1-5/8 RBN-8	14738	1052
1-5/8 & 2" RB-6	52206	1109
1-5/8 & 2" RB-8		1059
2-5/8 RB-6	A-1122	
2-5/8 RB-8	52206	1075
3-1/2 RB-6		1157



30-N T-Nut

33-N ADJUSTING BLOCK

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41404
1-5/8 & 2" RB-6	A-39404
1-5/8 & 2" RB-8	
2-5/8 RB-6	B-85404
2-5/8 RB-8	A-97404
3-1/2 RB-6	



33-N Adjusting Block

44-N BRACKET ASSEMBLY

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-40030
1-5/8 & 2" RB-6	A-400300
1-5/8 & 2" RB-8	BM-820300
2-5/8 RB-6	B-84030
2-5/8 RB-8	A-960300
3-1/2 RB-6	A-94030



44-N Bracket Assembly

Cross Slide and Top Slide (Front)



60-N Adjusting Screw

60-N ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	2086
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	2173
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	



67-N Chip Guard

67-N CHIP GUARD

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-40033
1-5/8 & 2" RB-6	A-38033
1-5/8 & 2" RB-8	A-96033
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	



80-N Stud



81-N Roll

80-N, 81-N, 82-N

MACHINE SIZE	PART NUMBER		
	80-N STUD	81-N ROLL	82-N BLOCK ASSEMBLY
1-1/4 RB-8 & 1-5/8 RBN-8	14367	14261	AM-40931
1-5/8 & 2" RB-6			A-389310
1-5/8 & 2" RB-8	14367	14263	BM-82931
2-5/8 RB-6			B-829310
2-5/8 RB-8			A-96931
3-1/2 RB-6			



82-N Block Assembly

83-N GIB

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-38022
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	BM-82022
2-5/8 RB-6	
2-5/8 RB-8	A-960220
3-1/2 RB-6	



83-N Gib

85-N GIB

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-40456
1-5/8 & 2" RB-6	A-384562
1-5/8 & 2" RB-8	BM-824561
2-5/8 RB-6	B-82456
2-5/8 RB-8	A-964561
3-1/2 RB-6	



85-N Gib

Cross Slide and Top Slide (Front)

87-N SLIDE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-400200
1-5/8 & 2" RB-6	A-400201
1-5/8 & 2" RB-8	BM-820201
2-5/8 RB-6	B-84020
2-5/8 RB-8	A-960201
3-1/2 RB-6	A-940201



87-N Slide

92-N SCREW & 93-N GIB

MACHINE SIZE	PART NUMBER	
	SCREW	TAPER GIB
1-1/4 RB-8 & 1-5/8 RBN-8	N/A	N/A
1-5/8 & 2" RB-6	52649	A-41413
1-5/8 & 2" RB-8	N/A	N/A
2-5/8 RB-6	52649	A-97413
2-5/8 RB-8		
3-1/2 RB-6		



92-N Screw



93-N Gib

118-N & P LEVER ASSY. & COMPONENTS	118-N & P LEVER ASSY.	119-N & P LEVER ONLY	120-N & P BUSHING	121-N & P WASHER	122-N & P STUD
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41428	A-39403	C-17022	15842	AM-41420
1-5/8 & 2" RB-6	A-394280	A-39403	C-17022	15842	A-97420
1-5/8 & 2" RB-8	BM-394280	BM-83403	C-17022	15842	A-97420
2-5/8 RB-6	B-854280	B-854030	C-17022	15842	A-97420
2-5/8 RB-8	A-97428	A-97403	C-17022	15842	A-97420
3-1/2 RB-6	A-97428	A-97403	C-17022	15842	A-97420
4" RB-6	A-97428	A-97403	C-17022	15842	A-97420



118-N Lever Assy.

	123-N & P CLAMP STUD	124-N & P NUT	125-N & P ROLL	126-N & P STUD	128-N & P BLOCK
1-1/4 RB-8 & 1-5/8 RBN-8	44338	3157	14208	3180	AM-41400
1-5/8 & 2" RB-6	44338	3157	14208	3180	A-97400
1-5/8 & 2" RB-8	44338	3157	14208	3180	A-97400
2-5/8 RB-6	44338	3157	14208	3180	A-97400
2-5/8 RB-8	44338	3157	14208	3180	A-97400
3-1/2 RB-6	44338	3157	14208	3180	A-97400
4" RB-6	44338	3157	14208	3180	A-97400



121-N Washer

	129-N & P STUD	130-N & P NUT
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41419	51195
1-5/8 & 2" RB-6	A-974190	51209
1-5/8 & 2" RB-8	A-974190	51209
2-5/8 RB-6	A-974190	51209
2-5/8 RB-8	A-974190	51209
3-1/2 RB-6	A-974190	51209
4" RB-6	BA-93419	51209

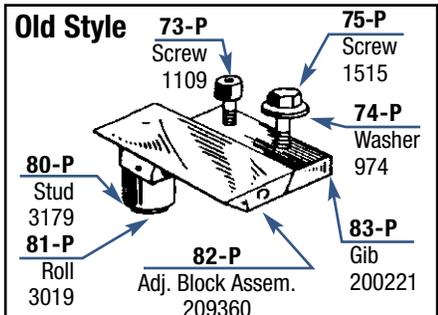
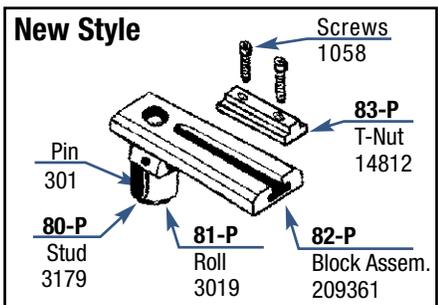
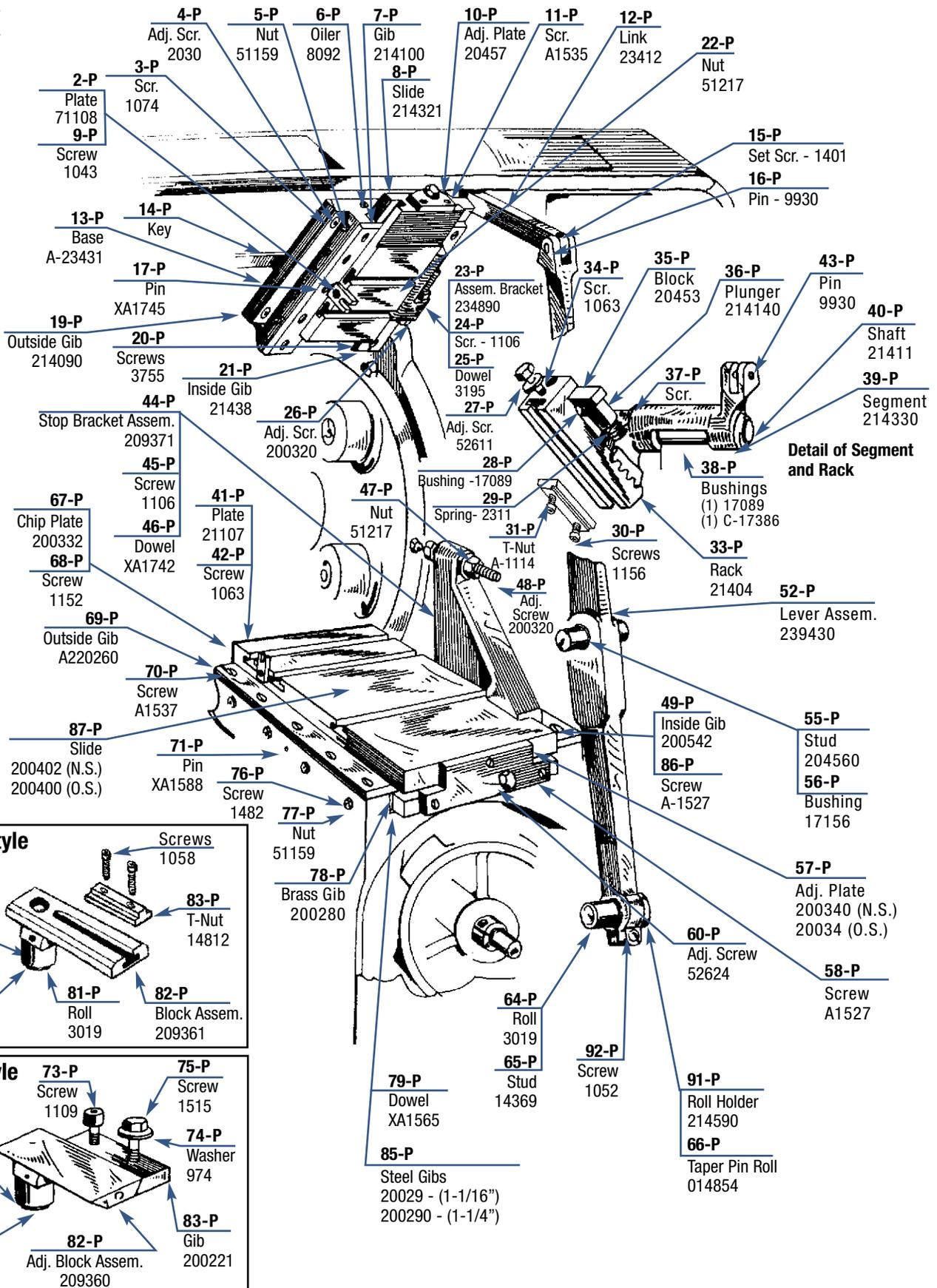


128-N Block

Cross Slide and Top Slide (Rear) Position 4 & 6

For Machines
9/16 RA-6

OLD STYLE
SERIAL NOS.
22000 SERIES



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Cross Slide and Top Slide (Rear) - Position 4 & 6

For Machines

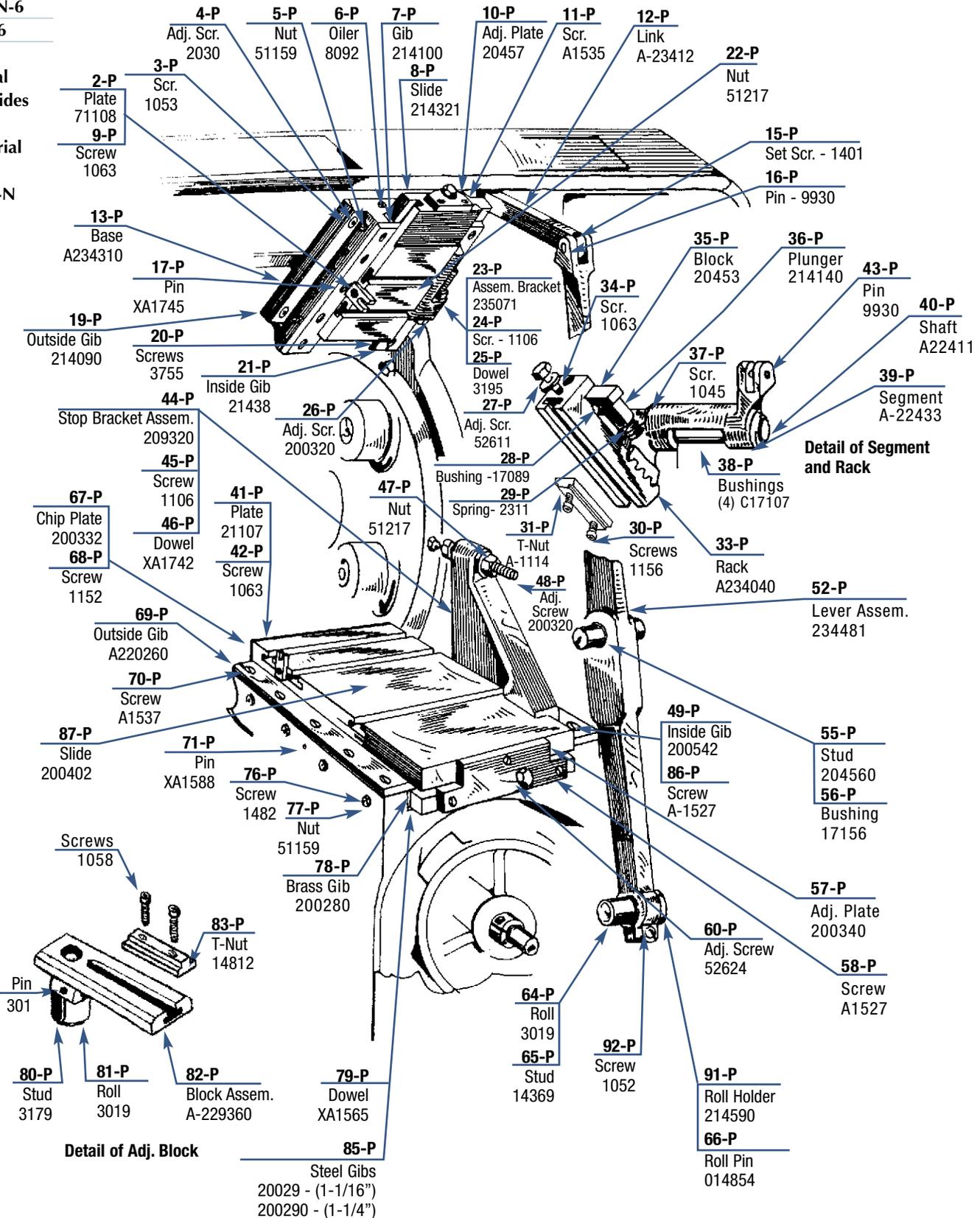
9/16 RAN-6

1" RAN-6

30° Radial
Upper Slides

Begin Serial
Number

B-23510-N

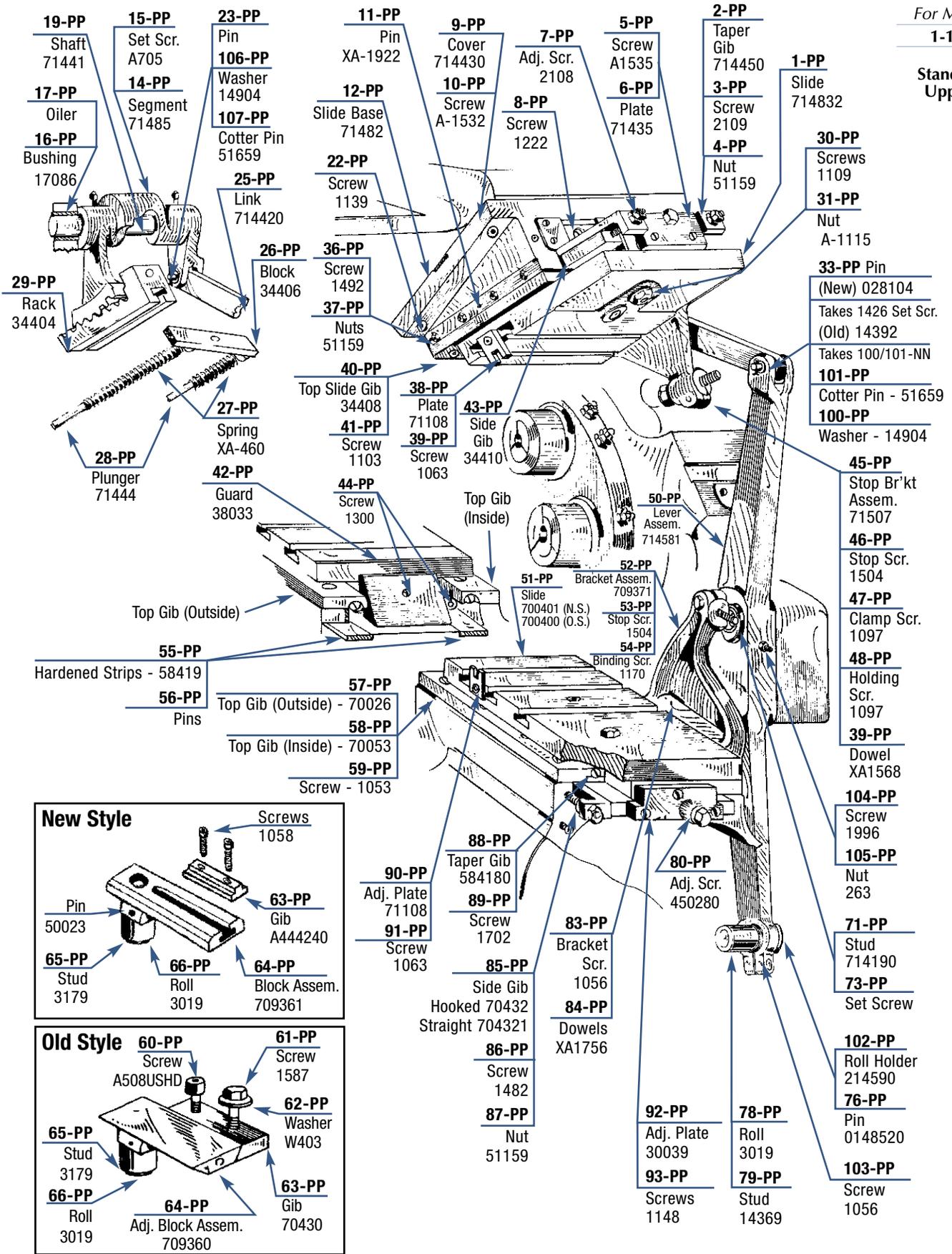


Cross Slide and Top Slide (Rear) Position 4 & 6

For Machines

1-1/4 RA-6

Standard 50°
Upper Slide



PP

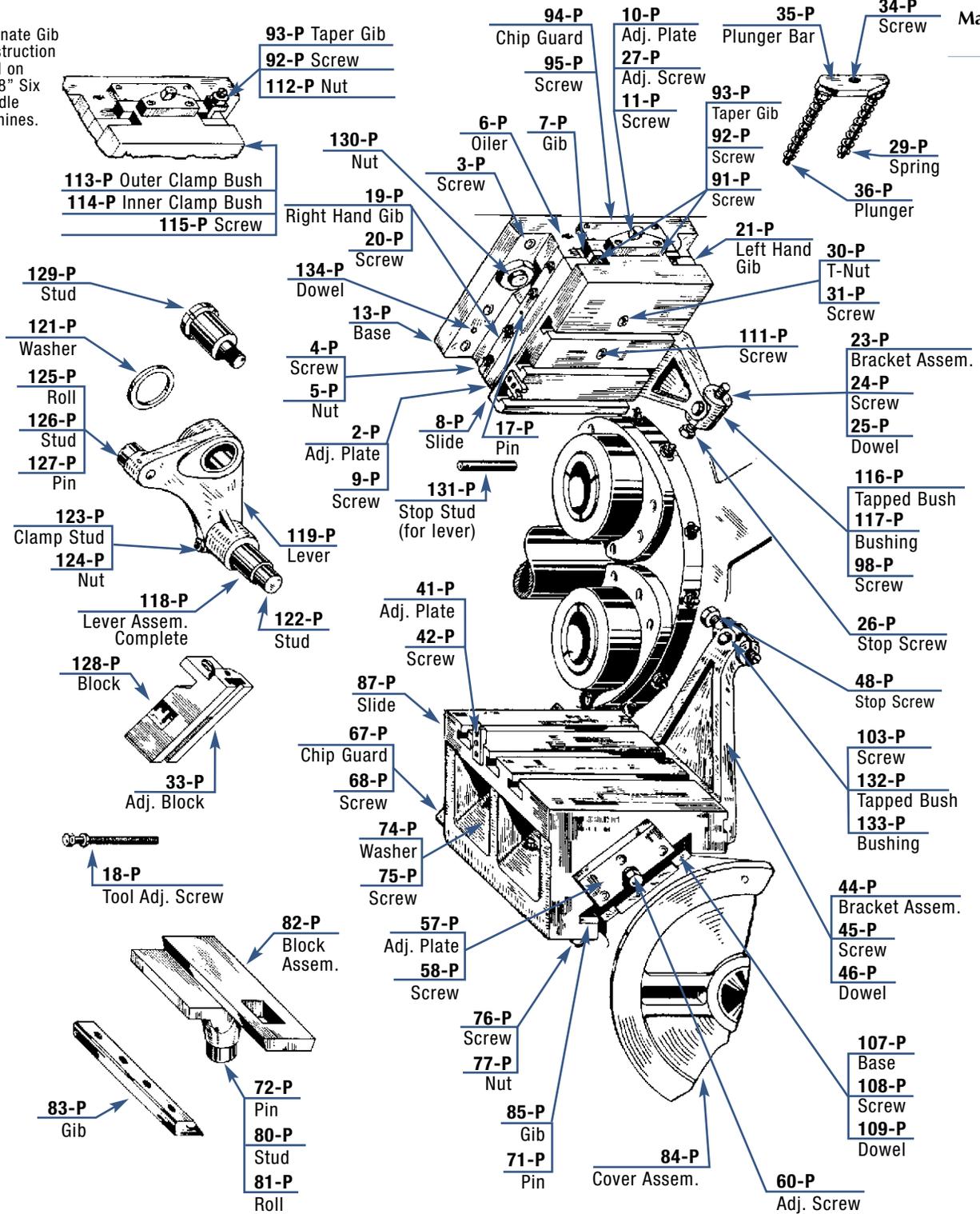


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Cross Slide and Top Slide (Rear)

For Machines
1-5/8 RB-6
Machines and
Larger

Alternate Gib
Construction
Used on
1-5/8" Six
Spindle
Machines.



Cross Slide and Top Slide (Rear)



7-P Gib Flat



7-P Gib Tapered



8-P Upper Slide



18-P Tool Adjusting Screw



26-P, 48-P Stop Screw

7-P GIB

MACHINE SIZE	PART NUMBER	
	FLAT	TAPERED
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41410	
1-5/8 & 2" RB-6	A-414102	A-414101
1-5/8 & 2" RB-8	A-414102	A-414101
2-5/8 RB-6	A-97410	
2-5/8 RB-8		
3-1/2 RB-6		

8-P UPPER SLIDE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-414320
1-5/8 & 2" RB-6	A-414321
1-5/8 & 2" RB-8	026897
2-5/8 RB-6	B-854021
2-5/8 RB-8	A-974021
3-1/2 RB-6	A-954020

18-P TOOL ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
9/16 & 1" RA-6	2135
9/16 & 1" RAN-6	
1-1/4 RA-6, 3/4 RA-8	
1-1/4 RB-8 & 1-5/8 RBN-8	
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	

26-P, 48-P STOP SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	1504
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	26-N 1504 48-N 38032
2-5/8 RB-6	38032
2-5/8 RB-8	XA-6810
3-1/2 RB-6	38032

P

Cross Slide and Top Slide (Rear)

27-P ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	2178
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	
2-5/8 RB-6	2234
2-5/8 RB-8	2178
3-1/2 RB-6	



27-P Adjusting Screw

29-P SPRING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	XA-182
1-5/8 & 2" RB-6	XA-458
1-5/8 & 2" RB-8	2312
2-5/8 RB-6	XA-458
2-5/8 RB-8	2312 O.S.
3-1/2 RB-6	XA-303 N.S.



29-P Spring

30-P T-NUT & 31-P SCREW

MACHINE SIZE	PART NUMBER	
	T-NUT	SCREW
1-1/4 RB-8 & 1-5/8 RBN-8	14738	1052
1-5/8 & 2" RB-6	52206	1109
1-5/8 & 2" RB-8		1059
2-5/8 RB-6	A-1122	
2-5/8 RB-8	52206	1075
3-1/2 RB-6		1157



30-P T-Nut

33-P ADJUSTING BLOCK

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41404
1-5/8 & 2" RB-6	A-39404
1-5/8 & 2" RB-8	
2-5/8 RB-6	B-85404
2-5/8 RB-8	A-97404
3-1/2 RB-6	



33-P Adjusting Block

44-P BRACKET ASSEMBLY

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-40030
1-5/8 & 2" RB-6	A-400300
1-5/8 & 2" RB-8	BM-820300
2-5/8 RB-6	B-84030
2-5/8 RB-8	A-960300
3-1/2 RB-6	A-94030



44-P Bracket Assembly

Cross Slide and Top Slide (Rear)



60-P Adjusting Screw

60-P ADJUSTING SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	2086
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	2173
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	



67-P Chip Guard

67-P CHIP GUARD

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-38062
1-5/8 & 2" RB-6	A-38062
1-5/8 & 2" RB-8	A-96062
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	



80-P Stud

81-P Roll

80-P, 81-P, 82-P

MACHINE SIZE	PART NUMBER		
	80-P STUD	81-P ROLL	82-P BLOCK ASSEMBLY
1-1/4 RB-8 & 1-5/8 RBN-8	14367	14261	AM-40936
1-5/8 & 2" RB-6			A-389360
1-5/8 & 2" RB-8	14367	14263	BM-82936
2-5/8 RB-6			B-829360
2-5/8 RB-8			A-96936
3-1/2 RB-6			



82-P Block Assembly

83-P GIB

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-38022
1-5/8 & 2" RB-6	
1-5/8 & 2" RB-8	BM-82022
2-5/8 RB-6	
2-5/8 RB-8	A-960220
3-1/2 RB-6	



83-P Gib

85-P GIB

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-40456
1-5/8 & 2" RB-6	A-384562
1-5/8 & 2" RB-8	BM-824561
2-5/8 RB-6	B-82456
2-5/8 RB-8	A-964561
3-1/2 RB-6	



85-P Gib

Cross Slide and Top Slide (Rear)

87-P SLIDE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-400400
1-5/8 & 2" RB-6	A-400401
1-5/8 & 2" RB-8	BM-820401
2-5/8 RB-6	B-84040
2-5/8 RB-8	A-960401
3-1/2 RB-6	A-940401



87-P Slide

92-P SCREW & 93-P GIB

MACHINE SIZE	PART NUMBER	
	SCREW	TAPER GIB
1-1/4 RB-8 & 1-5/8 RBN-8	N/A	N/A
1-5/8 & 2" RB-6	52649	A-41413
1-5/8 & 2" RB-8	N/A	N/A
2-5/8 RB-6		
2-5/8 RB-8	52649	A-97413
3-1/2 RB-6		



92-P Screw



93-P Gib

118-N & P LEVER ASSY. & COMPONENTS	118-N & P LEVER ASSY.	119-N & P LEVER ONLY	120-N & P BUSHING	121-N & P WASHER	122-N & P STUD
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41428	A-39403	C-17022	15842	AM-41420
1-5/8 & 2" RB-6	A-394280	A-39403	C-17022	15842	A-97420
1-5/8 & 2" RB-8	BM-394280	BM-83403	C-17022	15842	A-97420
2-5/8 RB-6	B-854280	B-854030	C-17022	15842	A-97420
2-5/8 RB-8	A-97428	A-97403	C-17022	15842	A-97420
3-1/2 RB-6	A-97428	A-97403	C-17022	15842	A-97420
4" RB-6	A-97428	A-97403	C-17022	15842	A-97420



118-P

Lever Assy.

	123-N & P CLAMP STUD	124-N & P NUT	125-N & P ROLL	126-N & P STUD	128-N & P BLOCK
1-1/4 RB-8 & 1-5/8 RBN-8	44338	3157	14208	3180	AM-41400
1-5/8 & 2" RB-6	44338	3157	14208	3180	A-97400
1-5/8 & 2" RB-8	44338	3157	14208	3180	A-97400
2-5/8 RB-6	44338	3157	14208	3180	A-97400
2-5/8 RB-8	44338	3157	14208	3180	A-97400
3-1/2 RB-6	44338	3157	14208	3180	A-97400
4" RB-6	44338	3157	14208	3180	A-97400



121-P

Washer

	129-N & P STUD	130-N & P NUT
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41419	51195
1-5/8 & 2" RB-6	A-974190	51209
1-5/8 & 2" RB-8	A-974190	51209
2-5/8 RB-6	A-974190	51209
2-5/8 RB-8	A-974190	51209
3-1/2 RB-6	A-974190	51209
4" RB-6	BA-93419	51209



128-P

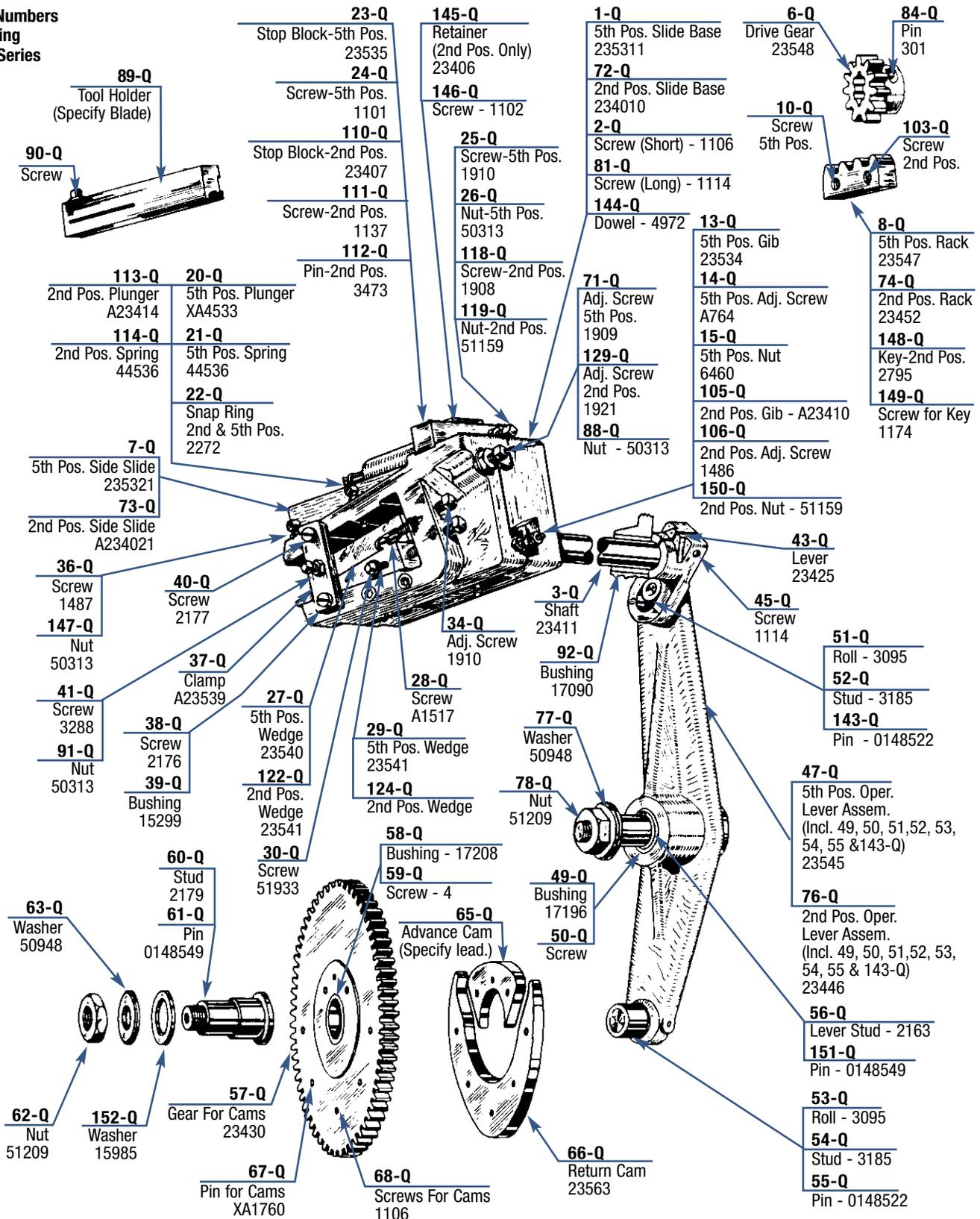
Block

Intermediate Side Slides (Front or Rear)

For Machines

9/16 RA-6

Serial Numbers
Beginning
22000 Series



Intermediate Side Slides (Front or Rear)

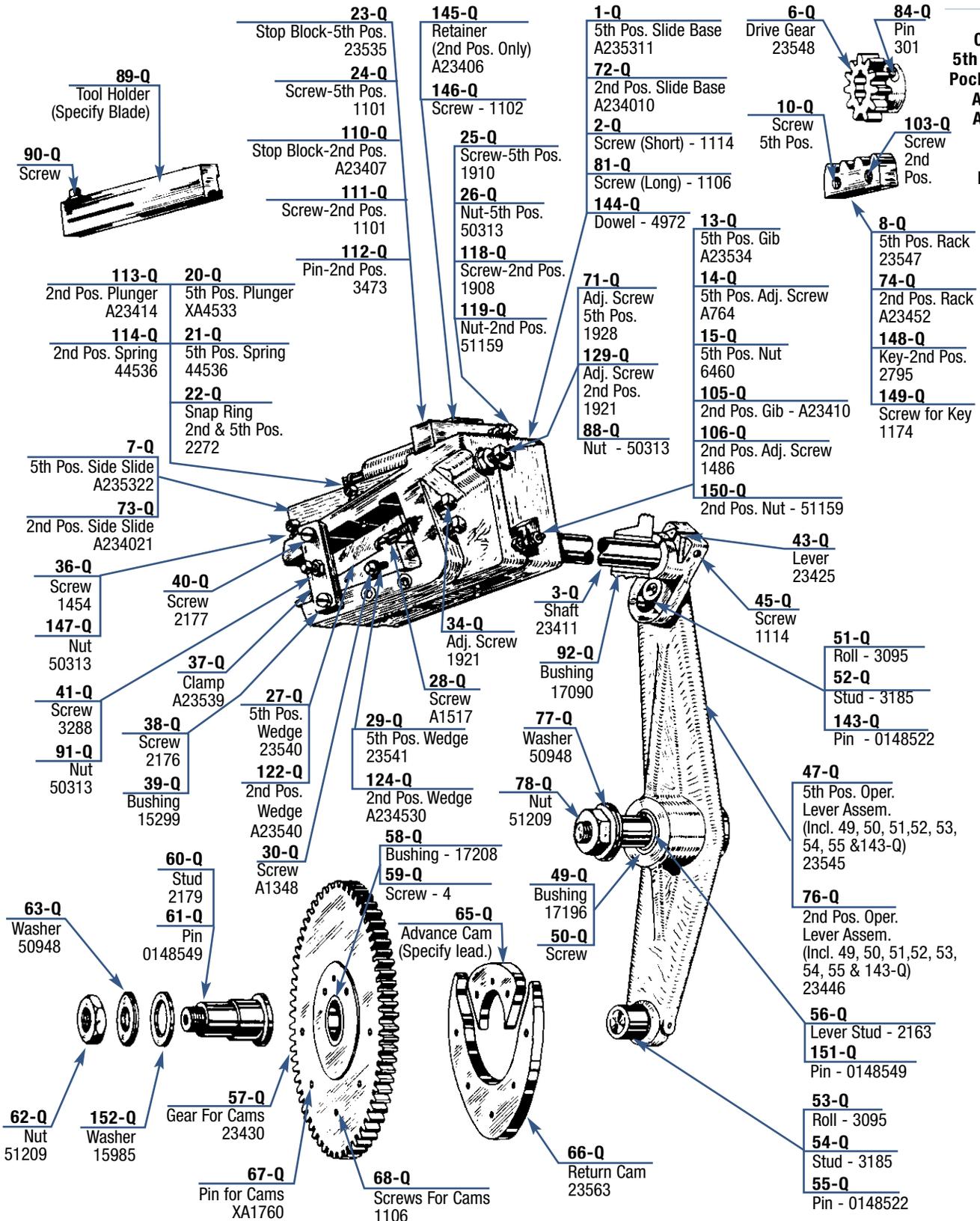
For Machines

9/16 RA-6

1" RA-6

**Complete
5th Position
Pocket Slide
Assembly
A-235441**

**Serial
Numbers
23000
Series**



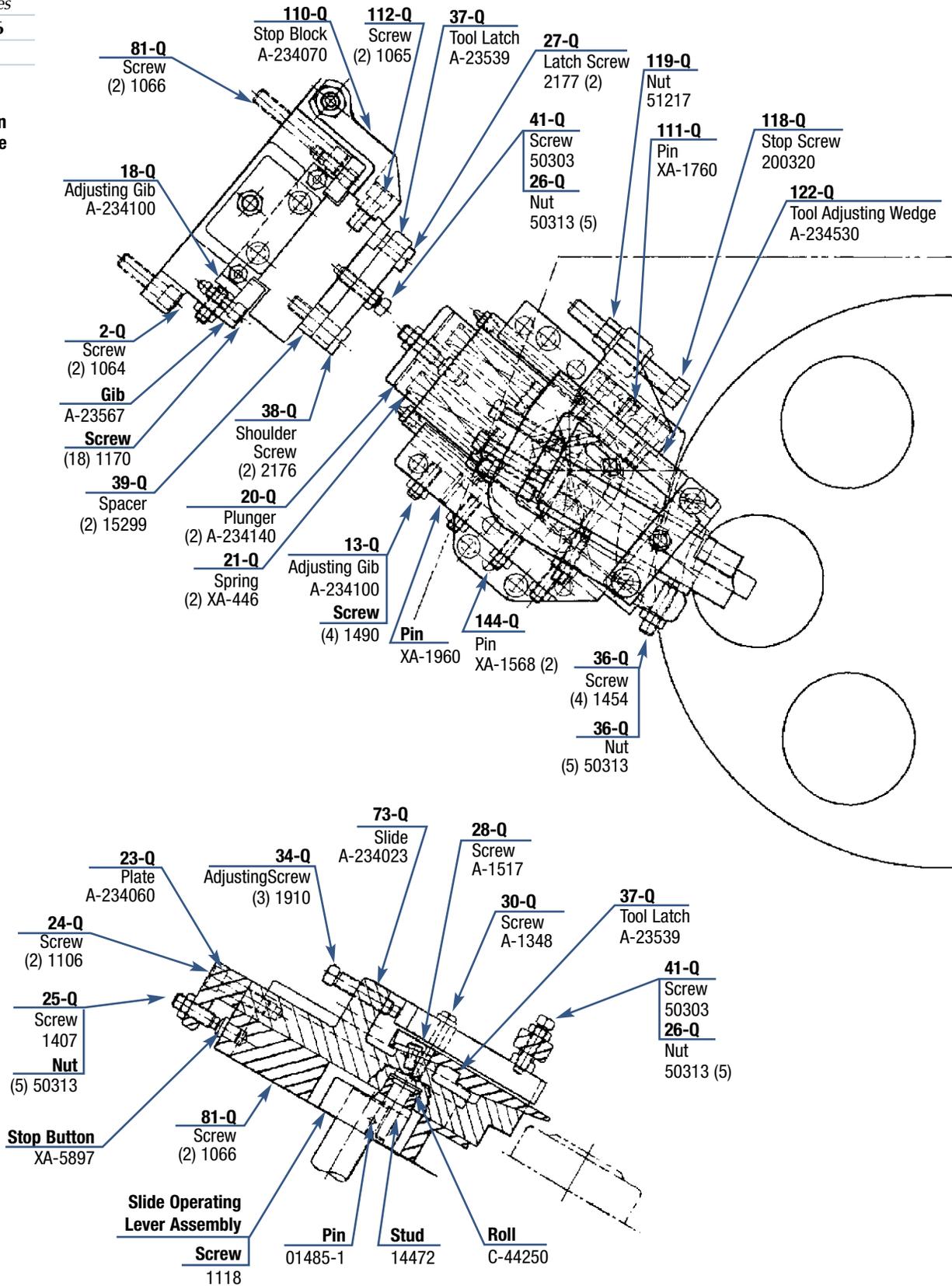
Intermediate Side Slide - Front

For Machines

9/16 RAN-6

1" RAN-6

**Complete
2nd Position
(Front) Slide
Assembly
A-234262**



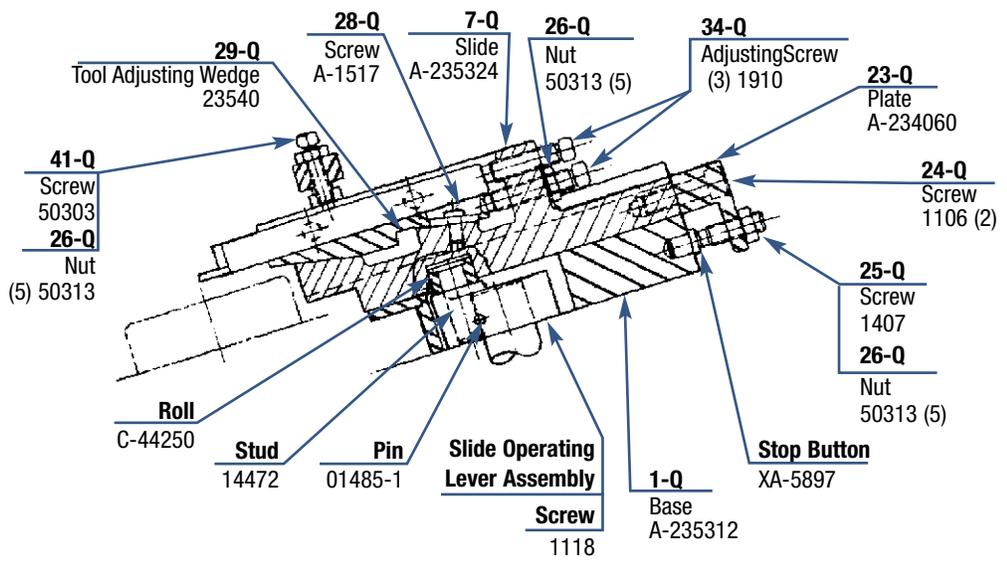
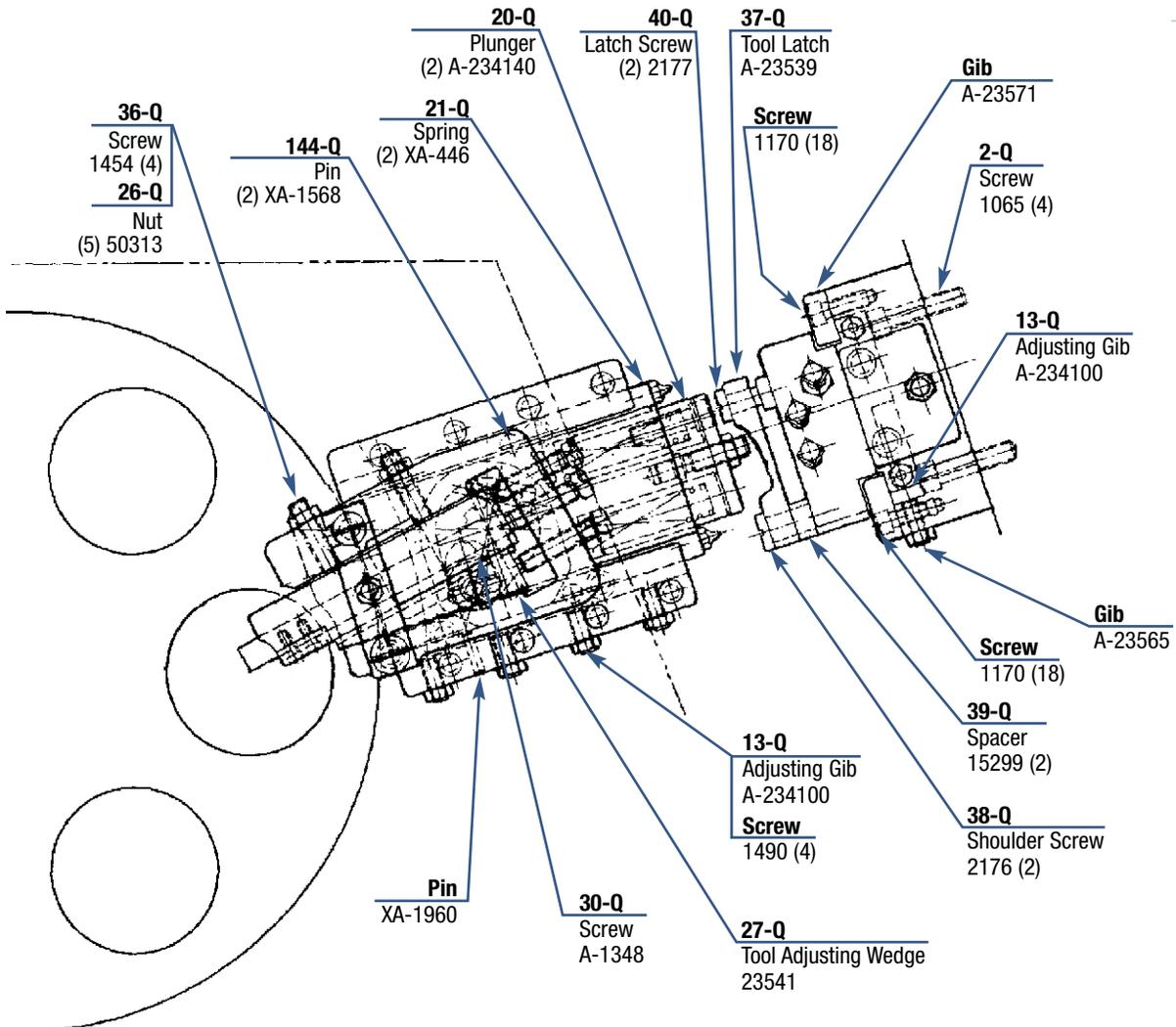
Intermediate Side Slide - Rear

For Machines

9/16 RAN-6

1" RAN-6

**Complete
5th Position
Slide
Assembly
02593-20**

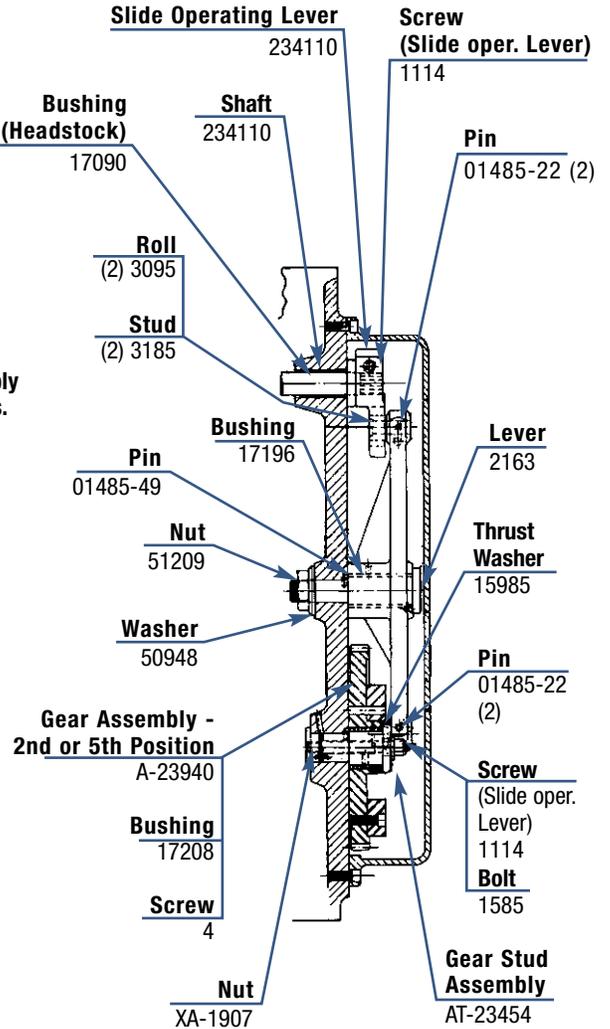
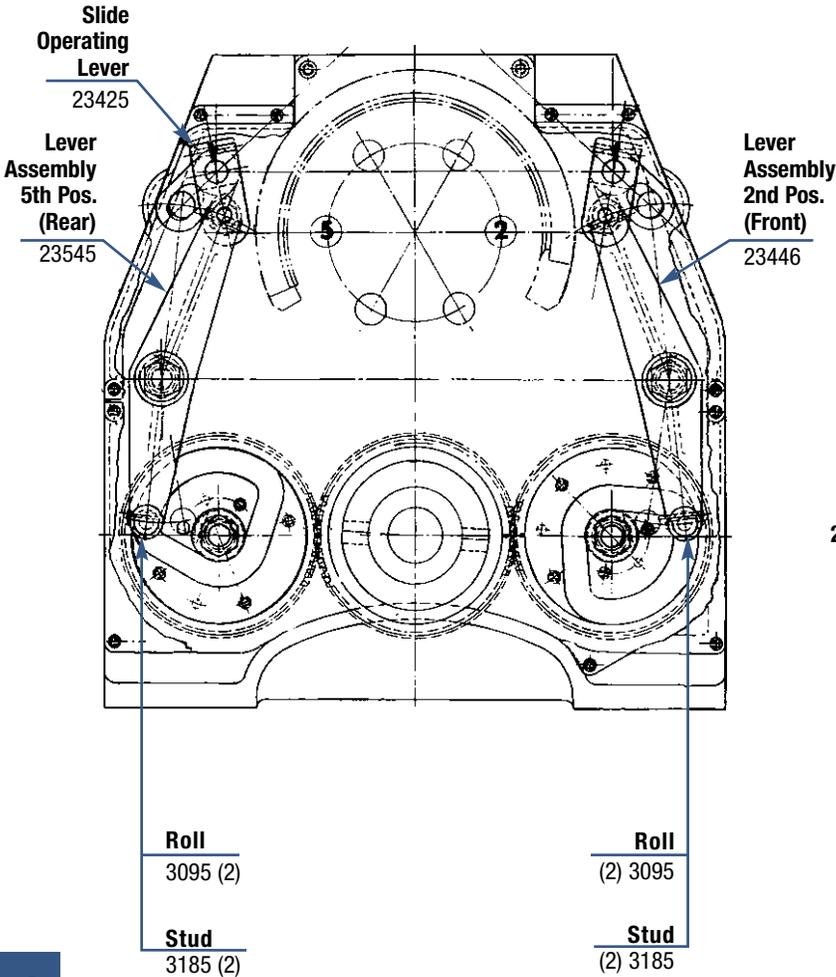


Intermediate Slide Operating Levers

For Machines

9/16 RAN-6

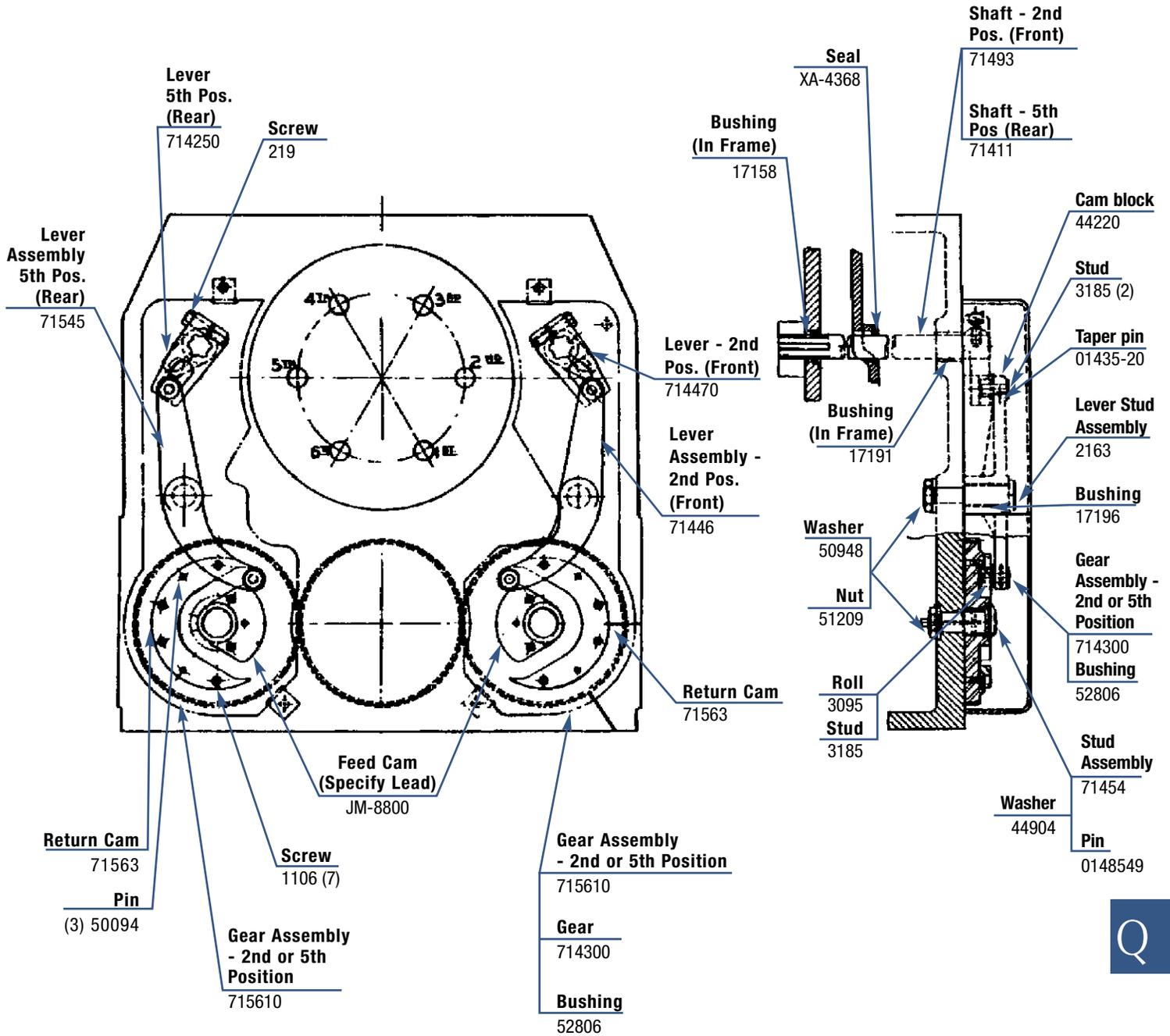
1" RAN-6



Intermediate Slide Drive Lever Mechanism

For Machines

1-1/4 RA-6

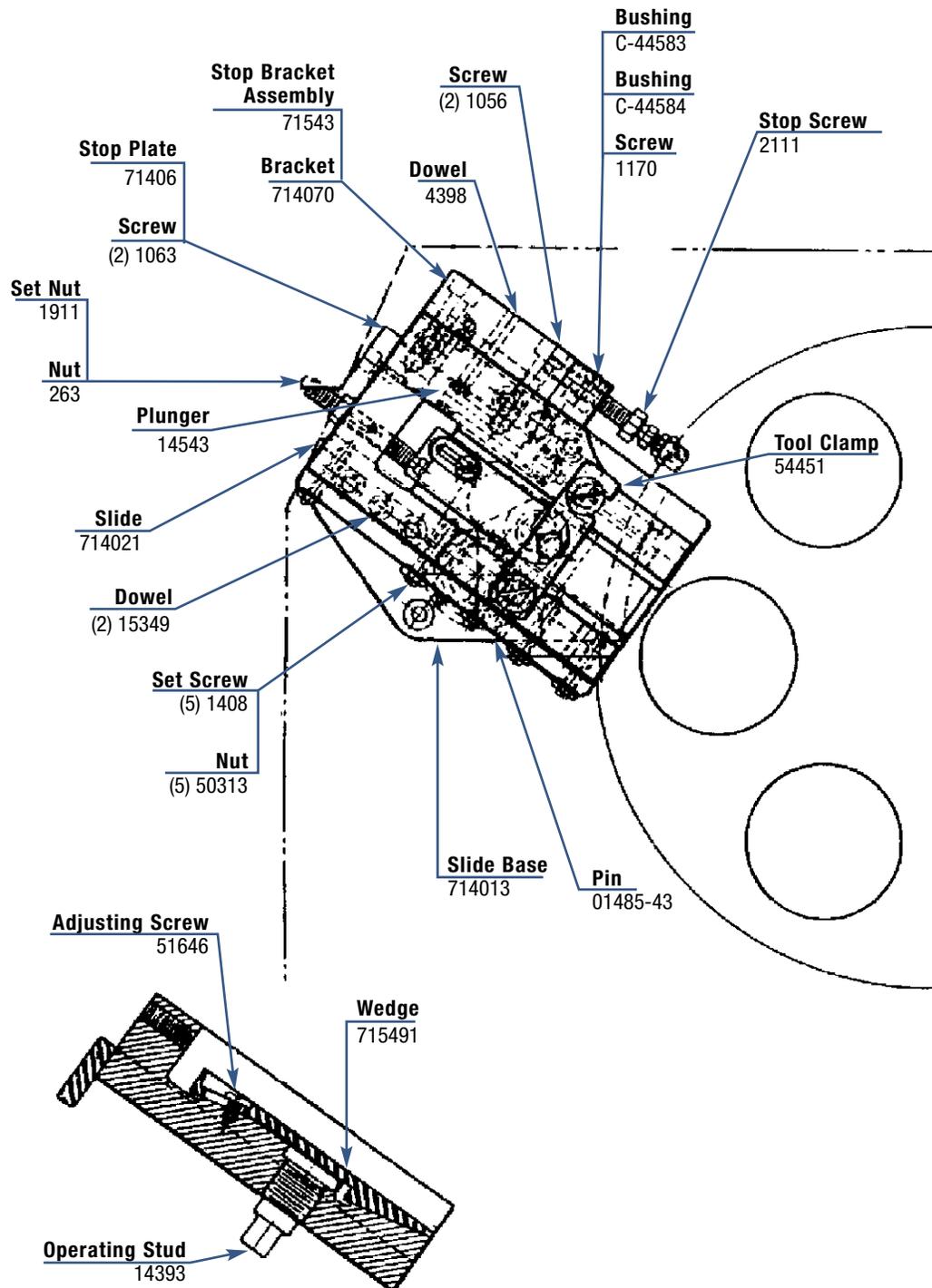


Intermediate Slide - Pocket Type - Front

For Machines

1-1/4 RA-6

Complete
2nd Position
Side Slide
Assembly
714264

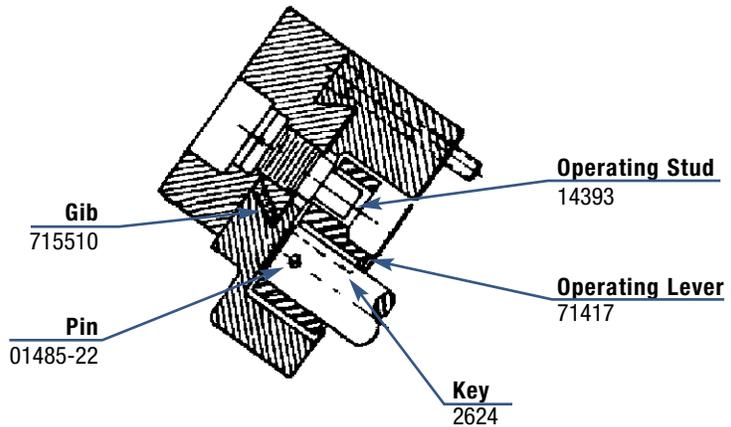
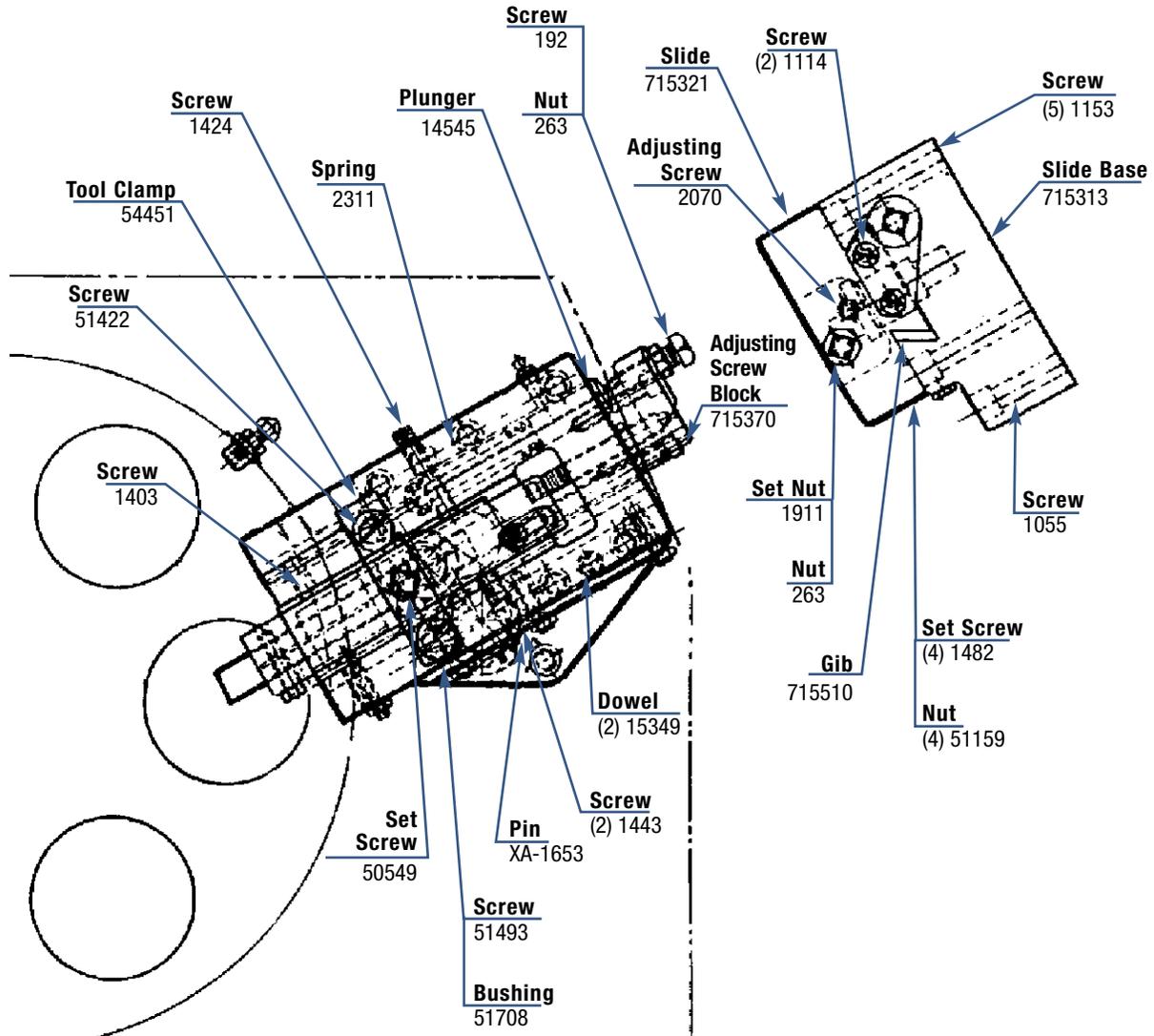


Intermediate Slide - Pocket Type - Rear

For Machines

1-1/4 RA-6

**Complete
5th Position
Cut-off Slide
Assembly
715445**

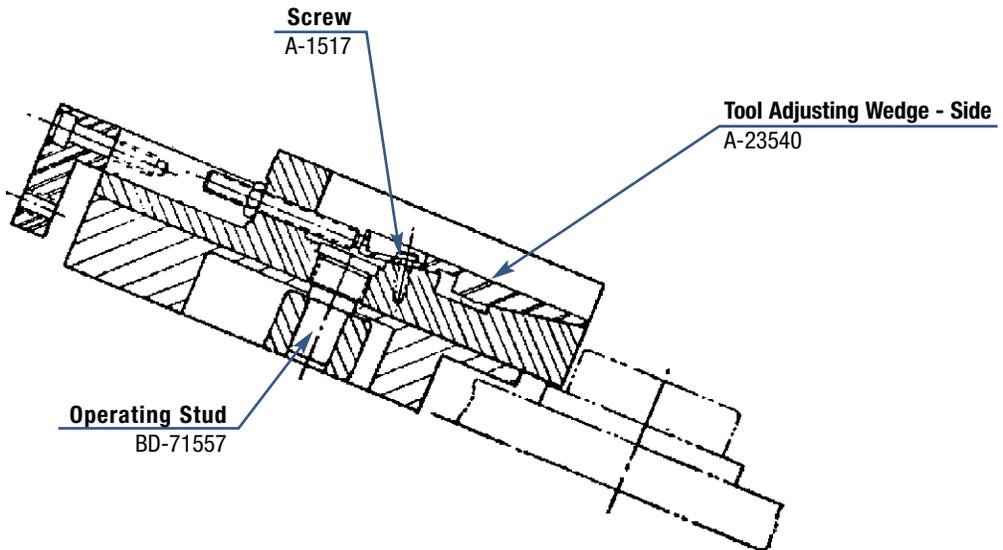
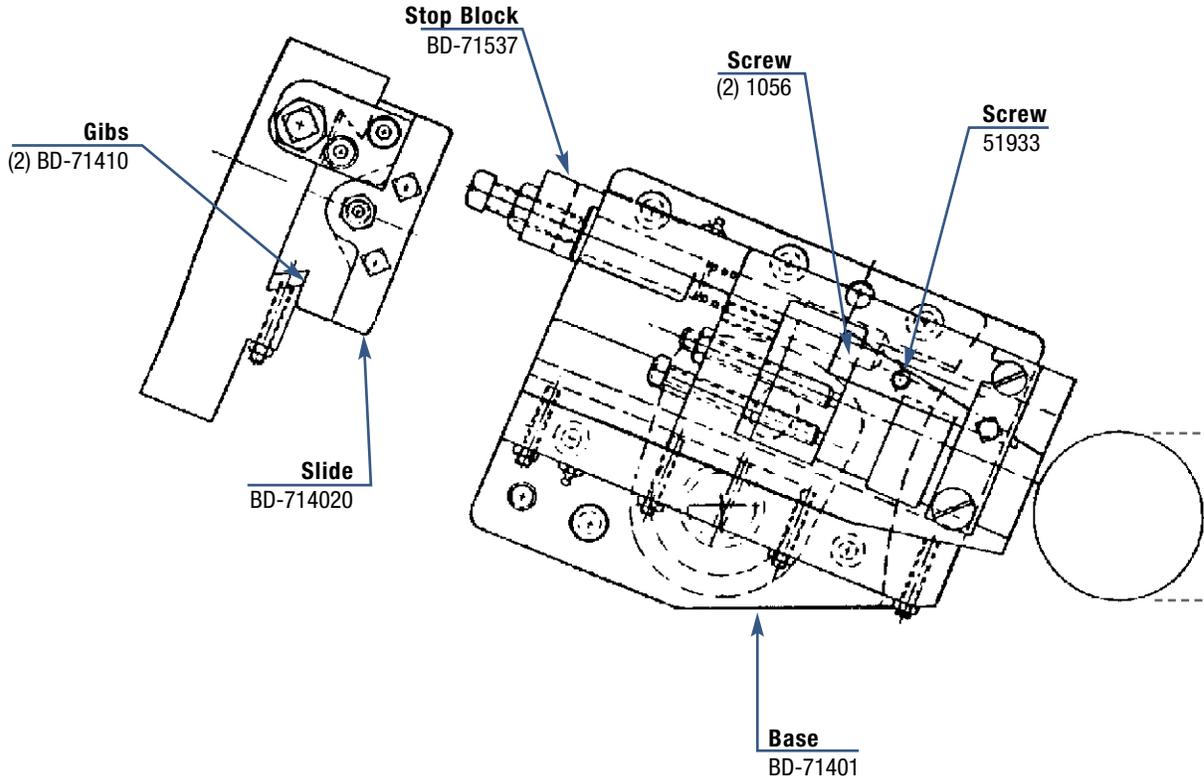


Intermediate Slide - Pocket Type - Front

For Machines

3/4 RA-8

Complete
3rd Position
Side Slide
Assembly
BD-714260

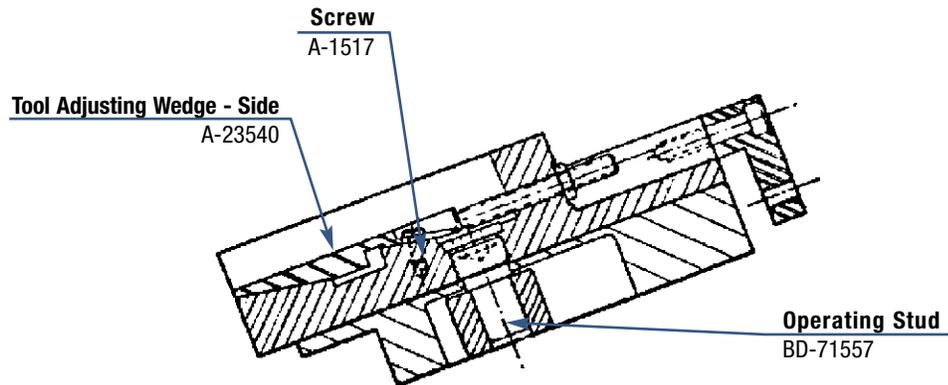
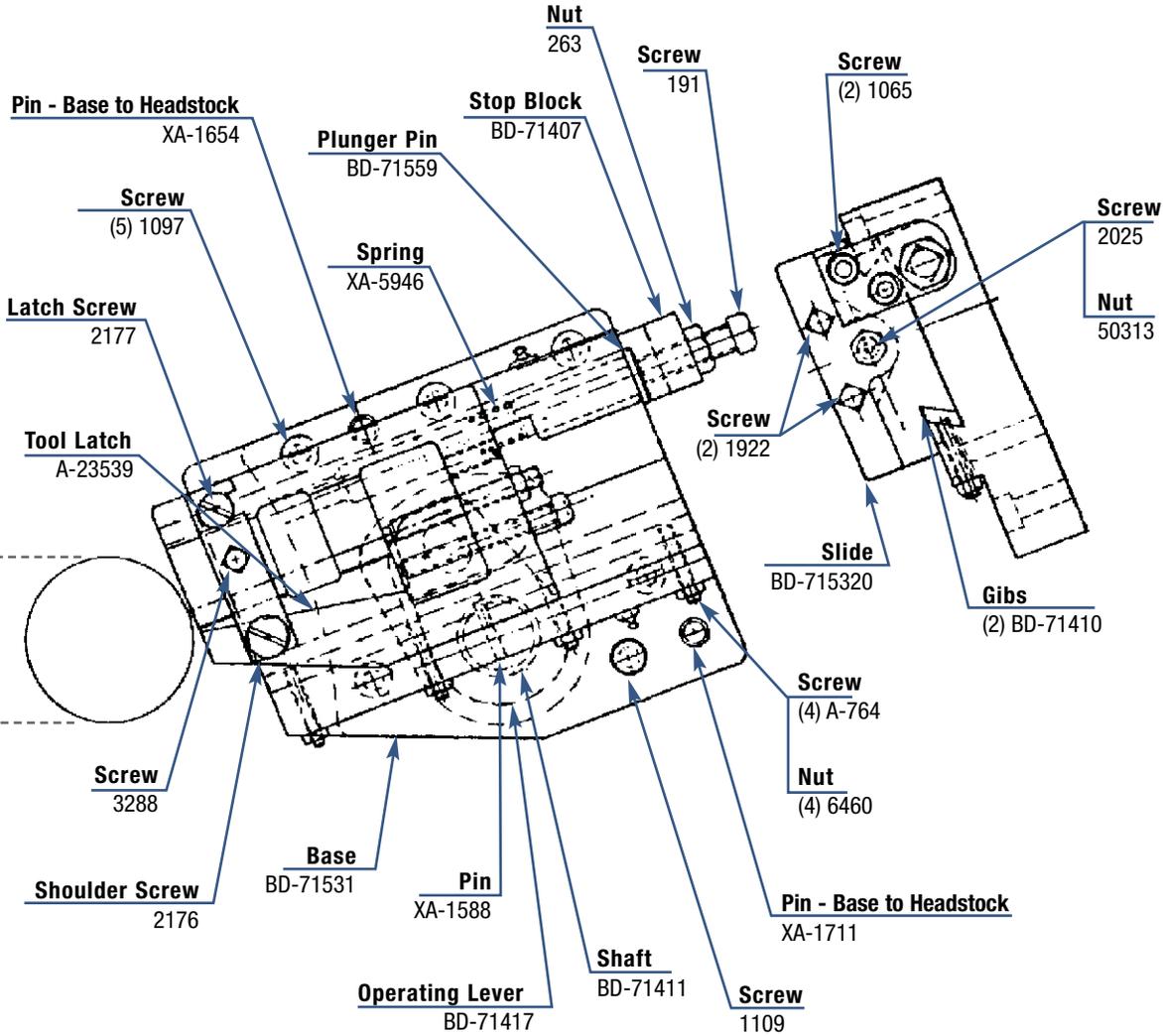


Intermediate Slide - Pocket Type - Rear

For Machines

3/4 RA-8

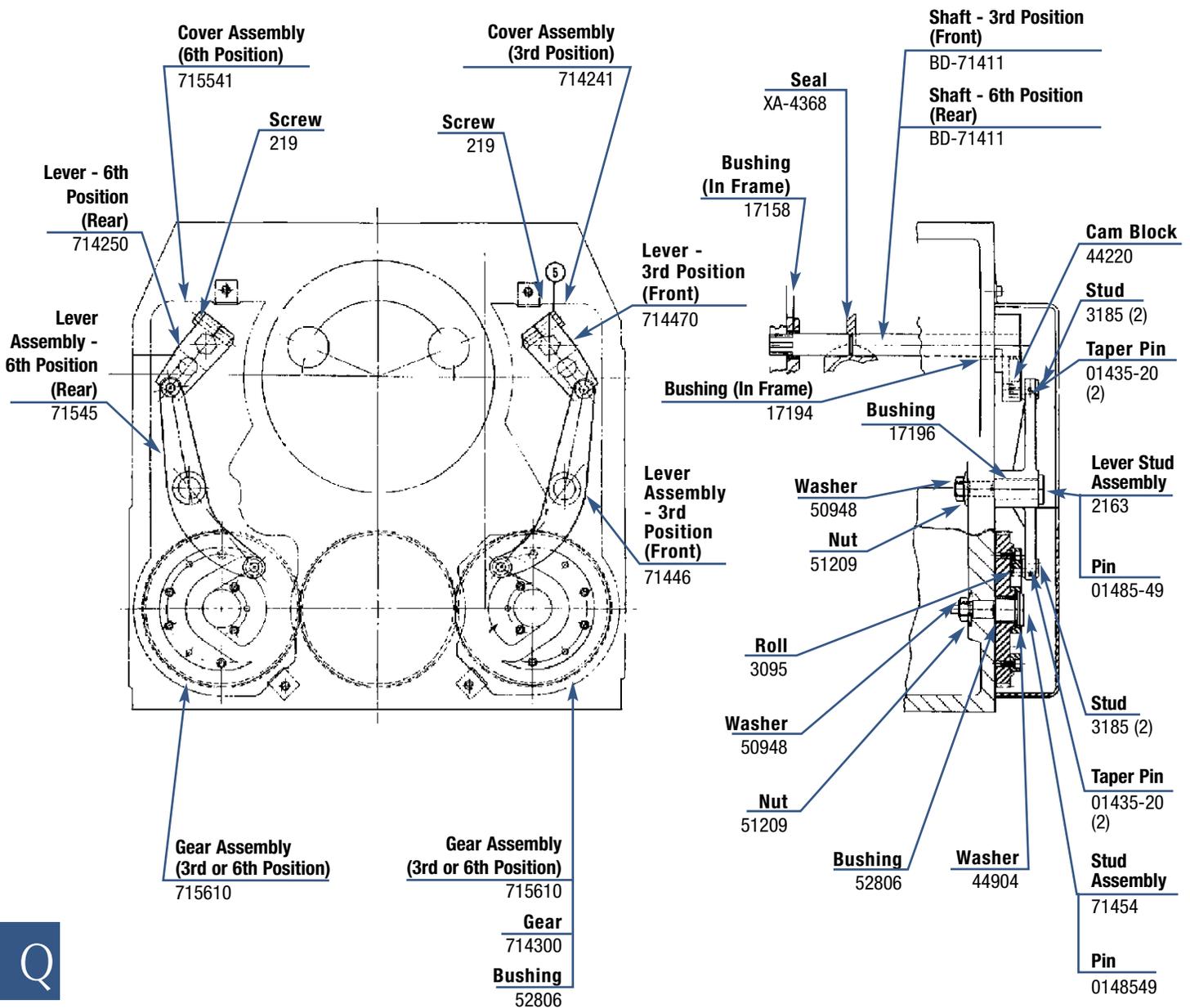
**Complete
6th Position
Side Slide
Assembly
BD-715440**



Side Slide Operating Parts

For Machines

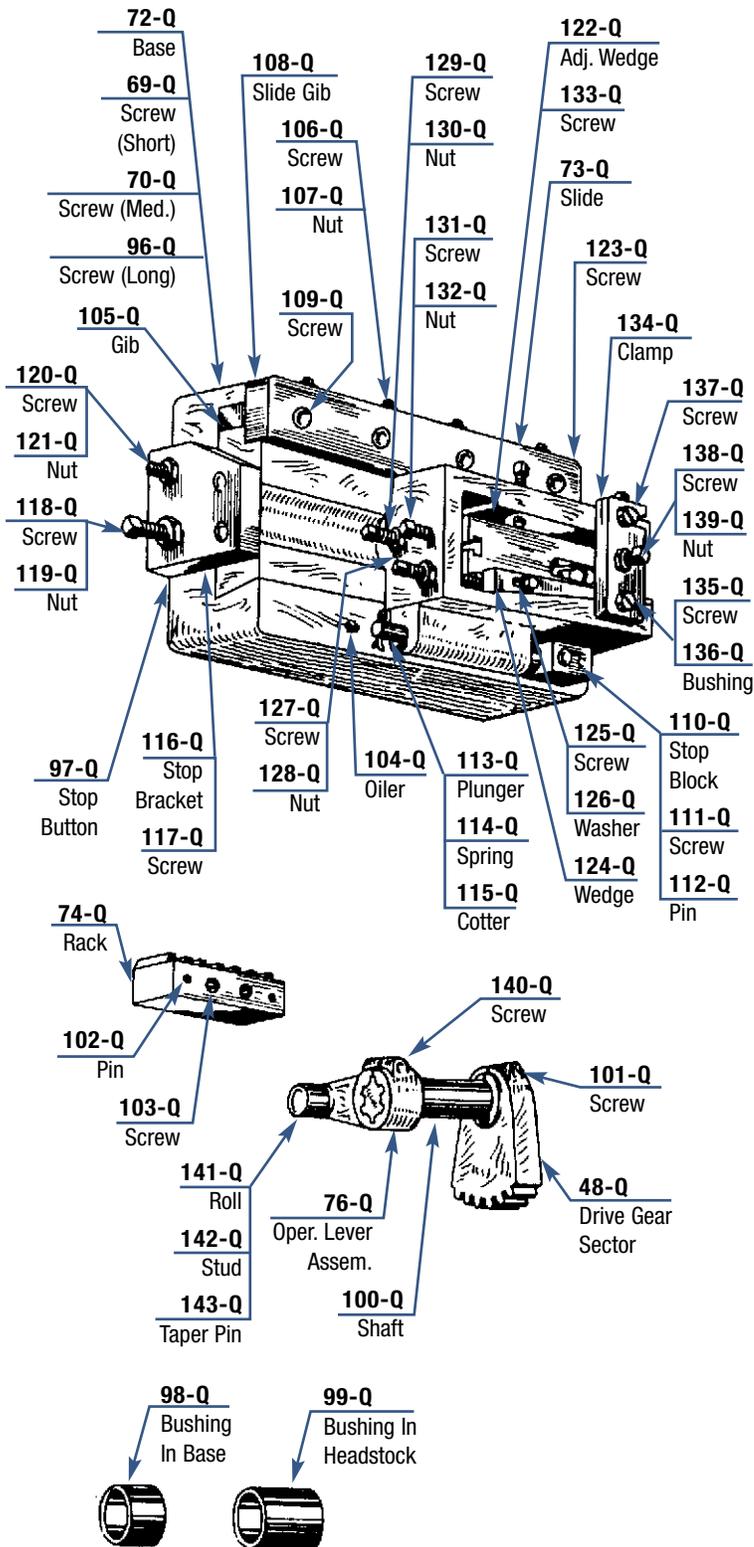
3/4 RA-8



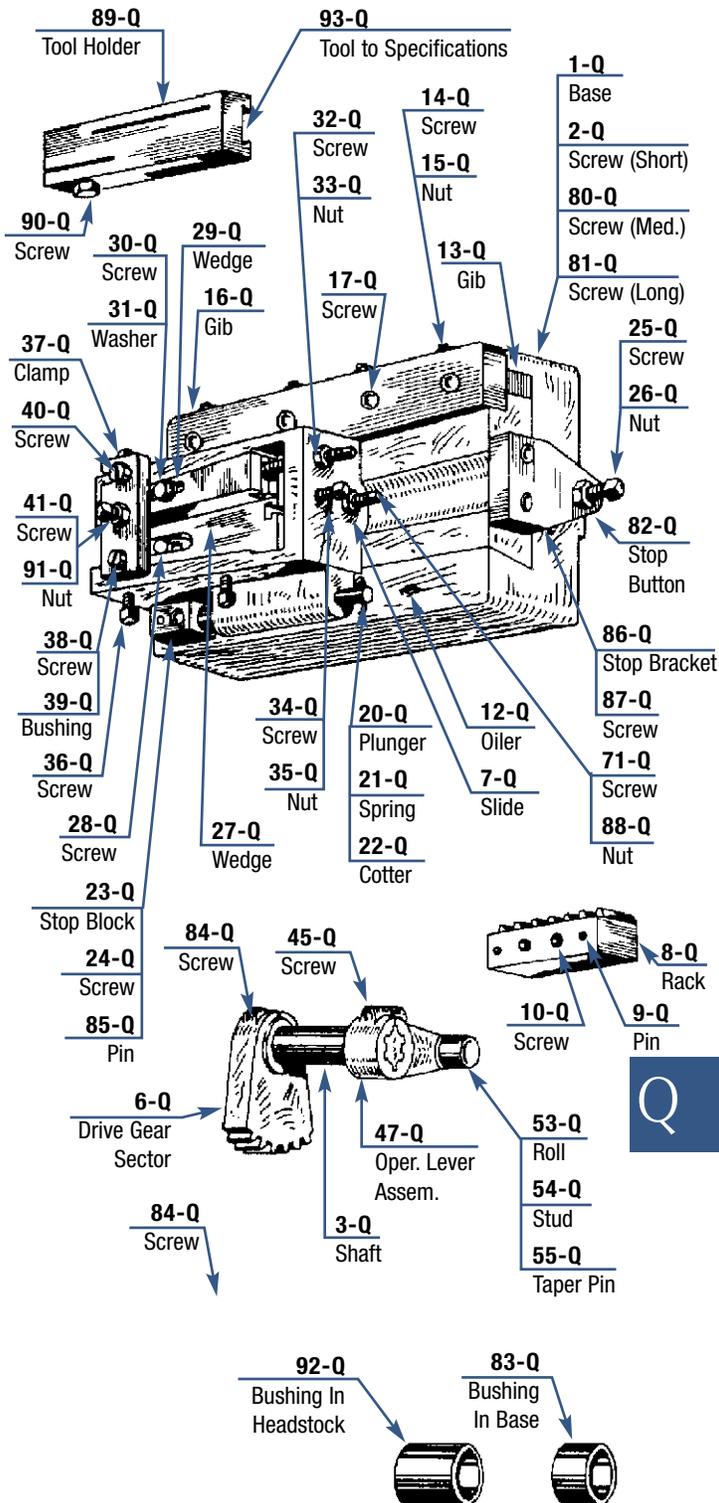
Intermediate Side Slides (Front Or Rear)

For Machines
Q-Group Chart
Reference for
Larger
Machines

**Front Side Slide Assem.
Complete – 95-Q**



**Rear Side Slide Assem.
Complete – 94-Q**



Cut-off Slide - Common Replacement Parts - Larger Acmes

For Machines
Larger Acmes



1-Q Slide Base

1-Q SLIDE BASE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41531
1-5/8 RB-6 & 2" RB-6	A-415310
1-5/8 RB-8 & 2" RB-8	BM-834822, BM-834823
2-5/8 RB-6	B-85531
2-5/8 RB-8	A-975311
3-1/2 RB-6	A-955311
3-1/2 RB-8	BM-95531
4" RB-6	BA-93531, BA-935310



3-Q Shaft

3-Q SHAFT

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41557
1-5/8 RB-6 & 2" RB-6	A-41557
1-5/8 RB-8 & 2" RB-8	BM-83557, BM-835570
2-5/8 RB-6	B-855570
2-5/8 RB-8	A-975570, A-975571
3-1/2 RB-6	A-954930, A-954931
3-1/2 RB-8	BA-93557
4" RB-6	BA-93557



6-Q Drive Gear Sector

6-Q DRIVE GEAR SECTOR

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41548
1-5/8 RB-6 & 2" RB-6	A-415480
1-5/8 RB-8 & 2" RB-8	BM-82485
2-5/8 RB-6	B-85548
2-5/8 RB-8	A-975481
3-1/2 RB-6	A-955480, A-955481
3-1/2 RB-8	BA-93556
4" RB-6	BA-93556

Q



7-Q Slide

7-Q SLIDE

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-415320
1-5/8 RB-6 & 2" RB-6	A-415321
1-5/8 RB-8 & 2" RB-8	BM-834381, BM-834832
2-5/8 RB-6	B-85532, B-855320
2-5/8 RB-8	A-975321, A-975322
3-1/2 RB-6	A-955320, A-955321
3-1/2 RB-8	BM-95532
4" RB-6	BA-93532, BA-935320

Cut-off Slide - Common Replacement Parts - Larger Acmes

For Machines
Larger Acmes

8-Q RACK

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-415470
1-5/8 RB-6 & 2" RB-6	A-415470
1-5/8 RB-8 & 2" RB-8	BM-835470
2-5/8 RB-6	B-85547
2-5/8 RB-8	A-975470
3-1/2 RB-6	A-955470
3-1/2 RB-8	A-955470
4" RB-6	A-955470



8-Q Rack

13-Q GIB

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-41558
1-5/8 RB-6 & 2" RB-6	A-41560
1-5/8 RB-8 & 2" RB-8	BM-835580, BM-835581
2-5/8 RB-6	B-855580
2-5/8 RB-8	A-975580
3-1/2 RB-6	A-955601
3-1/2 RB-8	BM-95560
4" RB-6	BA-93560



13-Q Gib

20-Q PLUNGER

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	1672
1-5/8 RB-6 & 2" RB-6	A-41559
1-5/8 RB-8 & 2" RB-8	BM-83359
2-5/8 RB-6	B-855590
2-5/8 RB-8	A-97559
3-1/2 RB-6	A-955590
3-1/2 RB-8	A-955590
4" RB-6	BA-93559



20-Q Plunger

21-Q SPRING

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	51553
1-5/8 RB-6 & 2" RB-6	XA-173
1-5/8 RB-8 & 2" RB-8	51552
2-5/8 RB-6	XA-36, XA-459
2-5/8 RB-8	51554
3-1/2 RB-6	XA-162
3-1/2 RB-8	XA-162
4" RB-6	51546



21-Q Spring

Cut-off Slide - Common Replacement Parts - Larger Acmes

For Machines

Larger Acmes



27-Q Tool Adj. Wedge (lateral adj.)



28-Q Screw



29-Q Tool Wedge (height adj.)



30-Q Screw



31-Q Washer



32-Q Screw



33-Q Nut

27-Q TOOL ADJ. WEDGE (LATERAL ADJ.)

28-Q SCREW

MACHINE SIZE	PART NUMBER	
	27-Q WEDGE	28-Q SCREW
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41540	2192
1-5/8 RB-6 & 2" RB-6	A-41540	2192
1-5/8 RB-8 & 2" RB-8	A-95540	2146
2-5/8 RB-6	B-85540	2192
2-5/8 RB-8	A-97540	2192
3-1/2 RB-6	A-95540	2192
3-1/2 RB-8	A-95540	2192
4" RB-6	BA-93540	2192

29-Q TOOL WEDGE (HEIGHT ADJ.)

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41541
1-5/8 RB-6 & 2" RB-6	A-41574
1-5/8 RB-8 & 2" RB-8	A-97541
2-5/8 RB-6	A-97541
2-5/8 RB-8	A-97541
3-1/2 RB-6	A-97541
3-1/2 RB-8	A-97541
4" RB-6	A-97541

30-Q SCREW

31-Q WASHER

MACHINE SIZE	PART NUMBER	
	30-Q SCREW	31-Q WASHER
1-1/4 RB-8 & 1-5/8 RBN-8	A-1347	972
1-5/8 RB-6 & 2" RB-6	2146	
1-5/8 RB-8 & 2" RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
3-1/2 RB-8		
4" RB-6		

32-Q SCREW

33-Q NUT

MACHINE SIZE	PART NUMBER	
	32-Q SCREW	33-Q NUT
1-1/4 RB-8 & 1-5/8 RBN-8	2089	51650
1-5/8 RB-6 & 2" RB-6		
1-5/8 RB-8 & 2" RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
3-1/2 RB-8		
4" RB-6		

Q

Cut-off Slide - Common Replacement Parts - Larger Acmes

For Machines
Larger Acmes

34-Q SCREW

35-Q NUT

MACHINE SIZE	PART NUMBER	
	34-Q SCREW	35-Q NUT
1-1/4 RB-8 & 1-5/8 RBN-8	50543	263
1-5/8 RB-6 & 2" RB-6	50543	
1-5/8 RB-8 & 2" RB-8	50543	
2-5/8 RB-6	195	
2-5/8 RB-8	50543	
3-1/2 RB-6	1911	
3-1/2 RB-8	50543	
4" RB-6	1911	



34-Q Screw



35-Q Nut

36-Q SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	1454
1-5/8 RB-6 & 2" RB-6	1454
1-5/8 RB-8 & 2" RB-8	1408
2-5/8 RB-6	1455
2-5/8 RB-8	1408
3-1/2 RB-6	1407
3-1/2 RB-8	1408
4" RB-6	1408



36-Q Screw

37-Q CLAMP

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	AM-41530
1-5/8 RB-6 & 2" RB-6	A-41539
1-5/8 RB-8 & 2" RB-8	85539
2-5/8 RB-6	B-85530
2-5/8 RB-8	85539
3-1/2 RB-6	A-97539
3-1/2 RB-8	A-97539
4" RB-6	A-97539



37-Q Clamp

38-Q SCREW

39-Q BUSHING

MACHINE SIZE	PART NUMBER	
	32-Q SCREW	33-Q NUT
1-1/4 RB-8 & 1-5/8 RBN-8	51493	51708
1-5/8 RB-6 & 2" RB-6		
1-5/8 RB-8 & 2" RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
3-1/2 RB-8		
4" RB-6		



38-Q Screw



39-Q Bushing

Q

Cutoff Slide - Common Replacement Part - Larger Acmes

For Machines

Larger Acmes



40-Q Screw

40-Q SCREW

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	51422
1-5/8 RB-6 & 2" RB-6	
1-5/8 RB-8 & 2" RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
3-1/2 RB-8	
4" RB-6	



41-Q Screw

41-Q SCREW 91-Q NUT

MACHINE SIZE	PART NUMBER	
	41-Q SCREW	91-Q NUT
1-1/4 RB-8 & 1-5/8 RBN-8	50550	560
1-5/8 RB-6 & 2" RB-6	594	560
1-5/8 RB-8 & 2" RB-8	50549	560
2-5/8 RB-6	50543	263
2-5/8 RB-8	50549	560
3-1/2 RB-6	50549	560
3-1/2 RB-8	50549	560
4" RB-6	50549	560



91-Q Nut

47-Q LEVER ASSEMBLY

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	A-41542
1-5/8 RB-6 & 2" RB-6	A-41542
1-5/8 RB-8 & 2" RB-8	BM-83446, BM-834460
2-5/8 RB-6	B-854230, B-854231
2-5/8 RB-8	A-974230
3-1/2 RB-6	A-955422
3-1/2 RB-8	BM-95423
4" RB-6	BA-93542



47-Q Lever Assembly

Q



53-Q Roll

53-Q ROLL

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	14245
1-5/8 RB-6 & 2" RB-6	14245
1-5/8 RB-8 & 2" RB-8	14271
2-5/8 RB-6	14271
2-5/8 RB-8	14271
3-1/2 RB-6	14268
3-1/2 RB-8	14268
4" RB-6	14268

Cutoff Slide - Common Replacement Part - Larger Acmes

For Machines
Larger Acmes

54-Q STUD

MACHINE SIZE	PART NUMBER
1-1/4 RB-8 & 1-5/8 RBN-8	3183
1-5/8 RB-6 & 2" RB-6	3183
1-5/8 RB-8 & 2" RB-8	14417
2-5/8 RB-6	14417
2-5/8 RB-8	14417
3-1/2 RB-6	329
3-1/2 RB-8	329
4" RB-6	329



54-Q Stud

71-Q SCREW 88-Q NUT

MACHINE SIZE	PART NUMBER	
	71-Q SCREW	88-Q NUT
1-1/4 RB-8 & 1-5/8 RBN-8	2089	51650
1-5/8 RB-6 & 2" RB-6		
1-5/8 RB-8 & 2" RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
3-1/2 RB-8		
4" RB-6		



71-Q Screw



88-Q Nut

83-Q BUSHING 92-Q BUSHING

MACHINE SIZE	PART NUMBER	
	83-Q	92-Q
1-1/4 RB-8 & 1-5/8 RBN-8	17191	17191
1-5/8 RB-6 & 2" RB-6	17191	C-17045
1-5/8 RB-8 & 2" RB-8	17288	17288
2-5/8 RB-6	17133	17133
2-5/8 RB-8	C-17417	C-17417
3-1/2 RB-6	C-17417	C-17417
3-1/2 RB-8	17288	17288
4" RB-6	17288	17288



83-Q Bushing

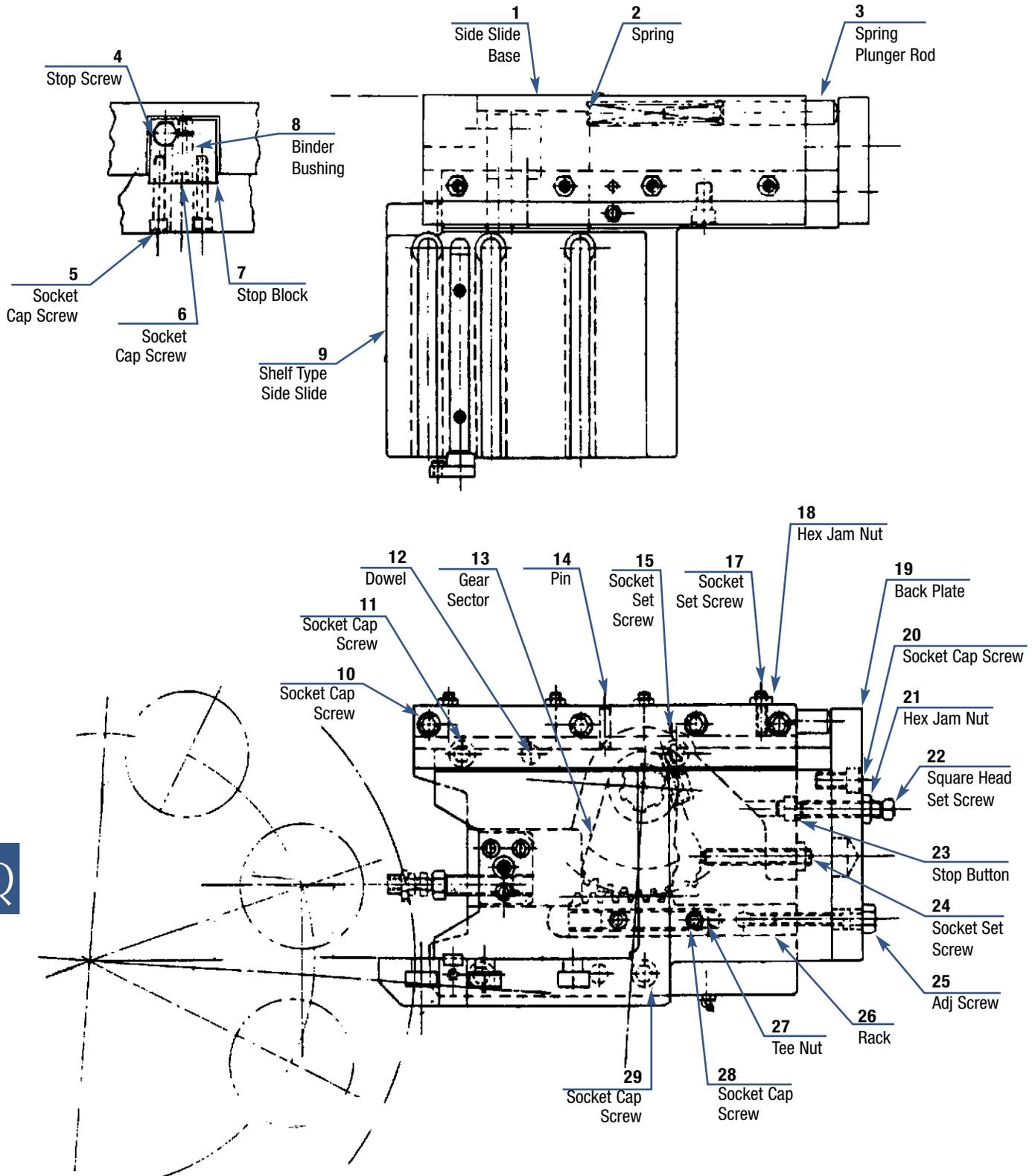


92-Q Bushing

Shelf Slide Reference Chart

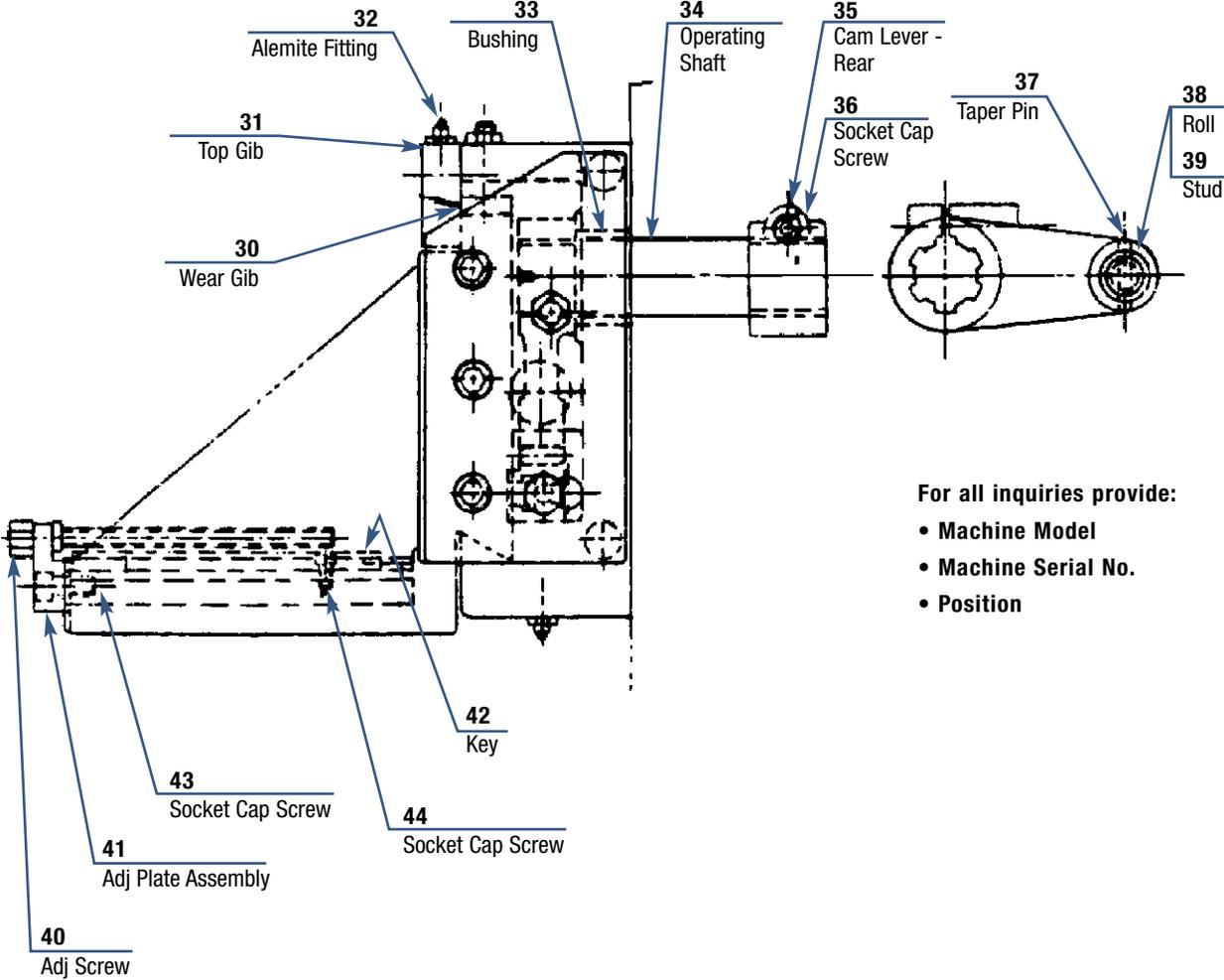
For Machines

All Machines



Shelf Slide Reference Chart

For Machines
All Machines



For all inquiries provide:

- Machine Model
- Machine Serial No.
- Position

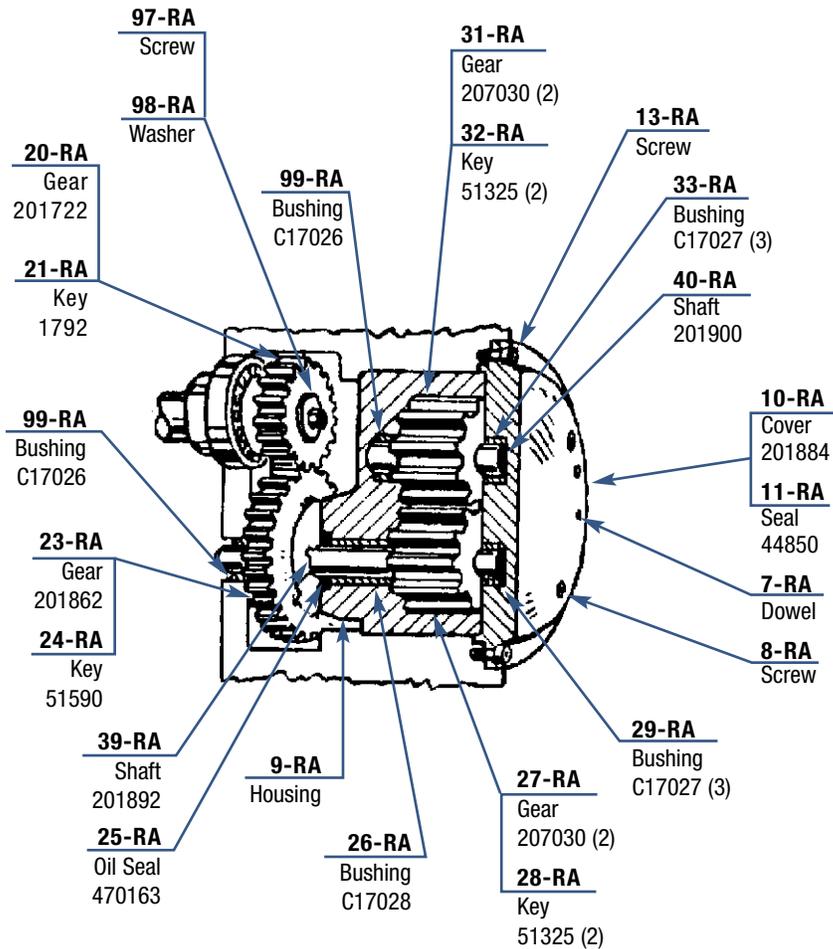
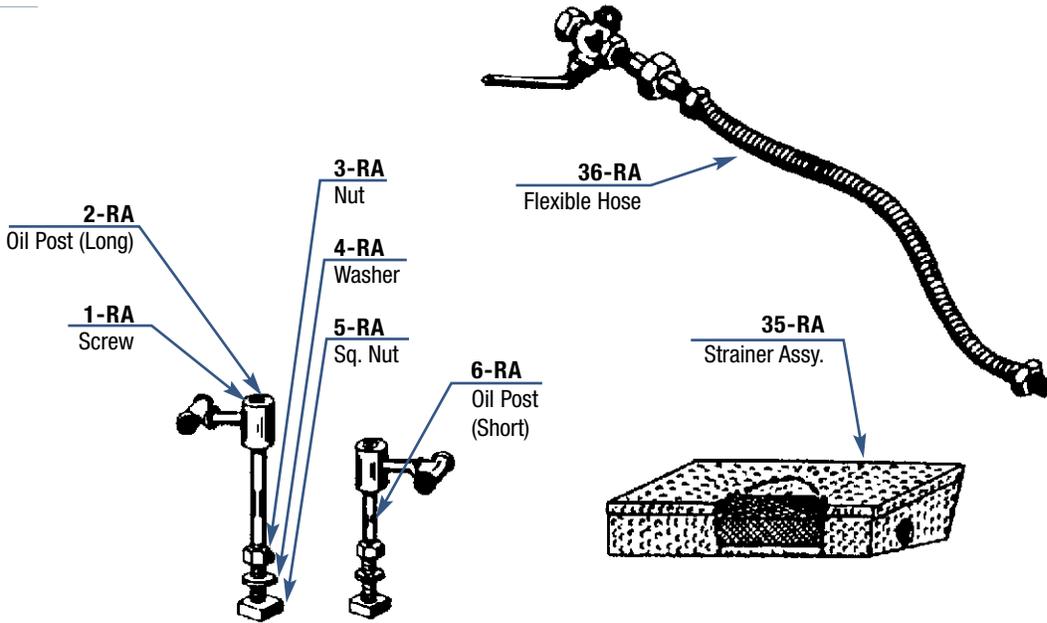


Cutting Oil Pump

For Machines

9/16 RA-6

1" RA-6

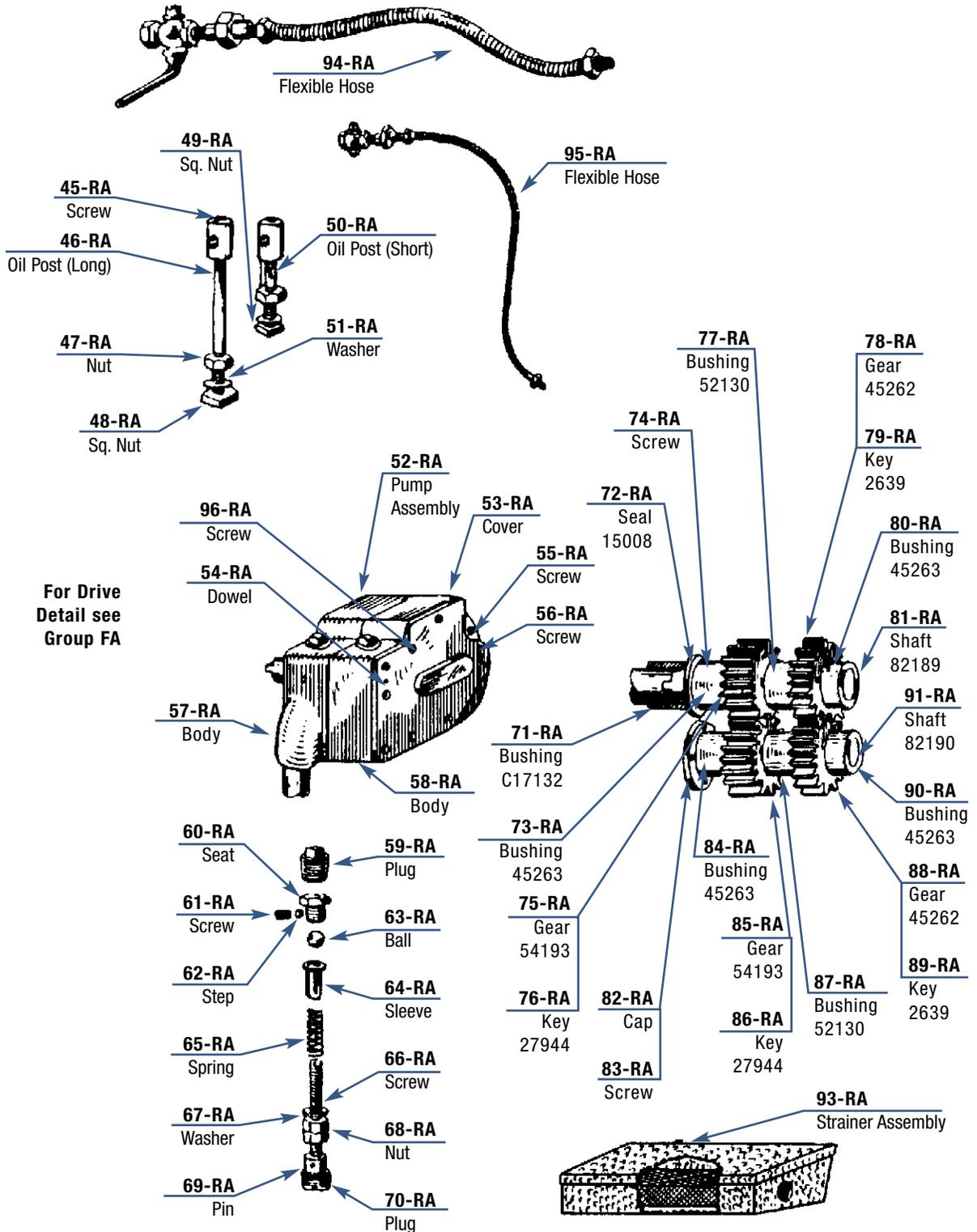


RA

Cutting Oil Pump

For Machines

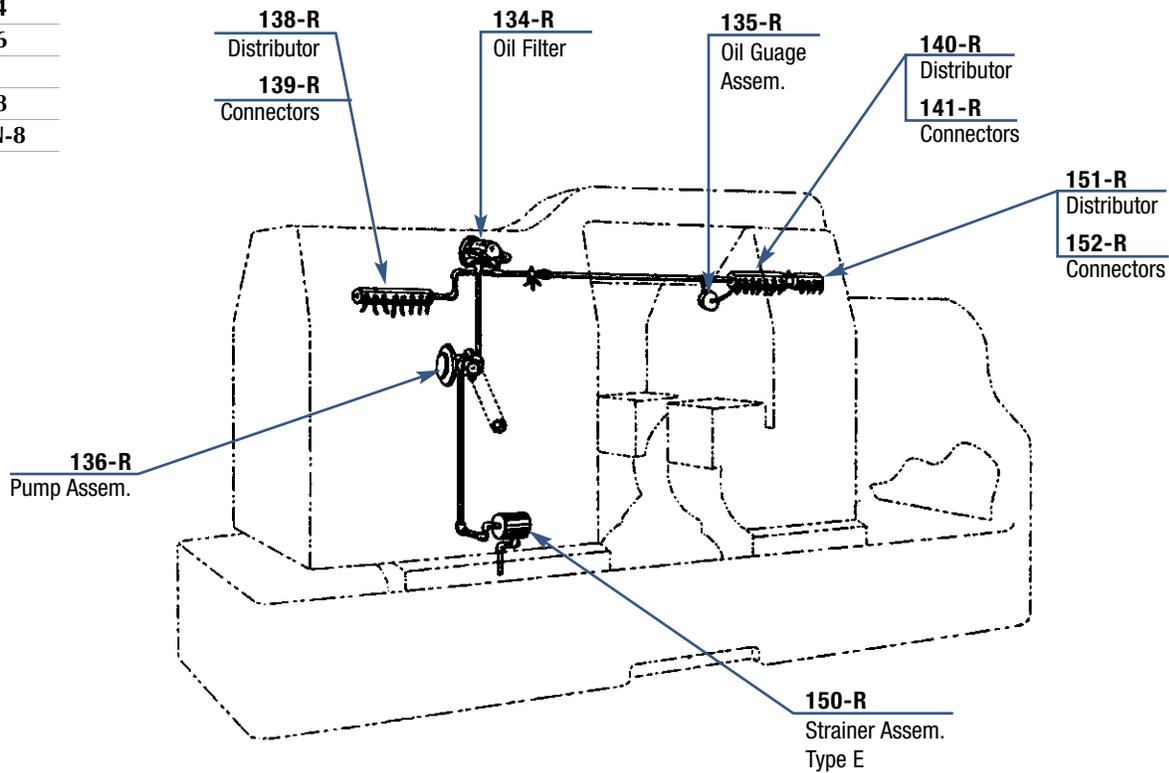
1-1/4 RA-6



Lubricating System

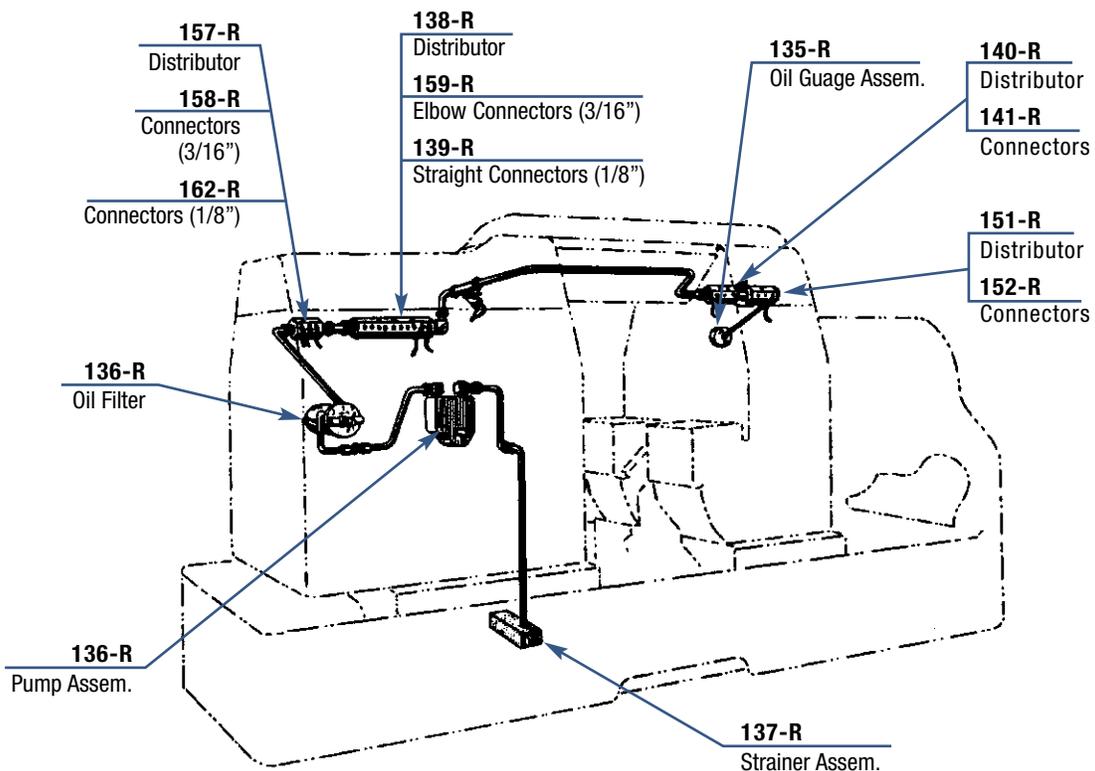
For Machines

- 2-5/8 RB-4
- 1-5/8 RB-6
- 2" RB-6
- 1-1/4 RB-8
- 1-5/8 RBN-8



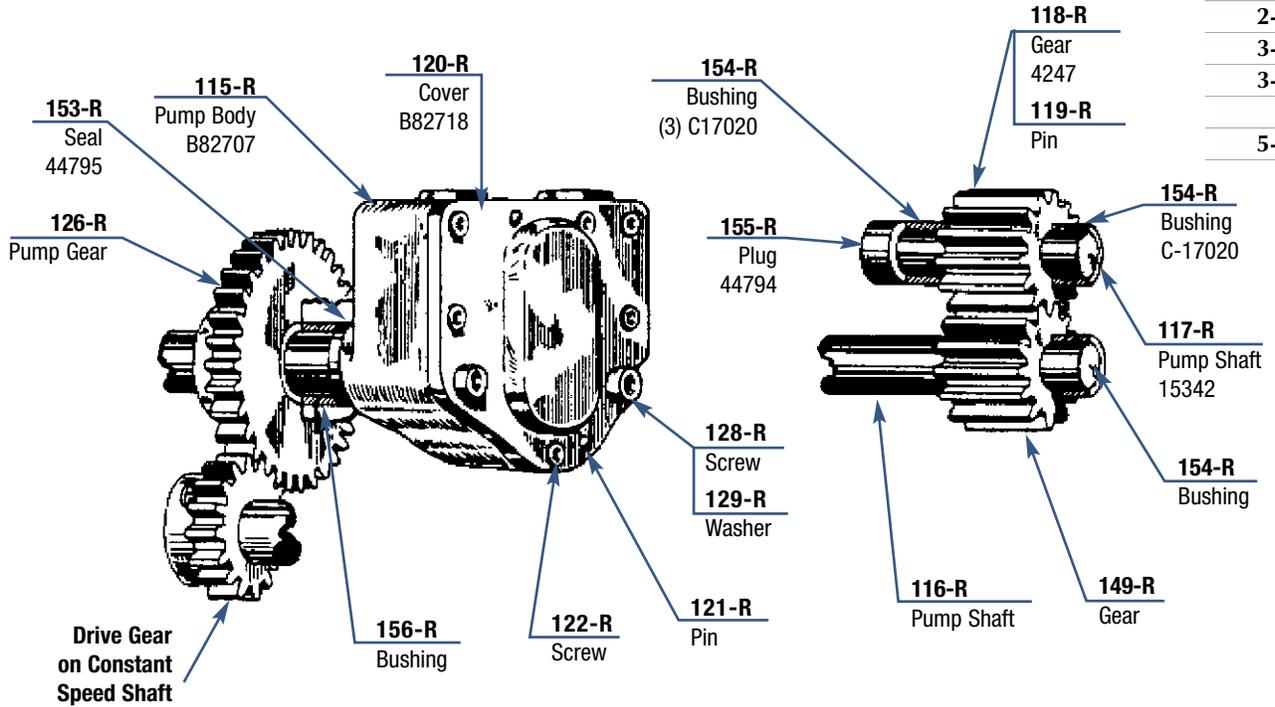
For Machines

- 3-1/2 RB-4
- 4-3/4 RB-4
- 2-5/8 RB-6
- 3-1/2 RB-6
- 1-5/8 RB-8
- 2" RB-8



R

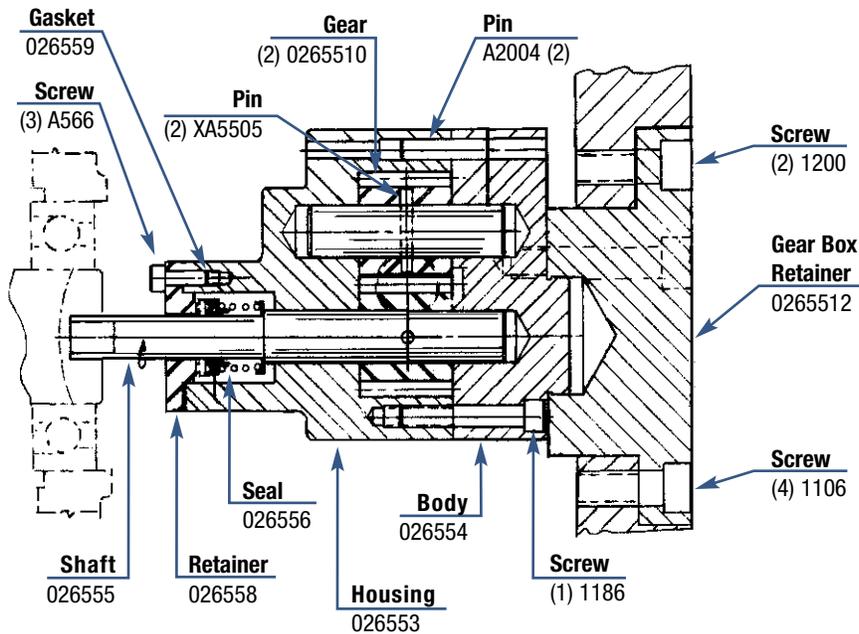
B-82906 Lubricating Pump Assembly



For Machines

1-5/8-2"	RB-8
2-5/8	RB-6
3-1/2	RB-4
2-5/8	RB-8
3-1/2	RB-6
3-1/2	RB-8
4"	RB-6
5-1/8	RB-4

0265515 Lubricating Pump Assembly



For Machines

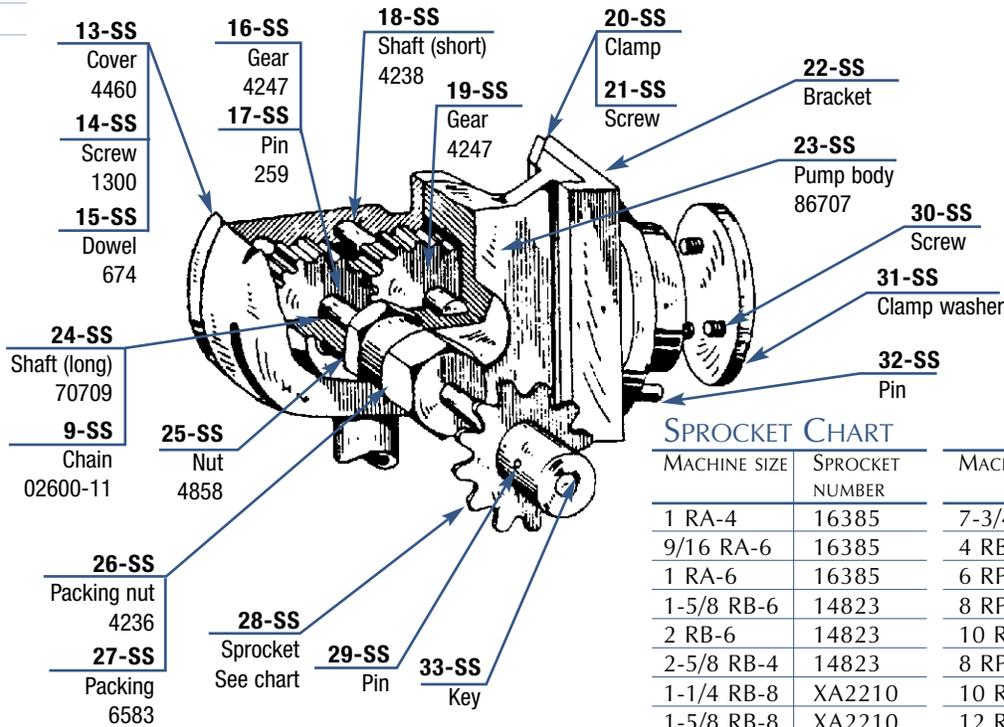
9/16	RAN-6
1"	RAN-6
1-1/4	RA-6
Late Model Machines	

Lubricating Oil Pumps

For Machines

- 9/16 - 1"RA-6
- 1-5/8 RB-6
- 1-1/4 RB-8
- 1-5/8 RBN-8

86906 - 5SS Lube Pump Assy.



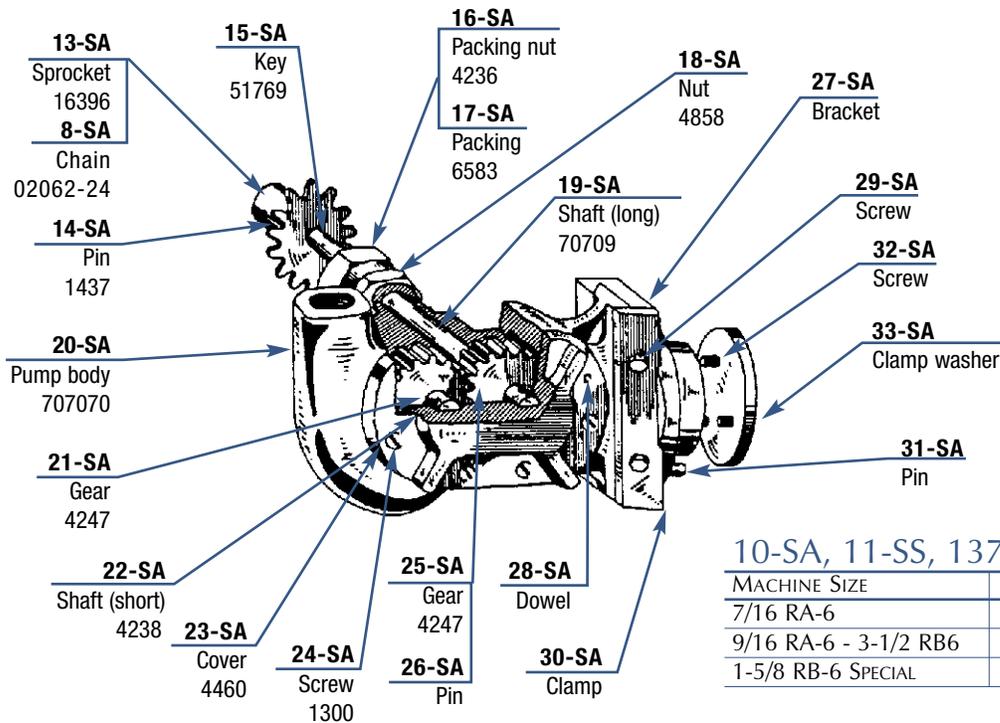
SPROCKET CHART

MACHINE SIZE	SPROCKET NUMBER	MACHINE SIZE	SPROCKET NUMBER
1 RA-4	16385	7-3/4 RB-4	BX88186
9/16 RA-6	16385	4 RB-8	BM88186
1 RA-6	16385	6 RPA-8	16351
1-5/8 RB-6	14823	8 RPA-6	16351
2 RB-6	14823	10 RPA-4	16351
2-5/8 RB-4	14823	8 RPA-8	A80744
1-1/4 RB-8	XA2210	10 RPA-6	A80744
1-5/8 RB-8	XA2210	12 RPA-4	16351
6 RB-6	BC88186	12 RPA-6	XA2209

For Machines

- 1-1/4 RA-6
- 3/4 RA-8
- 5-1/4 RAC-6

709060 - 9-SA Lube Pump Assy.



10-SA, 11-SS, 137-R STRAINER

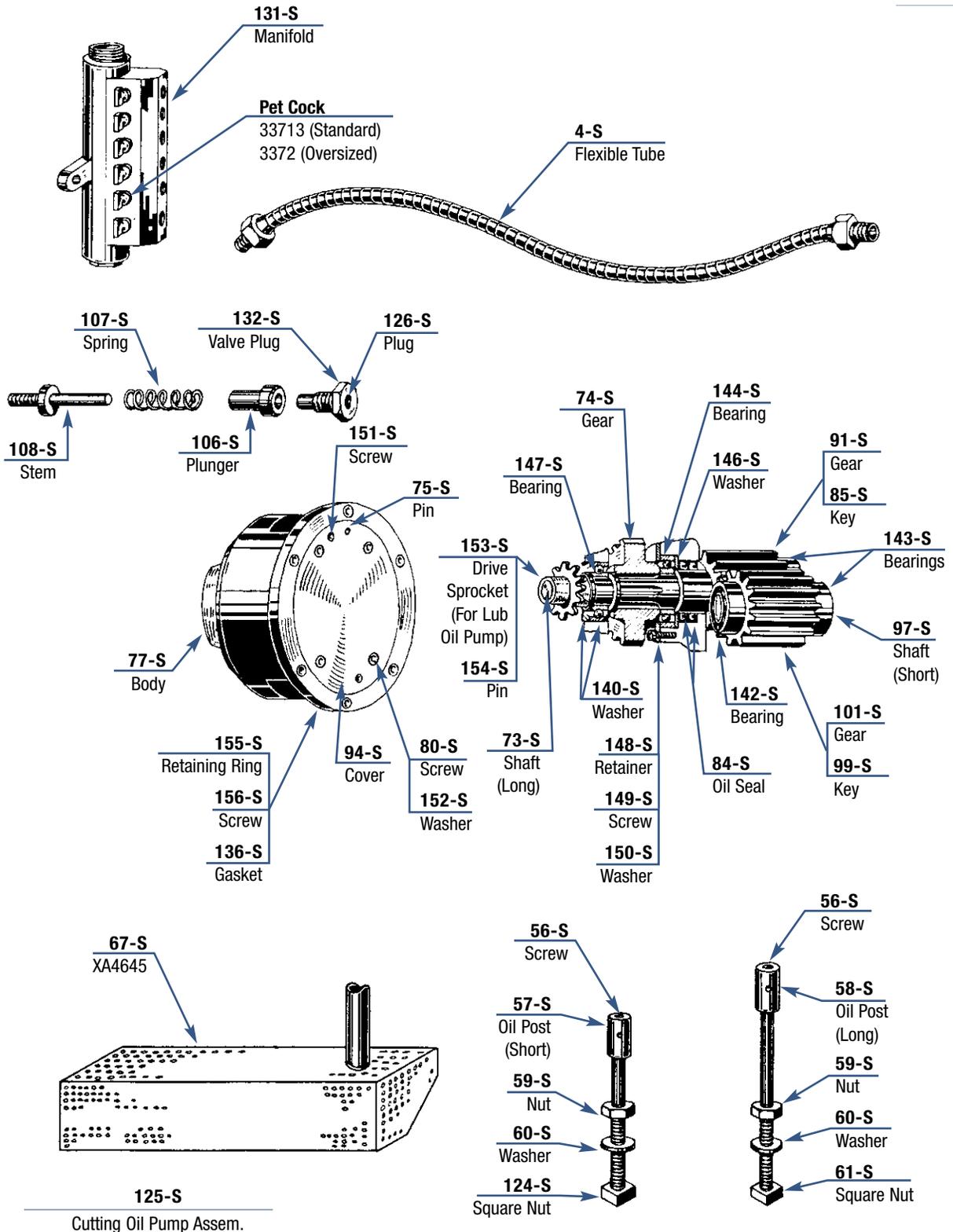
MACHINE SIZE	PART NUMBER
7/16 RA-6	XA-4739
9/16 RA-6 - 3-1/2 RB6	44332
1-5/8 RB-6 SPECIAL	44342

Cutting Oil Pumps

For Machines

1-5/8 RB-6

2" RB-6



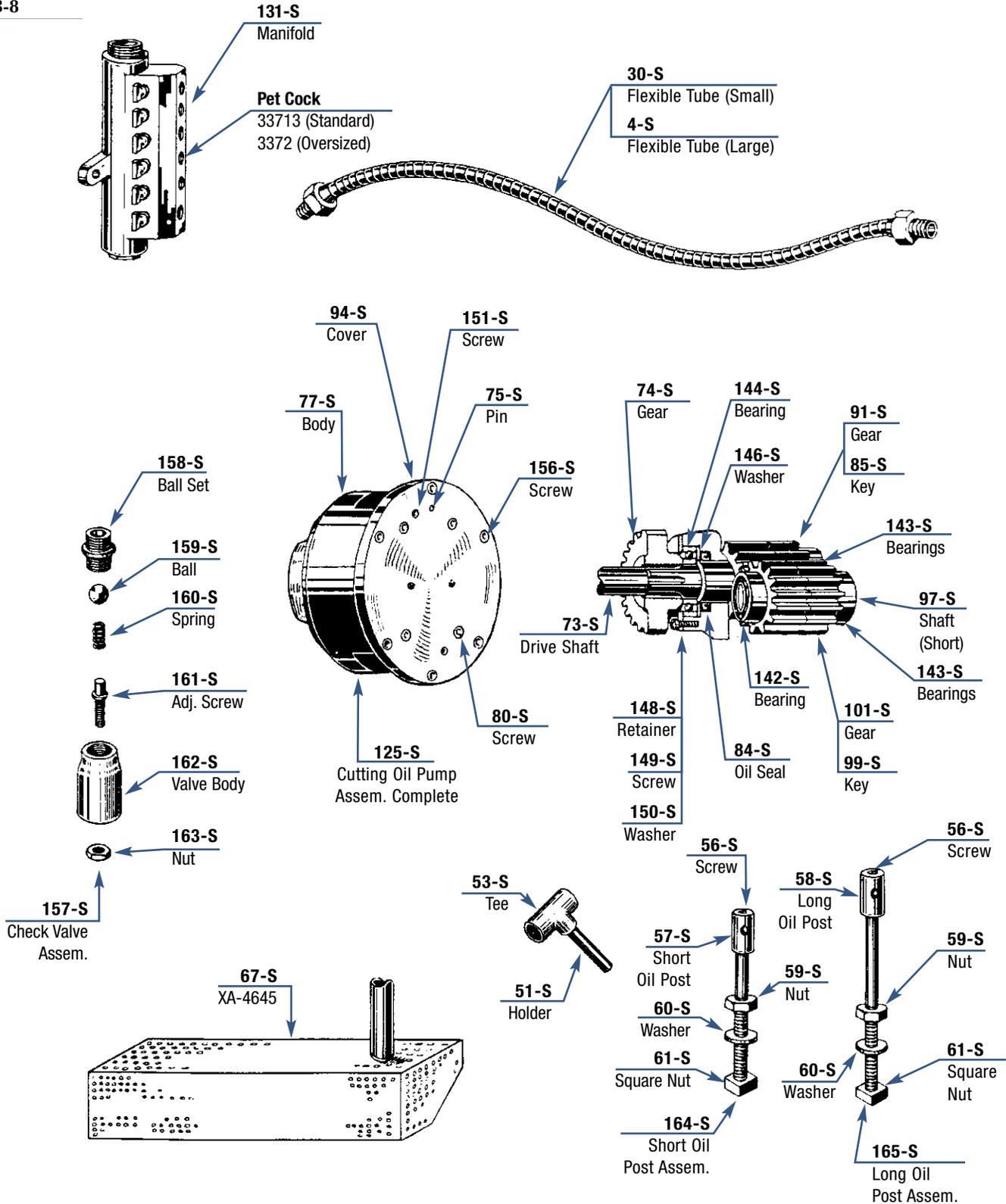
Cutting Oil Pumps

For Machines

2-5/8 RB-6

3-1/2 RB-6

2" RB-8



S

Geared Type External Coolant Pump Assemblies

For Machines

9/16-1"

RA, RAN-6

3/4 RA-8

1-1/4 RA-6

1-1/4 RB-8

1-5/8 RBN-8

1-5/8-2" RB-6

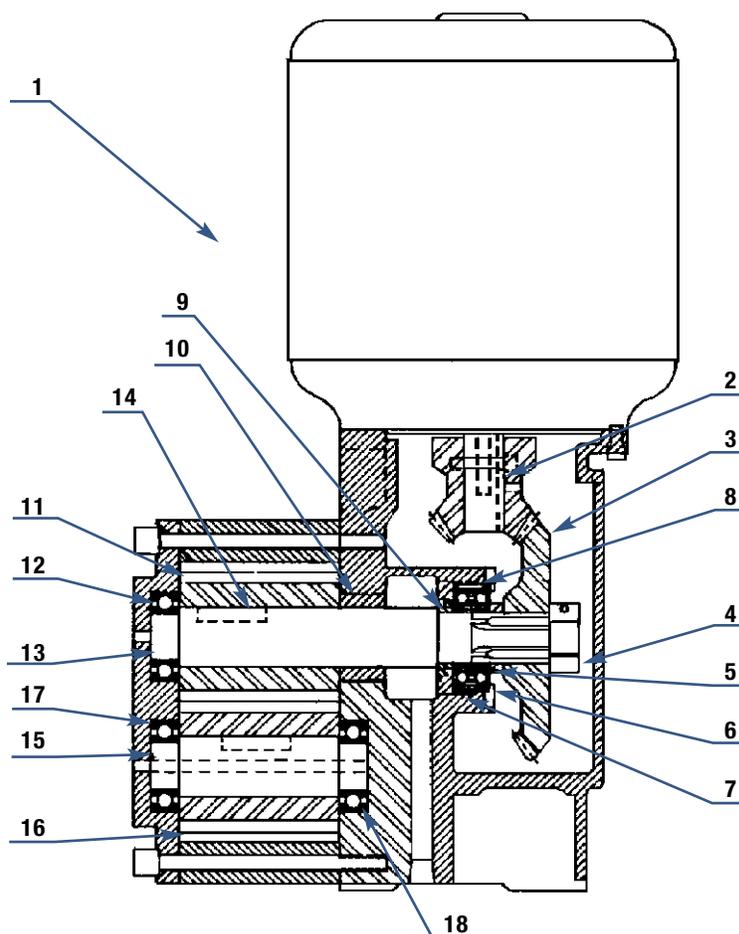
2-5/8 RB-6

3-1/2 RB-6

1-5/8-2" RB-8

2-5/8 RB-8

3-1/2 RB-8



9/16-1" RA, RAN-6, 3/4 RA-8, 1-1/4 RA-6

KEY	PART NUMBER	FITS
1	B-31301	Pump Assembly
2	B-313020	Gear
3	B-31303	Gear
4	01305-46	Nut
5	1305-5	Spacer
6	A-17488	Bearing
7	1305-44	Retainer
8	01305-45	Bearing Housing
9	01305-41	Flinger
10	01305-43	Bushing
11	A-387460	Gear
12	17533 (3)	Bearing
13	01314-30	Shaft
14	51670	Key
15	0131477	Shaft
16	A-387470	Gear

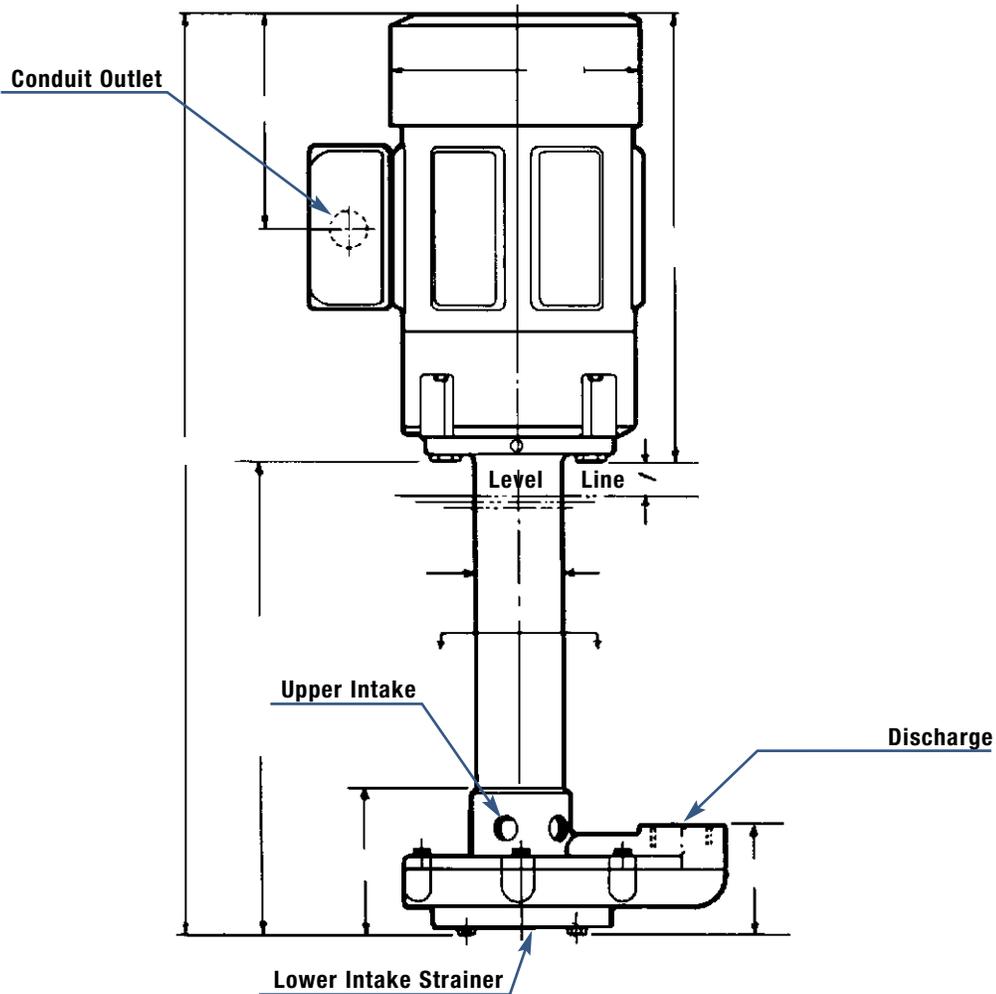
1-1/4 RB-8, 1-5/8 RBN-8, 1-5/8 - 2 RB-6,
2-5/8 RB-6, 3-1/2 RB-6, 1-5/8 - 2 RB-8,
2-5/8 RB-8, 3-1/2 RB-8

KEY	PART NUMBER	FITS
1	B-31201	Pump Assembly
2	B-31206	Gear
3	1305-50	Gear
4	1305-46	Nut
5	1305-5	Spacer
6	A-17488	Bearing
7	1305-44	Retainer
8	01305-45	Bearing Housing
9	01305-41	Flinger
10	01305-43	Bushing
11	B-387460	Gear
12, 17, 18	17533 (3)	Bearing
13	130540	Shaft
14	51670	Key
15	B-88190	Shaft
16	B887470	Gear

Centrifugal Pumps

For Machines

- 3/4 RA-8
- 9/16 RA, RAN-6
- 1" RA, RA-6
- 1-1/4 RA-6
- 1-1/4 RB-8
- 1-5/8 RBN-8
- 1-5/8 RB-8, RB-6
- 2" RB-6, RB-8
- 2-5/8 RB-6, RB-8
- 3-1/2 RB-6, RB-8



CENTRIFUGAL PUMPS

PART NUMBER:	03046-85 42 GALLON
FITS:	3/4 RA-8, 9/16 RA, RAN-6, 1 RA, RA-6, 1-1/4 RA-6

PART NUMBER:	0944-45 60 GALLON
FITS:	1-1/4 RB-8, 1-5/8 RBN-8, 1-5/8 RB-8, RB-6, 2 RB-6, RB-8, 2-5/8 RB-6, RB-8, 3-1/2 RB-6, RB-8

MOUNTING BRACKETS - ALL MACHINES

7515	New machines w/reservoirs
2-2128	Older machines no reservoir

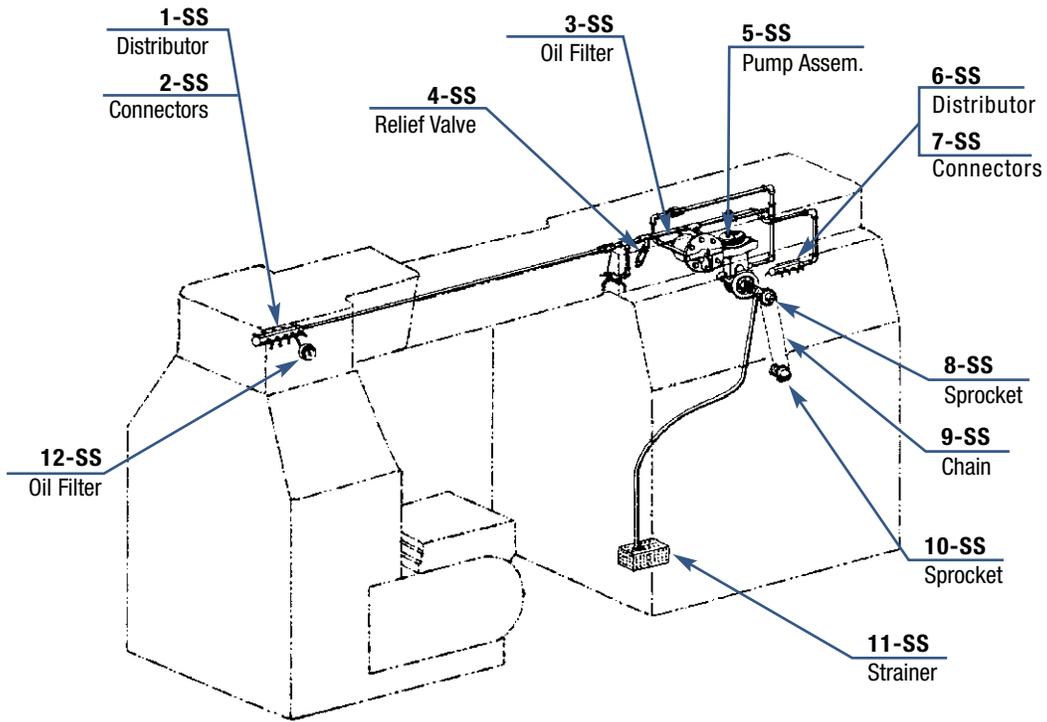
S

Lubricating System/Oil Pump

For Machines

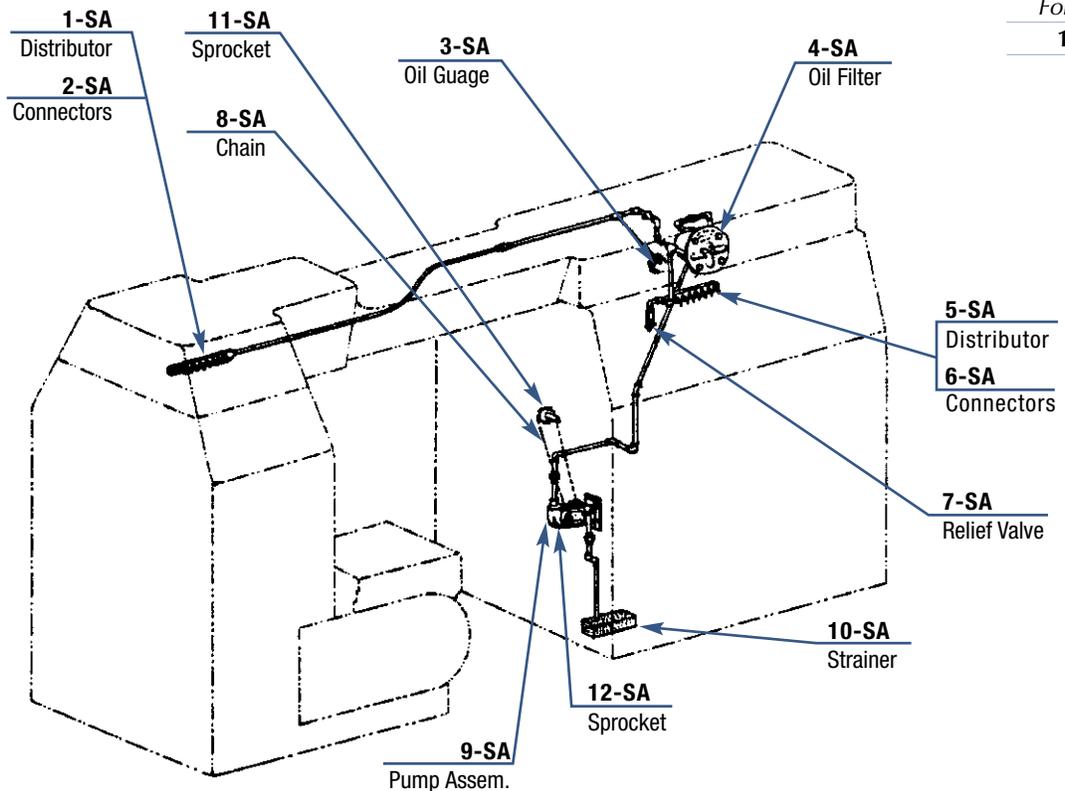
9/16 RA-6

1" RA-6



For Machines

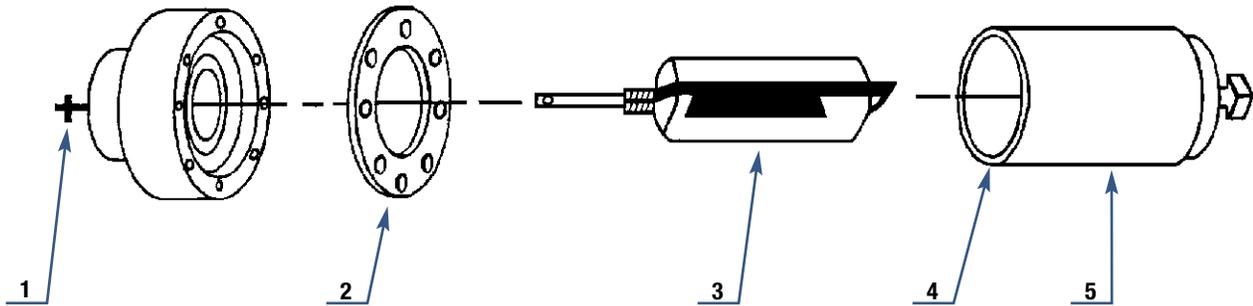
1-1/4 RA-6



Purolator Assembly

For Machines

All Machines



PUROLATOR ASSEMBLY

Key	Code	Part #	Description
1	4-SS	73815	Relief Valve
2		15042	Gasket
3		07381	Filter Element
4		XA3615	Rubber Gasket
5		15629-C	Cylinder
	3-SS	15629	Assembly

NEW STYLE SPIN ON FILTER (REPLACES PUROLATOR UNITS)

15629NS	Standard Assembly
15629NSF	Filter
15629NSB	Base
15042	Gasket
P530154	Pressure Gauge
1065	Screw
18HHP	Plug
1/8 Elbow	Pipe Elbow

LOW PROFILE SPIN ON FILTER

15629NSLP	Low Profile Filter Assy
15629NSFLP	Low Profile Filter

S

New Style Filtration System

For Machines
All Machines
Replaces Acme
OEM Filter
System



Ultra High Performance Filter



Parker Style



Purolator Style

BENEFITS

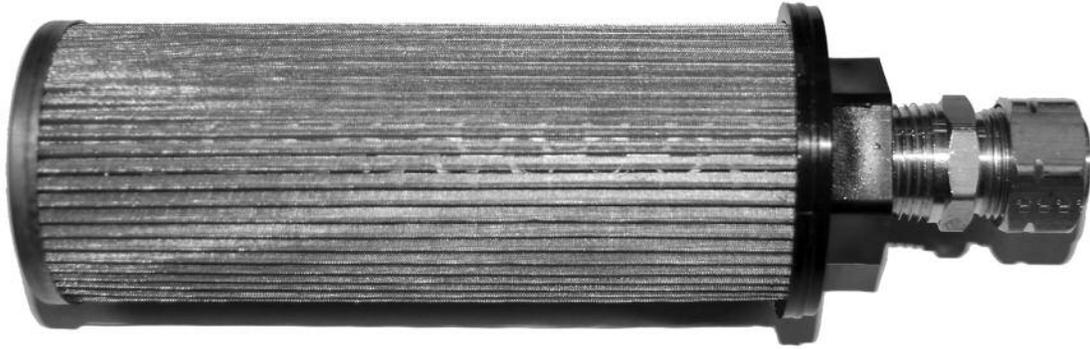
- No Daily Operator Maintenance
- High Efficiency Filtration
- Quick & Easy Conversion
- Pressure Gage Included
- One Minute Filter Change
- Cost Savings

Filter now available in a shorter style for tight applications



New Style Strainer

For Machines
All Machines
Replaces Acme
OEM Filter
System



NEW UPGRADED STRAINER AVAILABLE

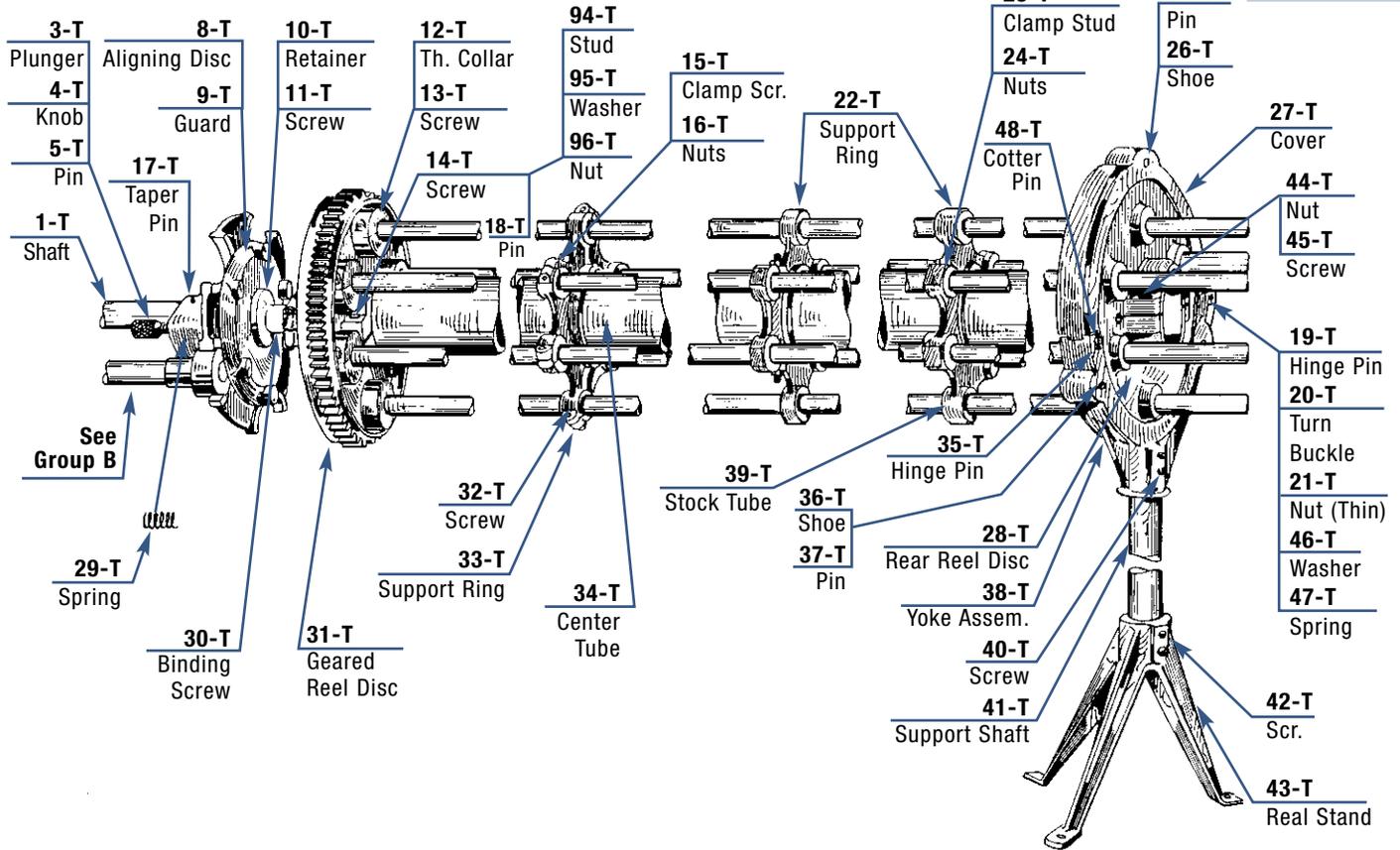
BENEFITS OVER 44332 BOX STYLE STRAINER

- Improved Filtration
- Reduced Cost
- Faster Installation/Replacement
- In Stock, Ready to Ship

S

Stock Reel

For Machines
All Machines



PUSHER TUBE GATE ASSEMBLY PARTS

	1-T	3-T	4-T	8-T	9-T	9-T	9-T	29-T
MACHINE SIZE	SHAFT	PLUNGER	KNOB	ALIGNING DISC	STEEL GUARD	STEEL RING WEAR	TEXHIDE GUARD	SPRING
7/16 RA-6	C-18122	C-18132	XA-5540	C-18129	C-18130	C-181510	C-18130-T	XA-348
5/8 RN-6	FC-16122	201320	3389	FC-16129	FC-16130	FC-161510	FC-16130-T	3699
9/16 O.S.	201223	201320	3389	221290	20130		20130-T	3699
9/16 N.S.	201223	201320	3389	221291	A-221301	A-231510	A-221301-T	3699
1 RA, RAN-6	201223	201320	3389	A-22129	A-221301	A-231510	A-221301-T	3699
3/4 RA-8	BD-70122	201320	3389	BD-701290	BD-70130	BD-711510	BD-70130-T	3699
1-1/4 RA-6	701222	38132	3389	701290	701300	711510	701300-T	2317
1-1/4 RB-8	B-841221	14544	44251	AM-40129	AM-40130	AM-401510	AM-40130-T	2275
1-5/8 RBN-8	B-841221	14544	44251	BM-40129	BM-40130	BM-401510	BM-40130-T	2275
1-5/8 RB-6	B-821221	14544	44251	A-40129	A-401300	A-401510	A-401300-T	2275
2 RB-6	B-821221	14544	44251	B-38129	BH-381300	BH-381510	BH-381300-T	2275
1-5/8 RB-8	A-96122	14544	44251	BM-82129	BM-821300	BM-821510	BM-821300-T	2275
2 RB-8	A-96122	14544	44251	BC-82129	BC-82130	BC-82151	BC-82130-T	2275
2-5/8 RB-6	B-841221	14544	44251	AU-84129	B-841300	B-841510	B-841300-T	2275
2-5/8 RB-8	A-94122	14544	44251	AT-96129	A-961300	A-961510	A-961300-T	2275
3-1/2 RB-6	A-94122	14544	44251	A-94129	A-941300	A-941510	A-941300-T	2275
3-1/2 RB-8	B-92122	XA-4197	44251	BM-94129	BM-94130	BM-94151	BM-94130-T	2275
4" RB-6	B-92122	XA-4197	44251	BA-92129	BA-92130	BA-921510	BA-92130-T	2275
4" RB-8	BM-88122	XA-4197	44251	BM-88129	BM-88130	BM-881510	BM-88130-T	2275

Stock Reel Components

For Machines

All Machines



Canvas Stock Reel Bands

CANVAS STOCK REEL BANDS

MACHINE	STANDARD TUBES	SILENT TUBES
7/16 RA-6	0195313	0195313-ST
9/16 RA-6 (4")	0195314	0195314-ST
9/16 RA-6 (1" FR)	0195359	0195359-ST
5/8 RN-6	0195362	0195362-ST
3/4 RA-8	0195315	0195315-ST
1" RA-6, RAN-6	0195316	0195316-ST
1-1/4 RA-6	0195317	0195317-ST
1-1/4 RB-8	0195354	0195354-ST
1-5/8 RBN-8	0195358	0195358-ST
1-5/8 RB-6	0195356	0195356-ST
2" RB-6	0195352	0195352-ST
1-5/8 RB-8	0195386	0195386-ST
2" RB-8	0195425	0195425-ST
2-5/8 RB-6	0195351	0195351-ST
2-5/8 RB-8	0195353	0195353-ST
3-1/2" RB-6	0195429	0195429-ST



Canvas Stock Reel Bands

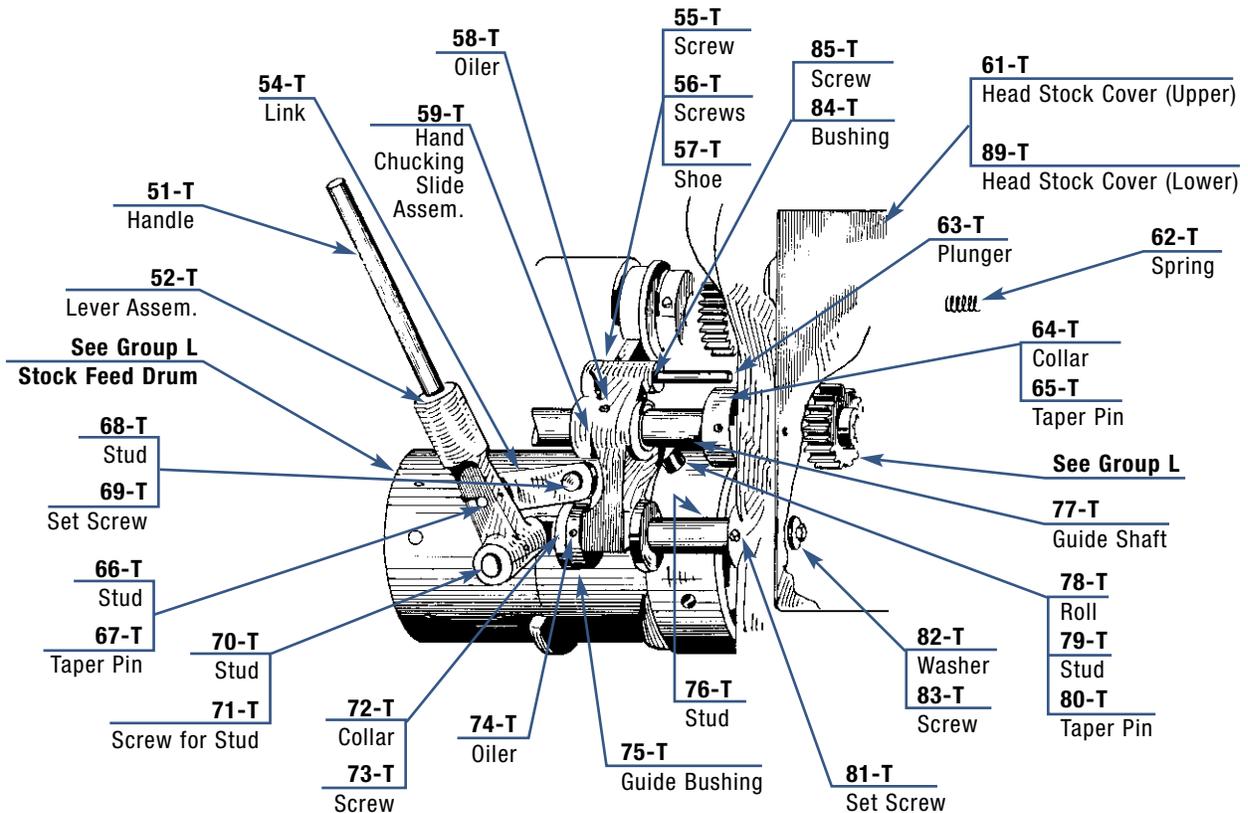
26-T & 36-T STOCK REEL SHOE

MACHINE	FIBER	STEEL
9/16 RA & RAN-6 1" RA & RAN-6	A-22494-T	A-22494
1-1/4 RA-6	70494-T	70494
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 RB-6, 2" RB-6	A-38494-T	A-38494
1-5/8 RB-8, 2" RB-8 2-5/8 RB-6	A-82494-T	A-82494
2-5/8 RB-8 3-1/2 RB-6	A-90494-T	A-90494
4" RB-6	B-92494-T	B-92494

T

Stock Reel

For Machines
All Machines



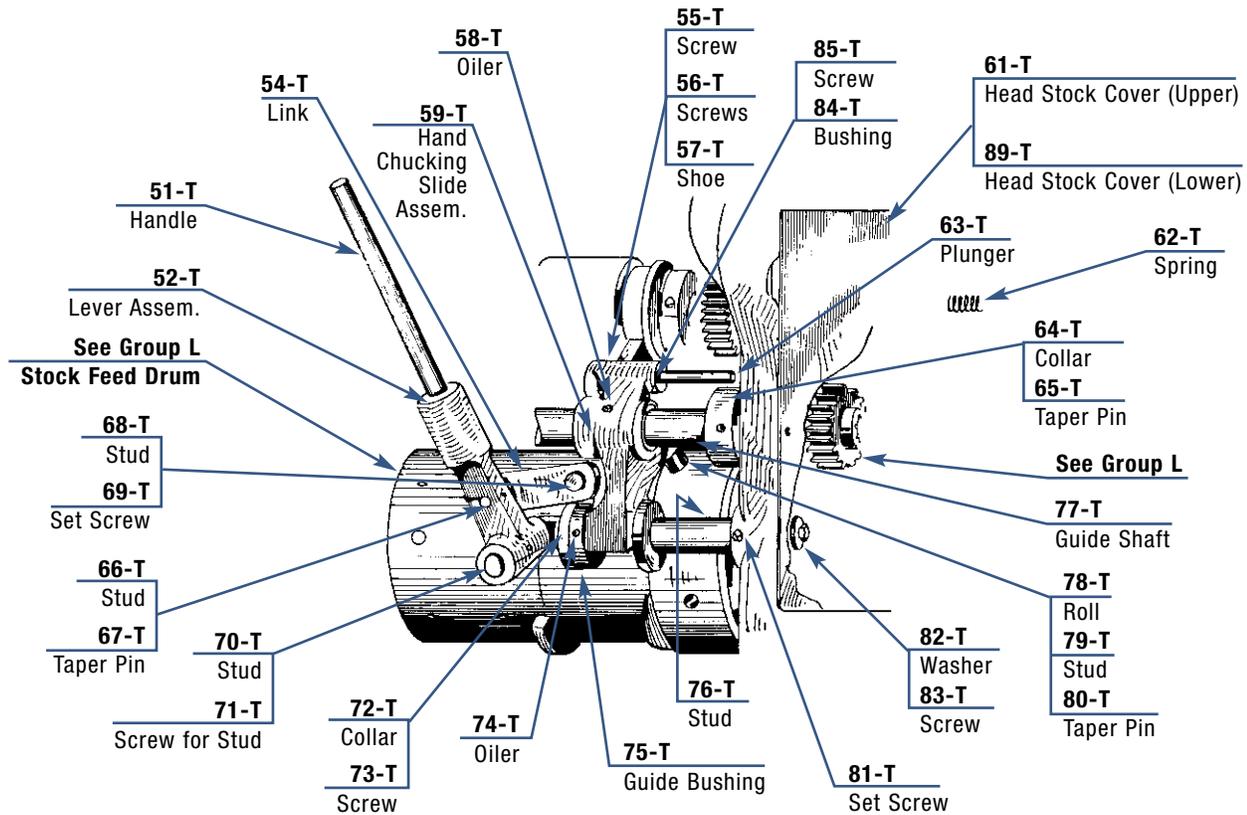
HAND CHUCKING SLIDE PARTS

MACHINE SIZE	52-T LEVER	54-T LINK	57-T SHOE	WEDGE FOR SHOE	59-T HAND CHUCKING SLIDE	66-T STUD	68-T STUD
7/16 RA-6	C-181430	C-18144	C-18136	C-18137	C-18141	01485-5	XA-1800
5/8 RN-6	FC-161430	FC-16144	CC-55117	20137	FC-16141	52698	52698
9/16 O.S.	221430	201440	18136	56233	221414	3183	52698
9/16 N.S.	221430	201440	18136	56233	A-22141	3183	52698
1 RA, RAN-6	221430	201440	A-231360	20137	A-22141	3183	3185
3/4 RA-8	70143	701441	18136	56233	BD-701410	10167	32734
1-1/4 RA-6	70143	701441	38136	A-36137	701413	10167	32734
1-1/4 RB-8	A-82143	A-82144	381360	A-36137	BM-40141	14405	14356
1-5/8 RBN-8							
1-5/8 RB-6	A-82143	A-82144	A-36136	A-36137	A-40141	14405	14356
2" RB-6							
1-5/8 RB-8	A-821431	BM-82144	A-96142	BM-82137	BM-82141	14405	14356
2" RB-8							
2-5/8 RB-6	A-82143	BM-82144	381360	B-84137	A-84141	14405	14356
2-5/8 RB-8	A-821431	A-82144	A-96142	38137	A-96141	14405	14356
3-1/2 RB-6	A-821431	A-947420	A-94136	A-94137	A-941412	14405	14356

Hand Chucking

For Machines

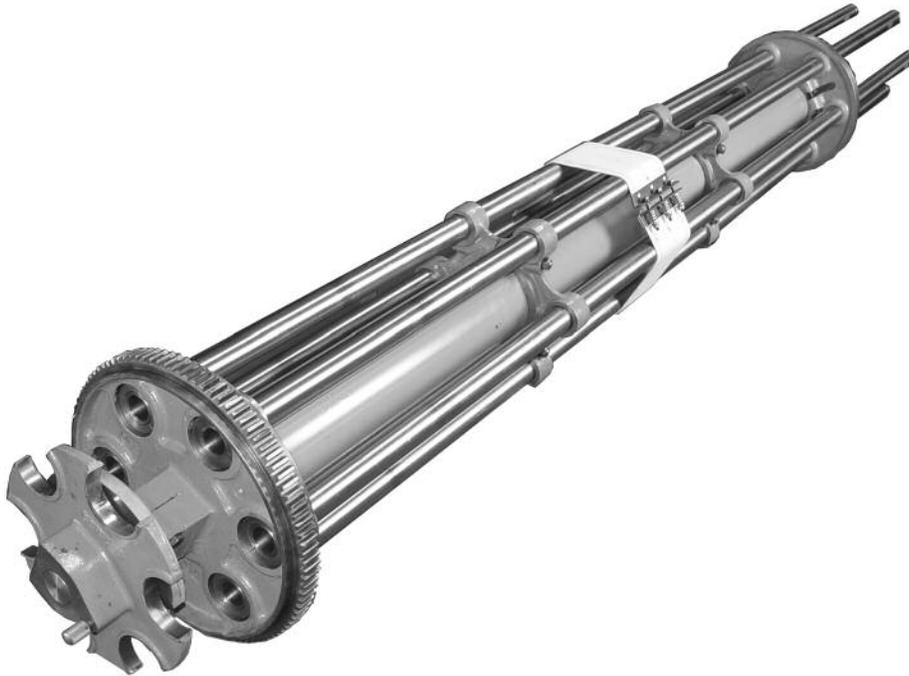
All Machines



HAND CHUCKING SLIDE PARTS

	70-T	75-T	76-T	78-T	79-T	84-T
MACHINE SIZE	STUD	GUIDE BUSHING	STUD	ROLL	STUD	BUSHING
7/16 RA-6	XA-5352	C-18065	C-18066	XA-5157	XA-5347	C-17419
5/8 RN-6	XA-6819	20065	FC-16066	3095	3185	17225 (2)
9/16 O.S.	1195	20065	220661	3095	3185	C-17075
9/16 N.S.	1195	20065	A-220660	3095	3183	C-17075
1 RA, RAN-6	1195	20065	A-220660	3095	3183	C-17075
3/4 RA-8	14395	38587	70066	3095	3185	C-17022 (2)
1-1/4 RA-6	14395	38587	70066	3095	3185	52199
1-1/4 RB-8, 1-5/8 RBN-8	14353	38587	84066	14262	14406	C-17343 (2)
1-5/8 RB-6, 2" RB-6	14353	38587	84066	14262	14406	33554 (2)
1-5/8 RB-8, 2" RB-8	14353	38587	84406	14262	14406	33554 (2)
2-5/8 RB-6	14354	38587	84406	14262	14406	33554 (2)
2-5/8 RB-8	14354	38587	84406	14262	14406	33554 (2)
3-1/2 RB-6	14354	38587	84406	14262	14406	33554 (2)

T



STOCK REEL TUBES FOR ALL MACHINES

2 Styles of Stock Reel Tubes Available

Quietube

Quietube has a sound absorbing material trapped between a steel outer sleeve and a wound steel inner coil.

Hushtube

Hushtube uses sound absorbing urethane liners sealed inside a solid steel outer sleeve.

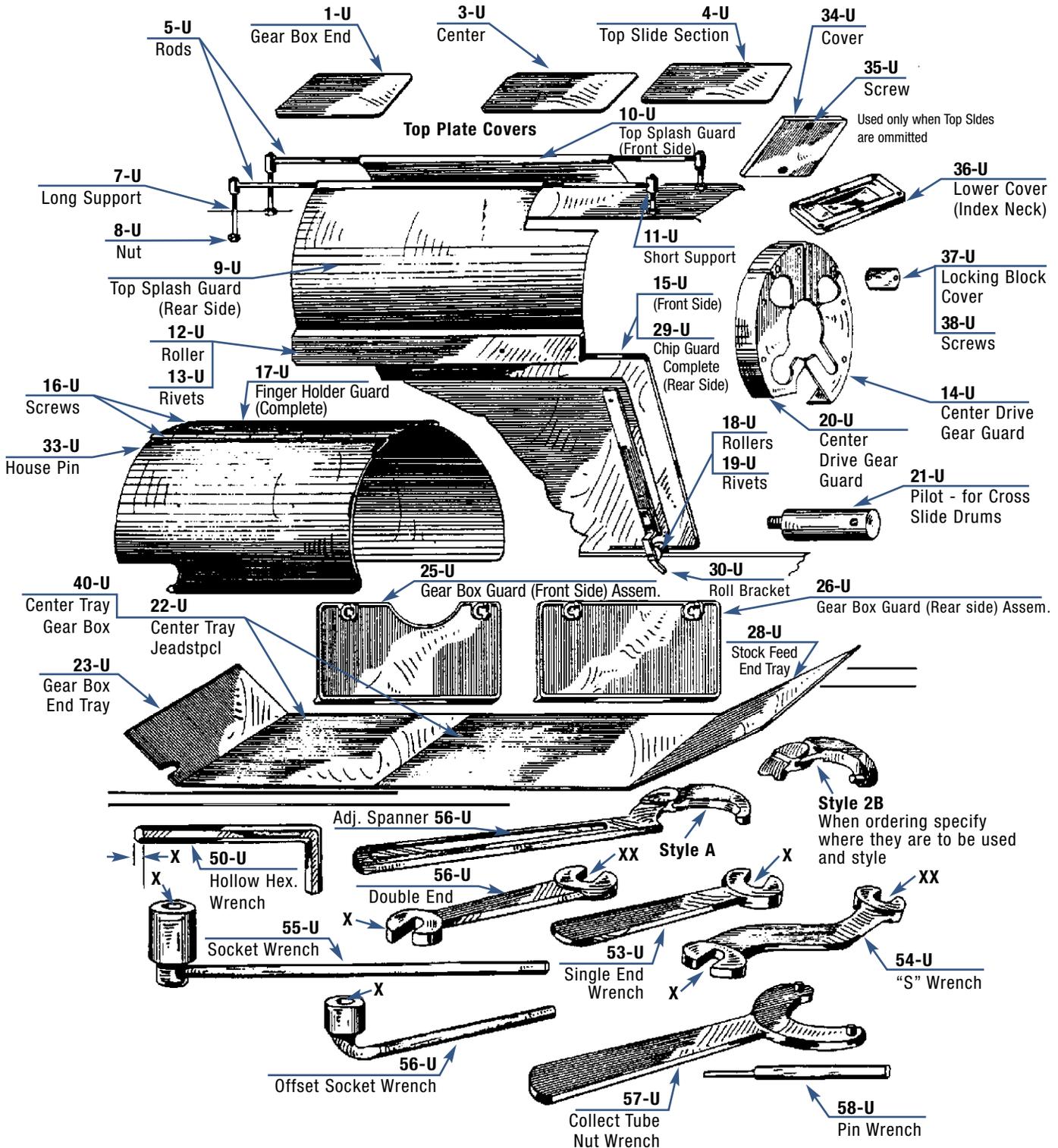
Tubes are made to order. Quotes available upon request.

Specify tube type, machine size, outside diameter and length of tube required.

T

Stock Steel Tubes

For Machines
All Machines



Wrenches available for Model R. Grindley Machines
When ordering quote dimensions at X and XX

Drum Pilots, Spanner Wrenches

For Machines
All Machines
 Quotes available
 upon request

21-U DRUM PILOT

MACHINE SIZE	PART NUMBER
9/16 RA, RAN-6 1" RA, RAN-6 3/4 RA-8, 1-1/4 RA-6	204451
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 RB-6, 2" RB-6	A-404450
1-5/8 RB-8, 2" RB-8 2-5/8 RB-6	B-824450
2-5/8 RB-8 3-1/2 RB-6 4" RB-6	A-964450



21-U Drum Pilot

51-U SPANNER WRENCH

STYLE	PART NUMBER	RANGE
Hook Type	34-301	3/4 - 2"
Hook Type	34-304	1-1/4 - 3"
Hook Type	34-307	2 - 4-3/4"
Pin Type	34-361	1-1/4 - 3"
Pin Type	34-363	2 - 4-3/4"



51-U Spanner Wrench - Hook Type



51-U Spanner Wrench - Pin Type

57-U SPANNER WRENCH

MACHINE SIZE	PART NUMBER	STYLE
1-5/8 RBN-8	16415	3-1/2"
1-5/8 RB-6, 2" RB-6	16402	4-1/8"
2-5/8 RB-6, 3-1/2 RB-6	16411	4-1/2"



57-U Spanner Wrench

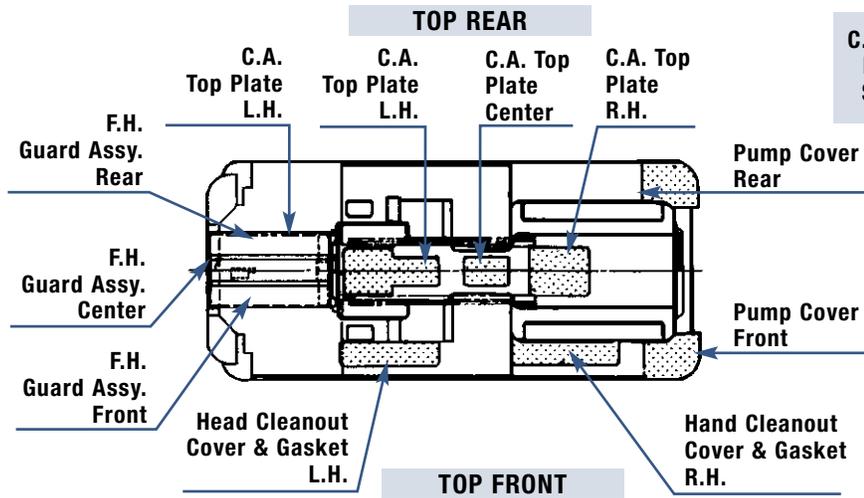
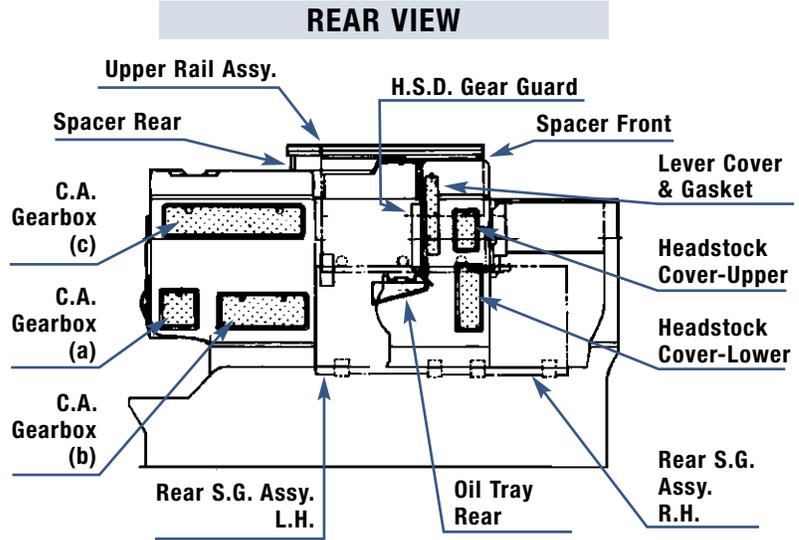
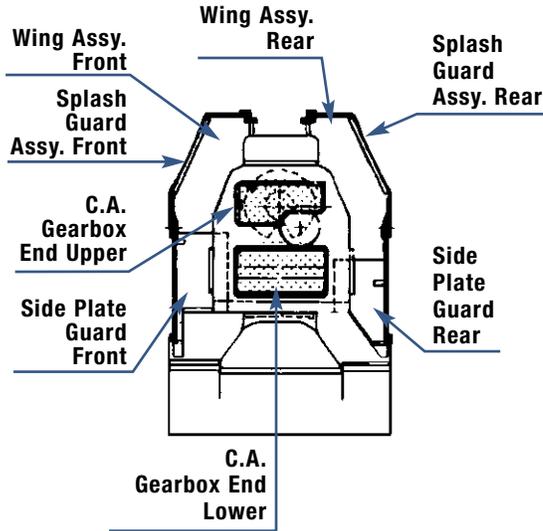
Guards and Covers

For Machines

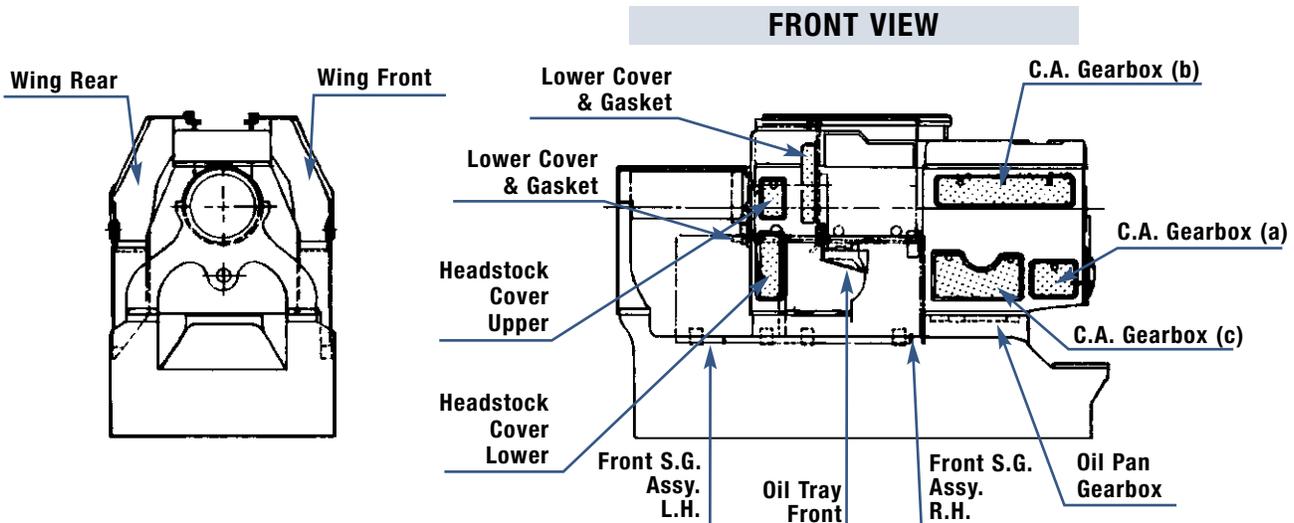
9/16 RA-6

1" RA-6

1-1/4 RA-6

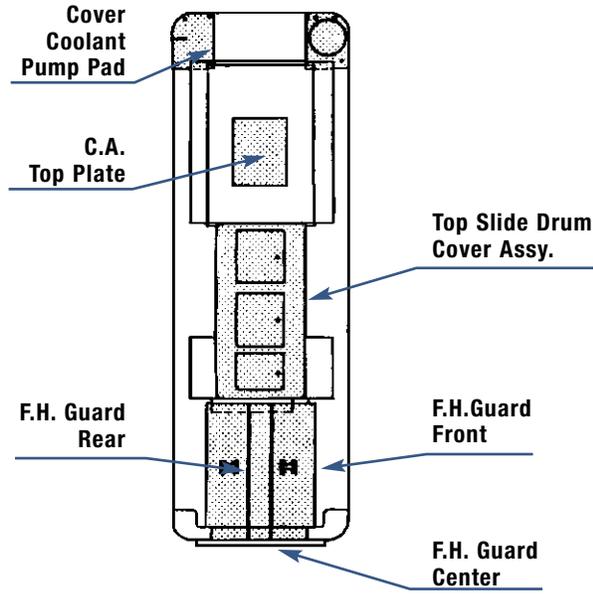


C.A. = Cover Assembly
F.H. = Finger Holder
S.G. = Splash Guard



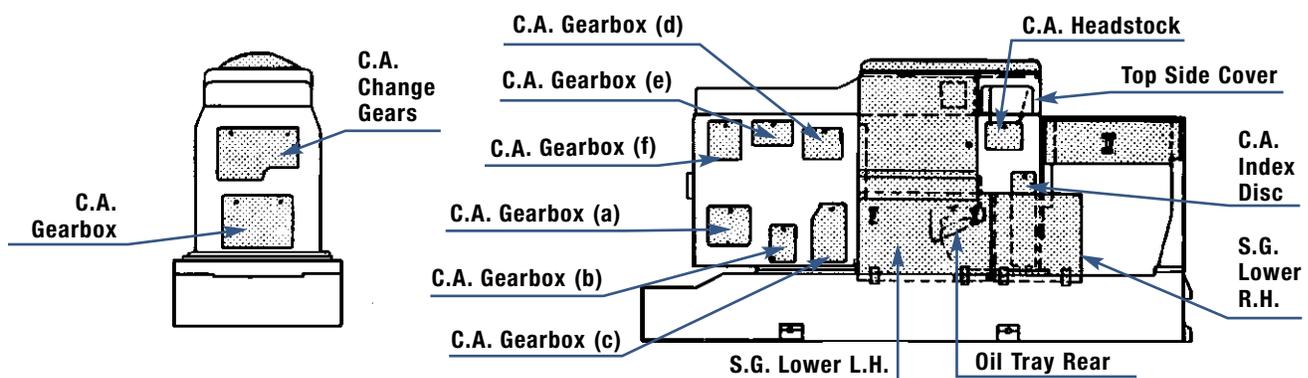
Guards and Covers

For Machines
1-1/4 RB-8
and Larger

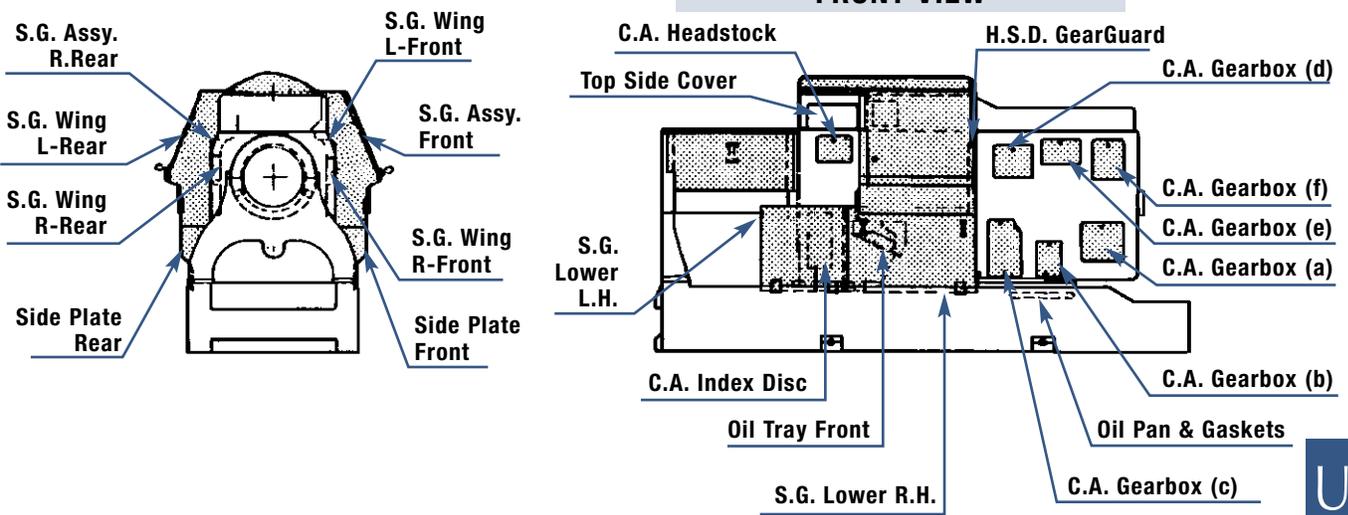


C.A. = Cover Assembly
F.H. = Finger Holder
S.G. = Splash Guard

REAR VIEW



FRONT VIEW



Tooling Section Index: Acme-Gridley

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- Model A Masters & Pads	229
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Pusher / Tube Combos	226
Pick-off Collets - see attachments	

Solid Collets and Collet Seals

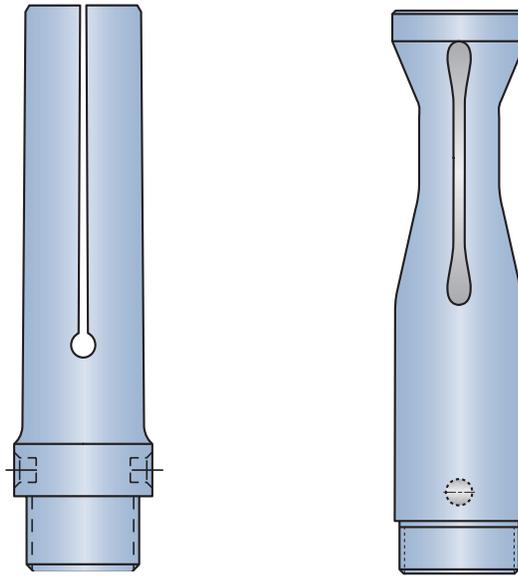


Solid Collet

Specify smooth or serrated when ordering collets
Special collets to exceed rated machine capacity quoted on request

MACHINE	SOLID COLLET	COLLET SEALS	RATED CAPACITY		
			ROUND	HEX	SQUARE
7/16 Acme	4001	7645	7/16	3/8	19/64
9/16 Acme	4013	7653	9/16	31/64	25/64
5/8 Acme	4021	7653	5/8	17/32	7/16
3/4 Acme	4027	7647	3/4	41/64	33/64
1" Acme	4035	7647	1"	55/64	45/64
1-1/4 Acme	4043	7647	1-1/4	1-5/64	7/8
1-5/8 Acme	4051	7649	1-5/8	1-13/32	1-9/64
2" Acme	4067	7649	2"	1-23/32	1-13/32
2-5/8 Acme	4059	7649	2-5/8	2-17/64	1-27/32
3-1/2 Acme	MP2551	7651	3-1/2	3-1/64	2-15/32
4" Acme	MP3185	7651	4"	3-29/64	2-53/64

Feed Finger Pushers, Cage Style Pushers



Bronze Cage Pushers and Dual Grip Pushers also available.
Call for a quote today

MACHINE	FEED FINGER PUSHER	CAGE PUSHER	RATED CAPACITY		
			ROUND	HEX	SQUARE
7/16 Acme	4007	CP04	7/16	3/8	19/64
9/16 Acme	4017	CP05	9/16	31/64	25/64
5/8 Acme	4025	CP06	5/8	17/32	7/16
3/4 Acme	4029	CP07	3/4	41/64	33/64
1" Acme	4041	CP1	1"	55/64	45/64
1-1/4 Acme	4047	CP12	1-1/4	1-5/64	7/8
1-5/8 Acme	4053	CP16	1-5/8	1-13/32	1-9/64
2" Acme	4055	CP2	2"	1-23/32	1-13/32
2-5/8 Acme	4201	CP26	2-5/8	2-17/64	1-27/32
3-1/2 Acme	MP2492	CP35	3-1/2	3-1/64	2-15/32
4" Acme	MP3186	CP4	4"	3-29/64	2-53/64

Pusher / Tube Combo's and Spool Bushings



Pusher / Tube Combo's Available

Some sizes available from stock - other sizes made to order

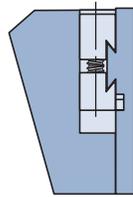


Pusher Tube Spool Bushings made to your specifications

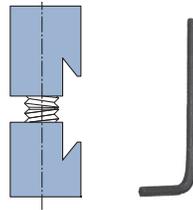
Spool Bushings made to order - available with round or broached hex I.D.

**Hardinge Style
'S' Master Collets and Pads
'B' Master Pushers and Pads**

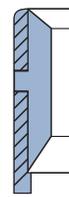
Collet pads specify smooth or serrated
Pushers pads in steel, bronze, or cast iron



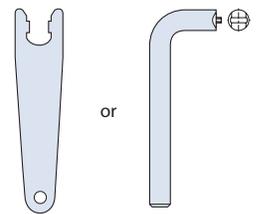
Style "S" Master
Collet & Pad



Clamp Wrench



Style "B" Master
Pusher & Pad



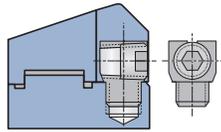
B Pad Wrench

MACHINE	S MASTER COLLET	S COLLET PAD	S PAD CLAMP / WRENCH	B MASTER PUSHER	B PUSHER PAD	B PAD WRENCH
7/16 Acme	N/A	N/A	N/A	6221	6643	7589
9/16 Acme	N/A	N/A	N/A	6223	6607	7577
5/8 Acme	N/A	N/A	N/A	6225	6611	7579
3/4 Acme	N/A	N/A	N/A	6229	6617	7581
1" Acme	5101	5601	7619 / 7637	6235	6625	7585
1-1/4 Acme	5103	5603	7619 / 7637	6237	6631	7587
1-5/8 Acme	5107	5607	7619 / 7637	6247	6657	7607
2" Acme	5109	5609	7619 / 7637	6249	6661	7607
2-5/8 Acme	5113	5613	7619 / 7637	6137	6673	7607
3-1/2 Acme	5115	5617	7627 / 7639	6253	6681	7607
4" Acme	5117	5619	7627 / 7639	N/A	N/A	N/A

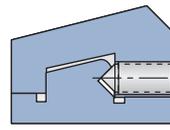
CT, CB, and Martin Master Collets and Pads

Martin Master Collets and Pads CT Master Collets and Pads CB Master Collets and Pads

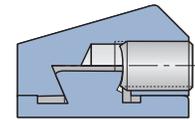
Specify smooth or serrated collet pads



*Martin Master
Collet & Pad*



*Style "CT" Master
Collet & Pad
(2 screws per pad)*



*Style "CB" Master
Collet & Pad
(1 screw per pad)*

MACHINE	MARTIN MASTER COLLET	MARTIN COLLET PAD	CT MASTER COLLET	CT COLLET PAD	CB MASTER COLLET	CB COLLET PAD
1" Acme	5425	5901	2115	2215	2101	2201
1-1/4 Acme	5427	5903	2117	2217	2103	2203
1-5/8 Acme	5431	5907	2119	2219	2105	2205
2" Acme	M20	5909	2121	2221	2107	2207
2-5/8 Acme	5437	5915	2123	2223	2109	2209
3-1/2 Acme	5439	5921	2125	2225	2111	2211
4" Acme	M40	5923	2127	2227	2113	2213

Model A, PN, and PB Master Pushers and Pads

PN Master Pushers and Pads
PB Master Pushers and Pads
Model A Master Pushers and Pads

Pads available in steel, bronze, or cast iron



PN Pusher Pad



PB Pusher Pad



Model A Pusher Pad

MACHINE	PN MASTER PUSHER	PN PUSHER PAD	PB MASTER PUSHER	PB PUSHER PAD	MODEL A MASTER PUSHER	MODEL A PUSHER PAD
1" Acme	A14251PN	PN1	A14251PB	PB1	6425	6715
1-1/4 Acme	A14252PN	PN1-1/4	A14252PB	PB1-1/4	6443	6719
1-5/8 Acme	A14253PN	PN1-5/8	A14253PB	PB1-5/8	6429	6727
2" Acme	A14254PN	PN2	A14254PB	PB2	4108	5029
2-5/8 Acme	A14256PN	PN2-5/8	A14256PB	PB2-5/8	6449	6739
3-1/2 Acme	A14257PN	PN3-1/2	A14257PB	PB3-1/2	4256A	6751
4" Acme	A14258PN	PN4	A14258PB	PB4	N/A	N/A

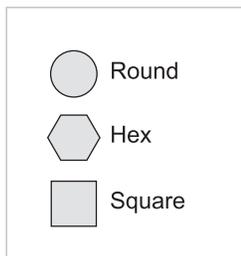
Are Pusher marks a Problem?

Just call
CHAMPION 

Scratch
Tamer



Protect fine surface finishes on barstock
with Scratch Tamer Feed Fingers



Available for:

- | | |
|--------------|----------------|
| Acme-Gridley | Wickman |
| New Britain | Schutte |
| Conomatic | Greenlee |
| Davenport | Brown & Sharpe |
| Euroturn | Tornos |

MACHINE	PART NUMBER	CAPACITY ROUND	CAPACITY HEX (ACROSS CORNERS)
7/16 ACME	ST04	.437	3/8 (.432)
9/16 ACME	ST05	.524	7/16 (.505)
5/8 ACME	ST06	.550	15/32 (.541)
3/4 ACME	ST07	.675	9/16 (.649)
1" ACME	ST1	.900	3/4 (.865)
1-1/4 ACME	ST12	1.100	15/16 (1.082)
1-5/8 ACME	ST16	1.300	1-3/32 (1.262)
2" ACME	ST2	1.725	1-15/32 (1.695)
2-5/8 ACME	ST26	2.250	1-15/16 (2.237)
3-1/2 ACME	ST35	3	2-9/16 (2.958)
4" ACME	ST4	3-1/2"	3"

STD DAVENPORT (1/2")	ST05DAV	.500	13/32 (.469)
O.S. DAVENPORT (3/4")	ST07DAV	.649	17/32 (.613)

1" NEW BRITAIN	ST1NB	.900	3/4 (.865)
1-5/8 NEW BRITAIN	ST16	1.300	1-3/32 (1.262)
2-1/4 NEW BRITAIN	ST22NB	1.920	1-5/8 (1.876)

1-1/4 CONOMATIC	ST12CONE	1.100	15/16 (1.082)
1-5/8 CONOMATIC	ST16	1.300	1-3/32 (1.262)

AF32 SCHUTTE	ST32SCH	1.100	15/16 (1.082)
--------------	---------	-------	---------------

1-5/8 GREENLEE	ST16GREEN	1.450	1-1/4 (1.443)
----------------	-----------	-------	---------------

00A B & S	ST00ABS	.312	9/32 (.324)
10 B & S	ST10BS	.375	5/16 (.360)
11 B & S	ST11BS	.449	3/8 (.432)
21A B & S	ST21ABS	.649	17/32 (.613)
22 B & S	ST22BS	.850	23/32 (.829)
22D B & S	ST22DBS	1.250	1-1/16 (1.226)
22H B & S	ST22HBS	1.100	15/16 (1.082)

5/8 WICKMAN	ST06WICK	.550	15/32 (.541)
1-3/8 WICKMAN	ST13WICK	1.000	27/32 (.974)
1-3/4 WICKMAN	ST17WICK	1.250	1-1/16 (1.226)

SAS14 TORNOS	STAS14TOR	.449	3/8 (.432)
SAS16 TORNOS	STAS16TOR	.550	15/32 (.541)
BS20, BS20B, BS22	STBS20TOR	.700	19/32 (.685)

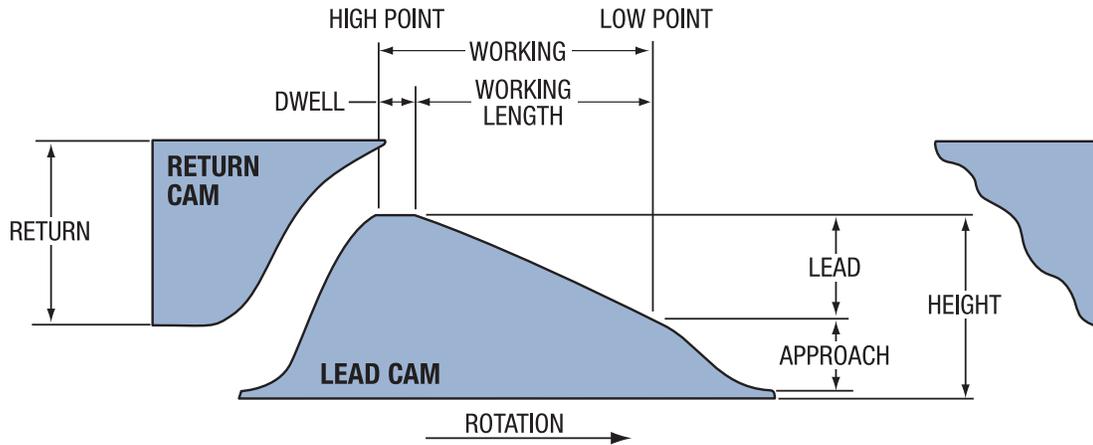
MS25 INDEX	STMS25	.900	3/4 (.865)
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PART	PAGE
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Cam Types	234
Cam Identification	235
Cam Timing Diagram	236
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Lower Cross Slide Cams	238
Upper Cross Slide Cams	239
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Chucking Cams	242

The illustration below will help you become more familiar with the basic function of each portion of a cam.

Typical 3 Cam Set



Lead Cam Height:

The distance from the base of the cam to the highest point of the cam.

Return: (Also called travel)

The rise of the return cam (equal to the approach plus the lead of the lead cam). Used to return the slide to its "back" position for the start of the next machining cycle.

Cam Length:

The working length plus the dwell, if any, given in degrees (full length of slow time).

Working Length:

The length (given in degrees) of the lead cam used to advance the slide during machining (slow) time.

Dwell:

The length (given in degrees) between the top of the lead and the start of the return. (The slide is in the fully forward position).

Lead:

The cam rise used to advance a slide during the performance of an operation (machining, stock feed, etc.).

High Point:

The point at which the machine shifts into high speed (idle or fast time).

Low Point:

The point at which the machine shifts into slow speed (machining time).

Cam Types

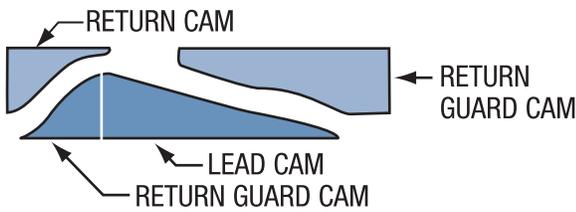
Depending on your machine and cam function, the cam you order may be one of several different types:

Two Cam Set

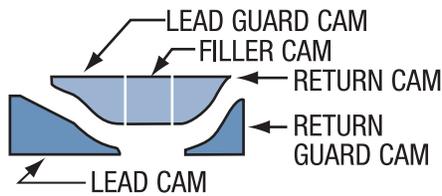


Three or Four Cam Set

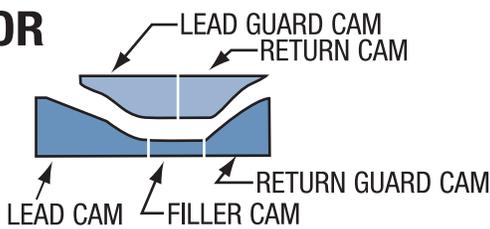
Four cam set is the same as a three cam set except for a separate return guard cam.



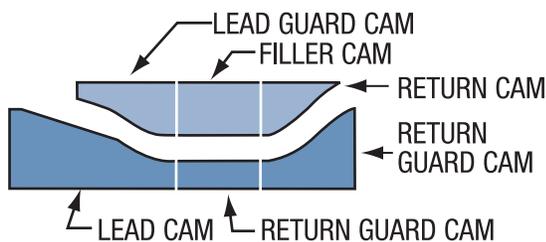
Five Cam Set with Filler Cam



OR



Six Cam Set with Filler Cam



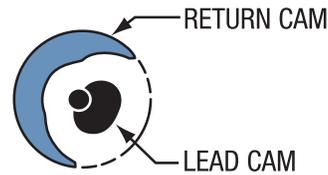
Barrel Cam

A barrel cam is basically a cam drum that has had the cam roll track milled directly into it.



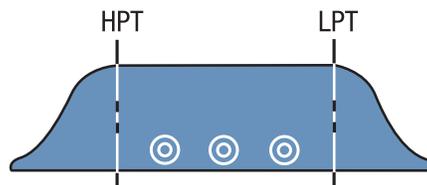
Disc Cam Set

Flat cams are mounted on a rotating disc instead of a rotating drum.



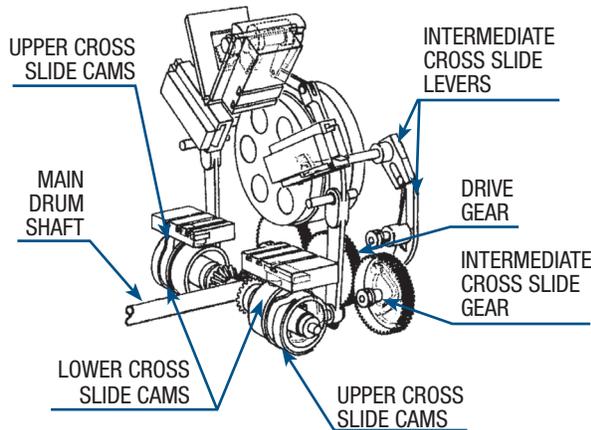
No-Lead Cam

A "no-lead" cam will move a slide forward during fast time where it will remain (dwell) for the duration of machining time. Usually, "no-lead" cams are used in the lower cross slide positions for attachments such as accelerated turning or magazine loading. "No-Lead" cams are hardened, furnished with mounting bolt holes, and are not meant to be reworked.

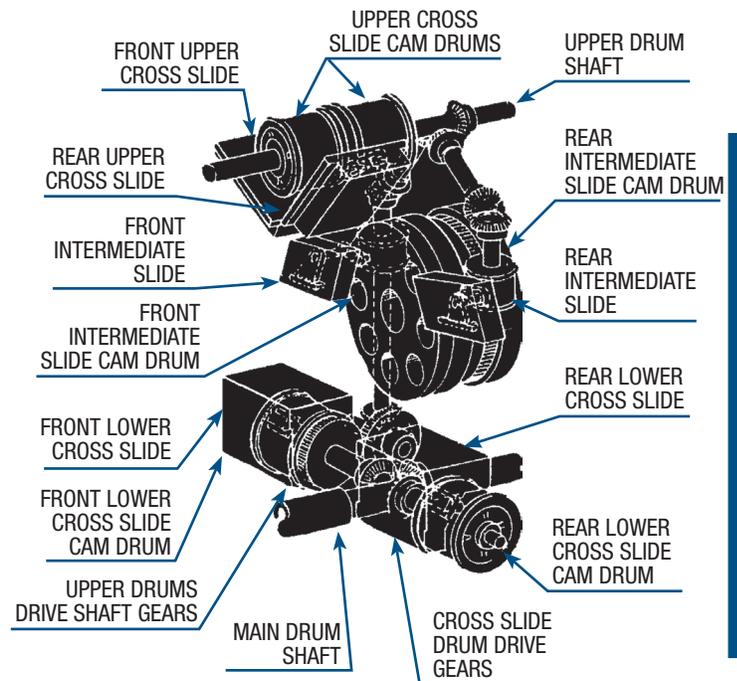


Location and Function

MODELS RA and RAN



MODEL RN



End Toolslide Cam

Operates the end toolslide causing it to advance and retract as required by the machining and idle times of the complete machining cycle.

Intermediate Cross Slide Cams

Operate the intermediate cross slides on six and eight spindle machines. There is a separate set of cams for each intermediate cross slide.

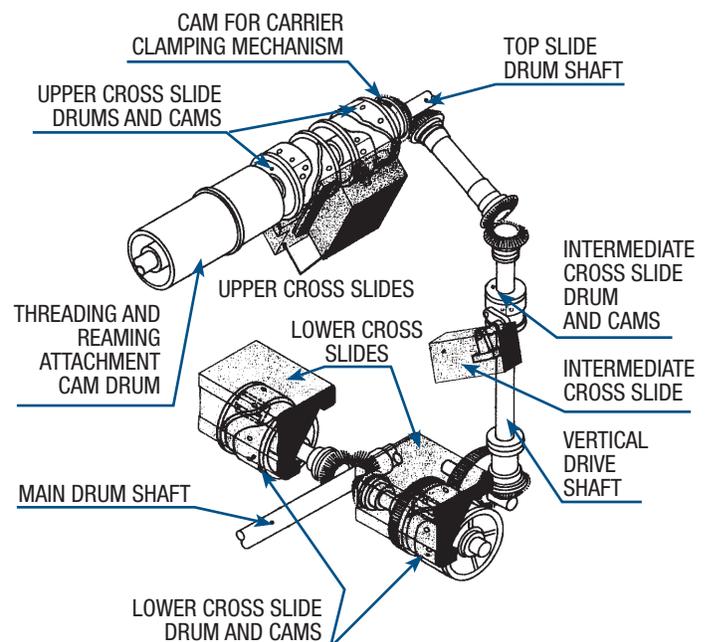
Lower Cross Slide Cams

Operate the two lower cross slides. There is a separate set of cams for each lower cross slide.

Upper Cross Slide Cams

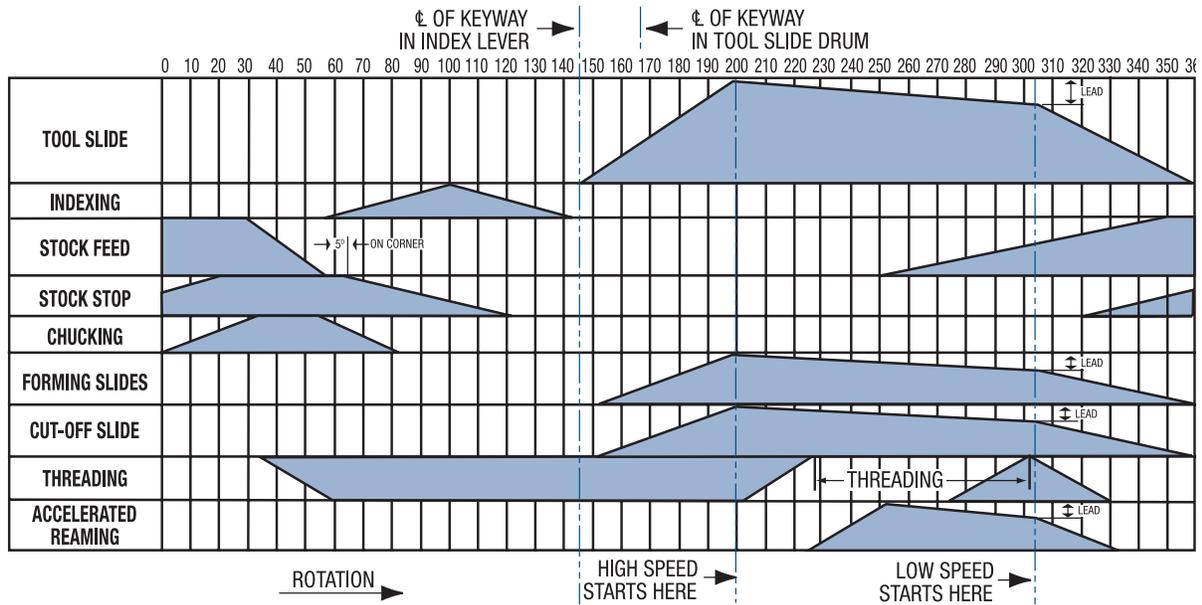
Operate the two upper cross slides. There is a separate set of cams for each upper cross slide.

MODELS RB and RPA



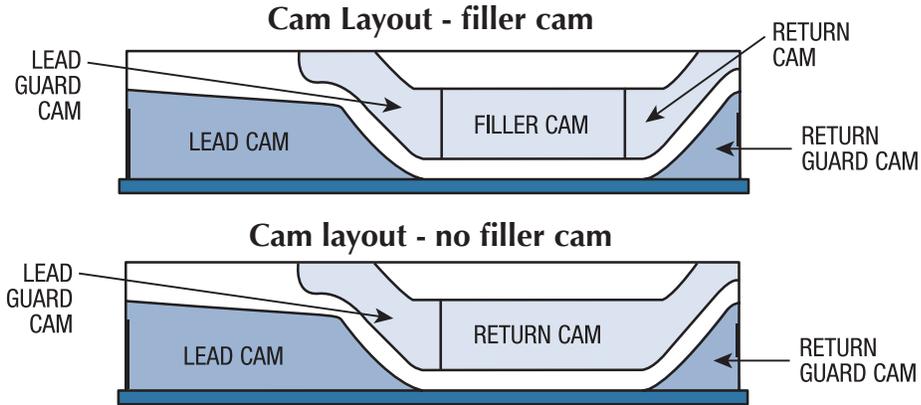
Relationship of Cams in Timing Various Machine Operations

Relationship of cam locations on various drums controlling the timing of machine operations during a complete cycle.

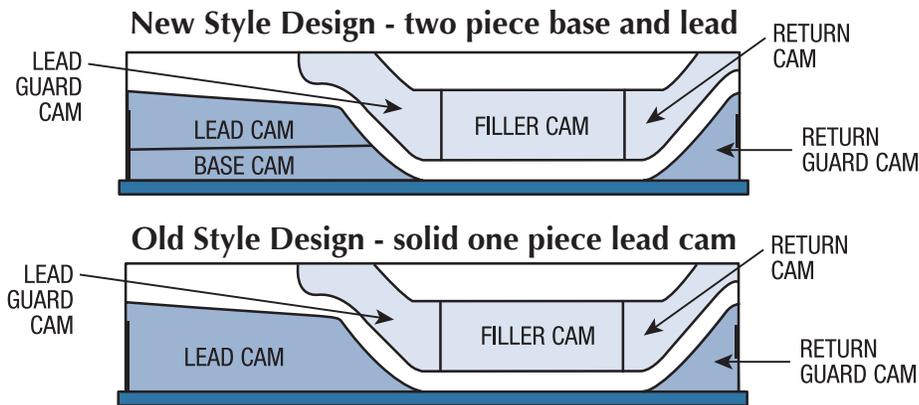


As shown in the chart above, all so-called “idle movements” (when tools are not cutting) are performed when the drum shaft is rotated at high speed. The leads, or working surfaces, of precision cut cams for end and side toolslides start at the same relative points and finish together. Cams for accelerated attachments, such as threading and reaming, start at approximately the same time, but finish ahead of the other cams to provide clearance of these tools.

(XXX = feed required on lead cam)



MACHINE	CHAMPION LEAD/GUARD SET (SPECIFY RISE)	LEAD / GUARD CAM	RETURN CAM	RETURN GUARD CAM	FILLER CAM
7/16 RA-6 (145°) *		C-18294 / C-18305	C-18292	C-18293	N/A
7/16 RA-6 (112°) *		C-182891	C-183251	C-183241	N/A
5/8 RN-6		AK-50000	FC-16325	FC-16328	FC-16329
9/16 & 1" RA-6 (112°)	TSC56XXX	222890	223250	223280	203240
9/16 & 1" RA-6 (140°)		0235482 / 0235483	223250	223280	203270
1-1/4 RA-6, 3/4 RA-8	TSC12XXX	702900 / 703040	703251	703271	N/A

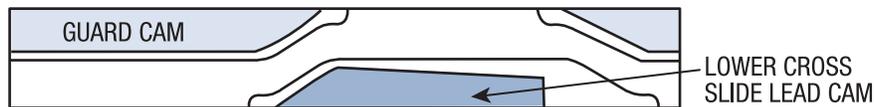


MACHINE	CHAMPION LEAD/GUARD SET (SPECIFY RISE)	LEAD / GUARD CAM	RETURN CAM	RETURN GUARD CAM	FILLER CAM	BASE FOR NEW STYLE LEAD CAM
1-1/4 RB-8	TSC16XXX (NEW STYLE)	A-40289 / A-40304	A-383250	A-383280	A-38329	A-40303
1-5/8 RBN-8						N/A
1-5/8 RB-6	OLD STYLE	A-38289 / A-38304	A-383250	A-383280	A-38329	N/A
2" RB-6						N/A
1-5/8 & 2" RB-8	TSC26XXX (NEW STYLE)	B-82289 / B-82304	A-823250	A-82327	A-82320	B-82303
2-5/8 RB-6 & RB-8						N/A
3-1/2 RB-6 & RB-8	OLD STYLE	A-82289 / A-82305	A-823250	A-82327	A-82320	N/A
4" RB-6						N/A

Lower Cross Slide Cams

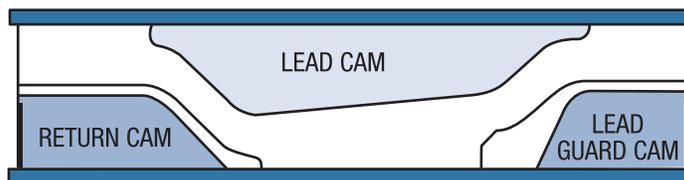
(XXX = feed required on lead cam)

Cam Layout - 2 piece set



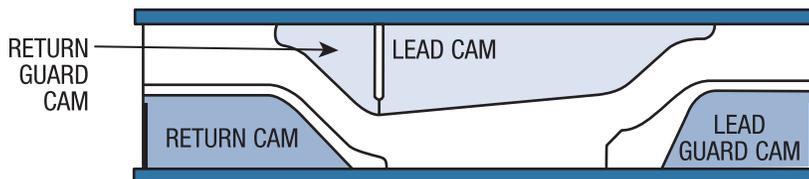
MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM
9/16 & 1" RA-6 (112°)	CSC56XXX-16	227890	227990
9/16 & 1" RA-6 (140°)		02354-95	02354-96
1-1/4 RA-6, 3/4 RA-8	CSC12XXX-16	708220	708210

Cam Layout - 3 piece set



MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM	RETURN CAM
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 RA-6, 1-5/8 & 2" RB-6	CSC16XXX-16	A-38822	A-38814	A-38821

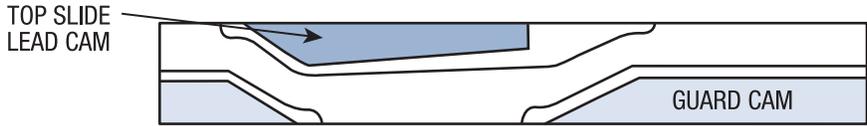
Cam Layout - 4 piece set



MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM	RETURN CAM	RETURN GUARD CAM
1-5/8 & 2" RB-8, 2-5/8 RB-6 2-5/8 RA-6	CSC26XXX-16	B-82822	B-82814	B-82821	B-82815
2-5/8 RB-8, 3-1/2 RB-8 3-1/2 RB-6, 4" RB-6	CSC35XXX-16	A-96822	A-96814	A-96821	A-96815
4" RB-8		BC-88822	BC-88814	BC-88821	BC-88815

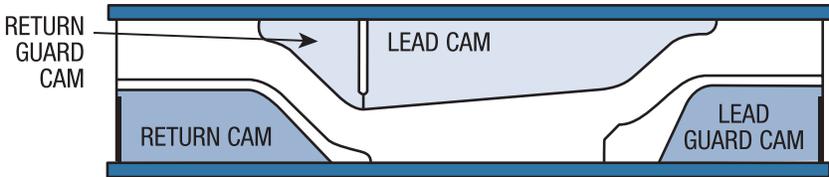
(XXX = feed required on lead cam)

Cam Layout - 2 piece set



MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM
9/16 & 1" RA-6 (112°)	CSC56XXX-34	227900	20820
9/16 & 1" RA-6 (140°)		02354-97	02354-98
1-1/4 RA-6, 3/4 RA-8	CSC12XXX-34	708260	708200

Cam Layout - 4 piece set



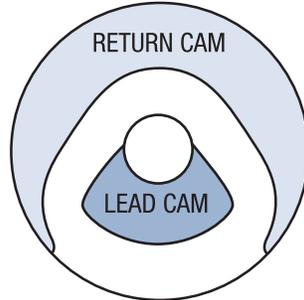
6 Spindle Machine - Front is 3rd Pos. Rear is 4th Pos.
 8 Spindle Machine - Front is 4th Pos. Rear is 5th Pos.

MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM	RETURN CAM	RETURN GUARD CAM
1-1/4 RB-8, 1-5/8 RBN-8	Upper Front	Upper Front	Upper Front	Upper Front	Upper Front
1-5/8 RA-6	CSC16XXX-3	A-38791	A-38792	A-38793	A-38794
1-5/8 & 2" RB-6	Upper Rear	Upper Rear	Upper Rear	Upper Rear	Upper Rear
1-5/8 & 2" RB-8	CSC16XXX-4	A-38795	A-38796	A-38797	A-38798
2-5/8 RB-6					
2-5/8 RB-8	Upper Front	Upper Front	Upper Front	Upper Front	Upper Front
3-1/2 RB-6	CSC35XXX-3	A-96791	A-96792	A-96793	A-96794
3-1/2 RB-8	Upper Rear	Upper Rear	Upper Rear	Upper Rear	Upper Rear
4" RB-6	CSC35XXX-4	A-96795	A-96796	A-96797	A-96798

Intermediate Slide Cams

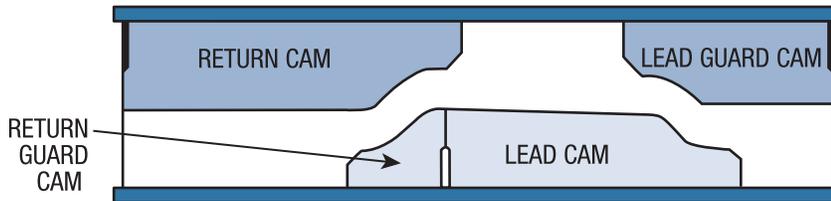
(XXX = feed required on lead cam)

Cam Layout - Disc Cam (2 pc. set)



MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	RETURN CAM
9/16 & 1" RA-6 (112°)	CSC56XXX-5	23562	23563
9/16 & 1" RA-6 (140°)		02358-6	02358-5
1-1/4 RA-6, 3/4 RA-8	CSC12XXX-5	71562	71563
2-5/8 RA-6		A-83562	A-83563

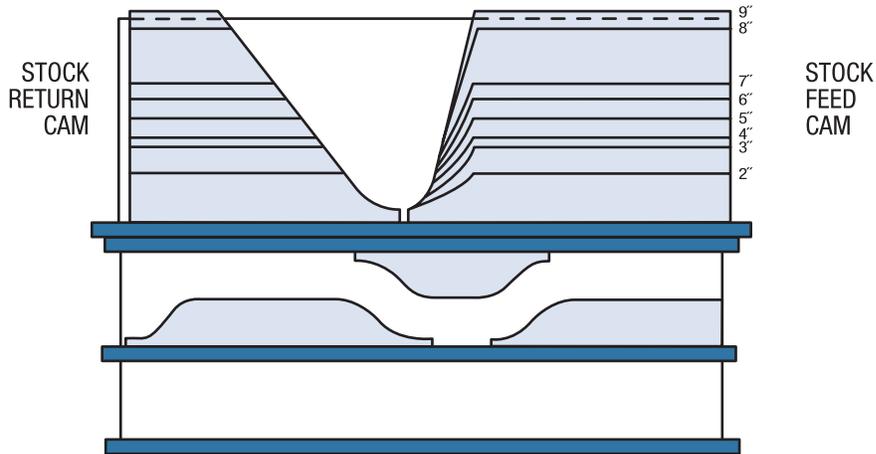
Cam Layout - 4 piece set



6 Spindle Machine - Front is 2nd Pos. Rear is 5th Pos.
 8 Spindle Machine - Front is 3rd Pos. Rear is 6th Pos.

MACHINE	CHAMPION LEAD/GUARD	LEAD CAM	LEAD GUARD CAM	RETURN CAM	RETURN GUARD CAM
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 RA-6 1-5/8 & 2" RB-6	Upper Front	A-41562	A-41564	A-41563	A-41565
1-5/8 & 2" RB-8 before 85308 use 3rd for 6th	3rd pos. 6th pos.	BM-83562 BM-835700	BM-83564 BM-835730	BM-83563 BM-835710	BM-83565 BM-835720
2-5/8 RB-8	3rd pos. 6th pos.	AT-97562 AT-97570	AT-97564 AT-97572	AT-97563 AT-97571	AT-97565 AT-97573
2-5/8 RB-6, 3-1/2" RB-6 before 84527-A use 2nd for 5th	2nd pos. 5th pos.	A-955620 A-955700	A-955640 A-955720	A-955630 A-955710	A-955650 A-955730
3-1/2 RB-8, 4" RB-6	front & rear	BA-93570	BA-93572	BA-93571	BA-93573
4" RB-8	3rd pos. 6th pos.	BC-895700 BC-895620	BC-895720 BC-895640	BC-895710 BC-895630	BC-895730 BC-895650

2 piece cam set for all machines



Special Feed and Double Feed Cams Made to Order

MACHINE	FEED	PART #
7/16 RA-6	1/2"	C-187470
	1"	C-187450
	1-1/2"	C-187400
	2"	C-18765
	3"	C-18738
	3-1/2"	C-187791

5/8 RN-6	1-1/2"	FC-16763
	3"	FC-16764
	5"	FC-16765

9/16 & 1" RA-6	2"	207631
9/16 & 1" RAN-6	3"	227641
	5"	A-22765

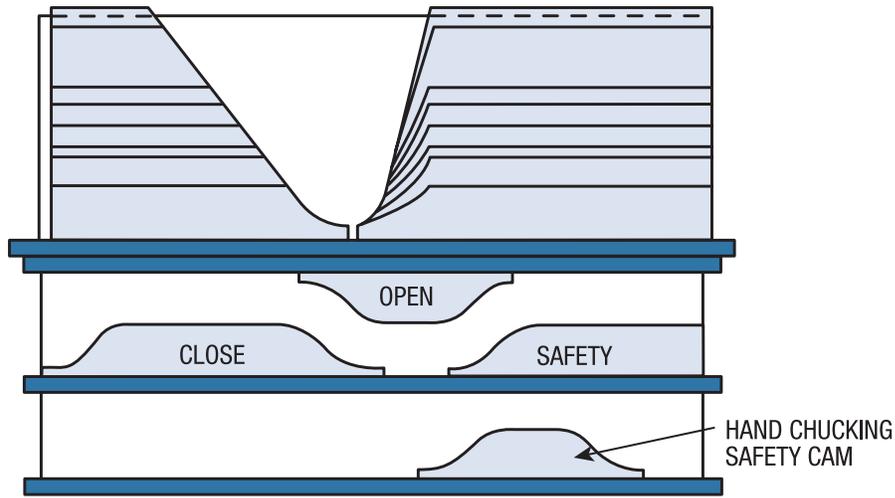
1-1/4 RA-6	2-1/2"	707622
3/4 RA-8	4-1/2"	707633
	7"	707642

MACHINE	FEED	PART #
1-1/4 RB-8	2"	A-827390
1-5/8 RBN-8	3"	82763
1-5/8 RA-6	4"	0363-2
1-5/8 & 2" RB-6	5"	82774
1-5/8 & 2" RB-8	6"	0363-12
2-5/8 RB-6	7"	827640
2-5/8 RB-8	9"	827650
3-1/2 & 4" RB-6	10"	A-40765

4" RB-8	4"	BC-88763
	6"	BC-88774

Chucking Cams

Cam Layout



MACHINE	CAM	PART #
9/16 & 1" RA & RAN-6	Open*	A-22769
	Close*	A-22771
3 pc. set A-22769S	Safety	A-22770
	Hand	205760

MACHINE	CAM	PART #
1-5/8 & 2" RB-6	Open	A-94769
1-5/8 & 2" RB-8	Close	A-94771
2-5/8 RB-6	Safety	A-82770
2-5/8 RB-8	Hand	A-84770

3/4 RA-8	Open	BD-70769
	Close	BD-70771
	Safety	BD-70770
	Hand	BD-70576

3-1/2 RB-6	Open	A-94855
	Close	A-94856
	Safety	AS-94770
	Hand	A-94770

1-1/4 RA-6	Open*	707691
	Close*	707710
	Safety*	707700
	Hand	70576
* 3 pc. set 707691S		

3-1/2 RB-8	Open	BM-94769
	Close	BM-94771
	Safety	BM-94770
	Hand	A-94770

1-1/4 RB-8	Open	AM-407691
	Close	AM-407711
	Safety	AM-407701
	Hand	A-84770

4" RB-6	Open	BA-92769
	Close	BA-92771
	Safety	BA-92770
	Hand	A-94770

1-5/8 RBN-8	Open	A-94769
	Close	A-94771
	Safety	A-82770
	Hand	A-84770



PART	PAGE
7/16 RA-6	244
9/16 & 1" RA-6, RAN-6 5/8 RN-6	245
1-1/4 RA-6, 3-4 RA-8 5-1/4 RAC-6	246
1-1/4 RB-8, 1-5/8 RBN-8 1-5/8 & 2" RB-6 & RB-8 2-5/8 RA-6 & RB-6 2-5/8 RB-8, 3-1/2 RA & RB-6* 6" RPA-8 *check s/n	247
2-5/8 RB-8 3" & 3-1/2" RA & RB-6* 3-1/2 RB-8 4" RB-6* 6" RB-6* *check s/n	248
4" RB-6* 6" RB-6* *check s/n	249
8" RPA-6 & 8 10" RPA-6 12" RPA-4 & 6	250
2-3/8 HSC-6	251

Identifying right hand and left hand helical gears



Left Hand

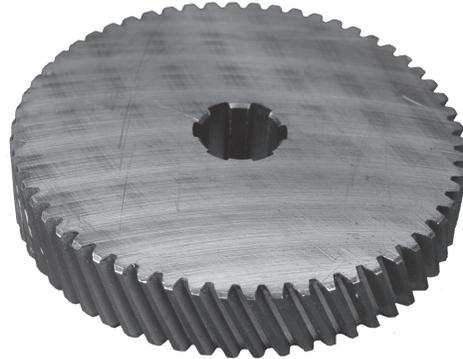


Right Hand

Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
7/16 RA-6	68	76

Pitch	12
Spline	1"
Width	.687"



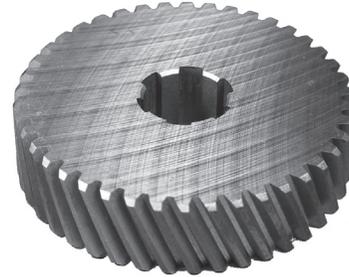
NO. TEETH	PART #	R.H. OR L.H.
20	C-18241	L
22	C-18242	L
24	C-18243	L
26	C-18244	L
28	C-18245	L
30	C-18246	L
32	C-18247	L
34	C-18248	L
34	C-18379	R
36	C-18249	R
38	C-18250	R
40	C-18251	R
42	C-18252	R
44	C-18253	R
46	C-18254	R
48	C-18255	R
50	C-18381	R
52	C-18383	R

Spindle Speed and Feed Gears

	# of teeth per set	
	Feed	Speed
9/16 & 1" RA & RAN-6	80	80
5/8 RN-6	76	76

Pitch	10
Spline	1.25"
Width	1.12"

Pitch	10/12
Spline	1.25"
Width	1.12"



No. TEETH	CHAMPION PART #	ACME PART #
20	NA56-20	20241
22	NA56-22	20242
24	NA56-24	20243
26	NA56-26	20244
28	NA26-28	20245
30	NA56-30	20246
32	NA56-30	20247
34	NA56-34	20248
36	NA56-36	20249
38	NA56-38	20250
40	NA56-40	20251
42	NA56-42	20252
44	NA56-44	20253
46	NA56-46	20254
48	NA56-48	20255
50	NA56-50	20256
52	NA56-52	20257
54	NA56-54	20258
56	NA56-56	20259

No. TEETH	CHAMPION PART #	ACME PART #
20R	NA56-20R	0515-65
22R	NA56-22R	0515-67
24R	NA56-24R	0515-69
26R	NA56-26R	0515-71
28R	NA56-28R	0515-73
30R	NA56-30R	0515-75
32R	NA56-32R	0515-77
34R	NA56-34R	0515-79
36R	NA56-36R	0515-81
38R	NA56-38R	0515-83
38L	NA56-38L	0947-8
40R	NA56-40R	0947-7
40L	NA56-40L	0515-85
42L	NA56-42L	0515-87
44L	NA56-44L	0515-89
46L	NA56-46L	0515-91
48L	NA56-48L	0515-93
50L	NA56-50L	0515-95
52L	NA56-52L	0515-97
54L	NA56-54L	0515-99
56L	NA56-56L	0947-2
58L	NA56-58L	0947-4
60L	NA56-60L	0947-6

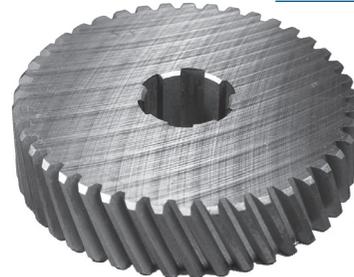
Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
1-1/4 RA-6 & 5-1/4 RAC-6	100	76
3/4 RA-8	100	76
1-1/4 RB-6 (helical gears for both feed & speed)	100	76

Other Machines - 5/8 RA-8, 1" R-6, 1" RAS-6, 1-1/4 R-6
1-3/8 R-4 & RA-4, 1-5/8 R, RA, RAS-4

Pitch	10
I.D.	1.88"
Width	1.06"

Pitch	10
Spline	1.5"
Width	1.38"



FEED GEARS

No. TEETH	CHAMPION PART #	ACME PART #
26	NA12-26	33393
28	NA12-28	33394
30	NA12-30	33395
32	NA12-32	33396
34	NA12-34	38379
36	NA12-38	33397
38	NA12-38	38267
40	NA12-40	33398
42	NA12-42	38278
44	NA12-44	33399
46	NA12-46	38279
48	NA12-48	38380
50	NA12-50	330760
52	NA12-52	38381
54	NA12-54	38382
56	NA12-56	38273
58	NA12-58	38383
60	NA12-60	33400
62	NA12-62	38275
64	NA12-64	38384
66	NA12-66	33401
68	NA12-68	38277
70	NA12-70	330770
72	NA12-72	38385

SPEED GEARS

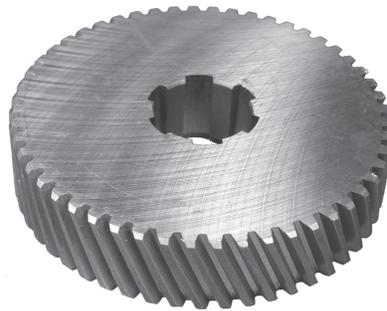
No. TEETH	CHAMPION PART #	ACME PART #
20	NA12-20L	70241
22	NA12-22L	330792
24	NA12-24L	33802
26	NA12-26L	333341
28	NA12-28L	330812
30	NA12-30L	330822
32	NA12-32L	333351
34	NA12-34L	70248
36	NA12-36L	333361
38	NA12-38L	333371
40	NA12-40L	333381
42	NA12-42L	332840
44	NA12-44L	333000
38	NA12-38R	70250
40	NA12-40R	70251
42	NA12-42R	70252
44	NA12-44R	70253
46	NA12-46R	333401
48	NA12-48R	333010
50	NA12-50R	333020
52	NA12-52R	333411
54	NA12-54R	70258
56	NA12-56R	70259
58	NA12-58R	333210
60	NA12-60R	330942
62	NA12-62R	330952
64	NA12-64R	330962
66	NA2-66R	330972
68	NA12-68R	330982

Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
1-1/4 RB-8 & 1-5/8 RBN-8	96	96
1-5/8 & 2" RB-6, 1-5/8 RA-6	96	96
1-5/8 & 2" RB-8	104	104
2-5/8 RA-6, 2-5/8 RB-6	104	104
2-5/8 RB-8 before s/n 96133	104	104
3-1/2 RA & RB-6 before s/n 94024*	104	104
6" RPA-8	106	112

* except serial no. 94024 - 94027, and 94031

Other Machines - 2" RA-4 & 6, RAS-6; 2-1/4 RA-4 & 6 before s/n 96133
 2-1/4 RA & RB-8; 2-5/8 RA & RB-4 before s/n 96133
 3", 3-1/2, 4-3/4, and 5" - 4 spindle machines before s/n 90038



Pitch	8/10
Spline	2"
Width	1.5

No.	CHAMPION PART #	ACME PART #
22	NA16-22R	82242
24	NA16-24R	82243
26	NA16-26R	82244
28	NA16-28R	82245
30	NA16-30R	82246
32	NA16-32R	82247
34	NA16-34R	82248
36	NA16-36R	82249
38	NA16-38R	82250
40	NA16-40R	82251
42	NA16-42R	82252
44	NA16-44R	82253
46	NA16-46R	82254
48	NA16-48R	82255
50	NA16-50R	82256
52	NA16-52R	82257
54	NA16-54R	86547
56	NA16-56R	86548
58	NA16-58R	

No.	CHAMPION PART #	ACME PART #
44	NA16-44L	
46	NA16-46L	
48	NA16-48L	A-38254
50	NA16-50L	A-38256
52	NA16-52L	82388
54	NA16-54L	82258
56	NA16-56L	82259
58	NA16-58L	82260
60	NA16-60L	82261
62	NA16-62L	82262
64	NA16-64L	82263
66	NA16-66L	82534
68	NA16-68L	82535
70	NA16-70L	82536
72	NA16-72L	82537
74	NA16-74L	82538
76	NA16-76L	82539
78	NA16-78L	82540
80	NA16-80L	82541
82	NA16-82L	82543
84	NA16-84L	86240
86	NA16-86L	86241
88	NA16-88L	86242

Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
2-5/8 RB-8 begin s/n 96133	104	104
3" & 3-1/2" RA & RB-6 begin s/n 94041*	104	104
3-1/2 RB-8	116	116
4" RB-6 before s/n BM-88005	104	104
6" RB-6 before s/n BC-88029	102	102

* include serial no. 94024-94027, and 94031

Other Machines - 4-3/4 RA & RB-4; 5" RA-4 begin s/n 90038
5-1/8 & 5-1/2 RB-4 begin s/n 90038

Pitch	8/10
Spline	3"
Width	1.5"



No. TEETH	CHAMPION PART #	ACME PART #
30	NA35-30R	A-94240
32	NA35-32R	A-94241
34	NA35-34R	A-94242
36	NA35-36R	A-94243
38	NA35-38R	A-94244
40	NA35-40R	A-94245
42	NA35-42R	A-94247
44	NA35-44R	A-94249
46	NA35-46R	A-94251
48	NA35-48R	A-94253
50	NA35-50R	A-94255
52	NA35-52R	A-94257
52	NA35-52L	A-94258
54	NA35-54L	A-94260
56	NA35-56L	A-94262
58	NA35-58L	A-94264
60	NA35-60L	A-94265
62	NA35-62L	A-94266
64	NA35-64L	A-94267
66	NA35-66L	A-94268
68	NA35-68L	A-94269
70	NA35-70L	A-94270
72	NA35-72L	A-94271
74	NA35-74L	A-94272

Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
4" RB-6 begin s/n BM-88005	96	96
6" RB-6 begin s/n BC-88029	96	96

Other Machines - 7-3/4 RA-4 begin s/n 88306; 8" RBN-4

Pitch	6/8
Spline	3.5"
Width	2.5"



NO. TEETH	CHAMPION PART #	ACME PART #
28	NA6-28R	BM-88239
30	NA6-30R	BM-88240
32	NA6-32R	BM-88241
34	NA6-34R	BM-88242
36	NA6-36R	BM-88243
38	NA6-38R	BM-88244
40	NA6-40R	BM-88245
42	NA6-42R	BM-88247
44	NA6-44R	BM-88249
46	NA6-46R	BM-88251
48	NA6-48R	BM-88253
50	NA6-50R	BM-88255
52	NA6-52L	BM-88258
54	NA6-54L	BM-88260
56	NA6-56L	BM-88262
58	NA6-58L	BM-88264
60	NA6-60L	BM-88265
62	NA6-62L	BM-88266
64	NA6-64L	BM-88267
66	NA6-66L	BM-88266
68	NA6-68L	BM-88269
70	NA6-70L	BM-88270
72	NA6-72L	BM-88271
74	NA6-74L	BM-88272
76	NA6-76L	BM-88276

Spindle Speed & Feed Gears

	# of teeth per set	
	Feed	Speed
8" RPA-6 & 8	112	112
10" RPA-6	108	108
12" RPA-4 & 6	112	92

Pitch	6/8
Spline	3"
Width	2"



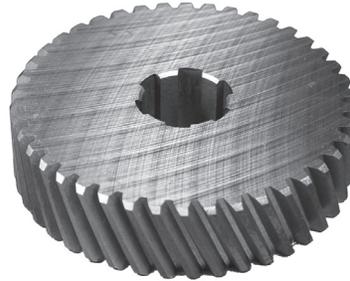
No. TEETH	CHAMPION PART #	ACME PART #
26	NA3-26R	BU-88238
27	NA3-27R	BU-88373
28	NA3-28R	BU-88239
29	NA3-29R	02679-1
30	NA3-30R	BU-88240
31	NA3-31R	02679-2
32	NA3-32R	BU-88241
33	NA3-33R	02679-3
34	NA3-34R	BU-88242
35	NA3-35R	BU-88377
36	NA3-36R	BU-88243
37	NA3-37R	02679-4
38	NA3-38R	BU-88244
39	NA3-39R	02679-5
40	NA3-40R	BU-88245
41	NA3-41R	02679-6
42	NA3-42R	BU-88247
43	NA3-43R	02679-7
44	NA3-44R	BU-88249
45	NA3-45R	02679-8
46	NA3-46R	BU-88251
47	NA3-47R	02679-9
48	NA3-48R	BU-88253
49	NA3-49R	BU-88384
50	NA3-50R	BU-88255
51	NA3-51R	02679-10
52	NA3-52R	BU-88257
54	NA3-54R	A-80387
63	NA3-63R	02679-23
69	NA3-69R	03062-18
77	NA3-77R	A-80400

No. TEETH	CHAMPION PART #	ACME PART #
31	NA3-31L	A-80379
39	NA3-39L	03062-19
45	NA3-45L	02679-22
46	NA3-46L	BU-88252
48	NA3-48L	BU-88254
51	NA3-51L	02679-11
52	NA3-52L	BU-88258
53	NA3-53L	BU-88386
54	NA3-54L	BU-88260
55	NA3-55L	02679-12
56	NA3-56L	BU-88262
57	NA3-57L	02679-13
58	NA3-58L	BU-88264
59	NA3-59L	02679-14
60	NA3-60L	BU-88265
61	NA3-61L	02679-15
62	NA3-62L	BU-88266
63	NA3-63L	02679-16
64	NA3-64L	BU-88267
65	NA3-65L	02679-17
66	NA3-66L	BU-88268
67	NA3-67L	02679-18
68	NA3-68L	BU-88269
69	NA3-69L	02679-19
70	NA3-70L	BU-88270
71	NA3-71L	02679-20
72	NA3-72L	BU-88271
73	NA3-73L	BU-88396
74	NA3-74L	BU-88272
75	NA3-75L	02679-21
76	NA3-76L	BU-88273
78	NA3-78L	BU-88274
80	NA3-80L	BU-88275
82	NA3-82L	A-80405

Spindle Speed & Feed Gears

2-3/8 HSC-6	# of teeth per set	
	Feed	Speed
	80	80

Pitch	10/12
Spline	1.25"
Width	1"

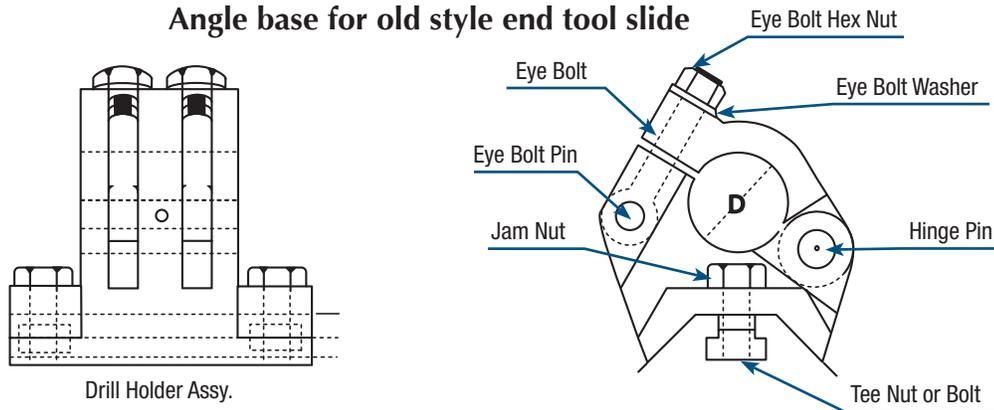


No. TEETH	CHAMPION PART #	ACME PART #
18	H-58268	H-58511
19	H-58269	
20	H-58270	
21	H-58271	
22	H-58263	
23	H-58241	
24	H-58272	
25	H-58261	
26	H-58255	
27	H-58267	H-58308
28	H-58273	
29	H-58252	H-58310
30	H-58278	H-58257
31	H-58251	H-58279
32	H-58242	H-58299
33	H-58243	H-58302
34	H-58252	H-58262
35	H-58247	H-58283
36	H-58274	H-58284
37	H-58248	H-58285
38	H-58236	H-58266
39	H-58250	H-58287
40	H-58275	H-58288

No. TEETH	CHAMPION PART #	ACME PART #
41	H-58235	H-58238
42	H-58230	H-58294
43	H-58291	H-58250
44	H-58276	H-58292
45	H-58293	H-58249
46	H-58277	H-58254
47	H-58293	H-58245
48	H-58296	H-58246
49	H-58297	H-58233
50	H-58338	H-58258
51	H-58309	H-58254
52		H-58300
53	H-58339	H-58301
54		H-58256
55		H-58263
56		H-58303
57		H-58259
58		H-58264
59		H-58304
60		H-58305
61		H-58306
62		H-58307

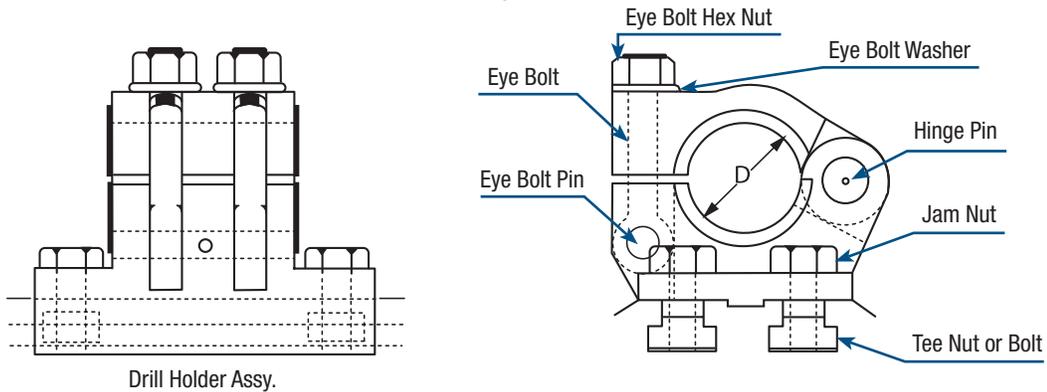
Drill Holders

Angle base for old style end tool slide

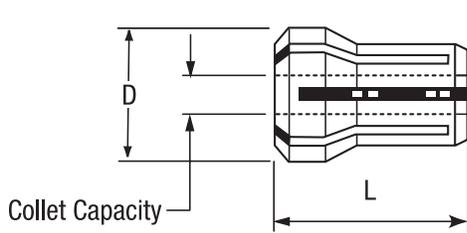


MACHINE SIZE	DRILL HOLDER ASSEMBLY	EYE BOLT	EYE BOLT WASHER	HEX NUT FOR EYE BOLT	EYE BOLT PIN	HINGE PIN	T-NUT OR T-BOLT	JAM NUT FOR T-BOLT
9/16, 1" RA-6	230451	1946	974	51217	XA1625	XA1625	14707	4244
1-1/4 RA-6	710450	1945	50939	3157	324	XA1658	1129	4244
2-5/8 RA-6	85045							

Flat base for new style end tool slide



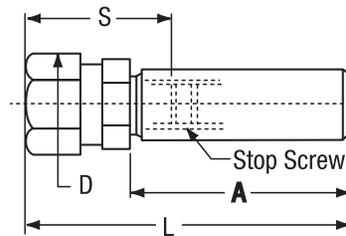
MACHINE SIZE	DRILL HOLDER ASSEMBLY	EYE BOLT	EYE BOLT WASHER	HEX NUT FOR EYE BOLT	EYE BOLT PIN	HINGE PIN	T-NUT OR T-BOLT	JAM NUT FOR T-BOLT
7/16 RA-6	C-19045	1646	W415	2806	XA1795	XA1793	A1050	A1516
9/16 - 1" RA-6	A-230450	1938	50935	51217	XA2066	XA1711	14745	4244
5/8 RN-6	FC-17045	C44321	W417	51164	9266	9266	A1119	51159
3/4 RA-8	BD-71045	1938	50935	51217	9266	51621	A1058	261
1-1/4 RA-6	B-71045	1945	50939	3157	324	3068	14727	4244
1-1/4 RB-8	AM-41045	1945	50939	3157	324	3068	14727	4244
1-5/8 RBN-8								
1-5/8 RB-6, RB-8	BM-830451	1947	50939	3157	324	3068	4866	262
2-5/8 RB-6	B-850450	A44781	50939	3157	324	A44782	4866	262
2-5/8 RB-8	A-970451	1949	W421	266	XA1660	XA1661	52203	1148
3-1/2 RB-6	A-830451	1949	W421	266	XA1660	XA1661	52206	1074
2-3/8 HSC	0259148	1938	50935	51217	XA1625	XA1625	A1119	51159



Double Angle Collets

SERIES	D	L	CAPACITY
100 DA	.769	1.44	3/64-9/16"
180 DA	1.035	1.62	3/64-3/4"
200 DA	.539	1.18	3/64-25/64"
300 DA	.375	1.00	1/32-1/4"
400 DA	1.455	2.00	3/32-1"
500 DA	2.25	2.00	1"-1-5/8"

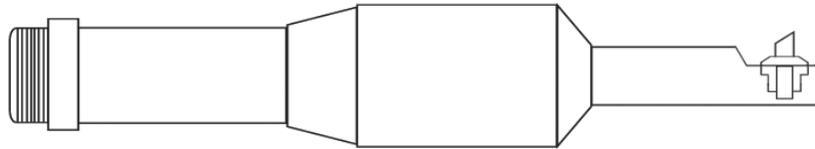
Straight Shank Collet Chucks



CAPACITY	SERIES	L	A	D	S	KENNAMETAL #
1/2" Shank						
1/32-1/4"	300 DA	6.84	5.42	1/2" Hex	1.50-4.25	SS050DA304681
5/8" Shank						
3/64-3/8"	200 DA	5.69	4.00	1" Hex	1.62-4.25	SS062DA208569
3/4" Shank						
3/64-3/8"	200 DA	5.50	7.12	3/4" Hex	1.65-4.75	SS075DA204712
3/64-9/16"	100 DA	3.97	6.50	1-1/2" Hex	1.75-5.75	SS075DA101650
1" Shank						
3/64-3/8"	200 DA	5.31	4.00	1" Hex	1.62-4.12	SS100DA208531
3/64-9/16"	100 DA	7.31	5.40	15/16" Hex	1.94-6.62	SS100DA104731
3/64-3/4"	180 DA	6.38	4.00	1-1/2" Hex	1.94-5.62	SS100DA188638
1-1/4" Shank						
3/64-3/4"	180 DA	8.38	6.00	1-3/4" Hex	1.75-5.62	SS125DA181838
3/32-1"	400 DA	8.32	6.00	2-1/4" Hex	2.12-7.68	SS125DA408862
1-1/2" Shank						
3/64-3/8"	200 DA	8.00	6.00	1-1/4" Hex	1.69-4.12	SS150DA201800
3/64-9/16"	100 DA	8.50	6.00	1-1/2" Hex	1.88-5.62	SS150DA101850
3/64-3/4"	180 DA	8.38	6.00	1-3/4" Hex	1.75-5.62	SS150DA181838
3/32-1"	400 DA	10.40	8.00	1-11/16" Hex	2.19-9.44	SS150DA404104
1-3/4" Shank						
3/32-1"	400 DA	8.06	6.00	2-1/4" Hex	2.12-7.121	SS175DA408806
2" Shank						
1/4-3/4"	180 DA	8.38	6.00	2" Hex	1.75-5.62	SS200DA181838
3/8-1"	400 DA	9.06	6.00	2-3/4" Hex	2.12-6.62	SS200DA401906
1"-1-5/8"	500 DA	11.20	8.00	3-7/8" Hex	2.62-10.37	SS200DA509112
3" Shank						
3/8-1"	400 DA	8.06	6.00	2-1/2" Hex	2.12-7.12	SS300DA408806
1"-1-5/8"	500 DA	10.40	8.00	3-7/8 Hex	2.31-7.00	SS300DA509104

Boring Bars and Components

Bars



MACHINE	9/16 RA-6	3/4 RA-8	1" RA-6	1-1/4 RA-6	1-5/8 RB-6
New	BB56N	BB75N	BB1N	BB12N	BB16N
Rent	BB56R	BB75R	BB1R	BB12R	BB16R

Bar Components



Dial



Adapter



Insert

MACHINE	9/16 RA-6	3/4 RA-8	1" RA-6	1-1/4 RA-6	1-5/8 RB-6
Dial	3705E1E	3705E1E	3705E1E	3705E1E	5705E1E
Adapter	3602	3602	3602	3602	5602
Insert - Long*	3A7E	3A7E	3A7E	3A7E	5A7E
Insert - Short*	3A5E	3A5E	3A5E	3A5E	5A5E

* short insert for drill holders / long insert for auxilliary housings

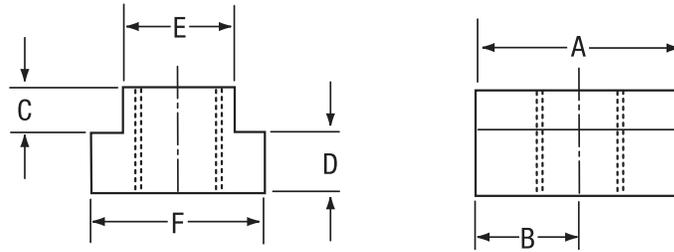
Gear Sets

MACHINE	9/16 RA-6	3/4 RA-8	1" RA-6	1-1/4 RA-6	1-5/8 RB-6
All Holders	BB56GEARS	BB12GEARS	BB56GEARS	BB12GEARS	BB16GEARS

Cam Sets

MACHINE	9/16 RA-6	3/4 RA-8	1" RA-6	1-1/4 RA-6	1-5/8 RB-6
Drill Holder	BB56CAM	BB12CAM	BB56CAM	BB12CAM	BB16CAM
Aux. Housing	BB56CAMPO		BB56CAMPO	BB12CAMTHD	

Cross Slide T-Nuts



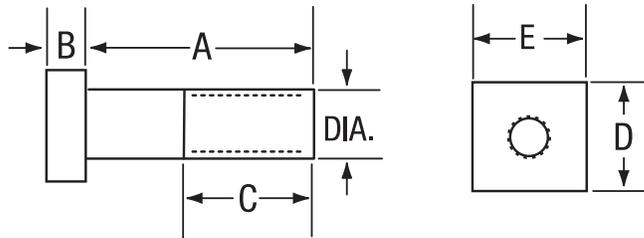
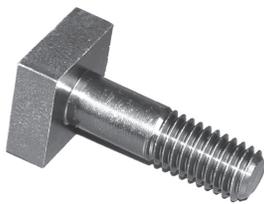
MACHINE SIZE	PART NO.	THDS	A	B	C	D	E	F
9/16 - 1 RA-6	52202	7/16 - 14	1-1/4	5/8	5/32	7/32	1/2	3/4
	T-102	3/8 - 16	1-1/4	5/8	1/8	7/32	1/2	3/4
	52203	7/16 - 14	1-1/4	5/8	7/32	11/32	1/2	13/16
1-1/4 RA-6	51870	1/2 - 13	1-1/4	5/8	1/4	3/8	19/32	15/16
1-5/8 - 2 RB-6 2-5/8 - 3-1/2 RB-6	52206	5/8 - 11	1-1/4	5/8	5/16	7/16	23/32	1-1/4
	14805	3/8 - 16	1	1/2	1/8	5/16	1/2	7/8
	14799	3/8 - 16	1	1/2	7/32	7/32	15/32	3/4
	14802	3/8 - 16	1	1/2	7/32	7/32	17/32	3/4
	14801	7/16 - 14	1	1/2	7/32	7/32	17/32	3/4
	52212	5/16 - 18	1	1/2	1/4	3/16	27/64	11/16
	14803	1/2 - 13	1-1/4	5/8	1/4	11/32	1/2	13/16

Tool Slide T-Nuts

MACHINE SIZE	PART NO.	THDS	A	B	C	D	E	F
7/16 RA-6	A-1050	1/4 - 20	5/8	5/16	1/4	1/8	0.277	0.387
3/4 RA-8	52210	3/8 - 16	1	1/2	9/64	15/64	27/64	21/32
	A-1116	5/16 - 18	1	1/2	1/4	3/16	27/64	5/8
9/16 - 1 RA-6	Flat T.S. 5021	3/8 - 16	1	1/2	5/32	3/16	1/2	5/8
	Ang. T.S. 52202	7/16 - 14	1-1/4	5/8	5/32	7/32	1/2	3/4
1-1/4 RA-6	Flat T.S. 14798	7/16 - 14	1	1/2	1/8	5/16	9/16	3/4
	Ang. T.S. 14811	7/16 - 14	7/8	Center	7/32	11/32	11/32	7/8
1-5/8 - 2 RB-6, RB-8 2-5/8 RB-6, RB-8	14811	7/16 - 14	7/8	Center	7/32	11/32	11/32	7/8
3-1/2 RB-6, RB-8 4 RB-6, RB-8 5-1/8, 5-1/2, 4-3/4 5 RB-4 6 RB-6	5026D	1/2 - 13	1-1/4	5/8	5/16	5/16	5/8	1

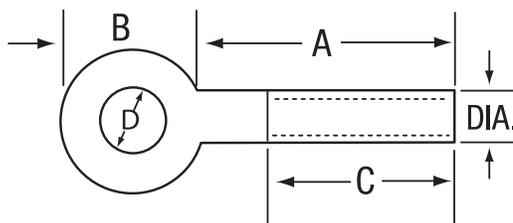
Toolholder Fasteners

T-Bolts



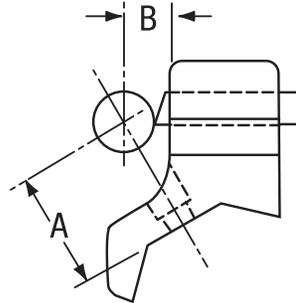
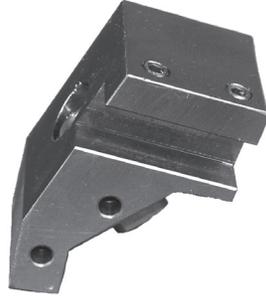
MACHINE SIZE	PART NO.	DIA.	THDS	A	B	C	D	E	TOOLSLIDE
9/16 - 1 RA-6	14707	7/16	14	23/32	15/64	1/2	3/4	3/4	Angular
	14745	7/16	14	7/8	7/32	1/2	5/8	3/4	Flat
3/4 RA-8	A-1058	3/8	16	1-1/16	3/16	11/16	5/8	5/8	Flat
1-1/4 RA-6	1129	7/16	14	31/32	11/32	1/2	7/8	7/8	Angular
1-1/4 RB-8	14727	7/16	14	1-3/16	19/64	3/4	3/4	3/4	Flat
1-5/8 RBN-8									
1-5/8 - 2 RB-6, RB-8	4866	7/16	14	1-1/2	11/32	3/4	7/8	7/8	Flat
2-5/8 RB-6									

Eye Bolts



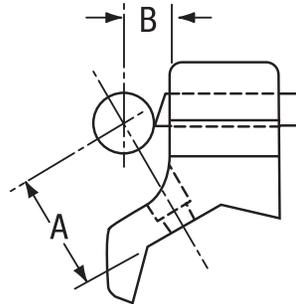
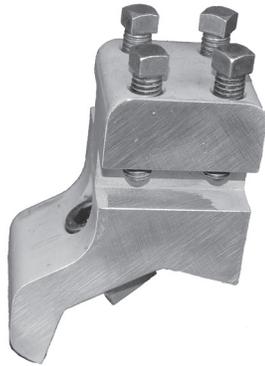
MACHINE SIZE	PART NO.	DIA.	THDS	A	B	C	D	TOOLSLIDE
7/16 RA-6	1646	1/4	20	3/4	1/2	3/4	1/4	Flat
3/4 RA-8	1938	7/16	20	1-7/8	5/8	3/4	3/8	Flat
9/16 - 1 RA-6	1938	7/16	20	1-7/8	5/8	3/4	3/8	Flat
	1946	7/16	20	1-11/16	5/8	3/4	3/8	Angular
1-1/4 RA-6, 1-1/4 RB-8, 1-5/8 RBN-8	1945	1/2	20	2-5/8	11-16	7/8	3/8	Flat & Angular
1-5/8 - 2 RB-6, RB-8	1947	1/2	20	3-3/16	11-16	7/8	3/8	Flat
2-5/8 RB-6	A-44781	1/2	20	3-3/4	11-16	7/8	3/8	Flat
3-1/2 RB-6	1949	5/8	16	4	1	1-1/4	1/2	Flat

Knee Turners - Angular Base



Plain Type

MACHINE SIZE	PART NO.	POSITION	A	B
9/16 - 1 RA 6	TK-3	1, 4	1.468	9/16
	TK-4	2, 3, 6	1.468	9/16
1-1/4 RA 6	TK-12	1, 4	1.468	13/16
	TK-13	2, 3	1.978	13/16
	TK-14	6	1.978	3/4

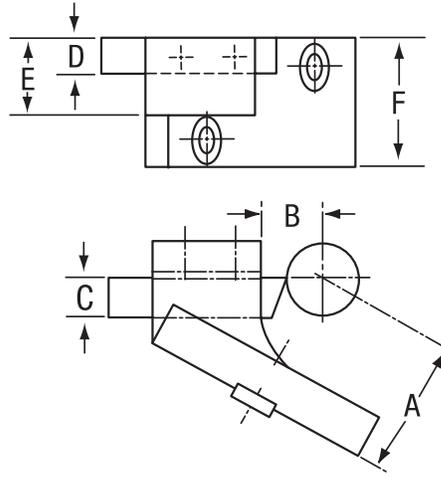


Reversible Type

MACHINE SIZE	PART NO.	POSITION	A	B
9/16 - 1 RA 6	TKR-2	1, 2, 3, 4	1.468	5/8
1-1/4 RA 6	TKR-6	1, 2, 3, 4	1.978	11/16
2-5/8 RA6	TKR-20	1, 2, 3, 4	2.611	1-7/16

End Tool Slide Toolholders

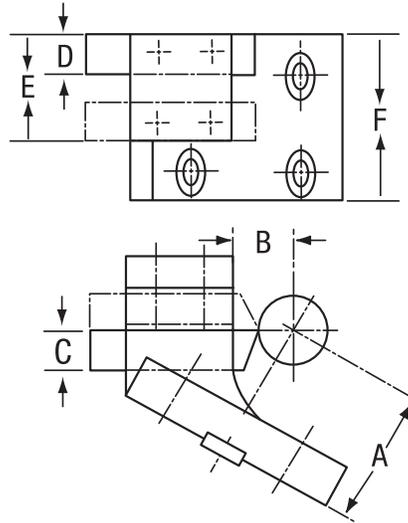
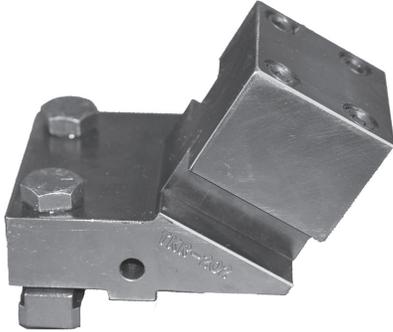
Knee Turners - Plain - Flat Base



Plain Type

MACHINE SIZE	PART #	CAPACITY	POSITION	A	B	C	D
7/16 RA-6	TK-176	7/16	1, 4	1.125	9/32	1/4	1/4
	TK-175	7/16	2, 3, 6	1.125	17/64	1/4	1/4
5/8 RN-6	ZT-174270	5/8	1, 4	1.625	1/2	1/2	1/2
	ZT-174291	5/8	2, 3, 6	1.625	1/2	1/2	1/2
9/16 - 1" RA-6	TK-203	9/16	1, 4	1.625	5/8	1/2	1/2
	TK-204	9/16	2, 3, 6	1.625	5/8	1/2	1/2
3/4 RA-8	ZT-714270	3/4	1, 5, 6	1.875	5/8	1/2	1/2
	ZT-714290	3/4	2, 3, 4, 8	1.875	5/8	1/2	1/2
1-1/4 RA-6	TK-212	1-1/4	1, 4	2.125	7/8	1/2	1/2
	TK-213	1-1/4	2, 3	2.125	27/32	1/2	1/2
	TK-214	1-1/4	6	2.125	25/32	1/2	1/2
1-1/4 RB-8	TK-7	1-5/8	1, 5, 6	2.500	15/16	1/2	1/2
1-5/8 RBN-8	TK-8	1-5/8	2, 3, 4, 8	2.500	15/16	1/2	1/2
1-5/8 & 2" RA/RB-6	TK-23	2	1, 5, 6*	2.50	1-3/16	5/8	5/8
1-5/8 & 2" RB-8	TK-24	2	2, 3, 4	2.50	1-3/16	5/8	5/8
*6TH ON 8 Spindle	TK-25	2	6, 8	2.50	1-1/8	5/8	5/8
2-5/8 RB-6	TK-73	2-5/8	1, 4	3.00	1-7/16	5/8	5/8
	TK-74	2-5/8	2, 3	3.00	1-7/16	5/8	5/8
	TK-75	2-5/8	6	3.00	1-7/16	5/8	5/8
2-5/8 RB-8	TK-41	2-5/8	1, 5, 6	3.00	1-3/8	5/8	5/8
	TK-42	2-5/8	2, 3, 4, 8	3.00	1-3/8	5/8	5/8
3-1/2 RB-6	TK-50	2-1/4	1, 5, 6	3.00	1-5/8	3/4	3/4
3-1/2 RB-8	TK-51	2-1/4	2, 3, 4, 8	3.00	1-5/8	3/4	3/4
	TK-52	3-1/2	1, 5, 6	3.00	2-1/4	3/4	3/4
	TK-53	3-1/2	2, 3, 4, 8	3.00	2-1/4	3/4	3/4

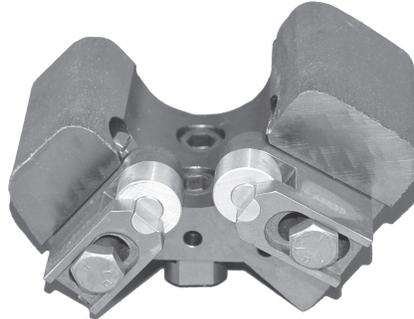
Knee Turners - Flat Base - Reversible



MACHINE SIZE	PART #	CAPACITY	POSITION	A	B	C	D
7/16 RA-6	TKR-175	7/16	1, 2, 3, 4	1.13	7/16	1/4	1/4
5/8 RN-6	ZT-174431	5/8	1, 2, 3, 4, 6	1.63	1/2	1/2	1/2
3/4 RA-8	ZT-714430	3/4	All	1.88	7/8	1/2	1/2
9/16 - 1 RA-6	TKR-202	9/16	1, 2, 3, 4	1.63	5/8	1/2	1/2
1-1/4 RA-6	TKR-206	1-1/4	1, 2, 3, 4	2.13	7/8	1/2	1/2
1-1/4 RB-8 1-5/8 RBN-8	TKR-7	1-5/8	1, 2, 3, 4, 5, 6	2.500	7/8	1/2	1/2
1-5/8 - 2 RB-6 & 8	TKR-15	2	1, 2, 3, 4	2.500	15/16	5/8	5/8
2-5/8 RB-6	TKR-40	2-5/8	1, 2, 3, 4, 6	3.00	1-7/16	5/8	5/8
2-5/8 RB-8	TKR-26	2-5/8	All	3.00	1-7/16	5/8	5/8
3-1/2 RB-6 & 8	TKR-30	3-1/2	1, 2, 3, 4	3.00	1-7/8	3/4	3/4

End Tool Slide Toolholders

Roll Supports - Angle Base - 6 Spindle



MACHINE SIZE	POSITION	LARGE ROLLS	CAPACITY	SMALL ROLLS	CAPACITY
9/16 RA-6 1 RA-6	1	RS-5 OR RS-10	1/4 to 1	RSS-5 or RSS-10	1/8 to 3/8
	2	RS-6 OR RS-2	1/4 to 1	RSS-6 or RSS-2	1/8 to 3/8
	3	RS-7 OR RS-11	1/4 to 1	RSS-7 or RSS-11	1/8 to 3/8
	4	RS-8 OR RS-12	1/4 to 1	RSS-8 or RSS-12	1/8 to 3/8
	6	RS-9 OR RS-13	1/4 to 1	RSS-9 or RSS-13	1/8 to 3/8
1-1/4 RA-6	1	RS-25	5/16 to 1-1/4	RSS-25	1/8 to 3/8
	2	RS-26	5/16 to 1-1/4	RSS-26	1/8 to 3/8
	3	RS-27	5/16 to 1-1/4	RSS-27	1/8 to 3/8
	4	RS-28	5/16 to 1-1/4	RSS-28	1/8 to 3/8
	6	RS-29	5/16 to 1-1/4	RSS-29	1/8 to 3/8

Roll Supports - Flat Base - 6 Spindle



MACHINE SIZE	POSITION	LARGE ROLLS	CAPACITY	SMALL ROLLS	CAPACITY
7/16 RA-6	1	RS-230	1/16 to 7/16		
	2	RS-131	1/16 to 7/16		
	3	RS-132	1/16 to 7/16		
	4	RS-133	1/16 to 7/16		
9/16-1 RA-6	1	RS-410	1/4 to 1	RSS-410	1/8 to 3/8
	2	RS-402	1/4 to 1	RSS-402	1/8 to 3/8
	3	RS-311	1/4 to 1	RSS-311	1/8 to 3/8
	4	RS-312	1/4 to 1	RSS-312	1/8 to 3/8
	6	RS-413	1/4 to 1	RSS-413	1/8 to 3/8
1-1/4 RA-6	1	RS-425	5/16 to 1-1/4	RSS-425	1/8 to 3/8
	2	RS-426	5/16 to 1-1/4	RSS-426	1/8 to 3/8
	3	RS-427	5/16 to 1-1/4	RSS-427	1/8 to 3/8
	4	RS-428	5/16 to 1-1/4	RSS-428	1/8 to 3/8
	6	RS-429	5/16 to 1-1/4	RSS-429	1/8 to 3/8
1-5/8-2 RB-6	1	RS-340	3/4 to 2	RSS-340	1/4 to 3/4
	2	RS-341	3/4 to 2	RSS-341	1/4 to 3/4
	3	RS-342	3/4 to 2	RSS-342	1/4 to 3/4
	4	RS-344	3/4 to 2	RSS-344	1/4 to 3/4
	6	RS-343	3/4 to 2	RSS-343	1/4 to 3/4
2-5/8 RB-6	1	RS-80	1-3/8 to 2-5/8	RSS-80	5/8 to 1-3/4
	2	RS-81	1-3/8 to 2-5/8	RSS-81	5/8 to 1-3/4
	3	RS-82	1-3/8 to 2-5/8	RSS-82	5/8 to 1-3/4
	4	RS-81	1-3/8 to 2-5/8	RSS-81	5/8 to 1-3/4
	5	RS-81	1-3/8 to 2-5/8	RSS-81	5/8 to 1-3/4
	6	RS-83	1-3/8 to 2-5/8	RSS-83	5/8 to 1-3/4

End Tool Slide Toolholders

Roll Supports - Flat Base - 8 Spindle



MACHINE SIZE	POSITION	LARGE ROLLS	CAPACITY	SMALL ROLLS	CAPACITY
3/4 RA-8	1	RS-53	3/4 to 1/4	RSS-53	3/8 to 1/8
	2, 5	RS-54	3/4 to 1/4	RSS-54	3/8 to 1/8
	3, 6	RS-55	3/4 to 1/4	RSS-55	3/8 to 1/8
	4, 7	RS-56	3/4 to 1/4	RSS-56	3/8 to 1/8
	8	RS-157	3/4 to 1/4	RSS-157	3/8 to 1/8
1-1/4 RB-8	1	RS-374, RS-474	1-1/4 to 5/16	RSS-374, RSS-474	3/8 to 1/8
1-5/8 RBN-8	2, 5	RS-75, RS-375	1-1/4 to 5/16	RSS-75, RSS-375	3/8 to 1/8
	3	RS-76, RS-376	1-1/4 to 5/16	RSS-76, RSS-376	3/8 to 1/8
	4, 7	RS-77, RS-377	1-1/4 to 5/16	RSS-77, RSS-377	3/8 to 1/8
	6	RS-78, RS-378	1-1/4 to 5/16	RSS-78, RSS-378	3/8 to 1/8
	8	RS-79, RS-379	1-1/4 to 5/16	RSS-79, RSS-379	3/8 to 1/8
1-5/8 - 2 RB-8	1	RS-45	1-5/8 to 1/2	RSS-45	3/4 to 1/4
	2, 5	RS-46	1-5/8 to 1/2	RSS-46	3/4 to 1/4
	3, 6	RS-47	1-5/8 to 1/2	RSS-47	3/4 to 1/4
	4, 7	RS-48	1-5/8 to 1/2	RSS-48	3/4 to 1/4
	8	RS-49	1-5/8 to 1/2	RSS-49	3/4 to 1/4
2-5/8 RB-8	1	RS-65	2-5/8 to 1-3/8		
	2, 5	RS-66	2-5/8 to 1-3/8		
	3, 6	RS-67	2-5/8 to 1-3/8		
	4, 7	RS-68	2-5/8 to 1-3/8		
	8	RS-69	2-5/8 to 1-3/8		

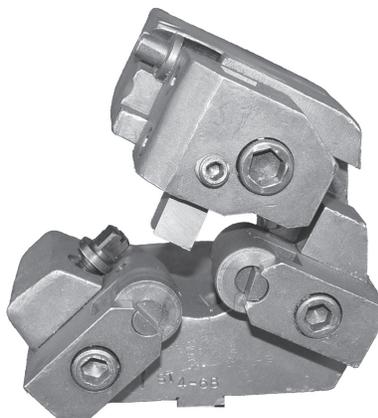
Roll Turners - Angle Base - 6 Spindle



MACHINE SIZE	POSITION	LARGE ROLL AHEAD	LARGE ROLL BEHIND	SMALL ROLL AHEAD	SMALL ROLL BEHIND
9/16 RA-6 Last Serial # 22326CM	1	TRA-5	TR-5	TSA-5	TRS-5
	2	TRA-6	TR-6	TSA-6	TRS-6
	3	TRA-7	TR-7	TSA-7	TRS-7
	4	TRA-8	TR-8	TSA-8	TRS-8
	6	TRA-9	TR-9	TSA-9	TRS-9
9/16 - 1 RA-6 Start Serial # A-23051	1	TRA-10	TR-10	TSA-10	TRS-10
	2	TRA-2	TR-2	TSA-2	TRS-2
	3	TRA-11	TR-11	TSA-11	TRS-11
	4	TRA-12	TR-12	TSA-12	TRS-12
	6	TRA-13	TR-13	TSA-13	TRS-13
1-1/4 RA-6	1	TRA-25	TR-25	TSA-25	TRS-25
	2	TRA-26	TR-26	TSA-26	TRS-26
	3	TRA-27	TR-27	TSA-27	TRS-27
	4	TRA-28	TR-28	TSA-28	TRS-28
	6	TRA-29	TR-29	TSA-29	TRS-29
2-1/4 RA-6 2-5/8 RA-6	1	TRA-50	TR-50		
	2	TRA-51	TR-51		
	3	TRA-52	TR-52		
	4	TRA-51	TR-51		
	6	TRA-53	TR-53		

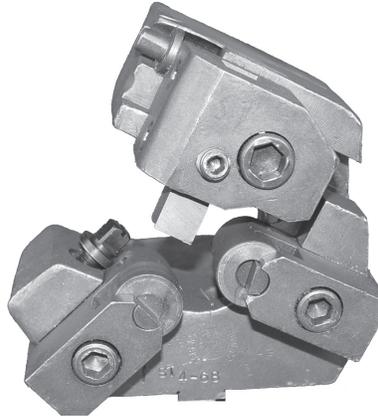
End Tool Slide Toolholders

Roll Turners - Flat Base - 6 Spindle



MACHINE SIZE	POSITION	LARGE ROLL AHEAD	LARGE ROLL BEHIND	SMALL ROLL AHEAD	SMALL ROLL BEHIND
7/16 RA-6	1	TRA-375	TR-375	TSA-375	TRS-375
	2	TRA-276	TR-276	TSA-276	TRS-276
	3	TRA-277	TR-277	TSA-277	TRS-277
	4	TRA-278	TR-278	TSA-278	TRS-278
9/16 - 1 RA-6	1	TRA-405	TR-405	TSA-405	TRS-405
	2	TRA-406	TR-406	TSA-406	TRS-406
	3 (radial)	TRA-406	TR-406	TSA-406	TRS-406
	3	TRA-307	TR-307	TSA-307	TRS-307
	4 (radial)	TRA-406	TR-406	TSA-406	TRS-406
1-1/4 RA-6	6	TRA-409	TR-409	TSA-409	TRS-409
	1	TRA-425	TR-425	TSA-425	TRS-425
	2	TRA-426	TR-426	TSA-426	TRS-426
	3	TRA-426	TR-426	TSA-426	TRS-426
	3	TRA-327	TR-327	TSA-327	TRS-327
	4	TRA-426	TR-426	TSA-426	TRS-426
	4	TRA-328	TR-328	TSA-328	TRS-328
6	TRA-429	TR-429	TSA-429	TRS-429	
1-5/8 - 2 RB-6	1	TRA-330	TR-330	TRS-330	TSA-330
	2	TRA-331	TR-331	TRS-331	TSA-331
	3	TRA-332	TR-332	TRS-332	TSA-332
	4	TRA-334	TR-334	TRS-334	TSA-334
	6	TRA-433	TR-433	TRS-433	TSA-433
2-5/8 RB-6	1	TRA-70	TR-70	TRS-70	TSA-70
	2	TRA-71	TR-71	TRS-71	TSA-71
	3	TRA-72	TR-72	TRS-72	TSA-72
	4	TRA-71	TR-71	TRS-71	TSA-71
	6	TRA-73	TR-73	TRS-73	TSA-73

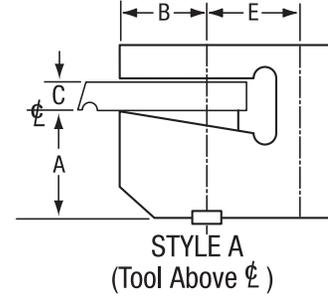
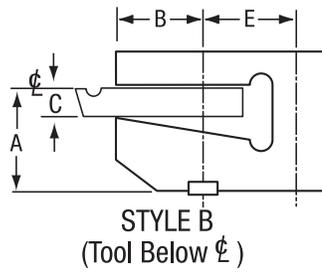
Roll Turners - Flat Base - 8 Spindle



MACHINE SIZE	POSITION	LARGE ROLL AHEAD	LARGE ROLL BEHIND	SMALL ROLL AHEAD	SMALL ROLL BEHIND
3/4 RA-8	1	TRA-83	TR-83	TSA-83	TRS-83
	2, 5	TRA-84	TR-84	TSA-84	TRS-84
	3, 6	TRA-85	TR-85	TSA-85	TRS-85
	4, 7	TRA-86	TR-86	TSA-86	TRS-86
	8	TRA-87	TR-87	TSA-87	TRS-87
1-1/4 RB-8 1-5/8 RBN-8	1	TRA-460	TR-460	TSA-460	TRS-460
	2, 5	TRA-361	TR-361	TSA-361	TRS-361
	3, 6	TRA-362	TR-362	TSA-362	TRS-362
	4, 7	TRA-363	TR-363	TSA-363	TRS-363
	8	TRA-365	TR-365	TSA-365	TRS-365
1-5/8 - 2 RB-8	1	TRA-40	TR-40	TSA-40	TRS-40
	2, 5	TRA-41	TR-41	TSA-41	TRS-41
	3, 6	TRA-42	TR-42	TSA-42	TRS-42
	4, 7	TRA-43	TR-43	TSA-43	TRS-43
	8	TRA-44	TR-44	TSA-44	TRS-44
2-5/8 RB-8	1	TRA-55	TR-55	TSA-55	TRS-55
	2, 5	TRA-56	TR-46	TSA-56	TRS-56
	3, 6	TRA-57	TR-47	TSA-57	TRS-57
	4, 7	TRA-58	TR-58	TSA-58	TRS-58
	8	TRA-59	TR-59	TSA-59	TRS-59

Cross Slide Toolholders

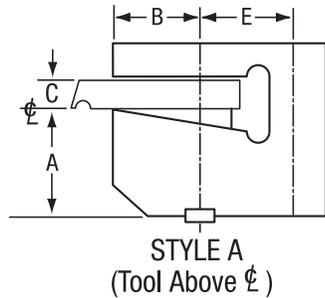
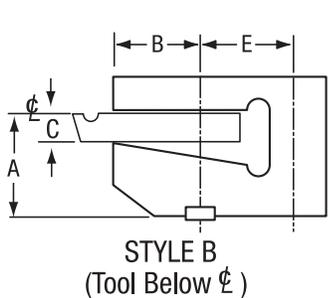
Flat Form



Inner - tool mounted close to spindle
Outer - tool mounted away from spindle

MACHINE SIZE	CSME PART NO.	ACME PART NO.	ACME CODE NO.	POSITION	TYPE	STYLE	A	B	C	E
9/16 RA-6 Last Serial #22326-CM	3176		FF-7	1 - 2	Inner	B	2.364	1.94	.75	2.06
	3177		FF-8	1 - 2	Outer	B				
	3174		FF-5	3	Inner	A				
	3175		FF-6	3	Outer	A				
	3172		FF-3	4	Inner	B				
	3173		FF-4	4	Outer	B				
	3178		FF-9	5 - 6	Inner	A				
	3179		FF-10	5 - 6	Outer	A	2.364	2.50		
9/16 RA-6 Start Serial #A-23051 1 RA-6 9/16 RAN-6 1 RAN-6	3180	ZT-715640	FF-11	1 - 2	Inner	B	2.364	2.56	.75	2.06
	3182	ZT-715620	FF-12	1 - 2	Outer	B				
	3174	ZT-715880	FF-5	3	Inner	A				
	3175	ZT-715860	FF-6	3	Outer	A				
	3172	ZT-715720	FF-3	4 2nd	Inner	B				
	3173	ZT-715700	FF-4	4 Shelf	Outer	B				
	3178	ZT-716200	FF-9	5 - 6	Inner	A				
	3179	ZT-716180	FF-10	5 - 6	Outer	A	2.364	2.50		
1 RAS-6 1 1/4 RA-6	3183	ZT-415641	FF-28	1 - 2 - 4	Inner	B	2.273	2.38	.75	2.06
	3184	ZT-415621	FF-29	1 - 2 - 4	Outer	B				
	3185	ZT-415881	FF-30	3 - 5 - 6	Inner	A				
	3176	ZT-415861	FF-31	3 - 5 - 6	Outer	A				

Cross Slide Toolholders



Flat Form

Inner - tool mounted close to spindle
Outer - tool mounted away from spindle

MACHINE SIZE	CSME PART NO.	ACME PART NO.	ACME CODE NO.	POSITION	TYPE	STYLE	A	B	C	E
1-5/8 RA-8	3187		FF-40	1 - 2 - 5	Inner	B	2.500	3.44	1.00	3.00
1-5/8 RB-8	3271		FF-41	1 - 2 - 5	Outer	B				
Before Serial #85395	3190		FF-46	4 - 7	Inner	A	1.312	2.06		
	3265		FF-47	4 - 7	Outer	A				
1-5/8 RB-8	1315	ZM-835640	FF-148	1 - 2 - 5	Inner	B	2.500	3.00	1.00	3.00
2 RB-8	1314	ZM-835620	FF-149	1 - 2 - 5	Outer	B				
Start Serial #85395	1399	ZM-835801	FF-154	3	Inner	B	2.273	2.18	1.00	2.06
	1400	ZM-835780	FF-155	3	Outer	B				
	1355	ZM-836040	FF-174	6	Inner	A	2.273	2.12		
	1356	ZM-836020	FF-157	6	Outer	A				
	1357	ZM-835880	FF-156	4 - 7 - 8	Inner	A	2.500	3.00	1.00	3.00
	1358	AM-835860	FF-159	4 - 7 - 8	Outer	A				
1-5/8 RA-6	3187		FF-40	1 - 2	Inner	B	2.500	3.44	1.00	3.00
1-5/8 RB-6	3271		FF-41	1 - 2	Outer	B				
2 RB-6	3189		FF-44	3	Inner	A	2.250	2.81		
	3272		FF-45	3	Outer	A				
2 RAS-6	3188		FF-42	4	Inner	B	2.250	2.62		
	1369		FF-43	4	Outer	B				
	3190		FF-46	5 - 6	Inner	A	2.500	2.81		
	3265		FF-47	5 - 6	Outer	A				
1-5/8 RB-6 2 RB-6	1315	ZM-835640	FF-148	1 - 2	Inner	B	2.500	3.00	1.00	3.00
	1314	ZM-835620	FF-149	1 - 2	Outer	B				
	1445	410600		4 & 2nd Shelf	Inner	B				
	1446	410360		4 & 2nd Shelf	Outer	B				
	3189	390400		3 & 5th Shelf	Inner	A	2.250			
	3272	390380		3 & 5th Shelf	Outer	A				
	1357	ZM-835880	FF-156	5 - 6	Inner	A	2.500			
	1358	ZM-835860	FF-159	5 - 6	Outer	A				

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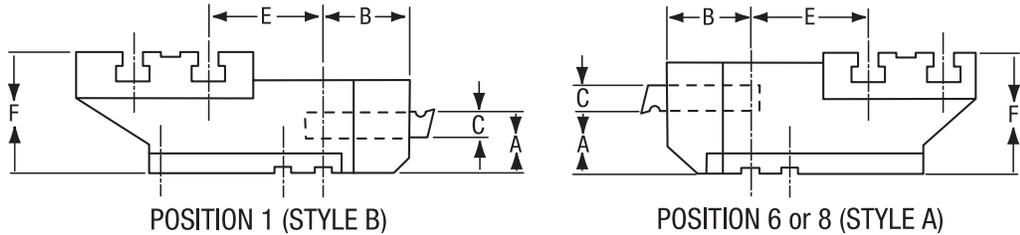
Cross Slide Toolholders

Flat Form - Continued from page 267

MACHINE SIZE	CSME PART NO.	ACME PART NO.	ACME CODE NO.	POSITION	TYPE	STYLE	A	B	C	E
2 RA-6 2-1/4 RA-6 2-5/8 RA-6	3191		FF-55	1 - 2	Inner	B	3.125	4.12	1.00	3.00
	3268		FF-56	1 - 2	Outer	B				
	3189		FF-44	3	Inner	A	2.250	2.81		
	3272		FF-45	3	Outer	A				
	8188		FF-42	4	Inner	B	2.250	2.62		
	1369		FF-43	4	Outer	B				
	3192		FF-57	5 - 6	Inner	A	3.125	4.75		
	3269		FF-58	5 - 6	Outer	A				
2-5/8 RB-6	3191		FF-55	1 - 2	Inner	B	3.125	4.12	1.00	3.00
	3268		FF-56	1 - 2	Outer	B				
	3194		FF-62	3	Inner	A	3.125	2.38		
	1370		FF-63	3	Outer	A				
	3195		FF-64	4	Inner	B	3.125	3.00		
	3270		FF-65	4	Outer	B				
	3192		FF-57	5 - 6	Inner	A	3.125	4.75		
	3269		FF-58	5 - 6	Outer	A				
2-5/8 RB-6	1349	AZ-975640	FF-188	1 - 2 - 4	Inner	B	3.125	3.88	1.00	3.00
	1350	AZ-975620	FF-189	1 - 2 - 4	Outer	B				
	1351	AZ-976120	FF-196	3 - 5 - 6	Inner	A	3.125	3.25		
	1352	AZ-976100	FF-197	3 - 5 - 6	Outer	A				
	1825	AZ-85572		2nd Shelf	Inner	B	2.250	2.75		
	1826	AZ-85570		2nd Shelf	Outer	B				
2-1/4 RA & RB-8 2-5/8 RA-8 2-5/8 RB-8 Before Serial #96456	1374		FF-60	1 - 2	Inner	B	3.125	2.38	1.00	3.00
	1376		FF-61	1 - 2	Outer	B				
	3189		FF-44	4	Inner	A	2.250	2.81		
	3272		FF-45	4	Outer	A				
	3188		FF-42	5	Inner	B	2.250	2.62		
	1369		FF-43	5	Outer	B				
	3194		FF-62	7 - 8	Inner	A	3.125	2.38		
	1370		FF-63	7 - 8	Outer	A				
2-5/8 RB-8 Start Serial #96456	1349	AZ-975640	FF-188	1 - 2	Inner	B	3.125	3.88	1.00	3.00
	1350	AZ-975620	FF-189	1 - 2	Outer	B				
	1334	AZ-975800	FF-190	3 - 5	Inner	B	2.250	3.44		
	1335	AZ-975780	FF-191	3 - 5	Outer	B				
	1353	AZ-976040	FF-194	4 - 6	Inner	A	2.250	3.25		
	1354	AZ-976020	FF-195	4 - 6	Outer	A				
	1351	AZ-976120	FF-196	7 - 8	Inner	A	3.125	3.25		
	1352	AZ-976100	FF-197	7 - 8	Outer	A				
3 RA & RB-6 3-1/2 RA & RB-6	1374		FF-60	1 - 2 - 4	Inner	B	3.125	2.38	1.00	3.00
	1376		FF-61	1 - 2 - 4	Outer	B				
	3194		FF-62	3 - 5 - 6	Inner	A	3.125	2.62		
	1370		FF-63	3 - 5 - 6	Outer	A				
3-1/2 & 4 RB-8	1302	BZ-955860	FF-192	1 - 2 - 5	Inner	B	3.125	3.62	1.00	3.00
	1303	ZB-955620	FF-193	1 - 2 - 5	Outer	B				
	1374		FF-60	3	Inner	B	3.125	2.38		
	1376		FF-61	3	Outer	B				
	1304	BZ-955880	FF-198	4 - 6 - 7 - 8	Inner	A	3.125	3.62		
	1305	BZ-955860	FF-199	4 - 6 - 7 - 8	Outer	A				
4 RB-6	1302		FF-51	1 - 2	Inner	B	3.125	3.50	1.00	3.00
	1303		FF-52	1 - 2	Outer	B				
	3266		FF-53	3	Inner	A	3.125	2.88		
	3267		FF-54	3	Outer	A				
	3195		FF-64	4	Inner	B	3.125	3.00		
	3270		FF-65	4	Outer	B				
	1304		FF-66	5 - 6	Inner	A	3.125	3.50		
	1305		FF-67	5 - 6	Outer	A				

Cross Slide Toolholders

Flat Form - Double Deck

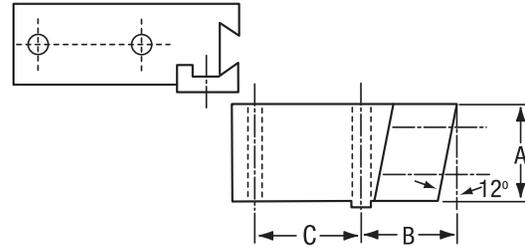
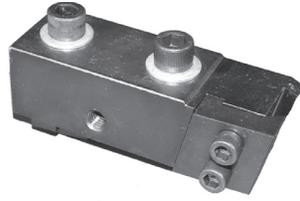


Inner - tool mounted close to spindle
 Outer - tool mounted away from spindle

MACHINE SIZE	REF PART #	ACME PART NO.	ACME CODE NO.	POSITION	STYLE	A	B	C	E	F
9/16 RA-6 Last Serial #22326-CM	1704		FFD-1	1 (inner)	B	2.364	2.25	.62	2.000	3.464
	1717		FFD-3	6 (inner)	A		2.75	.75	2.000	3.464
9/16 RA-6 Start Serial #A-23051 1 RA-6	1705		FFD-5	1 (inner)	B	2.364	2.62	.75	2.250	3.897
	1718		FFD-7	6 (inner)	A		2.68		2.250	3.897
9/16 & 1" RA & RAN-6 5/8 RN-6	1706	AZ-236280		1 (inner)	B	2.364	2.38	.75	2.250	3.897
	1719	AZ-236430		6 (inner)	A		2.38		2.250	3.897
	1986	ZT-17628	FFD-90	1 (inner)	A	2.364	2.50	.75	1.500	4.300
	1993	ZT-17626	FFD-91	1 (outer)	B					
	1985	ZT-17643	FFD-92	6 (inner)	A					
	2106	ZT-17641	FFD-93	6 (outer)	B					
3/4 RA-8	1713	ZT-716281		1 (inner)	B	2.364	2.75	.75	2.469	3.893
	1726	ZT-716531		8 (inner)	A		2.75		2.469	3.893
1 RAS-6	1707		FFD-10	1 (inner)	B	2.273	2.31	.75	2.750	4.763
1-1/4 RA-6	1720		FFD-12	6 (inner)	A		2.31		2.750	4.763
1-1/4 RA-6	1708	711010		1 (inner)	B	2.273	3.38	.75	2.750	4.763
	1915	AZ-716260		1 (outer)	A		2.75	1.00		
	1721	710670		6 (inner)	A			.75		
	1957	AZ-716410		6 (outer)	B			1.00		
1-1/4 RB-8 1-5/8 RBN-8	1714	ZT-416280		1 (inner)	B	2.250	2.75	.75	3.969	3.957
	1727	ZT-416530		8 (inner)	A					
	1995	ZT-416510		8 (outer)	B					
1-5/8 RA & RB-6, 2 RAS & RB-6	1709		FFD-20	1 (inner)	B	2.500	3.38	1.00	3.500	6.062
	1722		FFD-22	6 (inner)	A					
1-5/8 & 2 RB-6	1710	BZ-416280		1 (inner)	B	2.500	3.00	1.00	3.500	6.062
	1723	BZ-416430		6 (inner)	A					
1-5/8 RA & RB-8	1715		FFD-25	1 (inner)	B	2.500	3.38	1.00	4.532	4.532
	1728		FFD-27	8 (inner)	A		3.25			
1-5/8 & 2 RB-8	1716	ZM-836280		1 (inner)	B	2.500	3.00	1.00	4.532	4.532
	1729	ZM-836530		8 (inner)	A					
2, 2-1/4, 2-5/8 RA-6 2-5/8 RB-6	1711		FFD-30	1 (inner)	B	3.125	4.31	1.00	3.687	6.387
	1755		FFD-31	1 (outer)	A					
	1724		FFD-32	6 (inner)	A			4.12		
	1758		FFD-33	6 (outer)	B				2.375	
2-5/8 RB-6	1712	AZ-856280		1 (inner)	A	3.125	3.38	1.00	3.687	6.387
	1875	AZ-856260		1 (outer)	B					
	1725	AZ-856430		6 (inner)	A					
	1876	AZ-856410		6 (outer)	B					
3-1/2 RB-6	1941	A-951011		1 (inner)	A	3.125	3.25	1	4.375	7.578
	1984	BZ-956511		8 (outer)	B		3		5.75	5.75

Cross Slide Toolholders

Dovetail Fixed - Low Block

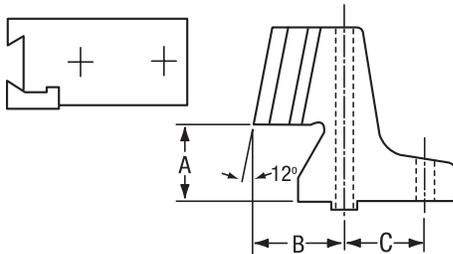


Note - 2-1/8" dovetail toolholders available upon request

MACHINE SIZE	CSME PART #	ACME CODE NO.	POSITION	DOVETAIL SIZE	A	B	C
9/16 R-6	1114	FD-7	1	5/8	2.364	1.88	2.06
9/16 RA-6	1116	FD-8	1	1-1/4	2.364	3.81	2.94
Last Ser.	1108	FD-3	4	5/8	1.312	2.03	2.06
#22326 CM	1110	FD-4	4	1-1/4	1.312	2.06	2.06
9/16 RA-6	1120	FD-11	1	5/8	2.364	2.38	2.06
Start Ser.	1122	FD-12	1	1-1/4	2.364	2.62	2.06
#23051	1108	FD-3	4	5/8	1.312	2.03	2.06
1 RA-6	1110	FD-4	4	1-1/4	1.312	2.06	2.06
7/8 RA-4	1105	FD-1	1	5/8	3.000	3.25	2.94
1" RA-4	1107	FD-2	1	1-1/4	3.000	3.31	2.94
	1108	FD-3	3	5/8	1.312	2.03	
	1110	FD-4	3	1-1/4	1.312	2.06	
1 R-6	1138	FD-32	1	5/8	2.273	2.38	
1 RAS-6	1140	FD-33	1	1-1/4	2.273	2.31	
1-1/4 R-6	1138	FD-32	4	5/8	2.250	2.38	2.06
1-1/4 RA-6	1140	FD-33	4	1-1/4	2.250	2.31	
1-3/8 RA-4	1126	FD-20	1	5/8	2.750	3.00	
1-5/8 RA-4	1128	FD-21	1	1-1/4	2.750	3.00	
1-5/8 RAS-4	1129	FD-23	3	5/8	2.250	2.62	
2 RAS-4	1131	FD-24	3	1-1/4	2.250	2.68	
1-5/8 RA-8	1144	FD-40	1 & 5	5/8	2.500	3.25	
1-5/8 RB-8	1146	FD-41	1 & 5	1-1/4	2.500	3.00	
1-5/8 R-6	1144	FD-40	1	5/8	2.500	3.25	
1-5/8 RA-6	1146	FD-41	1	1-1/4	2.500	3.00	
1-5/8 RB-6	1147	FD-43	4	5/8	2.250	2.38	
2-RB-6							
2 RAS-6	1149	FD-44	4	1-1/4	2.250	2.81	
2 RA-6	1164	FD-60	1	5/8	3.125	4.25	
2-1/4 RA-6	1166	FD-61	1	1-1/4	3.125	3.88	3.00
2-5/8 RA-6	1167	FD-163	4	5/8	2.250	2.38	
	1169	FD-164	4	1-1/4	2.250	2.06	
2-5/8 RB-6	1164	FD-60	1	5/8	3.125	4.25	
	1166	FD-61	1	1-1/4	3.125	3.88	
	1190	FD-91	4	5/8	3.125	2.68*	
	1185	FD-85	4	1-1/4	3.125	2.75*	
2-1/4 RA-8	1175	FD-70	1	5/8	3.125	2.62	
2-5/8 RA-8	1179	FD-78	1	1-1/4	3.125	2.31	
2-1/4 RB-8	1167	FD-163	5	5/8	2.250	2.38	
2-5/8 RB-8	1169	FD-164	5	1-1/4	2.250	2.06	
2 to 5 RA-4	1157	FD-53	1 & 3	5/8	3.125	2.75	
2-5/8 to 5 RB-4	1159	FD-54	1 & 3	1-1/4	3.125	3.31	
3, 3-1/2 & 4 RA & RB-6	1190	FD-91	1	5/8	3.125	2.68*	
	1185	FD-85	1	1-1/4	3.125	2.75*	
5-1/8 RB-4	1182	FD-81	1 & 3	5/8	3.125	2.75*	
	1184	FD-82	1 & 3	1-1/4	3.125	3.31*	

*Standard location. With step key reversed add .75 to Dim. B
For holders with dovetail tilted, give number from holder above and specify heel 2° toward or 2° away from spindle.

Cross Slide Toolholders



**Dovetail
Fixed - High Block**

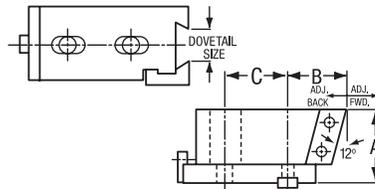
Note - 2-1/8" dovetail toolholders available upon request

MACHINE SIZE	CSME PART #	ACME CODE NO.	POSITION	DOVETAIL SIZE	A	B	C	
9/16 R-6	1111	FD-5	3	5/8	1.312	2.12	2.06	
9/16 RA-6	1113	FD-6	3	1-1/4	1.312	2.06		
1" RA-6	1117	FD-9	6	5/8	2.364	2.25		
	1119	FD-10	6	1-1/4	2.364	2.12		
7/8 RA-4	1111	FD-5	2	5/8	1.312	1.81		
1" RA-4	1113	FD-6	2	1-1/4	1.312	1.75		
	1123	FD-13	4	5/8	3.000	1.44		
	1125	FD-14	4	1-1/4	3.000	1.50		
1 R-6	1141	FD-34	3	5/8	2.251	2.38		2.06
1 RAS-6	1143	FD-35	3	1-1/4	2.251	2.12		
1-1/4 R-6	1141	FD-34	6	5/8	2.273	2.38		
1-1/4 RA-6	1143	FD-35	6	1-1/4	2.273	2.12		
1-3/8 RA-4	1132	FD-36	2	5/8	2.250	2.38		
1-5/8 RA-4	1134	FD-27	2	1-1/4	2.250	2.31		
1-5/8 RAS-4	1135	FD-29	4	5/8	2.750	2.68		
2 RAS-4	1137	FD-30	4	1-1/4	2.750	3.06		
1-5/8 R-6	1150	FD-46	3	5/8	2.250	2.34	3.00	
1-5/8 RA-6	1152	FD-47	3	1-1/4	2.250	2.31		
1-5/8 RB-6	1177	FD-73	6	5/8	2.500	2.81		
2 RB-6	1155	FD-50	6	1-1/4	2.500	3.18		
2 RAS-6								
1-5/8 RA-8	1153	FD-49	4	5/8	2.500	2.75		
1-5/8 RB-8								
2 RA-6	1150	FD-46	3	5/8	2.500	2.34		3.00
2-1/4 RA-6	1171	FD-65	3	1-1/4	2.500	2.06		
2-5/8 RA-6	1186	FD-86	6	5/8	3.125	2.75*		
	1174	FD-67	6	1-1/4	3.125	3.88		
2-1/4 & 2-5/8 RA & RB-8	1150	FD-46	4	5/8	2.250	2.34		
2-5/8 RB-6	1181	FD-79	4	1-1/4	2.250	2.75		
	1186	FD-86	3	5/8	3.125	2.75*		
	1162	FD-157	3	1-1/4	3.125	2.88		
	1172	FD-66	6	5/8	3.125	4.12		
3, 3-1/2 & 4 RA & RB-6	1174	FD-67	6	1-1/4	3.125	3.88		
	1186	FD-86	3 & 6	5/8	3.125	2.75*		
	1162	FD-57	3 & 6	1-1/4	3.125	2.88		
2 to 5 RA-4	1160	FD-56	2 & 4	5/8	3.125	2.75	3.00	
2-5/8 to 5 RB-4	1162	FD-57	2 & 4	1-1/4	3.125	2.88		
5-1/8 RB-4	1186	FD-86	2 & 4	5/8	3.125	2.75*		
	1188	FD-87	2 & 4	1-1/4	3.125	2.88*		

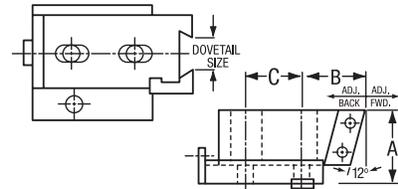
*Standard location. With step key reversed add .75 to Dim. B
For holders with dovetail tilted, give number from holder above and specify heel 2° toward or 2° away from the spindle.

Cross Slide Toolholders

Dovetail Adjustable - Low Block



STYLE B (Narrow Base)



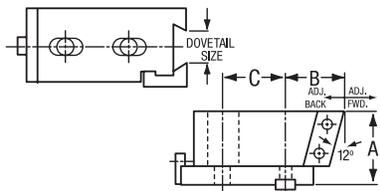
STYLE A (Wide Base)

MACHINE SIZE	CSME PART #	STYLE	ACME PART NO.	ACME CODE NO.	POSITION	DOVETAIL SIZE	A	B	C	ADJUSTMENT	
										FORWARD	BACK
9/16 R-6	1192	B		FDA-1	2	5/8	2.364	2.18	2.06	0.44	0.44
9/16 RA-6 Last Serial #22326-CM	1194	B		FDA-2	2	1-1/4		2.00	2.06	0.31	0.31
9/16 RA-6 Start Serial #A-23051 1" RA-6	1192	B		FDA-1	2	5/8	2.364	2.18	2.06	0.44	0.44
	1092	B		FDA-3	2	1-1/4	2.364	2.62	2.06	0.31	0.31
9/16 RA-6	1440	A	AZ-236890		1 - 2	5/8	2.364	2.25	2.06	0.25	0.25
1" RA & RAN-6	1441	A	ZT-716590		1 - 2	1-1/4	2.364	2.44	2.06	0.25	0.25
9/16 & 1" RA	1651	B	ZT-716970		4 & 2nd Shelf	5/8	1.312	2.25	2.06	0.25	0.25
& RA-6	1737	B	ZT-717050		4 & 2nd Shelf	1-1/4	1.312	2.25	2.06	0.25	0.25
3/4 RA-8	1651	B	ZT-716970		2 - 3 - 5	5/8	1.312	2.25	2.06	0.25	0.25
	1737	B	ZT-717050		2 - 3 - 5	1-1/4	1.312	2.25	2.06	0.25	0.25
1" & 1-1/4 R-6	1195	B		FDA-10	1 - 2	5/8	2.273	2.25	2.06	0.18	0.18
1" RAS-6	1197	B		FDA-11	1 - 2	1-1/4	2.273	2.56	2.06	0.25	0.25
1-1/4 RA-6	1329	A	718101		1 - 2	5/8	2.273	2.81	2.06	0.18	0.56
	1339	A	718130		1 - 2	1-1/4	2.273	2.75	2.06	0.25	0.50
	1329A	A	ZT-416891	FDA-92	2nd Shelf & 4	5/8	2.250	2.81	2.06	0.18	0.56
	1339A	A	ZT-416911	FDA-93	2nd Shelf & 4	1-1/4	2.250	2.81	2.06	0.18	0.56
1-1/4 RB-8 & 1-5/8 RBN-8	1329A	A	ZT-416891		1 - 2 - 3 - 5	5/8	2.250	2.75	2.06	0.25	0.50
	1339A	A	ZT-416911		1 - 2 - 3 - 5	1-1/4	2.250	2.62	2.06	0.25	0.50
1-5/8 RA & RB-6 & 8	1198	B		FDA-20 & 120	1 - 2	5/8	2.500	3.00	3.00	0.16	0.16
	1200	B		FDA-21	1 - 2	1-1/4	2.500	3.38	3.00	0.25	0.25
1-5/8 R-6	1310	A	ZM836890 ZM836970	FDA-28 & 128 FDA-29 & 129	1 - 2	5/8	2.500	3.31	3.00	0.31	0.31
2" RAS-6	1337	A	ZM836790 ZM836990	FDA-39 & 137 FDA-43 & 143	1 - 2	1-1/4	2.500	3.31	3.00	0.31	0.18
2" RB-6	1330	A			2nd Shelf & 4	5/8	2.250	3.31	3.00	0.31	0.31
	1331	A			2nd Shelf & 4	1-1/4	2.250	3.31	3.00	0.31	0.31

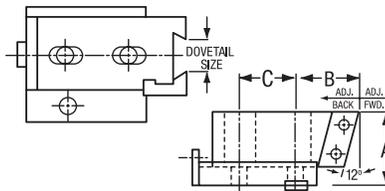
For holders with dovetail tilted, give number from holder above and specify heel 2° toward or 2° away from the spindle.

*Special 2-1/8 dovetail holders available

Cross Slide Toolholders



STYLE B (Narrow Base)



STYLE A (Wide Base)

Dovetail Adjustable - Low Block

MACHINE SIZE	CSME PART #	STYLE	ACME PART NO.	ACME CODE NO.	POSITION	DOVETAIL SIZE	A	B	C	ADJUSTMENT	
										FORWARD	BACK
1-5/8 RB-8 2 RB-8	1310	A	ZM836890 ZM836970	FDA-28 & 128 FDA-29 & 129	1 - 2 - 5	5/8	2.500	3.88	3.00	0.18	0.88
	1337	A	ZM836790 ZM836990	FDA-39 - 137 FDA-43 & 143	1 - 2 - 5	1-1/4	2.500	3.50	3.00	0.12	0.50
	1329	A	ZM837410	FDA-33 & 133	3	5/8	2.273	2.75	2.06	0.56	0.50
	1339	A	ZM837430	FDA-42 & 142	3	1-1/4	2.273	2.75	2.06	0.25	0.50
2 & 2-1/4 RA-6 2-5/8 RA & RB-6	1201	B		FDA-30	1 - 2 - 4	5/8	3.125	4.06	3.00	0.38	0.38
	1203	B		FDA-31	1 - 2 - 4	1-1/4	3.125	3.88	3.00	0.38	0.38
	1343	A	AZ976890	FDA-57 & 157	1 - 2 - 4	5/8	3.125	4.12	3.00	0.06	0.81
	1344	A	AZ976910	FDA-58 & 158	1 - 2 - 4	1-1/4	3.125	4.12	3.00	0.06	0.81
	1329A	A	AZ85774		2nd Shelf	5/8	2.250	2.94	2.06	0.06	0.81
	1339A	A	AZ85778		2nd Shelf	1-1/4	2.250	2.94	2.06	0.06	0.81
2-1/4 & 2-5/8 RA & RB-8	1204	B		FDA-35	2	5/8	3.125	2.38	3.00	0.34	0.34
	1206	B		FDA-36	2	1-1/4	3.125	2.38	3.00	0.25	0.25
	1395	A			1 - 2	5/8	3.125	2.75	3.00	0.25	0.81
	1396	A			1 - 2	1-1/4	3.125	2.75	3.00	0.25	0.81
	1363	A			3 - 5	5/8	2.250	2.75	3.00	0.44	0.62
	1364	A			3 - 5	1-1/4	2.250	2.75	3.00	0.44	0.62
2-5/8 RB-8	1343	A	AZ976890 AZ976970	FDA-157 FDA-160	1 - 2	5/8	3.125	4.12	3.00	0.06	0.81
	1344	A	AZ976910 AZ976990	FDA-158 FDA-161	1 - 2	1-1/4	3.125	4.12	3.00	0.06	0.81
	1330	A	AZ977410	FDA-163	3	5/8	2.250	3.66	3.00	0.06	0.81
	1331	A	AZ977430	FDA-164	3	1-1/4	2.250	3.66	3.00	0.06	0.81
	1345	A	AZ977490	FDA-167	5	5/8	2.250	4.06	3.00	0.06	0.81
	1346	A	AZ977510	FDA-166	5	1-1/4	2.250	4.00	3.00	0.06	0.81
3 & 3-1/2 RA & RB-6	1204	B		FDA-35	1 - 2 - 4	5/8	3.125	2.38	3.00	0.34	0.34
	1206	B		FDA-36	1 - 2 - 4	1-1/4	3.1225	2.38	3.00	0.25	0.25
	1744	A	BZ956890		1 - 2 - 4	5/8	3.125	2.38	3.00	1.00	0.00
	1745	A	BZ956910		1 - 2 - 4	1-1/4	3.125	2.38	3.00	1.00	0.00
	1329A	A	AZ-85774		2ND SHELF	5/8	2.250	2.94	2.06	0.06	0.68
	1339A	A	AZ-85778		2ND SHELF	1-1/4	2.250	2.94	2.06	0.06	0.68
4 RB-6	1204	B		FDA-35	1 - 2 - 4	5/8	3.125	2.38	3.00	0.34	0.34
	1206	B		FDA-36	1 - 2 - 4	1-1/4	3.125	2.38	3.00	0.25	0.25
	1744	A	BZ-956890		1 - 2 - 4 2ND SHELF	5/8	3.125	2.38	3.00	1.00	0.00
	1745	A	BZ-956910		1 - 2 - 4 2nd Shelf	1-1/4	3.125	2.38	3.00	1.00	0.00
3-1/2 RB-8 4" RB-8	1299	A	BZ95689 BZ95697		1 - 2 - 3 - 5	5/8	3.125	3.88	3.00	0.18	0.88
	1301	A	BZ95691 BZ956990		1 - 2 - 3 - 5	1-1/4	3.125	3.88	3.00	0.18	0.88
5-1/2 RB-4	1546	A			1 - 3	1-1/4	3.125	3.50	3.00		
	1547	A			1 - 3	5/8	3.125	3.62		0.68	1.18

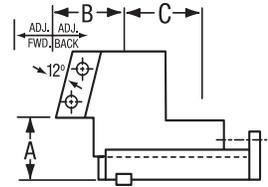
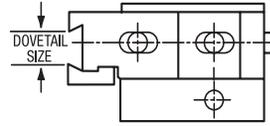
Note: 2-1/8 Dovetail Toolholders available on request.

For holders with dovetail tilted, give number from holder above and specify heel 2° toward or 2° away from the spindle.



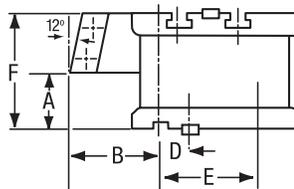
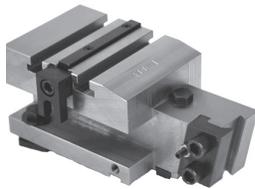
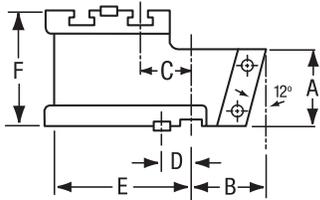
Cross Slide Toolholders

Dovetail Adjustable - High Block



MACHINE SIZE	CSME PART #	ACME PART NO.	ACME CODE NO.	POSITION	DOVETAIL SIZE	A	B	C	ADJUSTMENT	
									FORWARD	BACK
9/16 RA-6	1510	AZ237130		5 - 6	5/8	2.364	2.25	2.06	0.25	0.25
1" RA-6	1511	AZ23751		5 - 6	1-1/4	2.364	2.44	2.06	0.25	0.25
1" RAN-6	1739	ZT716830								
9/16 & 1" RA & RAN-6	1742	ZT-716970		3 & 5th Shelf	5/8	1.312	2.25	2.06	0.25	0.25
	1738	ZT-716671		3 & 5th Shelf	1-1/4	1.312	2.25	2.06	0.25	0.25
	1739	ZT-716830		6	1-1/4	2.364	2.44	2.06	0.25	0.25
3/4 RA-8	1742	ZT-716970		4 - 6 - 7	5/8	1.312	2.25	2.06	0.25	0.25
	1738	ZT-716671		4 - 6 - 7	1-1/4	1.312	2.25	2.06	0.25	0.25
	1824	ZT-717131		8	5/8	2.364	2.44	2.06	0.25	0.25
	1739	ZT-716830		8	1-1/4	2.364	2.44	2.06	0.25	0.25
1" & 1-1/4 R-6	1371	ZT-417051	FDA-94	3 & 5th Shelf	5/8	2.250	2.81	2.06	0.18	0.56
1" RAS-6	1341A	ZT-417071	FDA-95	3 & 5th Shelf	1-1/4	2.250	2.75	2.06	0.25	0.50
1-1/4 RA-6	1740A	AZ71714		5 - 6	5/8	2.273	2.50	2.06	0.25	0.50
	1741A	AZ71715		5 - 6	1-1/4	2.273	2.75	2.06	0.25	0.50
1-1/4 RB8 & 1-5/8 RBN-8	1371	ZT-417051		4 - 6	5/8	2.250	2.75	2.06	0.25	0.50
	1341A	ZT-417071		4 - 6	1-1/4	2.250	2.75	2.06	0.25	0.50
	1740	ZT-417210		7 - 8	5/8	2.250	2.38	2.06	0.25	0.50
	1741	ZT-417360		4 - 8	1-1/4	2.250	2.75	2.06	0.25	0.50
1-5/8 RA & RB-6 & 8	1347	BZ-41743		3 & 5th Shelf	5/8	2.250	3.31	3.00	0.31	0.31
	1348	BZ-41743		3 & 5th Shelf	1-1/4	2.250	3.38	3.00	0.31	0.31
	1312	ZM837210	FDA-38 & 138	5 - 6	5/8	2.500	3.31	3.00	0.31	0.31
	1342	ZM837070	FDA-40 & 140	5 - 6	1-1/4	2.500	3.38	3.00	0.31	0.31
2 RB-6	1340	ZM837110	FDA-34 & 134	6	5/8	2.273	2.75	2.06	0.25	0.50
1-5/8 RB-8	1341	ZM837150	FDA-41 & 141	6	1-1/4	2.273	2.75	2.06	0.25	0.50
	1312	ZM837210	FDA-38 & 138	4 - 7 - 8	5/8	2.500	3.50	3.00	0.56	0.50
	1342	ZM837070	FDA-40 & 140	4 - 7 - 8	1-1/4	2.500	3.50	3.00	0.12	0.50
	2 & 2-1/4 RA-6	1361	AZ977570	FDA-78 & 174	3 - 5 - 6	5/8	3.125	4.00	3.00	0.06	0.81
2-5/8 RA & RB6	1362	AZ977590	FDA-77 & 182	3 - 5 - 6	1-1/4	3.125	4.12	3.00	0.06	0.81
	1371	ZT417051	FDA-94 & 117	5th Shelf	5/8	2.250	2.94	3.00	0.06	0.81
	1341A	ZT417071	FDA-19 & 95	5th Shelf	1-1/4	2.250	2.94	2.06	0.06	0.81
	2-1/4 & 2-5/8 RA & RB-8	1365			4 - 6	5/8	2.250	2.75	2.06	0.44	0.62
	1366			4 - 6	1-1/4	2.250	2.75	3.00	0.44	0.62
	1367			7 - 8	5/8	3.125	2.75	3.00	0.18	0.62
	1368			7 - 8	1-1/4	3.125	2.75	3.00	0.18	0.62
	2-5/8 RB-8	1332	AZ977050	172	4	5/8	2.250	4.06	3.00	0.06	0.81
1333		AZ977070	FDA-180	4	1-1/4	2.250	4.00	3.00	0.06	0.81
1347		AZ977130	FDA-173	6	5/8	2.250	3.66	3.00	0.06	0.81
1348		AZ977150	FDA-181	6	1-1/4	2.250	3.66	3.00	0.06	0.81
1361		AZ977570	FDA-174	7 - 8	5/8	3.125	4.00	3.00	0.18	0.68
1362		AZ977590	FDA-182	7 - 8	1-1/4	3.125	3.75	3.00	0.38	0.50
3 & 3-1/2 RA & RB-6	1367	BZ-957050		3 - 5 - 6	5/8	3.125	2.38	3.00	1.00	0.00
	1368	BZ-956830		3 - 5 - 6	1-1/4	3.125	2.38	3.00	1.00	0.00
	1371	BZ95705		5th Shelf	5/8	2.250	2.94	3.00	0.06	0.68
	1341A	BZ95757		5th Shelf	1-1/4	2.250	2.94	3.00	0.06	0.68
4 RB-6	1367	BZ95707		3-5-6, 5th Shelf	5/8	3.125	2.38	3.00	1.00	0.00
	1368	BZ95683		3-5-6, 5th Shelf	1-1/4	3.125	2.38	3.00	1.00	0.00
3-1/2 RB-8	1298			4 - 6 - 7 - 8	5/8	3.125	3.88	3.00	0.18	0.88
4 RB-8	1300			4 - 6 - 7 - 8	1-1/4	3.125	3.88	3.00	0.18	0.88
5-1/2 RB-4	1548			2 - 4	1-1/4	3.125	3.50	3.00	0.62	1.18
	1549			2 - 4	2-1/8	3.125	3.62	& 3.50	0.68	1.18
8" - 4 Sp	1442			4	1-5/8	4.00	3.12	4.50	0.50	0.50

Cross Slide Toolholders

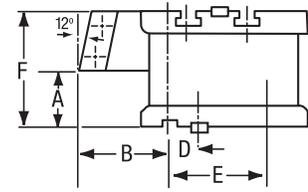
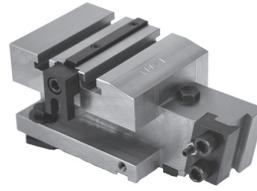
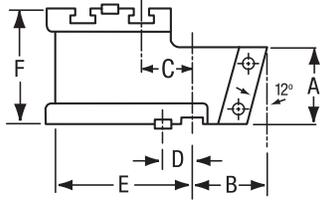


**Dovetail
Double Deck**

MACHINE SIZE	CSME PART #	ACME PART NO.	ACME CODE NO.	POSITON	DOVETAIL SIZE	A	B	C	D	E	F
9/16 RA-6 LAST SERIAL #22326-CM	1093		FDD1	1	5/8	2.364	2.31	2.00	1.031	5.00	3.464
	1543		FDD2	1	1-1/4	2.364	2.00	2.00			
	1780		FDD5	6	5/8	2.364	2.50	2.00			
	1757			6	1-1/4	2.364	2.50	2.00			
9/16 & 1 START SERIAL #A-23051	1094		FDD3	1	5/8	2.364	2.56	2.31	1.031	5.00	3.897
	1463	A-230880		1	5/8	2.364	2.38	2.25			
	1250		FDD4	1	1-1/4	2.364	2.62	2.31			
	1781	A-238040		1	1-1/4	2.364	2.62	2.25			
	1464	AZ-236730	FDD38	6	5/8	2.364	2.38	2.25			
	1465	AZ-239280		6	1-1/4	2.364	2.62	2.25			
3/4 RA-8	1476	ZT-719302	FDD6	1	5/8	2.364	2.44	2.47	1.031	5.00	3.893
	1477	ZT-719262		1	1-1/4	2.364	2.62				
	1478	ZT-716812		8	5/8	2.364	2.38				
	1479	ZT-719342		8	1-1/4	2.364	2.62				
1" & 1-1/4 R-6 1" RAS-6 1-1/4 RA-6	1286		FDD10	1	5/8	2.273	2.31	2.68	1.031	5.00	4.763
	1784	710882		1	5/8	2.273	2.50	2.75			
	1251		FDD11	1	1-1/4	2.273	2.62	2.68			
	1785	718041		1	1-1/4	2.273	2.50	2.75			
	1466		FDD12	6	5/8	2.273	2.00	2.75			
	1782	718081		6	5/8	2.273	2.50				
	1467		FDD13	6	1-1/4	2.273	2.62				
	1783	718061		6	1-1/4	2.273	2.50				
1-1/4 RB-8 1-5/8 RBN-8	1480	ZT-416570	FDD15	1	5/8	2.250	2.81	3.50	1.031	5.00	3.957
	1481	ZT-416590		1	1-1/4	2.250	2.81				
	1482	ZT-41936	FDD67	8	5/8	2.250	2.50				
	1483	ZT-41934		8	1-1/4	2.250	2.50				
1-5/8 RA & RB-6, 2" RAS-6 & RB-6	1287		FDD20	1	5/8	2.500	2.81	3.50	1.500	6.18	6.062
	1804	A-410881		1	5/8	2.500	2.88				
	1252		FDD21	1	1-1/4	2.500	3.19				
	1805	A-418041		1	1-1/4	2.500	3.12				
	1468	BZ-416611	FDD22	1	2-1/8	2.500	2.12				
	1469	BZ-41673		6	5/8	2.500	2.88				
	1470	BZ-417150		6	1-1/4	2.500	3.12				
1-5/8 RA-8 1-5/8 RB-8, 2" RB-8	1484	ZM-836571	FDD25	1	5/8	2.500	3.50	4.53	1.500	6.18	4.532
	1485	BM-838040	FDD26	1	1-1/4	2.500	3.50				
	1486	ZM-836610	FDD27	1	2-1/8	2.500	3.50				
	1487	ZM-83681	FDD14	8	5/8	2.500	3.50				
	1488	ZM-83683		8	1-1/4	2.500	3.50				
	1489	ZM-83685		8	2-1/8	2.500	3.50				
2, 2-1/4 & 2-5/8 RA-6 2-5/8 RB-6	1394		FDD30	1	5/8	3.125	3.81	3.69	1.500	6.18	6.387
	1806	AZ-856570		1	5/8	3.125	3.38	3.69			
	1253		FDD31	1	1-1/4	3.125	3.81	3.75			
	1807	AZ-858040		1	1-1/4	3.125	3.50	3.69			
	1472		FDD32	1	2-1/8	3.125	3.81	3.75			
	1808	AZ-851101		1	2-1/8	3.125	3.25	3.69			
	1473	AZ-85681		6	5/8	3.125	3.38	3.69			
	1474	AZ-85928		6	1-1/4	3.125	3.50	3.69			
1475	AZ-85677		6	2-1/8	3.125	3.25	3.69				

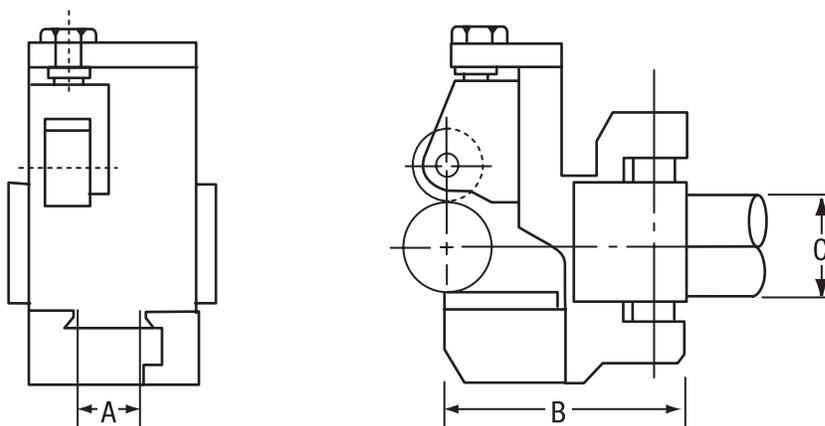
Cross Slide Toolholders

Dovetail Double Deck



MACHINE SIZE	CSME PART #	ACME PART NO.	ACME CODE NO.	POSITON	DOVETAIL SIZE	A	B	C	D	E	F	
2-1/4, 2-5/8 RA & RB-8	1645			FDD35	1	5/8	3.125	2.25	5.00	1.500	8.75	5.006
	1490	2 Slot			1	5/8	3.125	3.38				
	1798	3 Slot	AZ-976571									
	1641			FDD36	1	1-1/4	3.125	2.25				
	1491	2 Slot			1	1-1/4	3.125	3.50				
	1799	3 Slot	AZ-978041									
	1646			FDD37	1	2-1/8	3.125	2.25				
	1492	2 Slot			1	2-1/8	3.125	3.25				
	1800	3 Slot	AZ-976611									
	1493	2 Slot			8	5/8	3.125	3.38				
	1801	3 Slot	AZ-97681									
	1494	2 Slot			8	1-1/4	3.125	3.50				
	1802	3 Slot	AZ-97683									
	1495	2 Slot			8	2-1/8	3.125	3.25				
1803	3 Slot	AZ-976850										
3, 3-1/2 RA RB-6	1514			FDD40	1	5/8	3.125	2.38	4.38	1.500	6.18	7.578
	1792		AZ-956572		1	5/8	3.125	2.62				
	1515			FDD41	1	1-1/4	3.125	2.38				
	1793		AZ-956592		1	1-1/4	3.125	2.62				
	1516			FD42	1	2-1/8	3.125	2.38				
	1794		AZ-956613		1	2-1/8	3.125	2.50				
	1795		AZ-956731		6	5/8	3.125	2.62				
	1796		AZ-959281		6	1-1/4	3.125	2.62				
	1797		AZ-956771		6	2-1/8	3.125	2.50				
3-1/2 RB-8	1566	2 Slot		FDD44	1	5/8	3.125	2.62	5.75	1.500	9.38	5.750
	1809	3 Slot	BZ-956570		1	5/8	3.125	2.62				
	1567	2 Slot		FDD45	1	1-1/4	3.125	2.62				
	1810	3 Slot	BZ-956591		1	1-1/4	3.125	2.62				
	1568	2 Slot		FDD46	1	2-1/8	3.125	2.50				
	1811	3 Slot	BZ-95661		1	2-1/8	3.125	2.50				
	1569	2 Slot			8	5/8	3.125	2.62				
	1812	3 Slot	BZ-956810									
	1570	2 Slot			8	1-1/4	3.125	2.62				
	1813	3 Slot	BZ-95934									
	1571	2 Slot			8	2-1/8	3.125	2.50				
1814	3 Slot	BZ-95725										
4 RB-6	1786			FDD50	1	5/8	3.125	2.38	4.81	1.500	6.18	8.336
	1693		AZ-936570		1	5/8						
	1787			FDD51	1	1-1/4						
	1694		AZ-936590		1	1-1/4						
	1788			FDD52	1	2-1/8						
	1695		AZ-936611		1	2-1/8						
	1789		AZ-93673		6	5/8						
	1790		AZ-93928		6	1-1/4						
	1791		AZ-93677		6	2-1/8						

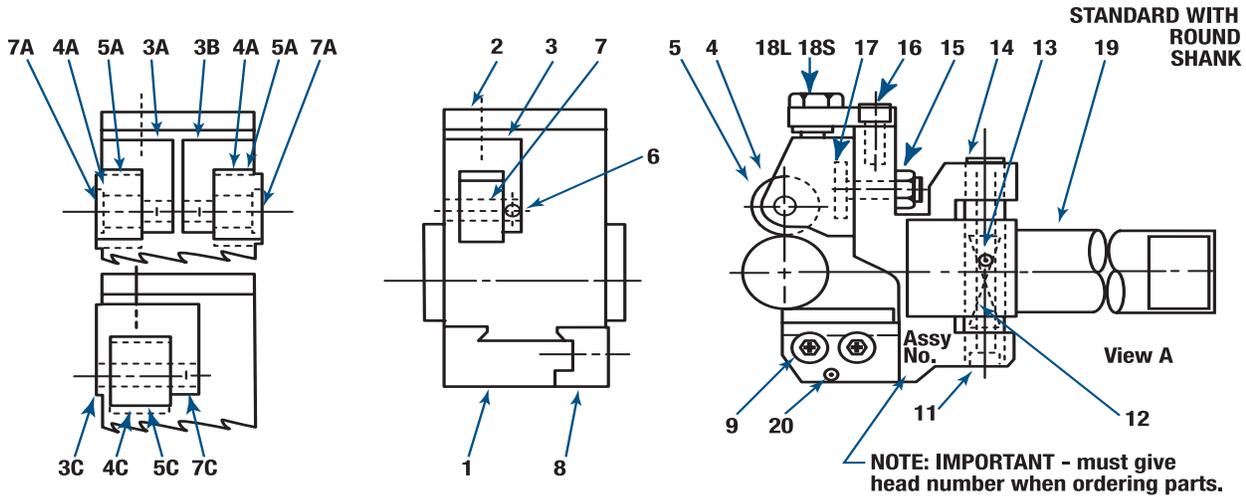
Shave Heads - Schlitters



HOLDER PART #	MAXIMUM CAPACITY	MINIMUM CAPACITY	DOVETAIL SIZE A	BODY LENGTH B	SHANK DIAMETER C
62-1H	1/2"	0	1/2"	2-1/8"	7/8"
62-2	5/8"	0	5/8"	2-3/8"	1"
62-62H	1" (Narrow)	0	5/8"	3"	1-1/4"
62-4H	1"	0	1"	3-1/8"	1-1/4"
62-5	1-1/4"	0	1"	3-1/2"	1-1/4"
62-6	1-5/8"	3/8"	1"	3-1/2"	1-1/2"
62-7	2"	3/4"	1-1/4"	3-1/2"	1-1/2"
62-8	2-1/4"	1"	1-1/4"	3-1/2"	1-1/2"
62-9	2-5/8"	1-1/4"	1-1/2"	3-3/4"	1-1/2"
62-10	3"	1-1/2"	1-1/2"	4"	1-3/4"
62-11	3-1/2"	1-5/8"	1-1/2"	4"	1-3/4"
62-12H	4"	2-1/8"	1-5/8"	4-3/8"	2"
62-13H	5"	2-7/8"	1-5/8"	5-1/4"	2-1/4"
62-82	6"	4-1/2"	1-5/8"	6"	2-3/4"

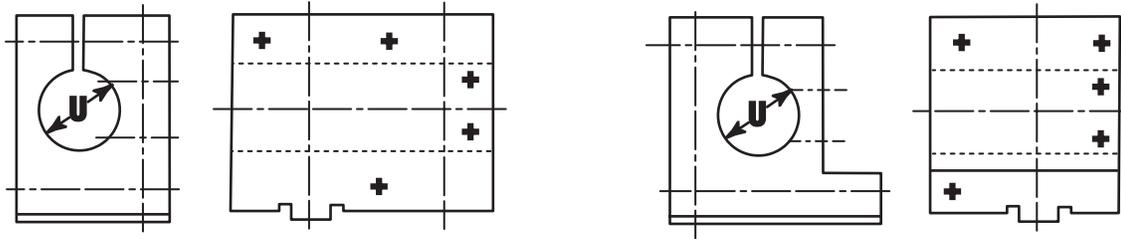
Shave Head Components

Replacement Parts for Schlitters Shave Heads



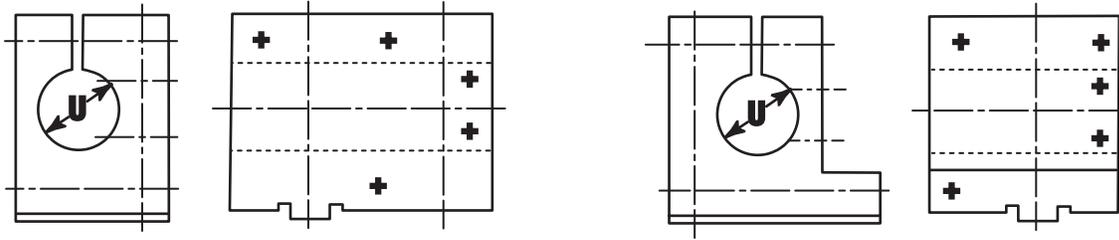
DETAIL	QTY.	DESCRIPTION
1	1	Body
2	1	Pressure Plate
3	1	Straddle Roller Rest
3A	1	L. H. Offset Roller Rest
3B	1	R. H. Offset Roller Rest
3C	1	Wide Roller Rest
4	1	Large Standard Roll
4A	1	Large Offset Roll
4C	1	Large Wide Roll
5	1	Small Standard Roll
5A	1	Small Offset Roll
5C	1	Small Wide Roll
6	1	Socket Set Screw
7	1	Standard Roll Pin
7A	1	Offset Roll Pin
7C	1	Wide Roll Pin
8	1	Dovetail Clamp
9	2	Screw
11	1	Screw
12	1	Spring
13	2	Screw
14	2	Pilot Pin
15	1	Nut for Clamping Screw
16	2	Screw
17	1	Clamping Screw
18L	1	Adjusting Screw - Long
18S	1	Adjusting Screw - Short
19	1	Shank
20	1	Screw

Shave Blocks - 6 Spindle



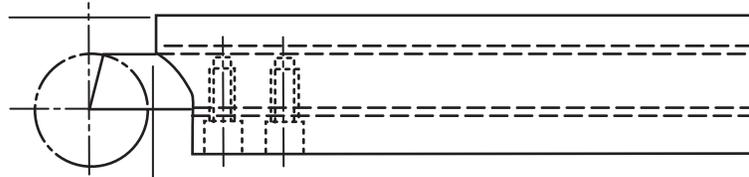
MACHINE	2ND POSITION DOUBLEDECK	3RD POSITION	4TH POSITION	BLOCK BORE DIA.	SHAVE HEAD
7/16 RA-6	71-302H	71-302H	71-302H	7/8"	62-1H
5/8 RN-6	71-57	71-43	71-57	1"	62-2
	71-41H	71-41H	71-41H	1-1/4"	62-62H
	71-41H	71-41H	71-41H	1-1/4"	62-4H
9/16 & 1" RA-6 9/16 & 1" RAN-6	71-167H	71-112H	71-112H	7/8"	62-1H
	71-45	71-43	71-57	1"	62-2
	71-38	71-41H	71-41H	1-1/4"	62-62H 62-4H
1-1/4 RA-6 1-1/4 RB-6 1" RAS-6	71-133	71-204	71-133	1"	62-2
	71-64	71-36	71-64	1-1/4"	62-62H 62-4H 62-5
1-5/8 & 2" RB-6 1-5/8 RA-6 2" RAS-6	71-136	71-127	71-67	1-1/4"	62-4H 62-5
	71-40	71-32	71-39	1-1/2"	62-6 62-7
2" RA-6 2-5/8 RA-6 2-1/4 RA-6	71-105	71-32	71-39	1-1/2"	62-6
					62-7
					62-8 62-9
2-5/8 RB-6 3" RA-6 3-1/2 RA-6 3" RB-6 3-1/2 RB-6 4" RB-6	71-105	71-62	71-63	1-1/2"	62-6
					62-7
	71-63	71-62	71-63	1-1/2"	62-8
					62-9
71-48	71-83	71-48	1-3/4"	62-6 62-11	
					71-114	71-115	71-114	2"	62-12H

Shave Blocks - 8 Spindle



MACHINE	2ND POSITION DOUBLEDECK	4TH POSITION	5TH POSITION	BLOCK BORE DIA.	SHAVE HEAD
3/4 RA-8	71-167H	71-112H	71-112H	7/8"	62-1H
	71-45	71-43	71-57	1"	62-2
	71-38	71-41H	71-41H	1-1/4"	62-62H 62-4H
1-1/4 RB-8 1-5/8 RBN-8	71-133	71-204	71-133	1"	62-2
	71-64	71-36	71-64	1-1/4"	62-62H 62-4H 62-5
	71-46	71-34	71-46	1-1/2"	62-6
1-5/8 & 2" RB-8 1-5/8 & 2" RA-8	71-136	71-169	71-136	1-1/4"	62-4H 62-5
	71-40	71-60	71-40	1-1/2"	62-6 62-7
2-1/4 RA-8 2-5/8 RA-8 2-1/4 RB-8 2-5/8 RB-8	71-137	71-127	71-67	1-1/4"	62-5
	71-63	71-32	71-39	1-1/2"	62-6
					62-7 62-8 62-9
3-1/2 RB-8 4" RB-8	71-63	71-62	71-63	1-1/2"	62-7 62-8 62-9
	71-48	71-83	71-48	1-3/4"	62-10 62-11
	71-114	71-115	71-114	2"	62-12H

For Acme style double bevel blades on Page 282

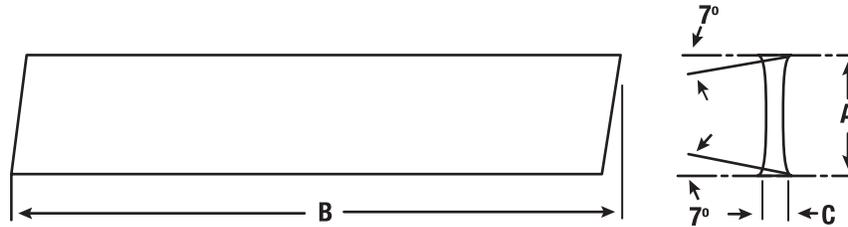


inner = close to spindle
outer = away from spindle

MACHINE	POSITION	BLADE POSITION	CODE #	PART #
9/16 RA-6	2nd & 5th	Inner	CTH-30	AZ-23479
1" RA-6		Outer	CTH-38	AZ-23481
9/16 R-6	3rd & 6th	Inner	CTH-30	AZ-23479
3/4 RA-8		Outer	CTH-38	AZ-23481
1-1/4 RA-6	2nd & 5th	Inner	CTH-40	AZ-71479
		Outer	CTH-49	AZ-71481
1-1/4 RB-8	3rd & 6th	Inner	CTH-54	ZT-41483
1-5/8 RBN-8		Outer	CTH-53	ZT-41485
1-5/8 RA-6	2nd & 5th	Inner	CTH-50	BZ-41479
1-5/8 RB-6		Outer	CTH-59	BZ-41481
2" RB-6	3rd & 6th	Inner	CTH-57	ZM-83483
2" RAS-6		Outer	CTH-58	ZM-83485
1-5/8 RB-8	2nd & 5th	Inner	CTH-60	AZ-85479
2-5/8 RB-6		Outer	CTH-69	AZ-85481
2-5/8 RB-8	3rd & 6th	Inner	CTH-63	AZ-97479
		Outer	CTH-64	AZ-97481
3-1/2 RB-6	2nd & 5th	Inner	CTH-80	AZ-95479
		Outer	CTH-89	AZ-95481

Acme Cutoff Blades

Acme style double bevel cutoff blade

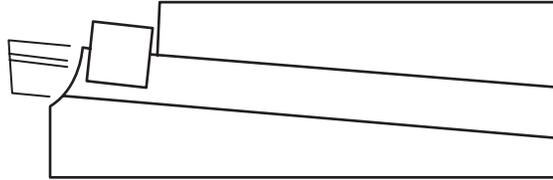


Blades are available in High Speed Steel, Cobalt, and Carbide

CODE #	PART #	A	B	C
B-17	AZ-50	.484/.483	4-3/8	.040
B-1	02958-13	.484/.483	5-3/4	.062
B-2	02958-2	.484/.483	5-3/4	.093
B-4	02958-14	.484/.483	5-3/4	.109
B-5	02958-5	.484/.483	5-3/4	.125
B-3	02958-15	.811/.810	7-3/16	.093
B-6	02958-7	.811/.810	7-3/16	.125
B-8	02958-16	.811/.810	7-3/16	.156
B-9	02958-8	.811/.810	7-3/16	.188
B-11	02958-6	.811/.810	7-3/16	.250
B-7	02958-12	.961/.960	8-1/4	.125
B-10	02958-11	.961/.960	8-1/4	.188
B-12	02958-10	.961/.960	8-1/4	.250
B-14	02958-9	.961/.960	8-1/4	.312
B-18	02958-22	.961/.960	8-1/4	.375
B-13	02958-17	1.219/1.218	9	.250

Holders for Empire Blades - 6 Spindle

For Empire 'T' type blades on page 286

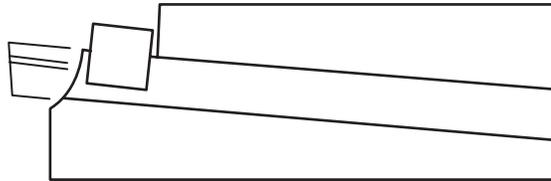


CAPACITY / MODEL	POSITION	HOLDER	POST	RISER OR WEDGE	BLADES	
					SERIES	HEIGHT
7/16 - RA	1	X-18	36W	N / R	P-1	1/2
	2	X-18	36W	N / R	P-1	
	3	X-18	36W	36W	P-1	
	4	X-18	36W	N / R	P-1	
	5	394WT	N / R	N / R	P-1	
	5SS	X-18	36W	36W	P-1	
	6	X-18	36W	36W	P-1	
9/16 - RA	1	X-18A	381	N / R	P-3	11/16
9/16 - RAN	2DD	X-18A	381	N / R	P-3	
5/8 - RN	2SS	X-18A	381	N / R	P-3	
1" - RA	3	X-18A	381	N / R	P-3	
1" - RAN	4	X-18A	381	N / R	P-3	
	5	351	N / R	N / R	P-3	
	5SS	X-18A	381	N / R	P-3	
	5DD	X-18A	381	381	P-3	
	6	X-18A	381	381	P-3	
1-1/4 - RA	1	356	7110	W-1	P-3	11/16
	2	356	N / R	N / R	P-3	
	2DD	356	7110	W-1	P-3	
	2SS	356	7110	W-1	P-3	
	3	356	7118	W-3	P-3	
	4	356	7110	W-1	P-3	
	5	356	N / R	N / R	P-3	
	5SS	356	7118	W-3	P-3	
5DD	356	7118	W-3	P-3		
	6	356	7118	W-3	P-3	
1-5/8 - RA	1	353	5-LH	W-3	P-5	7/8
1-5/8 - RB	2	353	N / R	N / R	P-5	
2" - RA	2DD	353	5-LH	W-3	P-5	
2" - RB	2SS	353	3-LH	W-3	P-5	
	3	353	4-RH	W-1	P-5	
	4	353	3-LH	W-3	P-5	
	5	353	N / R	N / R	P-5	
	5SS	353	4-RH	W-1	P-5	
	5DD	353	4-RH	W-9	P-5	
	6	353	4-RH	W-9	P-5	

SS - SHELF SLIDE
DD - DOUBLE DECK

Holders for Empire Blades - 6 Spindle

For Empire 'T' type blades on page 286



CAPACITY / MODEL	POSITION	HOLDER	POST	RISER OR WEDGE	BLADES	
					SERIES	HEIGHT
2" - RA	1	384	9-LH	W-2	P-8	1-1/8
2-1/4 - RA	2	357	N / R	N / R	P-8	
2-5/8 - RA	2DD	384	9-LH	W-2	P-8	
	3	384	6-RH	W-2	P-8	
	4	357	3-LH	W-1	P-8	
	5	357	N / R	N / R	P-8	
	5DD	384	10-RH	W-2	P-8	
	6	384	10-RH	W-2	P-8	
2-5/8 - RB	1	384	9-LH	W-2	P-8	1-1/8
	2	357	N / R	N / R	P-8	
	2DD	384	9-LH	W-2	P-8	
	2SS	384	7089	W-1	P-8	
	3	384	10-RH	W-2	P-8	
	4	384	9-LH	W-2	P-8	
	5	357	N / R	N / R	P-8	
	5SS	384	7106	W-2	P-8	
	5DD	384	10-RH	W-2	P-8	
6	384	10-RH	W-2	P-8		
3" - RA	1	384	9-LH	W-2	P-8	1-1/8
3" - RB	2	359	N / R	N / R	P-8	
3-1/2 - RA	2DD	384	9-LH	W-2	P-8	
3-1/2 - RB	2SS	384	7089	W-1	P-8	
4" - RA	3	384	10-RH	W-2	P-8	
4" - RB	4	384	9-LH	W-2	P-8	
	5	384	N / R	N / R	P-8	
	5SS	359	7106	W-2	P-8	
	5DD	384	10-RH	W-2	P-8	
	6	384	10-RH	W-2	P-8	

SS - SHELF SLIDE
DD - DOUBLE DECK

Holders for Empire Blades - 8 Spindle

For Empire 'T' type blades on page 286

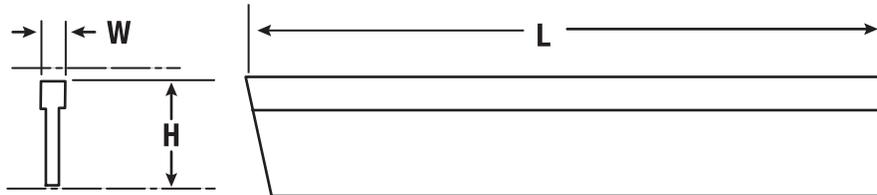
CAPACITY / MODEL	POSITION	HOLDER	POST	RISER OR WEDGE	BLADES	
					SERIES	HEIGHT
3/4 - RA	1	X-18A	381	N / R	P-3	11/16
	2DD	X-18A	381	N / R	P-3	
	3	351	N / R	N / R	P-3	
	3SS	X-18A	381	N / R	P-3	
	4	X-18A	381	N / R	P-3	
	5	X-18A	381	N / R	P-3	
	6	351	N / R	N / R	P-3	
	6SS	X-18A	381	N / R	P-3	
	7DD	X-18A	381	381	P-3	
8	X-18A	381	381	P-3		
1-1/4 - RB 1-5/8 - RBN	1	356	7110	W-1	P-3	11/16
	2DD	356	7110	W-1	P-3	
	3	356	N / R	N / R	P-3	
	3SS	356	7110	W-1	P-3	
	4	356	7118	W-3	P-3	
	5	356	7110	W-1	P-3	
	6	356	N / R	N / R	P-3	
	6SS	356	7118	W-3	P-3	
	7DD	356	7118	W-3	P-3	
8	356	7118	W-3	P-3		
1-5/8 - RA 1-5/8 - RB 2" - RA 2" - RB	1	353	5-LH	W-3	P-5	7/8
	2DD	353	5-LH	W-3	P-5	
	3	353	N / R	N / R	P-5	
	3SS	353	7089	W-3	P-5	
	4	353	6-RH	W-4	P-5	
	5	353	5-LH	W-3	P-5	
	6	353	N / R	N / R	P-5	
	6SS	353	7123	W-1	P-5	
	7DD	353	6-RH	W-4	P-5	
8	353	6-RH	W-4	P-5		
2-1/4 - RA 2-1/4 - RB 2-5/8 - RA 2-5/8 - RB	1	384	9-LH	W-2	P-8	1-1/8
	2DD	384	9-LH	W-2	P-8	
	3	359	N / R	N / R	P-8	
	3SS	384	3-LH	W-1	P-8	
	4	384	6-RH	W-2	P-8	
	5	384	3-LH	W-1	P-8	
	6	359	N / R	N / R	P-8	
	6SS	384	6-RH	W-2	P-8	
	7DD	384	10-RH	W-2	P-8	
8	384	10-RH	W-2	P-8		
3-1/2 - RB 4" - RB	1	384	9-LH	W-2	P-8	1-1/8
	2DD	384	9-LH	W-2	P-8	
	3	359	N / R	N / R	P-8	
	3SS	384	9-LH	W-2	P-8	
	4	384	10-RH	W-2	P-8	
	5	384	9-LH	W-2	P-8	
	6	359	N / R	N / R	P-8	
	6SS	384	10-RH	W-2	P-8	
	7DD	384	10-RH	W-2	P-8	
8	384	10-RH	W-2	P-8		

SS - SHELF SLIDE DD - DOUBLE DECK



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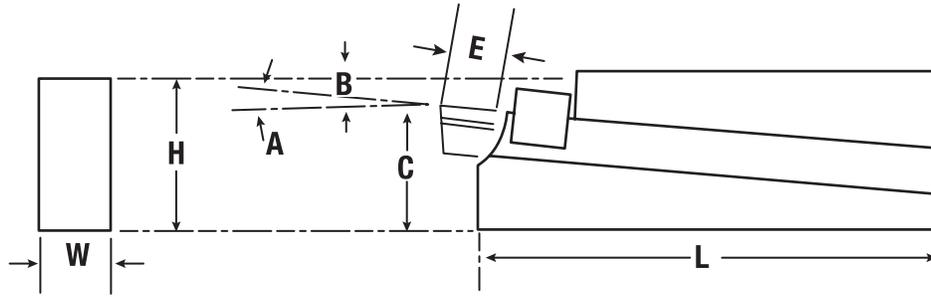
Empire 'T' type cutoff blades



Blades are available in High Speed Steel, Cobalt, and Carbide

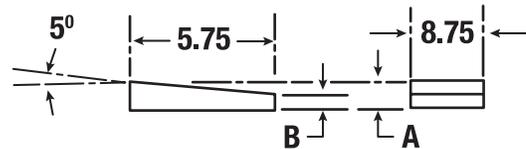
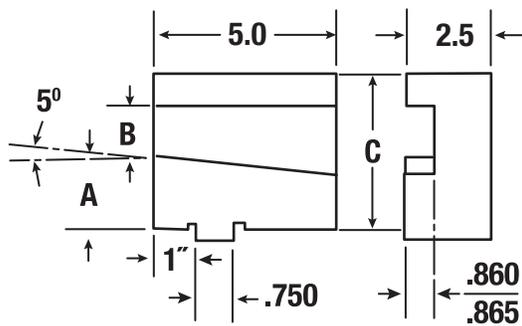
BLADE NO.	THICKNESS W	HEIGHT H	LENGTH L
P-1-N	.040	1/2	3-1/2
P-1	1/16	1/2	4-1/2
P-2-N	5/64	1/2	4-1/2
P-2	3/32	1/2	4-1/2
P-3-S	1/8	1/2	4-1/2
P-3-N	3/32	11/16	5
P-3	1/8	11/16	5
P-4	5/32	11/16	5
P-5-S	3/16	11/16	5
P-3-W	1/8	3/4	5
P-4-W	5/32	3/4	5
P-5-W	3/16	3/4	5
P-5-X	1/8	7/8	6
P-5-N	5/32	7/8	6
P-5	3/16	7/8	6
P-8-X	1/8	1-1/8	6-1/2
P-8-N	5/32	1-1/8	6-1/2
P-8	3/16	1-1/8	6-1/2
P-9	1/4	1-1/8	6-1/2
P-10	5/16	1-1/8	6-1/2
T-3-S	1/8	1-1/2	4-1/4
T-3	1/8	11/16	4-1/4
T-4	5/32	11/16	4-1/4
T-5-S	3/16	11/16	5
T-5	3/16	7/8	5
T-6	1/4	7/8	5
T-8	3/16	1-1/8	5-1/2
T-9	1/4	1-1/8	5-1/2
T-10	5/16	1-1/8	5-1/2

Empire Holders, Posts, and Wedges



L. H. CL Holder shown

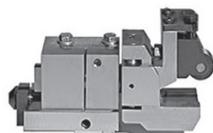
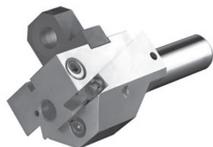
HOLDERS	A	B	C	E	H	L	W	BLADE
350	3°	.250	.968	.562	1.218	6.00	1.00	P-1
351	3°	.250	.968	.562	1.218	6.00	1.00	P-3
352	4°	.469	1.219	.687	1.688	8.50	1.00	P-3
353	4°	.343	1.345	.875	1.688	8.50	1.25	P-5
354	0°	.550	.700	-	1.250	5.00	1.00	P-1
356	0°	.482	1.203	-	1.688	7.00	1.00	P-3
357	5°	.438	1.812	1.375	2.250	9.00	1.50	P-8
359	5°	.218	2.282	1.813	2.250	9.00	1.50	P-8
383	5°	.281	1.594	.875	1.875	6.75	1.25	P-5
384	2°	.281	1.469	1.813	1.750	6.50	1.50	P-8



POSTS	A	B	C
3	.718	2.031	3.625
4	1.875	2.125	4.875
5	.964	2.156	4.125
6	1.840	2.656	5.375
9	1.562	2.062	4.500
10	2.719	2.156	5.750

WEDGES	A	B
W-1	.565	.062
W-2	.628	.125
W-3	.721	.218
W-4	.878	.375
W-6	1.128	.625
W-7	1.321	.518
W-9	.784	.281

Tooling Index



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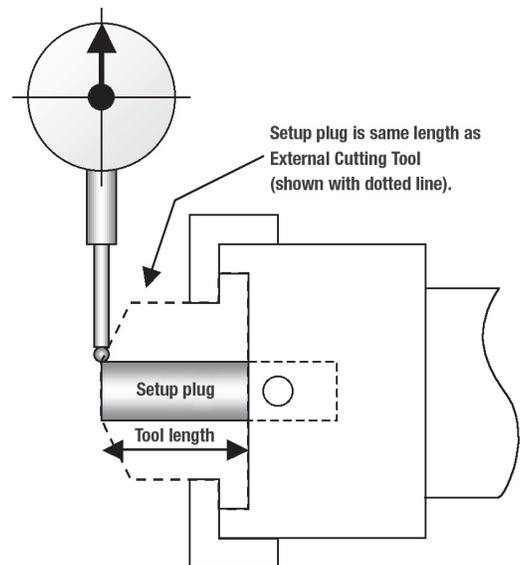


ID HexMaster™ Setup Instructions:

1. Insert a round plug equal to the length of your tool.
2. Mount the HexMaster™ in your machine. The shank should be snug but able to turn in place.
3. Mount a dial indicator on the cross slide, Use the set screws to bring the tip of the plug to centerline while rotating shank.
4. Tighten the two hex head bolts on the HexMaster™ and then tighten the shank on the machine.
5. Double check that the plug is still centered.
6. The holder is now setup for quick change with all tools of equal length.

To create your form:

1. Drill a pilot hole equal, to or slightly greater, than the ID of your form. Drill the hole deep enough to allow the chip to curl in the hole without the tool bottoming out.
2. Chamfer the hole to provide a smooth lead-in for the tool.
3. Feed rates start at .002 for steel and .004 or more for brass or aluminum. Depth of cut should not exceed 1.5x the pilot hole diameter to avoid problems with chips.
4. After your form is placed in the part, you may clean-up chips by re-drilling the pilot hole.



OD HexMaster™ Setup Instructions:

Your HexMaster Rotary Broach may be setup on or off the machine. For off-machine setup, make sure that your drill holder is on center with the part.

1. Insert a round plug equal to the length of your tool to the cutting edge (see diagram at right).
2. Mount the HexMaster™ in the machine or V-block. The shank should be snug but able to turn in place.
3. Use a dial indicator to indicate the tip of the plug as the shank of the holder is rotated in place.
4. Use the opposing set screws to bring the tip of the plug (representing the cutting edge of the tool) to centerline.
5. Tighten the two hex head bolts to preserve the setup. Snug all set screws (hand tight).
6. Double check that the tool plug is still centered.
7. The holder is now setup for quick-change with all tool of equal length.

Hex Master & OD Holders

Engineering Data- ID Broaching

PILOT HOLE

The pilot hole removes the majority of material. The hex (or other shape) to be broached will simply knock out the corners of the shape and roll the material in front of the broaching tool. The pilot hole should be equal to or slightly larger than the diameter of a circle inscribed inside your final shape and should be deep enough to allow the chips to pack ahead of the broaching tool. The pilot hole should have a chamfer large enough to engage the corners of your broaching tool. Reducing RPM will help your tool engage the work and will reduce or eliminate scoring of the chamfer. If no chamfer is desired, simply face the part after broaching. Scoring may also be eliminated by re-chamfering the part.



SPEEDS & FEEDS

Feed rates vary widely based on the size and shape of the broaching tool as well as the yield point of the material being broached. The chart at right provides a safe starting point for most jobs and materials.

Rotary broaching relies on the tool being driven by the work. Too low a feed rate will result in a bored hole instead of a broached shape. For this reason, the feed rate should not fall below .004 inches per revolution.

Above a 1/4" pilot hole diameter, the feed should not exceed .016 x the pilot hole diameter. This makes sure that the leading edge of the tool is doing the work, vastly reducing the cutting forces. In all materials, the smaller the broach diameter, the lower the recommended feed rate. For best results the tool should be retracted rapidly from the work piece.

The cutting action of the tool is independent of the RPM of the machine. Lower RPM's extend bearing life. RPM's can vary from 500 to over 2500.

COOLANT

Rotary Broaching creates little heat in the part or the chip. In blind holes, cutting fluid should be applied to the tool and not to the interior of the part. Trapped fluid will inhibit the broaching process.

PART MATERIAL

The yield point of the part material and the shape of the broach determine ease of broaching. Sq. and oblong shapes will be more difficult to broach than a simple hex shape, and splines are the easiest shape to broach. Because yield points vary so much even in one material category, we cannot provide a general guideline for maximum broach diameters.

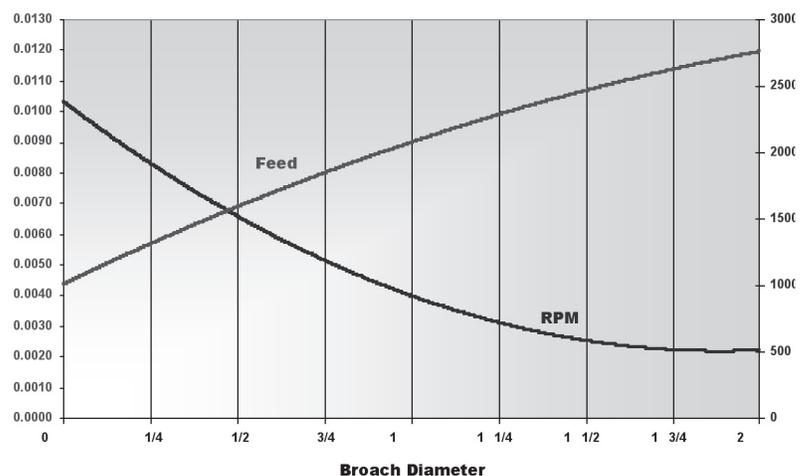
ALIGNMENT

The broach tool must be aligned with the pilot hole by means of adjusting screws on the tool holder. Failure to properly align the tool may result in damage to the tool and part, spiraling in the work piece and/or damage to the holder. Alignment instructions are included with the purchase of each holder and are available on our website.

TROUBLESHOOTING/ENGINEERING SUPPORT

Our tooling engineers will design tooling for your specific application and work with you to get the most out of your HexMaster™ Rotary Broaching Attachment. We'll supply you with the holder, the tools and the know-how to make your rotary broaching successful and trouble free.

Feeds & Speeds



Hex Master & OD Holders

HexMaster™ ID Holders



**HM 1000 Series
(Small)**



**HM 2000 Series
(Heavy Duty)**

Shank Diameter	Diameter of Tool Shank		Diameter of Tool Shank	
	.315	.500	.500	.750
5/8	HM1062A	HM1062B	n/a	n/a
3/4	HM1075A	HM1075B	n/a	n/a
1	HM1100A	HM1100B	n/a	n/a
1-1/4	HM1125A	HM1125B	HM2125B	HM2125C
1-1/2	n/a	n/a	HM2150B	HM2150C
1-3/4	n/a	n/a	HM2175B	HM2175C
2	n/a	n/a	HM 2200 B	HM2200C

HexMaster™ OD Holders



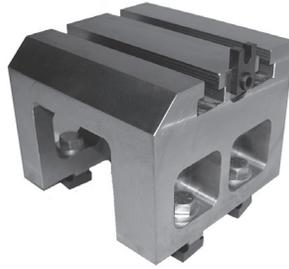
**3000 Series
Standard Machines**



**HM 4000 Series
(Davenport & Swiss)**

Shank Diameter	1.5748" Dia. Tool Blank	.9448" Dia. Tool Blank
16MM	n/a	HM4016E
5/8	n/a	HM4625E
3/4	HM3075E	HM4075E
1	HM3100E	n/a
1-1/4	HM3125E	n/a
1-1/2	HM3150E	n/a
2	HM3200E	n/a

Bridges

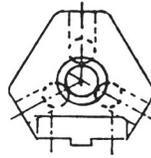


6 Spindle

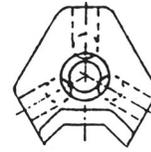
Machine	Mounts in 1st Position Provides Deck for 2nd Position	Mounts in 6th Position Provides Deck for 5th Position
9/16 RA start s/n A-23051, 9/16 RAN 1 RA, RB, RAN (flat base)	87-13	87-10
1-1/4 RA (angular base) 1-1/4 RA, RB (flat base)	87-15	87-15
1-5/8 RA, RB 2 RB (flat base)	87-3	87-2
2-5/8 RA (angular) 2-5/8 RB (flat)	87-5	87-4
3, 3-1/2 RA, RB (flat)	87-7	87-6
4 RB (flat)	87-9	87-8

8 Spindle

Machine	Mounts in 1st Position Provides Deck for 2nd Position	Mounts in 8th Position Provides Deck for 7th Position
3/4 RA (flat)	87-17	87-16
1-1/4 RB, 1-5/8 RBN (flat)	87-18	87-18
1-5/8 RA, RB 2 RB (flat)	87-21	87-20
2-5/8 RA & RB (flat)	87-23	87-22
3-1/2 (flat)	87-25	87-24
4 RB (flat)	87-27	87-26



Flat Base



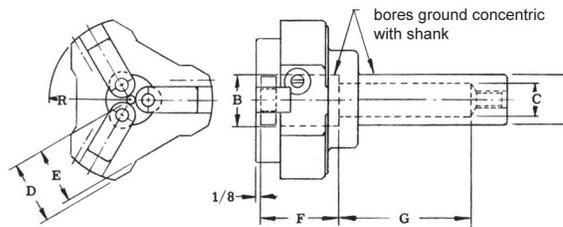
Angular Base

3-Roll Support Burnishing – Clamp Style 6 Spindle

Machine	Base	Position	Part #	Capacity	Roll Holder	Roll
7/16 RA	Flat	All	9-35	3/32 – 7/16	82-118	82-9-1
9/16, 1 RA	Angular	1, 2, 3, 4, 6	9-23	3/32 – 1	82-7	82-2-1
9/16 RA, 1 RA, RAN	Flat	1, 2, 3, 4, 6	9-33	3/32 – 1	82-36	82-2-1
1-1/4 RA	Angular	1, 2, 3, 4	9-27	1/4 – 1-1/4	82-76	82-70-1
1-1/4 RA & RB	Flat	1, 2, 3, 4	9-31	1/4 – 1-1/4	82-44	82-70-1
1-5/8 RA & RB 2 RB	Flat	All	9-25	3/16 – 2	82-23	82-3-1
2, 2-5/8 RA	Angular	1, 2, 3, 4, 6	9-21	3/16 – 2-5/8	82-68	82-3-1
2-5/8 RB	Flat	All	9-37	1/4 – 2-5/8	82-45	82-3-1
3-1/2 RA & RB	Flat	1, 2, 3, 4	9-45	3/4 – 3-1/4	82-30	82-30-1

8 Spindle

Machine	Base	Position	Part #	Capacity	Roll Holder	Roll
3/4 RA	Flat	All	9-44	3/16 – 3/4	82-36	82-2-1
1-1/4 RB, 1-5/8 RBN	Flat	All	9-42	1/4 – 1-1/2	82-44/82-129	82-70-1
1-5/8 RA & RB 2 RB	Flat	All	9-25	3/16 – 2	82-23	82-3-1
2-5/8 RA & RB	Flat	All	9-36	1/4 – 2-5/8	82-45	82-3-1



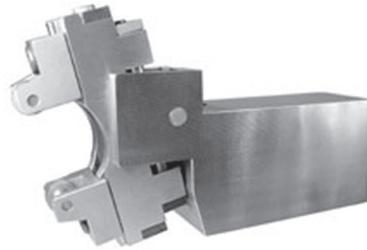
3-Roll Support Burnishing, Shank Style

Burnishing dramatically improves surface finish while imparting superior wear resistance and anti-friction properties to a part. Shank style burnishing tools are used in a wide variety of machines. For heavy duty holders, see your specific machine.

Order #	9-1	9-2	9-3	9-4
Capacity	1/8 – 1	3/16 – 1-1/2	3/8 – 2	3/4 – 2-1/2
Shank Dia. A	1-1/4	1-3/4	2	2-1/2
B	1-1/4	1-1/2	2	1-3/8
C	25/32	1-1/8	1-3/8	
D	1-13/32	1-3/4	1-7/8	2-5/16
E	1-3/8	1-3/8	1-7/8	2-1/8
F	1-15/16	2-3/16	3-1/8	3-1/8
G	3-3/8	3-1/4	3-7/8	4-1/8
R	2-1/16	2-1/2	3-1/8	3-3/8

Knurling

Knurling, Shank Style (cross slide)



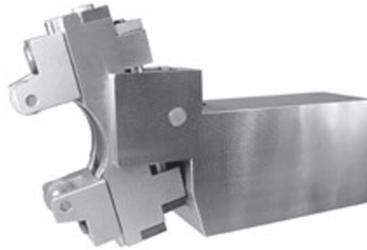
6 Spindle

Order #	Capacity	Max. Dia. Knurl Capacity	Max. Dia. Knurl	Knurl ID	Max. Knurl Width	Shank Dia.
50-1	0 – 1	3/4	7/8	1/4	5/8	1-3/8
50-2	1/2 – 1-5/8	3/4	1	1/4	5/8	1-1/2
50-3	1 – 2-1/4	7/8	1	1/4	3/4	1-3/4
50-4	1-3/8 – 3	7/8	1	1/4	3/4	1-3/4
50-33	1/16 – 9/16	5/8	3/4	1/4	5/8	7/8

Machine	Capacity	Order #	Mounting Blocks					
			Pos. 1	Pos. 2	Pos. 3	Pos. 4	Pos. 5	Pos. 6
7/16 RA		50-33	n/a	52-75 [†]	52-76	52-75	n/a	n/a
5/8 RN	0 – 1	50-1	n/a	52-110	52-1	52-1	n/a	n/a
9/16 RA after s/n 22326 CM	0 – 1	50-1	52-31	52-31 [†]	52-1	52-1	n/a	52-31 [†]
9/16 RA after s/n A-23051 1 RA	0 – 1	50-1	n/a	52-31	52-1	52-1	n/a	n/a
1-1/4 RA, RB	0 – 1	50-1	n/a	52-26	52-26	52-26	52-26	n/a
	1/2 – 1-5/8	50-2	n/a	52-21	52-21	52-21	52-21	n/a
	1 – 2-1/4	50-3	n/a	52-49	52-49	52-49	52-49	n/a
1-5/8 RA, RB 2 RB	0 – 1	50-1	n/a	52-22	52-29	52-29	52-22	n/a
	1/2 – 1-5/8	50-2	n/a	52-23	52-8	52-8	52-23	n/a
	1 – 2-1/4	50-3	n/a	52-67	52-4	52-4	52-67	n/a
2, 2-5/8 RA	1/2 – 1-5/8	50-2	n/a	52-30	52-8	52-8	n/a	n/a
	1 – 2-1/4	50-3	n/a	52-3	52-4	52-4	n/a	n/a
2-5/8 RB	1/2 – 1-5/8	50-2	52-30	52-30	52-27	52-27	n/a	n/a
	1 – 2-1/4	50-3	n/a	52-3	52-28	52-28	n/a	n/a
	1-3/8 – 3	50-4	n/a	52-3	52-28	52-28	n/a	n/a
3 RA, RB 3-1/2 RA, RB	1/2 – 1-5/8	50-2	n/a	52-27	52-27	52-27	52-27	n/a
	1 – 2-1/4	50-3	n/a	52-28	52-28	52-28	52-28	n/a
	1-3/8 – 3	50-4	n/a	52-28	52-28	52-28	52-28	n/a
4 RB	1/2 – 1-5/8	50-2	n/a	52-27	52-27	52-27	52-27	n/a
	1 – 2-1/4	50-3	n/a	52-28	52-28	52-28	52-28	n/a
	1-3/8 – 3	50-4	n/a	52-28	52-28	52-28	52-28	n/a

[†] 5/8 Maximum size knurl to clear machine on index.

Knurling, Shank Style (cross slide)



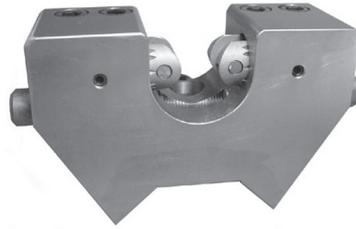
8 Spindle

Order #	Capacity	Max. Dia. Knurl at Capacity	Max. Dia. Knurl	Max. Knurl Width	Knurl Offset d	Shank j
50-1	0 – 1	3/4	7/8	5/8	5/8	1-3/8
50-2	1/2 – 1-5/8	3/4	1	5/8	5/8	1-1/2
50-3	1 – 2-1/4	7/8	1	3/4	3/4	1-3/4
50-4	1-3/8 – 3	7/8	1	3/4	3/4	1-3/4

Machine	Capacity	Order #	Mounting Blocks				
			Pos. 1	Pos. 2	Pos. 4	Pos. 5	Pos. 7
3/4 RA	0 – 1	50-1	n/a	52-31	52-1	52-1	n/a
1-1/4 RB, 1 5/8 RBN	0 – 1	50-1	n/a	52-26	52-26	52-26	52-26
1 5/8 RA, RB	0 – 1	50-1	52-22	52-22	52-22	52-22	52-22
2 RB	1/2 – 1	50-2	n/a	52-23	52-23	52-23	52-23
2 5/8 RA, RB	1/2 – 1	50-2	n/a	52-28	n/a	n/a	52-28
	1 – 2-1/4	50-3	n/a	n/a	52-4	52-4	n/a

Knurling

Knurling, Crank Style (Main Tool Slide)



6 Spindle

Machine	Slide Type	Position	Order #	Capacity	Knurl Dimensions OD x Width x ID
7/16 RA	Flat	1, 2, 3, 4	49-18	0 – 7/16	1/2 x 3/16 x 3/16
5/8 RN	Flat	1, 2, 3, 4	49-35	0 – 5/8	5/8 x 1/4 x 1/4
9/16, 1 RA	Angular	1, 2, 3, 4	49-6	0 - 1	3/4 x 3/8 x 1/4
9/16, 1 RA	Flat	1, 2, 3, 4, 6	49-23	0 – 1	3/4 x 3/8 x 1/4
1-1/4 RA	Angular	1, 2, 3, 4, 6	49-20	0 – 1-1/4	3/4 x 3/8 x 1/4
1-1/4 RA, RB	Flat	1, 2, 3, 4, 6	49-19	0 – 1-1/4	3/4 x 3/8 x 1/4
1-5/8 RA, RB	Flat	All	49-11	1/2 – 2	3/4 x 3/8 x 1/4
2, 2-5/8 RA	Angular	1, 2, 3, 4	49-4	1 5/16 – 2-5/8	3/4 x 3/8 x 1/4
2-5/8 RB	Flat	All	49-1	1 9/16 – 2-5/8	3/4 x 3/8 x 1/4
3, 3-1/2 RA, RB	Flat	All	49-37	1-3/4 – 3-1/2	3/4 x 3/8 x 1/4
4 RB	Flat	All	49-38	2 – 4	3/4 x 3/8 x 1/4

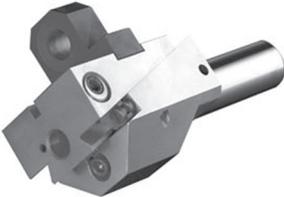
8 Spindle

Machine	Position	Order #	Capacity	Knurl Dimensions OD x Width x ID
3/4 RA	All	49-34	0 – 3/4	5/8 x 1/4 x 1/4
1-1/4 RB, 1-5/8 RBN	All	49-31	3/8 – 1-5/8	3/4 x 3/8 x 1/4
1-5/8 RB, 2 RB	All	49-11	1/2 – 2	3/4 x 3/8 x 1/4
2-5/8 RA, RB	All	49-36	1/2 – 2-5/8	3/4 x 3/8 x 1/4

Schlitter Recessing Attachments

3 Styles Available

- Shielded heavy-duty springs eliminate chip contamination.
- Hardened, match-ground bearing surfaces for precise movement and extreme rigidity.
- Adjustable gib for long life, tighter fit and better performance and longer life.
- Quick-change tool mechanism; Fast, easy setup.



*Shank Style Recess Holder:
Economy, Flexibility, Ease of Use*

Shank style recess attachments are ideal for light undercuts and single O-rings. It's universal design allows it to be mounted on the widest variety of machines.



*Clamp style Recess Holders:
Robust, Through-Tool Coolant, Rigid*

Clamp style recess attachments are designed for superior cutting and profiling capability as well as increased accuracy over shank style attachments. This model bolts directly to your machine's main tool slide. Its wide base provides more rigidity than shank style holders. Clamp style recess attachments offer superior accuracy, repeatability and tool life. Through-tool coolant improves cutting and chip formation.



*Recess Milling Attachment:
Superior Performance, No Chip Problems*

Recess milling attachments absolutely outperform all other styles. Its true milling cutter eliminates taper from tool deflection, performs complex profiling and takes the kind of heavy undercuts normally associated with secondary work. The rotating tool produces fine chips which are easily washed from the cutting area with through-tool coolant. Recess milling attachments also provide a much finer finish than can be achieved with either a shank or clamp style holder. You'll get faster setup, longer tool life, shorter tool changes and easier control of part quality. Recess milling attachments feature Erikson style spindles for minimal runout and quick tool change.

Features	Shank	Clamp	Milling
Universal mounting	✓	✓	✓
Hardened & ground	✓	✓	✓
Adjustable gib	✓	✓	✓
Enclosed heavy-duty springs	✓	✓	✓
Quick change tool mechanism	✓	✓	✓
Fast, easy setup	✓	✓	✓
Long service life	✓	✓	✓
Light undercuts	✓	✓	✓
Medium undercuts, profiling		✓	✓
Through tool coolant		✓	✓
Heavy cuts, complex profiling			✓
Active control of tool deflection			✓
Positive chip control			✓
Fine infeed adjustments			✓

Recess Attachments

Recess Holder Setup Shank Style, Clamp Style and Revolving Milling Attachments

Recess Holders are actuated by the draw bar attachment, or stop rod attachment halting forward travel of the recess tool carrier slide. To setup the recess tool holder assembled with the draw bar attachment follow these three simple steps:

Draw Bar

Step 1 Align the draw bar parallel to the top of the body of the holder as shown in Illustration A.

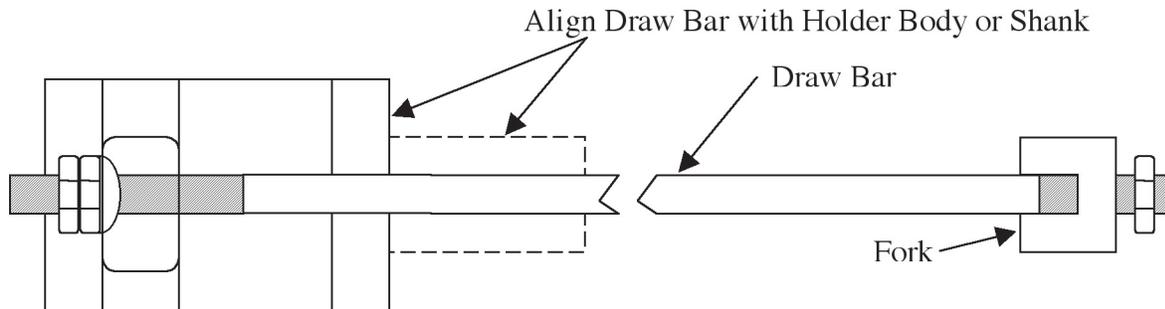


Illustration A: Draw Bar Alignment

Step 2 As in Illustration B, Position the fork anchor of the draw bar slightly higher than the stop bracket (an amount approximately equal to the expansion of the holder). The idea is for the draw bar to be parallel with the tool slide at the point where the recess holder has been pulled to its full-back position. The Draw Bar should never drop toward the machine from the side view as it will interfere with the operation of the holder. Attach the Fork Anchor to the frame of the machine.

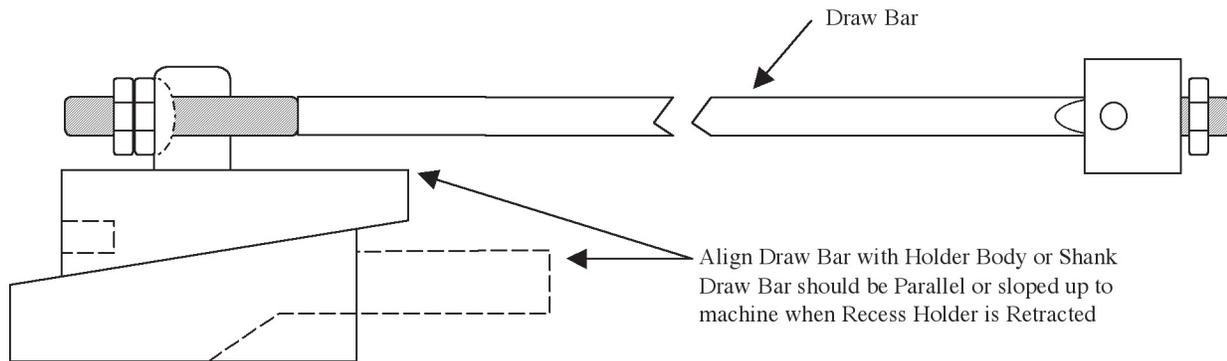


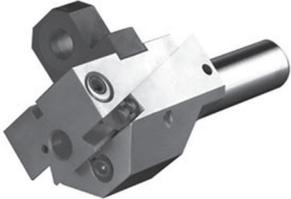
Illustration B: Draw Bar Elevation & Fork Anchor Placement

Step 3 Adjust the stop bracket so that the holder will begin to rise once the tool is positioned within the part.

Optional Stop Rod

A Stop Rod may be substituted for the Draw Bar. To operate the Stop Rod the customer must install a bumper on the machine. The bumper may be fixed to the machine frame or to a cross slide. When fed in from the cross slide the bumper may be a piece of stock or the side of a cross slide holder. In either case the bumper must clear the chuck or spindle nose and still extend out far enough to contact the hardened roller on the end of the adjustable Stop Rod.

Recess Tool Holder, Shank Style

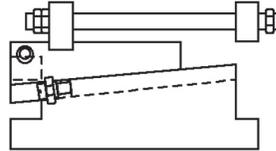
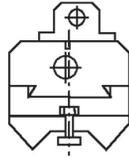


6 Spindle or 8 Spindle

	58-10	58-12	58-1	58-2	58-3	58-7
Shank Diameter	3/4	1	1-1/4	1-1/2	2	2-1/2
Tool Bore	3/8	1/2	5/8	1	1-1/4	1-1/4
Bore Depth	3/4	3/4	78	1-1/4	1-1/2	1-1/2
Tool Offset	0.031	0.031	0.031	0.062	0.062	0.125
Degree Rise	16°	16°	15°	20°	18°	12°
Rise per .001 feed	0.00029	0.00029	0.00027	0.00036	0.00032	0.00021
Max. Expansion	0.179	0.179	0.201	0.273	0.274	0.213
Draw Bar	59-7	59-3	59-1	59-1	59-1	59-1
Stop Rod	59-53	59-50	59-51	59-51	59-51	59-51

Recess Attachments

Recess Tool Holder. Clamp Style



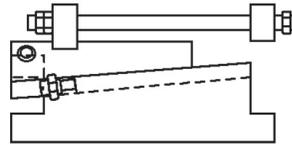
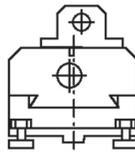
Angular Base

6 Spindle

Machine	Order #	Draw Bar	Tool Bore	Bore Depth	Rise per Tool Offset	Degree Rise	.010 Feed	Max. Travel	Max. Rise
9/16, 1 RA	54-78	59-1	5/8	1	.031	10°	.00018	1-1/2	.264
1-1/4 RA	54-59	59-1	1	1-1/4	.062	10°	.00018	1-5/8	.287
2 RA	54-1	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.246
2-5/8 RA, RB	54-51	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.353
2, 2-5/8 RA	54-3	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.24
	54-53	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.353

Flat Base

6 Spindle



Machine	Order #	Draw Bar	Tool Bore	Bore Depth	Rise per Tool Offset	Degree Rise	.010 Feed	Max. Travel	Max. Rise
5/8 RN	54-89	59-3	5/8	1	.031	10°	.00018	1-1/4	.220
9/16, 1 RA, RAN	54-76	59-1	5/8	1	.031	10°	.00018	1-1/2	.264
1-1/4 RA, RB	54-79	59-1	1	1-1/4	.062	10°	.00018	1-5/8	.286
1-5/8 RA, RB	54-8	59-1	1	1-1/4	.062	7°	.00012	2	.246
2 RB	54-58	59-1	1	1-1/4	.062	10°	.00018	2	.353
2-5/8 RB	54-4	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.246
	54-54	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.353
3, 3-1/2 RA, RB	54-2	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.246
	54-52	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.353
4 RB	54-6	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.246
	54-56	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.353

8 Spindle

Machine	Order #	Draw Bar	Tool Bore	Bore Depth	Rise per Tool Offset	Degree Rise	.010 Feed	Max. Travel	Max. Rise
1-1/4 RB,	54-34	59-1	1	1-1/4	.062	7°	.00012	2	.245
1-5/8 RBN	54-84	59-1	1	1-1/4	.062	10°	.00018	2	.352
1-5/8 RA, RB	54-8	59-1	1	1-1/4	.062	7°	.00012	2	.245
2 RB	54-58	59-1	1	1-1/4	.062	10°	.00018	2	.352
2-5/8 RB	54-5	59-1	1-1/4	1-1/2	.125	7°	.00012	2	.245
	54-55	59-1	1-1/4	1-1/2	.125	10°	.00018	2	.352

Recess Milling



6 Spindle

Angular base

Machine	Order #	Pos.	Draw Bar	Collet	Degree Rise	Rise per .001 Feed	Max. Travel	Max. Expansion
1-1/4 RA	13850	2, 3, 4	59-1	180DA	12°	.00021	1-1/4	.265
	14939	4	59-1	400DA	8°	.00014	1-1/4	.1757
2 RA	14860	2, 3, 4	59-1	400DA	15°	.00027	1	.268
2-5/8 RA	14939	4	59-1	400DA	10°	.00018	1-1/2	.264

Flat Base

Machine	Order #	Pos.	Draw Bar	Collet	Degree Rise	Rise per .001 Feed	Max. Travel	Max. Expansion
1-1/4 RA, RB	13854	2, 3, 4	59-1	180DA	12°	.00021	1-1/4	.265
1-5/8 RA, RB	14853	2 - 5	59-1	180DA	12°	.00021	1-1/4	.265
	15175	3, 4	59-1	180DA	10°	.00018	1-3/8	.242
2 RB	14853	2 - 5	59-1	180DA	12°	.00021	1-1/4	.265
2-5/8 RB	14861	2 - 5	59-1	400DA	10°	.00018	1	.268
	15162	3, 4	59-1	400DA	10°	.00018	1	.176
	15181	3, 4	59-1	400DA	10°	.00018	1-1/4	.220
3 RA	14557	2 - 5	59-1	400DA	18°	.00032	1	
3-1/2RA, RB	15077	2 - 5	59-1	400DA	12°	.00021	1-1/4	.212
4 RB	15180	3, 4	59-1	400DA	18°	.00032	1	.325

Draw bar included on recess milling attachments. Erickson style spindle standard. Straight bores available on request.

8 Spindle

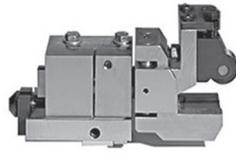
Flat Base

Machine	Order #	Pos.	Draw Bar	Collet	Degree Rise	Rise per .001 Feed	Max. Travel	Max. Expansion
1-1/4 RB, 1-5/8 RBN	14786	3 - 7	59-1	180DA	12°	.00021	1-1/4	.265
	14944	3 - 7	59-1	180DA	8°	.00014	1-1/4	.1756
1-5/8 RA, RB 2 RB	14853	3 - 7	59-1	180DA	12°	.00021	1-1/4	.265
2-5/8 RB	14862	3 - 7	59-1	400DA	15°	.00027	1	.268

Draw bar included on recess milling attachments. Erickson style spindles are standard. Optional straight bore also available.

Shaving

Shaving Systems 6 Spindle

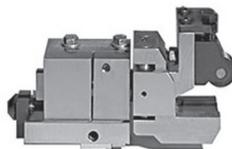


Traditional pin-style shave tool holder shown with optional adjustable shave block.

6 Spindle

Machine Model	Shave Order #	Shaving Capacity	Dovetail Size	Block for Pos. 2 dd	Block for Pos. 3	Block for Pos. 4	Shank Size/BlockBore
7/16 RA	62-1H	0 – 1/2	1/2	71-302H	71-302H	71-302H	7/8
9/16 RA, RAN 1 RA, RAN	62-1H	0 – 1/2	1/2	71-167H	71-112H	71-112H	7/8
	62-2	0 – 5/8	5/8	71-45	71-43	71-57	1
	62-62H	0 – 1	5/8	71-38	71-41H	71-41H	1-1/4
	62-4H	0 – 1	1	71-38	71-41H	71-41H	1-1/4
5/8 RN	62-2	0 – 5/8	5/8	71-57	71-43	71-57	1
	62-62H	0 – 1	5/8	71-41H	71-41H	71-41H	1-1/4
	62-4H	0 – 1	1	71-41H	71-41H	71-41H	1-1/4
1-1/4 RA, RB	62-2	0 – 5/8	5/8	71-133	71-204	71-133	1
	62-62H	0 – 1	5/8	71-64	71-36	71-64	1-1/4
	62-4H	0 – 1	1	71-64	71-36	71-64	1-1/4
	62-5	0 – 1-1/4	1	71-64	71-36	71-64	1-1/4
1-3/8, 1-5/8 AG	62-4H	0 – 1	1	61-94	61-94	61-94	1-1/4
	62-5	0 – 1-1/4	1	61-95	61-96	61-95	1-1/4
1-5/8 RA, RB 2 RB, RAS	62-6	3/8 – 1-5/8	1	61-95	61-96	61-95	1-1/2
	62-4H	0 – 1	1	71-136	71-127	71-67	1-1/4
	62-5	0 – 1-1/4	1	71-136	71-127	71-67	1-1/4
	62-6	3/8 – 1-5/8	1	71-40	71-32	71-39	1-1/2
2, 2-5/8 RA	62-7	3/4 – 2	1-1/4	71-40	71-32	71-39	1-1/2
	62-6	3/8 – 1-5/8	1	71-105	71-32	71-39	1-1/2
	62-7	3/4 – 2	1-1/4	71-105	71-32	71-39	1-1/2
	62-8	1 – 2-1/4	1-1/2	71-105	71-32	71-39	1-1/2
2-5/8 RB	62-9	1-1/4 – 2-5/8	1-1/2	71-105	71-32	71-39	1-1/2
	62-6	3/8 – 1-5/8	1	71-105	71-62	71-63	1-1/2
	62-7	3/4 – 2	1-1/4	71-105	71-62	71-63	1-1/2
	62-8	1 – 2-1/4	1-1/2	71-105	71-62	71-63	1-1/2
3, 3-1/2 RA, RB 4 RB	62-9	1-1/4 – 2-5/8	1-1/2	71-105	71-62	71-63	1-1/2
	62-6	3/8 – 1-5/8	1	71-63	71-62	71-63	1-1/2
	62-7	3/4 – 2	1-1/4	71-63	71-62	71-63	1-1/2
	62-8	1 – 2-1/4	1-1/2	71-63	71-62	71-63	1-1/2
	62-9	1-1/4 – 2-5/8	1-1/2	71-63	71-62	71-63	1-1/2
	62-10	1-1/2 – 3	1-1/2	71-48	71-83	71-48	1-3/4
	62-11	1-5/8 – 3-1/2	1-1/2	71-48	71-83	71-48	1-3/4
62-12H	2 1/8 – 4	1-5/8	71-114	71-115	71-114	2	

Shaving Systems 8 Spindle



Traditional pin-style shave tool holder shown with optional adjustable shave block.

8 Spindle

Machine Model	Shave Holder Order #	Shaving Capacity	Dovetail Size	Block for Pos. 2 dd	Block for Pos. 4	Block for Pos. 5
3/4 RA	62-1H	0 – 1/2	1/2	71-167H	71-112H	71-112H
	62-2	0 – 5/8	5/8	71-45	71-43	71-57
	62-62H	0 – 1	5/8	71-38	71-41H	71-41H
	62-4H	0 – 1	1	71-38	71-41H	71-41H
1-1/4 RB 1-5/8 RBN	62-2	0 – 5/8	5/8	71-133	71-204	71-133
	62-62H	0 – 1	5/8	71-64	71-36	71-64
	62-4H	0 – 1	1	71-64	71-36	71-64
	62-5	0 – 1-1/4	1	71-64	71-36	71-64
	62-6	3/8 – 1-5/8	1	71-46	71-34	71-46
1-5/8 RA, RB 2 RB	62-4H	0 – 1	1	71-136	71-169	71-136
	62-5	0 – 1-1/4	1	71-136	71-169	71-136
	62-6	3/8 – 1-5/8	1	71-40	71-60	71-40
	62-7	3/4 – 2	1-1/4	71-40	71-60	71-40
2-5/8 RA, RB	62-5	0 – 1-1/4	1	71-347	71-127	71-67
	62-6	3/8 – 1-5/8	1	71-63	71-32	71-39
	62-7	3/4 – 2	1-1/4	71-63	71-32	71-39
	62-8	1 – 2-1/4	1-1/2	71-63	71-32	71-39
	62-9	1-1/4 – 2-5/8	1-1/2	71-63	71-32	71-39
3-1/2, 4 RB	62-7	3/4 – 2	1-1/4	71-63	71-62	71-63
	62-8	1 – 2-1/4	1-1/2	71-63	71-62	71-63
	62-9	1-1/4 – 2-5/8	1-1/2	71-63	71-62	71-63
	62-10	1-1/2 – 3	1-1/2	71-83	71-48	71-83
	62-11	1-5/8 – 3-1/2	1-1/2	71-83	71-48	71-83
	62-12H	2-1/8 – 4	1-5/8	71-115	71-114	71-115

Shaving

Shaving Key Shave Tool Holder Constants

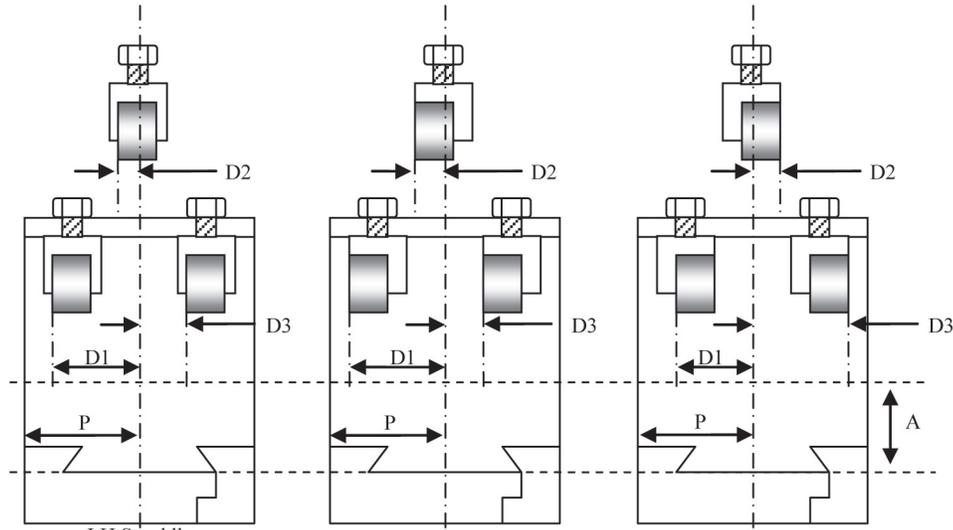
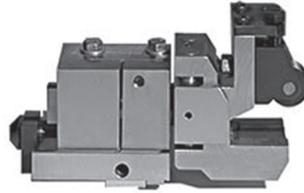


Table: Key Shave Tool Holder Constants

Traditional Pin Style	62-1H	62-2	62-62H	62-4H	62-5	62-6	62-7	62-8	62-9	62-10	62-11	62-12H
Capacity	0 – 1/2	0 – 5/8	0 – 1	0 – 1	0 – 1-1/4	3/8 – 1-5/8	3/4 – 2	1 – 2-1/4	1-1/4 – 2-5/8	1-1/2 – 3	1-5/8 – 3-1/2	2-1/8 – 4
Dovetail Size	1/2	5/8	5/8	1	1	1	1-1/4	1-1/4	1-1/4	1-1/2	1-1/2	1-5/8
Max. Tool Length	1-1/8	1-1/4	1-1/2	1-5/8	1-3/4	1-3/4	1-3/4	1-3/4	1-7/8	1-7/8	1-7/8	2-1/16
Tool Constant "A"	5/8	13/16	1	1	1-1/8	1-5/16	1-1/2	1-5/8	1-13/16	2	2-1/4	2-3/4
Dimension "P"	39/64	13/16	1	1-3/16	1-3/16	1-3/16	1-3/16	1-3/16	1-5/16	1-5/16	1-3/8	1-1/2
LH Straddle D1	9/16	11/16	15/16	1	1	1	1	1	1-1/16	1-1/16	1-1/8	1-1/4
LH Straddle D2	n/a	1/4	3/8	3/8	3/8	3/8	3/8	3/8	13/32	13/32	13/32	15/32
LH Straddle D3	5/32	3/16	3/16	1/4	1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16
LH Offset D1	21/32	7/8	1-1/8	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4	1-5/16	1-5/16	1-7/16	1-9/16
LH Offset D2	n/a	7/16	9/16	5/8	5/8	5/8	5/8	5/8	21/32	21/32	23/32	25/32
LH Offset D3	1/16 rt	0	0	0	0	0	0	0	0	0	0	0
RH Offset D1	1/32	0	0	0	0	0	0	0	0	0	0	0
RH Offset D2	n/a	7/16	9/16	5/8	5/8	5/8	5/8	5/8	13/32	13/32	23/32	25/32
RH Offset D3	3/4	7/8	1-1/8	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4	1-5/16	1-5/16	1-7/16	1-9/16
LH Offset D1	21/32	7/8	1-1/8	1-1/4	1-1/4	1-1/4	1-1/4	1-1/4	1-5/16	1-5/16	1-7/16	1-9/16
LH Offset D2	n/a	7/16	9/16	5/8	5/8	5/8	5/8	5/8	21/32	21/32	23/32	25/32
LH Offset D3	1/16 rt	0	0	0	0	0	0	0	0	0	0	0
Wide D1	39/64	n/a	1-1/8	1 3/32	1-3/16	1-3/16	1-3/16	1-3/16	1-1/16	1-1/16	1-1/8	1-1/8
Wide D2	n/a	5/8	9/16	15/32	9/16	9/16	9/16	9/16	13/32	13/32	13/32	13/32
Wide D3	7/64	n/a	0	5/32	1/16	1/16	1/16	1/16	1/4	1/4	5/16	5/16

**Replacement Parts:
Traditional Pin Style Shave Tool Holders**



*Shave Tool Holder shown with Standard LH Straddle Roll Holder
& Optional Adjustable Shave Block*

Roll Holders

					
Shave Tool Holder	LH Straddle (standard)	RH Straddle (optional)	Wide (optional)	LH Offset (optional)	RH Offset (optional)
62-1H	62-1-3	62-54-3	62-1-3C	62-1-3A	62-1-3B
62-2	62-2-3	62-55-3	62-2-3C	62-2-3A	62-2-3B
62-62H	62-3-3	62-64-3	62-3-3C	62-3-3C	62-3-3B
62-4H	62-4-3	62-56-3	62-4-3C	62-4-3A	62-4-3B
62-5, 62-6, 62-7, 62-8	62-5-3	62-60-3	62-5-3C	62-5-3A	62-5-3B
62-9, 62-10	62-9-3	n/a	62-9-3C	62-9-3A	62-9-3B
62-11	62-11-3	n/a	62-11-3C	62-11-3A	62-11-3B
62-12H	62-112-3	n/a	62-112-3C	62-112-3A	62-112-3B
62-13H	62-13-3	n/a	62-13-3C	62-13-3A	62-13-3B

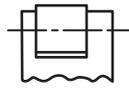
Pressure Plate, Jaws, Float Screw, Spring, Gib, Tool Posts

						
Holder	Pressure Plate	Standard Jaw	Reducing Jaw [†]	Pilot Pin	Float Screw	Spring
62-1H	62-1-2	62-1-8		62-1H-14	62-1H-11	62-1-12
62-2	62-2-2	62-2-8		62-2-14	62-2-11	62-2-12
62-62H	62-3-2	62-3-8		62-62H-14	62-62H-11	62-2-12
62-4H	62-4-2	62-4-8	62-4-8S6	62-62H-14	62-62H-11	62-23-12
62-5	62-5-2	62-5-8	62-5-8S3	62-5-14	62-5-11	62-5-12
62-6	62-5-2	62-5-8	62-5-8S3	62-6-14	62-6-11	62-5-12
62-7	62-5-2	62-7-8	62-7-8S1	62-7-14	62-7-11	62-5-12
62-8	62-5-2	62-7-8	62-7-8S1	62-8-14	62-8-11	62-8-12
62-9	62-9-2	62-9-8	62-9-8S1	62-9-14	62-9-11	62-9-12
62-10	62-10-2	62-9-8	62-9-8S	62-10-14	62-10-11	62-10-12
62-11	62-11-2	62-11-8	62-11-8S	62-11-14	62-11-11	62-10-12
62-12H	62-12-2	62-12-8		62-112-14	62-11-11	62-10-12
62-13H	62-13-2	62-113-8		62-13H-14	62-112-11	62-13-12

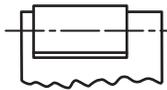
[†] Reduces to next smaller dovetail size.

Shaving

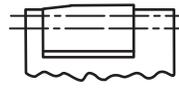
Shaving Supports



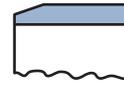
Standard



Wide



Wide Tapered



Carbide tipped with taper

6 Spindle

Machine & Model	Type Roll	Roll Width	Support Part Number		
			2nd Position Holder #	3rd Position Holder #	4th Position Holder #
7/16 RA	Standard	3/8	85-75	85-72	85-73
	Wide	1/2	85-75A	85-72A	85-73A
	Tapered	1/2	85-75B	85-72B	85-73B
	Carb. Tip	3/4	85-75D	85-72D	85-73D
5/8 RN	Standard	3/8	85-109	85-109	85-109
	Wide	3/4	85-109A	85-109A	85-109A
	Tapered	3/4	85-109B	85-109B	85-109B
	Carb. Tip	3/4	85-109D	85-109D	85-109D
9/16, 1" RA angular tool slide	Standard	3/8	85-26	85-3	85-4
	Wide	3/4	85-26A	85-3A	85-4A
	Tapered	3/4	85-26B	85-3B	85-4B
	Carb. Tip	3/4	85-26D	85-3D	85-4D
9/16, 1" RA with flat tool slide start s/n A-23346	Standard	3/8	85-83	85-45	85-55
	Wide	3/4	85-83A	85-45A	85-55A
	Tapered	3/4	85-83B	85-45B	85-55B
	Carb. Tip	3/4	85-83D	85-45D	85-55D
1-1/4 RA angular T.S.	Standard	3/8	85-22	85-6	85-12
	Wide	3/4	85-22A	85-6A	85-12A
	Tapered	3/4	85-22B	85-6B	85-12B
	Carb. Tip		85-22D	85-6D	85-12D
1-1/4 RA with flat tool slide 1-1/4 RB	Standard	3/8	85-60	85-59	85-58
	Wide	3/4	85-60A	85-59A	85-58A
	Tapered	3/4	85-60B	85-59B	85-58B
	Carb. Tip		85-60D	85-59D	85-58D

Shaving Supports

6 Spindle (continued)

Machine Size & Model	Type Roll	Roll Width	Support Part Number		
			2nd Position Holder #	3rd Position Holder #	4th Position Holder #
1-5/8 RA, 1-5/8, 2" RB	Standard	1/2	85-19	85-10	85-11
	Wide	1	85-19A	85-10A	85-11A
	Tapered	1	85-19B	85-10B	85-11B
	Carb. Tip		85-19D	85-10D	85-11D
2", 2-5/8 RA	Wide	1	85-87A	85-21A	85-48A
	Tapered	1	85-87B	85-21B	85-48B
	Carb. Tip		85-87D	85-21D	85-48D
2-5/8 RB	Wide	1	85-88A	85-76A	85-44A
	Tapered	1	85-88B	85-76B	85-44B
	Carb. Tip		85-88D	85-76D	85-44D
3", 3-1/2 RA 3", 3-1/2 RB	Wide	1	85-42A	85-57A	85-89A
	Tapered	1	85-42B	85-57B	85-89B
	Carb. Tip		85-42D	85-57D	85-89D

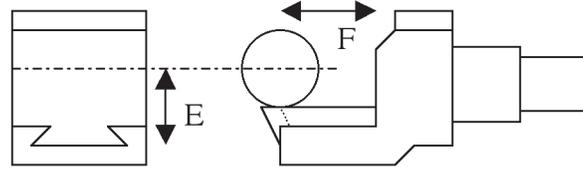
8 Spindle

Machine & Model	Type Roll	Roll Width	Support Part Number				
			2nd Position	3rd Position	4th Position	5th Position	6th Position
3/4 RA	Standard	3/8	85-117		85-118	85-121	
	Wide	3/4	85-117A		85-118A	85-121A	
	Tapered	3/4	85-117B		85-118B	85-121B	
1-1/4 RB 1-5/8 RBN	Standard	1/2	85-99	85-100	85-96	85-101	85-102
	Wide	1	85-99A	85-100A	85-96A	85-101A	85-102A
	Tapered	1	85-99B		85-96B	85-101B	
	Carb. Tip		85-99D		85-96D	85-101D	
1-5/8 RA, RB 2" RB	Standard	1/2	85-82	85-122	85-35	85-85	85-110
	Wide	1	85-82A	85-122A	85-35A	85-85A	85-110A
	Tapered	1	85-82B	85-122B	85-35B	85-85B	
	Carb. Tip		85-82D		85-35D	85-85D	
2-5/8 RA, RB	Wide	1	85-78A	85-103A	85-84A	85-86A	85-103A
	Tapered	1	85-78B	85-103B	85-84B	85-86B	85-103B
	Carb. Tip		85-78D		85-84D	85-86D	

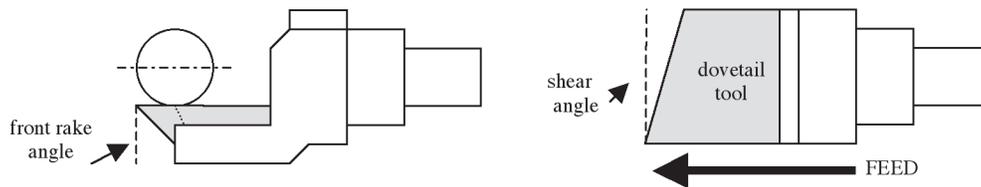
With order specify support number, diameter of part to be supported, type roll required, position, model and size machine. It is advisable to furnish parts print of piece to be supported, marking which diameters to be shaved and supported.

Skiving

Skiving



Order #	42-1	42-2	42-3	42-4
Capacity	3/4	1-1/2	2-1/4	3
Dovetail Size	5/8	1	1-1/4	101/2
E min.	3/8	1/2	3/4	1
E max.	7/8	1-1/4	1-5/8	2
F	1	1-1/2	1-13/16	2-1/8



Recommended Speeds & Feeds for Skiving

Tool Material	Part Material	Front Rake Angle	Shear Angle	Feed Rate
High Speed	Steel	20° to 30°	15° to 20°	2x form tool rate
	Non-Ferrous	15° to 25°	15° to 20°	3x form tool rate
Carbide	Steel	10° to 15°	15° to 20°	2x form tool rate
	Non-Ferrous	15° to 20°	15° to 20°	3x form tool rate

About Skiving

Skiving can be used as an extremely fast forming operation which is more accurate than forming. Like shaving, skive tools feed past the centerline, negating any infeed error on your machine. Unlike shaving, skiving does not overcome index error. Skived finishes are generally superior to other roughing operations. Like shave tools, skive tools require no compensation for front rake or shear angles.

Skiving



6 Spindle

Machine	Position	42-Series Skive Tool Holders			
		42-1	42-2	42-3	42-4
7/16 RA	2, 3, 4, 5, 6	44-3	n/a	n/a	n/a
5/8 RN	1, 6	44-9	n/a	n/a	n/a
	2dd	44-16	n/a	n/a	n/a
	3	44-10	n/a	n/a	n/a
9/16 RA, RAN 1 RA, RAN after s/n A23051	1, 6	44-9	44-34	n/a	n/a
	2dd	44-10	44-22	n/a	n/a
	3, 4	44-16	44-28	n/a	n/a
9/16, 1 RA before s/n 22326	2 dd	n/a	44-28	n/a	n/a
1-1/4 RA, RB	2 shelf, 3, 4, 6	44-11	44-31	44-42	n/a
	2dd	n/a	44-33	n/a	n/a
1-5/8 RA, RB 2 RA, RB 2-5/8 RA	1, 6	n/a	44-23	n/a	n/a
	3, 4	n/a	n/a	44-40	44-76
2 RA	1	n/a	n/a	n/a	44-68S
2-5/8 RA, RB	3, 4	n/a	n/a	n/a	44-60

8 Spindle

Machine	Position	42-Series Skive Tool Holders			
		42-1	42-2	42-3	42-4
3/4 RA	1, 6	44-9	n/a	n/a	n/a
	2dd	44-10	n/a	n/a	n/a
	3, 4	44-16	n/a	n/a	n/a
1-1/4 RB 1-5/8 RBN	3, 4, 5, 6 shelf, 8	44-11	44-31	44-42	n/a
1-5/8 RA, RB 2 RB	1, 4, 5	n/a	44-23	44-46	n/a
	3, 6 shelf	44-11	44-31	44-47	n/a
	3 shelf	n/a	44-47	44-42	n/a
	8	n/a	44-23	n/a	n/a
2-5/8 RA, RB	4, 5	n/a	44-40	44-87S1	n/a
	3, 6 shelf	n/a	44-70S	n/a	n/a
3-1/2, 4 RB	3 shelf, 4, 5, 6 shelf, 8	n/a	n/a	n/a	44-60

CJ Winter Index



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Selection of Thread Roll Styles

A complete listing of standard thread roll styles for each thread roll holder can be found in the product section of this catalog. We have tried to outline when a particular style should be used, but part diameter, thread pitch and part configuration will determine which thread roll style will be appropriate for a particular job.

Once a particular style has been selected, the next step is to choose the widest roll width that can be accommodated by the geometry of the part. If you are in doubt about whether a particular thread roll width will produce the thread length required, refer to the section entitled How To Determine Correct Working Face.

Although we try to standardize as many thread roll styles as possible, there will still be many applications when a special design thread roll will be required. Our Sales and Engineering Staff is trained to assist you in determining the style of thread roll that will best suit your needs. Please see the section entitled How To Order Winter Thread Rolls to determine the information required.

The Importance of Roll Chamfer

The chamfer on each edge of the thread roll has an important bearing on the effective working face of the roll, and consequently determines the maximum thread length that can be produced by a particular roll.

The figures shown in How To Determine Correct Working Face are based on a 45° chamfer. This chamfer angle can be altered to a long 30° in order to provide additional support for the threads on the end of the roll, if damage in this area

should prove to be a problem. A 30° chamfer, however, will reduce the length of thread produced by the roll.

When threads must be rolled very close to a collet and clearances are otherwise restricted, it may be necessary to order rolls with a 60° chamfer in order to extend the working face as far as possible. The use of a 60° chamfer angle should be avoided if at all possible since it will reduce the ability of the roll to withstand axial forces at the edge of the thread roll. If a special chamfer angle of 30° or 60° is required for your application, be sure to specify the method of measurement (from the face or axis) to insure the correct chamfer angle is applied.

How To Determine Correct Working Face

Figures 1 through 4 are intended to help you calculate the working face for various thread rolling applications, determine the amount of chamfer required and how to position the thread roll properly.

The working face (or F dimension) on a thread roll must always be greater than the length of thread to be generated on the part. The general rule is to allow the thread roll to overhang each end of the blank by at least 1/4 thread pitches.

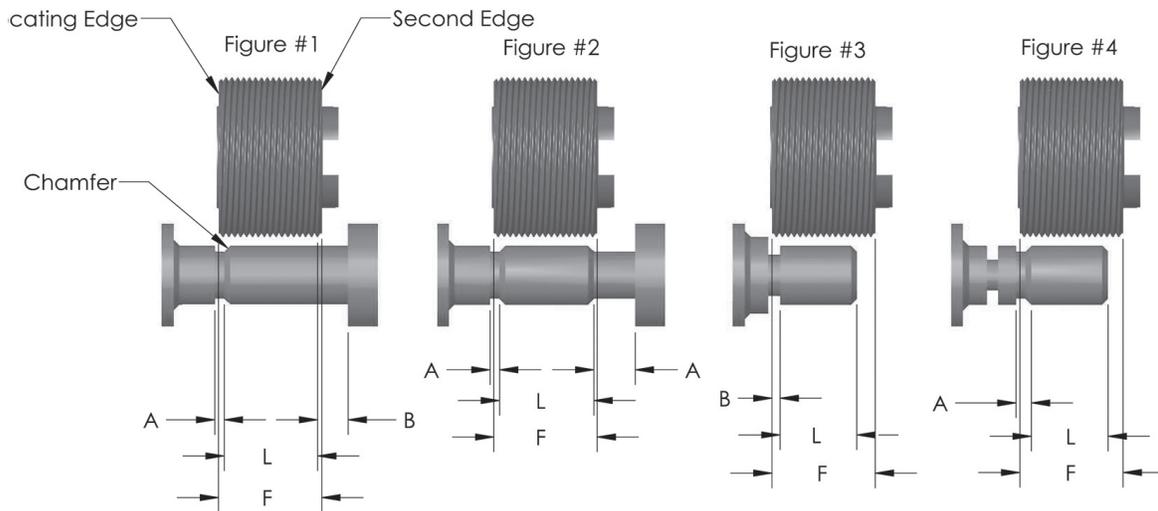
Figure 1 and 3 $F = (2.25 \times P) + L$

Figure 2 and 4 $F = (2.50 \times P) + L$

$A = 1.50 \times P$

$B = 1.25 \times P$

If you have any questions, please contact factory personnel or Champion Screw Machine Engineering.



= Chamfer Side
 = Shoulder Side
 = Length of Rolled Thread

Figure #1 and #3
 Figure #2 and #4

- $F=(2.25 \times P)+L$
 - $F=(2.50 \times P)+L$
 $A=1.50 \times P$

F = Thread roll working face
 L = Length of thread on part
 P = Thread pitch (1 / TPI)

A = Undercut width (recommended)
 B = Distance of thread roll to part shoulder

Winter Thread Roll Styles

Winter Thread Roll Styles

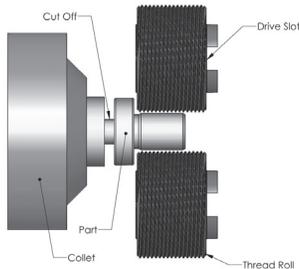
For Single Lead Right Hand Straight Threads

UN - American Standard Unified Screw Threads -
Classes 1A, 2A, 3A

Also used for N - American National Screw
Threads - Classes 2 and 3
ISO Metric Screw Threads

NPSM and NPSL American National Standard Straight
Pipe Threads for Mechanical Joints

Type WC-1 Thread Rolls For Straight Threads



WC - 1 STANDARD WORKING FACE

Winter		Landis		Detroit	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
125-SA	.552	14GA	.625	76000 (0-375)	.468
134-SA	.625	18GA	.844	76100 (6-625)	.625
141-SA	.875	20GA	1.000	76200 (10-750)	.812
151-SA	.875	22GA	1.375	76300 (30-1000)	.812
160-SA	1.530	24GA	1.500	76400 (25-1125)	1.062
162/163-SA	1.265				
170-SA	1.530				
172/173-SA	1.265				
Davenport		Reed		Salvo	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
1421SA	.625	B-5	.500	CBL	.812
1431SA	.625	B-8	.500	BBL	1.062
1448SA	.625	B-10 (500-G2A)	.625	DBL	1.312
		B-13 (750-G2A)	.875		
		B-18 (1000-G2A)	1.125		
		B-36	1.125		

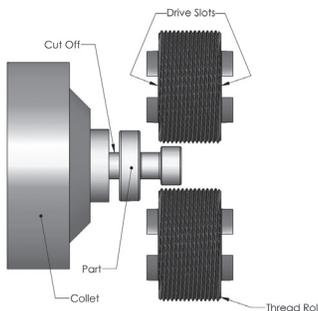
WHEN TO USE WC-1 STYLE

- 1) Rolling on outboard end of work.
- 2) Standard working face is satisfactory for length of thread to be rolled.
- 3) Position of attachment in relation to collet is not important.
- 4) Sufficient clearance is available on either side of working face.

STANDARD: working face as listed above

OPTIONAL: special bevels, machined breakouts, bronze bushings, left hand threads, multiple leads

Type WCR-1 Thread Rolls For Straight Threads



WCR - 1 STANDARD WORKING FACE

Winter		Landis		Detroit	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
125-SA	.480	14GA	.500	76000 (0-375)	.344
134-SA	.500	18GA	.750	76100 (6-625)	.500
141-SA	.750	20GA	.813	76200 (10-750)	.688
151-SA	.750	22GA	1.000	76300 (30-1000)	.688
160-SA	1.417	24GA	1.250	76400 (25-1125)	.938
162/163-SA	1.135				
170-SA	1.417				
172/173-SA	1.135				
Davenport		Reed		Salvo	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
1421SA	.500	B-5	-	CBL	.750
1431SA	.500	B-8	.437	BBL	.937
1448SA	.500	B-10 (500-G2A)	.500	DBL	1.187
		B-13 (750-G2A)	.750		
		B-18 (1000-G2A)	1.000		
		B-36	1.000		

WHEN TO USE WCR-1 STYLE

- 1) length of thread on part permits rolls to be reversed (doubling production from each pair of rolls). See instructions on determining correct working face.

STANDARD: double drive slots; working face as listed above

OPTIONAL: special bevels, machined breakouts, bronze bushings, left hand threads, multiple leads

Winter Thread Roll Styles

Winter Thread Roll Styles

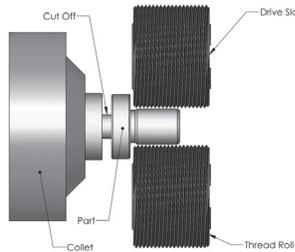
For Single Lead Right Hand Straight Threads

UN - American Standard Unified Screw Threads -
Classes 1A, 2A, 3A

Also used for N - American National Screw
Threads - Classes 2 and 3
ISO Metric Screw Threads

NPSM and NPSL American National Standard Straight
Pipe Threads for Mechanical Joints

Type WD-1 Thread Rolls For Straight Threads



WD - 1 STANDARD WORKING FACE

Winter		Landis		Detroit	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
125-SA	.636*	14GA	-	76000 (0-375)	.593
134-SA	.750*	18GA	-	76100 (6-625)	.750
141-SA	1.000*	20GA	-	76200 (10-750)	.938
151-SA	1.000	22GA	-	76300 (30-1000)	.938
160-SA	1.656*	24GA	-	76400 (25-1125)	1.188
162/163-SA	1.395*				
170-SA	1.656*				
172/173-SA	1.395*				
Davenport		Reed		Salvo	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
1421SA	.750*	B-5	-	CBL	.937
1431SA	.750*	B-8	.560	BBL	1.187
1448SA	.750*	B-10 (500-G2A)	.750	DBL	1.437
		B-13 (750-G2A)	1.000		
		B-18 (1000-G2A)	1.250		
		B-36	1.250		

*Gear Guard must be removed when installing

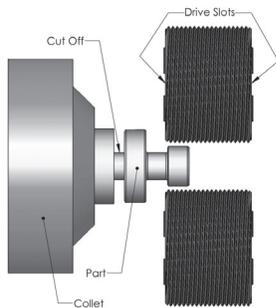
WHEN TO USE WD-1 STYLE

- 1) Working face of rolls with standard hubs is not sufficient for length of thread required. See instructions on determining correct working face..

STANDARD: recessed drive slot, extended standard working face as listed above

OPTIONAL: special bevels, machined breakouts, bronze bushings, left hand threads, multiple leads

Type WDR-1 Thread Rolls For Straight Threads



WDR - 1 STANDARD WORKING FACE

Winter		Landis		Detroit	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
125-SA	.636*	14GA	-	76000 (0-375)	.593
134-SA	.750*	18GA	-	76100 (6-625)	.750
141-SA	1.000*	20GA	-	76200 (10-750)	.938
151-SA	1.000	22GA	-	76300 (30-1000)	.938
160-SA	1.656*	24GA	-	76400 (25-1125)	1.188
162/163-SA	1.395*				
170-SA	1.656*				
172/173-SA	1.395*				
Davenport		Reed		Salvo	
Model	Std. W.F.	Model	Std. W.F.	Model	Std. W.F.
1421SA	.500	B-5	-	CBL	.937
1431SA	.500	B-8	.560	BBL	1.187
1448SA	.500	B-10 (500-G2A)	.750	DBL	1.437
		B-13 (750-G2A)	1.000		
		B-18 (1000-G2A)	1.250		
		B-36	1.250		

*Gear Guard must be removed when installing

WHEN TO USE WDR-1 STYLE

- 1) length of thread on part permits rolls to be reversed (doubling production from each pair of rolls). See instructions on determining correct working face.

STANDARD: recessed drive slots; working face as listed above

OPTIONAL: special bevels, machined breakouts, bronze bushings, left hand threads, multiple leads

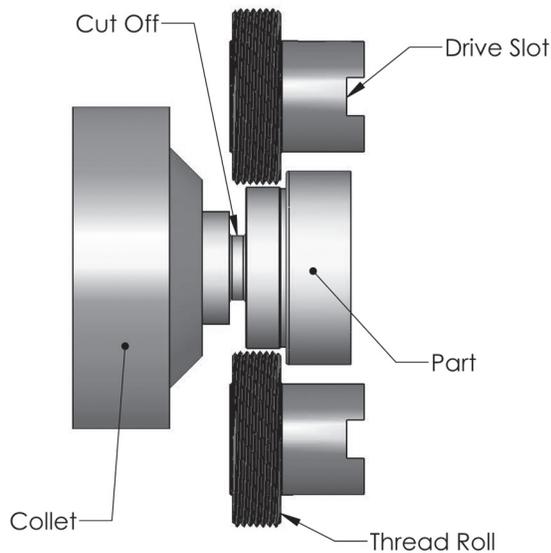
Winter Thread Roll Styles

Winter Thread Roll Styles

For Single Lead Right Hand Straight Threads

UN - American Standard Unified Screw Threads -
Classes 1A, 2A, 3A
Also used for N - American National Screw
Threads - Classes 2 and 3
ISO Metric Screw Threads
NPSM and NPSL American National Standard Straight
Pipe Threads for Mechanical Joints

Type WC-2 Thread Rolls for Straight Threads



WHEN TO USE WC-2 STYLE

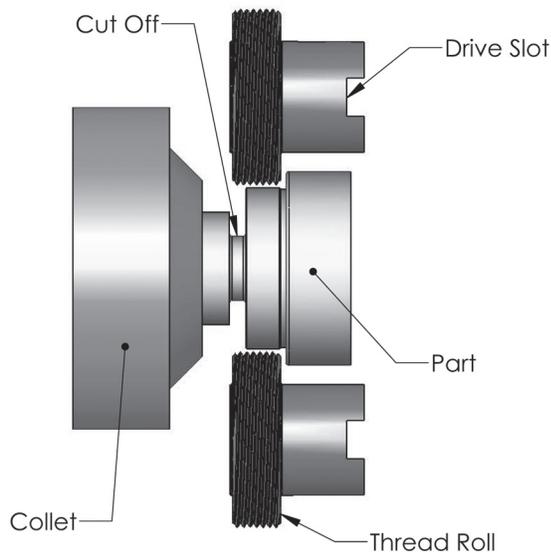
- 1) Rolling threads behind a shoulder at cut-off end.
- 2) Narrow width required due to part configuration.
- 3) Attachment to be positioned as close to collet as possible.

OPTIONAL: special bevels, machined breakouts, bronze bushings, double drive slots, left hand threads, multiple leads

WORKING FACE MUST BE SPECIFIED WHEN ORDERING WC-2 STYLE.

See instructions for determining correct working face.

Type WC-3 Thread Rolls for Straight Threads



WHEN TO USE WC-3 STYLE

- 1) Rolling threads behind a shoulder at cut-off end.
- 2) Narrow width required due to part configuration.
- 3) Attachment to be positioned as close to collet as possible.

OPTIONAL: special bevels, machined breakouts, bronze bushings, double drive slots, left hand threads, multiple leads

WORKING FACE MUST BE SPECIFIED WHEN ORDERING WC-2 STYLE.

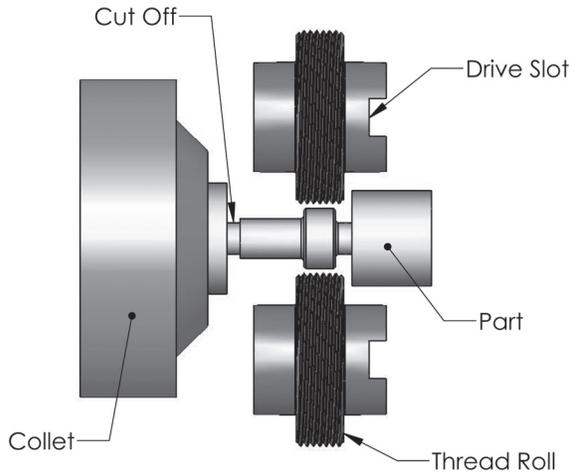
See instructions for determining correct working face.

Winter Thread Roll Styles

For Single Lead Right Hand Straight Threads

UN - American Standard Unified Screw Threads -
Classes 1A, 2A, 3A
Also used for N - American National Screw
Threads - Classes 2 and 3
ISO Metric Screw Threads
NPSM and NPSL American National Standard Straight
Pipe Threads for Mechanical Joints

Type WC-4 Thread Rolls for Straight Threads



WHEN TO USE WC-4 STYLE

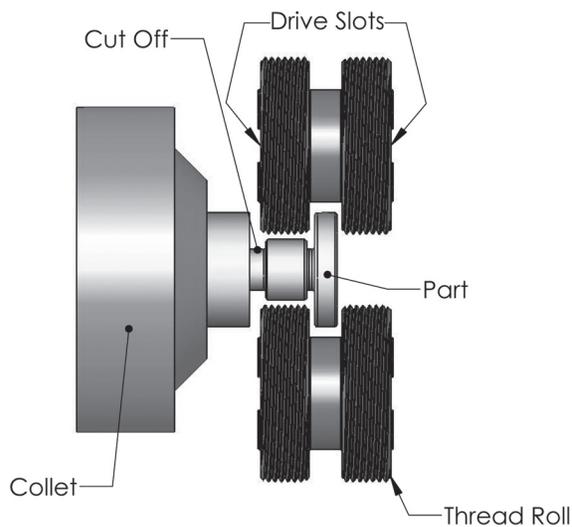
- 1) It is important to maintain position of attachment on the cross slide.
- 2) Need to maintain the position of the cut-off end of the part relative to the collet.

OPTIONAL: special bevels, machined breakouts, bronze bushings, double drive slots, left hand threads, multiple leads

WORKING FACE MUST BE SPECIFIED WHEN ORDERING WC-4 STYLE AS WELL AS LENGTH OF HUB OPPOSITE THE DRIVE SLOT.

See instructions for determining correct working face.

Type WDR-5 Thread Rolls for Straight Threads



WHEN TO USE WDR-5 STYLE

- 1) When rolling 2 threads of the same diameter and pitch which are separated by a shoulder.
- 2) Rolling behind a shoulder where length of thread permits rolls to be reversed (doubling production of 1 pair of rolls).

STANDARD: recessed double drive slots

OPTIONAL: special bevels, machined breakouts, bronze bushings, double drive slots, left hand threads, multiple leads

WORKING FACE MUST BE SPECIFIED WHEN ORDERING WDR-5 STYLE AS WELL AS GROOVE DIAMETER AND/OR STOCK DIAMETER.

See instructions for determining correct working face.

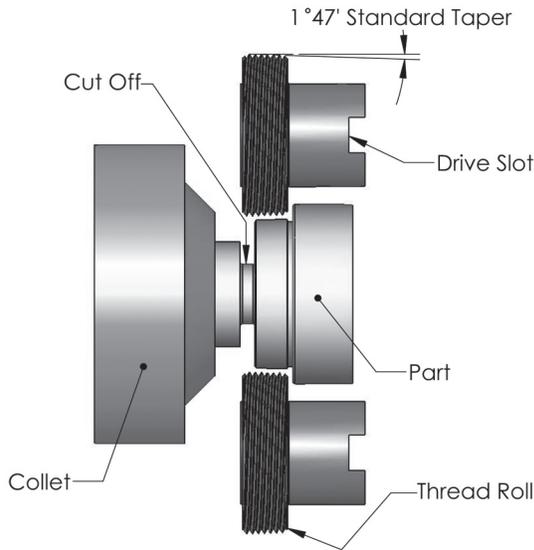
Winter Thread Roll Styles

Winter Thread Roll Styles

For Taper Pipe Threads

NPT - American Standard also used for:
 ANPT (MIL-P-7105) Air Force - Navy Aeronautical
 NPTR American Standard for railing fittings
 NPTF - (Dryseal) American Standard for pressure tight joints

Type WK-2 Thread Rolls for Taper Pipe Threads



WHEN TO USE WK-2 STYLE

- Rolling taper pipe threads with small end of work towards collet

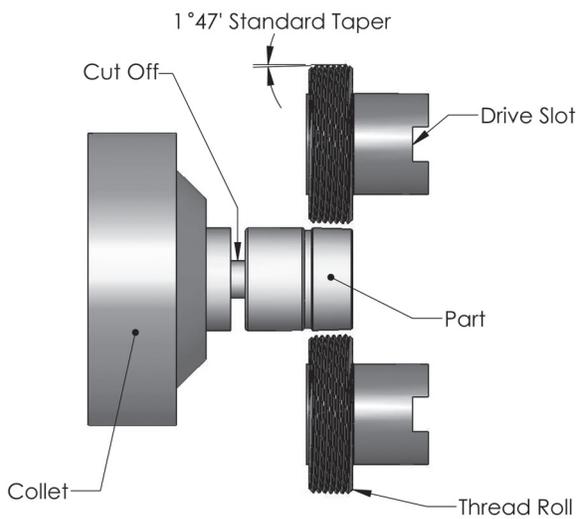
STANDARD: NPT or NPTF as specified, 45° chamfer, working face as listed below

OPTIONAL: Special working face bronze bushings

WK-2 STANDARD WORKING FACE

1/16 - 27	.375
1/8 - 27	.375
1/4 - 18	.562
3/8 - 18	.562
1/2 - 14	.712
3/4 - 14	.724
1 - 11-1/2	.900
1-1/4 - 11-1/2	.924
1-1/2 - 11-1/2	.941

Type WQ-2 Thread Rolls for Taper Pipe Threads



WHEN TO USE WQ-2 STYLE

- Rolling taper pipe threads with small end of work away from collet

STANDARD: NPT or NPTF as specified, 45° chamfer, working face as listed below

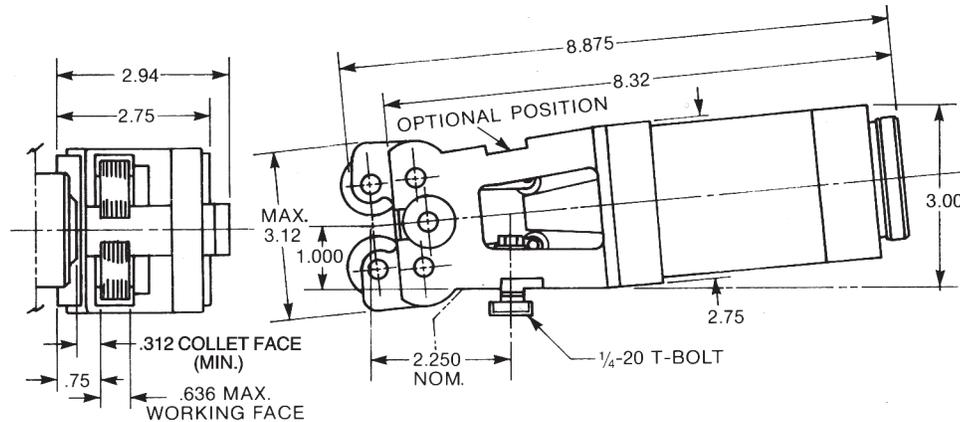
OPTIONAL: Special working face bronze bushings

WK-2 STANDARD WORKING FACE

1/16 - 27	.375
1/8 - 27	.375
1/4 - 18	.562
3/8 - 18	.562
1/2 - 14	.712
3/4 - 14	.724
1 - 11-1/2	.900
1-1/4 - 11-1/2	.924
1-1/2 - 11-1/2	.941

Winter Pinch Type Attachment

Model 125-SA



125-SA THREAD ROLLING CAPACITY

0 - 80	1/16 - 27 NPT	M1.4 x 0.3
To	To	To
1/2 - 32	1/4 - 18 NPT	M12 x 1.75

125-SA MACHINE APPLICATION CHART

MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	7/16 - 6	RA	3rd or 4th	-
	9/16 - 6	R, RA, RAN	3rd or 4th	125-112
	5/8 - 6	RN	3rd or 4th	125-112
	3/4 - 8	RA	4th or 5th	125-112
Brown & Sharpe	3/4	*0	Front or Rear	125-110
	1-1/4	*2	Front or Rear	125-111
	2	*3	Front or Rear	125-111
Hardinge	-	VBS, DSM - 59	Front or Rear	-
	-	DSMA	Front or Rear	125-126
New Britain	1 - 6	51	4th or 5th	125-113
Wickman	5/8 - 6	-	4th or 5th	125-114
	**1 - 6	-	4th or 5th	125-115

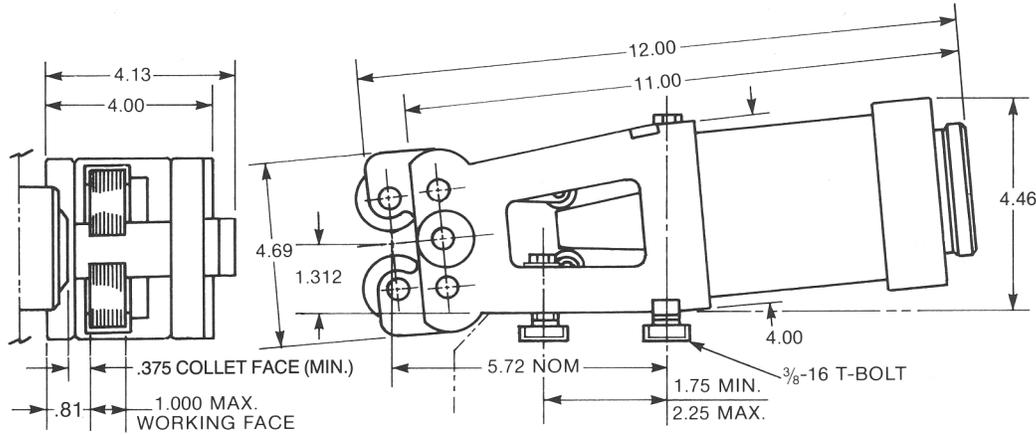
Common applications only - please contact factory for complete application information.

*Requires increased cross slide travel for max. clearance

**Requires auxiliary cross slide motion for max. clearance

Winter Pinch Type Attachment

Model 141-SA



141-SA THREAD ROLLING CAPACITY

0 - 80 To 3/4 - 27	1/16 - 27 NPT To 3/8 - 18 NPT	M1.4 x 0.3 To M18 x 2.5
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141-SA MACHINE APPLICATION CHART

MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	7/8 - 4	RA	2nd or 3rd	-
	5/8 - 6	RN	3rd or 4th	-
	*9/16 - 6	RA, RAN	3rd or 4th	-
	*1 - 6	RA, RAN	3rd or 4th	-
	1 - 6	R	3rd or 4th	143-3-1
	1 - 6	RAS	3rd or 4th	143-3-2
	1-1/4 - 6	RA	3rd or 4th	143-3-2
	1-5/8 - 6	RA, RB	3rd or 4th	143-3
	3/4 - 8	RA (Start S/N 70017)	4th or 5th	-
	1-1/4 - 8	RA, RB	4th or 5th	143-3-2
New Britain	1-5/8 - 8	RA, RB	4th or 5th	143-16
	1 - 6	51	4th or 5th	143-10
	1-1/4 - 6	52	4th or 5th	143-10
	1-5/8 - 6	61	3rd or 4th	143-9
	1-5/8 - 6	62	4th or 5th	143-9
	1-1/4 - 8	812	5th or 6th	143-9
	1-5/8 - 8	816	5th or 6th	143-9
Wickman	**5/8 - 6		4th or 5th	143-13
	**1 - 6; 1 - 8		4th or 5th	151-300
	1-3/8 - 6		4th or 5th	143-2

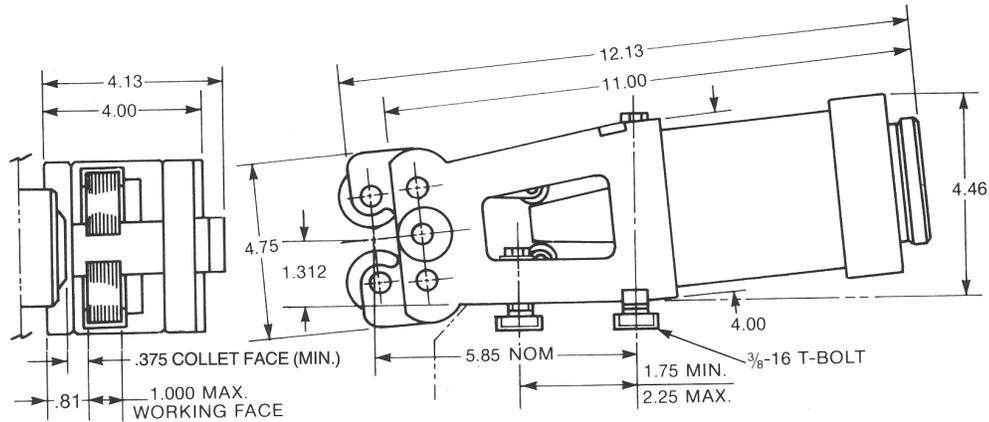
Common applications only - please contact factory for complete application information.

*Requires increased cross slide travel for max. clearance

**Requires auxiliary cross slide motion for max. clearance

Winter Pinch Type Attachment

Model 151-SA



151-SA THREAD ROLLING CAPACITY

6 - 32	1/16 - 27 NPT	M3 x 0.35
To	To	To
7/8 - 32	1/2 - 14 NPT	M22 x 2.5

151-SA MACHINE APPLICATION CHART

MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	7/8 - 4	RA	2nd or 3rd	-
	5/8 - 6	RN	3rd or 4th	-
	*9/16 - 6	RA, RAN	3rd or 4th	-
	*1 - 6	RA, RAN	3rd or 4th	-
	*1 - 6	R	3rd or 4th	143-3-1
	*1 - 6	RAS	3rd or 4th	143-3-2
	1-1/4 - 6	RA	3rd or 4th	143-3-2
	1-5/8 - 6	RA, RB	3rd or 4th	143-3
	*3/4 - 8	RA (Start S/N 70017)	4th or 5th	-
	1-1/4 - 8	RA, RB	4th or 5th	143-3-2
New Britain	1-5/8 - 8	RA, RB	4th or 5th	143-16
	1 - 6	51	4th or 5th	143-10
	1-1/4 - 6	52	4th or 5th	143-10
	1-5/8 - 6	61	3rd or 4th	143-9
	1-5/8 - 6	62	4th or 5th	143-9
	1-1/4 - 8	812	5th or 6th	143-9
Wickman	1-5/8 - 8	816	5th or 6th	143-9
	**5/8 - 6		4th or 5th	143-13
	**1 - 6; 1 - 8		4th or 5th	151-300
	1-3/8 - 6		4th or 5th	143-2

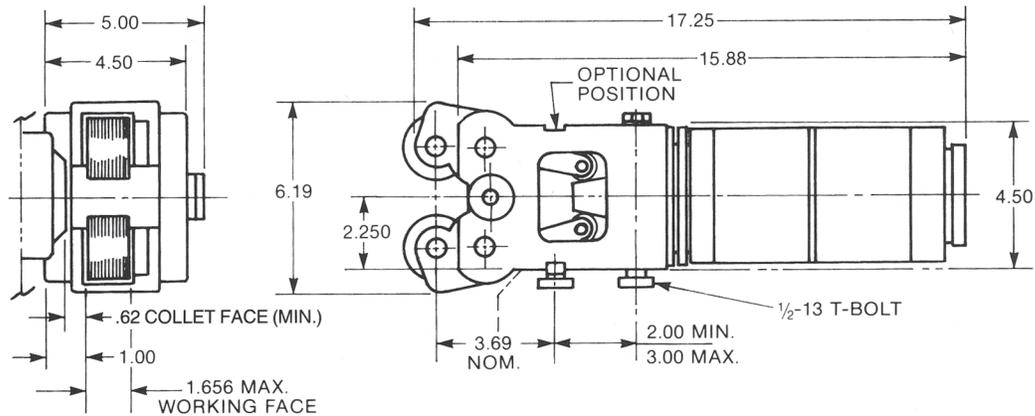
Common applications only - please contact factory for complete application information.

*Requires increased cross slide travel for max. clearance

**Requires auxiliary cross slide motion for max. clearance

Winter Pinch Type Attachment

Model 160-SA



160-SA THREAD ROLLING CAPACITY

10 - 32 To 1-7/8 - 18	1/8 - 27 NPT To 1-1/2 - 11-1/2 NPT	M6 x 1.0 To M45 x 3.0
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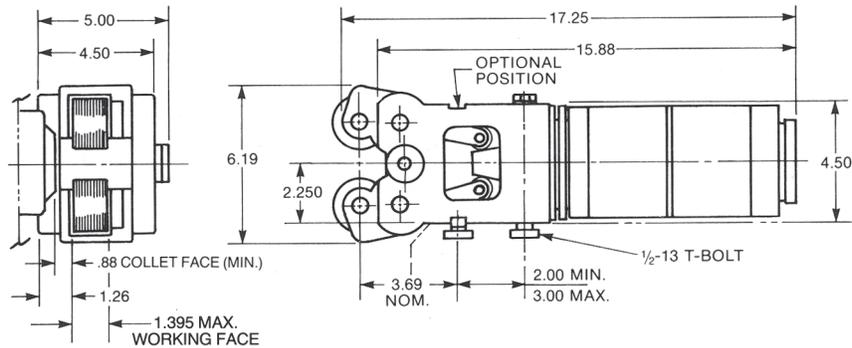
141-SA MACHINE APPLICATION CHART

MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1 - 6	RAS	3rd or 4th	-
	*1-1/4 - 6	RA	3rd or 4th	-
	1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA, RAS, RB	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB (Finish S/N 84806)	3rd or 4th	-
	2-5/8 - 6	RA, RB (Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-1/4 - 8	RA, RB	4th or 5th	-
	*1-5/8 - 8	RBN	4th or 5th	-
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	3-1/2 - 8	RB	4th or 5th	160-304
4 - 8	RB	4th or 5th	160-304	

*Requires increased cross slide travel for max. clearance

Winter Pinch Type Attachment

Model 162-SA Heavy-Duty Series



162-SA THREAD ROLLING CAPACITY

10 - 32 To 1-7/8 - 18	1/8 - 27 NPT To 1-1/2 - 11 1-2 NPT	M6 x 1.0 To M45 x 3.0
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162-SA MACHINE APPLICATION CHART

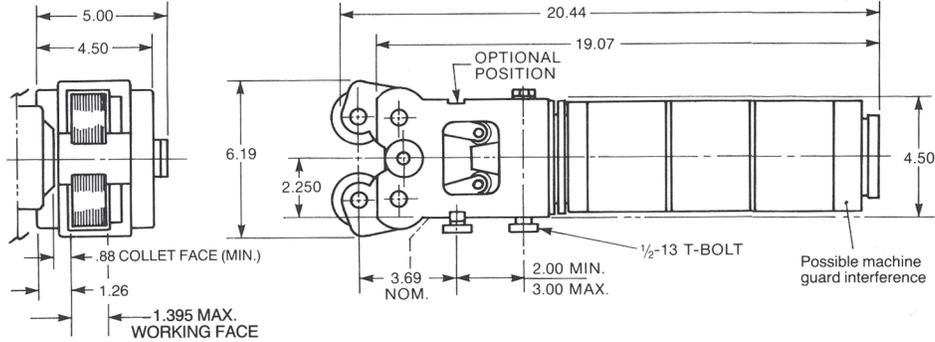
MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1 - 6	RAS	3rd or 4th	-
	*1-1/4 - 6	RA	3rd or 4th	-
	1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA, RAS, RB	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Finish S/N 84806)	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-1/4 - 8	RA, RB	4th or 5th	-
	*1-5/8 - 8	RBN	4th or 5th	-
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	3-1/2 - 8	RB	4th or 5th	160-304
	4 - 8	RB	4th or 5th	160-304

Common applications only - please contact factory for complete application information

*Requires increased cross slide travel for max. clearance.

Winter Pinch Type Attachment

Model 163-SA Heavy-Duty Series



162-SA THREAD ROLLING CAPACITY

10 - 32 To 1-7/8 - 18	1/8 - 27 NPT To 1-1/2 - 11 1-2 NPT	M6 x 1.0 To M45 x 3.0
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163-SA MACHINE APPLICATION CHART

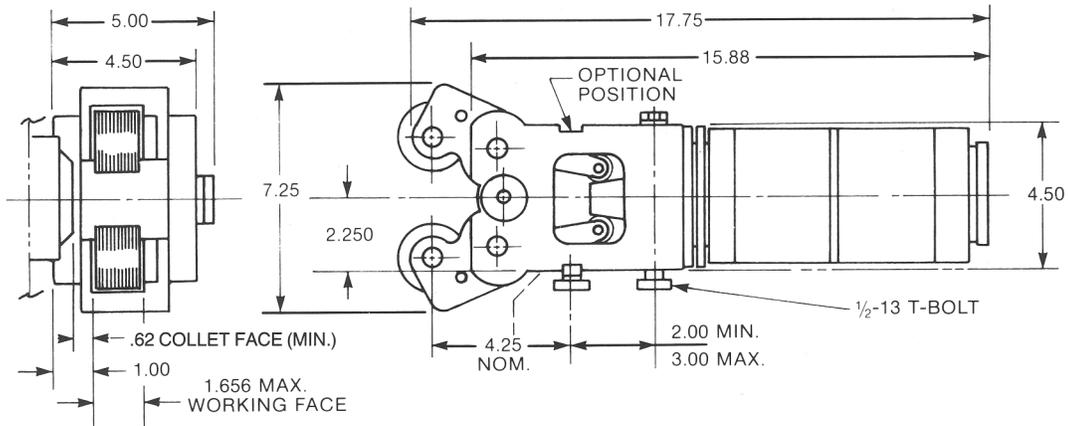
MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1 - 6	RAS	3rd or 4th	-
	*1-1/4 - 6	RA	3rd or 4th	-
	1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA, RAS, RB	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Finish S/N 84806)	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-1/4 - 8	RA, RB	4th or 5th	-
	*1-5/8 - 8	RBN	4th or 5th	-
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	3-1/2 - 8	RB	4th or 5th	160-304
	4 - 8	RB	4th or 5th	160-304

Common applications only - please contact factory for complete application information

*Requires increased cross slide travel for max. clearance.

Winter Pinch Type Attachment

Model 170-SA



170-SA THREAD ROLLING CAPACITY

5/16 - 18 To	1/2 - 14 NPT To	M10 x 1.5 To
2-1/4 - 20	1-1/2 - 11-1/2 NPT	M56 x 3.0

170-SA MACHINE APPLICATION CHART

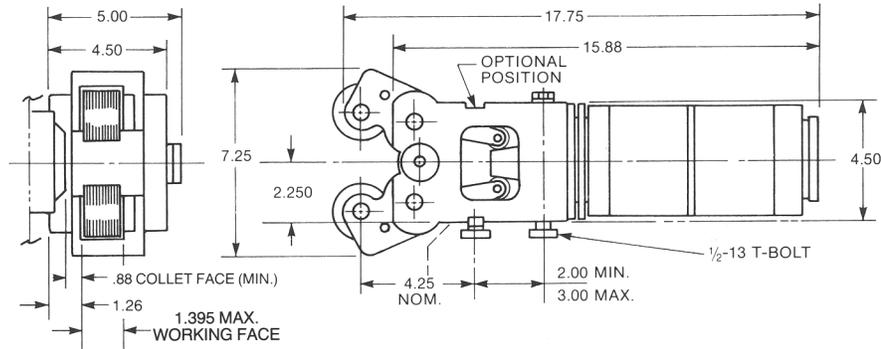
MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA	3rd or 4th	-
	*2 - 6	RB, RAS	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB (Last S/N 84806)	3rd or 4th	-
	2-5/8 - 6	RA, RB (Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	2-5/8 - 8	RA, RB	4th or 5th	-
	3-1/2 - 8	RB	4th or 5th	160-304
	4 - 8	RB	4th or 5th	160-304

Common applications only - please contact factory for complete application information.

*Requires increased cross slide travel for max. clearance.

Winter Pinch Type Attachment

Model 172-SA Heavy-Duty Series



172-SA THREAD ROLLING CAPACITY

5/16 - 18 To 2-1/4 - 20	1/2 - 14 NPT To 1-1/2 - 11 1-2 NPT	M10 x 1.5 To M56 x 3.0
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172-SA MACHINE APPLICATION CHART

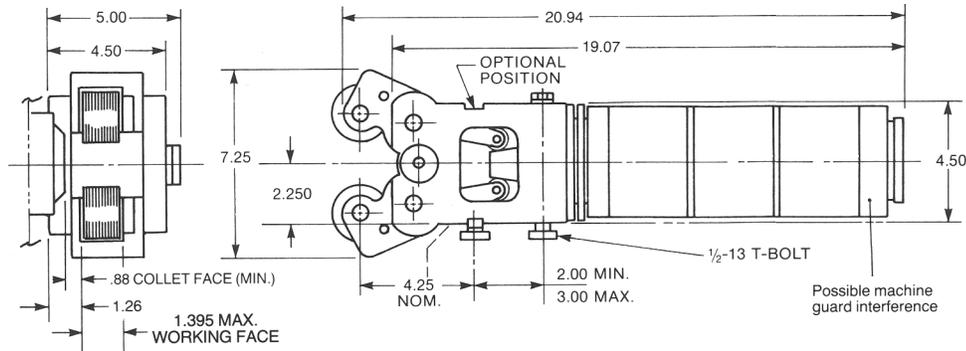
MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA	3rd or 4th	-
	*2 - 6	RB, RAS	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Last S/N 84806)	3rd or 4th	-
	2-5/8 - 6	RA, RB		
		(Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	2-5/8 - 8	RA, RB	4th or 5th	-
	3-1/2 - 8	RB	4th or 5th	160-304
4 - 8	RB	4th or 5th	160-304	

Common applications only - please contact factory for complete application information

*Requires increased cross slide travel for max. clearance

Winter Pinch Type Attachment

Model 173-SA Heavy-Duty Series



173-SA THREAD ROLLING CAPACITY

5/16 - 18	1/2 - 14 NPT	M10 x 1.5
To	To	To
2-1/4 - 20	1-1/2 - 11 1-2 NPT	M56 x 3.0

173-SA MACHINE APPLICATION CHART

MACHINE	SIZE	MODEL	POSITION	ADAPTER #
National Acme	*1-5/8 - 6	R, RA, RB	3rd or 4th	-
	2 - 6	R, RA	3rd or 4th	-
	*2 - 6	RB, RAS	3rd or 4th	-
	2-1/4 - 6	R, RA	3rd or 4th	-
	2-5/8 - 6	R	3rd or 4th	-
	2-5/8 - 6	RA, RB (Last S/N 84806)	3rd or 4th	-
	2-5/8 - 6	"RA, RB (Start S/N 84807)	3rd or 4th	160-304
	3-1/2 - 6	RB	3rd or 4th	160-304
	4 - 6	RB	3rd or 4th	160-304
	*1-5/8 - 8	RA, RB	4th or 5th	160-302
	*2 - 8	RB	4th or 5th	160-302
	2-5/8 - 8	RA, RB	4th or 5th	-
	3-1/2 - 8	RB	4th or 5th	160-304
	4 - 8	RB	4th or 5th	160-304

Common applications only - please contact factory for complete application information

*Requires increased cross slide travel for max. clearance

C.J. Winter Components

125SA: Components

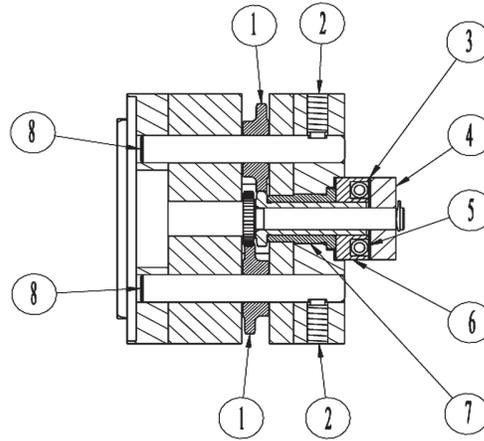
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125600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

125672-CURRENT

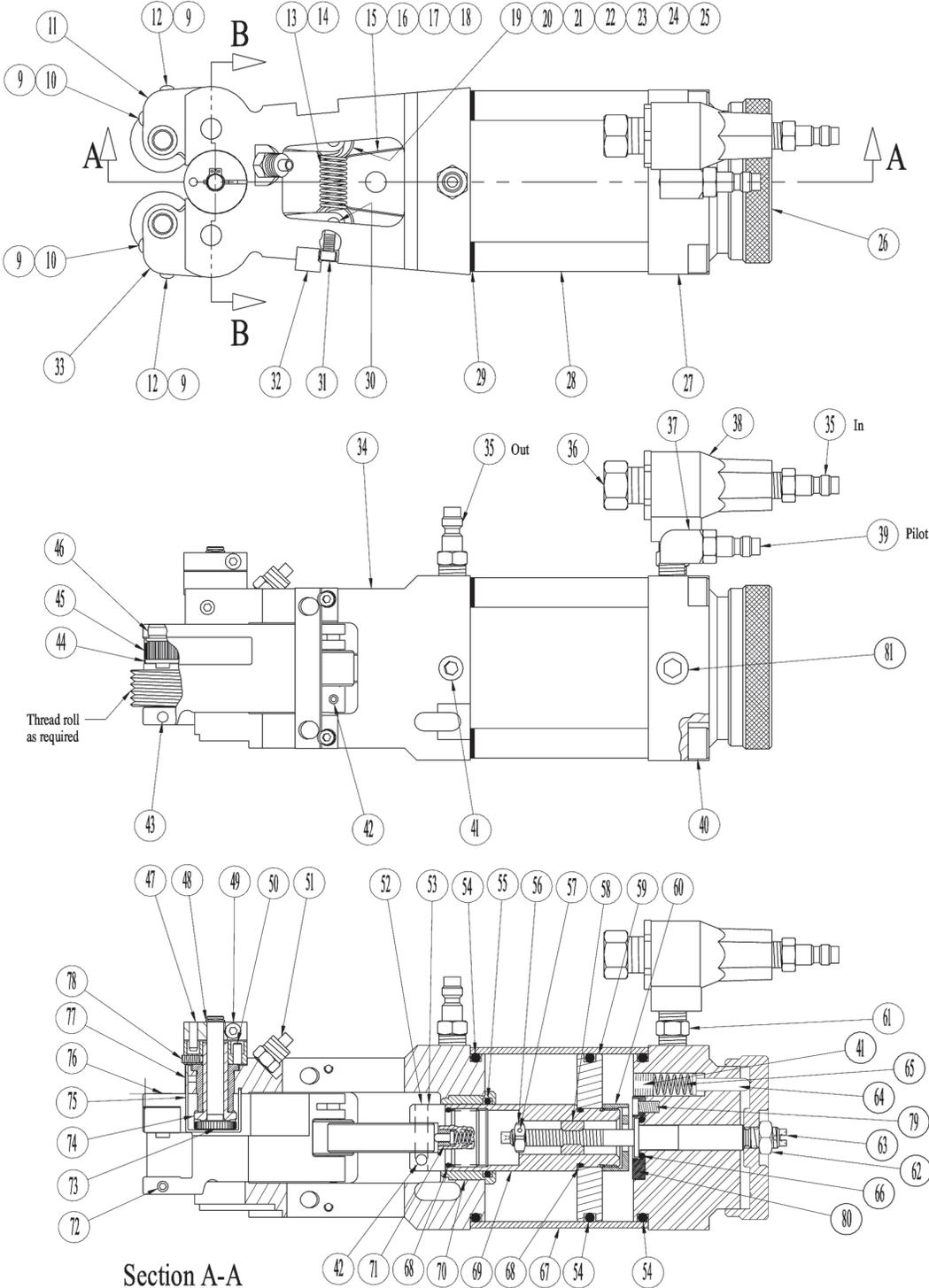
REVISION: F



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	125012	2	Idler Gear	41	140305	5	Screw
2	125005	2	Screw	42	125043	3	Screw
3	125019	1	Cover Plate	43	141367	2	Screw
4	125020	1	Adjusting Collar	44	125008	2	Roll Gear Washer
5	125023	2	Compensator Spring	45	125007	2	Roll Gear
6	125016	1	Compensator Spring Retainer	46	125074	2	Roll Arm Thrust Bushing
7	125076	1	Compensator Bushing	47	125021	1	Adjusting Collar Pin
8	125004	2	Fulcrum Pin	48	125025	1	Compensator Retaining Ring
9	125069	4	Screw	49	141379	1	Screw
10	125026	2	Roller Gear Guard	50	125017	1	Dowel Pin
11	125002	1	R.H. Roller Arm	51	141435	1	Coupling
12	125027	2	Idler Gear Guard	52	125042	1	Wedge Adapter Pin
13	125037	1	Roll Arm Spring – Short (Red)	53	125041	1	Wedge Adapter
14	125038	1	Roll Arm Spring – Long (Green)	54	125060	3	O-Ring
15	125033	1	Wedge, Narrow	55	125048	1	O-Ring
16	125034	1	Wedge, Medium	56	125056	1	Stop Nut
17	125035	1	Wedge, Large	57	160140	1	Spring Pin
18	125036	1	Wedge, Ex-Large	58	126004	1	Adjusting Nut
19	125029	2	Wedge Roller (.426 Dia.)	59	125049	1	Piston
20	125185	2	Wedge Roller (.469 Dia.)	60	126005	1	Retainer Nut
21	125030	2	Wedge Roller (.486 Dia.)	61	125414	1	Hex Nipple
22	125186	2	Wedge Roller (.531 Dia.)	62	140307	1	Jam Nut
23	125031	2	Wedge Roller (.548 Dia.)	63	134103	1	Adjusting Screw
24	125187	2	Wedge Roller (.597 Dia.)	64	141363	3	Plunger – Adj. Knob
25	125032	2	Wedge Roller (.611 Dia.)	65	134065	3	Compression Spring
26	125055	1	Adjusting Knob	66	134107	1	O-Ring
27	125138	1	Cylinder End Plate (Poppet)	67	125058	1	Cylinder
28	125062	4	Cover Tube	68	125044	2	O-Ring
29	141373	4	Cover Tube Washer	69	125046	1	Cylinder Shaft
30	125011	2	Wedge Roller Pin	70	125047	1	Cylinder Shaft Bushing
31	140207	2	Screw	71	141377	2	Plunger Assembly
32	125039	1	Key	72	125040	2	Screw
33	125003	1	L.H. Roll Arm	73	125013	1	Internal Gear
34	125001	1	Roll Arm Bracket (Sa)	74	125075	1	External Gear
35	125070	2	Quick Disconnect Plug	75	125024	1	Center Guard
36	141704	1	Muffler	76	125006	2	Carbide Roll Pin
37	134059	1	Adapter Elbow	77	125028	1	Screw
38	125180	1	Quick Exhaust Valve	78	125018	1	Screw
39	141370	1	Quick Disconnect Plug	79	134106	3	Screw
40	125061	4	Screw	80	134104	1	O-Ring Retainer
				81	125140	1	Screw

C. J. Winter Threading

125SA: Components



C. J. Winter Threading

C.J. Winter Components

141SA: Components

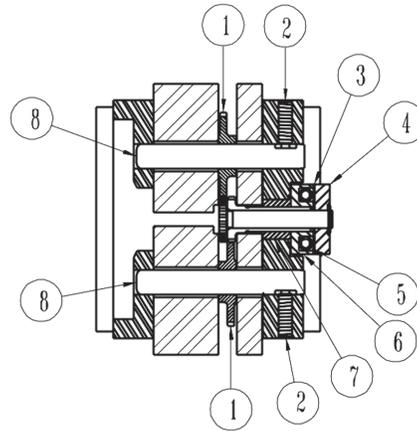
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141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

1411110-CURRENT

REVISION: E

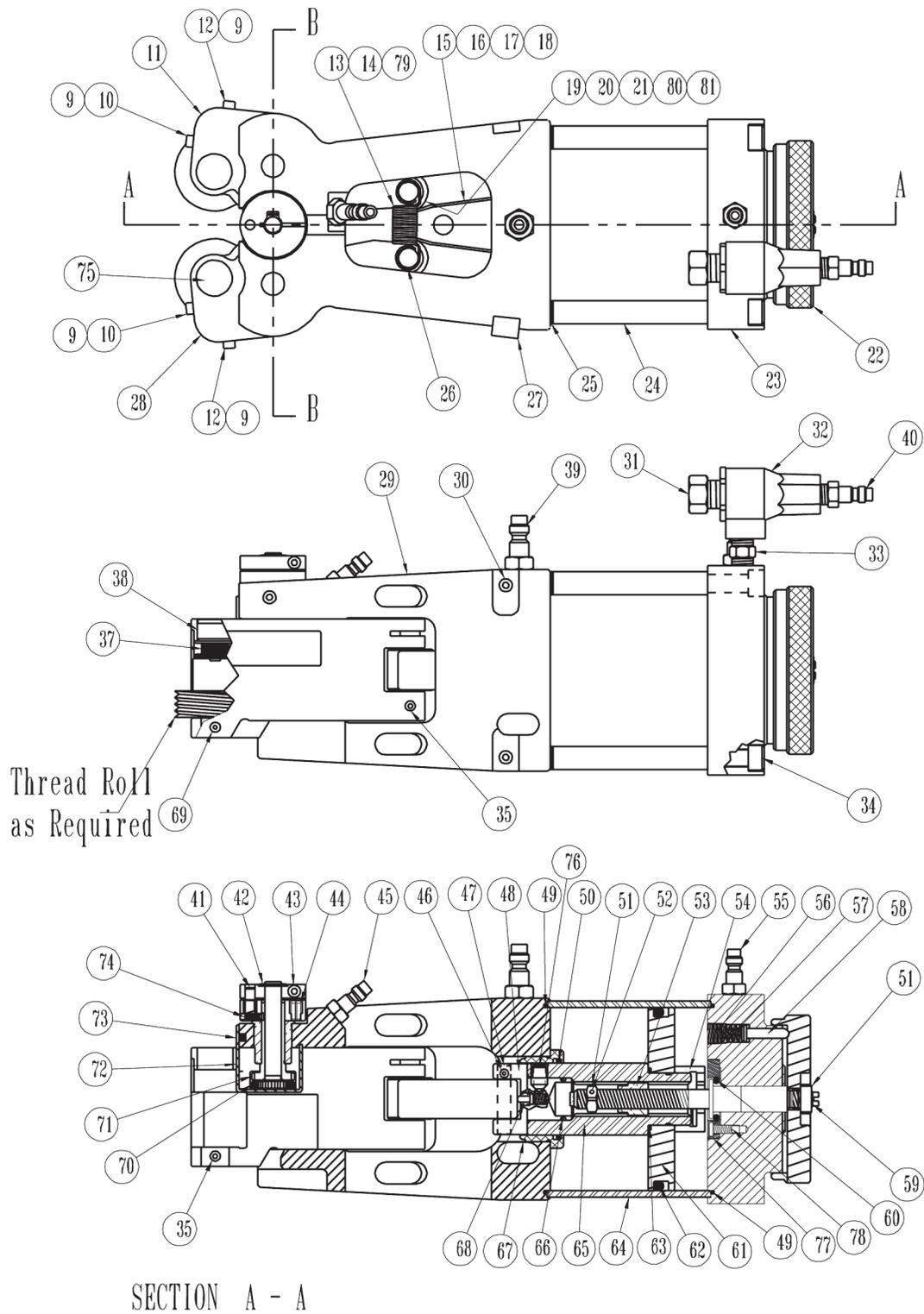


Section B-B

ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	140234	2	Idler Gear	42	141380	1	Compensator Retaining Ring
2	140294	2	Screw	43	141379	1	Screw
3	141378	1	Cover Plate	44	140285	1	Spring Pin
4	141383	1	Adjusting Collar	45	125070	1	Quick Disconnect Plug
5	140281	2	Compensator Spring	46	141368	1	Screw
6	140216	1	Spring Retainer	47	141358	1	Wedge Adapter Pin
7	141388	1	Compensator Bushing	48	141357	1	Wedge Adapter
8	140202	2	Fulcrum Pin	49	140257	2	O-Ring
9	140207	4	Screw	50	141360	1	O-Ring
10	140233	2	Roller Gear Guard	51	141375	2	Stop Nut
11	141223	1	R.H. Roller Arm	52	160140	1	Spring Pin
12	140232	2	Idler Gear Guard	53	140263	1	Adjusting Screw Nut
13	140208	1	Roll Arm Spring – Short (Red)	54	141354	1	Retainer Nut
14	140222	1	Roll Arm Spring – Long (Green)	55	141370	1	Quick Disconnect Plug
15	140235	1	Wedge, Narrow	56	140305	3	Screw
16	140236	1	Wedge, Medium	57	141364	3	Compression Spring
17	140237	1	Wedge, Large	58	141363	3	Plunger – Adj. Knob
18	140238	1	Wedge, Ex-Large	59	160411	1	Adjusting Screw
19	140219	2	Wedge Roller (.625 Dia.)	60	160414	1	O-Ring
20	140220	2	Wedge Roller (.750 Dia.)	61	141351	1	Piston
21	140221	2	Wedge Roller (.875 Dia.)	62	140256	1	O-Ring
22	141362	1	Adjusting Knob	63	141390	1	O-Ring
23	141511	1	Cylinder End Plate	64	141353	1	Cylinder
24	141374	4	Cover Tube	65	141352	1	Cylinder Shaft
25	141373	4	Cover Tube Washer	66	141359	1	O-Ring
26	140229	2	Wedge Roller Pin	67	141355	1	Cylinder Shaft Bushing
27	140203	2	Key	68	141377	2	Plunger Assy
28	141224	1	L.H. Roll Arm	69	141367	2	Screw
29	141200	1	Roll Arm Bracket	70	141382	1	Internal Gear
30	140204	2	Screw	71	141389	1	External Gear
31	141704	1	Muffler	72	140214	1	Compensator Center Guard
32	134069	1	Valve: Quick Exhaust	73	160086	1	Screw
33	141705	1	Close Nipple	74	125018	1	Screw
34	141366	1	Cylinder Screw	75	141273	2	Carbide Roll Pin
35	160054	5	Screw	76	140231	1	Screw
36	----	-	Not Used	77	160412	1	O-Ring Retainer
37	141394	2	Roll Gear w/Heavy Duty Tang	78	160413	3	Screw
38	141384	2	Roll Arm Thrust Bushing	79	141391	1	Roll Arm Spring-Medium (Yellow)
39	141372	1	Quick Disconnect Plug	80	140378	2	Wedge Roller (.688 Dia.)
40	141369	1	Quick Disconnect Plug	81	140379	2	Wedge Roller (.813 Dia.)
41	140282	1	Adjusting Collar Pin				

C. J. Winter Threading

141SA: Components



C. J. Winter Threading

C.J. Winter Components

151SA: Components

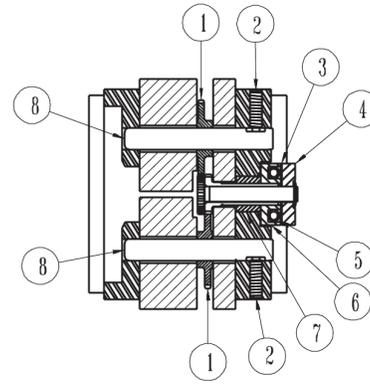
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141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

151804-CURRENT

REVISION: F

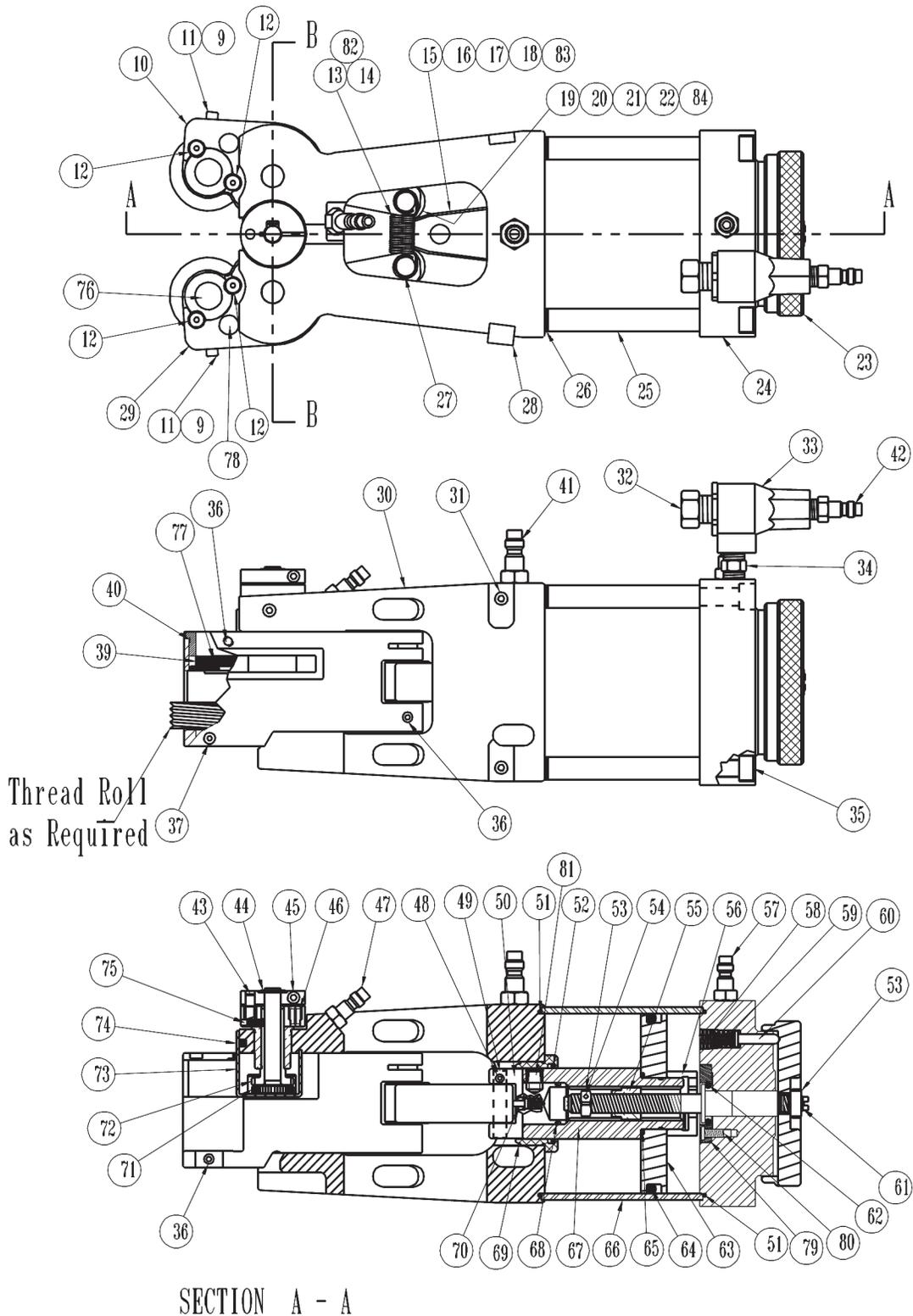


Section B-B

ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	140234	2	Idler Gear	43	140282	1	Adjusting Collar Pin
2	140294	2	Screw	44	141380	1	Compensator Retaining Ring
3	141378	1	Cover Plate	45	141379	1	Screw
4	141383	1	Adjusting Collar	46	140285	1	Spring Pin
5	140281	2	Compensator Spring	47	125070	1	Quick Disconnect Plug
6	140216	1	Spring Retainer	48	141368	1	Screw
7	141388	1	Compensator Bushing	49	141358	1	Wedge Adapter Pin
8	140202	2	Fulcrum Pin	50	141357	1	Wedge Adapter
9	140207	2	Screw	51	140257	2	O-Ring
10	151001	-	R.H. Roller Arm	52	141360	1	O-Ring
11	151009	1	Idler Gear Guard	53	141375	2	Stop Nut
12	151008	2	Screw	54	160140	1	Spring Pin
13	140208	4	Roll Arm Spring – Short (Red)	55	140263	1	Adjusting Screw Nut
14	140222	1	Roll Arm Spring – Long (Green)	56	141354	1	Retainer Nut
15	140235	1	Wedge, Narrow	57	141370	1	Quick Disconnect Plug
16	140236	1	Wedge, Medium	58	140305	3	Screw
17	140237	1	Wedge, Large	59	141364	3	Compression Spring
18	140238	1	Wedge, Ex-Large	60	141363	3	Plunger – Adj. Knob
19	140219	2	Wedge Roller (.625 Dia.)	61	160411	1	Adjusting Screw
20	140220	2	Wedge Roller (.750 Dia.)	62	160414	1	O-Ring
21	140379	2	Wedge Roller (.813 Dia.)	63	141351	1	Piston
22	140221	2	Wedge Roller (.875 Dia.)	64	140256	1	O-Ring
23	141362	2	Adjusting Knob	65	141390	1	O-Ring
24	141511	1	Cylinder End Plate (Poppet)	66	141353	1	Cylinder
25	141374	4	Cover Tube	67	141352	1	Cylinder Shaft
26	141373	4	Cover Tube Washer	68	141359	1	O-Ring
27	140229	2	Wedge Roller Pin	69	141355	1	Cylinder Shaft Bushing
28	140203	2	Key	70	141377	2	Plunger Assy
29	151002	1	L.H. Roll Arm	71	141382	1	Internal Gear
30	141200	1	Roll Arm Bracket	72	141389	1	External Gear
31	140204	2	Screw	73	140214	1	Compensator Center Guard
32	141704	1	Muffler	74	160086	1	Screw
33	134069	1	Valve: Quick Exhaust	75	125018	1	Screw
34	141705	1	Close Nipple	76	141273	2	Carbide Roll Pin
35	141366	4	Cylinder Screw	77	151003	2	Intermediate Idler Gear
36	160054	5	Screw	78	151004	2	Intermediate Idler Gear Pin
37	141367	2	Screw	79	140231	1	Screw
38	----	-	Not Used	80	160412	1	O-Ring Retainer
39	141394	2	Roll Gear w/Heavy Duty Tang	81	160413	3	Screw
40	151007	2	Roll Arm Thrust Bushing	82	141391	1	Roll Arm Spring-Medium (Yellow)
41	141372	1	Quick Disconnect Plug	83	151006	1	Wedge, Auxiliary
42	141369	1	Quick Disconnect Plug	84	140378	2	Wedge Roller (.688 Dia.)

C. J. Winter Threading

151SA: Components



C.J. Winter Components

160SA: Components

160912: BRACKET ASSEMBLY – SHOWN HERE

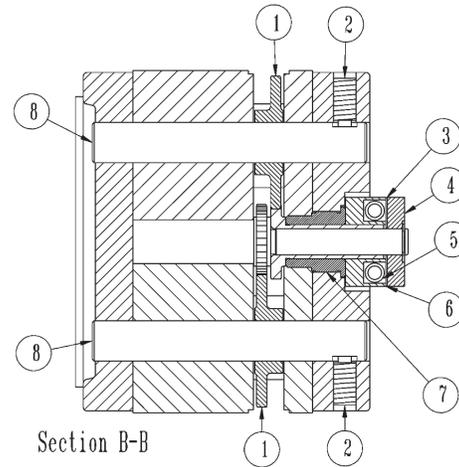
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141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

1601338-CURRENT

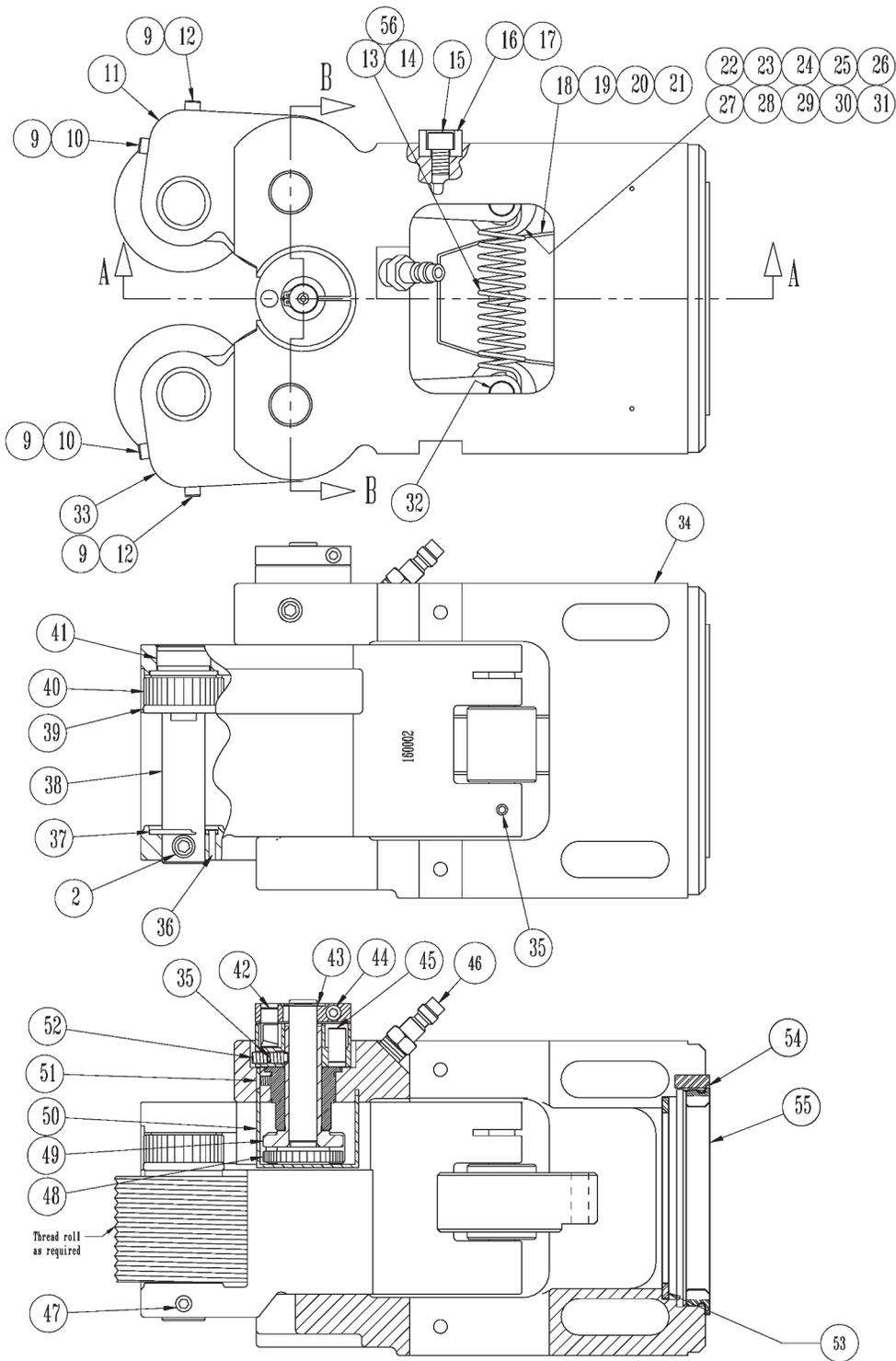
REVISION: E



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	160005	2	Idler Gear	29	160007	2	Wedge Roller (1.075 Dia.)
2	160103	4	Screw	30	160406	2	Wedge Roller (1.156 Dia.)
3	160102	1	Cover Plate	31	160029	2	Wedge Roller (1.312 Dia.)
4	160092	1	Adjusting Collar	32	160091	2	Wedge Roller Pin
5	160051	2	Compensator Spring	33	160002	1	L.H. Roll Arm
6	160050	1	Spring Retainer	34	160001QR	1	Quick Release Roll Arm Bracket (SA)
7	160048	1	Compensator Bushing	35	160054	5	Screw
8	160145	2	Fulcrum Pin (New Style)	36	160099	2	Dowel Pin
9	140207	4	Screw	37	160098	2	Roll Arm Thrust Washer
10	160045	2	Roller Gear Guard	38	160044	2	Carbide Roll Pin
11	160003	1	R.H. Roller Arm	39	160043	2	Roll Gear Washer
12	160046	2	Idler Gear Guard	40	160006	2	Roll Gear
13	160034	1	Roll Arm Spring – Short (Red)	41	160097	1	Roll Arm Thrust Bushing
14	160035	1	Roll Arm Spring – Long (Green)	42	160052	1	Adjusting Collar Pin
15	140204	2	Screw	43	160108	1	Retainer Ring
16	160039	2	Key	44	141379	1	Screw
17	160040	2	Stepped Key	45	160053	1	Dowel Pin
18	160030	1	Wedge, Narrow	46	125070	1	Quick Disconnect Plug
19	160031	1	Wedge, Medium	47	140280	2	Screw
20	160032	1	Wedge, Large	48	160093	1	Internal Gear
21	160033	1	Wedge, Ex-Large	49	160004	1	External Gear
22	160025	2	Wedge Roller (.625 Dia.)	50	160085	1	Center Gear Guard
23	160402	2	Wedge Roller (.688 Dia.)	51	160086	1	Screw
24	160026	2	Wedge Roller (.750 Dia.)	52	160054	1	Screw
25	160403	2	Wedge Roller (.813 Dia.)	53	160417	1	Quick Release Washer
26	160027	2	Wedge Roller (.875 Dia.)	54	838-19	2	Spring Pin
27	160405	2	Wedge Roller (.938 Dia.)	55	160416	1	Quick Release Adapter
28	160028	2	Wedge Roller (1.000 Dia.)	56	160130	1	Roll Arm Spring-Medium (Yellow)

C. J. Winter Threading

160SA: Components



C. J. Winter Threading

162SA: Components

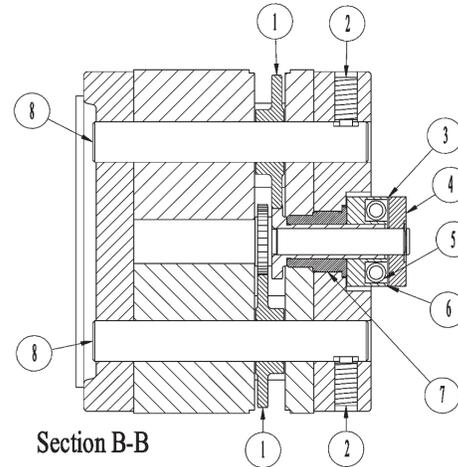
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160911QR: POWER PACK ASSEMBLY – NOT SHOWN

141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

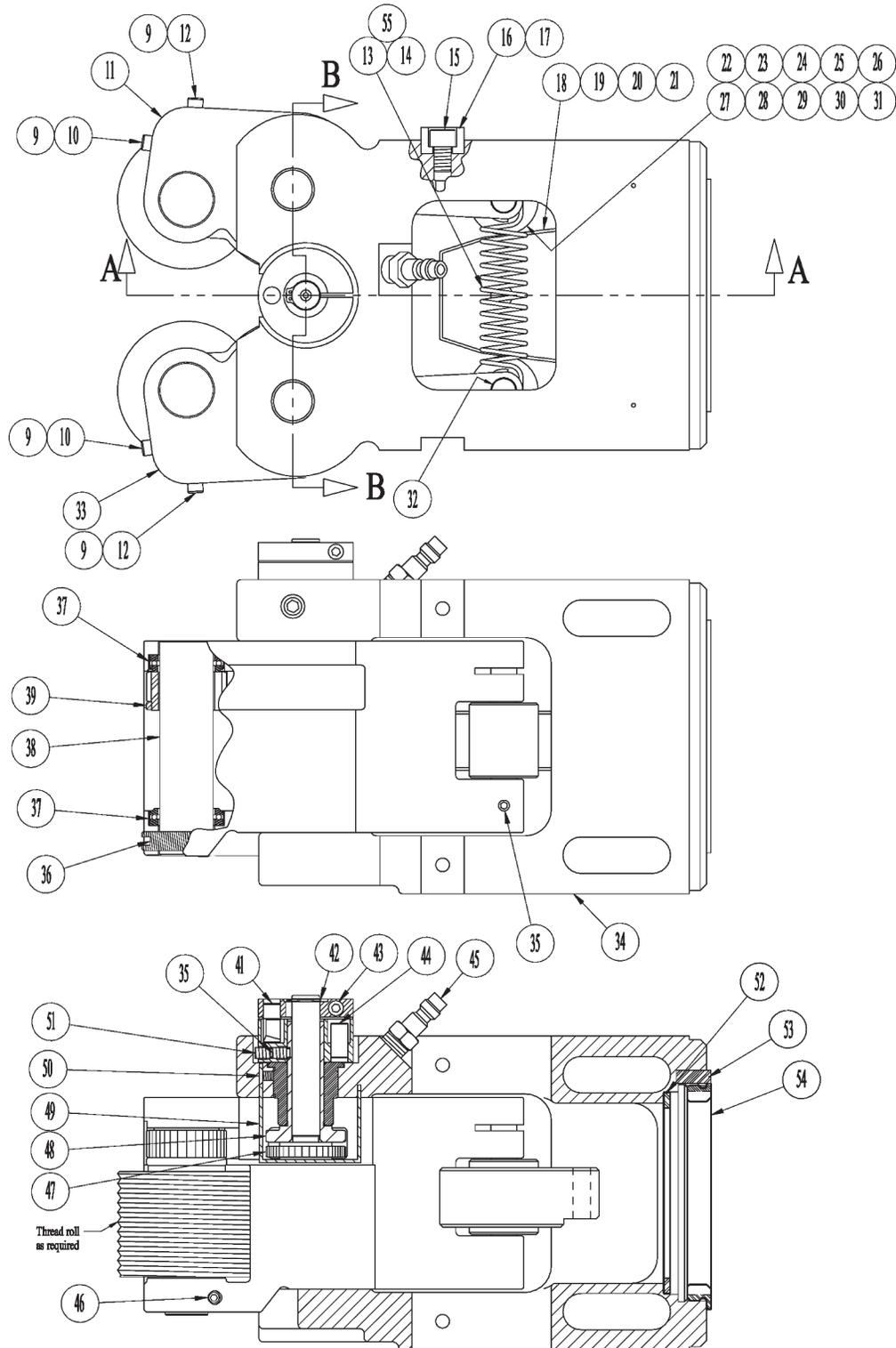
SERIAL NO. RANGE

162605-CURRENT



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	160005	2	Idler Gear	28	160028	2	Wedge Roller (1.000 Dia.)
2	160103	4	Screw	29	160007	2	Wedge Roller (1.075 Dia.)
3	160102	1	Cover Plate	30	160406	2	Wedge Roller (1.156 Dia.)
4	160092	1	Adjusting Collar	31	160029	2	Wedge Roller (1.312 Dia.)
5	160051	2	Compensator Spring	32	160091	2	Wedge Roller Pin
6	160050	1	Spring Retainer	33	162002	1	L.H. Roll Arm
7	160048	1	Compensator Bushing	34	160001QR	1	Quick Release Roll Arm Bracket (SA)
8	160145	2	Fulcrum Pin (New Style)	35	160054	5	Screw
9	140207	4	Screw	36	162003	2	Adjusting Screw
10	160045	2	Roller Gear Guard	37	162004	4	Thrust Bearing
11	162001	1	R.H. Roller Arm	38	162007	2	Carbide Roll Pin
12	160046	2	Idler Gear Guard	39	162020	2	Roll Gear
13	160034	1	Roll Arm Spring – Short (Red)	40			
14	160035	1	Roll Arm Spring – Long (Green)	41	160052	1	Adjusting Collar Pin
15	140204	2	Screw	42	160108	1	Retainer Ring
16	160039	2	Key	43	141379	1	Screw
17	160040	2	Stepped Key	44	160053	1	Dowel Pin
18	160030	1	Wedge, Narrow	45	125070	1	Quick Disconnect Plug
19	160031	1	Wedge, Medium	46	162008	2	Screw
20	160032	1	Wedge, Large	47	160093	1	Internal Gear
21	160033	1	Wedge, Ex-Large	48	160004	1	External Gear
22	160025	2	Wedge Roller (.625 Dia.)	49	160085	1	Center Gear Guard
23	160402	2	Wedge Roller (.688 Dia.)	50	160086	1	Screw
24	160026	2	Wedge Roller (.750 Dia.)	51	160054	1	Screw
25	160403	2	Wedge Roller (.813 Dia.)	52	160417	1	Quick Release Washer
26	160027	2	Wedge Roller (.875 Dia.)	53	838-19	2	Spring Pin
27	160405	2	Wedge Roller (.938 Dia.)	54	160416	1	Quick Release Adapter
				55	160130	1	Roll Arm Spring-Medium (Yellow)

162SA: Components



C.J. Winter Threading

C.J. Winter Components

170SA: Components

170903: BRACKET ASSEMBLY – SHOWN HERE

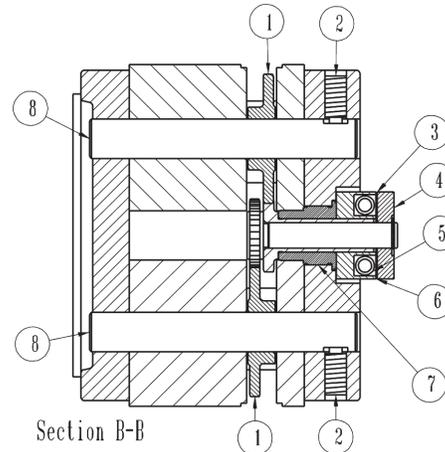
160911QR: POWER PACK ASSEMBLY – NOT SHOWN

141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

170196-CURRENT

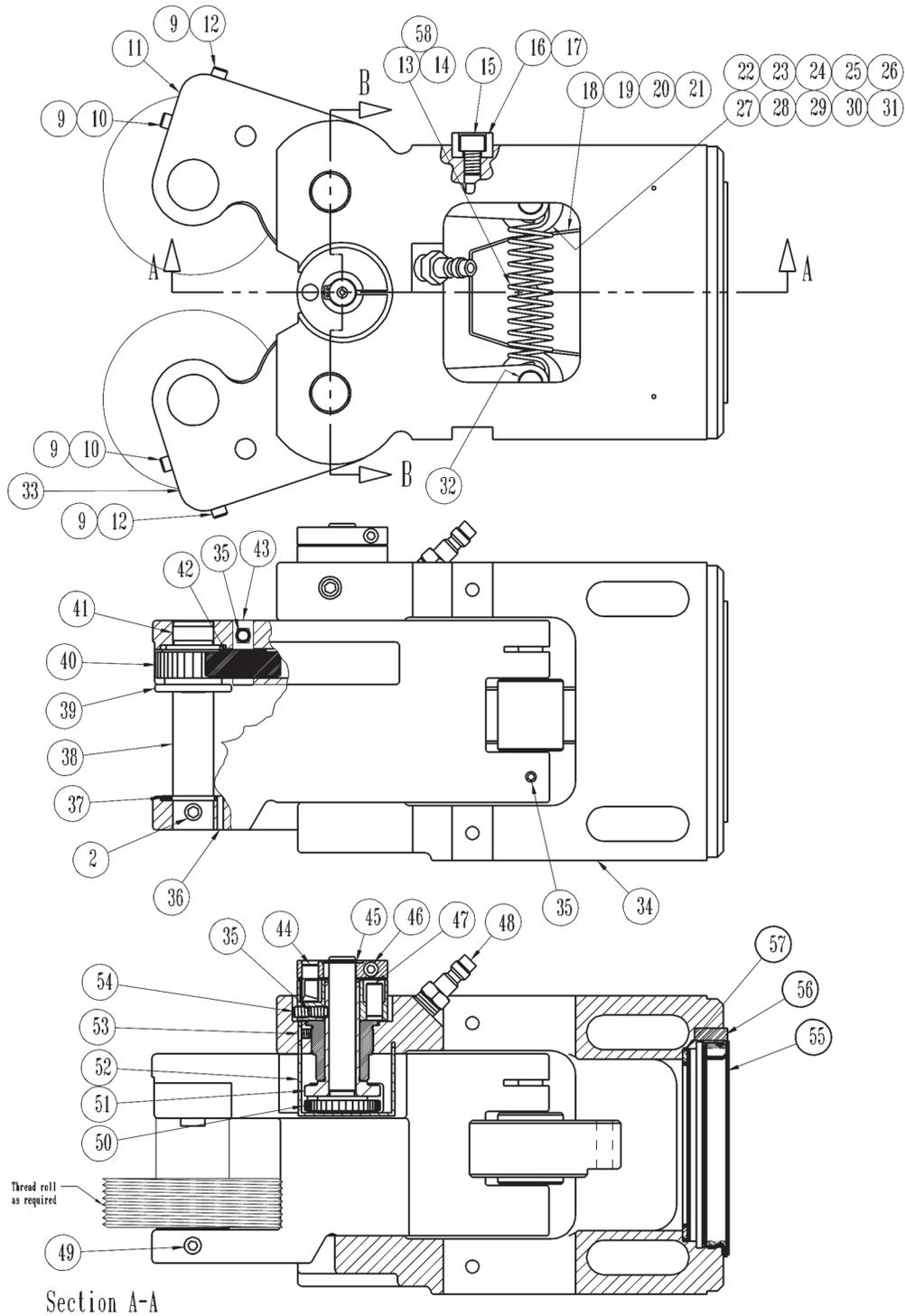
REVISION: D



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	160005	2	Idler Gear	29	160007	2	Wedge Roller (1.075 Dia.)
2	160103	4	Screw	30	160406	2	Wedge Roller (1.156 Dia.)
3	160102	1	Cover Plate	31	160029	2	Wedge Roller (1.312 Dia.)
4	160092	1	Adjusting Collar	32	160091	2	Wedge Roller Pin
5	160051	2	Compensator Spring	33	170004	1	L.H. Roll Arm
6	160050	1	Spring Retainer	34	160001QR	1	Quick Release Roll Arm Bracket (SA)
7	160048	1	Compensator Bushing	35	160054	5	Screw
8	160145	2	Fulcrum Pin (New Style)	36	160099	2	Dowel Pin
9	140207	4	Screw	37	160098	2	Roll Arm Thrust Washer
10	170016	2	Roller Gear Guard	38	160044	2	Carbide Roll Pin
11	170003	1	R.H. Roller Arm	39	160043	2	Roll Gear Washer
12	170015	2	Idler Gear Guard	40	160006	2	Roll Gear
13	160034	1	Roll Arm Spring – Short (Red)	41	160097	1	Roll Arm Thrust Bushing
14	160035	1	Roll Arm Spring – Long (Green)	42	170013	2	Intermediate Idler Gear
15	140204	2	Screw	43	170014	2	Intermediate Idler Pin
16	160039	2	Key	44	160052	1	Adjusting Collar Pin
17	160040	2	Stepped Key	45	160108	1	Retainer Ring
18	160030	1	Wedge, Narrow	46	141379	1	Screw
19	160031	1	Wedge, Medium	47	160053	1	Dowel Pin
20	160032	1	Wedge, Large	48	125070	1	Quick Disconnect Plug
21	160033	1	Wedge, Ex-Large	49	140280	2	Screw
22	160025	2	Wedge Roller (.625 Dia.)	50	160093	1	Internal Gear
23	160402	2	Wedge Roller (.688 Dia.)	51	160004	1	External Gear
24	160026	2	Wedge Roller (.750 Dia.)	52	160085	1	Center Gear Guard
25	160403	2	Wedge Roller (.813 Dia.)	53	160086	1	Screw
26	160027	2	Wedge Roller (.875 Dia.)	54	160054	1	Screw
27	160405	2	Wedge Roller (.938 Dia.)	55	160417	1	Quick Release Washer
28	160028	2	Wedge Roller (1.000 Dia.)	56	838-19	2	Spring Pin
				57	160416	1	Quick Release Adapter
				58	160130	1	Roll Arm Spring-Medium (Yellow)

C. J. Winter Threading

170SA: Components



C. J. Winter Threading

C.J. Winter Components

172SA: Components

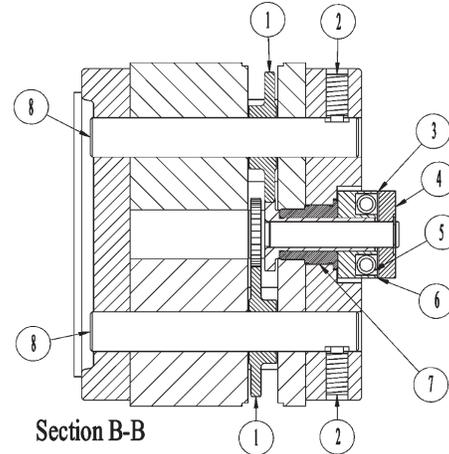
170912: BRACKET ASSEMBLY – SHOWN HERE

160911QR: POWER PACK ASSEMBLY – NOT SHOWN

141600: CONTROL VALVE ASSEMBLY – NOT SHOWN

SERIAL NO. RANGE

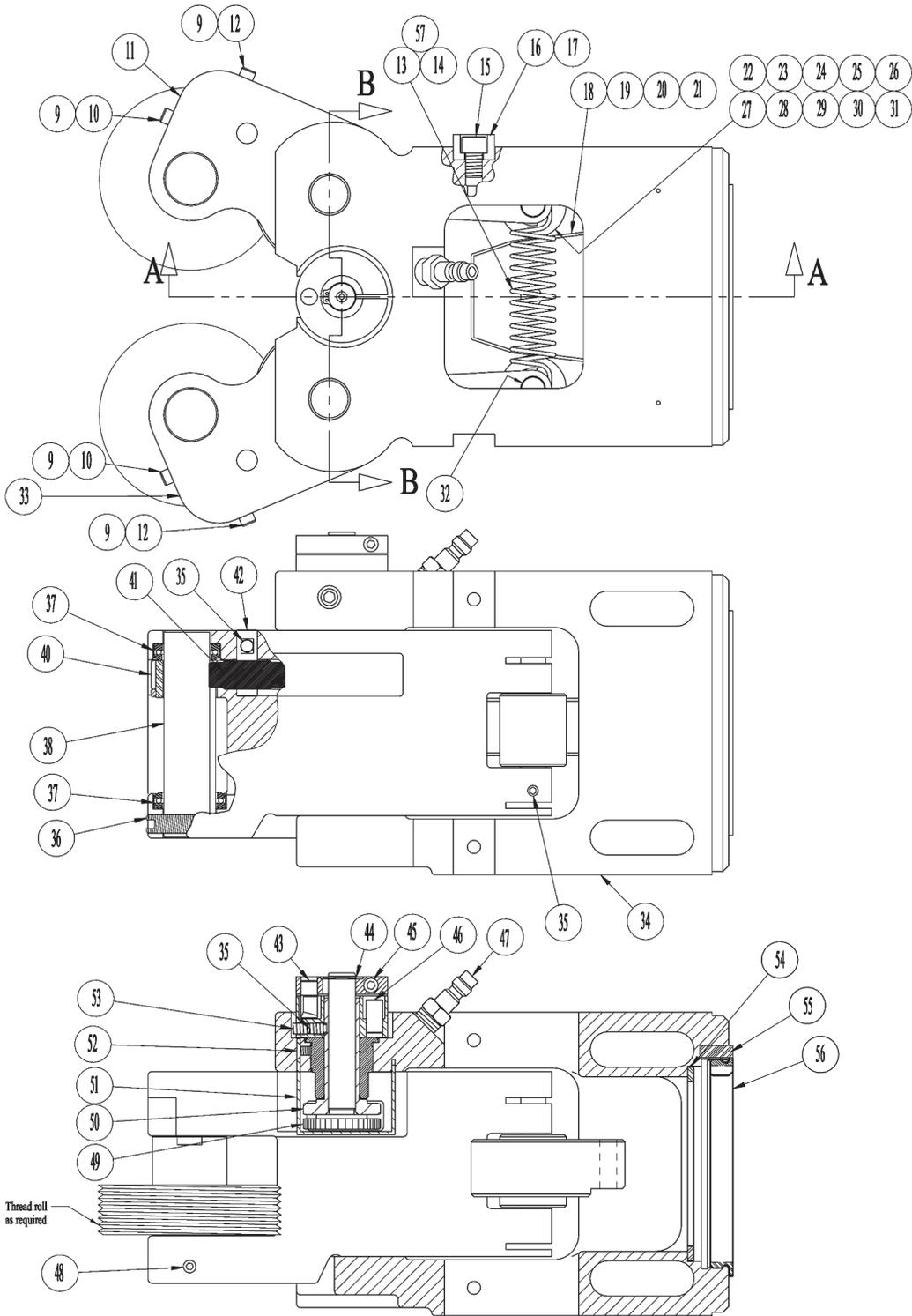
172222-CURRENT



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	160005	2	Idler Gear	29	160007	2	Wedge Roller (1.075 Dia.)
2	160103	4	Screw	30	160406	2	Wedge Roller (1.156 Dia.)
3	160102	1	Cover Plate	31	160029	2	Wedge Roller (1.312 Dia.)
4	160092	1	Adjusting Collar	32	160091	2	Wedge Roller Pin
5	160051	2	Compensator Spring	33	172002	1	L.H. Roll Arm
6	160050	1	Spring Retainer	34	160001QR	1	Quick Release Roll Arm Bracket (SA)
7	160048	1	Compensator Bushing	35	160054	5	Screw
8	160145	2	Fulcrum Pin (New Style)	36	162003	2	Adjusting Screw
9	140207	4	Screw	37	162004	4	Thrust Bearing
10	170016	2	Roller Gear Guard	38	162007	2	Carbide Roll Pin
11	172001	1	R.H. Roller Arm	39			
12	172003	2	Idler Gear Guard	40	162020	2	Roll Gear
13	160034	1	Roll Arm Spring – Short (Red)	41	170013	2	Intermediate Idler Gear
14	160035	1	Roll Arm Spring – Long (Green)	42	170014	2	Idler Pin
15	140204	2	Screw	43	160052	1	Adjusting Collar Pin
16	160039	2	Key	44	160108	1	Retainer Ring
17	160040	2	Stepped Key	45	141379	1	Screw
18	160030	1	Wedge, Narrow	46	160053	1	Dowel Pin
19	160031	1	Wedge, Medium	47	125070	1	Quick Disconnect Plug
20	160032	1	Wedge, Large	48	162008	2	Screw
21	160033	1	Wedge, Ex-Large	49	160093	1	Internal Gear
22	160025	2	Wedge Roller (.625 Dia.)	50	160004	1	External Gear
23	160402	2	Wedge Roller (.688 Dia.)	51	160085	1	Center Gear Guard
24	160026	2	Wedge Roller (.750 Dia.)	52	160086	1	Screw
25	160403	2	Wedge Roller (.813 Dia.)	53	160054	1	Screw
26	160027	2	Wedge Roller (.875 Dia.)	54	160417	1	Quick Release Washer
27	160405	2	Wedge Roller (.938 Dia.)	55	838-19	2	Spring Pin
28	160028	2	Wedge Roller (1.000 Dia.)	56	160416	1	Quick Release Adapter
				57	160130	1	Roll Arm Spring-Medium (Yellow)

C. J. Winter Threading

172SA: Components



C. J. Winter Threading

C.J. Winter Components

141600: Control Valve Assembly

ATTACHMENT RANGE
134, 141, 142, 151, 152,
160 SERIES, 170 SERIES

REVISION: C

Note:

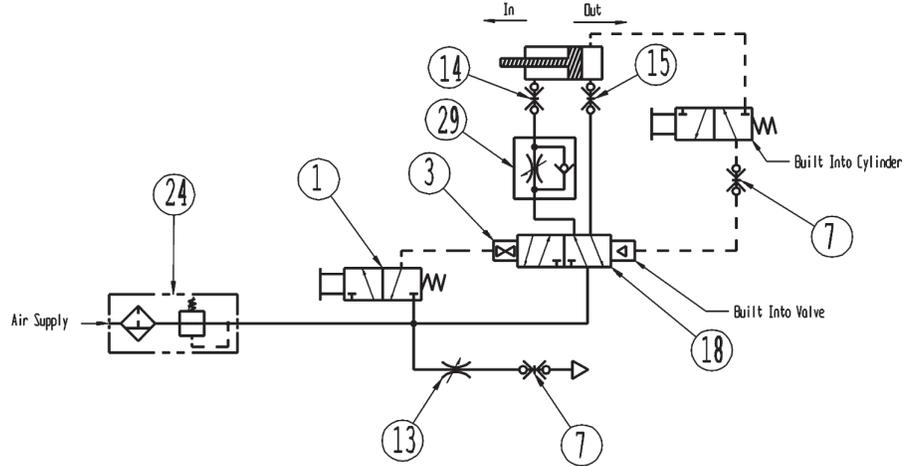
- Assembly Components Must Comply To
- CJ Winter Engineering Standards E1116 & E1118
- As Well As Standard Operating Procedure #106

Replacement Parts for Item #19

- End Cap Repair Kit
- O-Ring (Spool) Repair Kit
- 4-Way Replacement Kit

141600 Control Valve has been supplied with attachments starting serial #s:

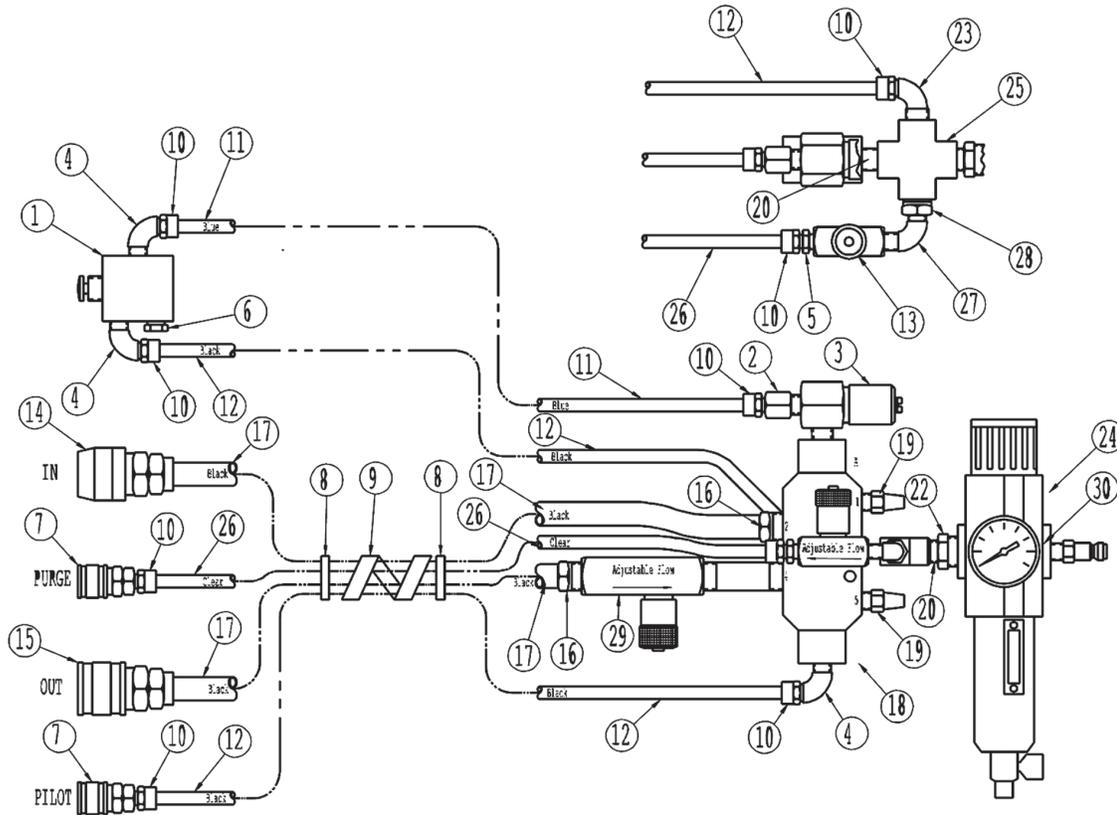
134xxx	145xxx	160xxx	163xxx	172xxx	177xxx
141xxx	151xxx	161xxx	165xxx	173xxx	178xxx
142xxx	152xxx	162xxx	170xxx	175xxx	



ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	125-404	1	Control Valve (3 Way)	16	141-447	2	Hose Fitting
2	141-603	1	Female Connector	17	141-448	2	Hose (Black)
3	141-602	1	Operator	18	141-630	1	Control Valve (4 Way)
4	125-407	3	Elbow 90	19	141-704	2	Muffler
5	125-410	1	Hose (Tube) Fitting	20	141-705	2	Nipple (Short)
6	125-411	1	Muffler	21	141-707	1	Nipple (Long)
7	125-412	2	Quick Disconnect Plug	22	141-708	1	Reducer Bushing
8	125-418	2	Inter-Tie	23	141-709	1	Elbow
9	125-419	1	Spiral Wrapping (24 In.)	24	141-716	1	Filter Regulator Assy
10	125-422	8	Nut & Sleeve Assy	25	141-711	1	Cross
11	125-426	1	Tubing _" x 48" Blue	26	141-712	1	Tubing (Clear) 48"
12	125-427	2	Tubing _" x 48" Black	27	141-713	1	Elbow (Male to Male)
13	141-733	1	Flow Control-Purge Line	28	141-714	1	Bushing
14	141-414	1	Quick Disconnect Plug	29	141-731	1	Flow Control Valve
15	141-415	1	Quick Disconnect Plug	30	141-433	1	Gage

C.J. Winter Threading

141600: Control Valve Assembly



Note:
 Assembly Components Must Comply To CJ Winter
 Engineering Standards E1116 & E1118 As Well As
 Standard Operating Procedure #106

141-600
 CONTROL VALVE ASSEMBLY
 WINTER MACHINE WORKS

C.J. Winter Components

160911QR:

Double Power Pack Assembly

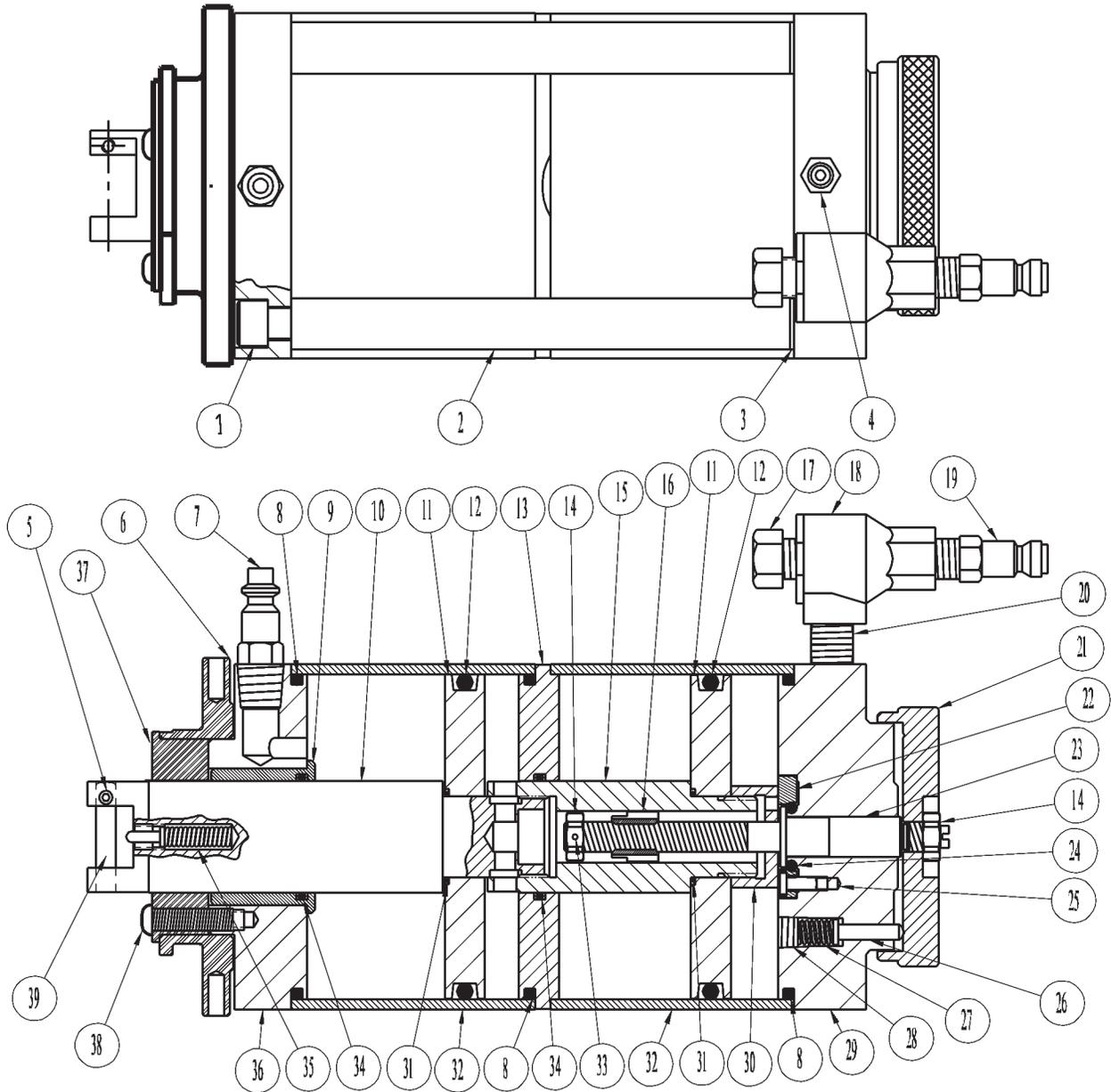
POPPET STYLE

8/96 - PRESENT

REVISION: A

ITEM	PART#	QTY	DESCRIPTION	ITEM	PART#	QTY	DESCRIPTION
1	160018	4	Screw	21	141362	1	Adjusting Knob
2	160019	4	Cover Tube	22	160412	1	O-Ring Retainer
3	160020	4	Cover Tube Washer	23	160411	1	Adjusting Screw
4	141370	1	Quick Disconnect Plug	24	160414	1	O-Ring
5	141368	1	Screw	25	160413	3	Screw
6	160415	1	Quick Release Lock Ring	26	141363	3	Index Plunger
7	141372	1	Quick Disconnect Plug	27	141364	3	Compression Spring
8	160023	3	O-Ring	28	140305	3	Screw
9	160015	1	Front Plate Bushing	29	160410	1	Cylinder End Plate
10	160012	1	Cylinder Front Shaft	30	141354	1	Retainer Nut
11	160010	2	Piston	31	141390	2	O-Ring
12	160021	2	O-Ring	32	160011	2	Cylinder
13	160016	1	Baffle Plate	33	160140	1	Spring Pin
14	141375	2	Stop Nut	34	141360	2	O-Ring
15	160013	1	Cylinder Rear Shaft	35	160070	2	Plunger Assembly
16	140263	1	Adjusting Screw Nut	36	160009	1	Cylinder Front Plate
17	141704	1	Muffler	37	160418	1	Quick Release Retainer Plate
18	134069	1	Quick Exhaust Valve	38	160419	3	Screw
19	141369	1	Quick Disconnect Plug	39	141358	1	Wedge Adapter Pin
20	141705	1	Close Nipple				

160911QR: Double Power Pack Assembly



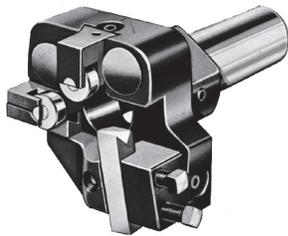
Threading Problem Checklist

PROBLEM	CAUSE	SOLUTION
SLIVER OR FLAKES ON THREADS	<ol style="list-style-type: none"> 1. Rolls not in match. 2. Center line of rolls not parallel with 3. Loose or worn cross slide or adapter. 4. Overfilling rolls. 5. Material not adaptable to cold-working. 6. Rough finish on blank. 7. Seamy stock. 8. Feed rate too slow, causing rolls to 9. Incorrect roll diameter. 	<ol style="list-style-type: none"> 1. Resynchronize rolls. 2. Check slide for alignment center line of work. 3. Check slide gib and springs. Tighten adapter if used. 4. Reduces blank diameter. 5. Change material. Check with material supplier. 6. Re grind tooling. 7. Not suitable for roll threading. 8. Increase rate of penetration. 9. Use correct rolls for job.
DRUNKEN THREADS	<ol style="list-style-type: none"> 1. Rolls not in match. 2. Center line of rolls not parallel with 3. Inaccurate rolls. 4. Work bending during rolling. 	<ol style="list-style-type: none"> 1. Resynchronize rolls 2. Check slide for alignment. center line of work 3. Replace rolls. 4. Support part during rolling operation or slow down penetration rate if possible.
OFFSIZE THREADS <ol style="list-style-type: none"> 1. Pitch diameter and major diameter, both oversize 2. Pitch diameter oversize, major diameter correct size 3. Pitch diameter oversize, major diameter undersize 4. Pitch diameter correct size, major diameter oversize 5. Pitch diameter correct size, major diameter undersize 6. Pitch diameter undersize, major diameter oversize 7. Pitch diameter undersize, major diameter correct size 8. Pitch diameter and major diameter both undersize 	<ol style="list-style-type: none"> 1. Oversize blanks. 2. Oversize blanks. If finished thread is full, thread on roll is too shallow. 3. Insufficient penetration on rolls. If finished thread is full, thread on roll is too shallow. 4. Blanks too large. Thread on roll deeper than necessary. 5. Blank too small. If finished thread is full, thread on roll is too shallow. 6. Excessive penetration. Thread on roll deeper than necessary. 7. Blank too small. Thread on roll deeper than necessary. 8. Blank too small. 	<ol style="list-style-type: none"> 1. Reduce blank diameter. 2. Use correct rolls for job. 3. Increase roll penetration. 4. Reduce blank diameter. 5. Increase blank diameter. Use correct rolls for job. 6. Reduce penetration. Use correct rolls for job. 7. Increase blank diameter. Use correct rolls for job. 8. Increase blank diameter.
OUT-OF-ROUND THREAD	<ol style="list-style-type: none"> 1. Out of round blank. 2. Center line of rolls not parallel with 3. Feed rate too high. 4. Insufficient work revolutions. 5. Material not ductile enough for cold-working. 6. Attachment not on center line of work. 	<ol style="list-style-type: none"> 1. Shave tool not reaching center or not cleaning up rough form diameter. 2. Check slide for alignment. center line of work. 3. Reduce rate of penetration. 4. Reduce rate of penetration. 5. Change material. Check with supplier. 6. Reset cross slide with gauge.
TAPERED THREADS <ol style="list-style-type: none"> 1. Pitch diameter straight. Major diameter tapered and not filled out on small end. 2. Pitch diameter and major diameter both tapered same way. 3. Pitch diameter and major diameter tapered in opposite directions and thread not filled out on end with 	<ol style="list-style-type: none"> 1. Tapered blank. 2. Tapered blank. 3. Rolls not penetrating deep enough on edge with large pitch diameter and small major diameter. 	<ol style="list-style-type: none"> 1. Straighten blank. 2. Straighten blank. 3. Support part during rolling. Part deflecting out of contact with center of rolls."
THREAD WITH EXPANDED LEAD	<ol style="list-style-type: none"> 1. Expanded lead in rolls. 2. Material extruding on short length of blank. 	<ol style="list-style-type: none"> 1. Use correct rolls. 2. Use longer blank and remove excess in another position.
THREAD WITH CONTRACTED LEAD	Contracted lead in rolls.	Use correct rolls for job.

Threading Problem Checklist

PROBLEM	CAUSE	SOLUTION
POOR THREAD FORM	<ol style="list-style-type: none"> 1. Work bending during rolling. 2. Rolls not in match. 3. Too many work revolutions. 4. Center line of rolls not parallel with center line of work. 	<ol style="list-style-type: none"> 1. Support part during rolling 2. Resynchronize rolls. 3. Increase rate of roll penetration. 4. Check slide for alignment.
THREAD FILLED OUT IN CENTER, BUT NOT TOWARDS ENDS, OR VICE VERSA.	<ol style="list-style-type: none"> 1. Blank with varying diameter from end to end. 2. Center line of rolls not parallel with center line of work. 	<ol style="list-style-type: none"> 1. Check blank for taper or shave tool not reaching center. 2. Check slide for alignment.
POOR FINISH ON THREAD.	<ol style="list-style-type: none"> 1. Overfilling rolls. 2. Rolls not synchronized. 3. Material accumulated in threads on roll. 4. Material not ductile enough for cold-working. 5. Chips from other operations between rolls and work. 6. Correspondingly poor finish on rolls. 7. Rolls that are worn or broken. 	<ol style="list-style-type: none"> 1. Check blank diameter oversize. 2. Resynchronize thread rolls. 3. Replace rolls if material cannot be removed. 4. Change material. 5. Make sure a good jet of clean oil is 6. Replace rolls. 7. Replace rolls.
SPLIT THREAD-AXIALLY. (Many users do not consider this a serious objection and by allowing their threads to pass with crests not filled out, overloading of rolls is avoided and roll life is prolonged).	<ol style="list-style-type: none"> 1. Blank too small 2. Thread on roll too deep. 	<ol style="list-style-type: none"> 1. Increase blank diameter. 2. Replace rolls with rolls of correct depth for job. Note: Special truncated rolls are available from Winter.
SCUFFED CRESTS.	<ol style="list-style-type: none"> 1. Attachment not retracting fast enough. 2. Rolls and gear train binding. 3. Rolling not on center line of work. 4. Materials accumulated in threads on rolls. 	<ol style="list-style-type: none"> 1. Increased speed of roll retraction. 2. Check gear train, remove any foreign matter. 3. Reset slide with gauge. 4. Check oil jet flowing on rolling position.
HOLLOW WORK, HOLE CLOSED IN.	<ol style="list-style-type: none"> 1. Insufficient wall thickness. 2. Improper supporting mandrel. 3. Feed rate too high causing too rapid penetration. 	<ol style="list-style-type: none"> 1. Machine hole later in operation or use smaller drill 2. Use proper supporting mandrel. 3. Slow down penetration rate.
HOLLOW WORK, HOLE ENLARGED.	<ol style="list-style-type: none"> 1. Material extruding due to insufficient wall thickness. 2. Supporting mandrel too tight. 3. Blank too large on major diameter. 4. Feed rate too high causing too rapid penetration. 	<ol style="list-style-type: none"> 1. Use smaller drill before rolling. 2. Reduce mandrel diameter. 3. Reduce blank diameter. 4. Slow down rate of penetration.
HOLLOW WORK, OUT OF ROUND.	<ol style="list-style-type: none"> 1. Material deforming due to insufficient wall thickness. 2. Feed rate too high causing too rapid penetration. 3. Too few work revolutions. 	<ol style="list-style-type: none"> 1. Drill later in cycle. 2. Slow down rate of penetration. 3. Slow down rate of penetration.
HOLLOW WORK, TAPERED THREADS.	<ol style="list-style-type: none"> 1. Uneven and insufficient wall thickness. 2. Improper mandrel not giving support where needed. 3. Feed rate too high causing too rapid penetration. 4. Taper of rolls not great enough to compensate for tendency of work to taper. 	<ol style="list-style-type: none"> 1. Drill later in cycle. 2. Check mandrel for size with hole. 3. Slow down rate of penetration. 4. Use correct rolls for job.

PART	PAGE
Box Tools - Model RT	349
Box Tools - Model RTC	350
Box Tools - Model TC-R	351
Roll Support	352
Burnishing / Knurling	353
Roller Block - Replacement Parts	354-355



Box Tools

Model T	
Model RTC	Carbide Insert
Model TC-R	Carbide Insert Self-Releasing
Model TC-RA	Releasing Carbide Insert Adapter
Model RTC-AB	Angled Insert Blocks
Model RTC-RA	Retrofit Block
Model BTT	Balanced Turning Tool
Model BTT-C	Carbide Balanced Turning Tool

Drill & Reamer Holders

Model D	Floating
Model DC	Floating Collet Type
Model DCR	Floating Collet Type Retrofit
Model DRH	Adjustable
Model U	Universal Adjustable

Tap Holders

Model AR	Adjustable Releasing
Model AT	Adjustable Non-Releasing

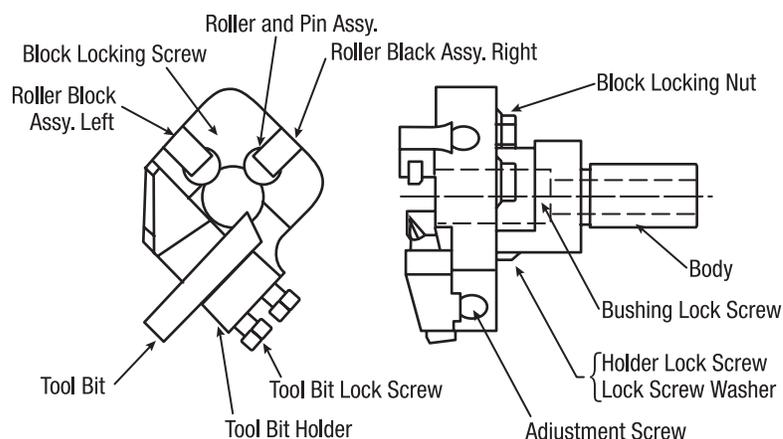
Roller Support

Model RR	2 Roller
Model 3RR	3 Roller

Burnishing/Knurling

Model C	Burishing
Model 3KN	Knurling
Model K	Swing Tool
Model SK	Cross Slide Tool

Boyar Schultz - Box Tools, Model RT



MODEL	OOORT	OORT	ORT	2RT	3RT	4RT
STD. ORDERING NUMBER	5700	5040	5140	5240	5350	5300
WITH EXTENDED ROLLERS	113356	113357	113358	113359	-----	-----
	DIMENSIONS					
Turning Capacity	3/32 to 3/8	3/32 to 3/8	3/16 to 5/8	1/4 to 7/8	5/16 to 1-1/4	5/16 to 1-1/4
Shank Size	5/8	5/8	3/4	1	1-1/4	1-1/2

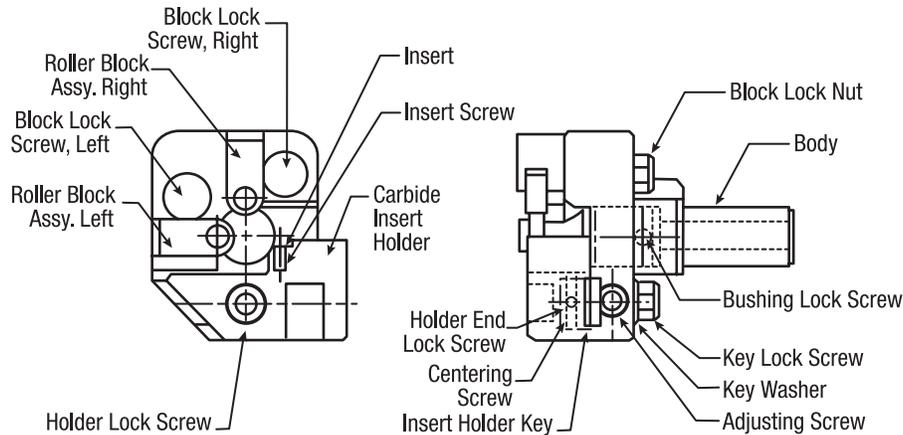
REPLACEMENT PARTS

Body	5701	5046	5146	5246	5351	51503
Tool Bit Holder	5702A	5002A	5102A	5202	5302	5302
Roller Block Assy., right	5707	5067	5167	5267	5307	5307
Roller Block Assy., left	5708	5068	5168	5268	5308	5308
Block Locking Screw (2 req.)	5719	5049	5149	5249	5319	5319
Block Locking Nut (2 req.)	6232	6232	6332	6332	6483	6483
Adjustment Screw (3 req.)	5734	7406	5134	5234	5334	5334
Holder Lock Screw	5034	5035	5135	5235	5335	5335
Lock Screw Washer	5743	5043	5143	5243	5343	5343
Tool Bit	5045	5045	5145	5245	5245	5245
Tool Bit Lock Screw (2 req.)	5737	5037	5137	5237	5337	5337
Tool Bit Lock Screw					5336	5336
Tool Bit Set Screw	1210	1210				
Bushing Lock Screw	6236	5044	6344	5244	5344	5344
Roller and Pin Assy.	105162	105163	105164	105165	105166	105166

OPTIONAL PARTS

Roller Block Assy., Right Ex. High	5709	5069	5169	5269	5309	5309
Roller Block Assy., Left Ex. High	5710	5070	5170	5270	5310	5310
Carbide Roller	5720C	5020C	5120C	5220C	5320C	5320C
Carbide Roller Pin	5725C	5025C	5125C	5225C	5325C	5325C
Spare Parts Kit	113049	113050	113051	113052	113053	113053

Boyar Schultz - Box Tools, Model RTC



MODEL	OORTC	ORTC	2RTC	3RTC
Turning Capacity	.09 - .38	.18 - .63	.25 - .88	.31 - 125
Shank Size	5/8	3/4	1"	1-1/2
Std. Ordering Number	94200	94300	94400	94500
With Extended Rollers	113431	113430	113432	113433
30° Angled Block Box Tool	96250	96350	96450	96550
45° Angled Block Box Tool	96200	96300	96400	96500

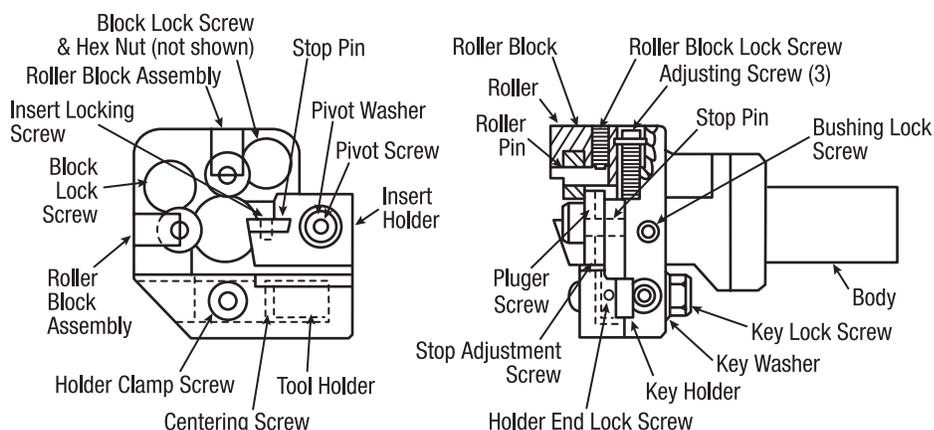
REPLACEMENT PARTS

Body	51203	51303	51403	51503
Holder, Carbide Insert	94204	94304	94404	94504
Roller Block Assy., Right	51202	51302	51402	51502
Roller Block Assy., Left	51201	51301	51401	51501
Block Lock Screw (2 Req'd)	5049	5149	5249	5319
Block Lock Screw, Right	51212			
Block Lock Nut (2 Req'd)	6232	6332	6332	6483
Adjustment Screw (3 Req'd)	7406	5135	5234	5334
Insert Holder Key	51205	51305	51405	51506
Key Lock Screw	51208	51308	51408	51508
Key Washer	5043	5143	5234	5343
Holder Lock Screw	51209	51309	51409	51509
Holder End Lock Screw	51214	51214	51314	51514
Centering Screw	51213	51313	51413	51513
Insert Lock Screw	113223	113223	113224	113224
Carbide Inserts	113272	113272	113230	113230
Wrench, Torx Lock	113225	113225	113226	113226
Bushing Lock Screw	5044	6344	5244	5344
Roller and Pin Assy	105170	105171	105172	105173

OPTIONAL PARTS

Roller Block Assy., Right Ex. High	51228	51327	51428	51528
Roller Block Assy., Left Ex. High	51227	51328	51427	51527
Carbide Insert, 1/32 Radius	113270	113270	113229	113229
Roller, 1/64 Chamfer	51220	51320	51420	51520
Carbide Roller	5020C	5120C	5220C	5320C
Carbide, 1/64 Chamfer	51220C	51320C	51420C	51520C

Boyar Schultz - Box Tools, Model TC-R



MODEL	OOTC-R	OTC-R	2TC-R	3TC-R
Turning Capacity	.09 - .38	.18 - .63	.25 - .88	.31 - 1.25
Shank Size	5/8	3/4	1"	1-1/2
Std. Ordering Number	113274	113284	113294	113304
With Extended Rollers	113385	113386	113387	113389

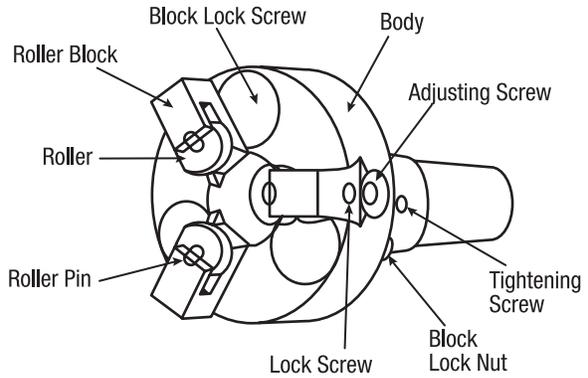
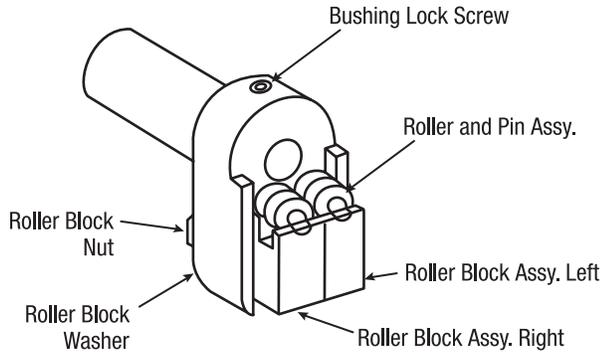
REPLACEMENT PARTS

Body	51203	51303	51403	51503
Insert Holder	113286	113286	113296	113296
Key Holder	51205	51305	51405	51506
Tool Holder	113275	113285	113295	113305
Bushing Lock Screw	5044	6344	5344	5344
Key Lock Screw	51208	51308	51408	51508
Stop Pin	113282	113282	113282	113282
Stop Adjustment Screw	3667	3667	3667	3667
Spring Plunger Screw	113290	113290	113300	113300
Centering Screw	51213	51313	51413	51513
Holder Clamp Screw	113281	113291	113301	113311
Pivot Screw	113277	113277	113297	113297
Holder End Key Lock Screw	51214	51314	51314	51514
Insert Locking Screw	113223	113223	113224	113224
Carbide Insert	113272	113272	113230	113230
Roller Block Assy., Left	113354	51328	51427	51501
Roller Block Assy., Right	113355	51327	51428	51502
Key Washer	5043	5143	5243	5343
Pivot Washer	113278	113278	113298	113298
Block Lock Screw (2 Req'd)	5049	5149	5249	5319
Block Lock Screw, Right	51212			
Block Lock Nut (2 Req'd)	6232	6332	6332	6483
Adjusting Screw (3 Req'd)	7406	5134	5234	5334
Insert Lock Wrench	113225	113225	113226	113226

OPTIONAL PARTS

Roller	5020	5120	5220	5320
Carbide Roller (Std)	5020C	5120C	5220C	5320C
Carbide Roller, 1/64 Chamfer	51220C	51320C	51420C	51520C
Roller, 1/64 Chamfer	51220	51320	51420	51520
Roller Pin	5025	5125	5225	5325
Carbide Roller Pin	5025C	5125C	5225C	5325C
Roller Block, Left Ex. High	113368	113372	113378	51527
Roller Block, Right Ex. High	113369	113373	113379	51528
Roller Block Lock Screw	5039	5039	5039	5339

Boyar Schultz - Roll Support



2 Roller Rest

MODEL	OORR	ORR
Ordering Number	5500	5525

	Dimensions	
Support Capacity	3/32 - 1/2	1/4 - 5/8
Shank Size	5/8	3/4

REPLACEMENT PARTS

Body	5501A	5526
Roller Block Assy., Right	5506	5531
Roller Block Assy., Left	5507	5532
Roller Block Nut (2 Req'd)	7869	6232
Roller Block Washer (2 Req'd)	5511	5743
Bushing Lock Screw	6234	
Roller and Pin Assy	105197	105198

3 Roller Rest

MODEL	OO3RR	O3RR	2-3RR
Ordering Number	112152	112153	112154

	Dimensions		
Diameter	1/16-9/32	3/32-19/32	1/8-15/16
Length	1-7/32	1-19/32	2-15/32
Roller Diameter	5-16	1/2	5/8
Shank Size	5/8	3/4	1"

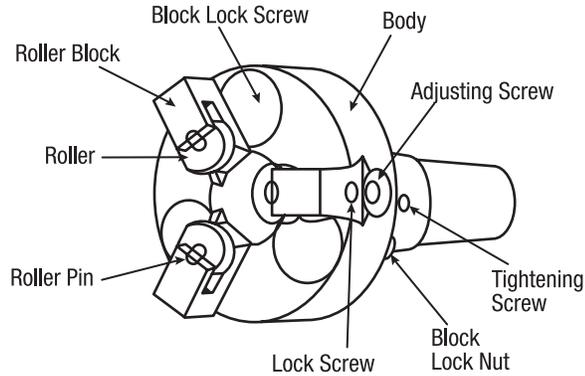
REPLACEMENT PARTS

Body	7401	7426	7451
Block Lock Screw (3)	7404	7429	7454
Block Lock Nut (3)	6232	6332	6332
Block Adj Screw (3)	7406	7431	7456
Lock Screw (3 Req'd)	7407	5039	5039
Tightening Screw	7408	7408	6444
Roller Block Screw	7409	5039	5039
Roller Block Assy			
Burnishing Tool	7410	7435	7460
Knurling Tool	113334	113335	113336
Roller Rest	113340	113341	113342
Roller Pin Assy			
Burnishing Tool	105163	105164	105165
Knurling Tool	113337	113338	113339
Roller Rest	113343	113344	113345

PARTS FOR 3 ROLLER REST

Roller Block	7402	7427	7452
Roller	112066	112068	112067
Roller Pin	5025	5125	5225

Boyar Schultz - Burnishing & Knurling



	BURNISHING			KNURLING		
MODEL	OOC	OC	2C	OO3KN	OO3KN	2-3KN
ORDERING NUMBER	7400	7425	7450	113346	113347	113348

DIMENSIONS

Body	7401	7426	7451	7401	7426	7451
Block Lock Screw (3)	7404	7429	7454	7404	7429	7454
Block Lock Nut (3)	6232	6332	6332	6232	6332	6332
Block Adj Screw (3)	7406	7431	7456	7406	7431	7456
Lock Screw (3 Req'd)	7407	5039	5039	7407	5039	5039
Tightening Screw	7408	7408	6444	7408	7408	6444
Roller Block Screw	7409	5039	5039	7409	5039	5039
Roller Block Assy						
Burnishing Tool	7410	7435	7460	7410	7435	7460
Knurling Tool	113334	113335	113336	113334	113335	113336
Roller Rest	113340	113341	113342	113340	113341	113342
Roller Pin Assy						
Burnishing Tool	105163	105164	105165	105163	105164	105165
Knurling Tool	113337	113338	113339	113337	113338	113339
Roller Rest	113343	113344	113345	113343	113344	113345
REPLACEMENT PARTS						
Roller Block	7402	7427	7452	7412	7437	7452
Roller	5020	5120	5220			
Roller Pin	5025	5125	5225	7415	5125	5225
Straight Knurl				7818	7868	7868
				(35TPI)	(29TPI)	(29TPI)

Boyar Schultz - Part List Roll Blocks

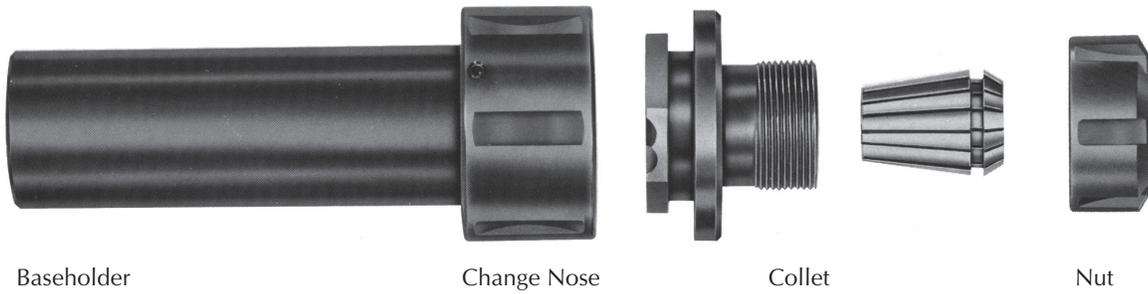
ASSEMBLY NUMBER	BLOCK	ROLLER	PIN	LOCK SCREW	TOOLS USED ON	ROLLER & PIN ASSY.
5067	5047	5020	5025	5039	5040 113357	105163
5068	5048	5020	5025	5039	5040 113357	105163
5069 EXH	5005A	5020	5025	5039	5040	105163
5070 EXH	5006A	5020	5025	5039	5040 113357	105163
5077 LH	5097	5020	5025	5039	5040 113357	105163
5078 LH	5098	5020	5025	5039		105163
5079 EXHLH	5055	5020	5025	5039		105163
5080 EXHLH	5056	5020	5025	5039		105163
5167	5147	5120	5125	5039	5140 113358	105164
5168	5148	5120	5125	5039	5140 113358	105164
5169 EXH	5105A	5120	5125	5039	5140 113358	105164
5170 EXH	5106A	5120	5125	5039	5140 113358	105164
5177 LH	5197	5120	5125	5039		105164
5178 LH	5198	5120	5125	5039		105164
5179 EXHLH	5155	5120	5125	5039		105164
5180 EXHLH	5156	5120	5125	5039		105164
5267	5247	5220	5225	5039	5240 113359	105165
5268	5248	5220	5225	5039	5240 113359	105165
5269 EXH	5205A	5220	5225	5039	5240 113359	105165
5270 EXH	5206A	5220	5225	5039	5240 113359	105165
5277 LH	5297	5220	5225	5039		105165
5278 LH	5298	5220	5225	5039		105165
5279 EXHLH	5255	5220	5225	5039		105165
5280 EXHLH	5256	5220	5225	5039		105165
5307	5303	5320	5325	5339	5300 5350	105166
5308	5304	5320	5325	5339	5300 5350	105166
5309 EXH	5305	5320	5325	5339	5300 5350	105166
5310 EXH	5306	5320	5325	5339	5300 5350	105166
5506 STEM	5502	5508	6225	6240	5500 2RR	105197
5507 STEM	5503	5508	6225	6240	5500 2RR	105197
5531 STEM	5527	5533	5534	7407	5525 2RR	105198
5532 STEM	5528	5533	5534	7407	5525 2RR	105198
5707	5703	5720	5725	7407	5700 113356	105162
5708	5704	5720	5725	7407	5700 113356	105162
5709 EXH	5705	5720	5725	7407	5700 113356	105162
5710 EXH	5706	5720	5725	7407	5700 113356	105162
5757 LH	5753	5720	5725	7407		105162
5758 LH	5754	5720	5725	7407		105162
5759 EXHLH	5755	5720	5725	7407		105162
5760 EXHLH	5756	5720	5725	7407		105162
6207	6203	5020	6225	6240	Model B Tools only	105167
6208	6304	5020	6225	6240	Model B Tools only	105167
6209 EXH	6305	5020	6225	6240	Model B Tools only	105167
6210 EXH	6306	5020	6225	6240	Model B Tools only	105167

Boyar Schultz - Part List Roll Blocks

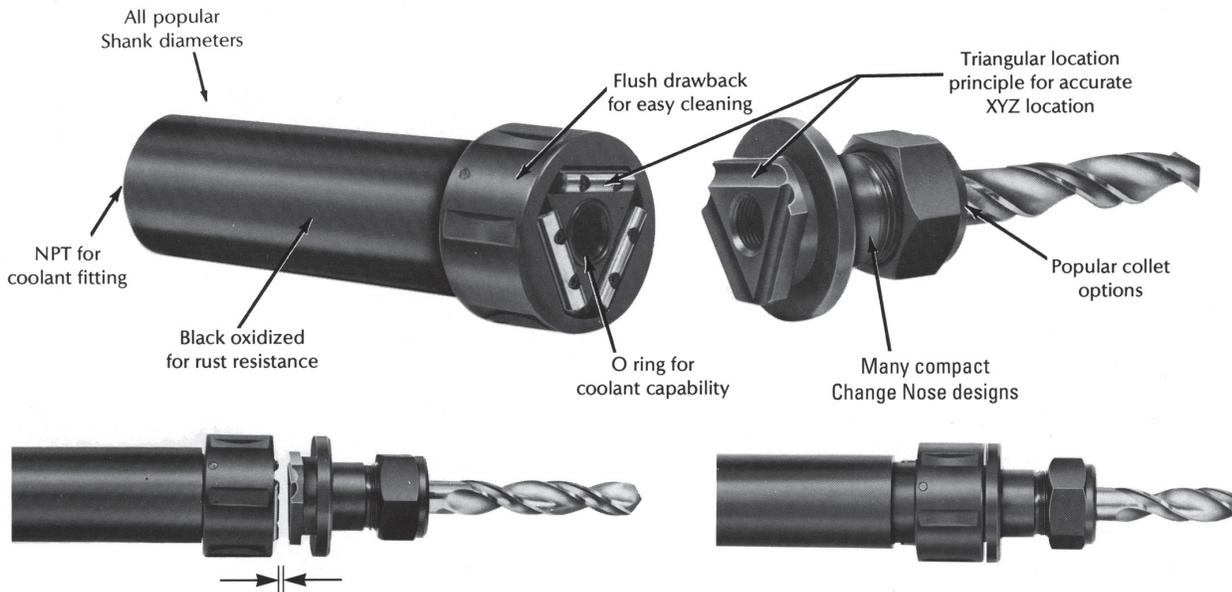
ASSEMBLY NUMBER	BLOCK	ROLLER	PIN	LOCK SCREW	TOOLS USED ON	ROLLER & PIN ASSY.
6303	6307	5120	6325	5039	Model B Tools only	105168
6304	6308	5120	6325	5039	Model B Tools only	105168
6305 EXH	6310	5120	6325	5039	Model B Tools only	105168
6306 EXH	6310	5120	6325	5039	Model B Tools only	105168
6403	6407	5220	6425	5039	Model B Tools only	105169
6404	6408	5220	6425	5039	Model B Tools only	105169
6405 EXH	6409	5220	6425	5039	Model B Tools only	105169
6406 EXH	6410	5220	6425	5039	Model B Tools only	105169
7410 BN	7402	5020	5025	7407	7400	105163
7435 BN	7427	5120	5125	5039	7425	105164
7460 BN	7452	5220	5225	5039	7450	105165
51201	5006A	5020	5025C	5039	94200 96200 96250	105170
51202	5005A	5020	5025C	5039	94200 96200 96250	105170
51227 EXH	51229	5020	5025C	5039	94200 96200 113431	105170
51228 EXH	51230	5020	5025C	5039	94200 96200 113431	105170
51301	5106A	5120	5125C	5039	94300 96300 96350	105171
51302	5105A	5120	5125C	5039	94300 96300 96350	105171
51327 EXH	51329	5120	5125C	5039	94300 96300 113284	105171
					113316 113430	
51328 EXH	51330	5120	5125C	5039	94300 96300 113284	105171
					113316 113430	
51401	5248	5220	5225C	5039	94400 96400 96450	105172
51402	5247	5220	5225C	5039	94400 96400 96450	105172
51427 EXH	5206A	5220	5225C	5039	94400 96400 113294	105172
					113317 113432	
51428 EXH	5205A	5220	5225C	5039	94400 96400 113294	105172
51501	5304	5320	5325C	5339	94500 96500 96550	105173
51502	5303	5320	5325C	5339	94500 96500 96550	105173
51527 EXH	5306	5320	5325C	5339	94500 96500 113304	105173
					113318 113389	
51528 EXH	5305	5320	5325C	5339	94500 113304 96500	105173
					113318 113433	
113334 KN	7412	7818KN	7415	7409	113346	
113335 KN	7437	7868KN	5125	5039	113347	
113336 KN	7452	7868KN	5225	5039	113348	
1133403 RR	7402	112066	5025	7407	112152	
1133413 RR	7427	112068	5125	5039	112153	
1133423 RR	7452	112067	5225	5039	112154	
113354	113352	5020	5025C	5039	113274	
113355	113353	5020	5025C	5039	113274	
113368 EEXH	113370	5020	5025C	5039	113385	
113369 EEXH	113371	5020	5025C	5039	113385	
113372 EEXH	113374	5120	5125C	5039	113386	
113373 EEXH	113375	5120	5125C	5039	113386	
113378 EEXH	113376	5220	5225C	5039	113387	
113379 EEXH	113377	5220	5225C	5039	113387	

Tri-Lock - Pre-Set/Quick Change Tooling

Basic Tri-Lock Components



Features



**.090" to .157" stroke required for tool change.
The shortest in the industry!**

**Powerful, rigid connection of baseholder
to change nose.**

Just call  **CHAMPION**

New Method - Steel Stamps, Marking Toolholders



MACHINE	POSITION	PART #
7/16" RA-6	All	523
	Double Deck	
9/16" RA-6	1-2	695
9/16" RA-6	2,3,4,5	620
9/16" RAN-6	3,5	620-1
9/16" RAN-6	2,4	620-2
3/4" RA-8	4,5	620
1" RA-6	2,3,4,5	617
1" RA-6	1	642-1
1" RA-6	6	642-2
1-1/4" RA-6	1,2,4	604-2
1-1/4" RA-6	3,5,6	604-1
1-1/4" RB-8	1,5	604-2
1-1/4" RB-8	4,6,8	604-1
1-5/8" RBN-8	1,3,5	604-2
1-5/8" RBN-8	4,6,7	604-1
1-5/8/2" RB-6	1	705-2
1-5/8/2" RB-6	2,4	681-2
1-5/8/2" RB-6	3,5	681-1
1-5/8/2" RB-6	6	705-1
1-5/8/2" RB-8	1	705-2
1-5/8/2" RB-8	3	604-2
1-5/8/2" RB-8	4	705-1
1-5/8/2" RB-8	5	705-2
1-5/8/2" RB-8	6	604-1
1-5/8/2" RB-8	8	678-1

MACHINE	POSITION	PART #
2-3/8" HSC	All	725
2-5/8" RB-6	1,4	678-2
2-5/8" RB-6	2	604-2
2-5/8" RB-6	5	604-1
2-5/8" RB-6	3,6	678-1
3-1/2" RB-6	5	604-1
3-1/2" RB-6	1,4	678-2
3-1/2" RB-6	3,6	678-1
3-1/2" RB-6	2	604-2
3-1/2" RB-8	4,6,8	678-1
4" RB-6	1,2,4	678-2
4" RB-6	5,3,6	678-1
4" RB-8	1,3,5	678-2
4" RB-8	4,6,8	678-1
5-1/4" RA-6	1,4	604-2
5-1/4" RB-6	6	604-1

Note: If Marking within 1/32" of collet request Outside Die Mount Holder

Just call
CHAMPION 

Drill Speeders

Air Drill Speeders

Part # DAPD



2" Diameter Quill
 200 DA Collet 0-3/8" Capacity
 2,000, 3,300, 4,500, 6,000 RPM
 1/3 HP
 15" OAL
 Simple Hook-Up, Supply Air, Drip Lube

Electric Drill Speeder

Part # DSPD



2" Diameter Quill
 200 Double Angle Collet, 0-3/8" capacity
 5,000 RPM
 27 IN-LB of Torque
 Forward and Reverse
 Speed or Torque readout
 All electronics are in one box with a 3 wire hook up
 At speed or current limit output

Re-Tapping Machine

Part # BB-SR



Retap threaded parts
 Chase threads
 Remove cutoff burrs from threads
 Inspect threads
 (with thread gage mounted in chuck)
 Countersink holes
 Deburr holes
 Ream holes

1/2" capacity chuck
 *1/3 H.P., 115V, Single Phase
 1725 RPM, A48 Frame Motor
 Weight 27 lbs

Tapping Machine

Part # STC-TAP-ER

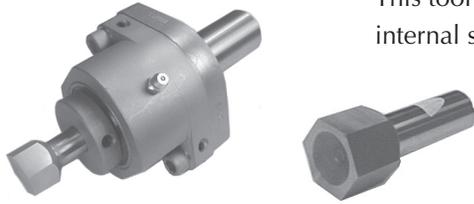


Push to tap in
 Pull to tap out
 Sliding face plate
 Work table can be reversed when not needed
 Adjustable "V" plate for small parts (removable)
 Easy to set stop for tap depth control
 Comfortable bench height working area
 Long lasting tapered cone drive
 Pilot light switch warns if motor left running

1/2" capacity chuck
 *1/3 H.P., 115V, Single Phase
 1725 RPM, A48 Frame Motor
 Weight 27 lbs

Rotary Broaches

Internal Rotary Broach



This tool is used to produce hexagon, square, and other irregular internal shapes in the workpiece without stopping the work spindle.

External Broaches



This tool is used to produce hexagon, splines, or other irregular shapes on external surfaces of the workpiece without stopping the work spindle.

Insert Hallow Mills

Insert Slides are Supplied to Turning Diameters 1/8" - 3/8" and for 3/8" - 5/8"
using standard Somma TSQ00 style Tangi-Square inserts
Inserts slides are interchangeable
Micrometer dial screw makes adjustments of all three insert slides simultaneously
Each Line on dial = .001" on diameter, .0005" on the side
Insert depth of cut is 3/16" max (3/8" on diameter)
Shank adjustable to correct misalignment
Available with drill bushing hole in shank for turning and drilling operations

Just call
CHAMPION 



Abrasives
Adhesives & Lubrication
Hand Tools



Indexable Tooling

- Turning Inserts
- Turning Toolholders
- Boring
- Indexable Threading
- Grooving
- Cut-off
- Milling
- Slotting
- Carbide Tipped Tool Bits
- Barbide Blanks



Material handling

Measuring Equipment

Power Tools & Accessories

Round Tools

- Broaches
- Burrs-Carbide
- Carbide Drills
- Drills
- Counter Bores
- Counter Sinks
- Dies
- Drill Sets
- End Mills
- Reamers
- tap
- Thread Repair Inserts
- Tread Milling
- Accessories



Safety

Saw Blades

Toolholding/Workholding

- Bar Pushers
- Boring Heads
- Centers
- Chuck Jaws
- Clamping & Workholding
- Collet Closers, Chucks & Headstocks
- Collet Pads
- Collet & Fixtures
- Drill & Tapping Attachments
- Drill Chucks & Arbors
- ER, DA & TG Collets & Chucks
- Fly Cutters
- Knurling Tools & Knurls
- Lathe Chucks
- Lathe Manuals
- Magnetic Chucks
- Morse Tape Tooling
- NMTB, ASA & ISO Tooling
- Performance Enhancing Solutions
- Quick Change Tooling
- R-8 Tooling
- Retention Knobs
- Rotary Tables, Dividing Heads & Indexers
- Tapping Chucks & Collets
- Tool Tightening Fixtures
- Toolholder Bushings
- Tool Posts & Holders
- Tool Post Grinders
- V-Flange & BT Tooling
- Vises & Accessories

Tooling Components

Just call
CHAMPION

Providing quality attachments for all screw machine challenges, through original innovative design and engineering, with proven results!

Proudly Made in America

Stationary End Tool Slide Milling



Recess Mills & Stationary Adj Recesses



Floating Reamer and Tap Holders



Sync End Tool Slide Cross Drill

Cross Slide Flat Generating and Thread milling



Sync End Tool Slide Milling

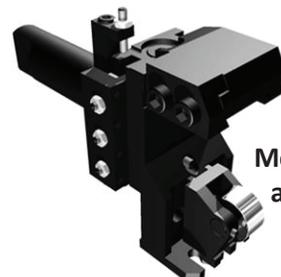


Cross Slide Face Grooving

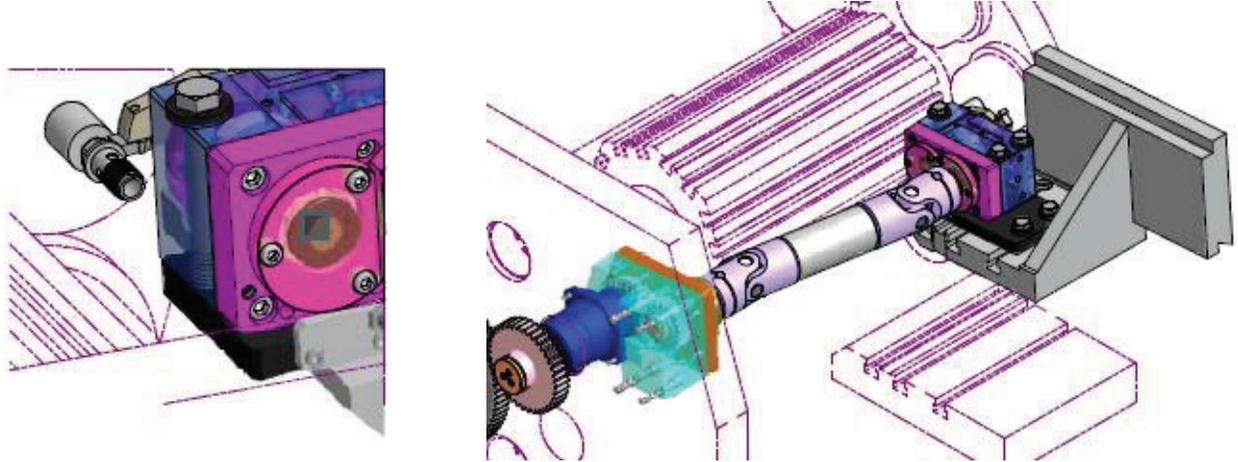
Cutoff Holders and Solid Carbide Blades



Shave Heads Model B Model C and Shank Style



Heavy Duty Cross Slide Flat Generating / Thread Milling



- Heavy Duty attachment allows for machining in steel
- Attachment Drives 1:1 or 2:1 with change gears, allowing core attachment to both Thread Mill and Flat Generate
- Heat Treated Gears and Components
- Drives of Standard Spindle Drive Shaft Pickoff Gear
- Flat Generating cutter uses Carbide Inserts
- Attachment can be mounted in different positions by change the base plate
- Thread Milling Attachment has taper adjustments for exact pitch straightness
- Outboard transmission allows room for drill saddle to be mounted on the tool slide in the same position



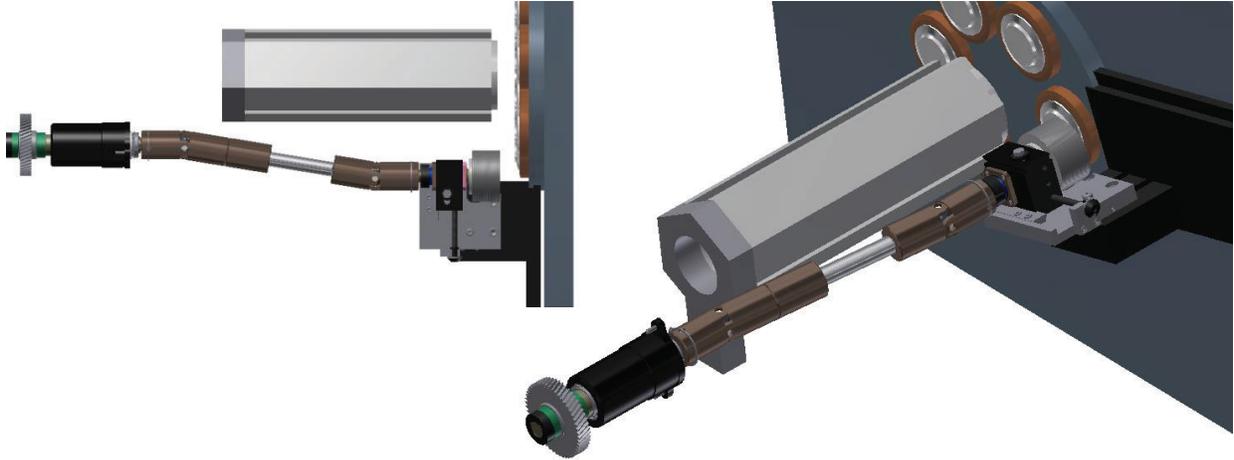
Heavy Duty Cross Slide Flat Generating / Thread Milling How to Order

	R - 6000 - 002	
Machine Size	|	Position*
B - 9/16"RA-6 Acme	|	002
D - 1"RA-6 Acme	|	003
F - 1 1/4" RA-6 Acme	|	004
I - 1 5/8"RB-6 Acme	|	005
L - 2 5/8"RB-6 Acme	|	006
P - 3/4"RA-8 Acme	|	007
R - 1 1/4"RB-8 Acme	|	
V - 1 5/8"RBN-8 Acme	|	
S - 1 5/8"RB-8 Acme	|	
T - 2"RB-8 Acme	|	Ratio
U - 2 5/8"RB-8 Acme	|	6000 - 2:1 Flat Generating
WI58 - 5/8"-6 Wickman	|	6001 - 1:1 Thread Milling
WI138 - 1 3/8"-6 Wickman	|	
WI134 - 1 3/4"-6 Wickman	|	
WI1 - 1"-8 Wickman	|	
NB51 - Model 51 New Britain	|	When ordering for Acmes, Please inform BME if your machine is a synchronous machine
NB52 - Model 52 New Britain	|	
NB62 - Model 62 New Britain	|	
NB812 - Model 812 New Britain	|	Please inform BME what RPM your work spindle will be running
DV - Davenport	|	

***Notes on Positions –**

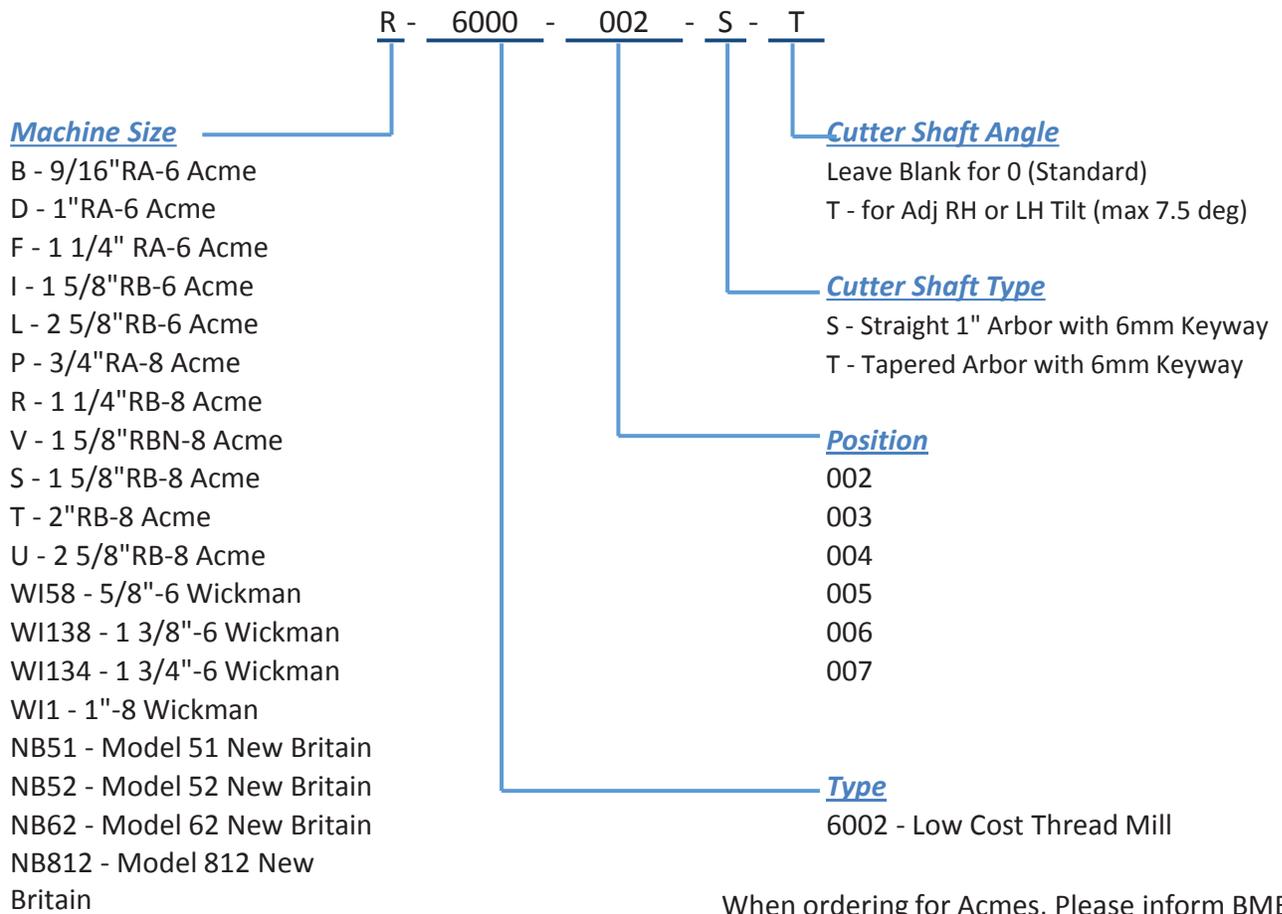
- Acme Six Spindles are available in Positions 2, 3, and 4
- Acme Eight Spindles are available in Positions 3, 4, 5,6
- New Britain and Wickman Six Spindles are available in Positions 3,4,5
- New Britain and Wickman Eight Spindles are available in Positions 3,4,5,6
- Davenport Models are only available in Position 4 – Please specify if threading is also being used.

Low Cost Cross Slide Thread Milling



- Attachment Direct Drives 1:1 without Transmission Box, lowering cost of unit
- Heat Treated Gears and Components
- Drives of Standard Spindle Drive Shaft Pickoff Gear
- Attachment can be mounted in different positions by change the base plate
- Taper adjustment for exact pitch straightness
- Long tool life when thread milling in Aluminum and Brass
- Tilted Cutter Shaft available for Thread Milling threads such as Acme, Worm Threads, and Multi-Start Threads

Low Cost Thread Milling How to Order



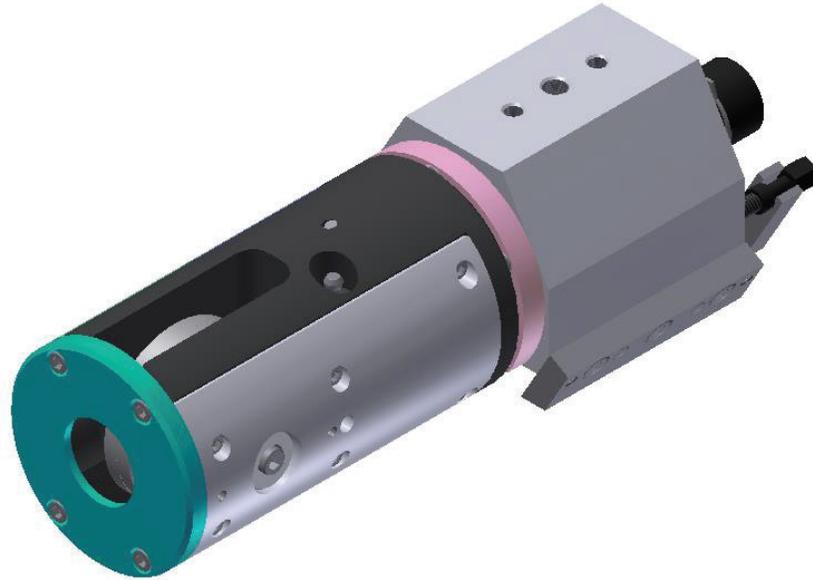
When ordering for Acmes, Please inform BME if your machine is a synchronous machine

Please inform BME what RPM your work spindle will be running

***Notes on Positions –**

- Acme Six Spindles are available in Positions 2, 3, and 4
- Acme Eight Spindles are available in Positions 3, 4, 5,6
- New Britain and Wickman Six Spindles are available in Positions 3,4,5
- New Britain and Wickman Eight Spindles are available in Positions 3,4,5,6
- Davenport Models are only available in Position 4 – Please specify if threading is also being used.

Synchronous End Tool Slide Milling Attachments



- **Fits most multi spindle automatics**
- **Heavy Duty All Bearing Construction**
- **Easy Installation**
- **Face Plate System allows Support Bushings**
- **Robust Dual Supported Cutter Shaft**
- **High Pressure Coolant Ports**
- **Hardened and Ground Components, included Gears and shafts**
- **Trammable Way Plate System, no boring required**
- **Attachment Top RPM = Machine Top RPM**

Synchronous End Tool Slide Milling Attachment Part Numbers

R - 6900 - 00a

Machine Size

D - 1"RA-6 Acme *
 F - 1 1/4" RA-6 Acme *
 I - 1 5/8"RB-6 Acme **
 L - 2 5/8"RB-6 Acme ***
 P - 3/4"RA-8 Acme*
 R - 1 1/4"RB-8 Acme **
 V - 1 5/8"RBN-8 Acme **
 S - 1 5/8"RB-8 Acme **
 T - 2"RB-8 Acme **
 U - 2 5/8"RB-8 Acme **

Type

6900- Sync ETS Milling Attachment

* - 3" Body - Max 3" Cutter w/ 1" Arbor

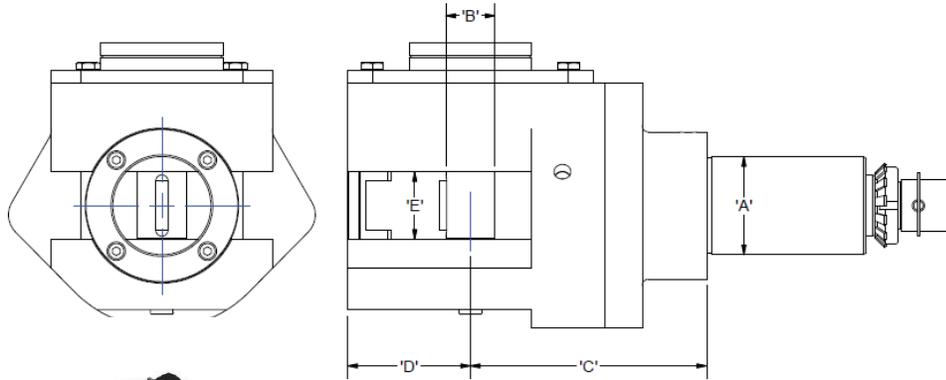
** 4.5 Body - Max 4 1/2" Cutter w/ 1" Arbor

*** 5" Body - Max 5 1/2" Cutter w/ 1" Arbor

W1134 - 1 3/4 & 1 3/8"-6 Wickman **

NB52 - Model 52 New Britain *
 NB62 - Model 62 New Britain *
 NB812 - Model 812 New Britain *
 NB62 - Model 62 New Britain *
 NB812 - Model 812 New Britain *

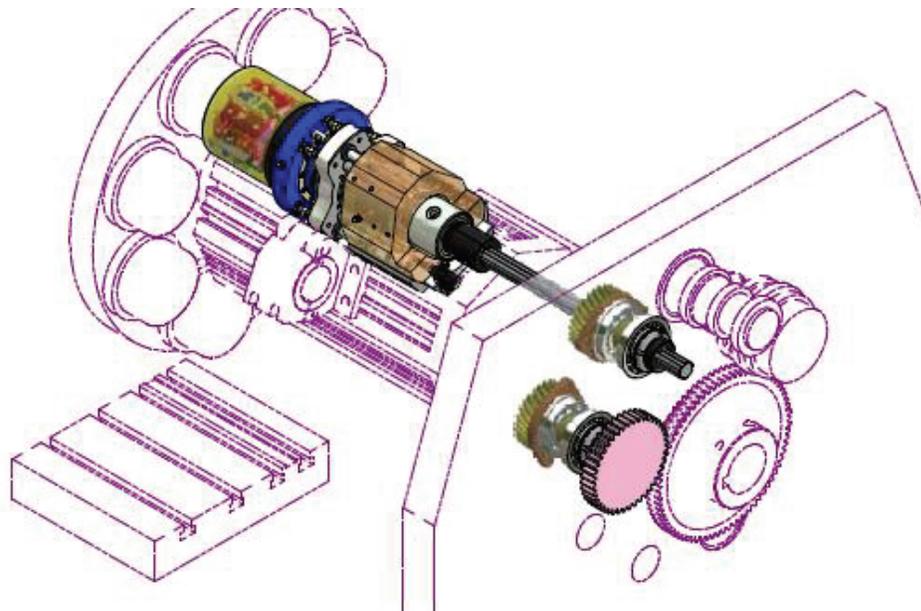
Stationary End Tool Slide Milling Attachments



Part #	W-6700a	D-6700a
A	2.00	1.50
B	1.00	0.63
C	4.81	3.50
D	2.50	1.69
E	1.38	1.00
Max Cutter	4.00	2.75

- Fits most multi spindle automatics
- Heavy Duty All Bearing Construction
- Easy Installation
- Face Plate System allows Support Bushings
- Robust Dual Supported Cutter Shaft
- Hardened and Ground Components, included Gears and shafts.
- Fits in Drill Saddle
- Driven from Pickoff Drive Unit or HSDA
- Attachment Top RPM = Machine Top RPM

Synchronized End Tool Slide Cross Drilling



- Drill Cross Holes without Spindle Stopping
- ½" Diameter Capacity Cross Holes
- Quick Change Drill Cap Assy allows for fast and easy tooling change
- Simple individual depth adjustments for Drill
- Patent Pending Design
- Drill 1 to 4 Holes
- RH Drills
- Max Speed – 2000 RPM
- Drill Stroke - .400"
- RPM Ratio (Cross Drill to Work Spindle) – 1.25:1
- Feed Ratio (Main Tool Slide / Drill Feed) – 1:0.414
- Max Dia to be Drilled – 1.25"



Synchronous ETS Cross Drill - How to Order

R - 6810 - 500 - 2

Machine Size

- I - 1 5/8"RB-6 Acme
- L - 2 5/8"RB-6 Acme
- R - 1 1/4"RB-8 Acme
- V - 1 5/8"RBN-8 Acme
- S - 1 5/8"RB-8 Acme
- T - 2"RB-8 Acme
- U - 2 5/8"RB-8 Acme

- WI138 - 1 3/8"-6 Wickman**
- WI134 - 1 3/4"-6 Wickman**

- NB52 - Model 52 New Britain***
- NB62 - Model 62 New Britain
- NB812 - Model 812 New Britain

Number of Cross Drills

- 1 - 1 Cross Drill with Rear Support
- 2 - 2 Cross Drill (180 apart)
- 3 - 3 Cross Drills (120 apart)
- 4 - 4 Cross Drills (90 apart)

Head Size

- 500 - 5" Head
- 450 - 4 1/2" Head*****

Type

- 6810 - Sync ETS Cross Drill Attachment

When ordering for Acmes, Please inform BME if your machine is a synchronous machine

Notes

** 1 3/8"-6 and 1 3/4"-6 Wickman requires an alteration to the tool slide to use a 5" head. 4 1/2" does fit

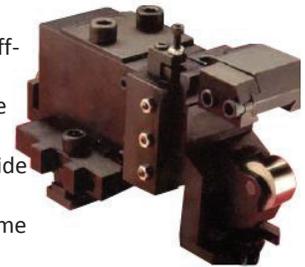
*** Max head on the 52 New Britain is 4 1/2".

**** The max amount of cross drills on the 4 1/2" Head is (3).

Shave Holders



FASTER SET UP ... All adjustments simple and convenient to operator.
QUICK ELIMINATION OF TAPER ... Adjusting screws in head are located off-center and close to shave tool
POSITIVE CHATTER CONTROL ... Both gib and spring float adjustments are easily accessible
ADJUSTABLE BASE ... Base permits use on machines which do not have slide adjustment
UNIVERSAL USAGE OF BASE ... Simple reversing of head permits using same base for all normal shaving positions
NO FLEXING OR LOSS OF ACCURACY ... Heavy Duty head is made of 6150 steel and heat treated to 40/45 HRC.
SIMPLE TO RECONDITION ... Can be reconditioned by using only a surface grinder

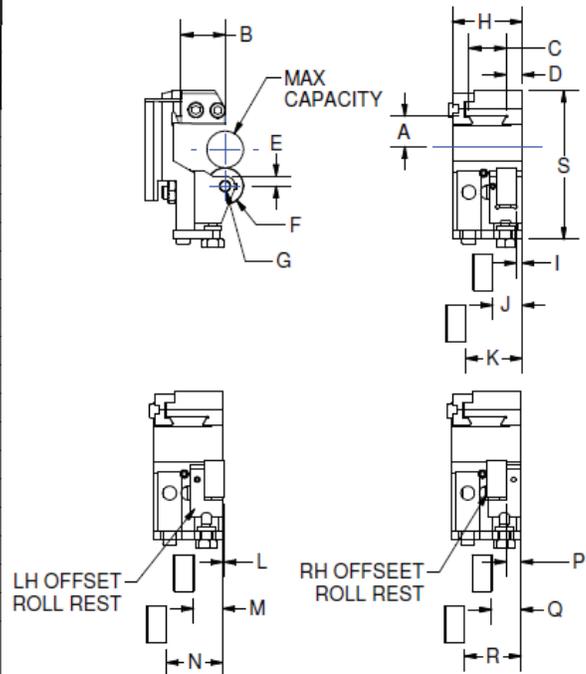


IMPORTANT – HOLDER NO. CODE

MACHINE	SHAVE	HEAD	ROLL	MOUNT	BASE
A	S	-29	-1	-41	-68

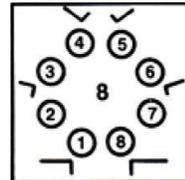
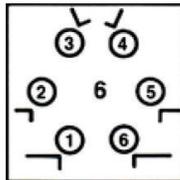
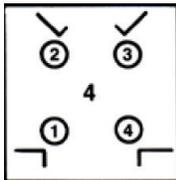
If different roll rest is need L.H., R.H., or Wide add the letter after the roll no.
Example: AS-29-1R.H-41-68
 AS-29-1L.H.-41-68
 AS-29-1W-41-68

Head Code No.	29	36	51	48	49	75	47	40
Max Capacity	5/8"	1"	1 1/4"	1 5/8"	2"	2 1/4"	2 5/8"	3 1/2"
Min. Capacity	-0-	-0-	-0-	3/8"	3/4"	1"	1 1/4"	1 5/8"
Dovetail Size	5/8"	1"	1"	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"
A	0.81	1.00	1.12	1.31	1.50	1.62	1.81	2.25
B	1.31	1.68	1.75	1.75	1.81	1.81	1.88	1.94
C	0.914	1.289	1.289	1.289	1.557	1.557	1.789	1.789
D	0.36	0.53	0.53	0.53	0.53	0.53	0.41	0.41
E	0.25	0.34	0.34	0.34	0.42	0.42	0.42	0.42
F	0.75	1.25	1.25	1.25	1.25	1.25	1.25	1.25
G	0.31	0.37	0.37	0.37	0.50	0.50	0.50	0.50
H	1.62	2.37	2.37	2.37	2.62	2.62	2.62	2.62
I	0.12	0.19	0.19	0.19	0.25	0.25	0.25	0.25
J	0.56	0.81	0.81	0.81	0.91	0.91	0.91	0.91
K	1.00	1.38	1.38	1.38	1.56	1.56	1.56	1.56
L	-0.06	-0.06	-0.06	-0.06	0.01	0.01	0.01	0.01
M	0.37	0.57	0.57	0.57	0.66	0.66	0.66	0.66
N	0.81	1.19	1.19	1.19	1.32	1.32	1.32	1.32
P	0.43	1.18	1.18	1.18	1.30	1.30	1.30	1.30
Q	0.88	1.81	1.81	1.81	1.96	1.96	1.96	1.96
R	1.31	2.43	2.43	2.43	2.62	2.62	2.62	2.62
S	3.38	4.43	5.06	5.25	5.68	5.93	6.44	7.37
ROLL REST CODE No.	No.1	No. 3	No. 3	No. 3	No. 5	No. 5	No. 5	No. 5



National Acme Machines - Model "B" Shaves

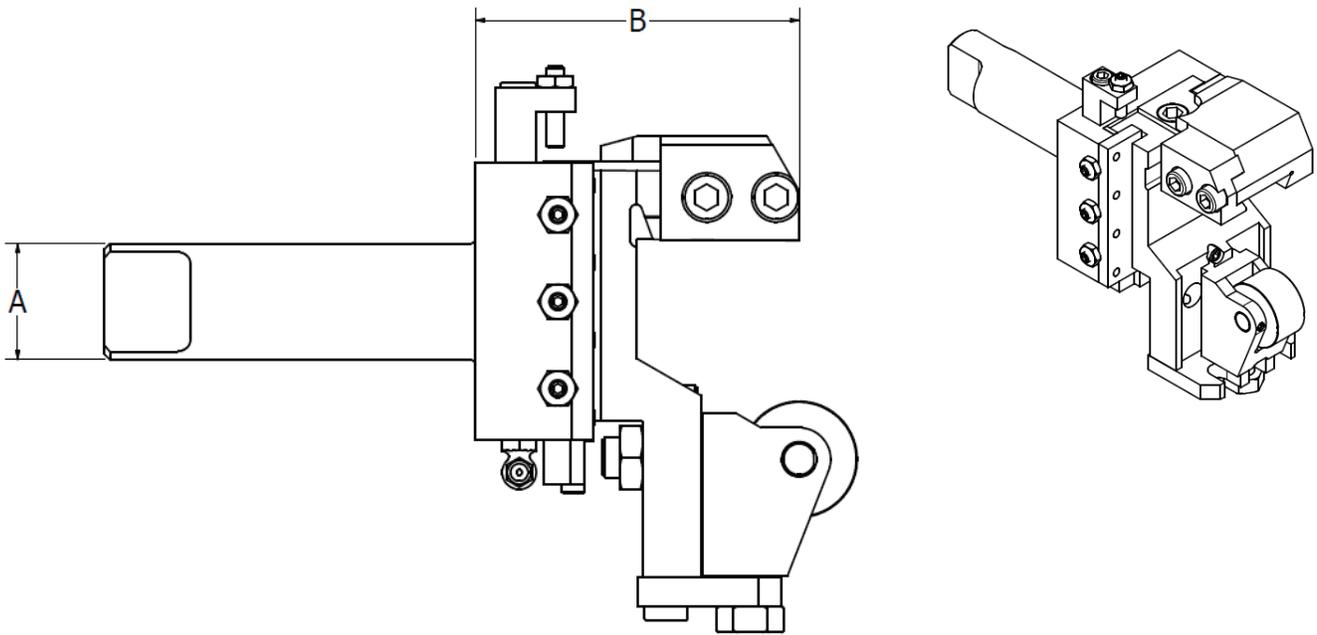
Machine: Size and Model	Position to be Used	Head Size and Dovetail	Ordering Holder Code No
7/8"RA & 1"RA-4 5/8"RN-6 9/16", 1"RA & RAN-6 3/4"RA-8	2 & 3 2DD, 3 & 4 2DD, 3 & 4 2DD, 4 & 5	5/8" Capacity 5/8" DT	AS-29-1-41-68
7/8"RA & 1"RA-4 5/8"RN-6 9/16", 1"RA & RAN-6 3/4"RA-8	2 & 3 2DD, 3 & 4 2DD, 3 & 4 2DD, 4 & 5	1" Capacity 1" DT	AS-36-3-25-30
1 1/4"RA-6 1 1/4"RB-8	2DD, 3 & 4 2DD, 4 & 5	1 1/4" Capacity 1" DT	AS-51-3-33-42
1 3/8"AG-6	2DD, 3 & 4	1 1/4" Capacity 1" DT	AS-51-3-33-60
1 5/8", 2"RAS-4 1 5/8"RBN-8	2 & 3 2DD, 4 & 5	1 5/8" Capacity 1" DT	AS-48-3-33-42
1 5/8", 2"RB & RA-6 1 5/8", 2"RB-8	2DD, 3 & 4 2DD, 4 & 5	1 5/8" Capacity 1" DT	AS-48-3-33-39
2"RAS-6 2"RA-6	2DD, 3 & 4 2DD, 3 & 4	2" Capacity 1 1/4" DT	AS-49-5-33-43 AS-49-5-33-40
2"RB-6 2"RB-8	2DD, 3 & 4 2DD, 4 & 5	2" Capacity 1 1/4" DT	AS-49-5-33-39
2 5/8"RB-4 2 5/8"RB-6	2 & 3 2DD, 3 & 4	2 5/8" Capacity 1 1/2" DT	AS-47-5-32A-50
2 5/8"RA-6 2 5/8"RB-8	2DD, 3 & 4 2DD, 4 & 5	2 5/8" Capacity 1 1/2" DT	AS-47-5-32A-38A AS-47-5-37A-69
3 1/2"RB-4 3 1/2"RA & RB-6 3 1/2" RB-8	2 & 3 2DD, 3 & 4 2DD, 4 & 5	3 1/2" Capacity 1 1/2" DT	AS-40-5-32A-50
4"RB-6	2DD, 3 & 4	4" Capacity 1 5/8" DT	AS-90-5-32A-50



New Britain Machines - Model "B" Shaves			
Machine: Size and Model	Positon to be Used	Head Size and Dovetail	Ordering Holder Code No
51 & 52 60	1,2,3,4,5 1,3, & 4	5/8" Capacity 5/8" DT	NS-29-1-41-51B
51 & 52 60	1,2,3,4,5 1\$,3, & 4\$	1" Capacity 1" DT	NS-36-3-53-71
51 & 52 60	1,2,3,4,5 1\$,3, & 4\$	1 1/4" Capacity 1" DT	NS-51-3-53-71
61	1,3,&4	1 1/4" Capacity 1" DT	NS-51-3-33-49
	1,3,&4	1 5/8" Capacity 1" DT	NS-48-3-33-49
	1,3,&4	2 1/4" Capacity 1 1/4" DT	NS-49-3-33-49
62	1,2,3,4,5	1 1/4" Capacity 1" DT	NS-51-3-33-49
	1,2,3,4,5	1 5/8" Capacity 1" DT	NS-48-3-33-49
	1\$,3,4,5	2 " Capacity 1 1/4" DT	NS-49-3-33-49
625,627 635	1,2,3,4, & 5	2 5/8" Capacity 1 1/2" DT	NS-47-5-32-55B
	1,2,3,4, & 5	3 1/2" Capacity 1 1/2" DT	NS-40-5-32-55
812,816 817	1,4,5,&6	1 1/4" Capacity 1" DT	NS-48-3-33-65
	1,4,5,&6	1 5/8" Capacity 1" DT	NS-48-3-33-65
816,817	1,4,5,&6	2" Capacity 1 1/4" DT	NS-49-5-33-65
	1,4,5,&6	2 1/4" Capacity 1 1/4" DT	NS-49-3-33-65
82	4,5,&6	2" Capacity 1 1/4" DT	NS-49-5-33-65
	4,5,&6	2 1/4" Capacity 1 1/4" DT	NS-49-3-33-65

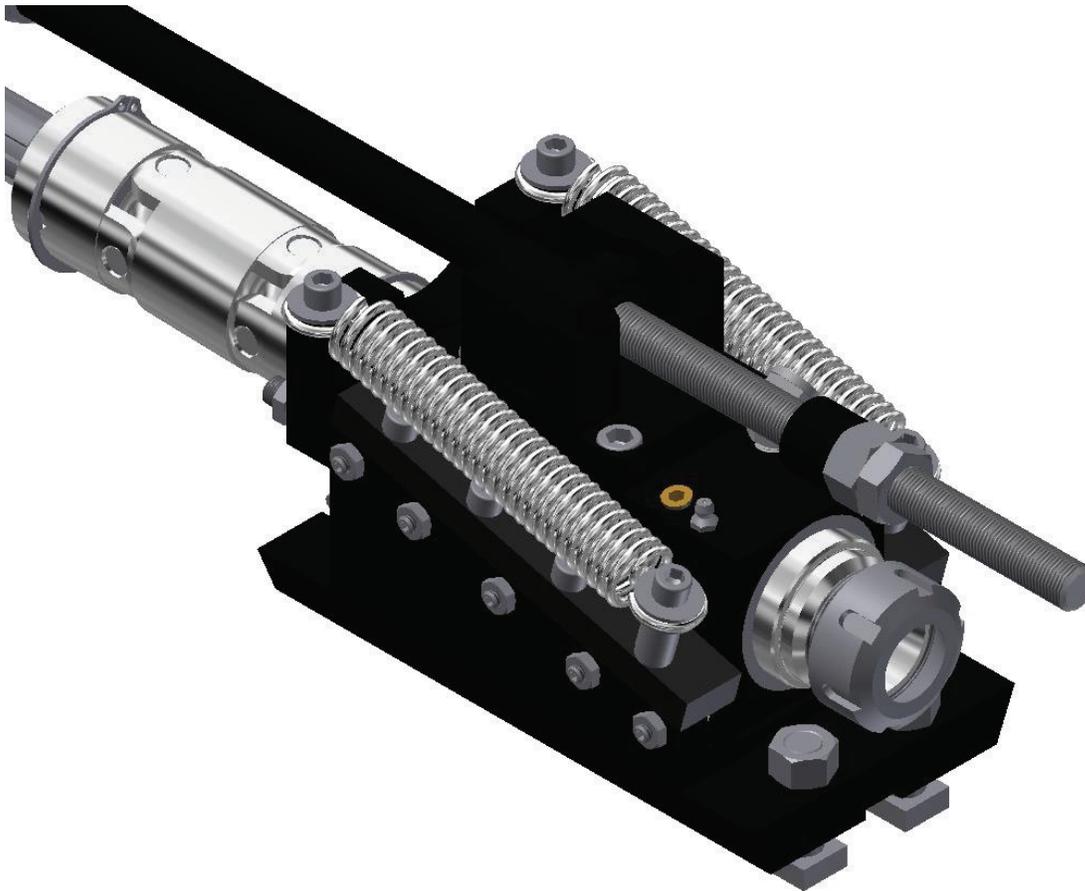
Davenport, 7/16 Acme, B&S & Others - Model "B" Shaves			
Machine: Size and Model	Roll Rest Assy	Head Size and Dovetail	Ordering Holder Code No
7/16" Acme B&S	No 15	1/2" Capacity 1/2" DT	62-1H
Davenport	No 15	1/2" Capacity 1/2" DT	62-72
Davenport	No 15	1/2" Capacity 1/2" DT	62-77

Model "B" Shank Shave Tool Holders



Model "B" Shank Shave Tool Holders					
Ordering Head Code NO	Head Size & Dovetail	Min Capacity	A	B	Ref No.
29-2	5/8" Cap 5/8" DT	0.00	1	2.5	62-2
36-62H	1" Cap 5/8" DT	0.00	1.25	3.12	62-62H
36-4H	1" Cap 1" DT	0.00	1.25	3.12	62-4H
51-5	1 1/4" Cap 1" DT	0.00	1.25	3.5	62-5
48-6	1 5/8" Cap 1" DT	0.37	1.5	3.5	62-6
49-7	2" Cap 1 1/4" DT	0.75	1.5	3.5	62-7
75-7	2 1/4" Cap 1 1/4" DT	1.00	1.5	3.5	62-8
47-9	2 5/8" Cap 1 1/2" DT	1.25	1.5	3.75	62-9
40-11	3 1/2" Cap 1 1/2" DT	1.62	1.75	4.12	62-11

Toll Slide Recess Attachments



- Rotary Recess come with ER collet seat spindle
- Sealed construction allows for true coolant thru the spindle
- Hardened slide and mount
- Stationary and Rotary come with draw bar bracket assembly
- Rotary comes with Ujoint and Drive shaft

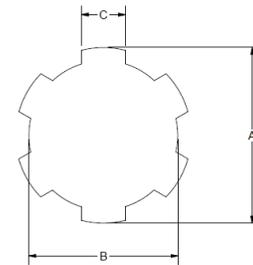
Tool Slide Recess Attachment Part Nuymbers

National Acme Recess Attachment				
Machine Size	Rise	Adjustable Stationary	Rotary w/ Coolant thru	ER Collet Size
5/8 RN-6 (Flat Base)	10 deg	AA-10-19-0	AM-3-19-40-HP	
9/16 & 1" RA-6 & RAN-6 (Flat Base)	10 deg	AA-10-1-0	AM-3-1-40-HP	ER25
9/16 & 1" RA-6 & RAN-6 (Angular Base)	10 deg	AA-10-2-0	AM-3-2-40-HP	ER25
2 3/8"-HSC-6 Acme Chucker	10 deg	AA-10-16-0	AM-3-18-59-HP	ER25
1 1/4"RA-6 (Flat Base)	15 deg	AA-12-3-0	AM-28-3-5-HP	ER32
1 1/4"RA-6 (Ang Base)	15 deg	AA-12-4-0	AM-31-4-5-HP	ER32
1 1/4"RB-8	15 deg	AA-12-5-0	AM-28-5-5-HP	ER32
1 5/8"RBN-8				
1 5/8"RA-6 & 8				
1 5/8"RB-6 & 8	15 deg	AA-12-6-0	AM-28-6-15-HP	ER32
2"RB-6 & 8				
2"RAS-6				
2 5/8"RB-6	15 deg	AA-18-8-0	AM-12-8-18-HP	ER40
2 5/8"RB-8	15 deg	AA-18-10-0	AM-12-10-18-HP	ER40
3 1/2"RB-6	15 deg	AA-18-11-0	AM-13-9-66-HP	ER40
3 1/2"RB-8				
4"RB-6	15 deg	AA-18-12-0	AM-12-13-XX-HP	ER40

Wickman Recess Attachment				
Machine Size	Rise	Adjustable Stationary	Rotary w/ Coolant thru	ER Collet Size
5/8"-6	10 deg	WA	WM	ER25
1"-6 & 8	10 deg	WA-10-20-0	WM-3-2-66-HP	ER25
1 3/8" and 1 3/4"-6	15 deg	WA-12-3-0	WM-28-3-47-HP	ER25
1 3/4"-8 2 1/4"-6	15 deg	WA-12-5-0	WM-28-5-47-HP	ER32
6 5/8"-6 Chuck				

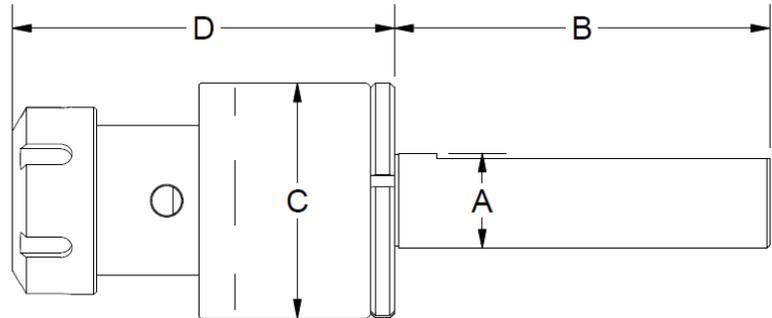
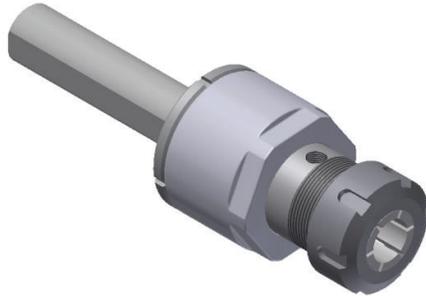
New Britain Recess Attachment				
Machine Size	Rise	Adjustable Stationary	Rotary w/ Coolant thru	ER Collet Size
51	10 deg	NA-10-10-0	NM-3-10-40-HP	ER25
52	15 deg	NA-12-2-0	NM-28-2-28-HP	ER32
60	15 deg	NA-10-1010	NM-3-10-XX-HP	ER25
61, 62 656,657	15 deg	NA-12-3-0	NM-28-3-XX-HP	ER32
602	15 deg	NA-12-4-0	NM-28-4-XX-HP	ER32
16	15 deg	NA-16-6-0	NM-12-6-XX-HP	ER32
88	15 deg	NA-18-7-0	NM-12-7-90-HP	ER32
865	15 deg	NA-18-6-0	NM-12-6-XX-HP	ER32

XX = Specify Splin size



SPLINE NO.	SPLINE PART NO.	A	B	C	# TEETH	U-JOINT PART NO.
4	GRH-4-19	1.121	0.881	0.171	10	ARH-5-18
5	ARH-5-19	0.995	0.845	0.25	6	ARH-5-18
13	CRH-13-19	1.498	1.1945	0.372	6	CRH-13-18
14	ARH-14-19	1.495	1.267	0.372	6	CRH-13-18
15	ARH-15-19	1.245	1.062	0.31	6	ARH-5-18
18	ARH-18-19	1.248	1.062	0.31	6	CRH-13-18
19	CRH-19-19	1.245	0.989	0.308	6	ARH-5-18
28	NRH-28-19	1.245	0.989	0.308	6	ARH-5-18
32	CRH-32-19	1.998	1.562	0.498	6	CRH-13-18
40	ARH-40-19	0.882	0.693	0.216	6	SRS-24-18
47	WRH-47-19	0.998	0.84	0.181	6	ARH-5-18
51	CRH-51-19	1.245	0.989	0.308	6	ARH-5-18
55	SRH-55-19	0.999	0.839	0.239	6	ARH-15-18
59	ARH-59-19	0.745	0.597	0.185	6	ARH-40-18
66	ARH-66-19	1.245	1.061	0.31	6	CRH-13-18
86	WRH-86-19	0.745	0.65	0.18	6	ARH-40-18
90	NRH-90-19	1.495	1.189	0.37	6	CRH-13-18

Precision Form & Grind Floating Reamer Holder



All Holders come with Port for Coolant thru

Specials Available upon Request!

Floating Reamer Holders with ER Collet Seat						
Model No	ER Collet Size	A - Shank Size	B - Shank Length	C - Dia	D - Length	Part #
200	ER 25	3/4"	4"	2.00"	3.06"	200-075
		1"				200-100
		1 1/4"				200-125
		1 1/2"				200-150
250	ER 32	1"	4"	2.47"	4.02"	250-100
		1 1/2"				250-150
		2"				250-200
300	ER 40	1"	4"	2.97"	4.55"	300-100
		1 1/2"				300-150
		2"				300-200
		2 1/4"				300-250

Here is indeed an outstanding floating tool holder! Its simplicity of design (a coordination of only five parts) bespeaks its high efficiency. It will compensate for both angular and parallel misalignment, permits the float to be adjusted in all directions. The moving parts ride on rollers and thus contribute immeasurably to making the members antifriction-producing smoother running with more perfect alignment. Composed of only 5 parts, the Precision Floating Tool Holder requires a minimum of maintenance-nothing to get out of order. Nor is there anything to fall out or get lost when holder is taken apart. It will enable you to ream holes with close tolerances with the very first hole reamed to size. You will definitely have no more "bell mouthed holes" if you use the Precision Floating Tool Holder.

Attachments Section Index: Acme-Gridley

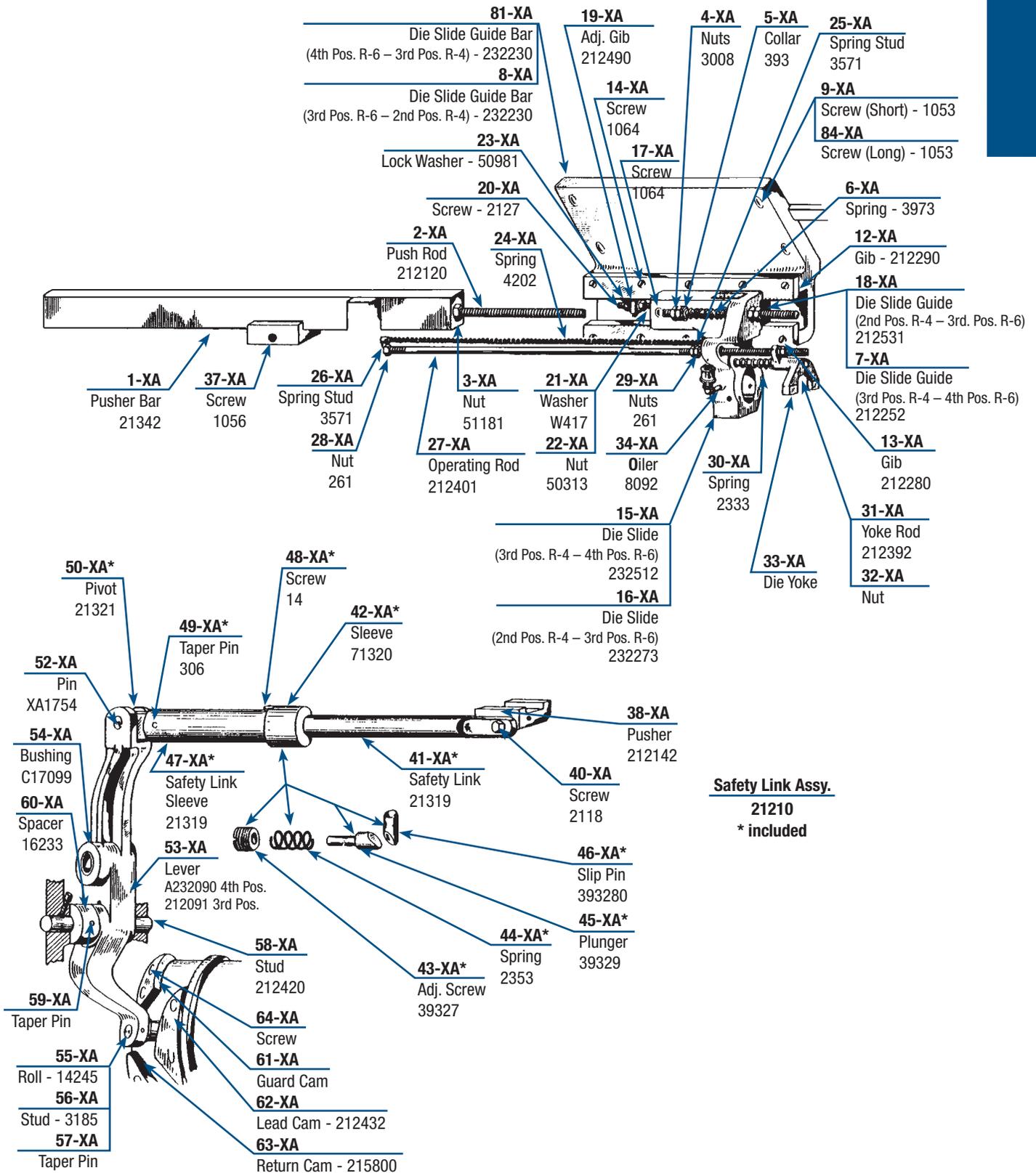
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XC Group	Threading Clutch Shaft Assy & Operating Mechanism 9/16 & 1" RA & RAN-6	379-380
XD Group	Threading Clutch Shaft & Drive Shaft Larger Machines	381-385
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XB - Threading Spindle Assy.	376	376	377	376 & 377	376 & 377	378
XC-XD - Clutch Shaft & Operating Mechanism	379-380	379-380	379-380	381-383		
Mechanical Threading Clutches	387	386	386	387	388	387-391
Logan Clutches	392-393	392-393	392-393	392-393	392-393	392-393
Acme Air Threading Clutches		394	394	395	395	
Die Yokes	396-400	396-400	396-400	396-400	396-400	396-400
Releasing Tap Holders	401-402	401-402	401-402	401-402	401-402	401-402
Cams	403-404	403-404	403-404	403-404	403-404	403-404

Die Slide & Operating Linkage 3rd & 4th Position

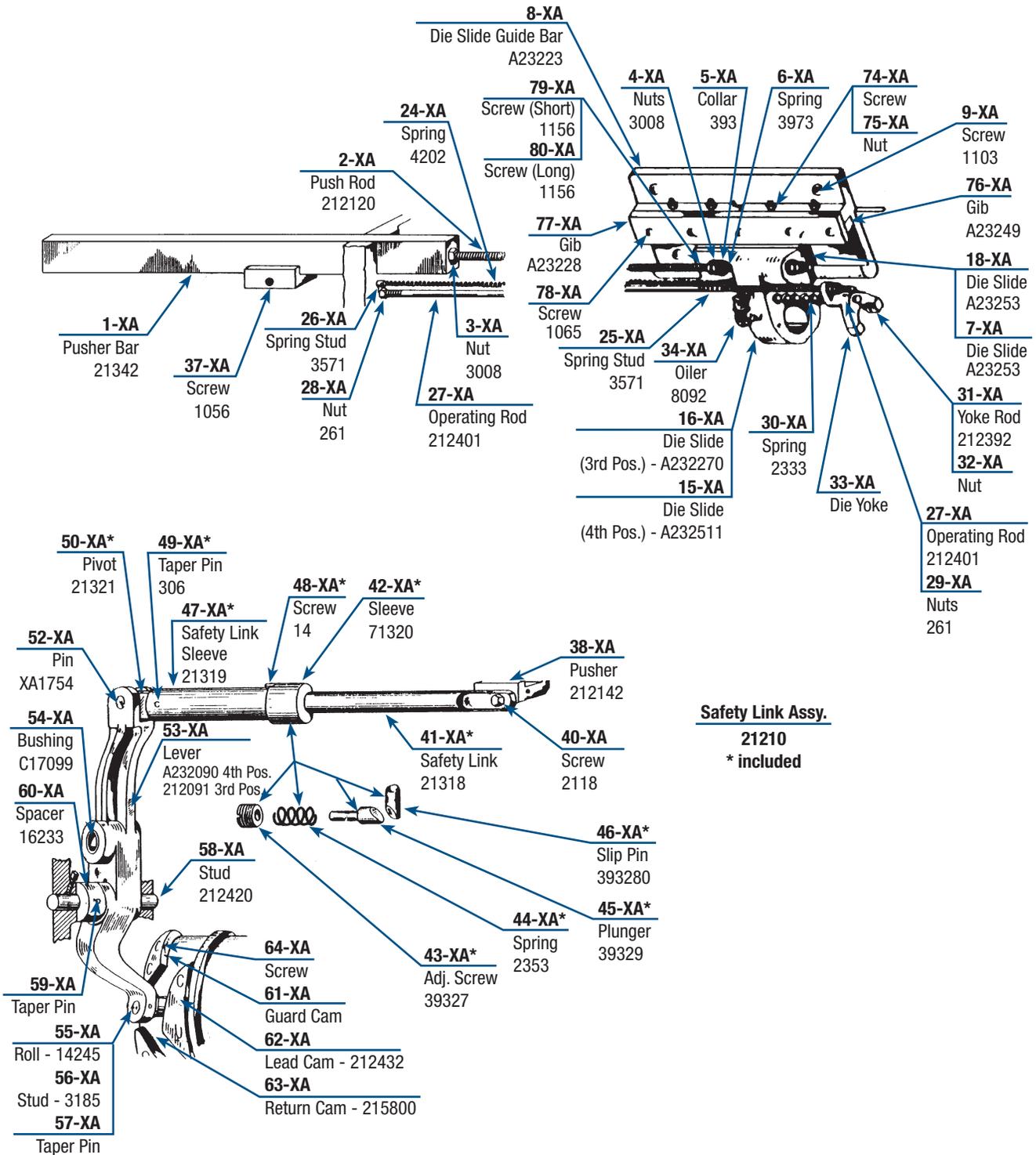
Machine Size
9/16 RA-6
Old Style
4" Machine



Threading

Machine Size
 9/16 RA-6
 1" RA-6

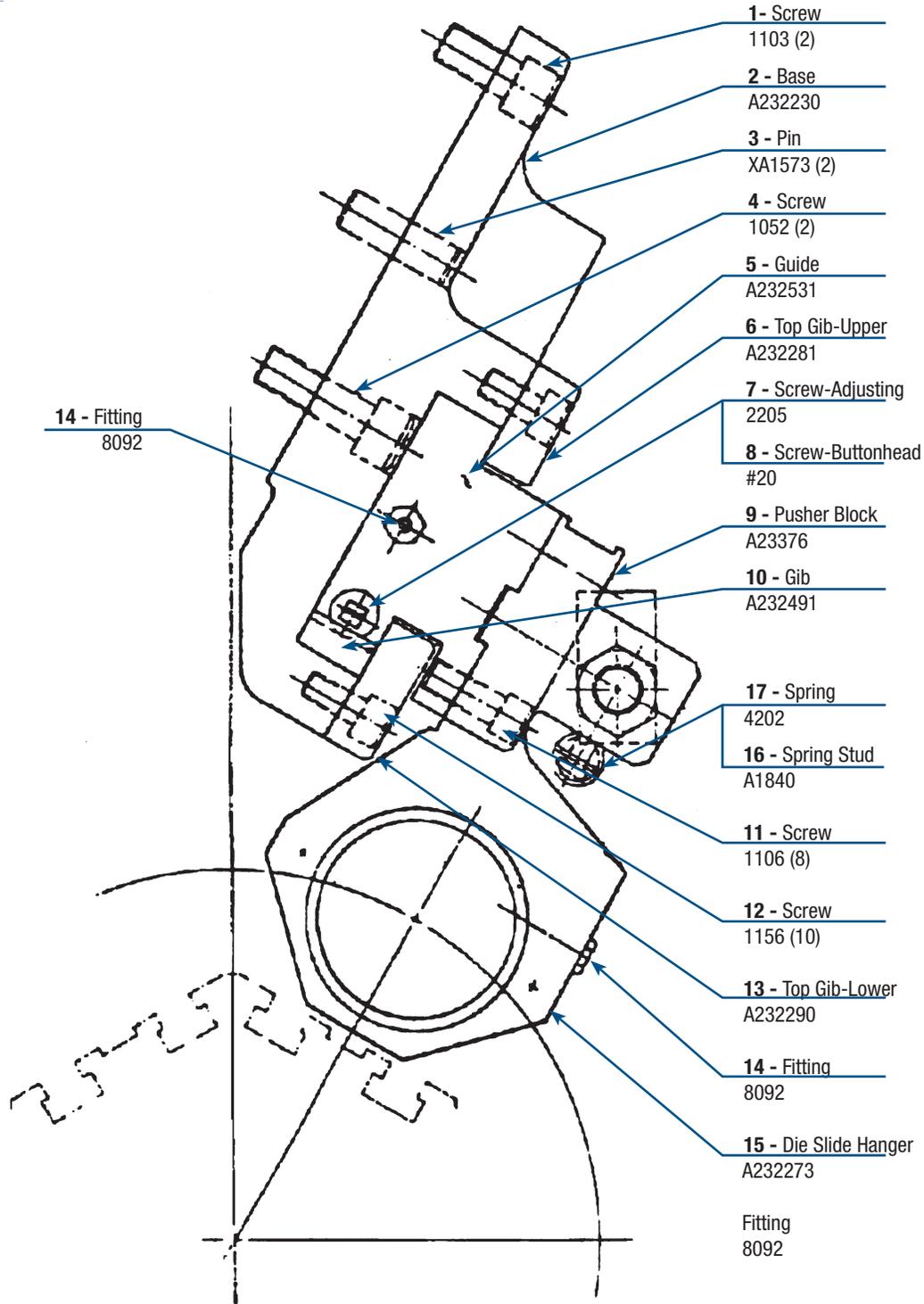
Die Slide & Operating Linkage 3rd & 4th Position



Threading

Machine Size
9/16 RAN-6
1" RAN-6
Radial
Machines

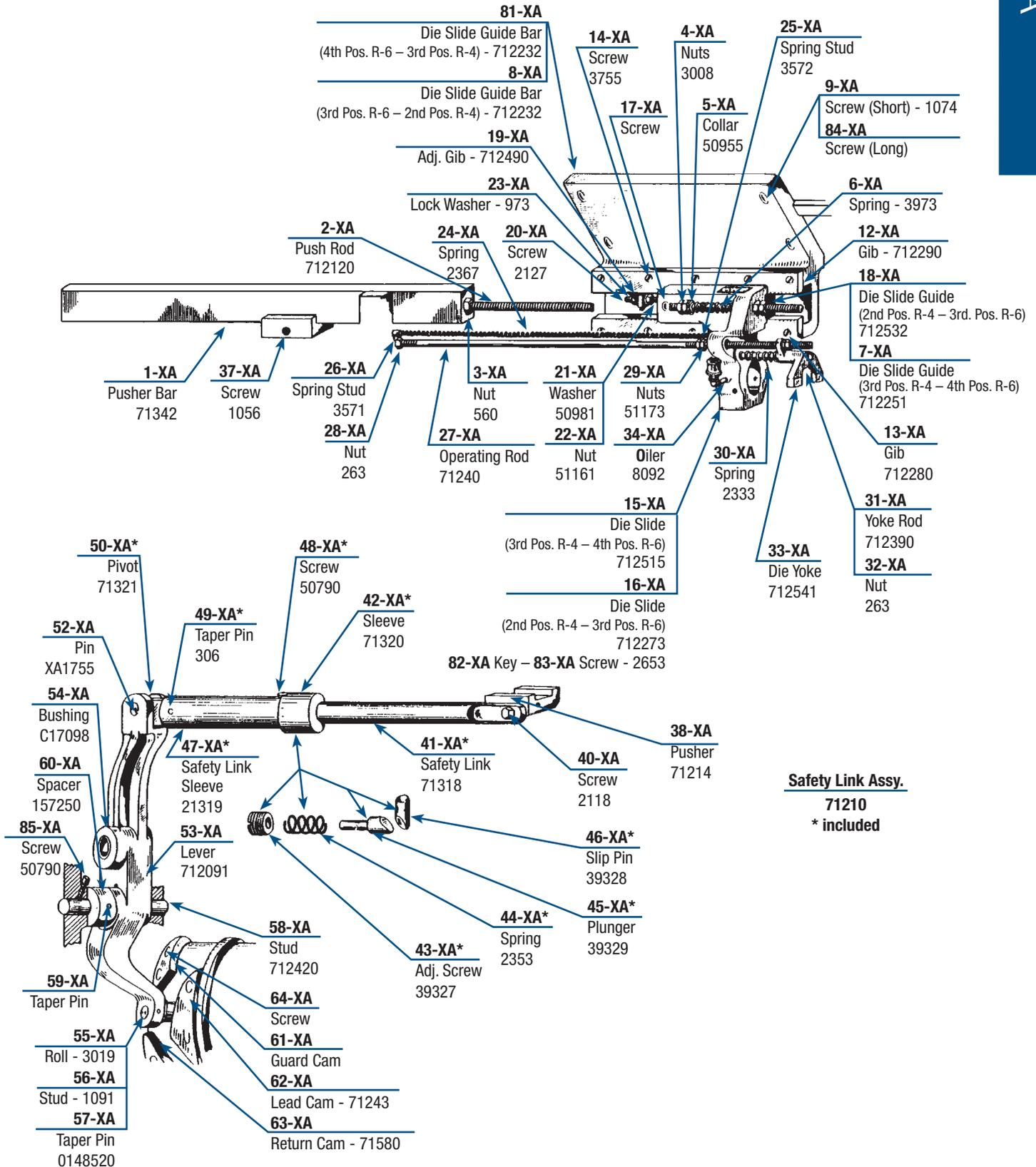
Modular Threading Hanger Assy. 3rd & 4th Position



Die Slide & Operating Linkage 3rd & 4th Position

Machine Size
1-1/4 RA-6

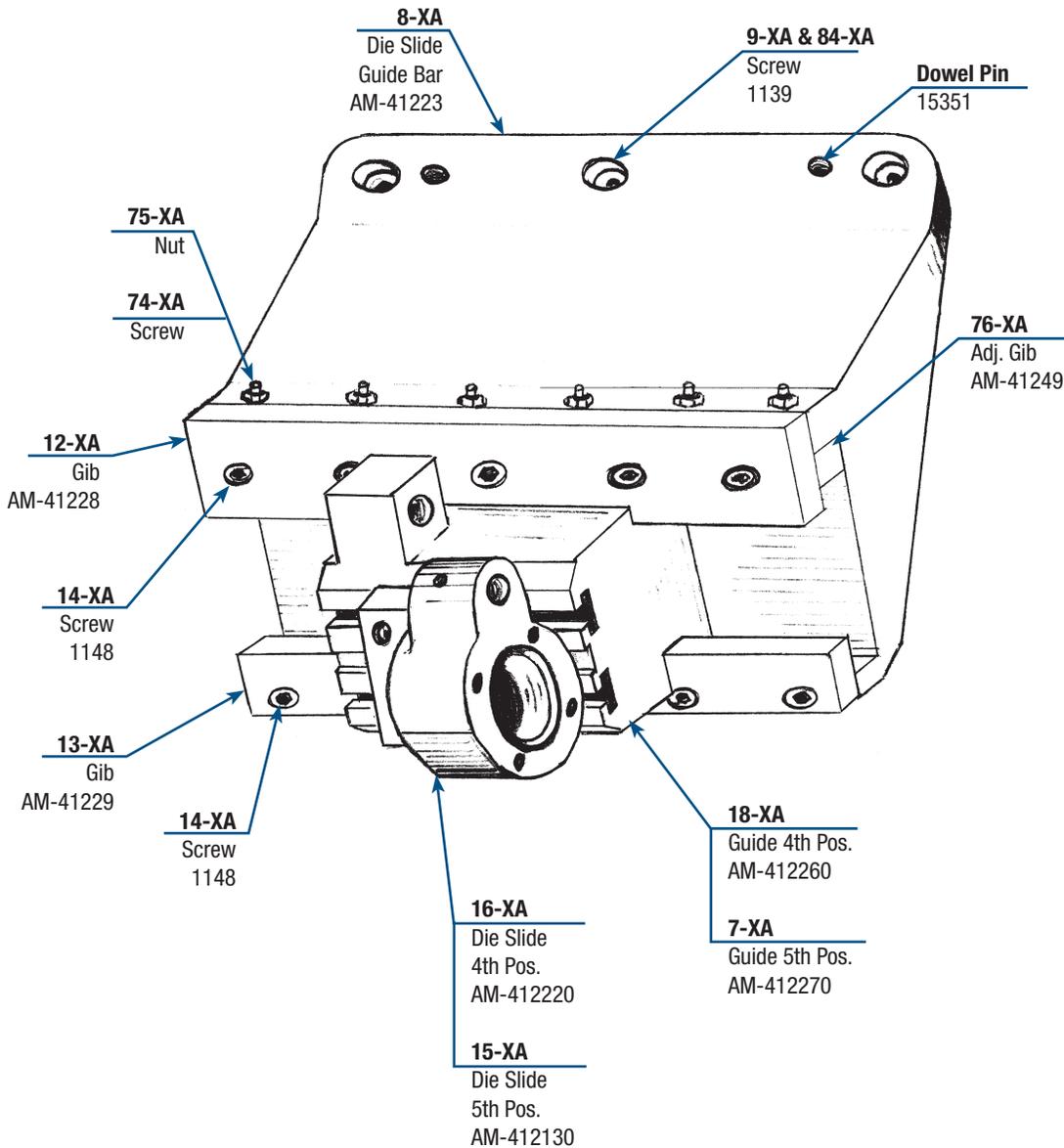
XA



Threading

Machine Size
1-1/4 RB-8
1-5/8 RBN-8

Die Slide Assy. 4th & 5th Position



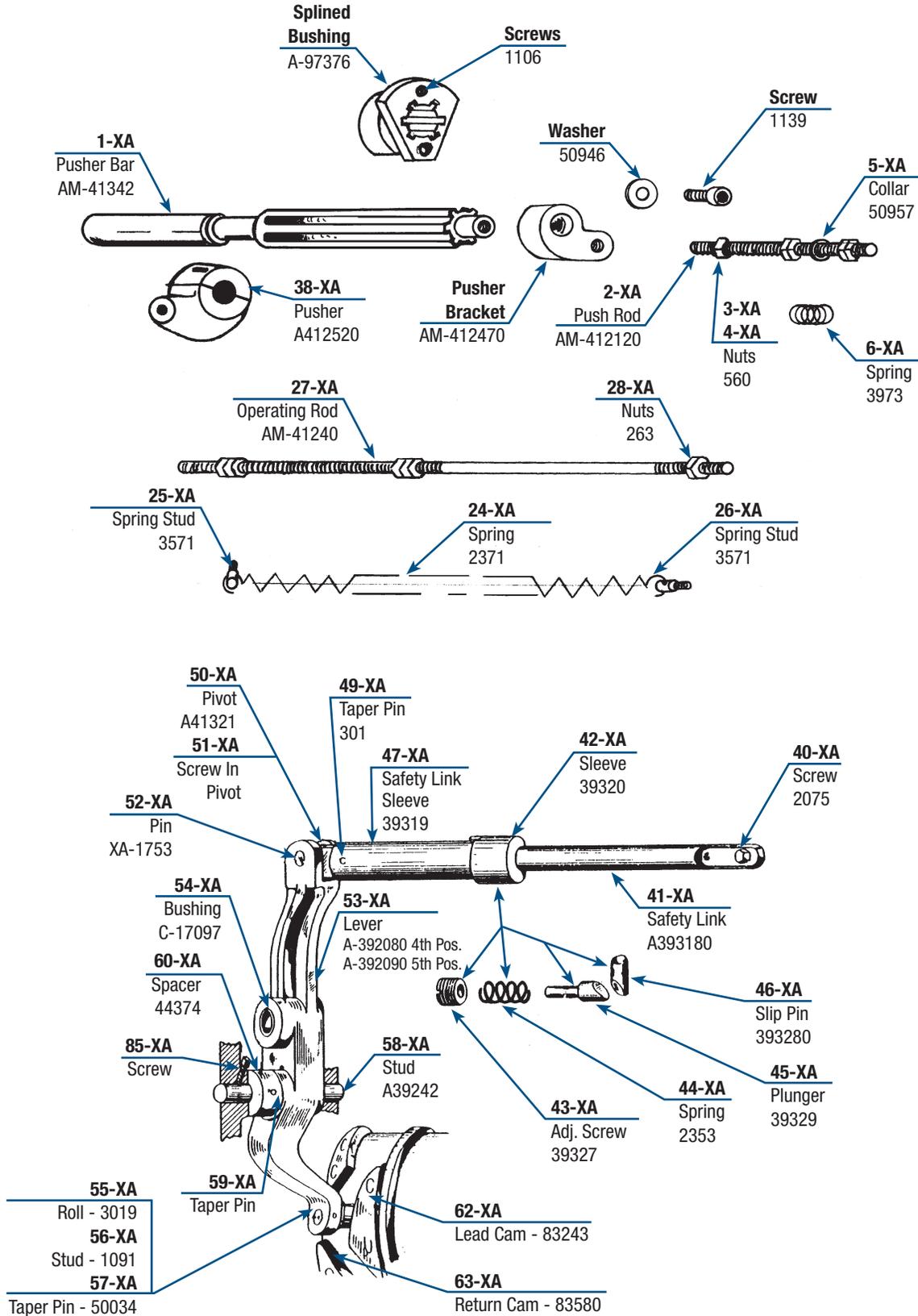
Operating Linkage 4th & 5th Position

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

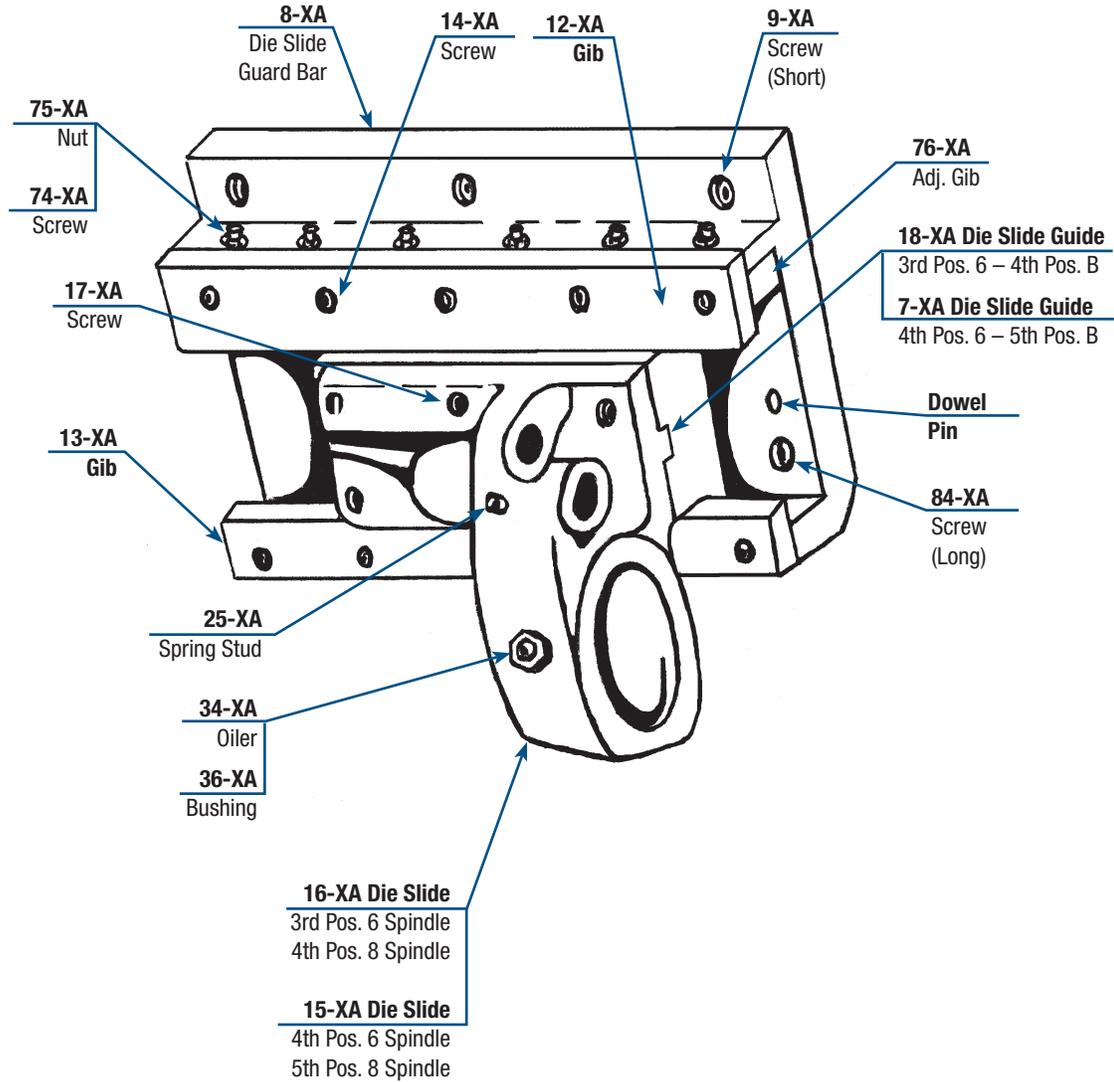
XA



Threading

Machine Size
1-5/8 RB-6
and Larger

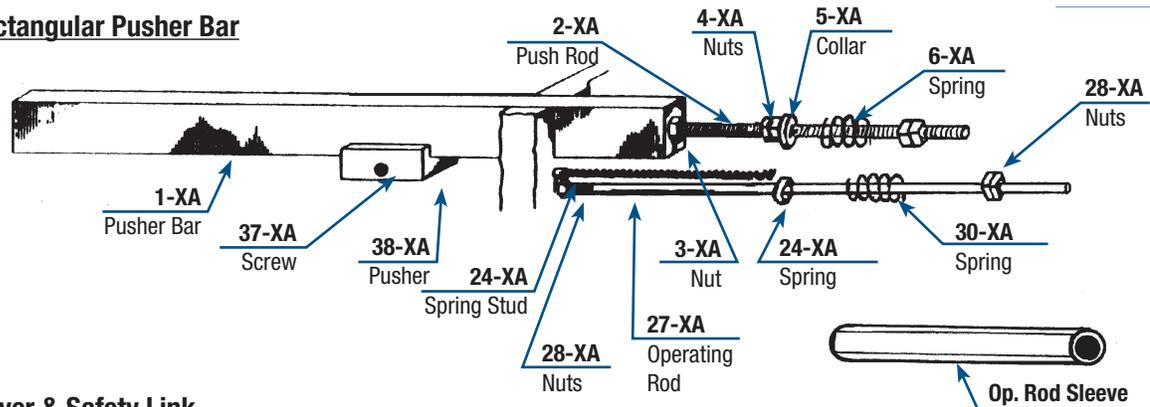
Guide Bar (Base) – Guide – Die Sleeve (Hanger) Upper Slides



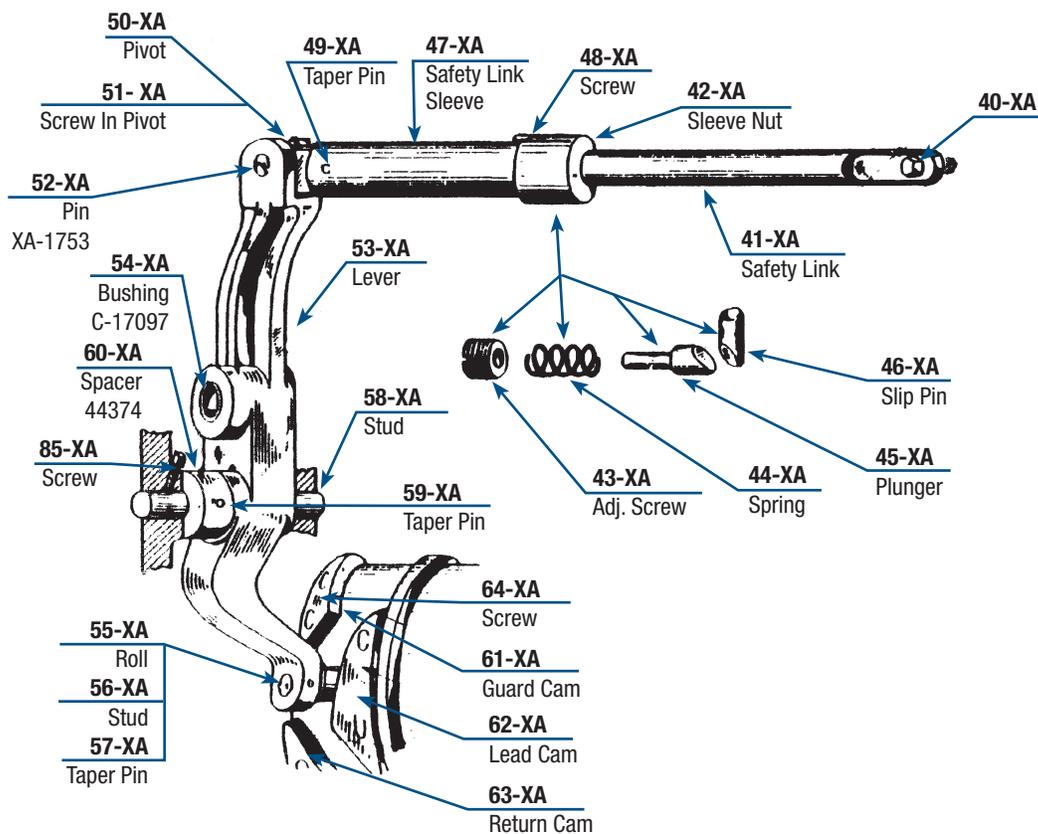
Threading Lever – Pusher – Pusher Bar – Operating Rods Upper Slides

Machine Size
1-5/8 RB-6
and Larger

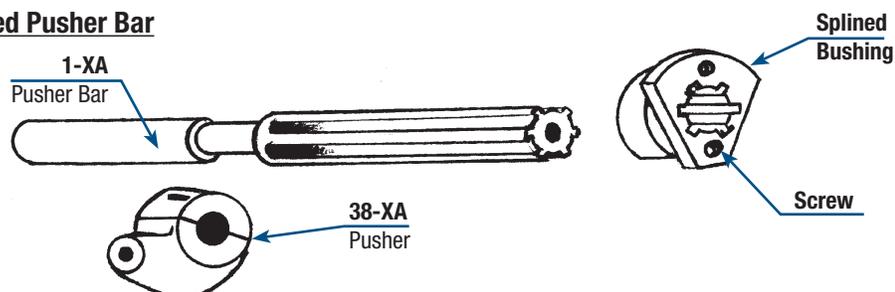
Rectangular Pusher Bar



Lever & Safety Link



Splined Pusher Bar



Threading



2-XA Push Rod

2-XA PUSH ROD

MACHINE SIZE	PART NUMBER
1-5/8 RB-6	A-392121
2 RB-6	
1-5/8 RB-8	BM-83212
2 RB-8	
2-5/8 RB-6	BM-83212
2-5/8 RB-8	A-97212
3-1/2 RB-6	A-97212
4 RB-6	BM-83212



4-XA Nuts

4-XA NUTS

MACHINE SIZE	PART NUMBER
1-5/8 RB-6	2809
2 RB-6	
1-5/8 RB-8	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
4 RB-6	



6-XA Spring

6-XA SPRING

MACHINE SIZE	PART NUMBER
1-5/8 RB-6	44980
2 RB-6	
1-5/8 RB-8	
2 RB-8	
2-5/8 RB-6	
2-5/8 RB-8	
3-1/2 RB-6	
4 RB-6	

7-XA DIE SLIDE GUIDE 18-XA DIE SLIDE GUIDE

MACHINE SIZE	PART NUMBER	
	18-XA GUIDE 3RD POS 6 SPINDLE 4TH POS 8 SPINDLE	7-XA GUIDE 4TH POS 6 SPINDLE 5TH POS 8 SPINDLE
1-5/8 RB-6	A-83253	A-83253
2 RB-6		
1-5/8 RB-8		
2 RB-8		
2-5/8 RB-6		
2-5/8 RB-8		
3-1/2 RB-6		
4 RB-6		

12-XA GIB

MACHINE SIZE	PART NUMBER
1-5/8 RB-6	A-392280
2 RB-6	
1-5/8 RB-8	BM-83229
2 RB-8	
2-5/8 RB-6	BM-83229
2-5/8 RB-8	A-97229
3-1/2 RB-6	A-97229
4 RB-6	A-97229



12-XA Gib

13-XA GIB

MACHINE SIZE	PART NUMBER
1-5/8 RB-6	A-392290
2 RB-6	
1-5/8 RB-8	BM-83228
2 RB-8	
2-5/8 RB-6	BM-83228
2-5/8 RB-8	A-97228
3-1/2 RB-6	A-97228
4 RB-6	A-97228



13-XA Gib

Threading

XA

15-XA DIE SLIDE 16-XA DIE SLIDE

MACHINE SIZE	PART NUMBER	
	15-XA DIE SLIDE UPPER REAR 4TH POS 6 SPINDLE 5TH POS 8 SPINDLE	16-XA DIE SLIDE UPPER FRONT 3RD POS 6 SPINDLE 4TH POS 8 SPINDLE
1-5/8 RB-6 2 RB-6	A-41226	A-41227
1-5/8 RB-8 2 RB-8	BM-83226	BM-83227
2-5/8 RB-6	B-85226	B-85227
2-5/8 RB-8	A-972270	A-972510
3-1/2 RB-6	A-952261	A-952271
4 RB-6	BA-93226	BA-93227



24-XA Spring

24-XA SPRING

MACHINE SIZE	PART NUMBER
1-5/8 RB-6 2 RB-6	2371
1-5/8 RB-8 2 RB-8	44349
2-5/8 RB-6	44349
2-5/8 RB-8	44349
3-1/2 RB-6	44349
4 RB-6	2371



43-XA Adjusting Screw

43-XA ADJUSTING SCREW 44-XA SPRING 45-XA PLUNGER 46-XA SLIP PIN

	43-XA ADJUSTING SCREW	44-XA SPRING	45-XA PLUNGER	46-XA SLIP PIN
1-5/8 RB-6	39327	2353	39329	393280
2 RB-6				
1-5/8 RB-8				
2 RB-8				
2-5/8 RB-6				
2-5/8 RB-8				
3-1/2 RB-6				
4 RB-6				



44-XA Spring



45-XA Plunger



46-XA Slip Pin

53-XA LEVER ASSY. INCL. 54, 55, 56-XA

MACHINE SIZE	PART NUMBER	
	3RD POS. 6 SPINDLE 4TH POS. 8 SPINDLE	4TH POS. 6 SPINDLE 5TH POS. 8 SPINDLE
1-5/8 RB-6 2 RB-6	A-392080	A-392090
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 4 RB-6	A-832080	A-832090



53-XA Lever Assy.

54-XA BUSHING 55-XA ROLL 56-XA STUD

MACHINE SIZE	PART NUMBER		
	54-XA BUSHING	55-XA ROLL	56-XA STUD
1-5/8 RB-6 2 RB-6	C-17097	3019	1091
1-5/8 RB-8 2 RB-8 2-5/8 RB-6 2-5/8 RB-8 3-1/2 RB-6 4 RB-6	C-17079	14204	14369



54-XA BUSHING



55-XA ROLL



56-XA STUD

76-XA ADJUSTING GIB

MACHINE SIZE	PART NUMBER
1-5/8 RB-6 2 RB-6	A-392490
1-5/8 RB-8 2 RB-8	A-83249
2-5/8 RB-6 2-5/8 RB-8	A-83249
3-1/2 RB-6 4 RB-6	A-97249



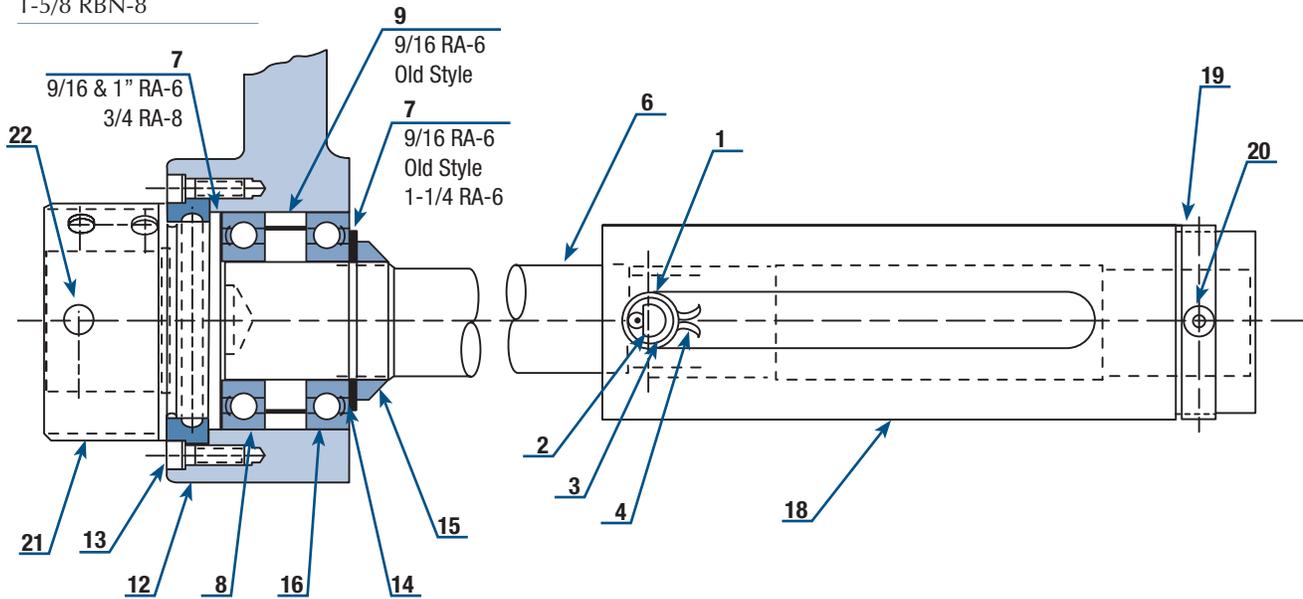
76-XA Adjusting Gib

Threading

Machine Size

- 9/16 RA-6 Old Style
- 9/16, 1", 1-1/4 RA-6
- 3/4 RA-8
- 1-1/4 RB-8
- 1-5/8 RBN-8

Threading Spindle Assy. - Smaller Machines

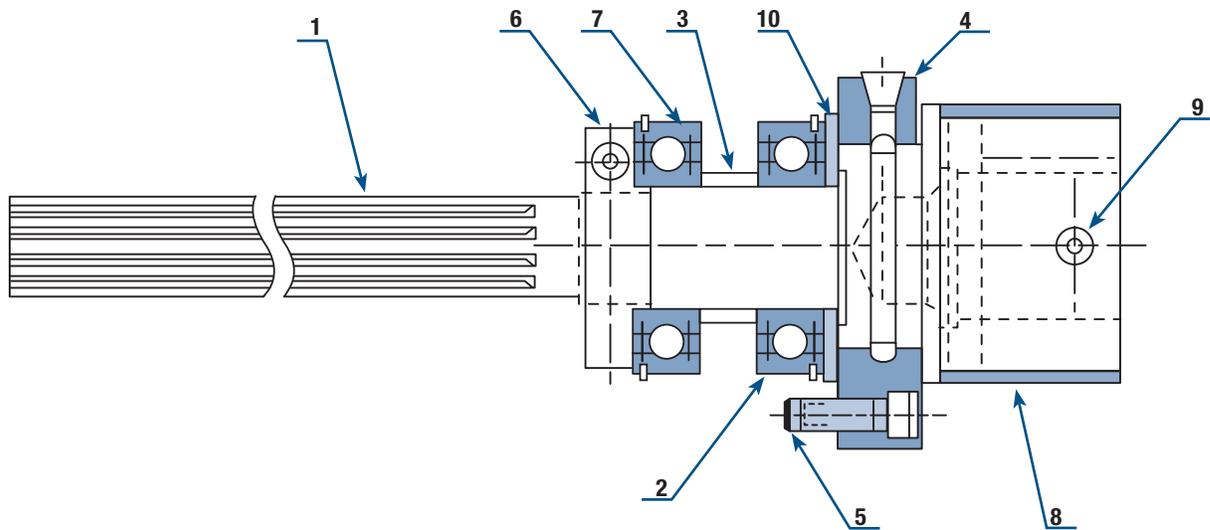


KEY No.	DESCRIPTION	MACHINE SIZE				
		9/16 RA-6 OLD STYLE	9/16 RAN-6 1" RA-6	3/4 RA-8	1-1/4 RA-6	1-1/4 RB-8 1-5/8 RBN-8
1	1-XB Roll	9877	9877	9877	9877	9877
2	2-XB Pin	15222	15222	15222	15222	15222
3	3-XB Washers	2483	2483	2483	2483	2483
4	4-XB Cotter Pins	9765	9765	9765	9765	9765
6	6-XB Spindle	232331	212335	BD-71233	712333	AM-41233
7	7-XB Flinger Spacer	16515	A-23255	A-23255	15939	n/a
8	8-XB Bearing	A-17433	A-17769	A-17769	A-17769	A-17769
9	9-XB Spacer	161390	n/a	na/	n/a	n/a
12	12-XB Reservoir	232350	A-23235	BD-71235	21235	AM-41235
13	13-XB Screw	1151	1121	1608	79	1101
14	14-XB Lockwasher	27919	17948	17948	17948	17948
15	15-XB Locknut	27920	17949	17949	17949	17949
16	16-XB Bearing	A-17432	A-17769	A-17769	A-17769	A-17769
18	Sleeve	XA-22079	XA-22079	BD-70237	712371	AM-41237
19	Ring	XA-83	XA-83	*XA-83	XA-83	XA-83
20	Ring Pin	Z-22073	Z-22073	**Z-22073	Z-22073	Z-22073
21	Collar	XA-2039	XA-2038	XA-2038	XA-2038	XA-2038
22	Collar Pin	XA-1668	XA-1666	XA-1666	XA-1666	XA-1666

3/4 RA-8 begin s/n BD70062 * Ring use XA-6780 ** Ring Pin use XA-6781

Threading Spindle Assy. - Splined

Machine Size
9/16, 1" RAN-6
1-1/4 RA-6
1-1/4 RB-8



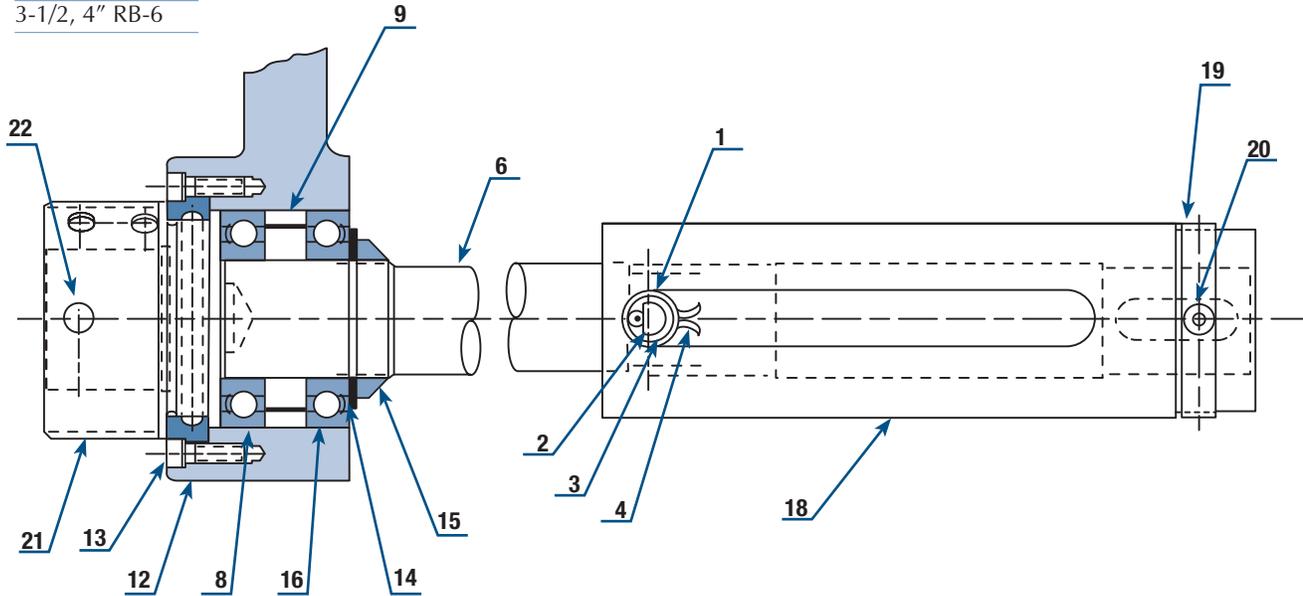
KEY No.	DESCRIPTION	MACHINE SIZE		
		9/16 RAN-6 1" RAN-6	1-1/4 RA-6	1-1/4 RB-8
1	6-XB Spindle	212336	712334	AM-412230
2	8-XB Bearing	A-17769	A-17769	A-17769
3	9-XB Spacer	C-44808	C-44893	C-44893
4	12-XB Reservoir	A-23235	212350	212350
5	13-XB Screw	1101	79	79
6	15-XB Adj. Nut	XA-7135	XA-7135	XA-7135
7	16-XB Bearing	A-17769	A-17769	A-17769
8	Collar	XA-2037	XA-2037	XA-2037
9	Collar Pin	XA-1662	XA-1662	XA-1662
10	Flinger Spacer	A-23255	n/a	n/a

Threading

Machine Size

- 1-5/8, 2" RB-6
- 1-5/8, 2" RB-8
- 2-5/8 RB-6
- 2-5/8 RB-8
- 3-1/2, 4" RB-6

Threading Spindle Assy. - Larger Machines

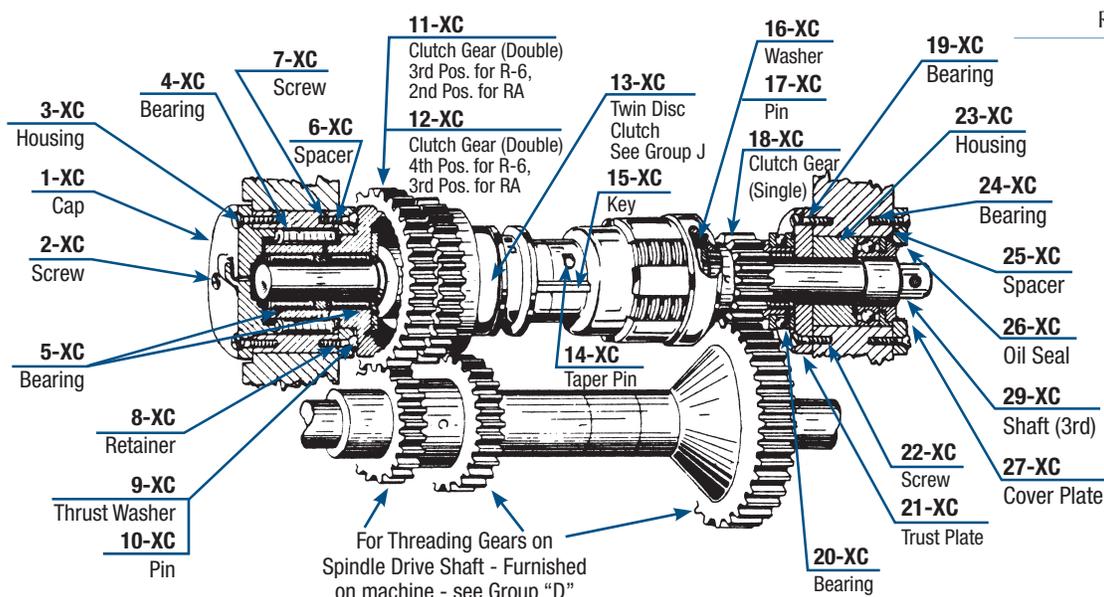


XB - Group

KEY No.	DESCRIPTION	MACHINE SIZE			
		1-5/8 RB-6 2" RB-6	1-5/8 RB-8 2" RB-8	2-5/8 RB-6	2-5/8 RB-8 3-1/2 RB-6 4" RB-6
1	1-XB Roll	523	523	523	523
2	2-XB Pin	15200	15200	15200	15200
3	3-XB Washers	2485	2485	2485	2485
4	4-XB Cotter Pins	51660	51660	51660	51660
6	6-XB Spindle	A-392331	BM-832331	A-972331	A-972331
8	8-XB Bearing	17395	17395	17394	17394
9	9-XB Spacer	A-85238	A-85238	B-83238	not used
12	12-XB Reservoir	A-85235	BM-83235	A-83235	A-83235
13	13-XB Screw	1058	1058	1608	1058
14	14-XB Lockwasher	8622	8622	17963	17963
15	15-XB Locknut	8621	8621	17962	17962
16	16-XB Bearing	17464	17464	17503	17394
18	Sleeve	A-392372	BM-832371	B-852370	A-972371
19	Ring	XA-88	XA-88	XA-88	XA-88
20	Ring Pin	XA-1664	XA-1664	XA-1664	XA-1664
21	Collar	XA-2037	XA-2037	XA-2037	XA-2037
22	Collar Pin	XA-1662	XA-1662	XA-1662	XA-1662
23	Key	2730	1769	2600	2662

Threading Clutch Shaft Assy. - 3rd & 4th Pos. Auxiliary

Machine Size
9/16 & 1"
RA, RAN-6



KEY No.	DESCRIPTION	9/16 RA-6 OLD STYLE (4" CENTER)	9/16 RA-6 (1" FRAME)	1" RA-6 1ST GEN	1" RA-6 2ND GEN	1" RA-6 3RD GEN	1" RA-6 1" RAN-6 (SYNC.)
		PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
1-XC	Cap	AZ-22018	A-23476	AZ-22018	AZ-22018	A-23476	A-23476
3-XC	Housing	212190	A-23219	212190	212190	A-23219	A-23219
4-XC	Bearing	17693	A-17265	17693	17693	A-17265	A-17265
5-XC	Bearing	17694 (2)	A-17279 (2)	17694 (2)	17694 (2)	A-17279 (2)	A-17279 (2)
6-XC	Spacer	16010	C-44042	n/a	n/a	C-44042	C-44042
8-XC	Retainer	212200	n/a	212200	212200	n/a	n/a
9-XC	Thrust Washer	15992	C-44041	44826	B-44315	C-44041	C-44041
10-XC	Pin	15172	15172	15172	15172	15172	15172
11-XC	Clutch Gear (3rd)	232600	232602	A-23260	A-232600	A-232602	232602
12-XC	Clutch Gear (4th)	232180	232183	A-232180	A-232181	A-232183	232183
13-XC	Clutch	16615	02098-28	01477-35	01477-35	02098-28	02098-28
15-XC	Key	51322	XA-5858	2744	2744	XA-5858	XA-5858
16-XC	Thrust Washer	15992	B-44315	44825	B-44315	B-44315	B-44315
17-XC	Pin	15172	15172	15172	15172	15172	15172
18-XC	Clutch Gear	232171	232172	A-23217	A-232170	A-232170	A-232172
19-XC	Bearing	54529	A-17713	54529	54529	A-17713	A-17713
20-XC	Bearing	17641	17641	17641	17641	17641	17641
23-XC	Housing	A-232160	A-23475	A-232160	A-232160	A-23475	A-23475
24-XC	Bearing	17603	A-17808	17603	17907	A-17808	A-17808
25-XC	Spacer	AZ-22016	A-23478	AZ-22016	AZ-22016	A-23478	A-23478
26-XC	Oil Seal	16556	n/a	16556	16556	n/a	n/a
27-XC	Cover Plate	21309	n/a	21309	21309	n/a	n/a
29-XC	Shaft (3rd)	232155		A-232151	A-232152	A-232155	A-232155
29-XC	Shaft (4th)	Z-22011	AZ-220113	AZ-22011	AZ-220110	AZ-220113	AZ-220113

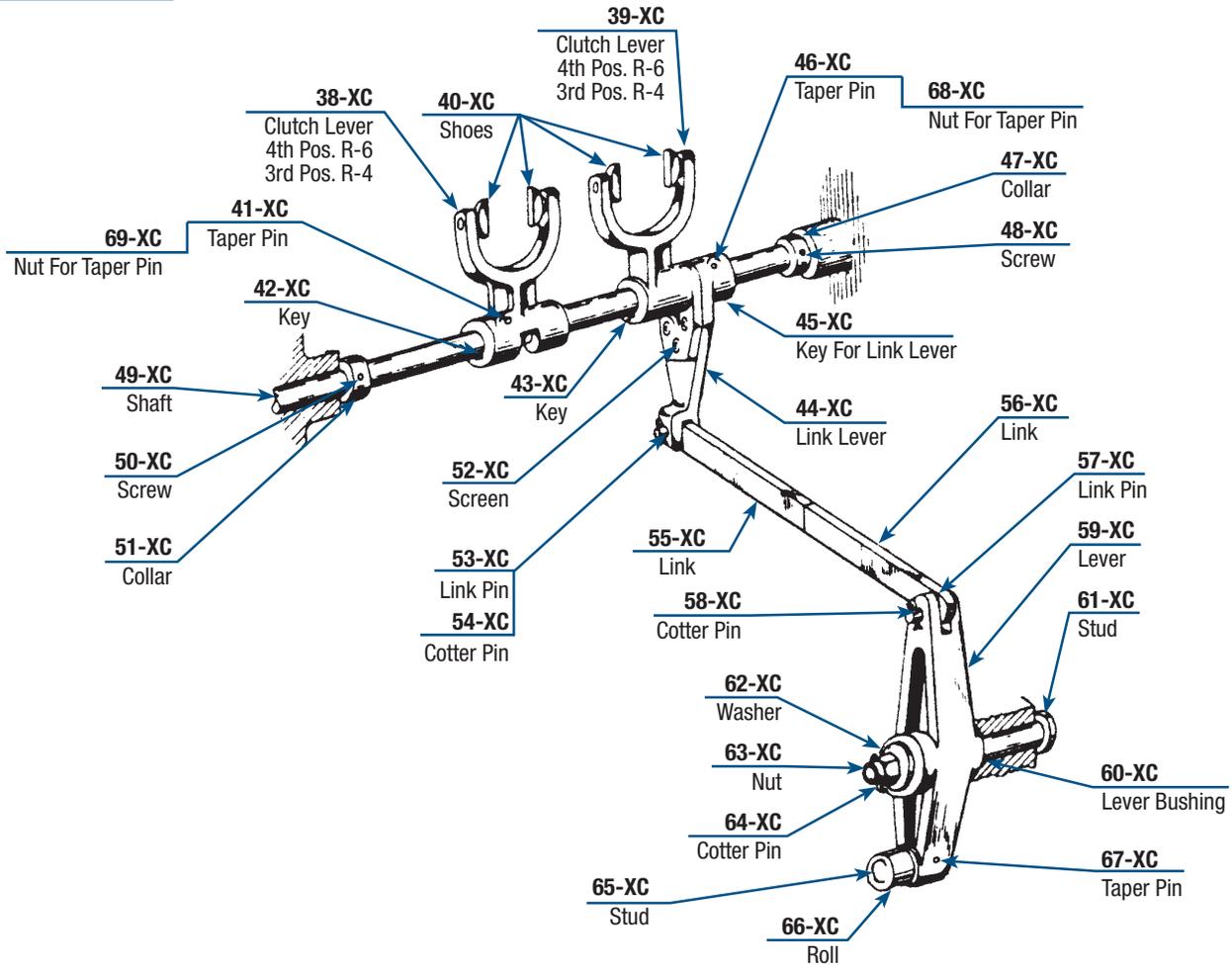
Additional parts for 29-XC Shaft AZ-220113

XC	Spacer - 4th pos. (when not driving 5th)					B-44993	
XC	Bronze Spacer - behind 18XC gear					C-44039	
XC	Steel Spacer - behind 18XC gear					B-44966	
XC	Adjusting Nut (end of shaft)					01305-46	

Threading

Machine Size
9/16 & 1"
RA, RAN-6

Clutch Operating Mechanism - 3rd & 4th Pos. Auxiliary



KEY No.	DESCRIPTION	9/16 RA-6	1" RA-6
		PART No.	PART No.
38-XC	Clutch Oper. Lever (3rd)	232071	A-232071
39-XC	Clutch Oper. Lever (4th)	A232031	A-23219
40-XC	Shoes	232050	A-23205
44-XC	Link Lever	232593	A-232590
56-XC	Link Bolt	23206	23206
59-XC	Cam Lever	212010	212010
60-XC	Bushing	17160	17160
61-XC	Lever Stud	1258	1258
65-XC	Roll Stud	3185	3185
66-XC	Roll	14245	14245

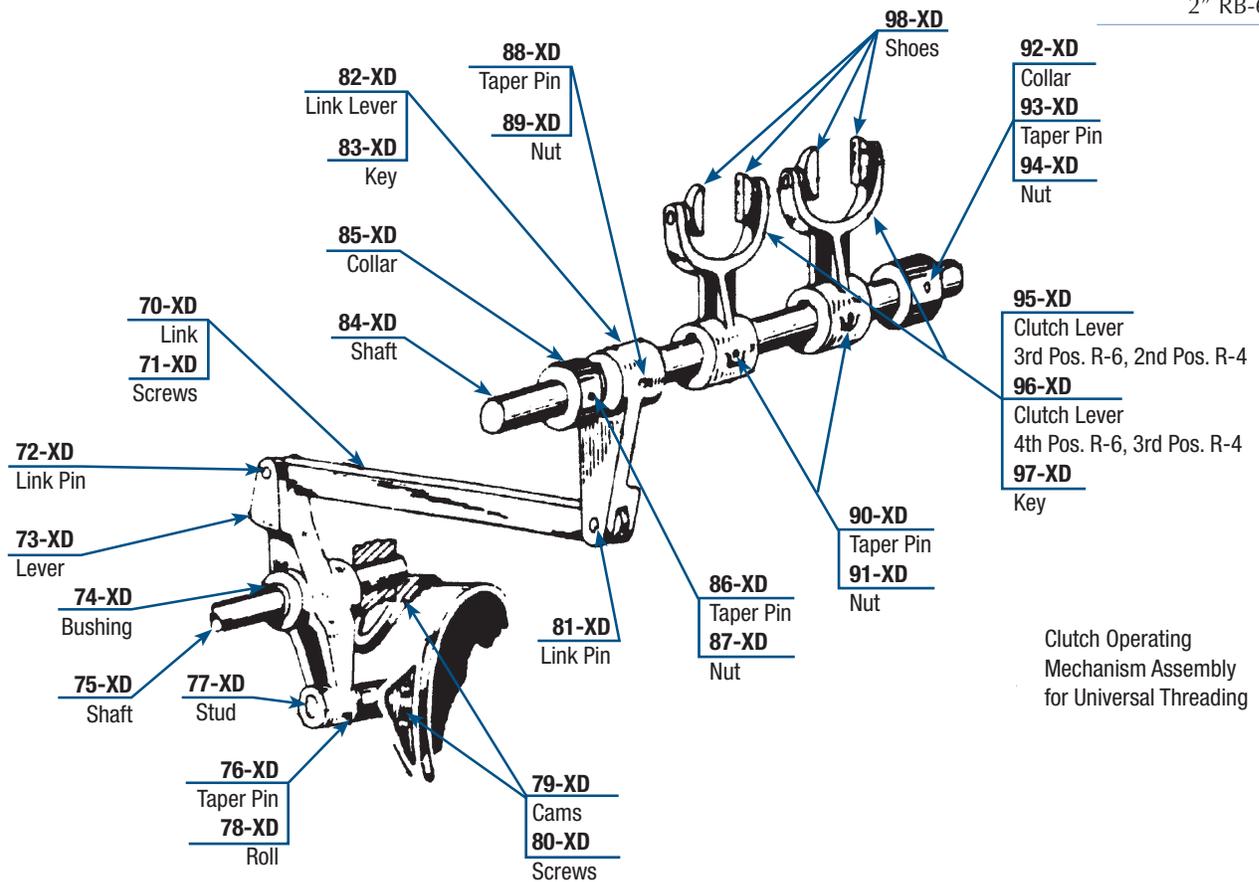
Clutch Operating Mechanism Assy. - 3rd & 4th Pos. Auxiliary

Machine Size

1-1/4 RA-6

1-5/8 RB-6

2" RB-6



Clutch Operating Mechanism Assembly for Universal Threading

KEY No.	DESCRIPTION	1-1/4 RA-6	1-5/8 RB-6 2" RB-6
		PART No.	PART No.
70-XD	Link Bolt	712060	A-39206
73-XD	Lever	71201	A-392010
74-XD	Bushing	52809	52134
75-XD	Shaft	703470	A-38347
77-XD	Roll Stud	3179	14351
78-XD	Roll Stud	3019	14245
79-XD	Cam	71241	A-41251
82-XD	Lever	712030	A-39259
84-XD	Shaft	71204	A-39204
85-XD	Collar	XA-2010	XA-2011
90-XD	Pin	51785	51785
91-XD	Nut	51159	51159
92-XD	Collar	XA-2010	XA-2011
95-XD	Lever	71207	A-41207
96-XD	Lever	71207	A-41207
98-XD	Shoes	392050	A-41205

Threading

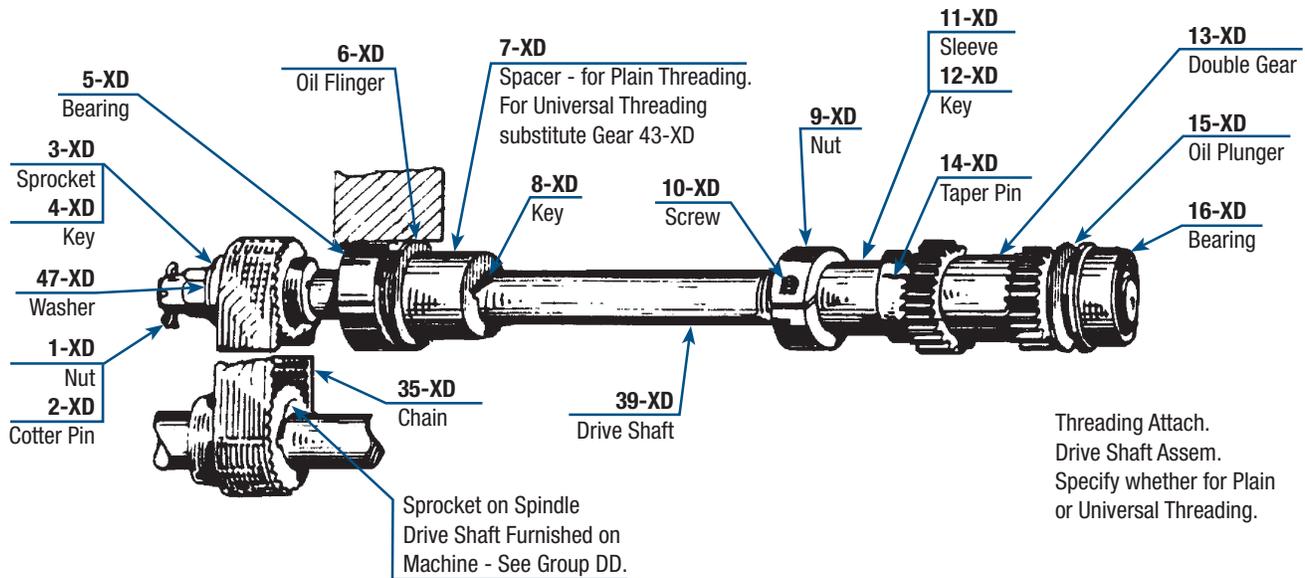
Machine Size

1-1/4 RA-6

1-5/8 RB-6

2" RB-6

Threading Drive Shaft Assy. - 3rd & 4th Pos. Auxiliary



Silent chain design shown

KEY No.	DESCRIPTION	1-1/4 RA-6	1-5/8 RB-6 2" RB-6
		PART No.	PART No.
1-XD	Nut	2803	2805
3-XD	Sprocket *	71269 (silent)	A-41269
5-XD	Bearing	17750	A-17063 (2)
43-XD	Gear	71263	A-41263
9-XD	Adj. Nut	XA-1844	n/a
11-XD	Sleeve	71249	A412990
13-XD	Gear(s)	71260, 712620 71262	A-412622 A-41260
16-XD	Bearing	A-17161	A-17678
39-XD	Shaft ***	712661	A-41266, A-412660
35-XD	Chain **	71296 (silent)	A-41296
XD	Spacer		B-44567
XD	Bearing		A-17349
XD	Lock Washer		27915
XD	Lock Nut		27910

* Single bicycle sprocket - 712692 Double bicycle sprocket - 712693

** Single bicycle chain - 712962 Double bicycle chain - 712963

*** Multiple options are available - verify before ordering

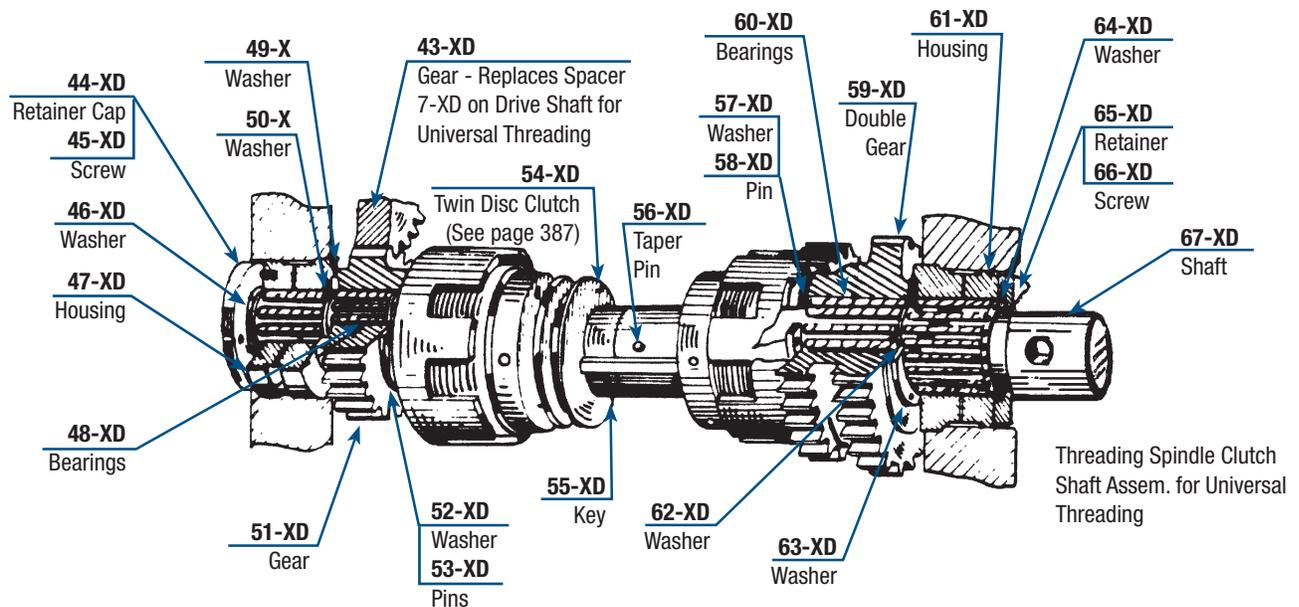
Threading Clutch Shaft Assy. - 3rd & 4th Pos. Auxiliary

Machine Size

1-1/4 RA-6

1-5/8 RB-6

2" RB-6



KEY No.	DESCRIPTION	1-1/4 RA-6	1-5/8 RB-6 2" RB-6
		PART No.	PART No.
44-XD	Retainer Cap	71339	A-41221
46-XD	Washer	15927	n/a
47-XD	Housing	71219	A-41294
48-XD	Bearings	17751 (2)	17658, 17390
49-XD	Washer	15927	15879
50-XD	Washer	XA-1206	15881
51-XD	Single Gear	712170	A-41217
52-XD	Washer	15979	15880
53-XD	Pins	15172 (3)	15172 (3)
54-XD	Clutch	16620	16608
55-XD	Key	51303	1900
57-XD	Washer	15979	15880
58-XD	Pins	15172 (3)	15172 (3)
59-XD	Double Gear	71261	A-412181
60-XD	Bearings	17751 (2)	17658 (2)
61-XD	Housing	71219	A-41219
62-XD	Washer	15927	444760
63-XD	Washer	15925	158780
64-XD	Washer	15927	n/a
65-XD	Retainer Cap	71339	A-413170
67-XD	Shaft	712152	A-412150

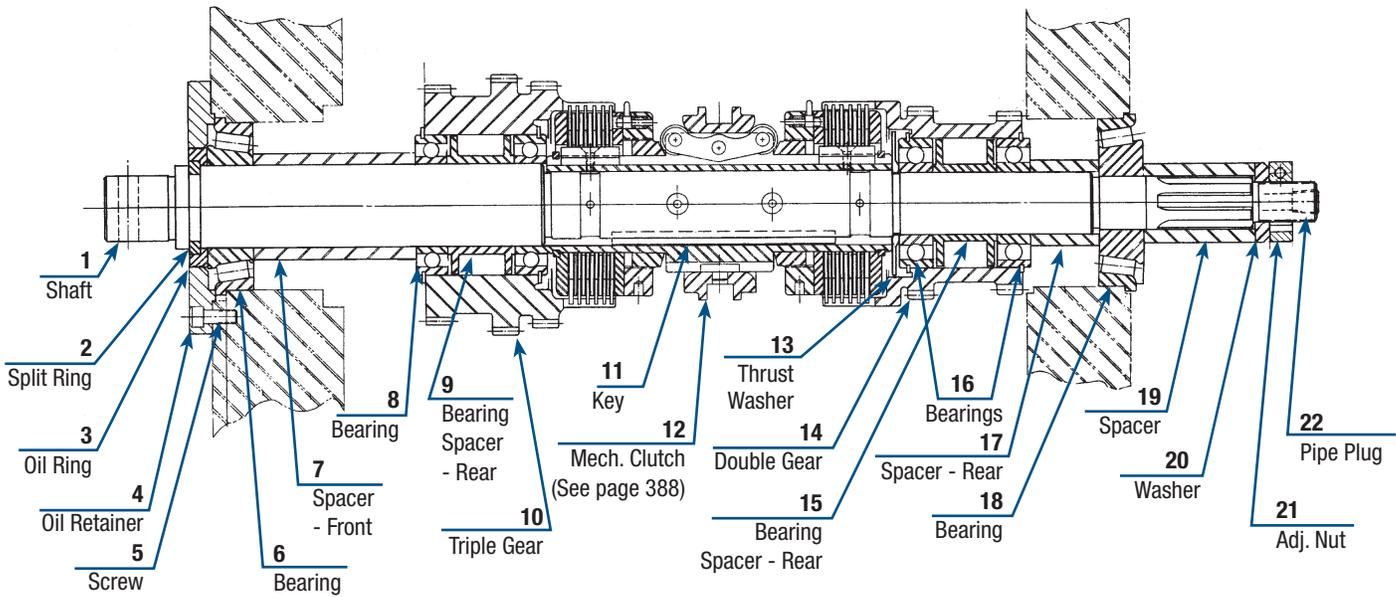
Threading

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

Threading - Clutch Shaft Assy.



KEY. NO.	QTY.	PART NO.	DESCRIPTION
1	1	AM-412151	Shaft
2	1	A-44907	Split Ring
3	1	A-44906	Oil Ring
4	1	B-713530	Oil Retainer
5	2	1102	Screw
6	1	A-17346	Bearing
7	1	B-44681	Spacer- Front
8	2	A-17349	Bearing
9	1	C-441080	Brg. Spacer -Rear
10	1	AM-412181	Triple Gear
11	1	51303	Key

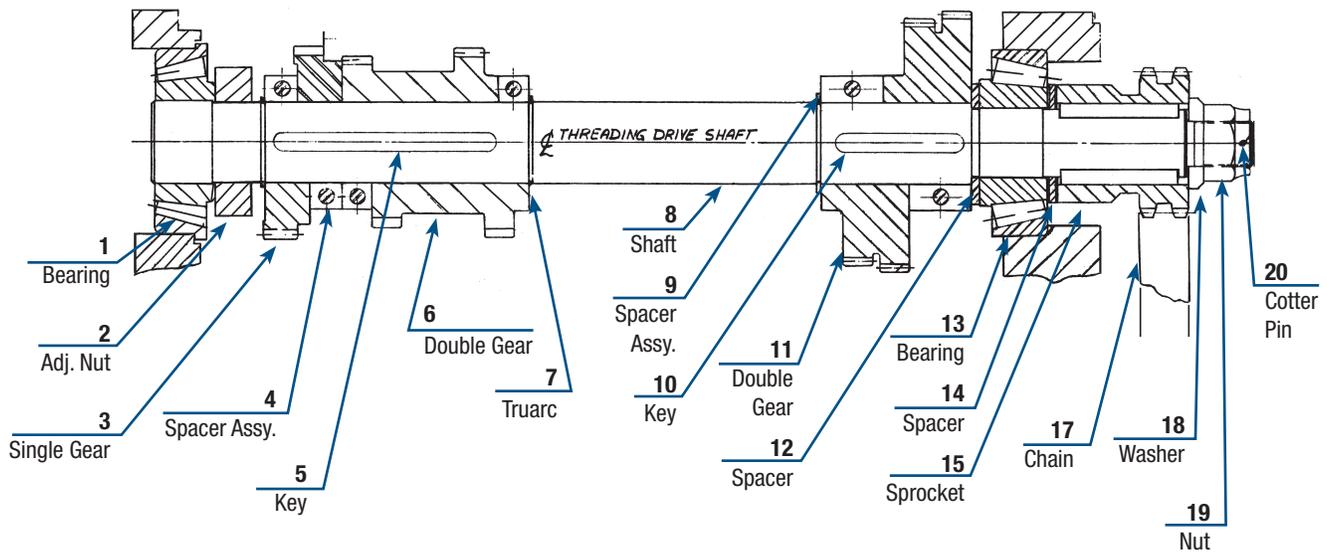
KEY. NO.	QTY.	PART NO.	DESCRIPTION
12	1	02074-12	Mech. Clutch
13	1	C-44267	Thrust Washer
14	1	AM-412171	Double Gear
15	1	C-441090	Brg. Spacer - Rear
16	2	17891	Bearing
17	1	A-44714	Spacer - Rear
18	1	A-17347	Bearing
19	1	B-44680	Spacer
20	1	50939	Washer
21	1	53528	Adj. Nut
22	1	01727-53	Pipe Plug

Threading - Drive Shaft Assy.

Machine Size

1-1/4 RB-8

1-5/8 RBN-8



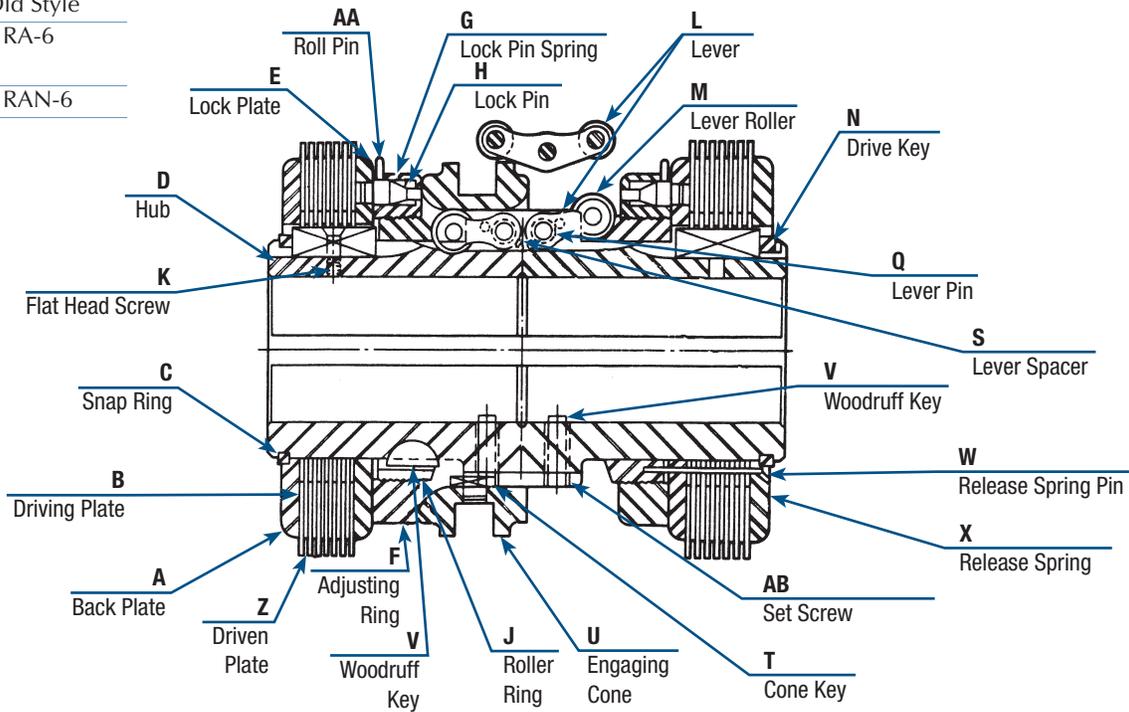
KEY. NO.	QTY.	PART NO.	DESCRIPTION
1	1	17749	Bearing
2	1	XA-1881	Adj. Nut
3	1	AM-412601	Single Gear
4	2	B-44788	Spacer Assy.
5	1	51302	Key
6	1	AM-412630	Double Gear
7	3	02502-39	Truarc
8	1	AM-412662	Shaft
9	1	B-44789	Spacer Assy.
10	1	1779	Key
11	1	AM-412620	Double Gear

KEY. NO.	QTY.	PART NO.	DESCRIPTION
12	1	B-44790	Spacer
13	1	17750	Bearing
14	1	B-448700	Spacer
15	1	AM-412691	Sprocket 1-1/4 RB-8
		BM-412690	Sprocket 1-5/8 RBN-8
16	2	51301	Key
17	1	BM-412960	Chain 1-1/4 RB-8
			Chain 1-5/8 RBN-8
18	1	50946	Washer
19	1	2803	Nut
20	1	51663	Cotter Pin

Threading

Machine Size
 1" RA-6 Old Style
 9/16 & 1" RA-6
 New Style
 9/16 & 1" RAN-6

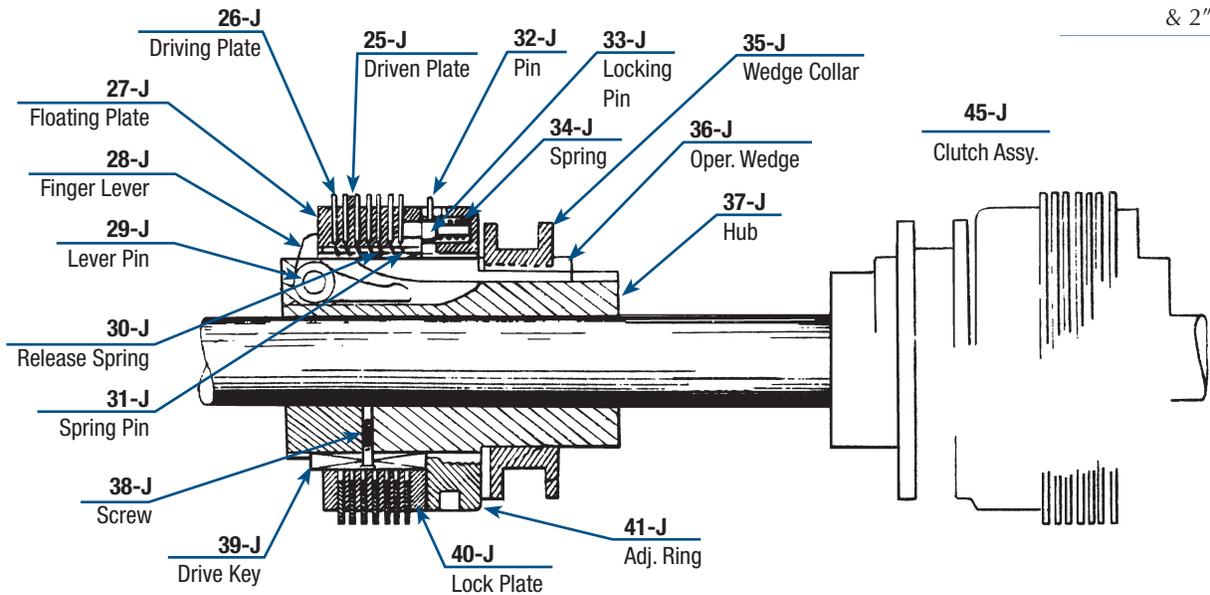
Threading Clutch - Mechanical



KEY NO.	DESCRIPTION	1" RA-6 OLD STYLE			9/16 & 1" RA, RAN-6 NEW STYLE		
		QTY.	PART NO.	ACME NO.	QTY.	PART NO.	ACME NO.
Assy.	Clutch Assy.		TD33169	0147735		0209828	0209828
A	Back Plate	2	TDA2113	0500-3	2	TDA2113	0500-3
B	Driving Plate	10	TD2215E	01999-35	8	TD2215E	01999-35
C	Snap Ring	2	TDA2181	0500-13	1	TDA2181	0500-13
D	Hub	2	TDZA3404B	0500-1	2	TDA3819	01999-56
E	Lock Plate	2	TDA2120	0500-7	2	TDA2120	0500-7
F	Adjusting Ring	2	TDA2116	0500-8	2	TDA2116	0500-8
G	Lock Pin Spring	2	TD2469	8178	2	TD2469	8178
H	Lock Pin Assy.	2	TDX2466	8167	2	TDX2466	8167
J	Roller Ring	2	TDA2115	0500-9	2	TDA2115	0500-9
K	Flat Head Screw	6	TDM2020D	0500-26	6	TDM2020D	0500-26
L	Lever	12	TDA2122	0500-10	6	TDA2384	01999-51
M	Lever Roller	6	TDA2123	0500-28	6	TDA2385	01657-6
N	Drive Key	6	TDA2125	0500-20	6	TDA2382	01657-3
Q	Lever Pin	6	TDA2594A	0500-30	3	TDA2594A	0500-30
S	Lever Spacer	6	TDA2595A	0500-29		n/a	n/a
T	Cone Key	2	TDA1959	0401-21	1	TDA1959	0401-21
U	Engaging Cone	1	TDA2114	0500-2	1	TDA2386	01999-52
V	Woodruff Key	4	TDM2022H	0500-27	2	TDM2022H	0500-27
W	Release Spring Pin	6	TDA2679A	0500-17	6	TDA2679A	0500-17
X	Release Spring	6	TDA1425	0500-16	6	TDA1425	0500-16
Y	Dog Pt. Set Screw	2	TDM2038A	0500-24	1	TDM2038A	0500-24
Z	Driven Plate	6	TDA2110	01999-12	6	TDA2110	01999-12
AA	Roll Pin (incl. in H)	2	TD2467	8189	2	TD2467	8189
AB	Cup Pt. Set Screw	2	TDM2041G	0500-25	1	TDM2041G	0500-25

Threading Clutch - Mechanical

Machine Size
9/16 RA-6 Old Style
1-1/4 RA-6
1-5/8 RB-6
& 2" RB-6



KEY No.	DESCRIPTION	9/16 RA-6 OLD STYLE			1-1/4 RA-6			1-5/8 RB-6 2" RB-6		
		QTY.	PART NO.	ACME NO.	QTY.	PART NO.	ACME NO.	QTY.	PART NO.	ACME NO.
45-J	Clutch Assy.		16615	16615		16620	16620		16608	16608
41-J	Adj. Ring	2	TDA1267	8160	2	TD2462	8155	2	TD3996	8156
40-J	Lock Plate	2	TDA1266	8318	2	TD2463	8313	2	TD3997	8314
39-J	Drive Key		n/a		6	TD1937A	A-44797	6	TD1937X	8115
38-J	Screw		n/a		6	TDM2020F	0405-26	6	TDM2020F	0405-26
37-J	Hub	2	TD4789	8107	2	TD5775E	0445-1	2	TDZ5780A	8106
36-J	Oper. Wedge	3	TDA1268		3	TD2162	8236	3	TD2168	8231
35-J	Wedge Collar	1	TD2323	8218	1	TD1953	8215	1	TD3786	8216
34-J	Spring	2	TDA1270		2	TD2469	8178	2	TD2424	8179
33-J	Locking Pin	2	TDXA1265	01776-4	2	TDX2466A	0461-14	2	TDX2458	8168
32-J	Pin	2	TDA1271		2	TD2467	8189	2		8190
31-J	Spring Pin	12	TDA2677N		12	TDA2677E	0404-17	12	TDA2677E	0404-17
30-J	Release Spring	12	TDA1218		12	TD1921B	8304	12	TD1921B	8304
29-J	Lever Pin	6	TD2321		6	TD1941	8131	6	TD1941	8131
28-J	Finger Lever	6	TD2320F	A-44805	6	TD1957C	0405-10	6	TD1957C	0405-10
27-J	Floating Plate	2	TD2325	8260	2	TD1942A	16604	2	TD2167A	0405-6
26-J	Driving Plate	8	TD2330A	01999-11	12	TD1933H	16614	12	TD3787C	01999-3
25-J	Driven Plate	6	TD2327		10	TD1939	8297	10	TD3788	8298

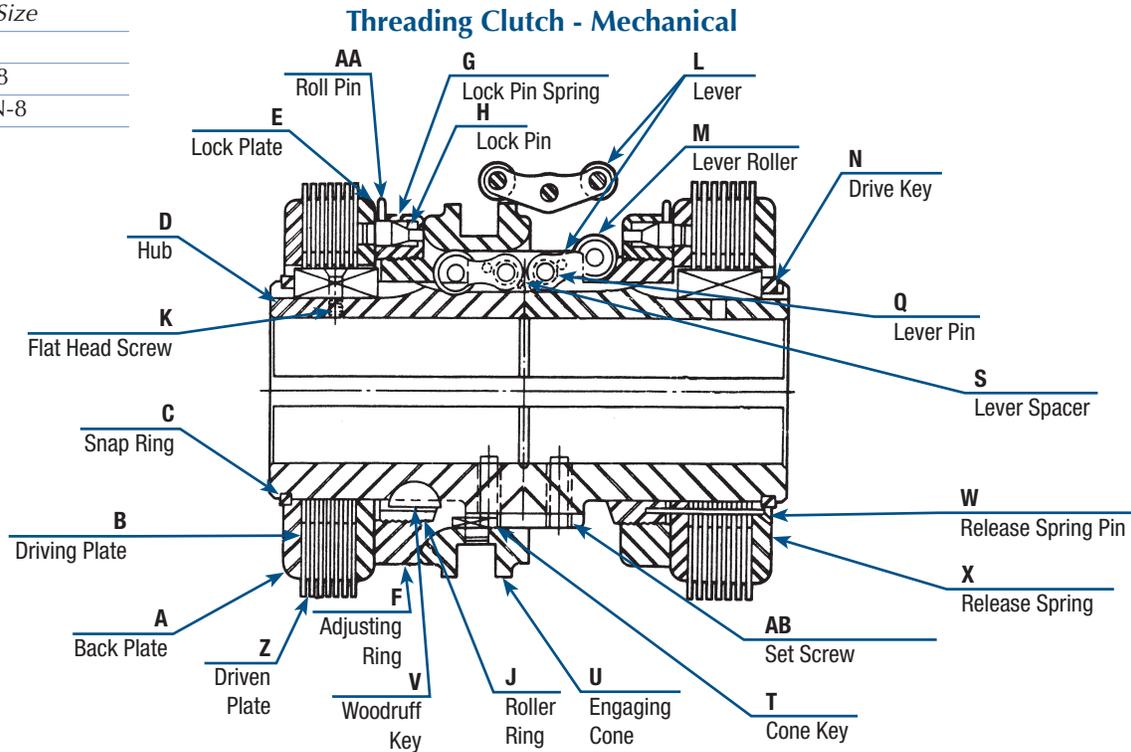
Threading

Machine Size

3/4 RA-8

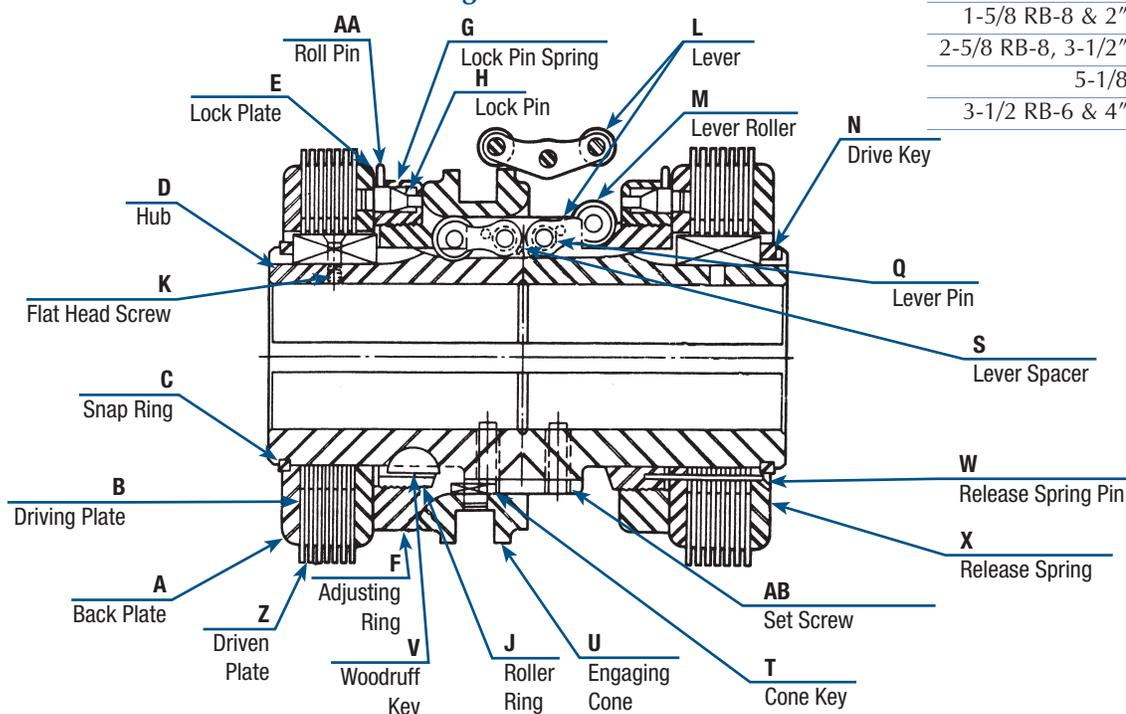
1-1/4 RB-8

1-5/8 RBN-8



KEY NO.	DESCRIPTION	3/4 RA-8			1-1/4 RB-8 1-5/8 RBN-8		
		QTY.	PART NO.	ACME NO.	QTY.	PART NO.	ACME NO.
Assy.	Clutch Assy.		01999-47	01999-47		02074-12	02074-12
A	Back Plate	2	TDA2113	0500-3	2	TDA1794	02074-1
B	Driving Plate	10	TD2215E	01999-35	12	TD1933H	01999-2
C	Snap Ring	2	TDA2181	0500-13	2	TDA1805	02074-3
D	Hub	2	TDZA3819	01999-56	1	TD3820	02074-4
E	Lock Plate	2	TDA2120	0500-7	2	TDA1953A	02074-8
F	Adjusting Ring	2	TDA2116	0500-8	2	TDA1958A	0274-9
G	Lock Pin Spring	2	TD2469	8178	2	TD2469	8178
H	Lock Pin Assy.	2	TDX2466	8167	2	TDX2466A	0461-14
J	Roller Ring	2	TDA2115	0500-9	2	TDA1955	02074-10
K	Flat Head Screw	6	TDM2020D	0500-26	6	TDM2020E	0461-27
L	Lever	12	TDA2384	01999-51	6	TDA2302	02074-6
M	Lever Roller	6	TDA2385	01657-6	6	TDA2301	02074-7
N	Drive Key	6	TDA2382	01657-3	6	TDA2303	02074-2
Q	Lever Pin	6	TDA2594A	0500-30	3	TDA2594B	02074-5
S	Lever Spacer		n/a	n/a		n/a	n/a
T	Cone Key	2	TDA1959	0401-21	1	TDA1959	0401-21
U	Engaging Cone	1	TDA2386	01999-52	1	TDA1956	02074-11
V	Woodruff Key	4	TDM2022H	0500-27	2	TDM2020H	0500-27
W	Release Spring Pin	6	TDA2679A	0500-17	6	TDA2679B	0461-17
X	Release Spring	6	TDA1425	0500-16	6	TDA1802	0459-16
Y	Dog Pt. Set Screw	2	TDM2038A	0500-24	1	TDM2038A	0500-24
Z	Driven Plate	6	TDA2110	01999-12	10	TDA1954	01999-13
AA	Roll Pin (incl. in H)	2	TD2467	8189	2	TD2467	8189
AB	Cup Pt. Set Screw	2	TDM2041G	0500-25	2	TDM2042A	0459-25

Threading Clutch - Mechanical



Machine Size

1-5/8 RB-8 & 2" RB-8

2-5/8 RB-8, 3-1/2" RB-8

5-1/8 RB-4

3-1/2 RB-6 & 4" RB-6

KEY NO.	DESCRIPTION	QTY.	1-5/8 RB-8 2" RB-8		2-5/8 RB-8, 3-1/2 RB-8 5-1/8 RB-4 3-1/2 RB-6, 4" RB-6		
			PART NO.	ACME NO.	QTY.	PART NO.	ACME NO.
Assy.	Clutch Assy.		0459-27	0459-27		0402-29	0402-29
A	Back Plate	2	TDA2074	0459-3	2	TDA3372	0402-3
B	Driving Plate	10	TD3787C	01999-3	12	TD3533D	01999-6
C	Snap Ring	2	TDA2085	0459-13	2	TDA2063	0402-13
D	Hub	2	TDZA3388G	0459-1	2	TDA5272F	0402-1
E	Lock Plate	2	TDA2075A	0408-7	2	TDA3382	0402-7
F	Adjusting Ring	2	TDA2084A	0408-8	2	TDA3380	0402-8
G	Lock Pin Spring	2	TD2469	8178	2	TD2424	8179
H	Lock Pin Assy.	2	TDX2466A	0461-4	2	TD2458	8168
J	Roller Ring	2	TDA2080	0459-9	2	TDA3379	0402-9
K	Flat Head Screw	6	TDM2020F	0405-26	6	TDM2020J	0401-26
L	Lever	12	TDA2066	0402-10	6	TDA2066	0402-10
M	Lever Roller	6	TDA2065	0402-12	6	TDA2065	0402-12
N	Drive Key	6	TDA2086	0459-20	6	TDA2064	0402-20
Q	Lever Pin	6	TDA2594C	0461-11	6	TDA2594D	0737-11
S	Lever Spacer	6	TDA2595C	0461-22		n/a	n/a
T	Cone Key	1	TDA1959	0401-21	1	TDA1959	0401-21
U	Engaging Cone	1	TDA3387	0459-2	1	TDA3381	0402-2
V	Woodruff Key	2	TDM2022N	0461-28	2	TDM2022R	0737-27
W	Release Spring Pin	6	TDA2679B	0461-17	6	TDA2679C	0737-17
X	Release Spring	6	TDA1802	0459-16	6	TD1921	16605
Y	Dog Pt. Set Screw	2	TDM2038A	0404-24	1	TDM2038A	0404-24
Z	Driven Plate	8	TDA2077	01999-14	10	TDA3878D	01999-17
AA	Roll Pin (incl. in H)	2	TD2467	8189	2	TD2467	8189
AB	Cup Pt. Set Screw	2	TDM2042A	0459-25	2	TDM2042H	0737-25

Threading

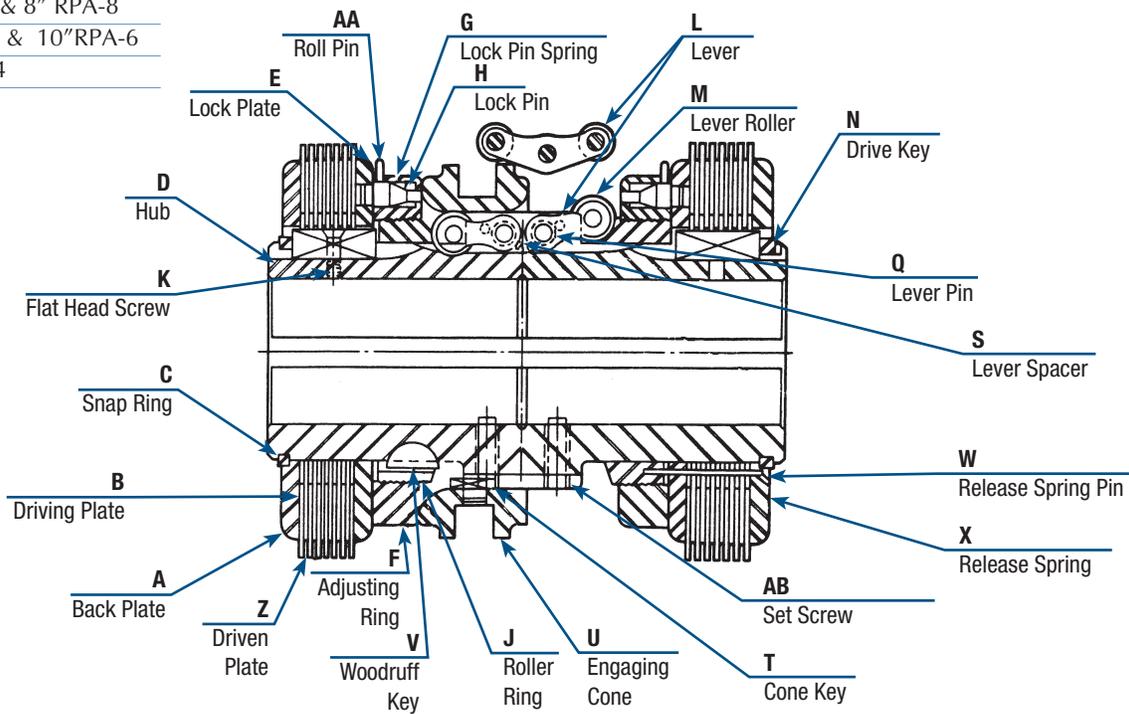
Machine Size

6" RPA-8 & 8" RPA-8

8" RPA-6 & 10" RPA-6

12" RPA-4

Threading Clutch - Mechanical



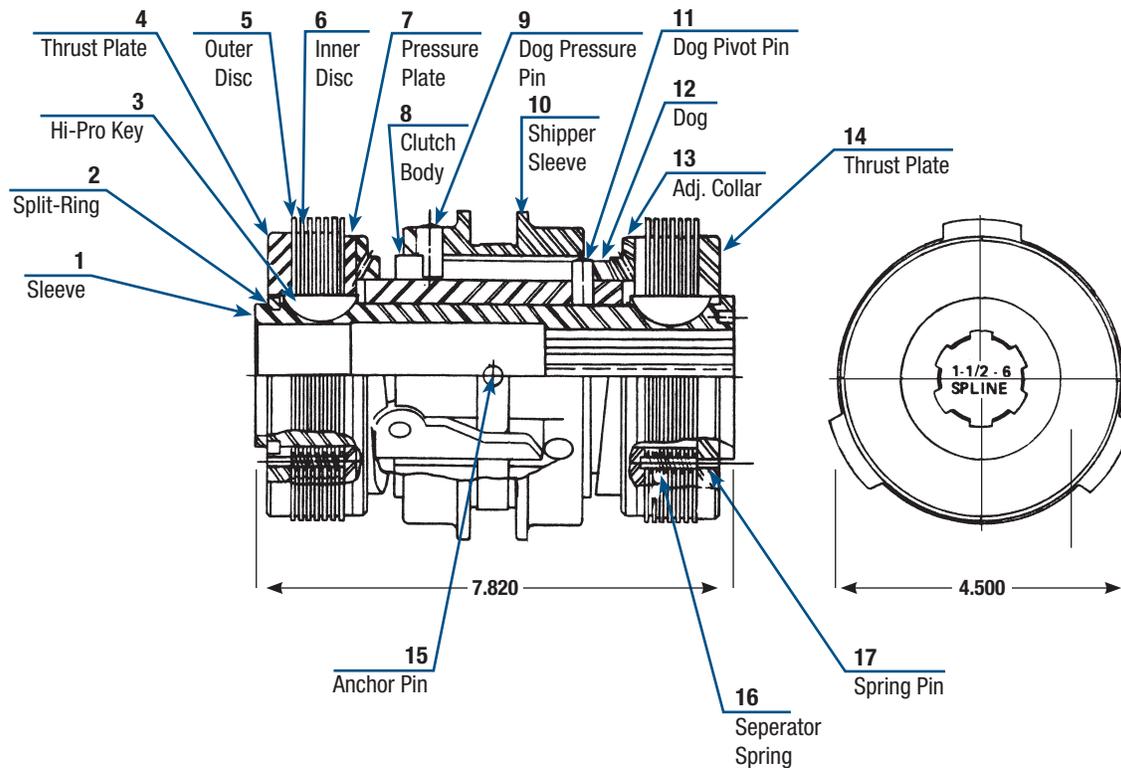
6" RPA-8, 8" RPA-8
8" RPA-6, 10" RPA-6
12" RPA-4

KEY NO.	DESCRIPTION	QTY.	PART NO.	ACME NO.
Assy.	Clutch Assy.		0461-29	0461-29
A	Back Plate	2	TDA2074	0459-3
B	Driving Plate	10	TD3787C	01999-3
C	Snap Ring	2	TDA2085	0459-13
D	Hub	2	TDZA3388G	0459-1
E	Lock Plate	2	TDA2075A	0408-7
F	Adjusting Ring	2	TDA2084A	0408-8
G	Lock Pin Spring	2	TD2469	8178
H	Lock Pin Assy.	2	TDX2466A	0461-4
J	Roller Ring	2	TDA2080	0459-9
K	Flat Head Screw	6	TDM2020F	0405-26
L	Lever	12	TDA2066	0402-10
M	Lever Roller	6	TDA2065	0402-12
N	Drive Key	6	TDA2086	0459-20
Q	Lever Pin	6	TDA2594C	0461-11
S	Lever Spacer	6	TDA2595C	0461-22
T	Cone Key	1	TDA1959	0401-21
U	Engaging Cone	1	TD1802	0459-16
V	Woodruff Key	2	TDM2022N	0461-28
W	Release Spring Pin	6	TDA2679B	0461-17
X	Release Spring	6	TDA1802	0459-16
Y	Dog Pt. Set Screw	2	TDM2038A	0404-24
Z	Driven Plate	8	TDA2077	01999-14
AA	Roll Pin (incl. in H)	2	TD2467	8189
AB	Cup Pt. Set Screw	2	TDM2042A	0459-25

Threading Clutch - Mechanical

Machine Size

2-5/8 RB-6

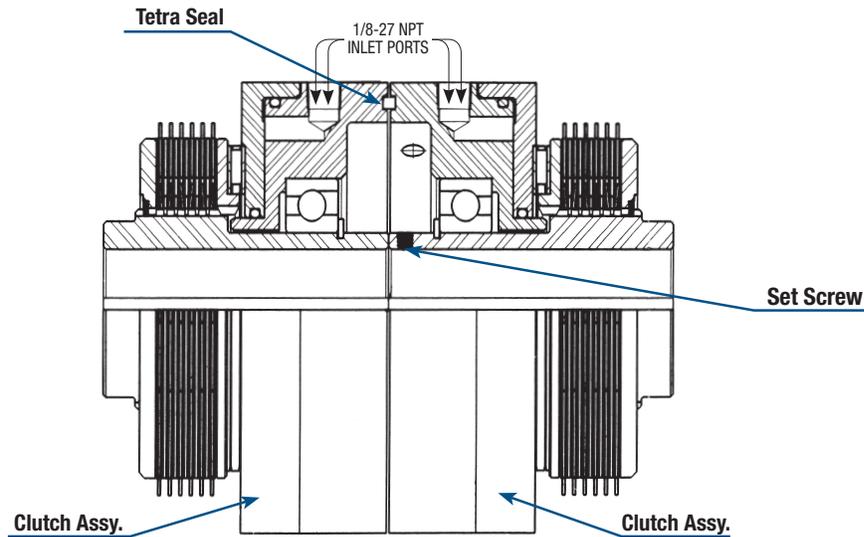


2-5/8 RB-6			
KEY NO.	DESCRIPTION	QTY.	PART NO.
	Assy.		0403-8
1	Sleeve	1	0403-1
2	Split-Ring	1	0403-6
3	Hi-Pro Key	6	0199-9
4	Thrust Plate	1	0403-4
5	Outer Disc	14	0199-6
6	Inner Disc	12	7950
7	Pressure Plate	2	0403-3
8	Clutch Body	1	0196-1
9	Dog Pressure Pin	6	7971
10	Shipper Sleeve	1	0196-2
11	Dog Pivot Pin	6	7966
12	Dog	6	7969
13	Adj. Collar	2	0403-2
14	Thrust Plate	1	0403-5
15	Anchor Pin	1	0196-3
16	Seperator Spring	6	7977
17	Spring Pin	6	7985

Threading

Machine Size
Smaller Machines

Logan Clutch - Smaller Machines



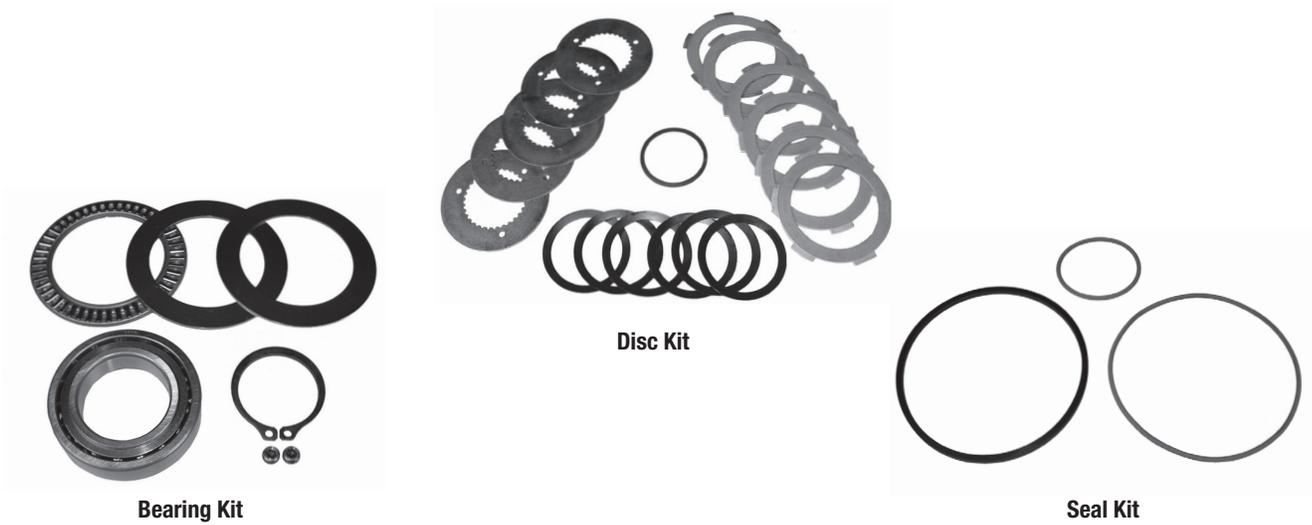
MACHINE SIZE AND MODEL	* LOGAN CLUTCH PART #	REPLACES OLD LOGAN CLUTCH #	REPLACES ACME MECHANICAL CLUTCH #	REPLACES ACME AIR CLUTCH #		LOGAN COMPLETE REBUILD KIT	LOGAN DISC KIT PART	LOGAN BEARING KIT PART #	LOGAN SEAL KIT PART
7/16 RA-6	D15-2405	D15-2403 D15-2402	C193801	C193802		500-1504	501-1502	502-1501	503-1501
9/16 RA-6 3rd Pos 22000 Series SN	1 D30-2422	D30-2413	16615		Hi Speed	500-3012	501-3007	502-3503	503-3500
					Low Speed	500-3010	501-3006	502-3503	503-3500
9/16 RA-6 4th Pos 22000 Series SN	1 D30-2415 NS-304-000-24	D30-2402	16615		Hi Speed	500-3012	501-3007	502-3503	503-3500
					Low Speed	500-3003	501-3002	502-3503	503-3500
5/8 RN-6	2 D30-2403 NS-307-000-024	D30-2418 CC-44027				500-3007	501-3004	502-3503	503-3500
5/8 RN-6	D30-2428		03367-61			500-3014	501-3003	502-3503	503-3510
3/4 RA-8 (Standard)	D30-2420	D30-2408	02398-26			500-3018	501-3002	502-3503	503-3510
3/4 RA-8 (High Capacity)	3 D30-2421	D30-2409	02398-26			500-3019	501-3002	502-3503	503-3511
3/4 RA-8 (High Capacity)	3 D30-2429			02619-2		500-3025	501-3003	502-3503	503-3511
9/16 - 1" RA-6, RAN-6 (High Capacity)	D30-2424	D30-2409 D30-2407	01999-95 01477-35			500-3025	501-3003	502-3503	503-3511
9/16 - 1" RA-6, RAN-6 (High Capacity)	D30-2423	D30-2412		02742-61		500-3025	501-3003	502-3503	503-3511
9/16 - 1" RA-6, RAN-6 (High Capacity)	D30-2429			02619-2		500-3025	501-3003	502-3503	503-3511
1-1/4 RA-6 1-1/4 RB-8	D30-2410			02331-90 02331-92		500-4005	501-3003	502-4001	503-4000
1-1/4 RA-6; 5-1/4 RAC-6 (High Capacity)	D35-2421	D35-2403 D35-2408	16620			500-3526	501-3500	502-3500	503-3511
1-1/4 RA-6; 1-1/4 RB-8 5-1/4 RAC-6 (High Capacity)	D35-2422	D35-2417		03365-1		500-3526	501-3500	502-3500	503-3511
1-1/4 RB-8; 1-5/8 RBN-8 (High Capacity)	D35-2420	D35-2402		02619-26		500-3526	501-3500	502-3500	503-3511
1-1/4 RB-8 (High Capacity)	D35-2425		02074-12			500-3526	501-3500	502-3500	503-3511

All repair kits listed are for current model clutches.
 1 Includes both drive clutch gears (cups), high speed cup bearing and spacers
 2 Includes both drive clutch gears (cups) and spacers

3 Can not be used in dual threading applications
 4 Does not require bronze spacers
 5 Includes bronze spacers and clutch shaft

Logan Clutch - Larger Machines

Machine Size
Larger Machines



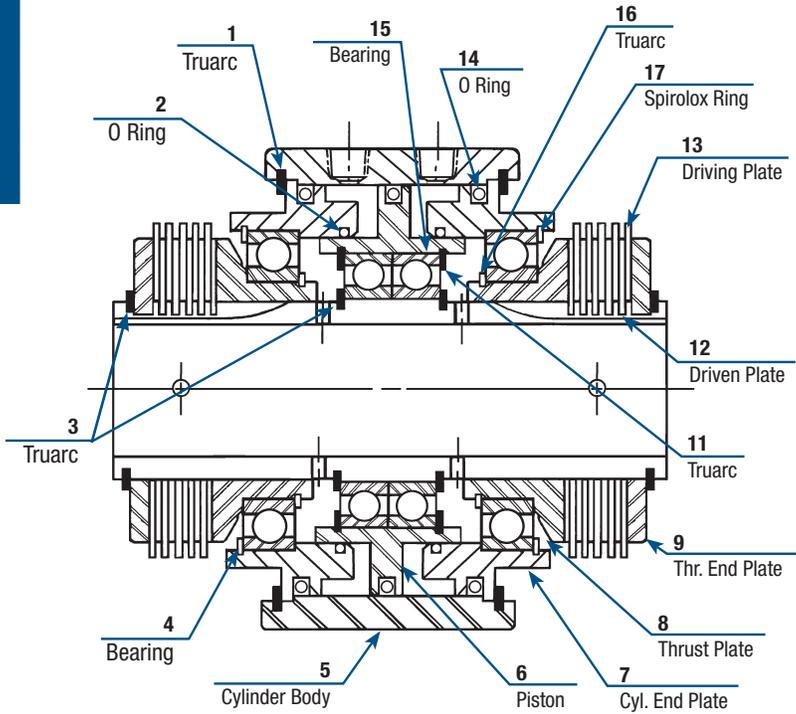
MACHINE SIZE AND MODEL	*	LOGAN CLUTCH PART #	REPLACES OLD LOGAN CLUTCH #	REPLACES ACME MECHANICAL CLUTCH #	REPLACES ACME AIR CLUTCH #	LOGAN COMPLETE REBUILD KIT	LOGAN DISC KIT PART	LOGAN BEARING KIT PART #	LOGAN SEAL KIT PART
1-5/8 & 2" RB-6; 1-5/8 & 2" RB-8 6" RPA-8; 10" RPA-6 3/8 Key (High Capacity)		D40-2414	D40-2405	16608 16636		500-4021	501-4001	502-4503	503-4511
1-5/8 & 2" RB-6; 1-5/8 & 2" RB-8 6" RPA-8; 10" RPA-6 3/8 Key (Std Capacity)		D40-2416	D40-2401	16608 16636		500-4022	501-4001	502-4503	503-4510
1-5/8 & 2" RB-6; 1-5/8 & 2" RB-8; 1-5/8 RA-8 5/16 Key (High Capacity)		D40-2412	D40-2406	XA-3289 0459-27 1999-44	2619-73 2742-51	500-4021	501-4001	502-4503	503-4511
1-5/8 & 2" RB-6; 1-5/8 & 2" RB-8; 1-5/8 RA-8 5/16 Key (Std Capacity)		D40-2409	D40-2402 D40-2403	XA-3289 0459-27 1999-44	2619-73 2742-51	500-4022	501-4001	502-4503	503-4510
2-5/8 RB-4 (High Capacity)	4	D45-2404		11747		500-4506	501-4500	502-4500	503-4501
2-5/8 RB-4 (Std Capacity)	4	D45-2405		11747		500-4520	501-4500	502-4500	503-4510
2-5/8 RA-6 & 2-5/8 RB-6 (High Capacity)	5	D45-2406	D45-2402	0403-8		500-4517	501-4503	502-4500	503-4511
2-5/8 RA-6 & 2-5/8 RB-6 (Std Capacity)	5	D45-2407	D45-2403	0403-8		500-4518	501-4503	502-4500	503-4510
2-5/8 & 3-1/2 RB-8 3-1/2 & 4" RB-6 5-1/8 RB-4 (High Capacity)		D55-2403	D55-2402	0402-29		500-5525	501-5500	502-5500	503-5511
2-5/8 & 3-1/2 RB-8 3-1/2 & 4" RB-6 5-1/8 RB-4 (Std Capacity)		D55-2405	D55-2401	0402-29		500-5520	501-5500	502-5500	503-5510
6" RPA-8, 8" RPA-8 10" RPA-4, 12" RPA-4 8" RPA-6, 10" RPA-6 (High Capacity)		D40-2415	D40-2407	0461-29		500-4021	501-4001	502-4503	503-4511
6" RPA-8, 8" RPA-8 10" RPA-4, 12" RPA-4 8" RPA-6, 10" RPA-6 (Std Capacity)		D40-2410	D40-2404	0461-29		500-4022	501-4001	502-4503	503-4510

All repair kits listed are for current model clutches.
 1 Includes both drive clutch gears (cups), high speed cup bearing and spacers
 2 Includes both drive clutch gears (cups) and spacers

3 Can not be used in dual threading applications
 4 Does not require bronze spacers
 5 Includes bronze spacers and clutch shaft

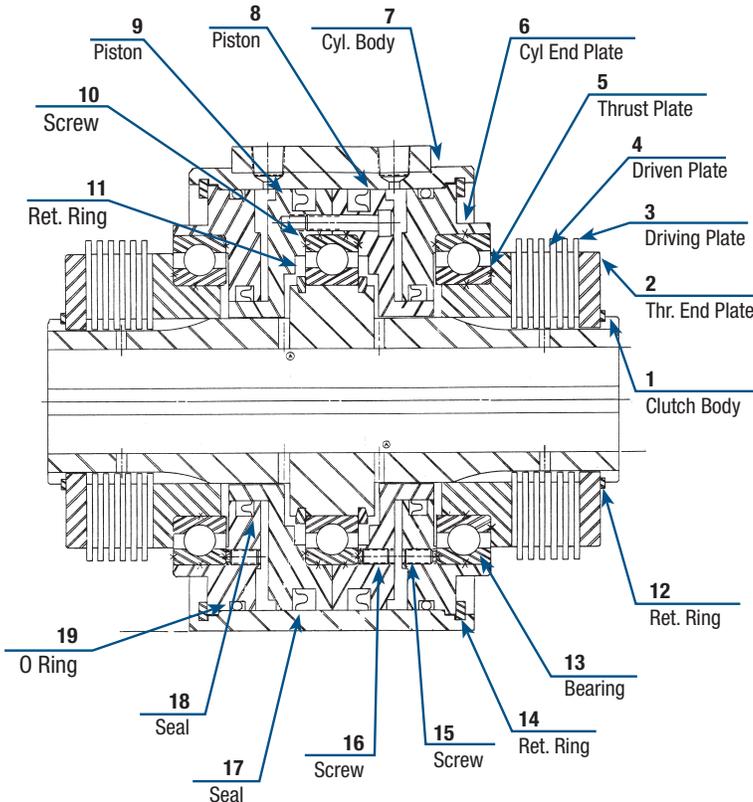
Threading

Acme Air Threading Clutch



Acme Air Threading Clutch - 1" RA-6, 1" RAN-6
02619-2

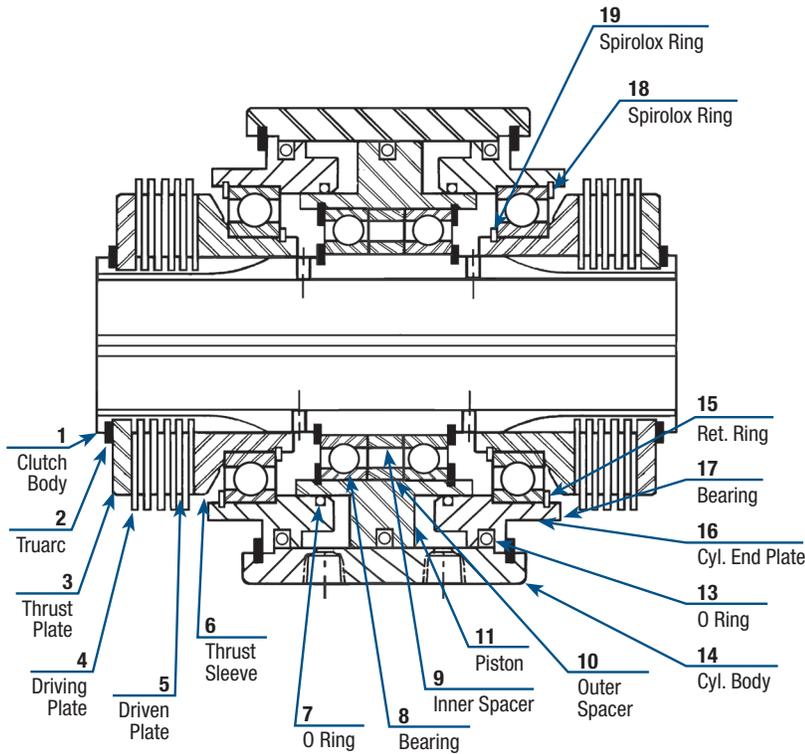
KEY .	QTY.	PART NO.	DESCRIPTION
17	2	01972-76	Spirolox Ring
16	2	02502-23	Truarc
15	2	D-17353	Bearing
14	3	01837-40	O Ring
13	10	02619-6	Driving Plate
12	10	02619-5	Driven Plate
11	2	02500-49	Truarc
10	1	02619-9	Body
9	2	02619-7	Thr. End Plate
8	2	02619-4	Thrust Plate
7	2	02619-3	Cyl. End Plate
6	1	02619-8	Piston
5	1	02619-10	Cylinder Body
4	2	D-17361	Bearing
3	4	02502-45	Truarc
2	2	01836-51	O Ring
1	2	01972-95	Truarc



Acme Air Threading Clutch - 1" RAN-6
02742-61

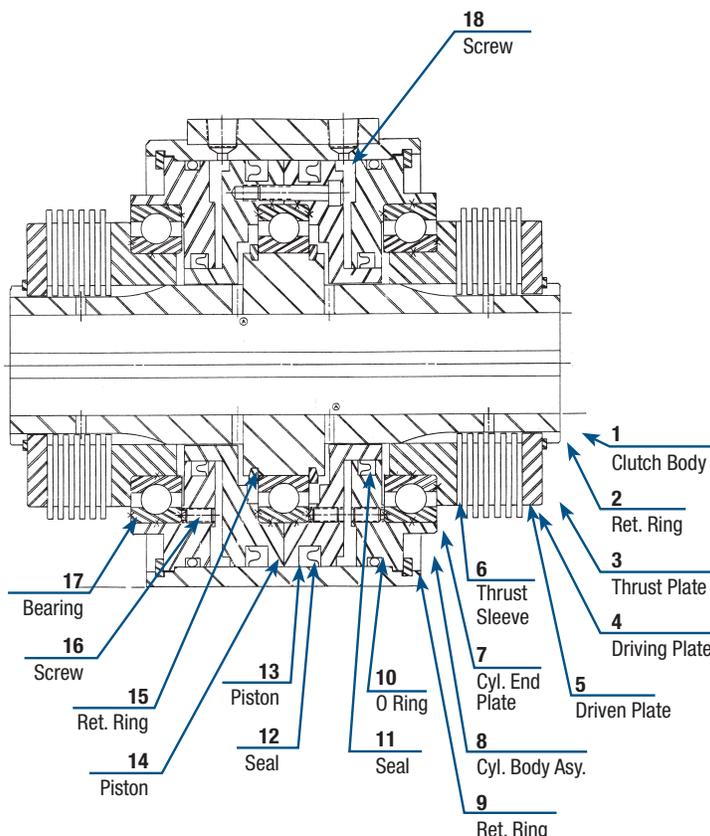
KEY .	QTY.	PART NO.	DESCRIPTION
19	2	01837-40	O Ring
18	2	01790-40	Seal
17	2	01790-53	Seal
16	2	A-708	Screw
15	4	A-725	Screw
14	2	02619-98	Ret. Ring
13	3	D-17361	Bearing
12	2	02502-45	Ret. Ring
11	2	02508-22	Ret. Ring
10	3	A-527	Screw
9	1	02742-69	Piston
8	1	02742-63	Piston
7	1	02742-65	Cyl. Body
6	2	02742-64	Cyl. End Plate
5	2	02742-63	Thrust Plate
4	12	02619-5	Driven Plate
3	12	02619-6	Driving Plate
2	2	02619-7	Thr. End Plate
1	1	02742-62	Clutch body

Acme Air Threading Clutch



Acme Air Threading Clutch - 1-1/4 RA-6
02619-26

KEY .	QTY.	PART NO.	DESCRIPTION
19	2	01970-56	Spirolox Ring
18	2	01972-89	Spirolox Ring
17	2	D-17543	Bearing
16	2	02619-37	Cyl. End Plate
15	2	02619-36	Ret. Ring
14	1	02619-35	Cyl. Body
13	3	01840-47	O Ring
12	2	02619-34	Ret. Ring
11	1	02619-33	Piston
10	1	02619-32	Outer Spacer
9	1	02619-31	Inner Spacer
8	2	D-17740	Bearing
7	2	01840-39	O Ring
6	2	02619-38	Thrust Sleeve
5	12	02619-30	Driven Plate
4	12	02619-29	Driving Plate
3	2	02619-28	Thrust Plate
2	4	02502-49	Truarc
1	1	02619-27	Clutch Body

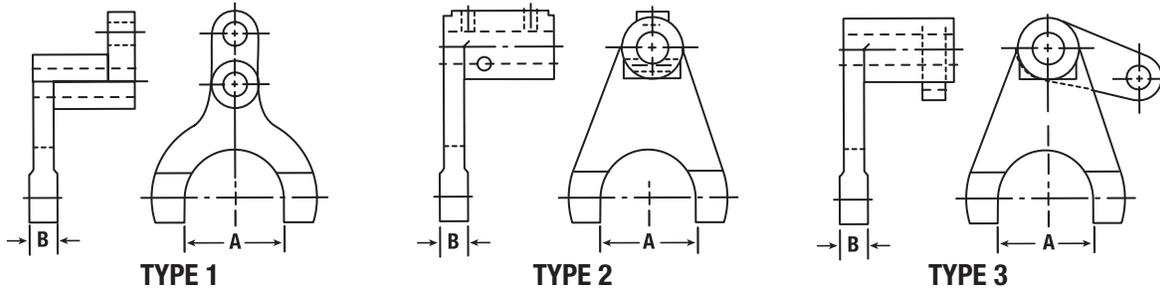


Acme Air Threading Clutch -
1-1/4 RA-6, 1-1/4 RB-8, 1-5/8 RBN-8
03365-01

KEY .	QTY.	PART NO.	DESCRIPTION
18	3	A-534	Screw
17	3	A-17756	Bearing
16	6	A-235	Screw
15	2	02508-28	Ret. Ring
14	1	02619-91	Piston
13	1	02619-90	Piston
12	2	01790-86	Seal
11	2	01790-43	Seal
10	2	01837-48	O Ring
9	2	02619-99	Ret. Ring
8	1	02619-84	Cyl. Body Assy.
7	2	03365-03	Cyl. End Plate
6	2	03365-04	Thrust Sleeve
5	12	04222-10	Driven Plate
4	12	04222-34	Driving Plate
3	2	02619-28	Thrust Plate
2	2	02502-49	Ret. Ring
1	1	03365-02	Clutch Body

Threading

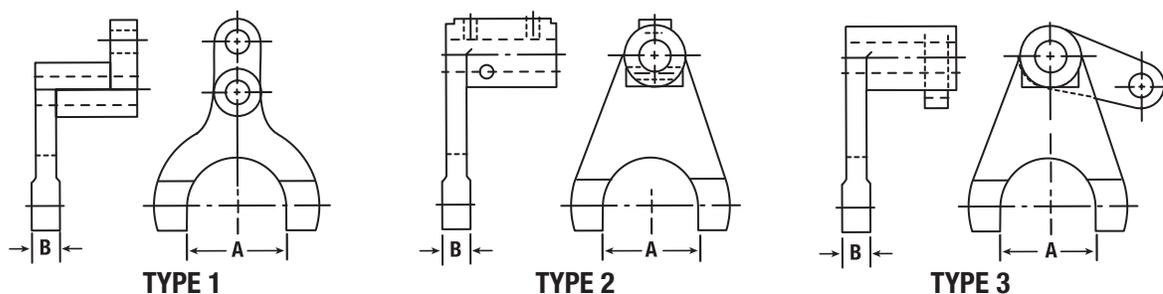
Namco Style Die Head Yokes



(Note: Die Head Yokes for H & G, Geometric and Landis type yokes also available)

MACHINE SIZE	Pos.	STYLE AND MAX. SIZE DIE OR TAP FOR SLIDE		ORDER BY CODE No.	YOKE DIMENSIONS		YOKE TYPE	PART No.
		WITHOUT REMOVABLE TEE WAY	WITH REMOVABLE TEE WAY		A	B		
7/16 RA-6	2 & 3 4 & 5	5/16 DR		Y-14	1-7/16	.370	2	
9/16 RA-6 Last s/n 22326-CM	3 & 4	5/16 R		Y-1	1-1/32	.370	1	C-44605 C-44605 C-44606 C-44607 C-44608
		1/2 R		Y-2	1-13/32	.370		
		5/8	3/4 R	Y-3	1-7/8	.557		
		5/16 DR		Y-4	1-31/32	.557		
		3/8 DR		Y-2	1-13/32	.370		
9/16 DR	13/16 DR, DRF 1-1/16 DR	Y-3	1-7/8	.557				
		Y-4	1-31/32	.557				
		Y-5	2-1/32	.557				
3/4" RA-8	3	5/16 DR		Y-29	1-13/32	.365	2	ZM-70267 ZM-70267 C-44645 C-44646 C-44645 C-44646
		3/8 DR		Y-29	1-13/32	.365		
		9/16 DR		Y-23	1-7/8	.557		
		13/16 DR & DRF		Y-24	1-31/32	.557		
	5/8 R		Y-23	1-7/8	.557			
	3/4 R		Y-24	1-31/32	.557			
	6	5/16 DR		Y-20	1-13/32	.365	2	ZM-70266 ZM-70266 C-44638 C-44639 C-44638 C-44639
		3/8 DR		Y-20	1-13/32	.365		
		9/16 DR		Y-21	1-7/8	.557		
		13/16 DR & DRF		Y-22	1-31/32	.557		
		5/8 R		Y-21	1-7/8	.557		
		3/4 R		Y-22	1-31/32	.557		
4 & 5	5/16 DR		Y-38	1-13/32	.365	1	BD-71234 BD-71234 C-44619 C-44618 C-44619 C-44618	
	3/8 DR		Y-38	1-13/32	.365			
	9/16 DR		Y-36	1-7/8	.557			
	13/16 DR & DRF		Y-35	1-31/32	.557			
	5/8 R		Y-36	1-7/8	.557			
3/4 R		Y-35	1-31/32	.557				
9/16 RA-6, 1" RA-6 Before s/n A-23001	5	5/16 R		Y-6	1-1/32	.370	1	C-44680
1/2 R		Y-7	1-13/32	.370				
5/16 DR		Y-7	1-13/32	.370				
3/8 DR		Y-7	1-13/32	.370				
9/16 RA-6, 1" RA-6 Start s/n A-23051	3 & 4	5/16 R	3/4 R	Y-15	1-1/32	.370	1	969711 969711 C-44612 C-44613 C-44614
		1/2 R		Y-16	1-1/32	.370		
		5/8 R		Y-17	1-7/8	.557		
		5/16 DR		Y-18	1-31/32	.557		
		3/8 DR		Y-16	1-13/32	.370		
		9/16 DR	13/16 DR, DRF 1-1/16 DR	Y-16	1-13/32	.370		
				Y-17	1-7/8	.557		
				Y-18	1-31/32	.557		
				Y-19	2-1/32	.557		

Namco Style Die Head Yokes

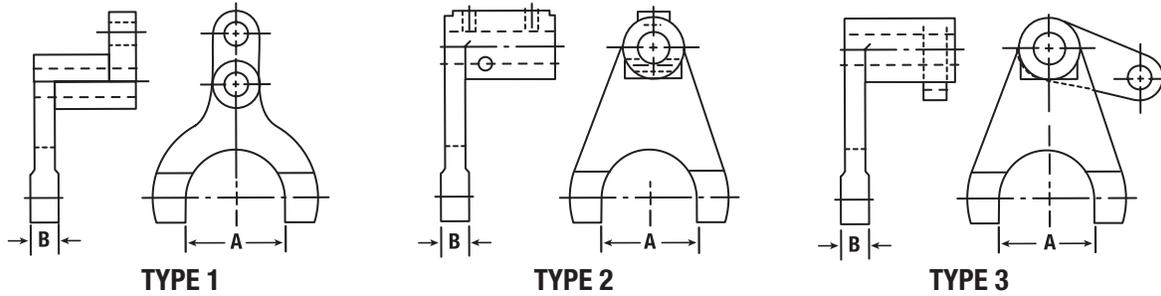


(Note: Die Head Yokes for H & G, Geometric and Landis type yokes also available)

MACHINE SIZE	Pos.	STYLE AND MAX. SIZE DIE OR TAP FOR SLIDE		ORDER BY CODE No.	YOKE DIMENSIONS		YOKE TYPE	PART No.
		WITHOUT REMOVABLE TEE WAY	WITH REMOVABLE TEE WAY		A	B		
9/16 RA-6, 1" RA-6 Start s/h A-23001	5	5/16 DR 3/8 DR	9/16 DR 13/16 DR, DRF	Y-7	1-13/32	.370	1	C-44680
				Y-7	1-13/32	.370		C-44680
				Y-8	1-7/8	.557		C-44681
				Y-10	1-31/32	.557		AZ-22268
1-1/4 RA-6 5-1/4 RAC-6	3	5/8 R 3/4 R 7/8 R		Y-25	1-7/8	.557	1	939072
				Y-26	1-31/32	.557			939072
	4	5/16 DR 3/8 DR		Y-27	2-1/32	.557		C-44615
				Y-28	3-9/16	.745		C-44616
	5	9/16 DR 13/16 DR, DRF 1-1/16 DR	1 DR, DRF 1-5/8 DR, DRF 2 DR	Y-70	1-13/32	.370		C-44617
				Y-25	1-7/8	.557		C-44617
				Y-26	1-31/32	.557		C-44617
				Y-27	2-1/32	.557		C-44617
				Y-27	2-1/32	.557		C-44617
				Y-28	3-9/16	.745		C-44617
1-1/4 RB-8	3 & 6	5/8 R 3/4 R 9/16 DR 13/16 DR, DRF 1 DR, DRF 1-1/16 DR		Y-58	1-7/8	.557	3	C-44664
				Y-59	1-31/32	.557		C-44665
				Y-59	1-7/8	.557		C-44664
				Y-53	1-31/32	.557		C-44657
				Y-63	2-1/32	.557		C-44666
				Y-63	2-1/32	.557		C-44666
1-5/8 RBN-8	7	5/8 R 3/4 R 9/16 DR 13/16 DR, DRF 1 DR, DRF 1-1/16 DR		Y-11	1-7/8	.557	3	C-44659
				Y-12	1-31/32	.557		C-44660
				Y-11	1-7/8	.557		C-44659
				Y-12	1-31/32	.557		C-44660
				Y-13	2-1/32	.557		C-44661
				Y-13	2-1/32	.557		C-44661
	4 & 5	5/8 R 3/4 R 7/8 R 9/16 DR 13/16 DR, DRF 1-1/16 DR 1-5/8 DR, DRF		Y-30	1-15/16	.557	1	C-44622
				Y-31	1-31/32	.557		C-44620
				Y-32	2-1/32	.557		C-44621
				Y-32	1-15/16	.557		C-44622
				Y-31	1-31/32	.557		C-44620
				Y-32	2-1/32	.557		C-44621
		Y-33	3-17/32	.750	73241			

Threading

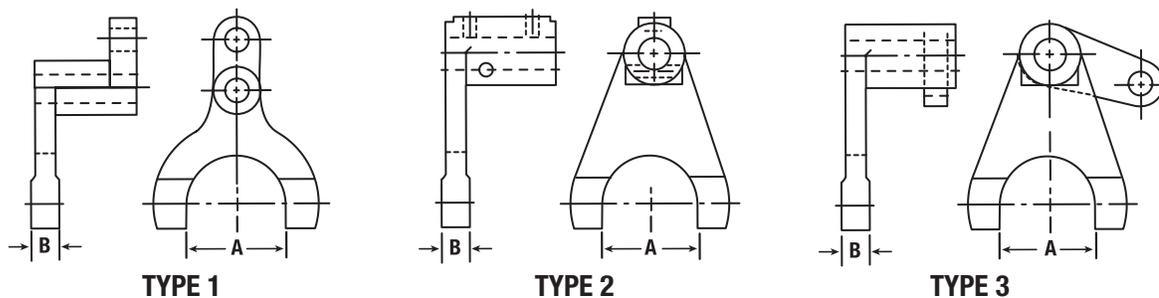
Namco Style Die Head Yokes



(Note: Die Head Yokes for H & G, Geometric and Landis type yokes also available)

MACHINE SIZE	Pos.	STYLE AND MAX. SIZE DIE OR TAP FOR SLIDE		ORDER BY CODE No.	YOKE DIMENSIONS		YOKE TYPE	PART No.
		WITHOUT REMOVABLE TEE WAY	WITH REMOVABLE TEE WAY		A	B		
1-5/8 RA-6 2" RAS-6 1-5/8 RB-6 2" RB-6 1-5/8 RB-8 2" RB-8	3 & 4	5/8 R	2 DR	Y-40	1-7/8	.557	2	C-44642
		3/4 R		Y-41	1-31/32	.557		C-44644
		7/8 R		Y-42	2-1/32	.557		C-44643
		1-1/2 R		Y-43	3-9/16	.745		C-44640
		3/8 DR		Y-75	1-13/32	.370		969425
		9/16 DR		Y-40	1-7/8	.557		C-44642
		13/16 DR, DRF		Y-41	1-31/32	.557		C-44644
		1 DR, DRF		Y-42	2-1/32	.557		C-44643
		1-1/16 DR		Y-42	2-1/32	.557		C-44643
		1-5/8 DR, DRF		Y-43	3-9/16	.745		C-44640
1-5/8 RA-6 2" RAS-6 1-5/8 RB-6 2" RB-6	5	5/8 R	1-5/8 DR, DRF	Y-45	1-7/8	.557	3	C-44642
		3/4 R		Y-46	1-31/32	.557		C-44644
		3/8 DR		Y-77	1-13/32	.370		
		9/16 DR		Y-45	1-7/8	.557		C-44642
1-5/8 RB-8 2" RB-8 (4th & 5th)	(4 & 5)	13/16 DR, DRF		Y-46	1-31/32	.557		C-44644
		1 DR, DRF		Y-47	2-1/32	.557		C-44643
		1-1/16 DR		Y-47	2-1/32	.557		C-44643
		1-7/16 RST		Y-97	3-9/16	.745		C-44640
2-5/8 RB-6	3 & 4	1-13/16 RST	2-1/2 R 2-3/8 DR, DRF	Y-49	2-11/16	.620	2	961356
		5/8 R		Y-40	1-7/8	.557		C-44642
		3/4 R		Y-41	1-31/32	.557		C-44644
		7/8 R		Y-42	2-1/32	.557		C-44643
		1-1/2 R		Y-43	3-9/16	.745		C-44640
		2-1/2 R		Y-50	3-15/16	.745		C-44641
		13/16 DR, DRF		Y-41	1-31/32	.557		C-44643
		1 DR, DRF		Y-42	2-1/32	.557		C-44643
		1-1/16 DR		Y-42	2-1/32	.557		C-44640
		1-5/8 DR, DRF		Y-43	3-9/16	.745		C-44640
		2 DR		Y-43	3-9/16	.745		C-44641
		2-3/8 DR, DRF		Y-50	3-15/16	.745		961356
		1-7/16 RST		Y-44	2-11/16	.620		961356
		1-13/16 RST		Y-44	2-11/16	.620		961356
		2-1/16 RST		Y-44	2-11/16	.620		
		2-7/16 RST		Y-44	2-11/16	.620		961356

Namco Style Die Head Yokes



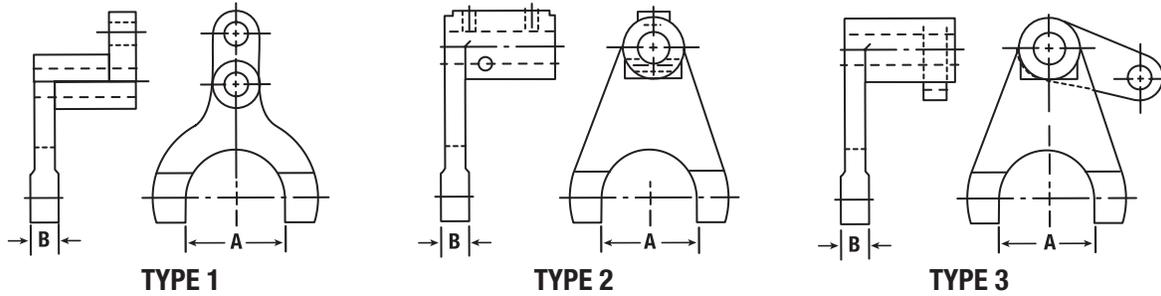
(Note: Die Head Yokes for H & G, Geometric and Landis type yokes also available)

MACHINE SIZE	POS.	STYLE AND MAX. SIZE DIE OR TAP FOR SLIDE		ORDER BY CODE No.	YOKE DIMENSIONS		YOKE TYPE	PART No.			
		WITHOUT REMOVABLE TEE WAY	WITH REMOVABLE TEE WAY		A	B					
2-5/8 RB-6	5	5/8 R		Y-51	1-7/8	.557	3	C-44642			
		3/4 R		Y-52	1-31/32	.557		C-44644			
		7/8 R		Y-53	2-1/32	.557		C-44643			
		1-1/2 R		Y-54	3-9/16	.745		C-44640			
		13/16 DR, DRF		Y-52	1-31/32	.557		C-44644			
		1 DR, DRF		Y-53	2-1/32	.557		C-44643			
		1-1/16 DR		Y-53	2-1/32	.557		C-44643			
		1-5/8 DR, DRF		Y-54	3-9/16	.745		C-44640			
		2 DR		Y-54	3-9/16	.745		C-44640			
				2-3/8 DR, DRF #	Y-94	3-15/16		.745	C-44641		
		3-1/2 DRF #	Y-94	3-15/16	.745	C-44641					
2-5/8 B-8 (4 & 5)	(4 & 5)	1-7/16 RST		Y-56	2-11/16	.620	3	961356			
		1-13/16 RST		Y-56	2-11/16	.620		961356			
		2-1/16 RST		Y-56	2-11/16	.620		961356			
		2-7/16 RST		Y-56	2-11/16	.620		961356			
		3-1/2 RA-6	3 & 4	3/4 R		Y-41		1-31/32	.557	2	C-44644
		7/8 R			Y-42	2-1/32		.557	C-44643		
		1-1/2 R			Y-43	3-9/16		.745	C-44640		
		2-1/2 R			Y-50	3-15/16		.745	C-44641		
		13/16 DR, DRF			Y-41	1-31/32		.557	C-44644		
		1 DR, DRF			Y-42	2-1/32		.557	C-44643		
1-1/16 DR		Y-42		2-1/32	.557	C-44643					
1-5/8 DR, DRF		Y-43		3-9/16	.745	C-44640					
2 DR		Y-43		3-9/16	.745	C-44640					
2-3/8 DR, DRF		Y-50		3-15/16	.745	C-44641					
3-1/2 DR, DRF*		3-1/2 DR, DRF	Y-90	5-5/32	.745	TC-901435					
4" RB-6	3 & 4	1-7/16 RST		Y-44	2-11/16	.620	2	961356			
		1-13/16 RST		Y-44	2-11/16	.620		961356			
		2-1/16 RST		Y-44	2-11/16	.620		961356			
		2-7/16 RST		Y-44	2-11/16	.620		961356			
		2-13/16 RST		Y-44	2-11/16	.620		961356			
		3 RST		Y-57	3-9/16	.620		TB-933230			
		3-1/2 RST		Y-57	3-9/16	.620		TB-933230			

Die Yokes

Threading

Namco Style Die Head Yokes

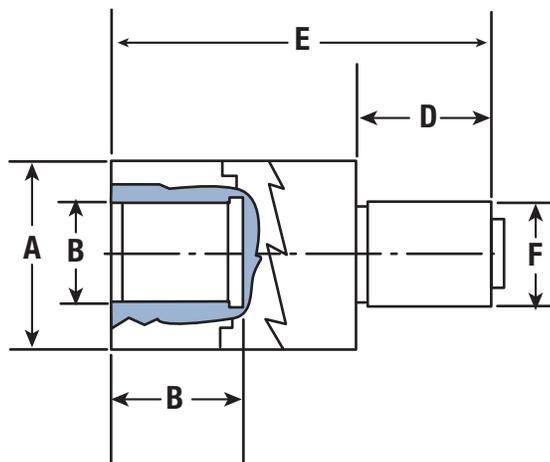


(Note: Die Head Yokes for H & G, Geometric and Landis type yokes also available)

MACHINE SIZE	Pos.	STYLE AND MAX. SIZE DIE OR TAP FOR SLIDE		ORDER BY CODE No.	YOKE DIMENSIONS		YOKE TYPE	PART No.
		WITHOUT REMOVABLE TEE WAY	WITH REMOVABLE TEE WAY		A	B		
3-1/2 RA-6 3-1/2 RB-6 4" RB-6	5	3/4 R	2-3/8 DR, DRF	Y-60	1-31/32	.557	3	C-44662
		7/8 R		Y-61	2-1/32	.557		
		1-1/2 R		Y-62	3-9/16	.745		
		13/16 DR, DRF		Y-60	1-31/32	.557		
		1 DR, DRF		Y-61	2-1/32	.557		
		1-1/16 DR		Y-61	2-1/32	.557		
		1-5/8 DR, DRF		Y-62	3-9/16	.745		
		2 DR		Y-62	3-9/16	.745		
		2-3/8 DR, DRF*		Y-100	3-15/16	.745		
		1-7/16 RST		Y-64	2-11/16	.620		
		1-13/16 RST		Y-64	2-11/16	.620		
		2-1/16 RST		Y-64	2-11/16	.620		
		2-7/16 RST		Y-64	2-11/16	.620		
		2-13/16 RST		Y-64	2-11/16	.620		
		3 RST		Y-65	3-9/16	.620		
		3-1/2 RST*		Y-65	3-9/16	.620		
3-1/2 RB-8	4 & 5	5/8 R		Y-40	1-7/8	.557	2	C-44642
		3/4 R		Y-41	1-31/32	.557		C-44644
		7/8 R		Y-42	2-1/32	.557		C-44643
		1-1/2 R		Y-39	3-9/16	.745		C-44647
		2-1/2 R		Y-48	3-15/16	.745		C-44648
		9/16 DR		Y-40	1-7/8	.557		C-44642
		13/16 DR		Y-41	1-31/32	.557		AC-44644
		1 DR		Y-42	2-1/32	.557		C-44643
		1-1/16 DR		Y-42	2-1/32	.557		C-44643
		1-5/8 DR		Y-39	3-9/16	.745		C-44647
		2 DR		Y-39	3-9/16	.745		C-44647
		2-3/8 DR		Y-48	3-15/16	.745		C-44648
		1-7/16 RST		Y-44	2-21/32	.615		961356
		1-13/16 RST		Y-44	2-21/32	.615		961356
		2-1/16 RST		Y-44	2-21/32	.615		961356
		2-7/16 RST		Y-44	2-21/32	.615		961356
		2-13/16 RST		Y-44	2-21/32	.615		961356

Die Yokes

Ratchet Type Tap Holders Applications Chart

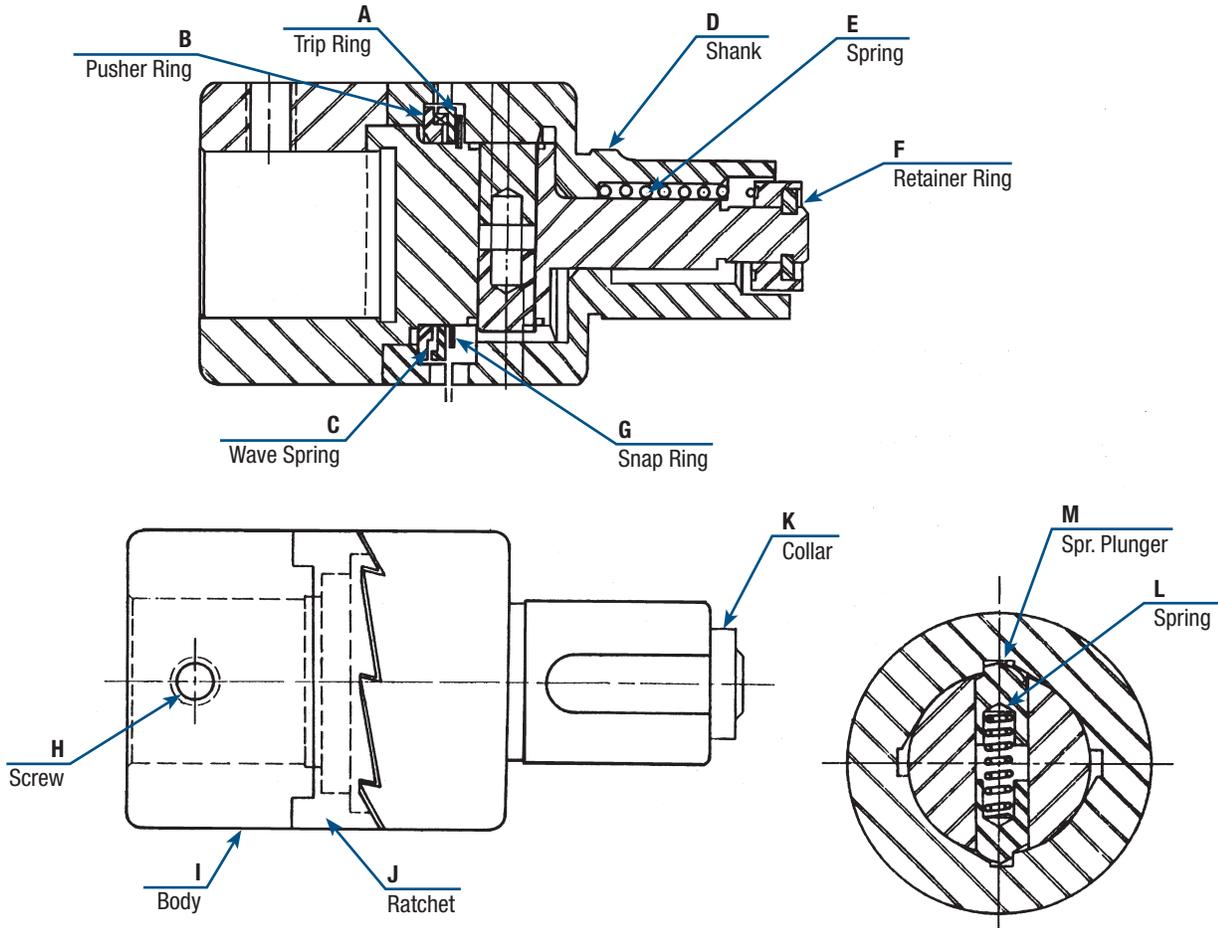


ASSEMBLY CODE No.	CAPACITY	ASSEMBLY PART NO.		DIMENSIONS IN INCHES					
		RIGHT HAND	LEFT HAND	A	B	C	D	E	F
RTR-1	1/8 TO 3/8"	290960	291020	1-3/4	5/8	13/16	1-1/8	3-1/8	1
RTR-2	3/8 TO 3/4"	291081	291141	2-1/4	1	1-1/4	1-13/16	4-3/4	1-1/2
RTR-3	3/4 TO 1-1/4"	291201	291261	2-3/4	1-1/2	1-3/4	1-13/16	5-1/4	1-1/2
RTR-4	1-1/4 TO 2"	291310	291370	3-3/4	2	2-1/4	2-1/2	7-1/2	2-3/4

Pull-off style made in left and right hand types for tap capacity shown. Cam of the threading attachment must have correct lead to keep holder engaged for proper travel.

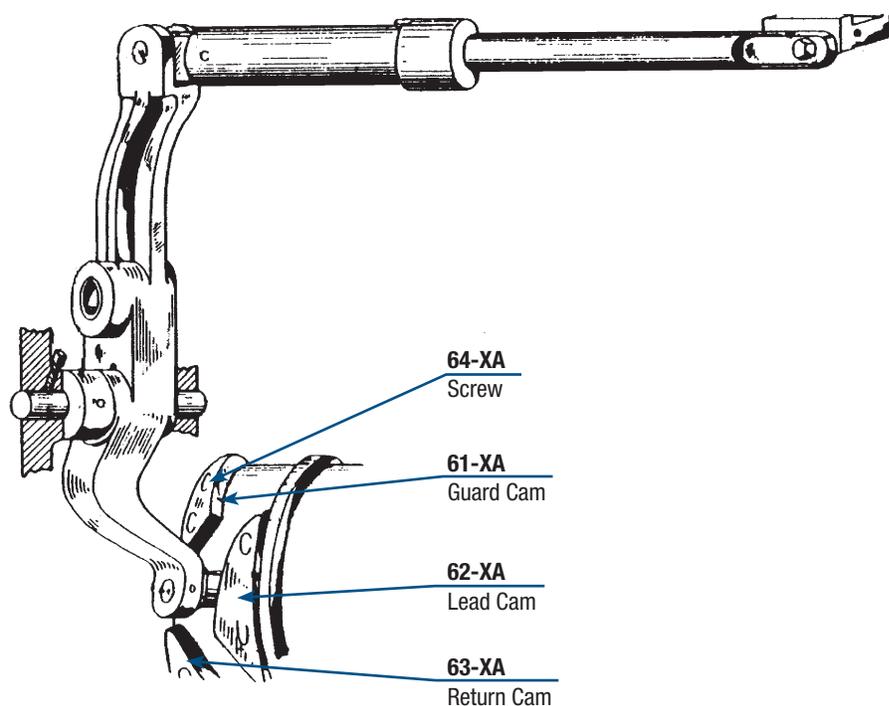
Releasing Type Tap Holders are required for solid dies or taps in all cases where electric tripping mechanism is not employed to operate clutches of the universal threading attachment.

Ratchet Type Tap Holders Components List



ASSEMBLY CODE NO.	RTR-1 290960	RTR-2 291081	RTR-3 91201	RTR-4 291310
A	29142	29148	29157	29165
B			29159	29166
C	XA-75	29149	29158	29164
D	290980	291100	291220	291330
E	2372	XA-82	XA-82	XA-54
F	29181	29180	29180	29182
G	01108-12	01108-13	01108-15	02502-54
H	1405	52685	1324	1404
I	290970	291091	291211	291320
J	29143	291470	291241	291350
K	290031	A-440390	A-440390	A-440381
L	5925	XA-53	XA-53	XA-55
M	29101	29113	29125	
N	075	7/64	1/8	3/16

Auxiliary Threading Bump Cams



	9/16, 1" RA-6 9/16, 1" RAN-6	3/4 RA-8 1-1/4 RA-6	1-1/4 RB-8 & LARGER
62-XA Start Cam	212432	71243	83243
63-XA Return Cam	215800	71580	83580

Threading

Cam Chart for Auxiliary Threading or Tapping Acme-Gridley Machines

Machine - _____

Position - _____

Tap Head or Die Head - _____

Size & Pitch of Thread - _____

Length of full thread - _____

Threading Speed Ratio - On - _____

Threading Speed Ratio - Off (Solid Tap Only) - _____

Mechanical or Electric Clutch Tripping (Solid Tap Only) - _____

Threading Lever Hole Used - Top - Middle - Bottom OR ratio _____

Feed Change Gears A _____

B _____

C _____ (1-1/4 RA-6 only)

D _____ (1-1/4 RA-6 only)

Range - Circle One Fine Coarse

Do you want - Lead Only
 Lead & Guard Only
 Complete Cam Set

Company Name _____

Contact Name _____

Phone Number _____

Ext. _____

Information Sheet for Quoting Thread Rolling Cams

Machine make _____

Machine model _____

Attachment make and model _____

Position mounted _____

Size and pitch of thread _____

Threading at beginning or end of cycle _____

Material being threaded _____

Feed change gears _____ fine or coarse _____

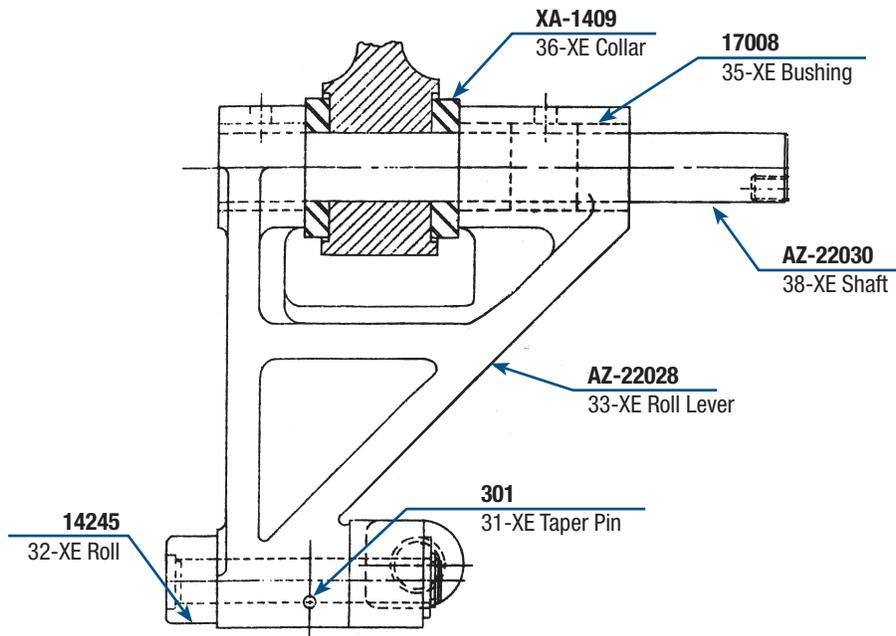
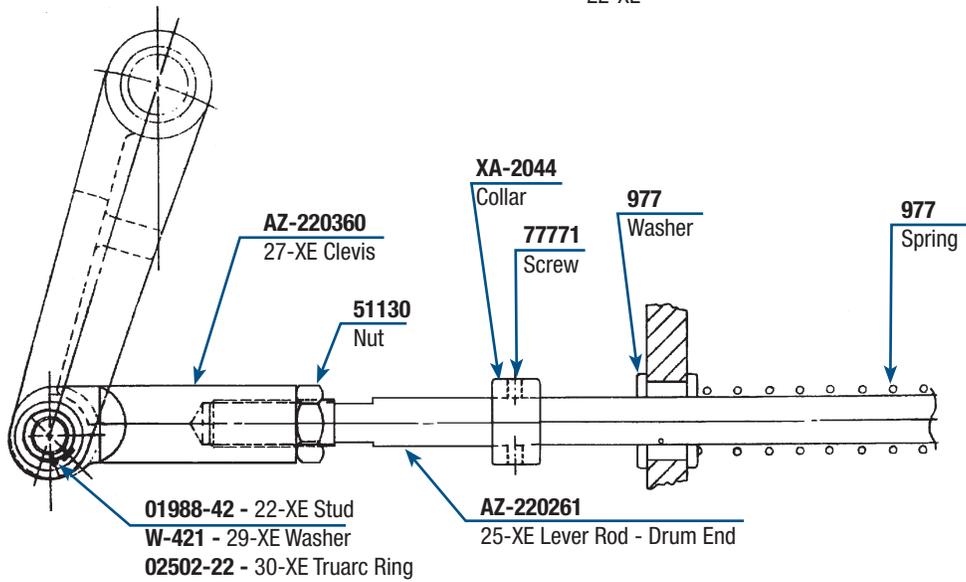
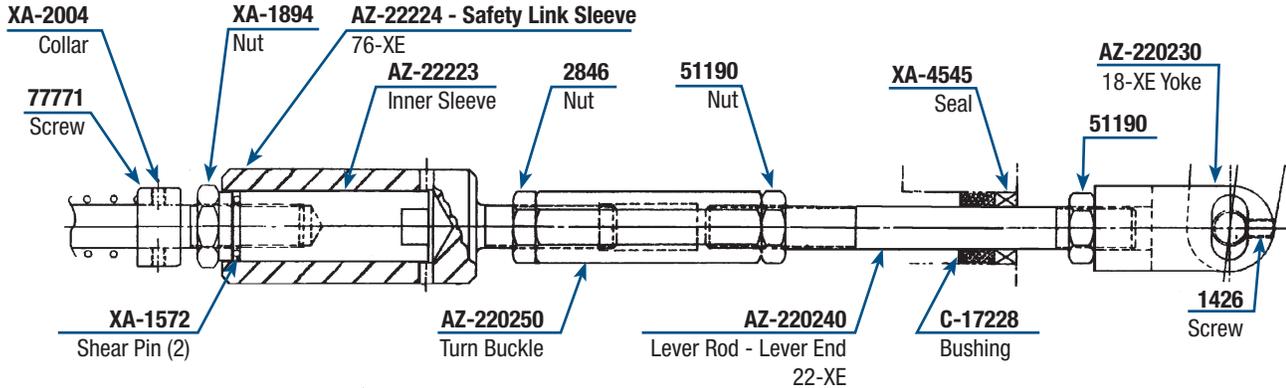
If feed change gears are unknown please provide

Main toolslide cam and feed rate _____

Reaming

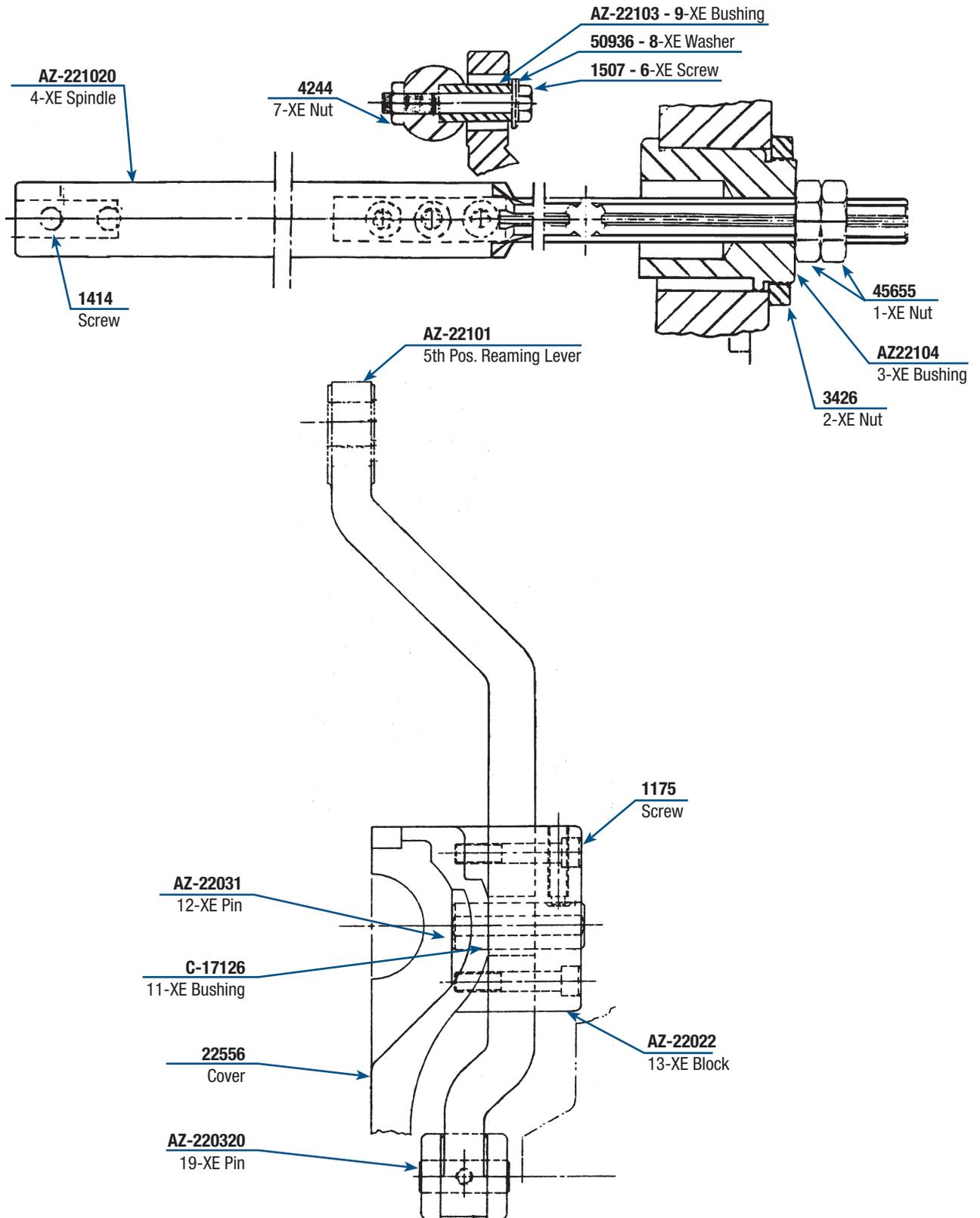
Machine Size
 9/16 RA-6/5th Pos.
 1" RA-6/5th Pos.

Auxiliary Reaming Lower Operating Linkage Assy.



Auxiliary Reaming Lever and Spindle Assy.

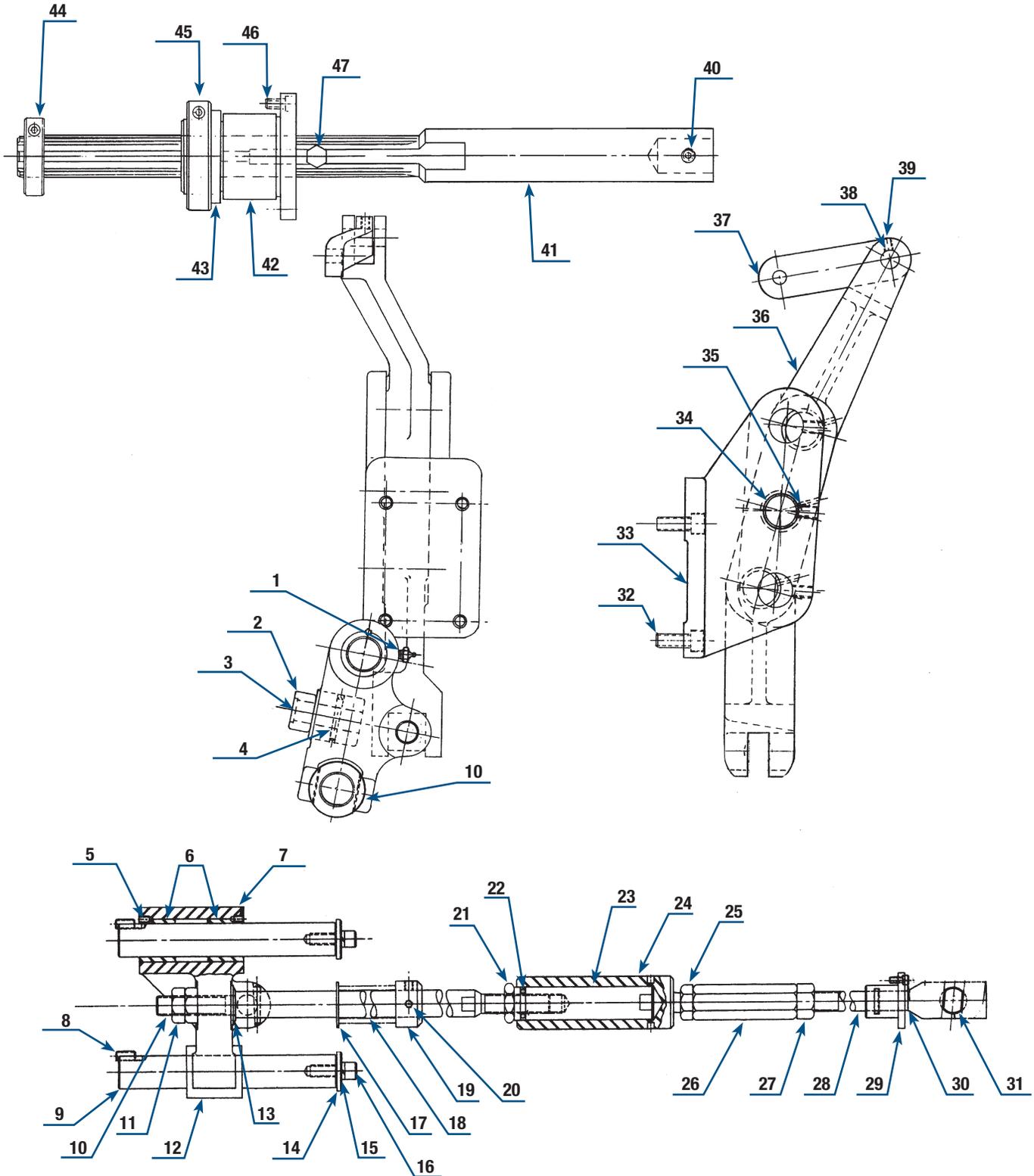
Machine Size
9/16 RA-6/5th Pos.
1" RA-6/5th Pos.



Reaming

Machine Size
1-1/4 RA-6/5th Pos.

Auxiliary Reaming Spindle, Lever, and Lower Linkage Assy.



**Auxiliary Reaming
Spindle, Lever, and Lower Linkage Assy.**

Machine Size
1-1/4 RA-6/5th Pos.

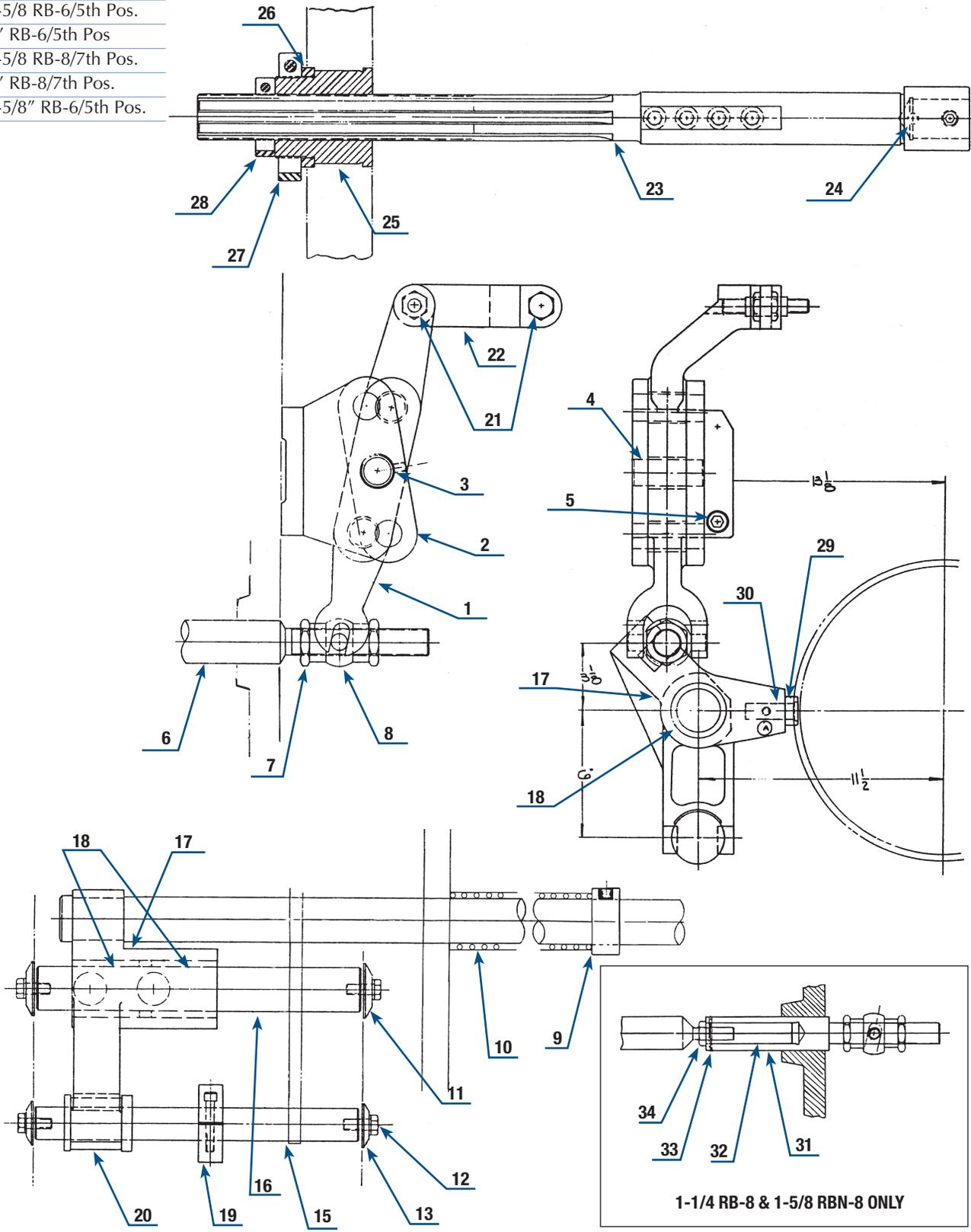
KEY NO.	QTY.	PART NO.	DESCRIPTION	
717280 Cam Roll Bracket Assembly	1	8092	Oiler	
	2	3019	Roll	
	3	10182	Stud	
	4	01485-22	Roll Pin	
	5	77771	Screw	
	6	2	52147	Bushing
	7	1	717110	Cam Roll Bracket
	8	2	53260	Screw
	9	2	717200	Shaft
	10	1	AZ-70248	Lever Rod - Drum End
	11	2	51188	Nut
	12	1	71628	Guide Bushing
	13	1	50959	Washer
	14	2	2448	Bevel Washer
	15	2	2546	Lockwasher
	16	2	1058	Screw
	17	1	2479	washer
	18	1	XA-181	Spring
	19	1	B-44461	Spring Collar
	20	1	1401	screw
	21	1	XA-1894	Lock Nut
	22	2	XA-1572	Shear Pin
	23	1	AZ-70223	Safety Link Plug
	24	1	AZ-70224	Safety Link Sleeve
	25	1	51188	Nut
	26	1	B-71625	Turnbuckle
	27	1	53419	Nut
	28	1	B-71624	Lever Rod - Lever End
	29	1	C-17212	Bushing Assy.
	30	3	1300	Screw
	31	1	B-71623	Pivot Pin
	32	4	1053	Screw
	33	1	AZ-70022	Lever Bracket
	34	1	B-71622	Lever Pin
	35	3	1406	Set Screw
	36	1	AZ-70101	Reaming Lever Assy.
	37	1	AZ-70134	Lever Link
	38	1	3052	Link Pin
	39	1	1405	Screw
	40	1	50791	Screw
	41	1	AZ-701020	Reaming Spindle
	42	1	AZ-701060	Splined Bushing
	43	1	B-44554	Spacer
	44	1	XA-1893	Stop Nut Assy.
	45	1	15462	Adj. Nut Assy.
	46	2	1063	Screw
	47	1	1618	Link Screw

Reaming

Machine Size

- 1-1/4 RB-8/7th Pos.
- 1-5/8 RBN-8/7th Pos.
- 1-5/8 RB-6/5th Pos.
- 2" RB-6/5th Pos
- 1-5/8 RB-8/7th Pos.
- 2" RB-8/7th Pos.
- 2-5/8" RB-6/5th Pos.

Auxiliary Reaming Spindle, Lever and Lower Operating Mechanism



Auxiliary Reaming Spindle, Lever and Lower Operating Mechanism

Machine Size

1-1/4 RB-8/7th Pos.
1-5/8 RBN-8/7th Pos.
1-5/8 RB-6/5th Pos.
2" RB-6/5th Pos.
1-5/8 RB-8/7th Pos.
2" RB-8/7th Pos.
2-5/8 RB-6/5th Pos.

XE

KEY No.	DESCRIPTION	1-1/4 RB-8 1-5/8 RBN-8	1-5/8 RB-6 2" RB-6	1-5/8 RB-8 2" RB-8	2-5/8 RB-6
1	Lever	ZM-40142	AZ-40101	927231	AZ-84058
2	Lever Bracket	ZM-40141	AZ-84022	927230	AZ-84022
3	Screw	1402	1402	1400	1402
4	Lever Pin	AZ-84031	AZ-84031	927234	AZ-84031
5	Screw (4)	1050	1059	1059	1191
6	Operating Rod	AZ-40024	AZ-40024	TF-925899	AZ-84024
7	Adjusting Nut (2)	XA-1818	XA-1818	XA-1818	XA-1818
8	Trunion	AZ-84023	AZ-84023	AZ-84023	AZ-84023
9	Collar Assy.	XA-2004	XA-2004	XA-2004	XA-2004
10	Spring	XA-8	XA-8	XA-8	XA-8
11	Washer (2)	50971	50971	50971	50971
12	Screw (4)	1527	1527	1527	1527
13	Lockwasher 4)	50968	50968	50968	50968
14	Washer (2)	50954	50954	50954	50954
15	Small Guide Shaft	AZ-40087	AZ-40087	A-83720	A-83720
16	Large Guide Shaft	AZ-40088	AZ-40088	A-83721	A-83721
17	Cam Roll Bracket	AZ-40028*	AZ-40028*	A-837110	A-837110
18	Bronze Bushing (2)	C-17073	C-17073	C-17073	C-17073
19	Stop Collar Assy.	15815	15815	15815	15815
20	Steel Bushing	C-17074	C-17074	C-17074	C-17074
21	Link Screw (2)	page	AZ-84061	AZ-84061	AZ-84061
22	Lever Link	page	AZ-84062	927233	AZ-84062
23	Spindle	AM-41280	AZ-40102	941750	AZ-84057
24	Set Screw	52685	52685	XA-4767	52685
25	Splined Bushing	B-71287	AZ-40106	A-39287	AZ-84059
26	Spacer	A-44712	44515	44739	n/a
27	Large Adj. Nut	706190	15421	15421	15432
28	Small Adj. Nut	15400	AZ-40090	XA-1830	AZ-40090
29	Roll	3019	3019	3019	3019
30	Stud	10164	10164	10164	10164
31	Safety Sleeve	02307-67	n/a	n/a	n/a
32	Drive Plug	AZ-70233	n/a	n/a	n/a
33	Shear Pin (2)	XA-1572	n/a	n/a	n/a
34	Nut	XA-1894	n/a	n/a	n/a

* Bracket Assy No. AZ-40035 includes 17, 18, 29 & 30.

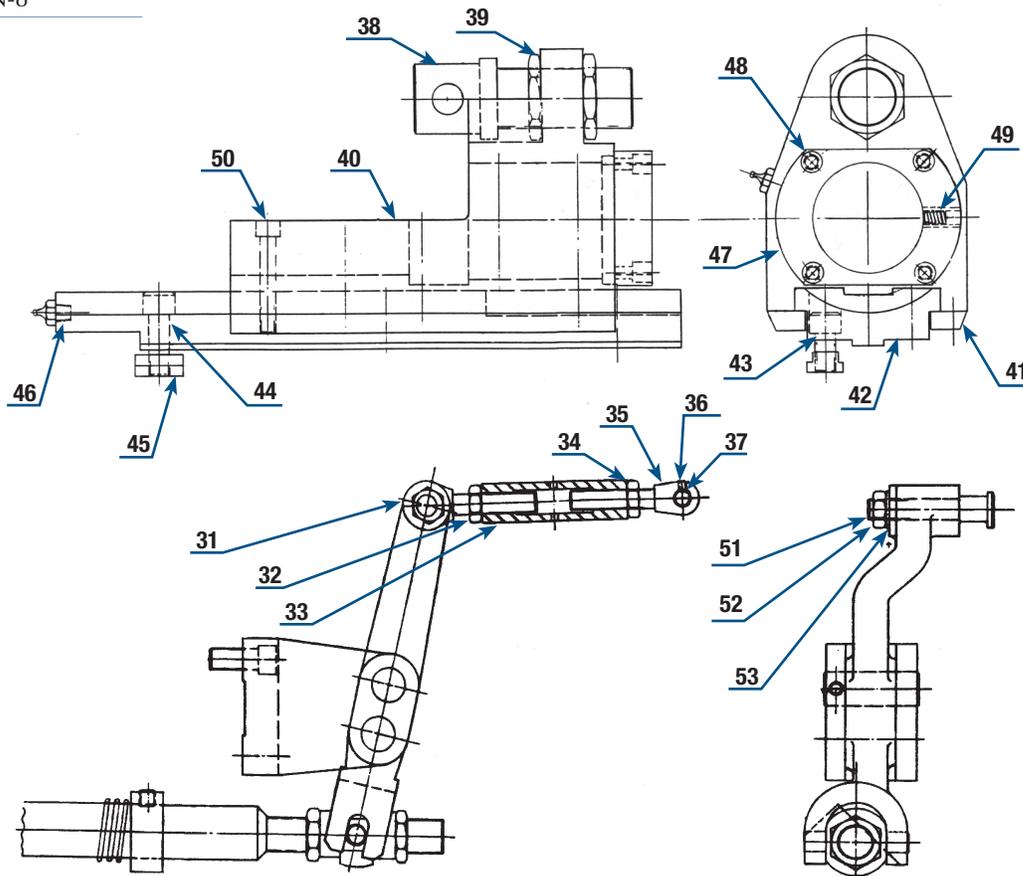
Reaming

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

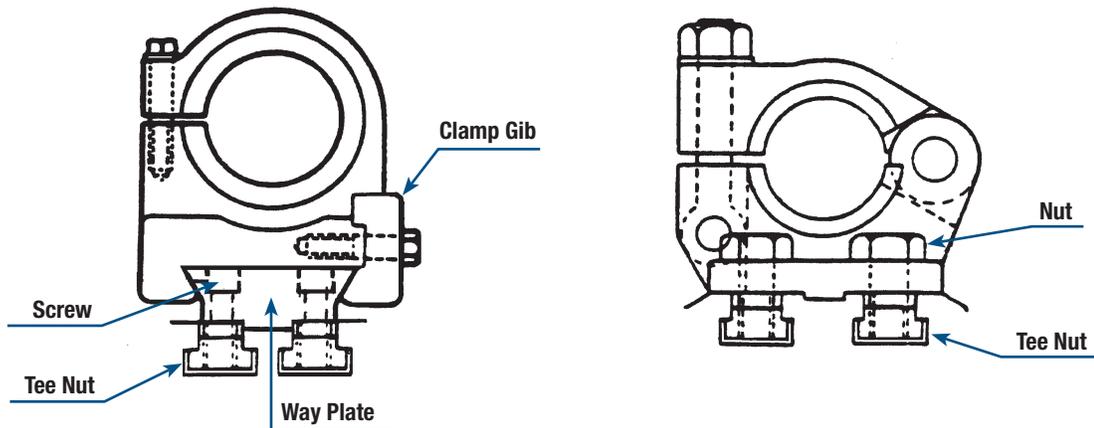
Auxiliary Reaming Way Plate, Housing & Linkage



KEY	DESCRIPTION	PART NO.
31	Eyebolt R.H.	1944
32	Jam Nut	51190
33	Connecting Sleeve Nut	ZM-400250
34	Hex Nut	2846
35	Eyebolt L.H.	1943
36	Set Screw	50790
37	Pin	XA-1740
38	Guide Rod	ZM-40128
39	Hex Nut	4858 (2)
40	Housing	ZM-400411
41	Gib	ZM-400481 (2)
42	Way Plate	ZM-400541
43	Screw - Short	1150 (2)
44	Screw - long	1058 (4)
45	Tee Nut	14801 (6)
46	Fitting	8092
47	Stop Plate	AM-41214
48	Screw	1101 (4)
49	Set Screw	1426
50	Screw for Gib	1110
51	Bolt	ZM-40099
52	Nut	51188
53	Washer	977

Auxiliary Reaming Housing and Way Plate

<i>Machine Size</i>
9/16 RAN-6
1" RAN-6

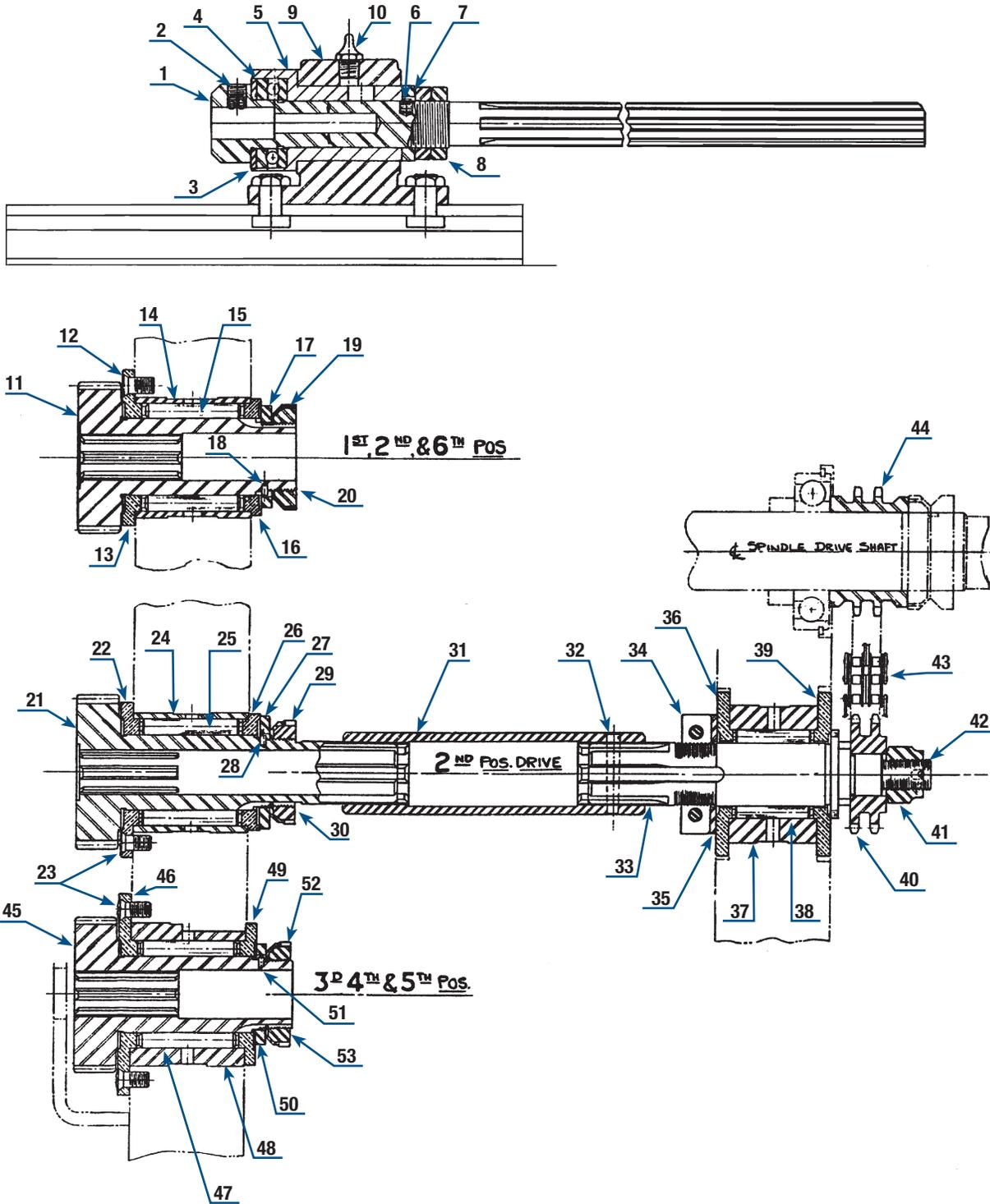


MACHINE	TOOLHOLDER ASSY. NO.	CLAMP GIB	WAY PLATE	TEE NUT TEE BOLT	SCREW	NUT
9/16 & 1" RA-6	23103	23105	225892	n/a	A-1527	n/a
1-1/4 RA-6	71103	71105	705890	n/a	1106	n/a
1-5/8 RB-6 2" RB-6	AZ-40107	AZ-40048 (2)	AZ-401080	52203	1254	n/a
1-5/8 RB-8 2" RB-8	941749	n/a	n/a	4866	n/a	262
2-5/8 RB-6	B-850450	n/a	n/a	4866	n/a	262

High Speed Drilling

Machine Size
9/16 RA-6

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

9/16 RA-6

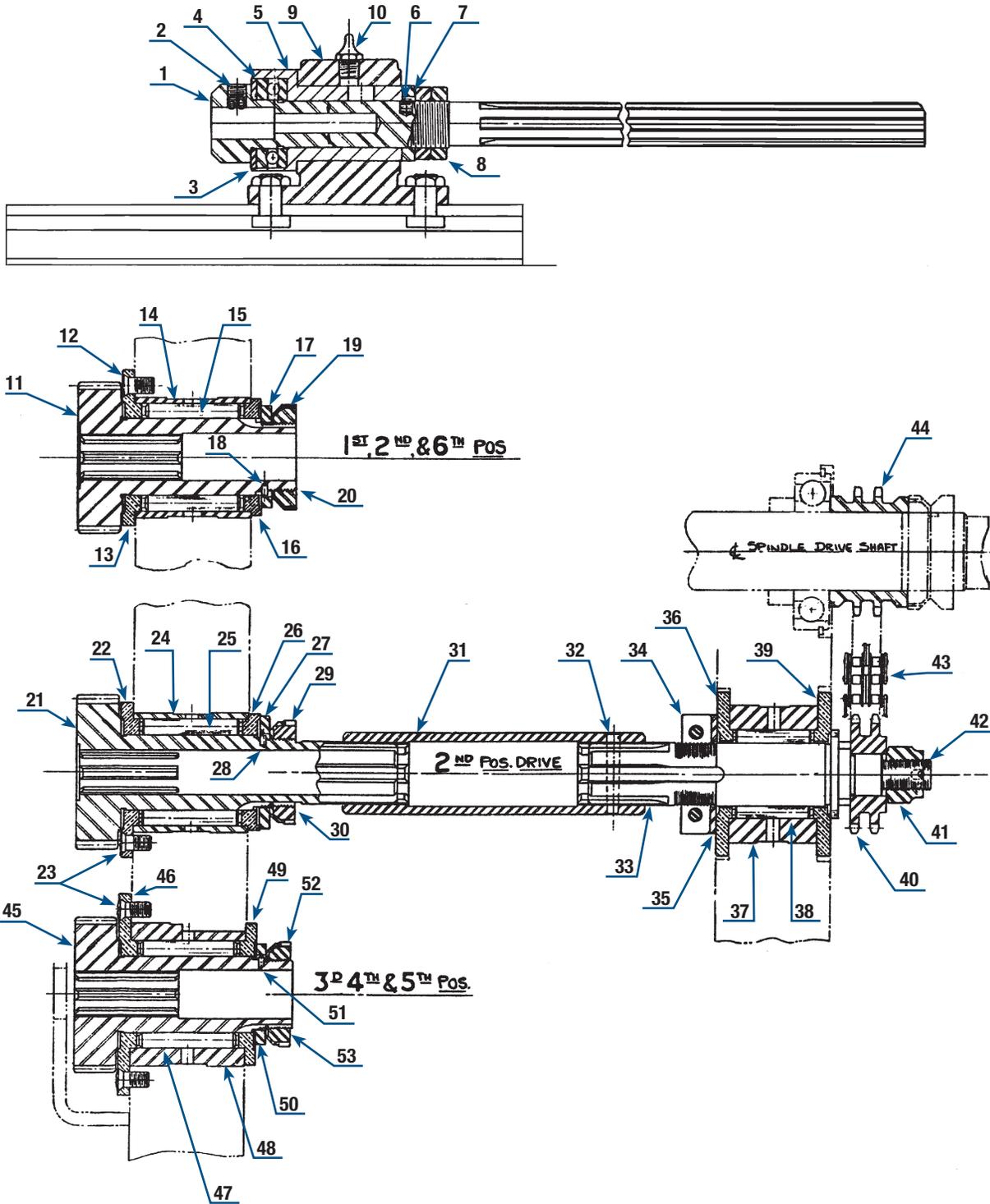
	KEY NO.	QTY.	PART NO.	DESCRIPTION
A-23347 Spindle Assy.	1	1	21310	Drill Spindle
	2	1	50790	Screw
	3	1	XA-4336	Oil Flinger
	4	1	17625	Bearing
	5	1	A-23311	Bushing
	6	1	9915	Screw
	7	1	9904	Washer
	8	2	9905	Nut
233492 Sleeve Assy 1st, 2nd, 6th Position	9	1	230451	Tool Holder - angle base
	10	1	8092	Oil Fitting
	11	1	213082	Gear
	12	2	#30	Screw
	13	1	233150	Retainer
	14	1	23363	Bearing Sleeve
	15	1	17658	Bearing
	16	1	A-23309	Retainer
	17	1	2429	Washer
	18	1	15134	Pin
	19	1	27916	Lochwasher
53XF9/16 Drive Unit Assy. 2nd Position	20	1	9892	Locknut
	21	1	213062	Gear
	22	1	233090	Retainer
	23	2	#30	Screw
	24	1	23363	Bearing Sleeve
	25	1	17658	Bearing
	26	1	A-23309	Retainer
	27	1	2429	Washer
	28	1	15134	Pin
	29	1	27916	Lockwasher
	30	1	9892	Locknut
	31	1	233041	Splined Sleeve
	32	1	50034	Taper Pin
	33	1	23462	Splined Sprocket Shaft
	34	1	15418	Adj. Nut
	35	1	2480	Washer
	36	1	23461	Retainer
	37	1	233160	Bearing Sleeve
	38	1	17628	Bearing
	39	1	23461	Retainer
	40	1	23324	Sprocket
41	1	51613	Nut	
42	1	51658	Cotter Pin	
43	1	23326	Chain	
24XG9/16 Sleeve Assy. 3rd, 4th , 5th Position	44	1	221610	Sprocket - Spindle Drv. Shaft
	45	1	213082	Gear
	46	1	233090	Retainer
	47	1	17658	Bearing
	48	1	21363	Bearing Sleeve
	49	1	A-23307	Retainer
	50	1	2429	Washer
	51	1	15154	Pin
	52	1	27916	Lockwasher
	53	1	9892	Locknut

XF/XG

High Speed Drilling

Machine Size
1" RA-6

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

1" RA-6

	KEY NO.	QTY.	PART NO.	DESCRIPTION
A-23347 Spindle Assy.	1	1	21310	Drill Spindle
	2	1	50790	Screw
	3	1	XA-4336	Oil Flinger
	4	1	17625	Bearing
	5	1	A23311	Bushing
	6	1	9915	Screw
	7	1	9904	Washer
	8	2	9905	Nut
A-233491 Sleeve Assy 1st, 2nd, 6th Position	9	1	A-230450	Tool Holder - flat base
	10	1	8092	Oil Fitting
	11	1	23308	Gear
	12	2	#30	Screw
	13	1	A-23315	Retainer
	14	1	23363	Bearing Sleeve
	15	1	17658	Bearing
	16	1	A-23309	Retainer
	17	1	2429	Washer
	18	1	15134	Pin
	19	1	27916	Lochwasher
A-233592 Drive Unit Assy. 2nd Position	20	1	9892	Locknut
	21	1	A-233061	Gear
	22	1	A-23315	Retainer
	23	2	#30	Screw
	24	1	23363	Bearing Sleeve
	25	1	17658	Bearing
	26	1	A-23309	Retainer
	27	1	2429	Washer
	28	1	15134	Pin
	29	1	27916	Lockwasher
	30	1	9892	Locknut
	31	1	233041	Splined Sleeve
	32	1	50034	Taper Pin
	33	1	23462	Splined Sprocket Shaft
	34	1	15418	Adj. Nut
	35	1	2480	Washer
	36	1	23461	Retainer
	37	1	233160	Bearing Sleeve
	38	1	17628	Bearing
	39	1	23461	Retainer
40	1	A-233050	Sprocket	
41	1	51613	Nut	
42	1	51658	Cotter Pin	
43	1	A-233250	Chain	
A-233500 Sleeve Assy. 3rd, 4th, 5th Position	44	1	A-221611	Sprocket - Spindle Drv. Shaft
	45	1	23308	Gear
	46	1	233090	Retainer
	47	1	17658	Bearing
	48	1	21363	Bearing Sleeve
	49	1	A-23307	Retainer
	50	1	2429	Washer
	51	1	15154	Pin
	52	1	27916	Lockwasher
	53	1	9892	Locknut

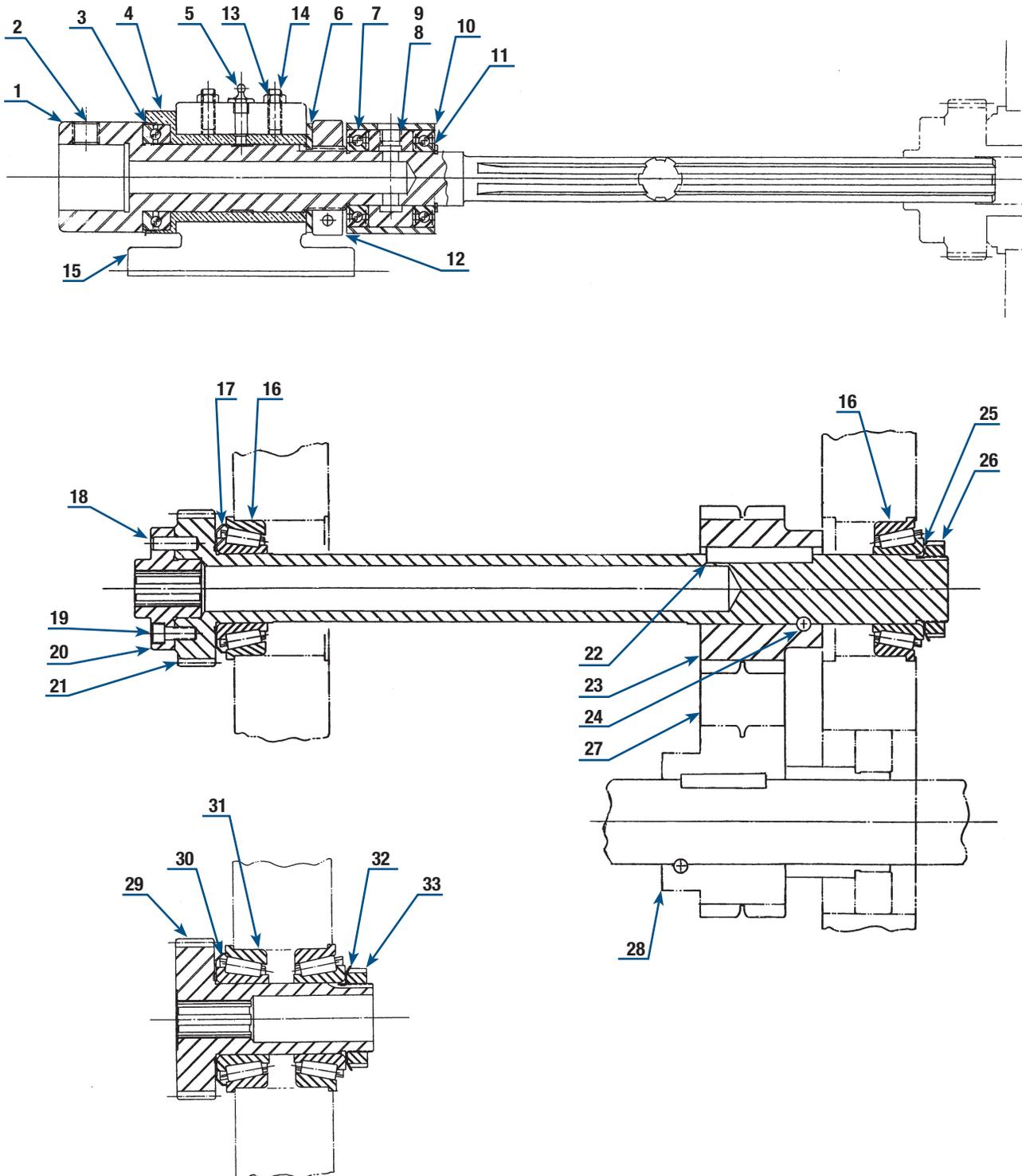
XF/XG

High Speed Drilling

Machine Size

1-1/4 RA-6

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

1-1/4 RA-6

	KEY NO.	QTY.	PART NO.	DESCRIPTION
713471 Spindle Assy.	1	1	713100	Drill Spindle
	2	1	52685	Screw
	3	1	54530	Bearing
	4	1	C-17148	Bushing
	5	1	8092	Grease Fitting
	6	1	2478	Washer
	7	2	17558	Bearing
	8	1	161941	Bearing Spacer
	9	1	01727-3	Pipe Plug
	10	1	413132	Oil Well
	11	1	02502-37	Truarc
	12	1	53526	Adj. Nut
	13	2	1490	Screw
	14	2	51159	Nut
71345 Drive Unit Assy.	15	1	B-71045	Tool Holder
	16	2	17764	Bearing
	17	1	165250	Oil Retainer
	18	1	XA-1916	Pin
	19	4	1137	Screw
	20	1	71351	Flange
	21	1	71304	Drive Shaft - 35T
	22	1	2796	Key
	23	1	71323	Sprocket - 33T
	24	1	50038	Taper Pin
	25	1	71325	Drive Chain
	26	1	27915	Lockwasher
	27	1	27910	Locknut
71346 Drive Sleeve Assy.	28	1	70161	Sprocket - Spindle Drive Shaft
	29	1	71308	Gear
	30	1	165250	Oil Retainer
	31	2	17764	Bearing
	32	1	27915	Lockwasher
	33	1	27910	Locknut

XF/XG

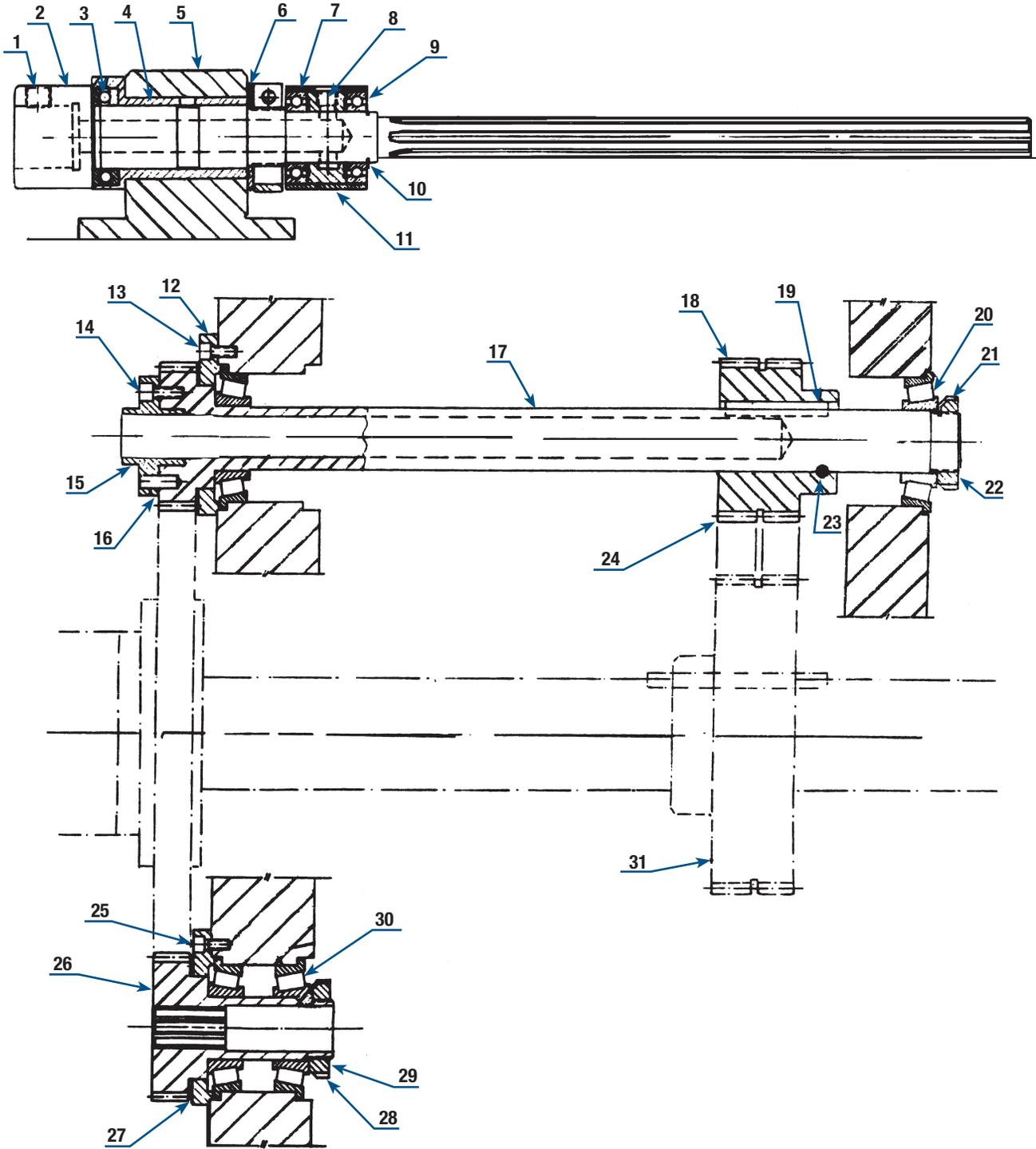
High Speed Drilling

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

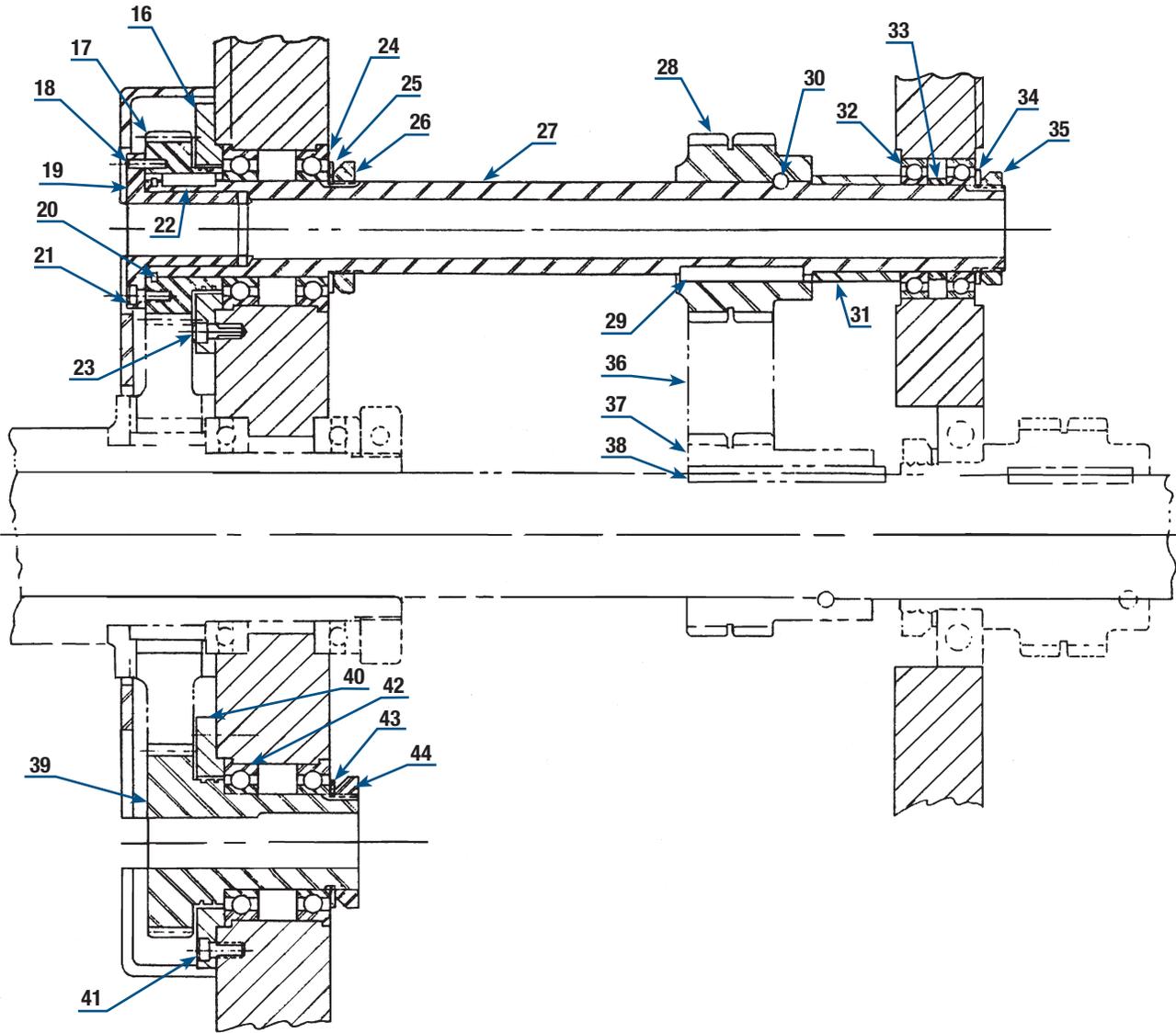
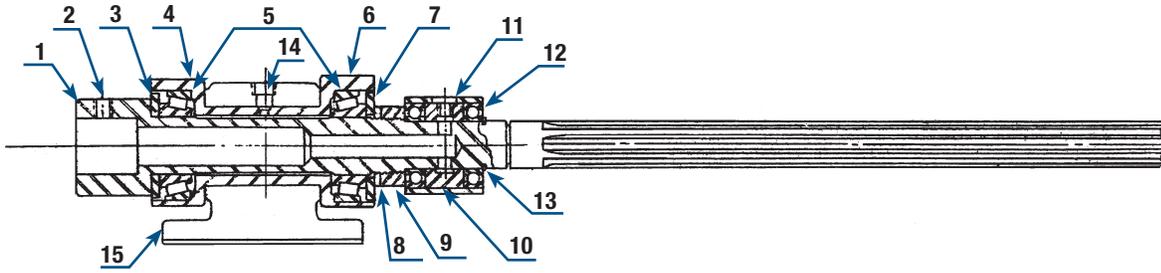
	KEY NO.	QTY.	PART NO.	DESCRIPTION	
AM-41347 Spindle Assy. 1-1/4 RB-8 1-5/8 RBN-8	1	1	52685	Screw	
	2	1	AM-41310	Drill Spindle	
	3	1	54530	Bearing	
	4	1	C-17148	Bushing	
	5	1	AM-41045 *	Drill Holder	
	6	1	2478	Washer	
	7	1	53526	Adj. Nut	
	8	1	161940	Bronze Center Oiler	
	* not included in AM-41347	9	2	17558	Bearing
		10	1	02502-37	Truarc
	AM-413450 Drive Unit Assy. 1-1/4 RB-8	11	1	413132	Outer Shell
12		1	B-713530	Retainer	
13		2	1102	Screw for 12	
14		4	1137	Screw for 15	
15		1	71351	Splined Flange	
16		1	50083	Pin	
17		1	AM-413040	Geared Drive Shaft	
18		1	AM-41323	Sprocket 1-1/4 RB-8	
BM-413450 Drive Unit Assy. 1-5/8 RBN-8		18	1	BM-41323	Sprocket 1-5/8 RBN-8
		19	1	2607	Key
20		2	A-17346	Bearing	
21	1	27915	Lockwasher		
22	1	27910	Locknut		
23	1	301	Taper Pin		
24	1	AM-41325	Chain 1-1/4 RB-8 - only		
24	1	BM-41325	Chain 1-5/8 RBN-8 - only		
AM-413460 Drive Sleeve Assy. 1-1/4 RB-8 1-5/8 RBN-8	25	2	1102	Screw for 27	
	26	1	AM-413080	Gear	
	27	1	B-713530	Retainer	
	28	1	27915	Lockwasher	
	29	1	27910	Locknut	
	30	2	A-17346	Bearing	
	31	1	AM-40161	Sprocket 1-1/4 RB-8	
31	1	BM-40161	Sprocket 1-5/8 RBN-8		

XF/XG

High Speed Drilling

Machine Size
1-5/8 RB-6
2" RB-6

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

1-5/8 RB-6

2" RB-6

	KEY NO.	QTY.	PART NO.	DESCRIPTION
A-413471 Spindle Assy.	1	1	A413100	Spindle
	2	1	52685	Screw
	3	1	A-41468	Oil Flinger - Front
	4	1	A-41469	Bearing Housing - Front
	5	2	A-17382	Bearing
	6	1	A-41470	Bearing Housing - Rear
	7	1	A41468	Oil Flinger - Rear
	8	1	2478	Washer
	9	1	53526	Adj. Nut
	10	1	413132	Outer Shell
	11	1	161940	Bronze Center
	12	2	17558	Bearing
	13	1	02502-37	Truarc
A-413451 Drive Unit Assy.	14	1	8092	Grease Fitting
	15	1	BM830451	Tool Holder
	16	1	A-413530	Retainer
	17	1	A-413061	Gear
	18	2	50126	Pin
	19	1	A-414210	Drive Flange
	20	1	XA-153	Retaining Ring
	21	4	1170	Screw - for 19
	22	1	2758	Key
	23	2	A-1536	Screw - for 16
	24	2	17476	Bearing
	25	1	8622	Lockwasher
	26	1	8621	Locknut
27	1	A-413041	Drive Shaft	
28	1	A-41323	Sprocket	
29	1	51588	Key	
30	1	304	Pin	
31	1	B-44024	Spacer	
32	2	17387	Bearing	
33	1	A-41313	Bearing Spacer	
34	1	17955	Lockwasher	
35	1	17956	Locknut	
36	1	A-41325	Chain	
37	1	A-40161	Sprocket	
38	1	2596	Key	
A-413490 Sleeve Assy.	39	1	A-413080	Gear
	40	1	A-413530	Retainer
	41	2	A-1536	Screw
	42	2	17476	Bearing
	43	1	8622	Lockwasher
44	1	8621	Locknut	

XF/XG

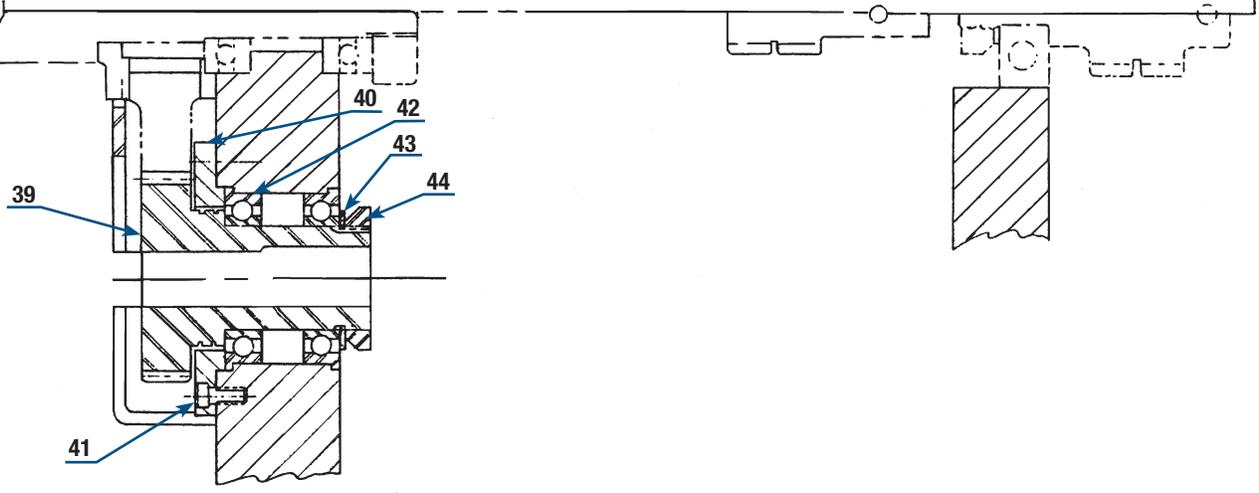
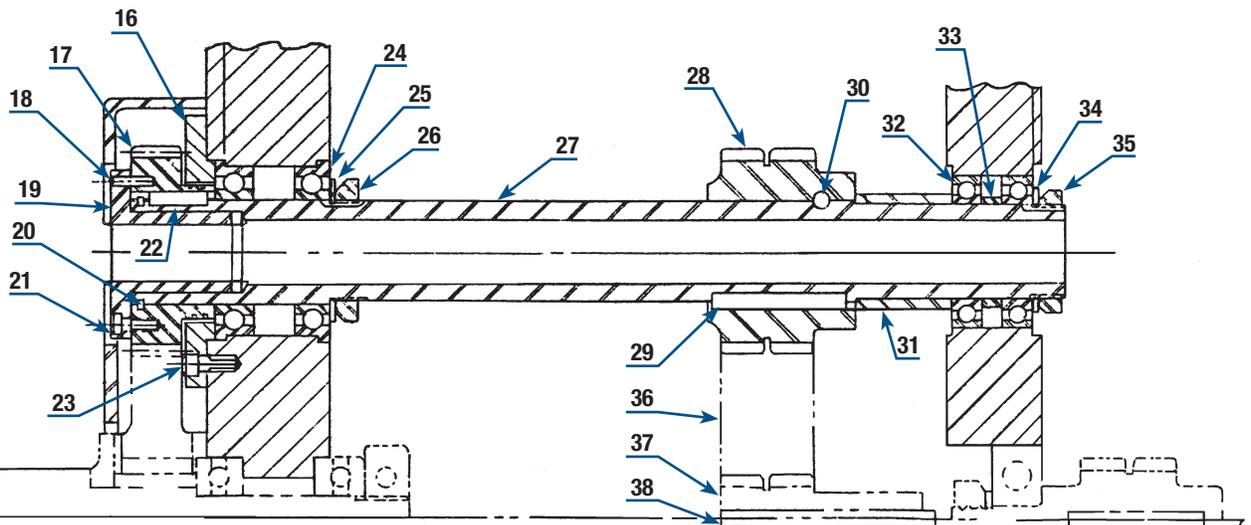
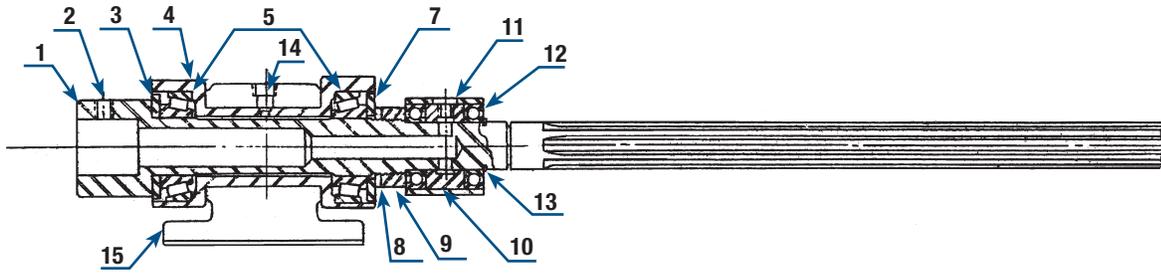
High Speed Drilling

Machine Size

1-5/8 RB-8

2" RB-8

High Speed Drilling
Standard 96% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 96% Ratio

Machine Size

1-5/8 RB-8

2" RB-8

	KEY NO.	QTY.	PART NO.	DESCRIPTION
BM-833470	1	1	BM-833100	Spindle
	2	1	52685	Screw
	3	1	A-41468	Oil Flinger - Front
	4	1	A-414690	Bearing Housing - Front
	5	2	A-17382	Bearing
	7	1	A41468	Oil Flinger - Rear
	8	1	2478	Washer
	9	1	53526	Adj. Nut
	10	1	413132	Outer Shell
	11	1	161940	Bronze Center
	12	2	17558	Bearing
	13	1	02502-37	Truarc
	BM-833451 Drive Unit Assy.	14	1	8092	Grease Fitting
15		1	BM830451	Tool Holder
16		1	BM-83303	Retainer
17		1	BM-833061	Gear
18		2	50126	Pin
19		1	A-414210	Drive Flange
20		1	XA-153	Retaining Ring
21		4	1170	Screw - for 19
22		1	2758	Key
23		2	A-1536	Screw - for 16
24		2	17476	Bearing
25		1	8622	Lockwasher
26		1	8621	Locknut
27	1	A-413041	Drive Shaft	
28	1	BM-83323	Sprocket	
29	1	51588	Key	
30	1	304	Pin	
31	1	44549	Spacer	
32	2	17387	Bearing	
33	1	A-41313	Bearing Spacer	
34	1	17955	Lockwasher	
35	1	17956	Locknut	
36	1	BM-83325	Chain	
37	1	BM-82161	Sprocket	
38	1	2596	Key	
BM-833460 Sleeve Assy.	39	1	BM-833080	Gear
	40	1	BM-83303	Retainer
	41	2	A-1536	Screw
	42	2	17476	Bearing
	43	1	8622	Lockwasher
	44	1	8621	Locknut

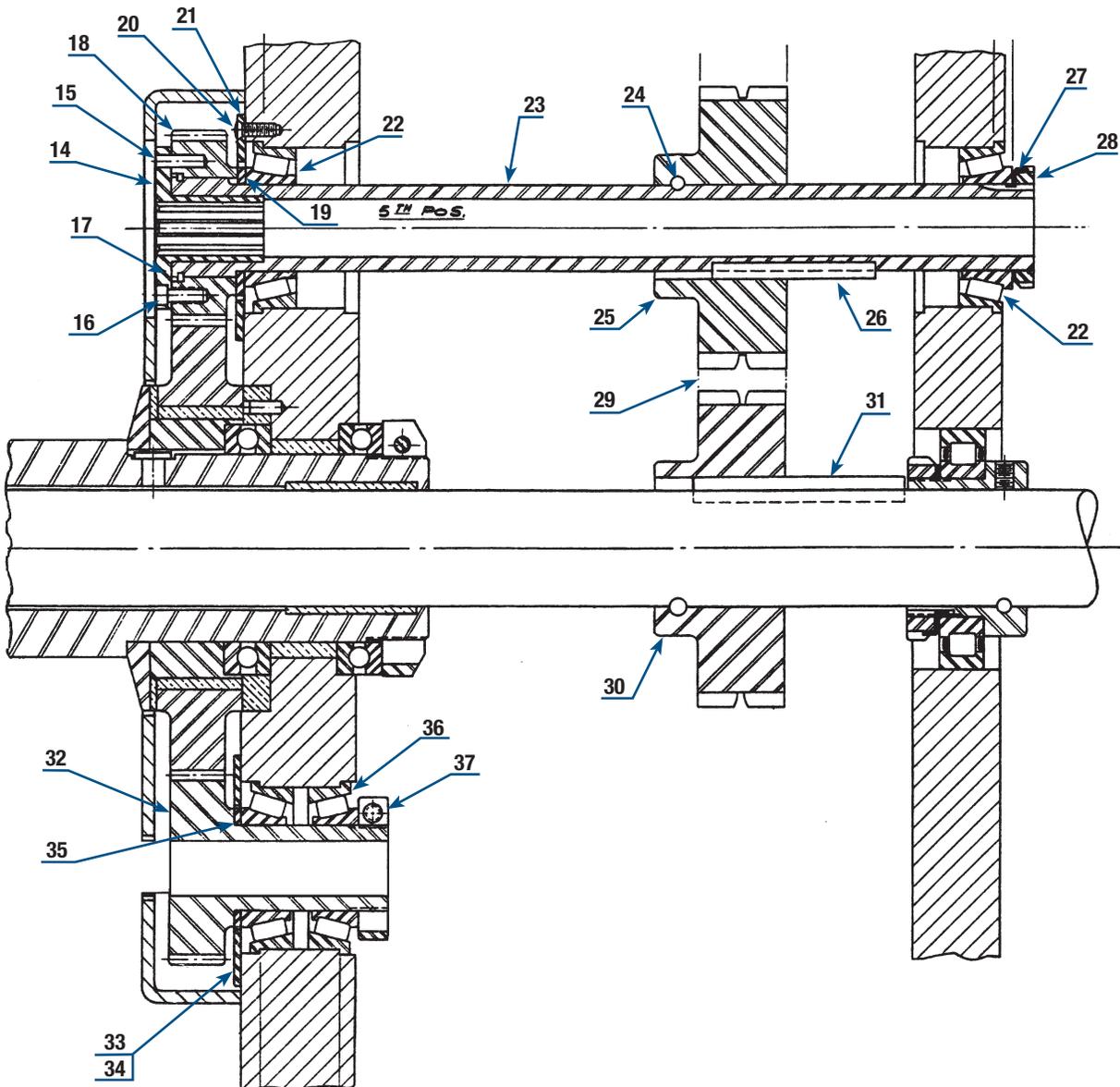
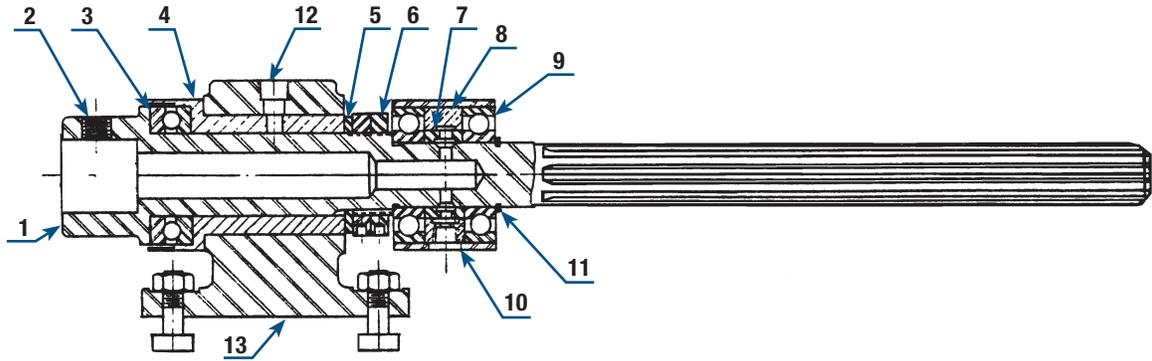
XF/XG

High Speed Drilling

Machine Size

2-5/8 RB-6

High Speed Drilling
Standard 100% Ratio



XF/XG

High Speed Drilling

High Speed Drilling Standard 100% Ratio

Machine Size

2-5/8 RB-6

	KEY NO.	QTY.	PART NO.	DESCRIPTION
B-85347 Spindle Assy.	1	1	B-85310	Shaft
	2	1	52685	Screw
	3	1	9027	Thrust Bearing
	4	1	B-85311	Spindle Bushing
	5	1	2477	Washer
	6	2	6194	Adj. Nut
	7	1	161030	Inner Spacer
	8	1	161950	Outer Spacer
	9	2	17541	Bearing
	10	1	393131	Outer Shell
	11	1	02502-39	Truarc
A-853451 Drive Unit Assy.	12	1	8092	Grease Fitting
	13	1	B-850450	Tool Holder
	14	1	A-854210	Splined Bushing
	15	2	3472	Pin
	16	4	1137	Screw - for 14
	17	1	XA-153	Retaining Ring
	18	1	853060	Gear
	19	1	44750	Spacer
	20	2	#30	Screw - for 21
	21	1	853090	Retainer
	22	2	17649	Bearing
	23	1	A-853041	Drive Shaft
	24	1	50034	Taper Pin
	25	1	A-85323	Sprocket
	26	1	30031	Key
	27	1	17955	Lockwasher
28	1	17956	Locknut	
29	1	A-85325	Chain	
Sleeve Assy.	30	1	A-84161	Sprocket
	31	1	2478	Key
	32	1	85308	Gear Sleeve
	33	1	853090	Retainer
	34	2	#30	Screw - for 34
	35	1	44750	Spacer
	36	2	17649	Bearing
	37	1	53530	Adj. Nut

XG/XG

Pick-Off

Machine Size

9/16 RA-6

1" RA-6

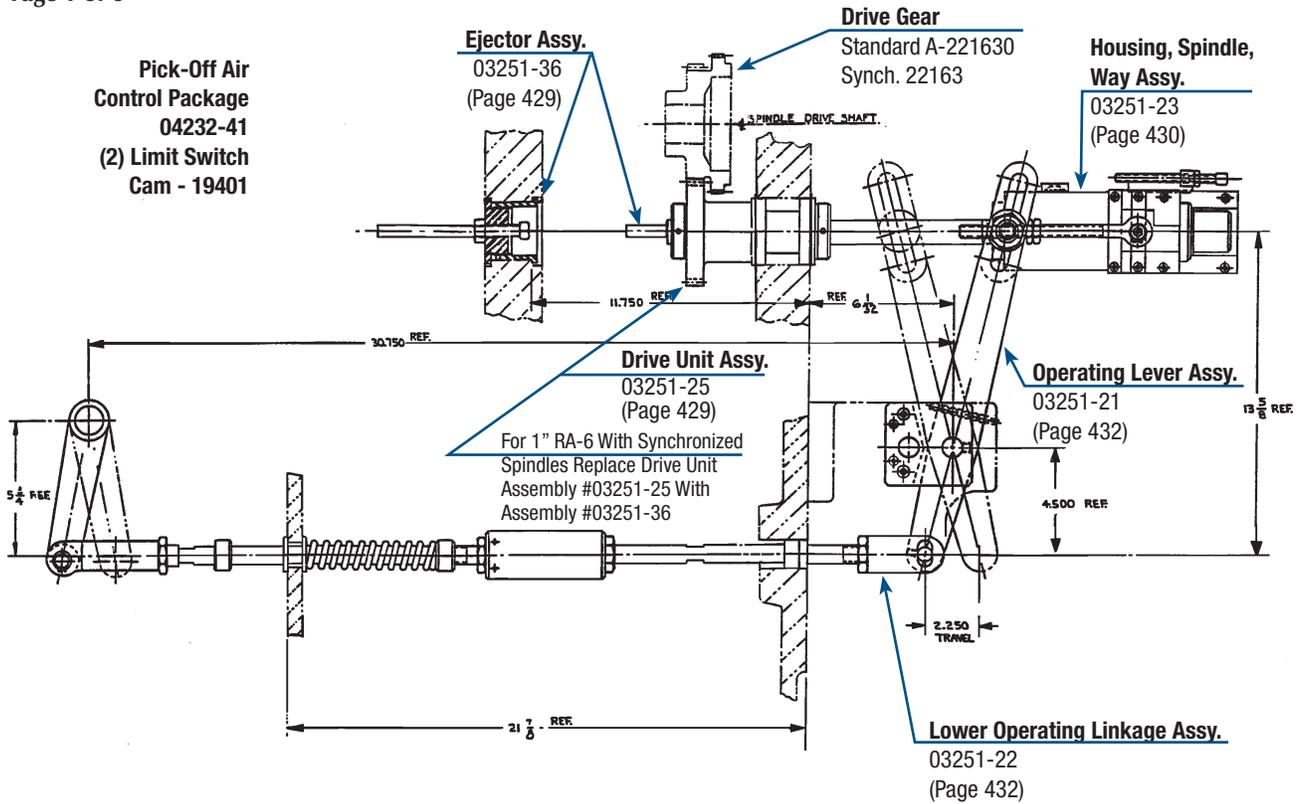
9/16 RAN-6

1" RAN-6

Page 1 of 6

Pick-Off

Complete Attachment Reference Sheet

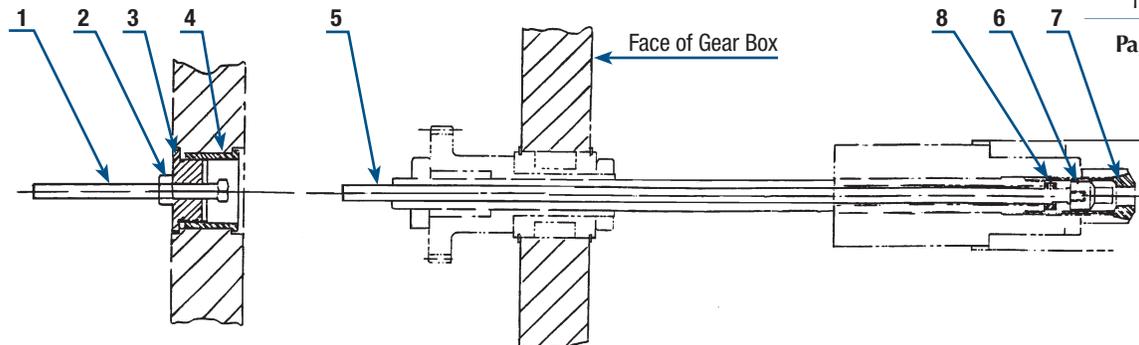


Pick-Off

Pick-Off
Ejector Assy. 03251-36

Machine Size
9/16 RA-6
1" RA-6
9/16 RAN-6
1" RAN-6

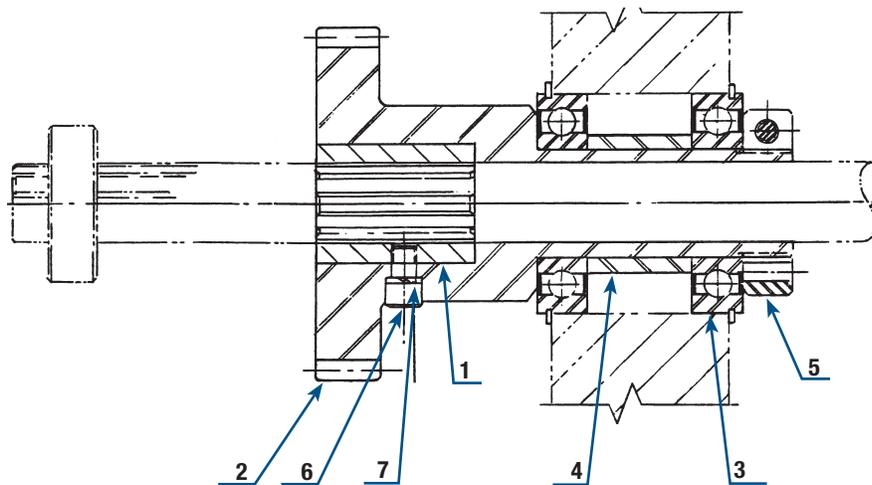
Page 2 of 6



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-off Ejector Assy. 03251-36	1	1*	A-1904	Square Head Set Screw
	2	1*	263	Hex Nut
	3	1*	01969-19	Plug
	4	1*	01969-18	Plug Retainer
	5	1	TG-961974	Ejector Rod
	6	1	TG-961975	Ejector Head
	7	1	AO2920	Collet
	8	1	TG-961973	Adjusting Spacer

* included in Plug Assy part number 01969-21

Drive Unit Assy. 03251-25 (Serial Number Required)



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-off Drive Unit Assy. 03251-25	1	1	03234-86	Drive Sleeve
	2	1	03251-13*	Gear
	3	2	D-17170	Bearing
	4	1	03234-88	Fitting Spacer
	5	1	15402	Adjusting Nut Assembly
	6	1	A-564	5/16 Socket Head Screw
	7	1	2497	Lockwasher

* Synchronized machines use gear part number 03251-40 and Assy. part number 03251-18

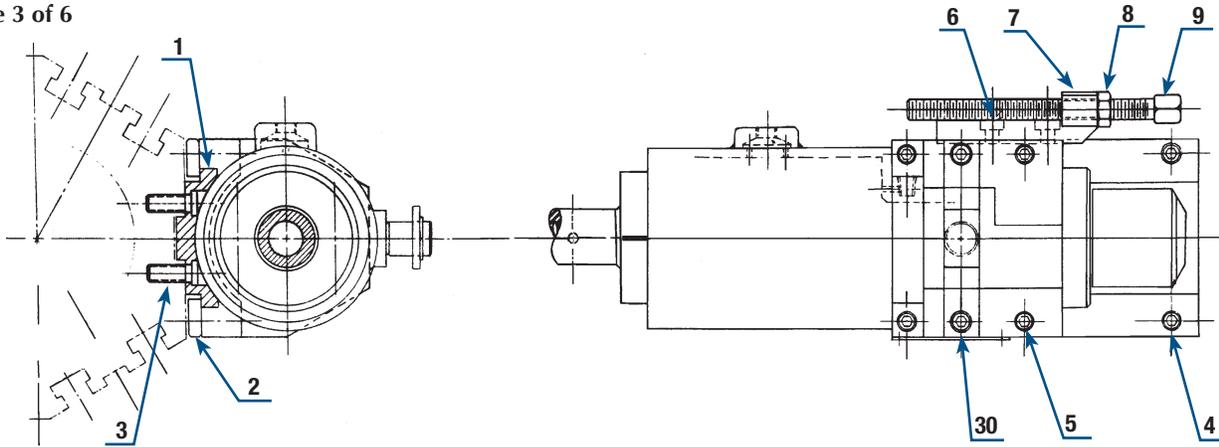
Pick-Off

Machine Size
 9/16 RA-6
 1" RA-6
 9/16 RAN-6
 1" RAN-6

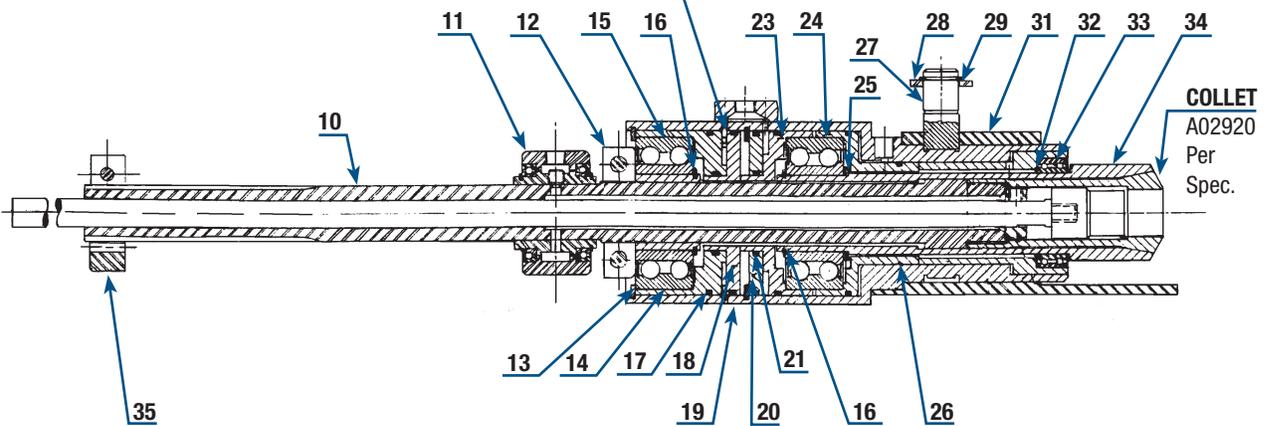
Pick-Off

Housing, Way & Spindle Assy. 03251-23

Page 3 of 6



Note! The Split in this Snap Ring
 Must be Positioned to Straddle
 Port Hole to Allow Passage of Air



Pick-Off

Pick-Off

Housing, Spindle, and Way Assy.

Machine Size

9/16 RA-6

1" RA-6

9/16 RAN-6

1" RAN-6

Page 4 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick -Off Housing, Spindle and Way Assy. 03251-23	1	1	02068-30	Tool Slide Way
	2	2	02068-34	Gib
	3	8	A-1526	Screw
	4	4	1174	Screw
	5	2	A-523	Screw
	6	2	1221	Screw
	7	1	02068-35	Stop Block
	8	1	50313	Jam Nut
	9	1	1928	Set Screw
	10	1	03251-20	Drive Shaft
	11	1	03251-32	Air Distributor Assembly
	12	1	03251-29	Adjusting Nut Assembly
	13	3*	02510-38	Retaining Ring
	14	2*	D17878	Bearing
	15	1	03251-11	Bearing Retainer
	16	2*	02508-8	Retaining Ring
	17	5**	01829-40	O-Ring
	18	1	03251-6	Seal Ring
	19	1	03251-19	Pick-Off Housing
	20	1	03251-9	Retainer and Seal Ring
	21	2**	01829-28	O-Ring
	23	1	03251-15	Bearing Retainer
	24	1	03251-12	Bearing Retainer
	25	1	03251-10	Bearing Spacer
	26	1**	01829-31	O-Ring
	27	1	03251-37	Clamping Link
	28	1	W-421	Washer
	29	1	02502-22	Retaining Ring
	30	2	1102	Screw
	31	1	02068-59	Pick-Up Housing
	32	1	03251-14	Bearing Housing
	33	1*	D-17877	Bearing
	34	1	03251-17	Collet Sleeve
	35	1	XA-612	Split Lock Nut Assembly

* included in bearing service kit part # 0325123BK

** included in seal service kit part # 0325123SK

Machine Size

9/16 RA-6

1" RA-6

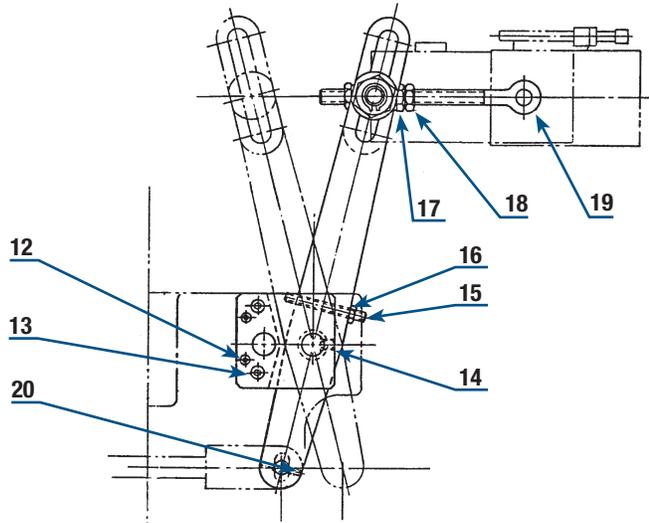
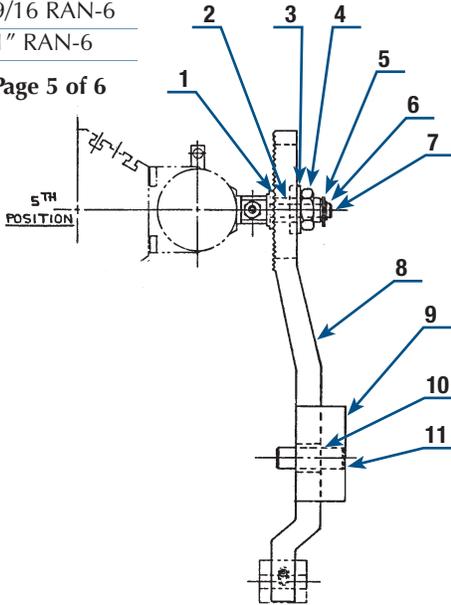
9/16 RAN-6

1" RAN-6

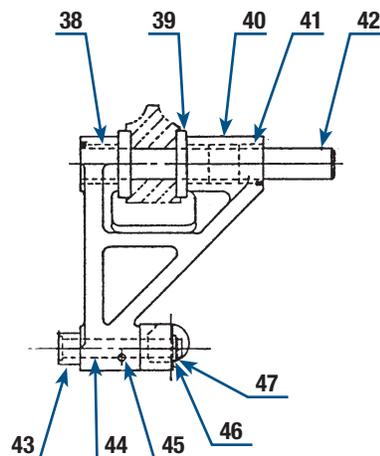
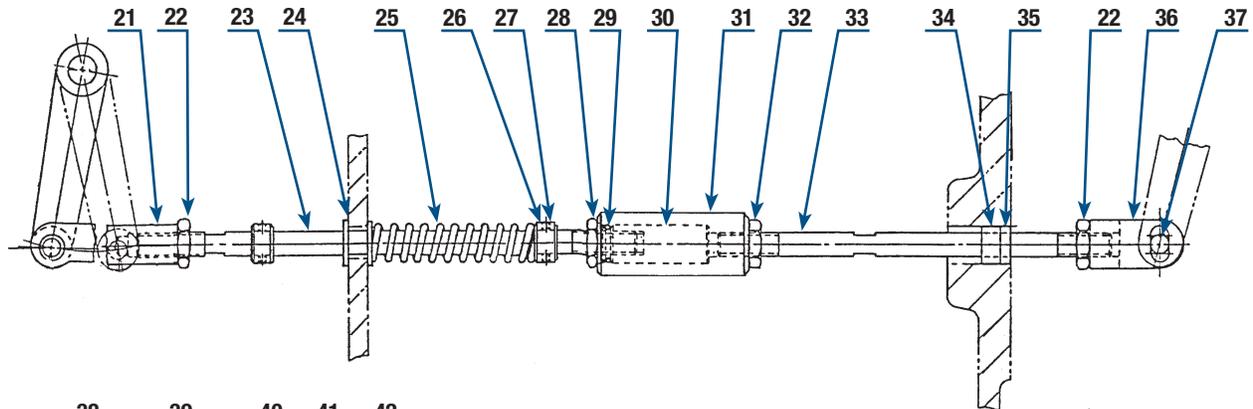
Page 5 of 6

Pick-Off

Operating Lever Assy. 03251-21



Lower Operating Linkage Assy. 03251-22



Pick-Off
Operating Lever Assy.
Lower Operating Linkage Assy.

Machine Size
 9/16 RA-6
 1" RA-6
 9/16 RAN-6
 1" RAN-6

Page 6 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Operating Lever Assy. 03251-21	1	1	01966-89	Serrated Washer
	2	1	01966-87	Bushing
	3	1	01966-90	Washer
	4	1	XA-613	Jam Nut
	5	1	W-420	Washer
	6	1	02502-20	Truarc Ring
	7	1	01966-88	Pilot Pin
	8	1	01966-86	Operating Lever
	9	1	01966-54	Operating Lever Block Assembly
	10	1	C-17126	Bushing
	11	1	AZ-22031	Lever Pin
	12	2	XA-760	Dowel Pin
	13	2	1200	Screw
	14	1	1405	Set Screw
	15	1	1467	Set Screw
	16	1	51159	Jam Nut
	17	2	AZ-22046	Eyebolt Nut
	18	1	51479	1/2-20 Hex Jam Nut
	19	1	01966-79	Connecting Link
	20	1	1426	Set Screw

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Lower Operating Linkage Assy. 03251-22	21	1	AZ-220360	Clevis Link
	22	2	51190	Jam Nut
	23	1	AZ-220261	Lever Rod - Drum End
	24	2	977	Washer
	25	1	51764	Spring
	26	4	77771	Screw
	27	2	XA-2044	Collar
	28	1	XA-1894	Nut
	29	2	XA-1572	Shear Pin
	30	1	AZ-22223	Safety Drive Plug
	31	1	01969-78	Safety Link Sleeve
	32	1	2846	Nut
	33	1	01969-79	Lever Rod - Lever End
	34	1	C-17228	Bushing
	35	1	XA-4545	Oil Seal
	36	1	AZ-220230	Yoke
	37	1	AZ-220320	Pin
	38	1	C-17038	Bushing
	39	2	XA-1409	Spacer
	40	1	AZ-22028	Roll Lever
	41	2	17008	Bushing
	42	1	AZ-22030	Support shaft
	43	1	14245	Roll
	44	1	01988-42	Stud
	45	1	301	Taper Pin
	46	1	W-421	Washer
	47	1	02502-22	Truarc Ring

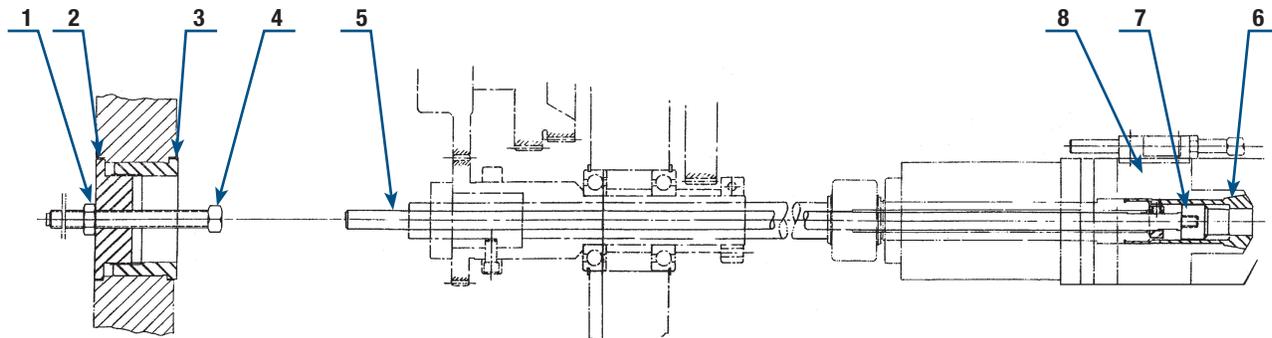
Pick-Off

Machine Size

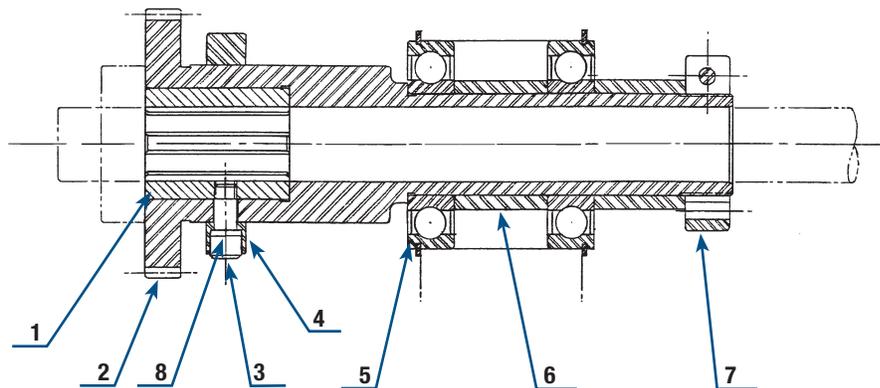
3/4 RA-8

Ejector Assy. Drive Unit Assy.

Page 2 of 6



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Ejector Assy. 03044-4	1	1	263	Nut
	2	1	02069-47	Plug
	3	1	02069-46	Plug Retainer
	4	1	A-1904	Screw
	5	1	03044-17	Ejector Rod
	6	1	AO2920	Collet (Per Spec.)
	7	1	TG-961976	Ejector Head
	8	1	TG-961973	Adjusting Spacer



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Drive Unit Assy. 03044-14	1	1	03234-86	Drive Sleeve
	2	1	03044-15	Drive Gear
	3	1	A-572	Screw
	4	1	03251-42	Lock Ring
	5	2	D-17170	Bearing
	6	2	03234-88	Fitting Spacer
	7	1	15402	Adjusting Nut Assembly
	8	1	2497	Lock Washer

Pick-Off

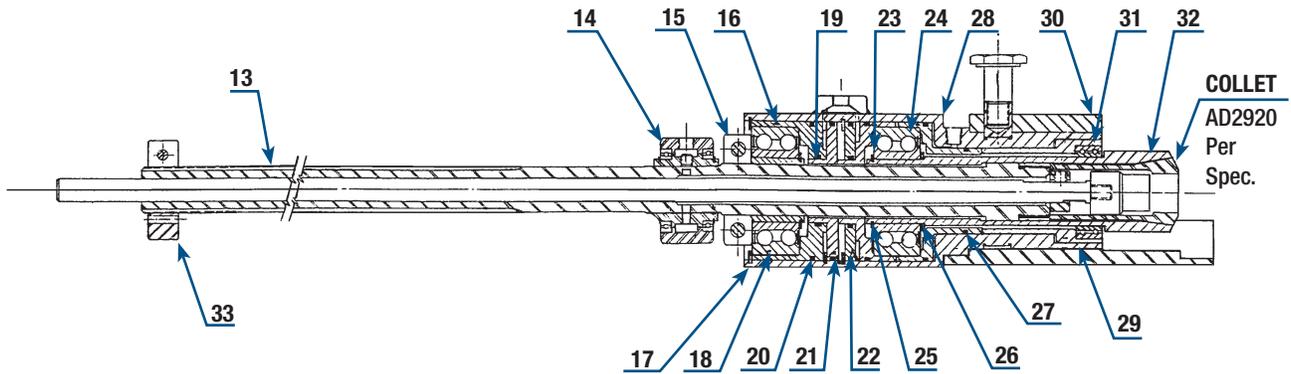
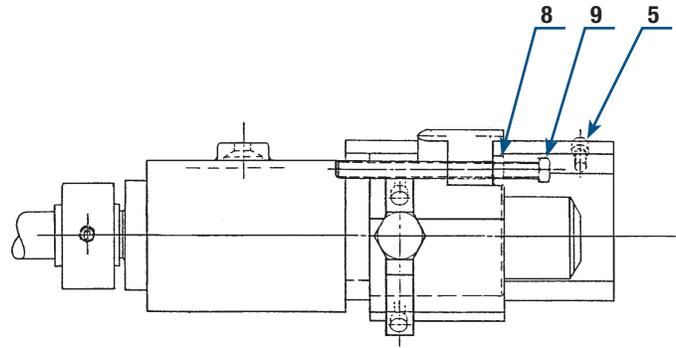
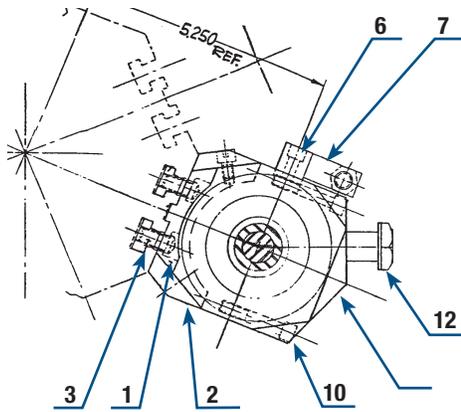
Machine Size

3/4 RA-8

Page 3 of 6

Pick-Off

Housing, Spindle, and Way Assy. 03044-1



Pick-Off

Pick-Off

Machine Size

3/4 RA-8

Housing, Spindle & Way Assy.

Page 4 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Housing, Spindle and Way Assy. 03044-1	1	1	03044-12	Tool Slide Way
	2	2	03044-7	Gib
	3	8	TG-976363	Screw
	4	8	A-1116	Tee Nut
	5	8	1302	Screw
	6	2	1102	Screw
	7	1	03044-11	Stop Block
	8	1	50313	Jam Nut
	9	1	1928	Square Head Set Screw
	10	2	1186	Screw
	11	1	03044-10	Clamping Link
	12	1	03044-13	Special Bolt
	13	1	03044-8	Drive Shaft
	14	1	03251-32	Air Distributor Assembly
	15	1	03251-29	Adjusting Nut Assembly
	16	1	03251-11	Bearing Retainer
	17	3	02510-38	Retaining Ring
	18	2	D-17878	Bearing
	19	2	01829-28	O-Ring
	20	5	01829-40	O-Ring
	21	1	03251-6	Seal Ring
	22	1	03251-9	Retainer and Seal Ring
	23	1	03251-15	Bearing Retainer
	24	1	03251-12	Bearing Retainer
	25	2	02508-8	Retaining Ring
	26	1	03251-10	Bearing Spacer
	27	1	01829-31	O-Ring
	28	1	03251-19	Pick-Up Housing
	29	1	03251-14	Bearing Housing
	30	1	03044-9	Pick-Up Slide
	31	1	D-17877	Bearing
	32	1	03251-17	Collet Sleeve
	33	1	XA-612	Split Lock Nut Assembly

Pick-Off

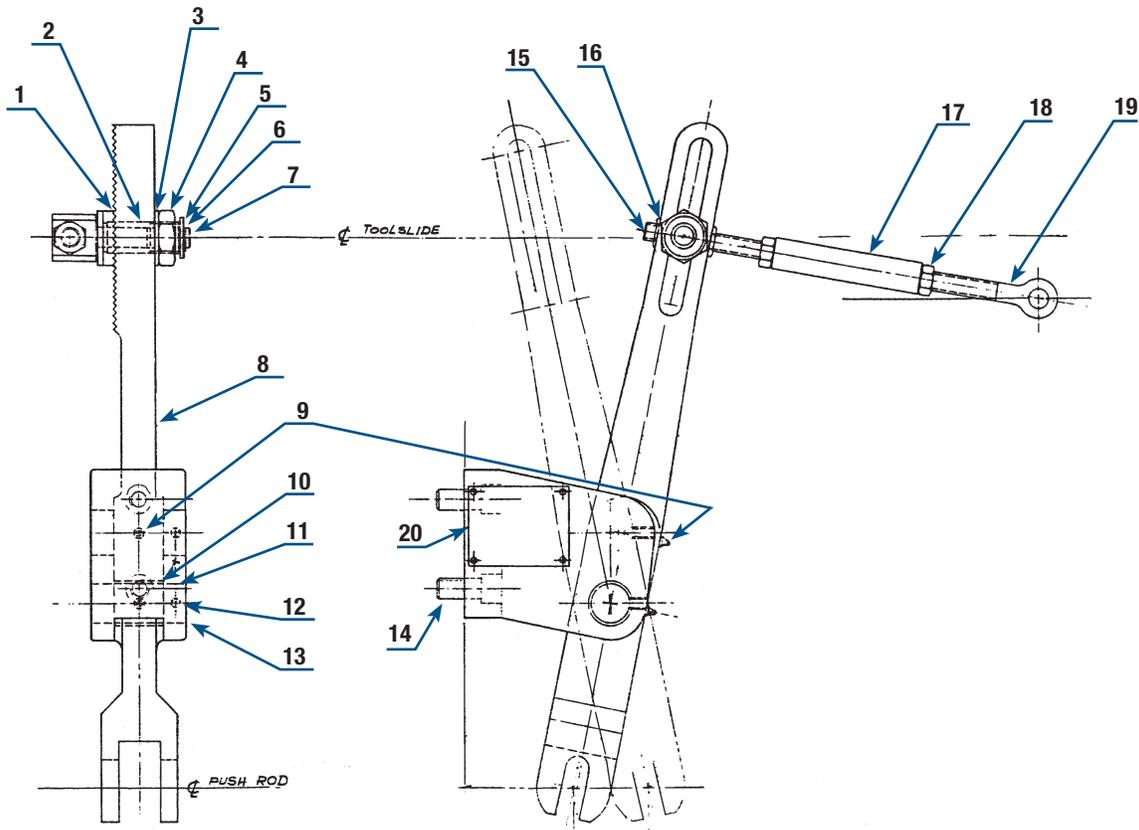
Machine Size

3/4 RA-8

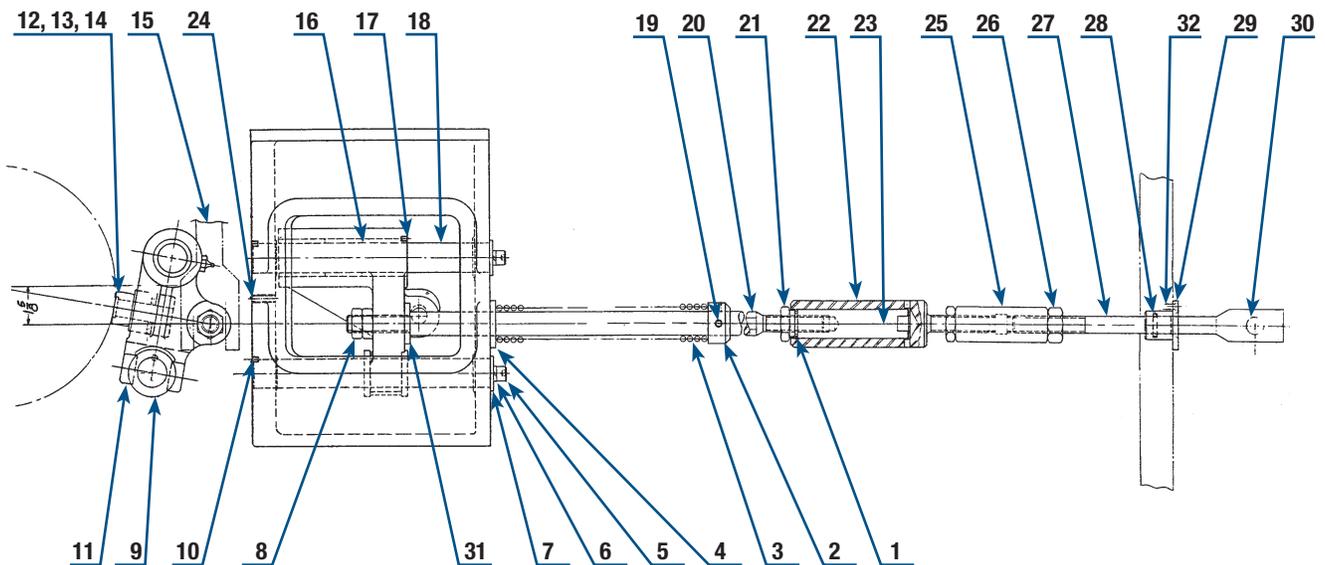
Page 5 of 6

Pick-Off

Operating Lever Assy. 02069-50



Lower Operating Linkage Assy. ZM-70262



Pick-Off

Machine Size

3/4 RA-8

**Operating Lever Assy.
Lower Operating Linkage Assy.**

Page 6 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Operating Lever Assy. 02069-50	1	1	02069-38	Serrated Washer
	2	1	02069-37	Bushing
	3	1	02069-51	Washer
	4	1	51209	Nut
	5	1	W-406	Washer
	6	1	02502-22	Truarc Ring
	7	1	02069-36	Pivot Pin
	8	1	03044-6	Adjusting Operating Lever
	9	1	15655	Grease Fitting
	10	2	17153	Bushing
	11	1	B-71622	Lever Pin
	12	2	1402	Socket Headless Set Screw
	13	1	03044-5	Lever Bracket
	14	4	1191	Socket Head Cap Screw
	15	1	02069-39	Connecting Screw
	16	3	51650	Nut
	17	1	ZM70025	Connecting Nut
	18	1	A-1320	Nut
	19	1	02069-40	Front Clevis
	20	1	01334-7	Pick-Up Lever Ratio Plate

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Lower Operating Linkage Assy. ZM-70262	1	2	XA-1572	Shear Pin
	2	1	B-44461	Adjusting Collar
	3	1	XA-181	Spring
	4	1	2479	Washer
	5	2	1058	Screw
	6	2	2546	Lock Washer
	7	2	2448	Washer
	8	2	51188	Nut
	9	1	BD-71628	Bushing
	10	2	1480	Set Screw
	11	1	XA-70078	Cam Roll Bracket
	12	1	01485-22	Roll Pin
	13	1	10182	Stud
	14	1	3019	Cam Roll
	15	1	8092	Fitting
	16	2	52150	Bushing
	17	2	77771	Set Screw
	18	2	ZM-70030	Shaft
	19	2	1401	Set Screw
	20	1	AZ-70248	Lever Rod
	21	1	XA-1894	Lock Nut
	22	1	AZ-70224	Safety Link Sleeve
	23	1	AZ-70223	Safety Drive Plug
	24	1	53260	Set Screw
	25	1	B-71625	Turn Buckle
	26	1	53419	Nut
	27	1	B-71624	Lever Rod
	28	1	01837-10	O-Ring
	29	1	NC-17212	Bushing
	30	1	B-71623	Pin
	31	1	50959	Bevel Washer
	32	3	1300	Screw

Pick-Off

Machine Size

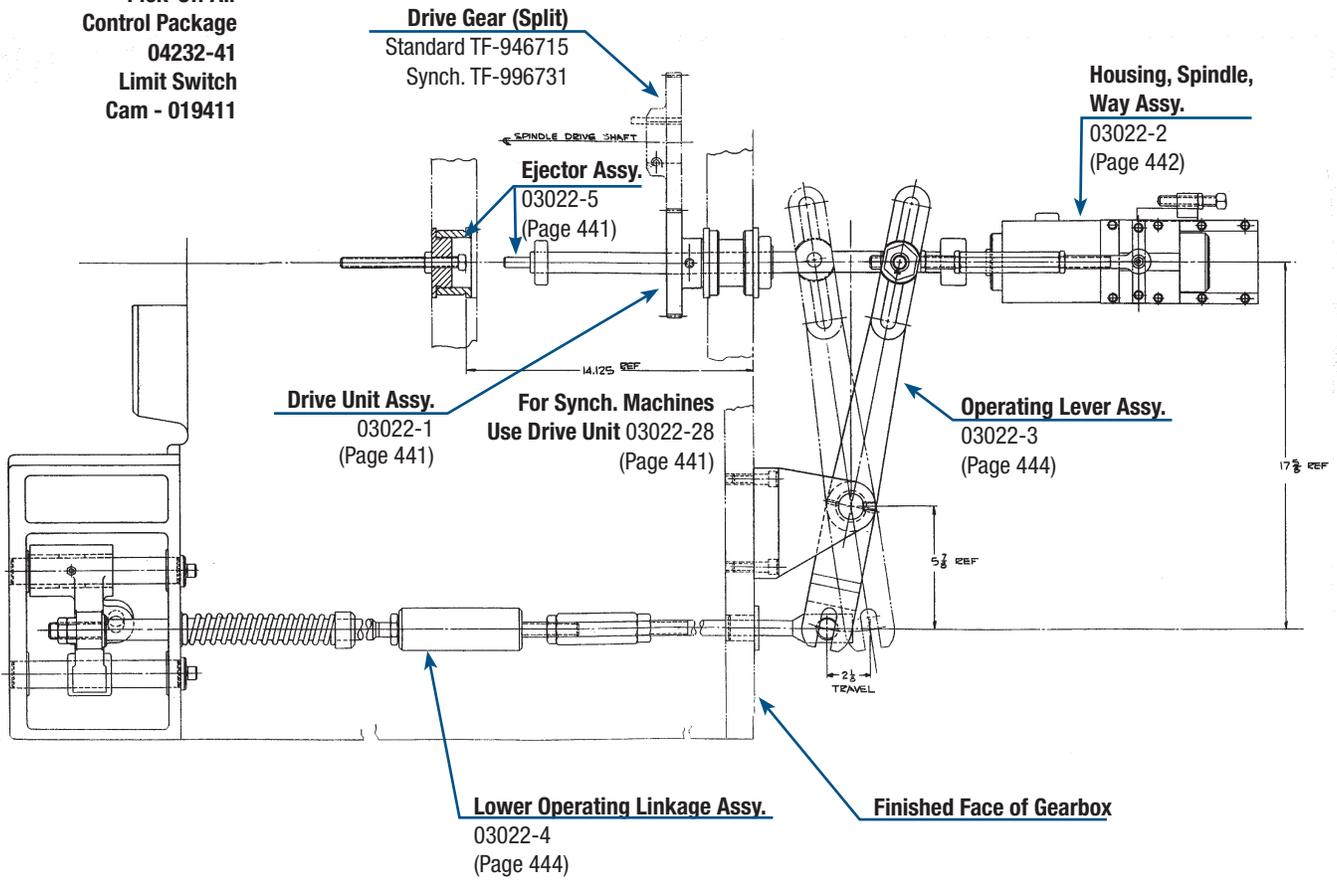
1-1/4 RA-6

Page 1 of 6

Pick-Off Air
Control Package
04232-41
Limit Switch
Cam - 019411

Pick-Off

Complete Attachment Reference Sheet



Pick-Off

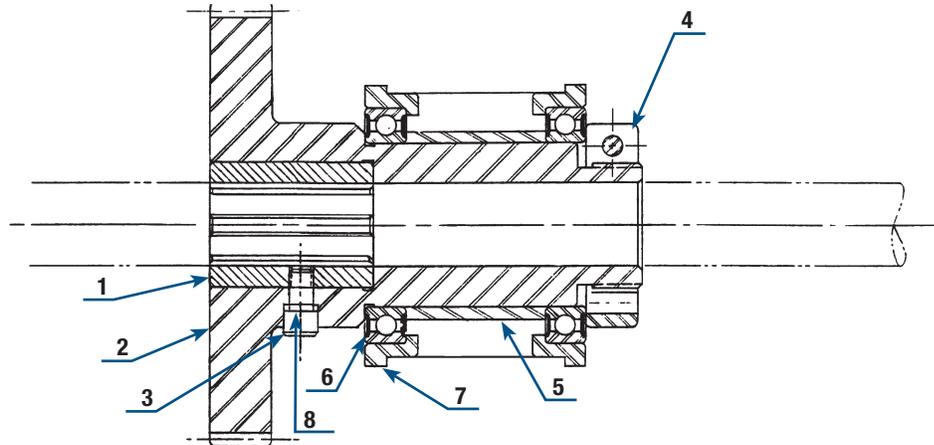
Pick-Off

Machine Size

1-1/4 RA-6

Page 2 of 6

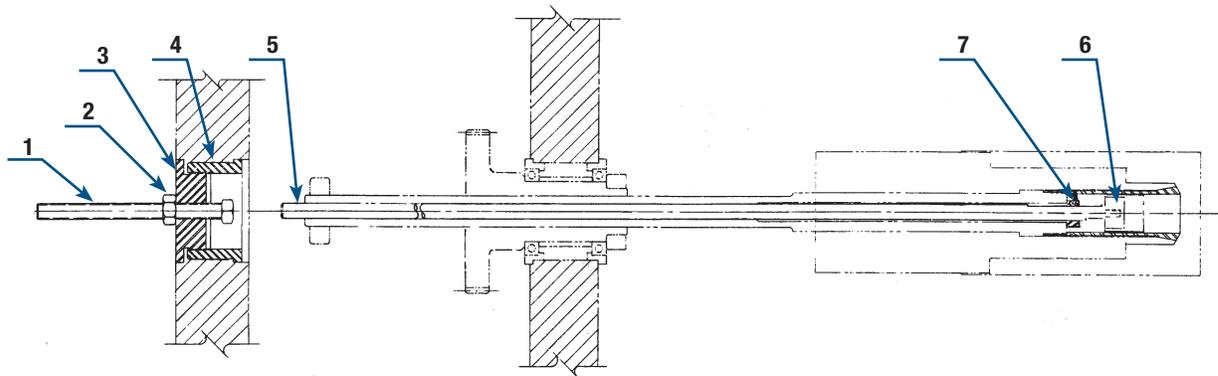
Drive Unit Assy. 03022-1



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Drive Unit Assy. 03022-1	1	1	03234-86	Drive Sleeve
	2	1	03022-25*	Drive Gear
	3	1	A-564	Screw
	4	1	226190	Adjusting Nut Assembly
	5	1	03022-27	Fitting Spacer
	6	2	D-17865	Bearing
	7	2	03022-26	Bearing Retainer
	8	1	2497	Lock Washer

* For synchronized machines use gear part number 03022-29 and Assy. part number 03022-28

Ejector Assy. 03022-5



	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Ejector Assy. 03022-5	1	1*	A-1904	Set Screw
	2	1*	263	Hex Nut
	3	1*	02069-47	Plug
	4	1*	02069-46	Plug Retainer
	5	1	TG-961978	Ejector Rod
	6	1	TG-961979	Ejector Head
	7	1	TG-961973	Adjusting Spacer

* included in assembly part number 02069-48

Pick-Off

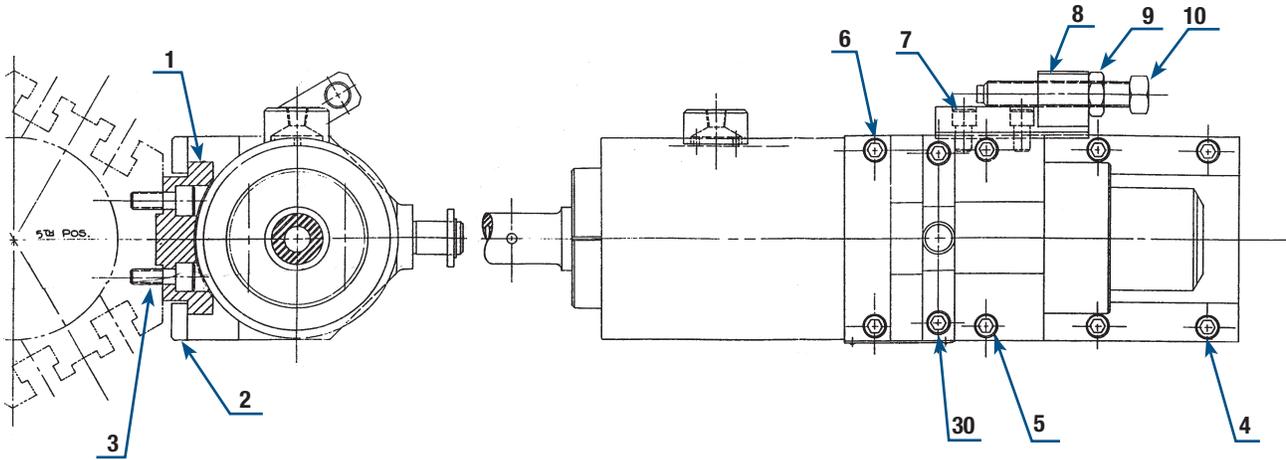
Machine Size

1-1/4 RA-6

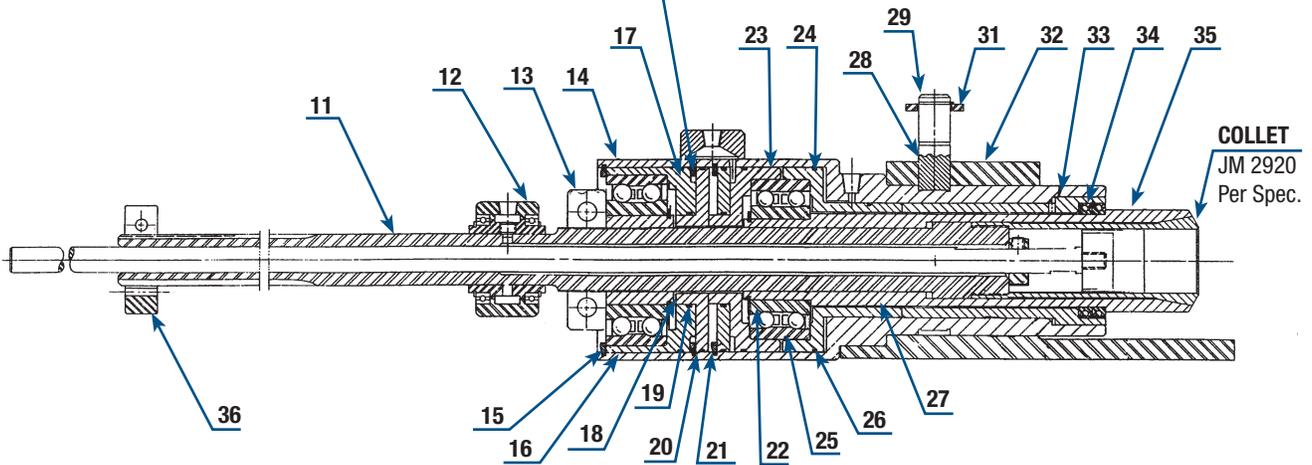
Page 3 of 6

Pick-Off

Housing, Spindle, and Way Assy.



NOTE:
The Split in this Snap Ring
Must be Positioned to Straddle
Port Hole to Allow Passage
of Air



Pick-Off

Pick-Off

Machine Size

1-1/4 RA-6

Housing, Spindle, and Way Assy.

Page 4 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-off Housing, Spindle and Way Assy. 03022-2	1	1	02307-14	Tool Slide Way
	2	2	02307-32	Gib
	3	8	1156	Screw
	4	4	1151	Screw
	5	2	1176	Screw
	6	2	1101	Screw
	7	2	1188	Screw
	8	1	02307-34	Stop Block
	9	1	263	Fin Hex Jam Nut
	10	1	50543	Square Head Set Screw
	11	1	03022-6	Drive Shaft
	12	1	03251-32	Air Distributor Assembly
	13	1	03022-24	Adjusting Nut Assembly
	14	1	03022-16	Pick-Up Housing
	15	3	02510-48*	Retaining Ring
	16	1	D-17885*	Bearing
	17	1	03022-9	Bearing Retainer
	18	1	02508-15*	Retaining Ring
	19	2	01829-31**	O-Ring
	20	1	03022-7	Seal Ring
	21	1	03022-8	Retainer and Seal Ring
	22	1	02508-11*	Retaining Ring
	23	1	03022-12	Bearing Retainer
	24	1	03022-10	Bearing Retainer
	25	1	D-17886*	Bearing
	26	5	01829-43**	O-Ring
	27	1	01829-34**	O-Ring
	28	1	02307-33	Clamping Link
	29	1	02502-22	Retaining Ring
	30	2	1137	Screw
	31	1	W-421	Washer
	32	1	02307-31	Pick-Up Housing
	33	1	03022-11	Bearing Housing
	34	2	D-17884*	Bearing
	35	1	03022-14	Collet Sleeve
	36	1	XA-612	Split Lock Nut Assembly

* included in bearing kit 030222BK

**included in seal kit 030222SK

Pick-Off

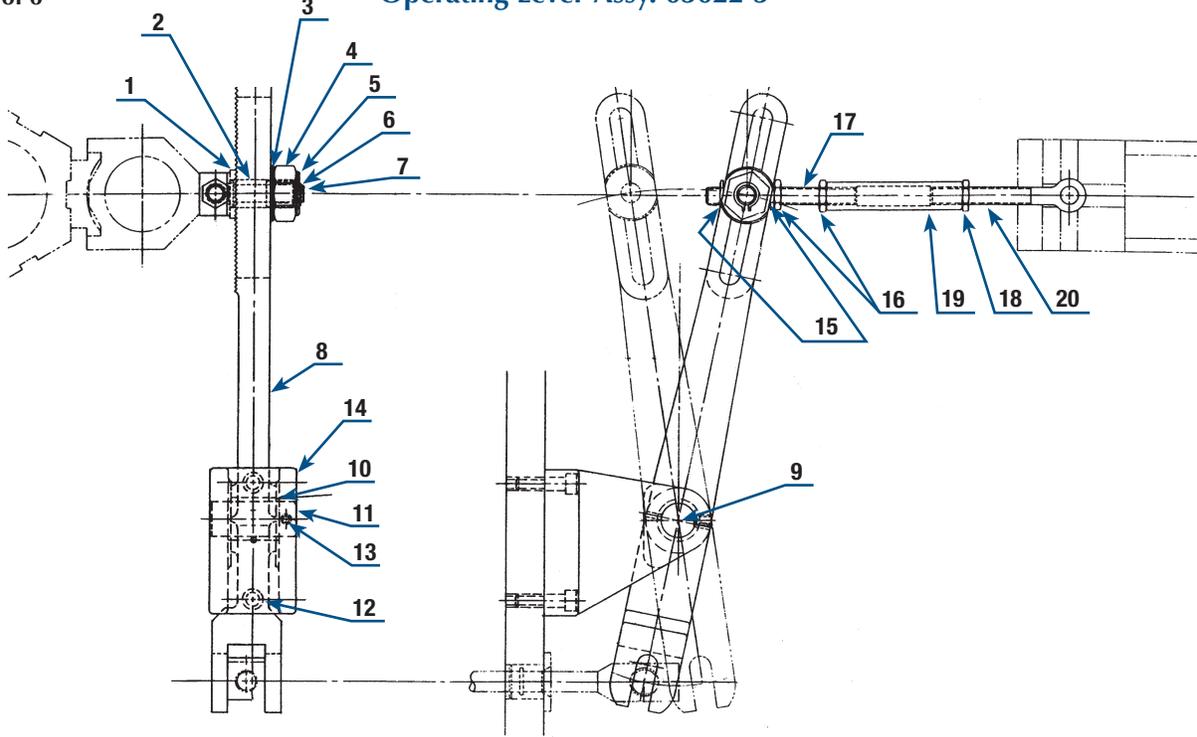
Machine Size

1-1/4 RA-6

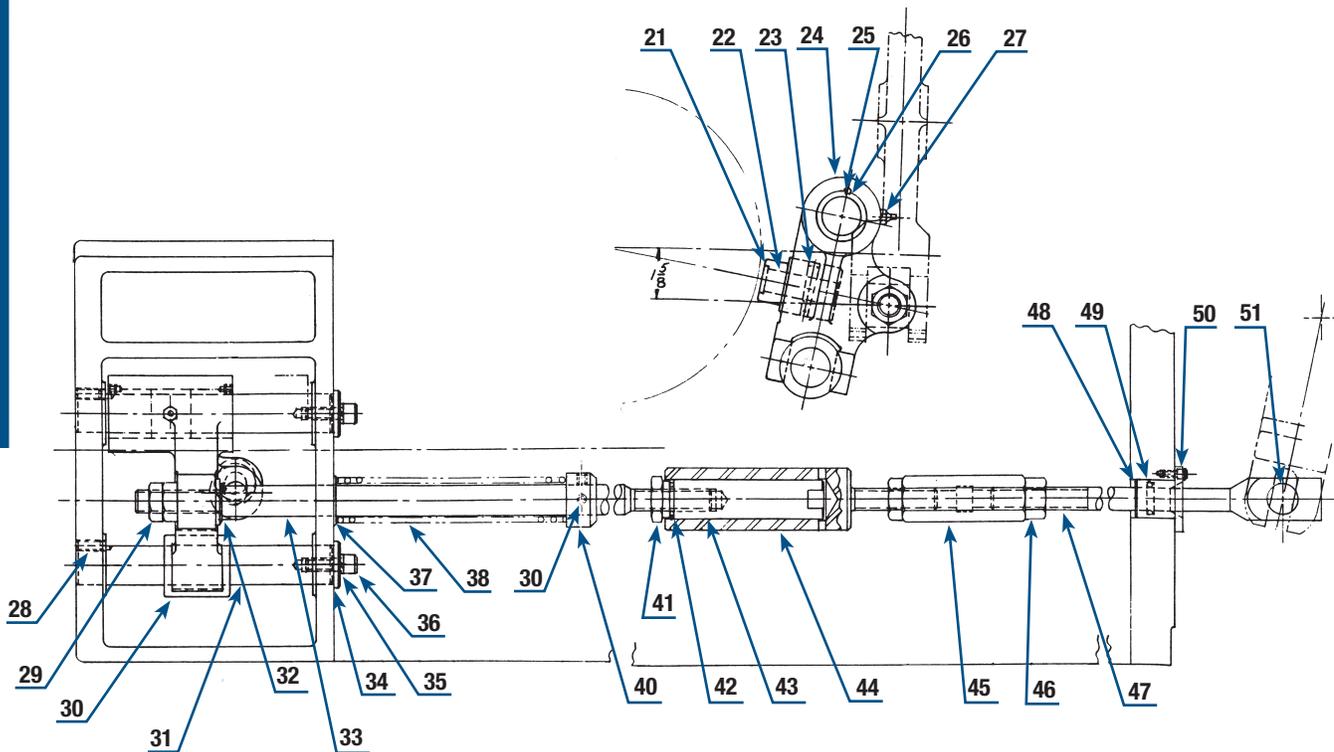
Page 5 of 6

Pick-Off

Operating Lever Assy. 03022-3



Lower Operating Linkage Assy. 03022-4



Pick-Off

Machine Size

1-1/4 RA-6

Operating Lever Assy. 03022-3

Page 6 of 6

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Operating Lever Assy. 03022-3	1	1	02307-38	Serrated Washer
	2	1	02307-39	Bushing
	3	1	02069-51	Washer
	4	1	51209	Nut
	5	1	W-406	Washer
	6	1	02502-22	Truarc Ring
	7	1	02307-40	Pivot Pin
	8	1	02309-18	Operating Lever
	9	2	15655	Fitting
	10	1	17153	Bushing
	11	1	B-71622	Lever Pin
	12	2	1056	Socket Head Screw
	13	1	1385	Set Screw
	14	1	03229-8	Lever Bracket
	15	2	02307-41	Nut
	16	2	51650	Nut
	17	1	02069-39	Connecting Screw
	18	1	A-1320	Nut
	19	1	ZM-70025	Connecting Nut
	20	1	02069-40	Front Clevis

Lower Operating Linkage Assy. 03022-4

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Lower Operating Linkage Assy. 03022-4	21	1	3019	Roll
	22	1	10182	Stud
	23	1	01485-22	Roll Pin
	24	1	717110	Cam Roll Bracket
	25	2	52147	Bushing
	26	2	77771	Screw
	27	1	8092	Alemite Oiler
	28	2	53260	Screw
	29	3	51188	Nut
	30	1	71628	Guide Bushing
	31	2	717200	Shaft
	32	1	50959	Washer
	33	1	AZ-70248	Lever Rod - Drum End
	34	2	2448	Bevel Washer
	35	2	2546	Lock Washer
	36	2	1058	Screw
	37	1	2479	Washer
	38	1	XA-181	Spring
	39	2	1401	Screw
	40	1	B-44461	Spring Adjusting Collar
	41	1	XA-1894	Lock Nut
	42	2	XA-1572	Shear Pin
	43	1	AZ-70223	Safety Link Plug
	44	1	AZ-70224	Safety Link Sleeve
	45	1	B-71625	Turn Buckle
	46	1	53419	Nut
	47	1	B-71624	Lever Rod - Lever End
	48	1	C-17212	Bushing
	49	1	01837-0	O-Ring
	50	3	1300	Screw
	51	1	B-71623	Pivot Pin

Pick-Off

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

Page 1 of 8

Pick-Off

Complete Attachment Reference Sheet

Pick-Off Air Control Package
04232-41
(2) Limit Switch Cam - 019411

Drive Gear (Split)
 1-1/4 RB-8 TF-913023
 1-5/8 RBN-8 TF-920757

Housing, Spindle, Way Assy.
 1-1/4 RB-8 03050-1
 (Page 448-449)
 1-5/8 RBN-8 03393-82
 (Page 450-451)

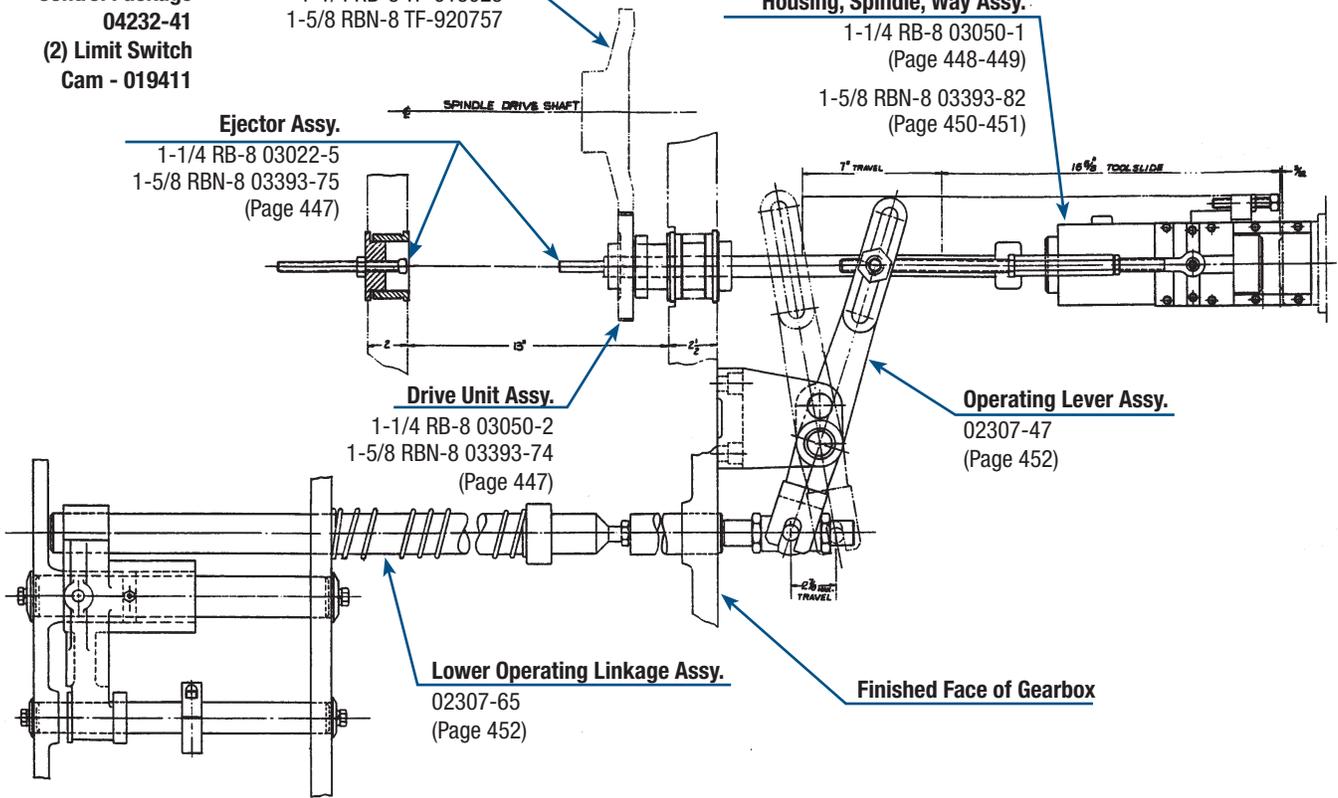
Ejector Assy.
 1-1/4 RB-8 03022-5
 1-5/8 RBN-8 03393-75
 (Page 447)

Drive Unit Assy.
 1-1/4 RB-8 03050-2
 1-5/8 RBN-8 03393-74
 (Page 447)

Operating Lever Assy.
 02307-47
 (Page 452)

Lower Operating Linkage Assy.
 02307-65
 (Page 452)

Finished Face of Gearbox



Pick-Off

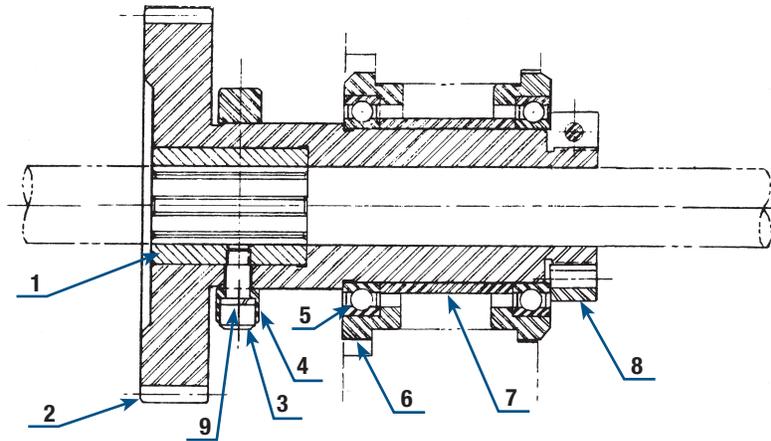
Pick-Off Drive Unit Assy.

Machine Size

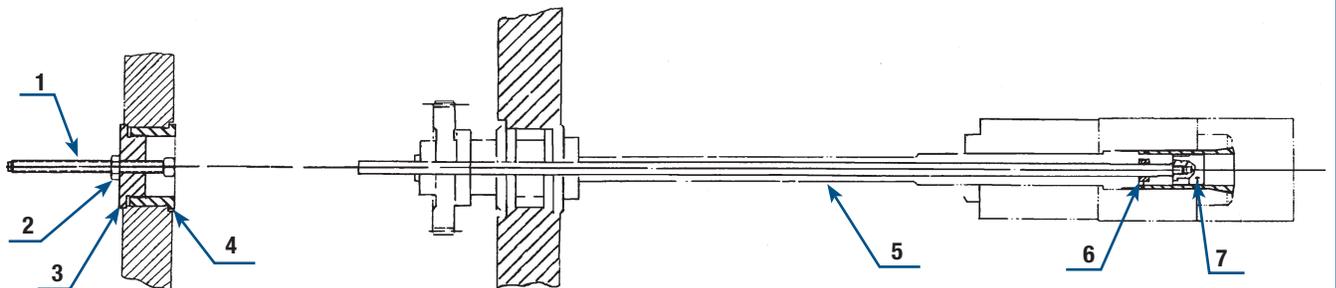
1-1/4 RB-8

1-5/8 RBN-8

Page 2 of 8



	KEY	QTY.	PART # 1-1/4 RB-8	PART # 1-5/8 RBN-8	DESCRIPTION
Complete Pick-Off Drive Unit Assy.	1	1	03234-86	03234-86	Drive Sleeve
	2	1	03050-6	TH-903039	Drive Gear
	3	1	A-572	A-572	Screw
1-1/4 RB-8 03050-2	4	1	03251-42	03251-42	Lock Ring
	5	2	D-17865	D-17865	Bearing
1-5/8 RBN-8 03393-74	6	2	03050-7	03050-7	Bearing Retainer
	7	1	03022-27	03022-27	Fitting Spacer
	8	1	226190	226190	Adjusting Nut Assembly
	9	1	2497	2497	Lock Washer



	KEY	QTY.	PART # 1-1/4 RB-8	PART # 1-5/8 RBN-8	DESCRIPTION
Complete Pick-Off Ejector Assy.	1	1*	A-1904	A-1904	Set Screw
	2	1*	263	263	Hex Nut
	3	1*	02069-47	02069-47	Plug
1-1/4 RB-8 03022-5	4	1*	02307-76	02307-76	Plug Retainer
	5	1	03050-9	03045-17 & 03393-76	Ejector Rod
1-5/8 RBN-8 03393-75	6	1	TG-961973	TG-961973	Adjusting Spacer Assembly
	7	1	TG-961979	03045-49	Ejector Head

*Included in Plug Assy. Part number 02307-75.

Pick-Off

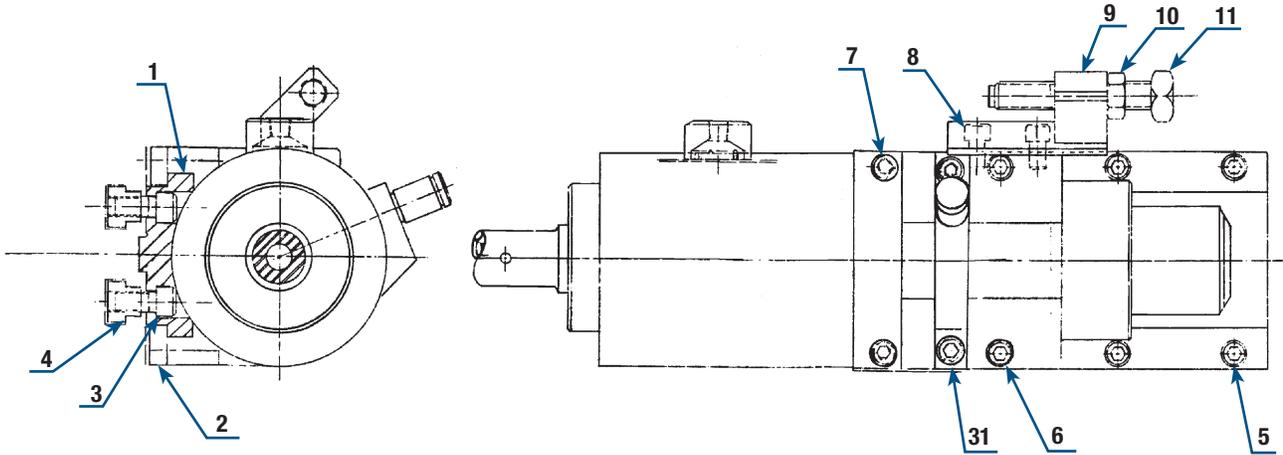
Machine Size

1-1/4 RB-8

Page 3 of 8

Pick-Off

Housing, Spindle, and Way Assy.



Pick-Off

Pick-Off

Machine Size

1-1/4 RB-8

Housing, Spindle, and Way Assy.

Page 4 of 8

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Housing, Spindle and Way Assy. 03050-1	1	1	02307-55	Tool Slide Way
	2	2	02307-32	Gib
	3	8	1156	Screw
	4	8	14739	Tee Nut
	5	4	1151	Screw
	6	2	1176	Screw
	7	2	1101	Screw
	8	2	1188	Screw
	9	1	02307-34	Stop Block
	10	1	263	Fin. Hex Jam Nut
	11	1	50543	Screw
	12	1	03050-10	Drive Shaft
	13	1	03251-32	Air Distributor Assembly
	14	1	03022-24	Adjusting Nut Assembly
	15	3	02510-48	Retaining Ring
	16	1	D-17885	Bearing
	17	1	03022-16	Pick-Up Housing
	18	1	03022-9	Bearing Retainer
	19	1	02508-15	Retaining Ring
	20	2	01829-31	O-Ring
	21	1	03022-7	Seal Ring
	22	1	03022-8	Retainer And Seal Ring
	23	1	02508-11	Retaining Ring
	24	1	03022-12	Bearing Retainer
	25	1	03022-10	Bearing Retainer
	26	1	D-17886	Bearing
	27	5	01829-43	O-Ring
	28	1	01829-34	O-Ring
	29	1	02307-54	Clamping Link
	30	1	02502-22	Retaining Ring
	31	2	1137	Screw
	32	1	W-421	Washer
	33	1	02307-31	Pick-Up Housing
	34	1	03022-11	Bearing Housing
	35	2	D-17884	Bearing
	36	1	03022-14	Collet Sleeve
	37	1	XA-612	Split Lock Nut Assembly

Pick-Off

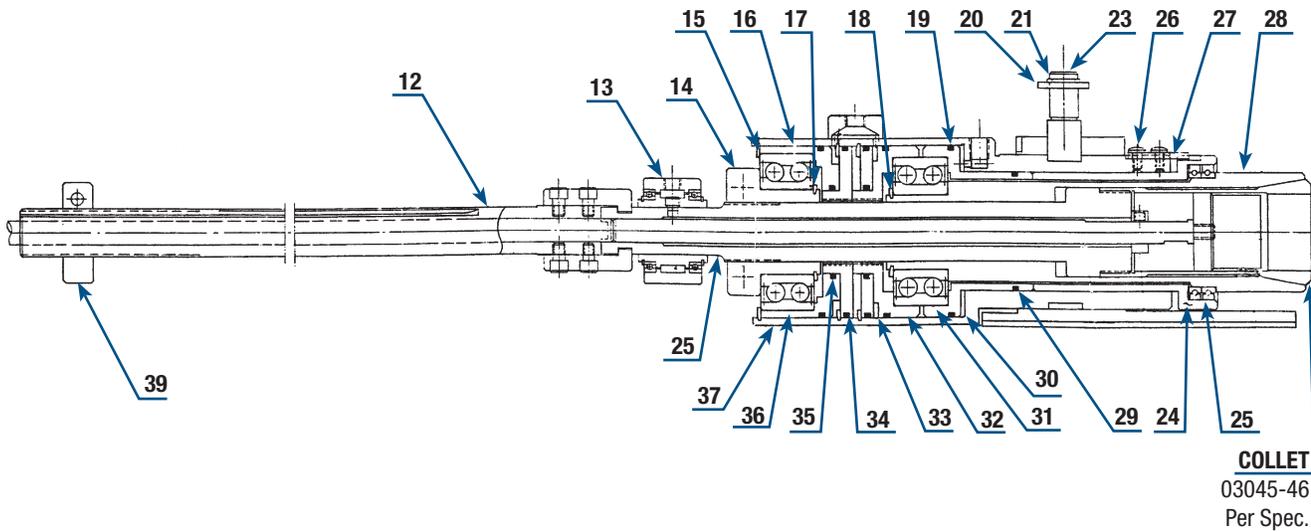
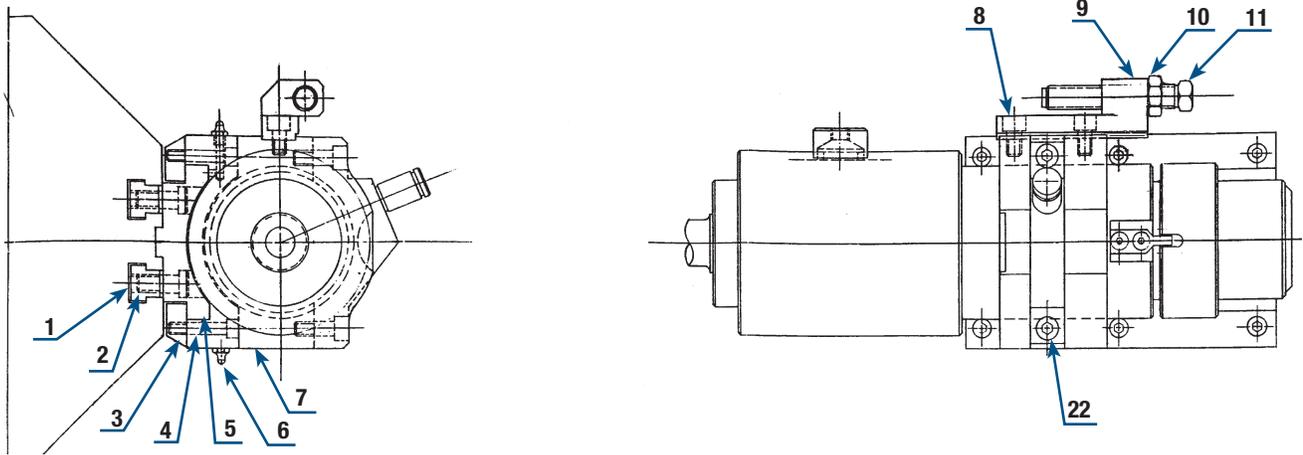
Machine Size

1-5/8 RBN-8

Page 5 of 8

Pick-Off

Housing, Spindle, and Way Assy.



Pick-Off

Pick-Off

Machine Size

1-5/8 RBN-8

Housing, Spindle, and Way Assy.

Page 6 of 8

	KEY	QTY.	PART NO.	DESCRIPTION
	1	10	14739	Tee Nut
	2	10	A-1536	Screw
	3	2	03045-34	Gib
	4	6	A-525	Screw
	5	1	03045-70	Tool Slide Way
	6	2	XA-5632	Grease Fitting
	7	1	03045-67	Pick-Up Holder
	8	2	A-1601	Screw
	9	1	TH-915886	Stop Block
	10	1	263	Nut
	11	1	1926	Adjusting Screw
	12	1	03393-79	Drive Shaft Assembly
	13	1	03251-32	Air Distributor Assembly
	14	1	03022-24	Adjusting Nut Assembly
Complete	15	3	02510-48	Retaining Ring
Pick-Off	16	1	03022-9	Bearing Retainer
Housing, Spindle	17	1	02508-15	Retaining Ring
Way & Ejector	18	1	02508-11	Retaining Ring
Assy.	19	5	01829-43	O-Ring
03393-82	20	1	W-421	Washer
(includes 03393-75	21	1	02502-22	Retaining Ring
Ejector Assy.	22	2	A-1604	Screw
shown on page 447)	23	1	03393-81	Clamping Link
	24	1	03045-41	Bearing Housing
	25	2	D-17992	Bearing
	26	2	A-1825	Screw, Button Head
	27	1	TH-931851	Locator
	28	1	03045-43	Collet Sleeve
	29	1	01829-36	O-Ring
	30	1	03045-40	Bearing Retainer
	31	1	D-17886	Bearing
	32	1	03022-12	Bearing Retainer
	33	1	03022-8	Seal Ring
	34	1	03022-7	Seal Ring
	35	2	01829-31	O-Ring
	36	1	D-17885	Bearing
	37	1	03045-39	Pick-Up Housing
	38	1	03045-38	Spindle
	39	1	XA-612	Split Lock Nut Assembly

Pick-Off

Machine Size

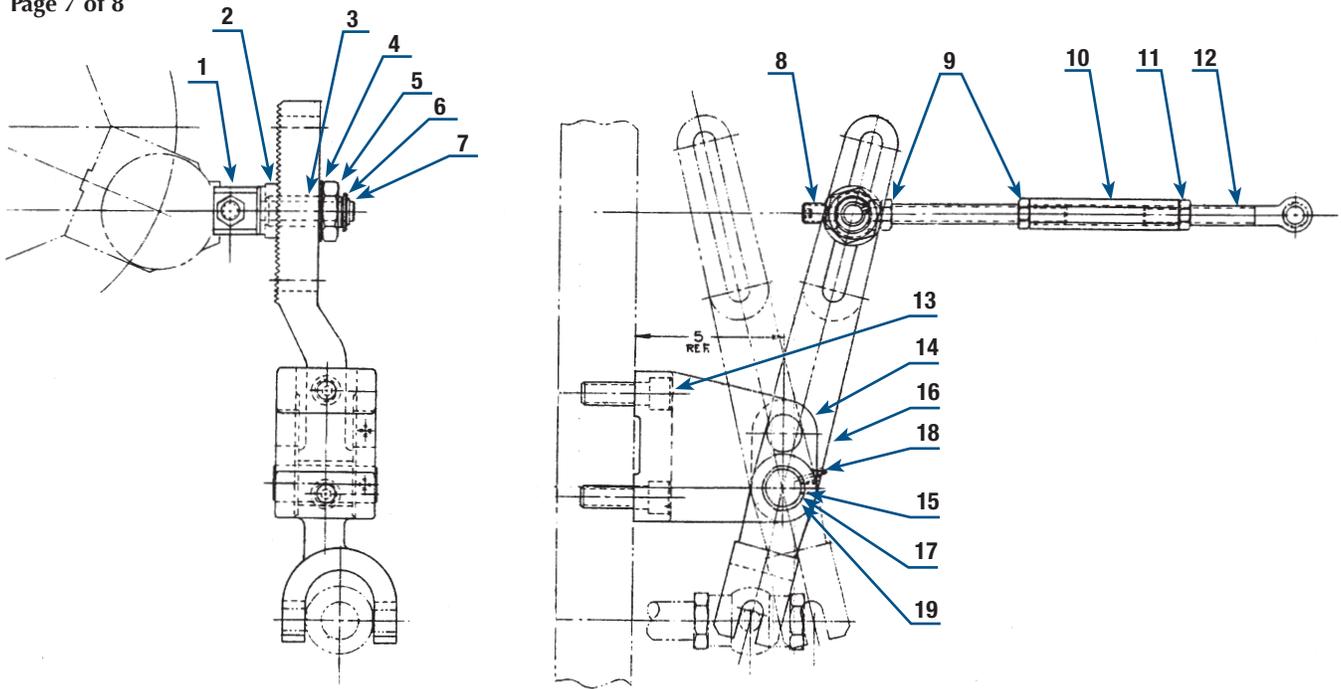
1-1/4 RB-8

1-5/8 RBN-8

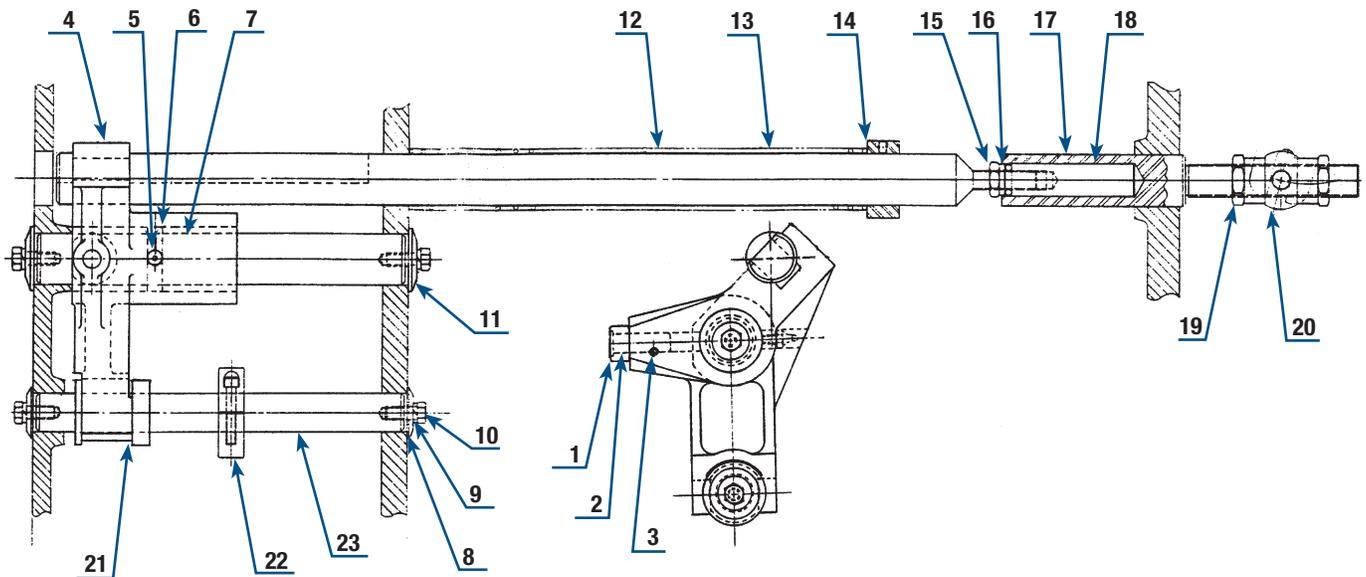
Page 7 of 8

Pick-Off

Operating Lever Assy. 02307-47



Lower Operating Linkage Assy. 02307-65



Pick-Off

Pick-Off
Operating Lever Assy.

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

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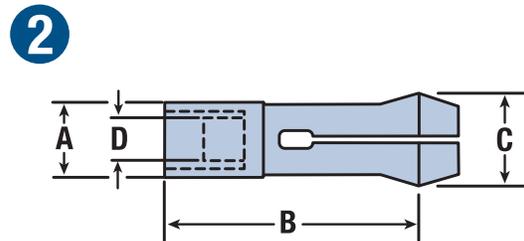
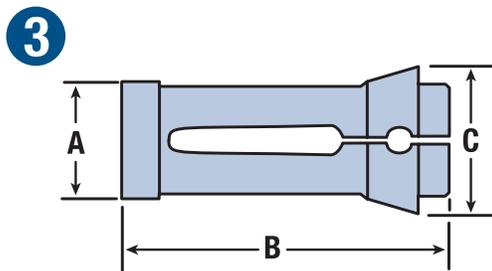
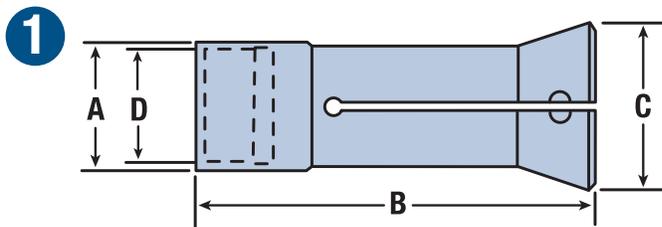
	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Operating Lever Assy. 02307-47	1	1	02069-36	Pivot Pin
	2	1	02069-38	Serrated Washer
	3	1	02069-37	Bushing
	4	1	02069-51	Washer
	5	1	51209	Nut
	6	1	W-406	Washer
	7	1	02502-22	Truarc Ring
	8	1	02307-51	Connecting Screw
	9	4	51650	Nut
	10	1	ZM-70025	Connecting Nut
	11	1	A-1320	Nut
	12	1	02069-40	Front Clevis
	13	2	1050	Screw
	14	1	03050-4	Bracket
	15	1	1402	Set Screw
	16	1	03021-3	Operating Lever
	17	1	52132	Bushing
	18	1	15655	Fitting
	19	1	AZ-84031	Pin

	KEY	QTY.	PART NO.	DESCRIPTION
Complete Pick-Off Lower Operating Linkage Assy. 02307-65	1	1	3019	Cam Roll
	2	1	10164	Cam Roll Stud
	3	1	301	Taper Pin
	4	1	TF-945754	Cam Roll Bracket
	5	1	8047	Grease Fitting
	6	2	C-17073	Bushing
	7	1	AZ-40088	Cam Bracket Guide Shaft
	8	2	50954	Bevel Washer
	9	4	2498	Lock Washer
	10	4	1527	Hex Screw
	11	2	50971	Bevel Washer
	12	1	02307-66	Operating Rod
	13	1	XA-8	Spring
	14	1	XA-2004	Collar Assembly
	15	1	XA-1894	Lock Nut
	16	2	XA-1572	Shear Pin
	17	1	AZ-70223	Safety Drive Plug
	18	1	02307-67	Safety Link Sleeve
	19	2	XA-1818	Adjusting Nut
	20	1	AZ-84023	Operating Rod Trunion
	21	1	TF-945755	Cam Roll Bracket Bushing
	22	1	15815	Stop Collar Assembly
	23	1	AZ-40087	Cam Bracket Guide Shaft

Pick-Off Collets

MACHINE	ACME PART#	HARDINGE PART #	FIGURE	DIMENSIONS			
				A	B	C	D
				REAR DIA.	LENGTH	HEAD DIA.	THREAD
7/16 RA-6	AH-2450	4003	2	.561	1.719	.700	.438 - 32 LH
7/16 RA-6	AH-2570	4005	2	.801	2.503	1.001	.625 - 24 LH
9/16 RA-6	AJ-2450	4015	2	.875	2.968	1.005	.750 - 20 LH
5/8 RN-6	AK-2920	4083	2	.935	3.000	1.128	.750 - 20 LH
3/4 RA-8	AL-2450	4069	2	1.123	3.000	1.265	1.00 - 20 LH
1" RA-6	Mechanical	4037	3	.749	2.385	1.313	None
1" RA-6	AO-2450	4039	2	1.310	3.000	1.450	1.188 - 20 LH
1" RA-6	AO-2920	4079	2	1.249	3.500	1.505	1.125 - 20 LH
1-1/4 RA-6 & RB-8	JM-2450	4045	1	1.623	3.375	1.890	1.438 - 20 LH
1-1/4 RA-6 & RB-8	JM-2920	4085	2	1.561	4.500	1.880	1.438 - 20 LH
1-5/8 RBN-8	03045-46	5851B					
1-5/8 RB-8	AW-2920	8660B					

Note: extended nose collets and specials made to specifications



Pick-Off Collet Wrenches
Pick-Off Collet Wrench Inserts



Pick-Off Collet Wrench
Top



Pick-Off Collet Wrench
Bottom



Pick-Off Collet Wrench
Inserts

WRENCHES - HEX DRIVE TYPE

MACHINE	PART #	INSERT PART #
Smaller Machines Up to 1-1/4 RB-8	CSJ1.00	TF-949954
Larger Machines 1-5/8 RB-6 and up	CSJ16	CSJ16INSERT



Pick-Off Collet Wrench
Handle Type



Pick-Off Collet Wrench
Inserts

WRENCHES - HANDLE TYPE

MACHINE	PART #	INSERT PART #
9/16 RA-6	TF-949937	TF-949954
1" RA-6	TF-949933	TF-949953
1-1/4 RA-6	TF-949933	TF-949953

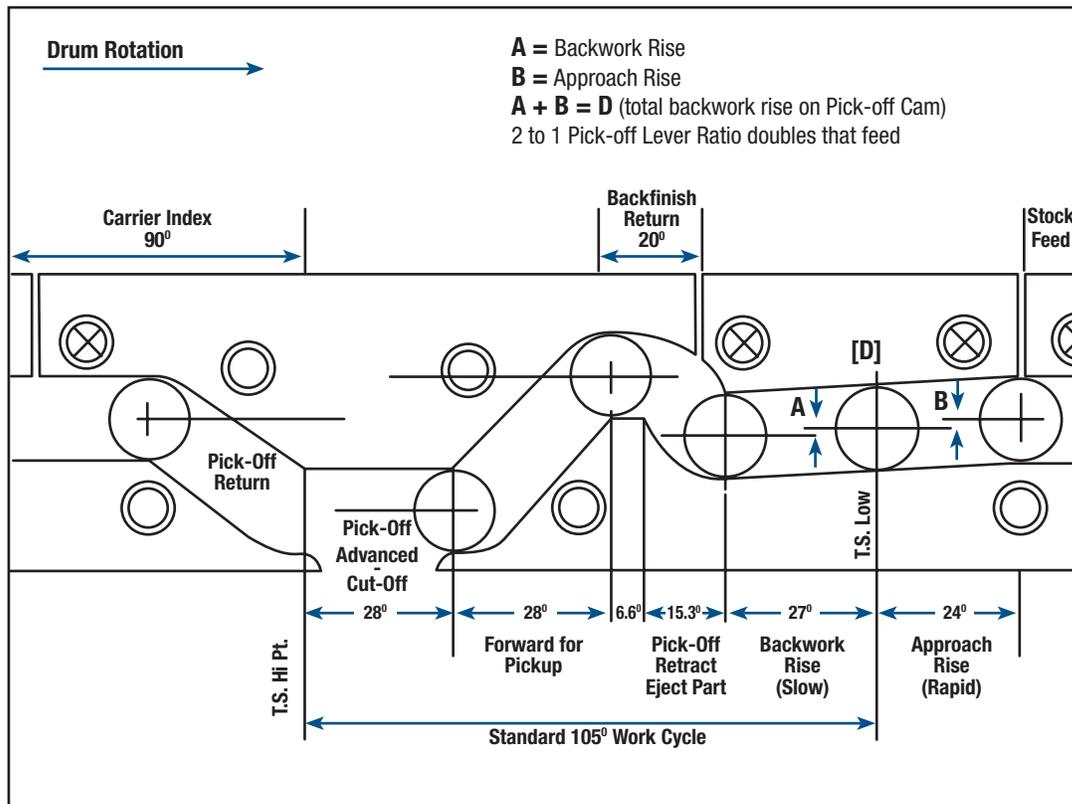
Pick-Off Cams

Below is a list of cams for burrless cut-off

MACHINE	CAM PART #
9/16 RA-6	TA-932010
1" RA-6	
1-1/4 RA-6	TB-971031
1-1/4 RB-8	
1-5/8 RBN-8	
1-5/8 RB-6	TB-939150
2" RB-6	
1-5/8 RB-8	
2" RB-8	



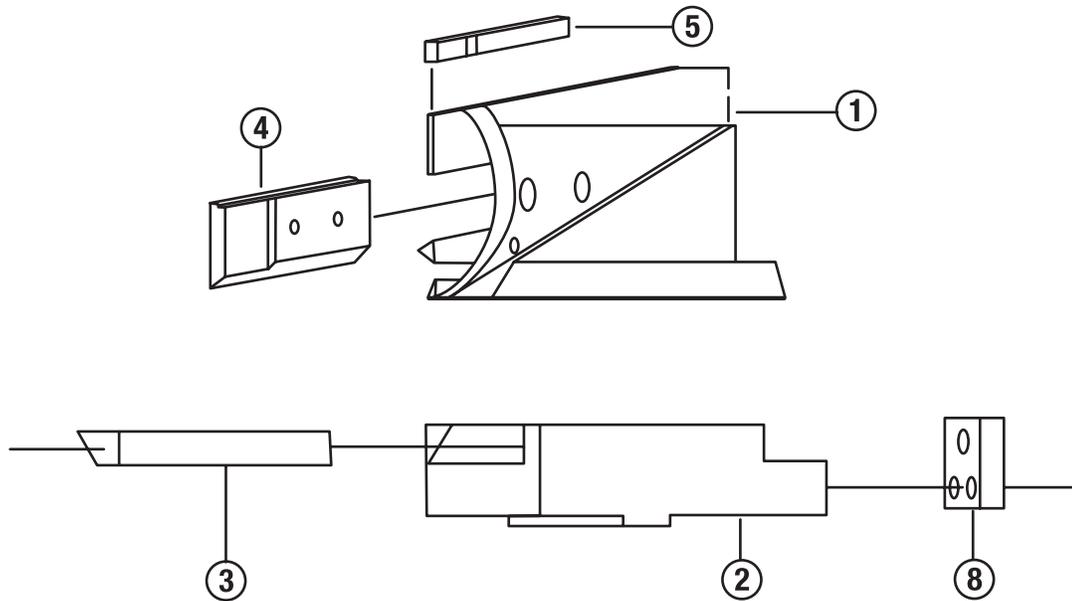
To order Pick-Off Cams for Backfinishing. Please reference the example timing diagram below and see page 481.



Example of timing diagram for pick-off with backfinish 1-1/4 RA-6 (short part timing).

**Cut-Off Blade Holders
For 5th Position (on Doubledeck)**

Machine Size
9/16 RA-6
1" RA-6
1-1/4 RA-6



FOR EMPIRE T STYLE CUT-OFF BLADES

MACHINE	ASSEMBLY NO.	COMPONENT PART KEY NO.					
		1	2	3	4	5	6
9/16 & 1" RA-6	TF-950463-A *	TF-950463	956725	TF-946658	TF-950464	n/a	956726
1-1/4 RA-6	TF-980785-A **	TF-980785	956738	TF-946658	TF-980786	n/a	956726

* TF-950463-A uses Empire P2 cut-off blade
 ** TF-980785-A uses Empire P3 cut-off blade

FOR ACME BEVEL CUT-OFF BLADES

MACHINE	ASSEMBLY NO.	COMPONENT PART KEY NO.					
		1	2	3	4	5	6
9/16 & 1" RA-6	956730 *	956731	956725	TF-946658	956723	956732	956726
1-1/4 RA-6	956735 **	956736	956738	TF-946658	956737	956732	956726

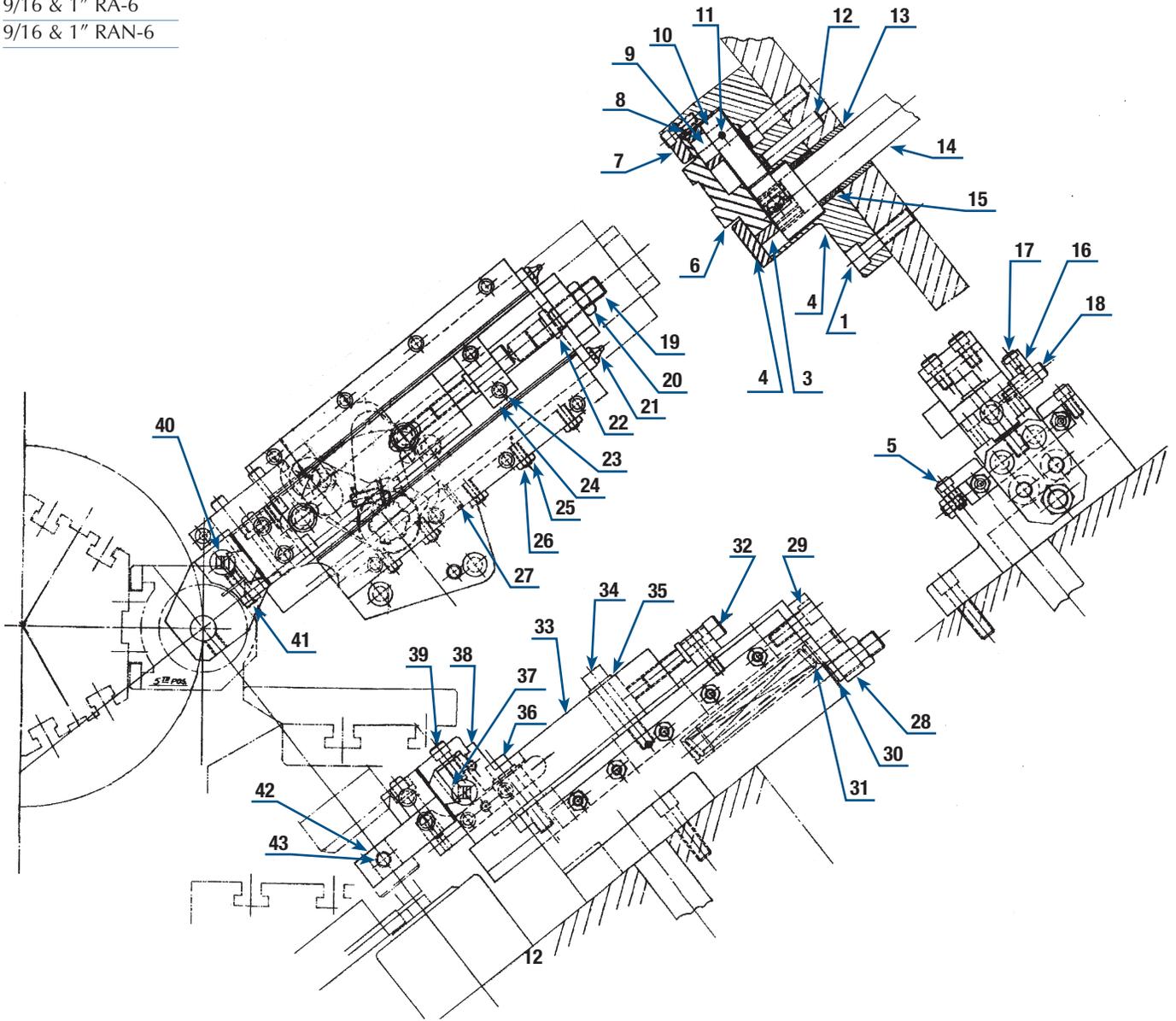
* 956730 uses 31/64 (.484) Acme Cut-Off Blades
 ** 956735 uses 13/16 (.811) Acme Cut-Off Blades

Pick-Off / Cut-Off Blade Holders

Backfinish

Machine Size
9/16 RA-6 O.S.
9/16 & 1" RA-6
9/16 & 1" RAN-6

Backfinish Slide Assy.



Backfinish Slide Assy.

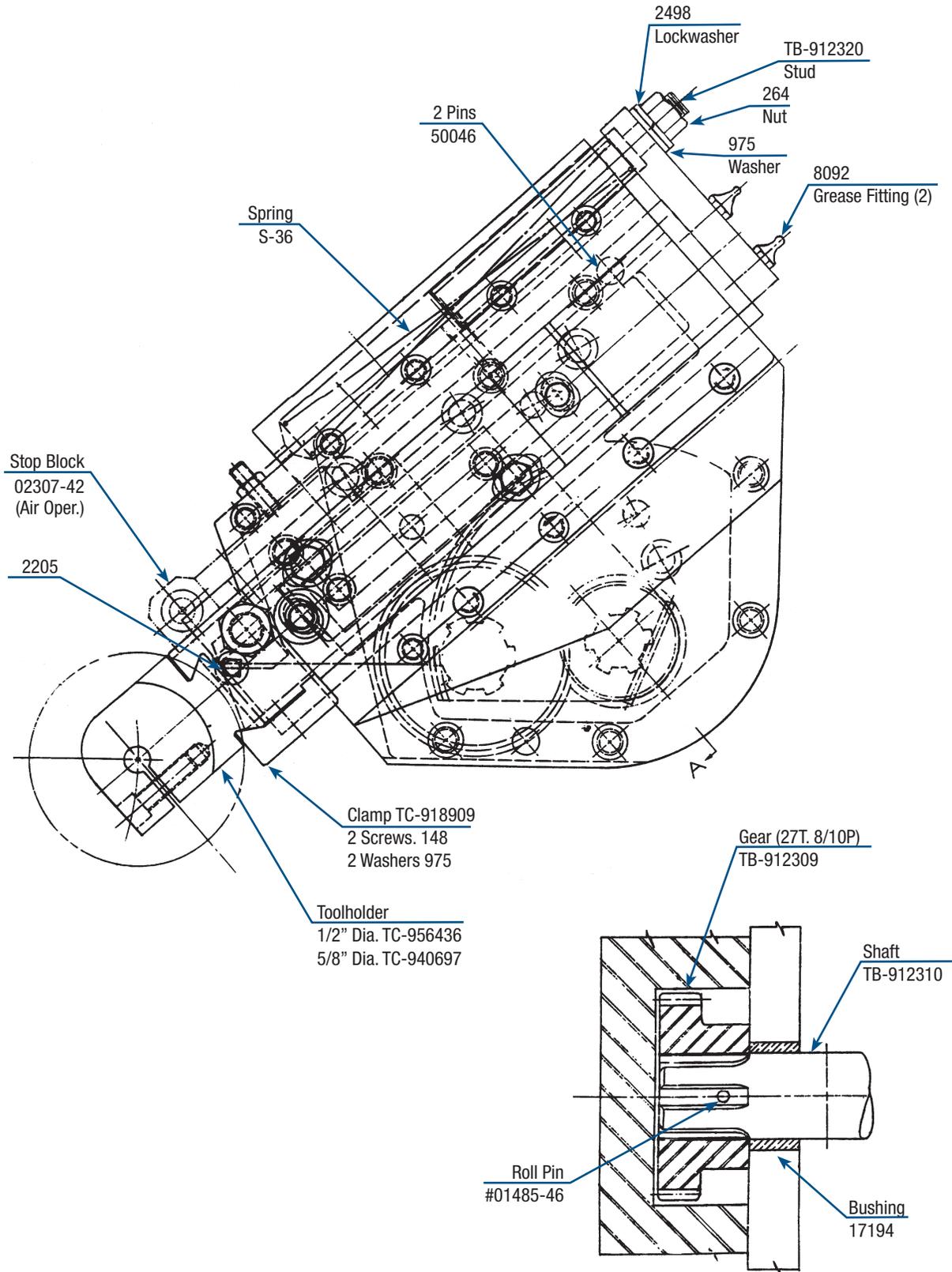
Machine Size
 9/16 RA-6 O.S.
 9/16 & 1" RA-6
 9/16 & 1" RAN-6

KEY No.	QTY.	DESCRIPTION	MACHINES		
			9/16 RA-6 O.S. s/n 22XXX	9/16 & 1" RA-6 PART NO.	9/16 & 1" RAN-6 PART NO.
ASSY.			02066-54M	02066-42	02066-54
1	1	Base	0206657-M	02066-41	02066-57
2	4	Screw	1065	3) 1065 1) 1114	1065
3	1	Side Gib	02066-31	02066-31	02066-31
4	1	Wide Top Gib	02066-30	02066-30	02066-30
5	8	Screw	1102	1102	1102
6	1	Slide Way	02066-27	02066-27	02066-27
7	1	Narrow Top Gib	02066-29	02066-29	02066-29
8	1	Block	01873-65	01873-65	01873-65
9	1	Stud	02066-14	02066-14	02066-14
10	1	Actuating Lever	02066-28	02066-28	02066-28
11	1	Roll Pin	01485-17	01485-17	01485-17
12	2	Pin	XA-1568	XA-1568	XA-1568
13	1	Bushing (Mach.)	C-17035	C-17035	C-17035
14	1	Splined Shaft	02066-15	02066-15	02066-15
15	1	Bushing (Base)	C-17099	C-17158	C-17099
16	1	Stop Block	02066-9M	02066-9	02066-9
17	1	Plunger	01842-15	01842-15	01842-15
18	2	Screw	1118	1118	1118
19	1	Set screw	1443	1443	1443
20	1	Nut	263	263	263
21	2	Grease Fitting	8092	8092	8092
22	1	Plug	01867-30	01867-30	01867-30
23	2	Screw	1118	1118	1118
24	1	Top Block	02066-33	02066-33	02066-33
25	5	Nut	6460	6460	6460
26	5	Set Screw	1990	1990	1990
27	1	Roll Pin	01485-3	01485-3	01485-3
28	1	Front Plate	02066-32	02066-32	02066-32
29	2	Screw	1063	1063	1063
30	2	Pin	02066-8	02066-8	02066-8
31	1	Spring	02066-16	02066-16	02066-16
32	1	Adj. Screw	02066-11	02066-11	02066-11
33	1	Toolholder Slide	02066-45	02066-45	02066-45
34	2	Screw	1200	1200	1200
35	2	Washer	W-417	W-417	W-417
36	1	Screw	1114	1114	1114
37	1	Dovetail Slide	02066-17	02066-17	02066-17
38	1	Clamp (Top Plate)	02066-47	02066-47	02066-47
39	2	Screw	1188	1188	1188
40	2	Adj. Screw	1980	1980	1980
41	2	Screw	1170	1170	1170
42	1	Toolholder	02066-46M	02066-46	02066-46
43	1	Set Screw	1405	1405	1405

Backfinish

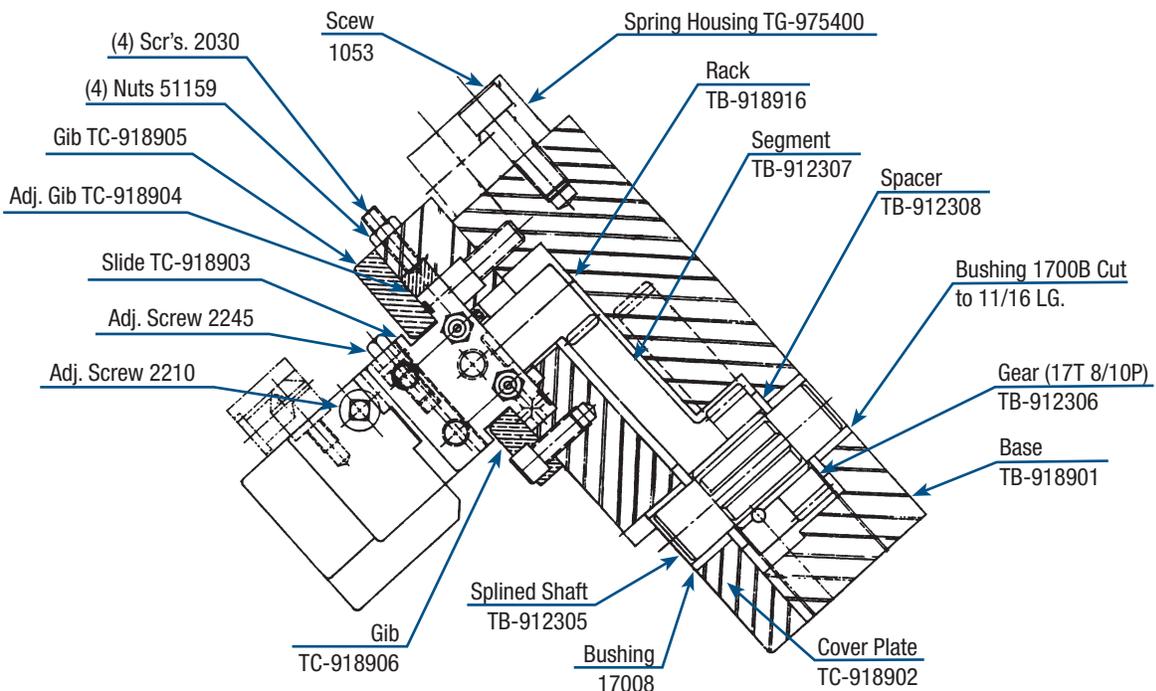
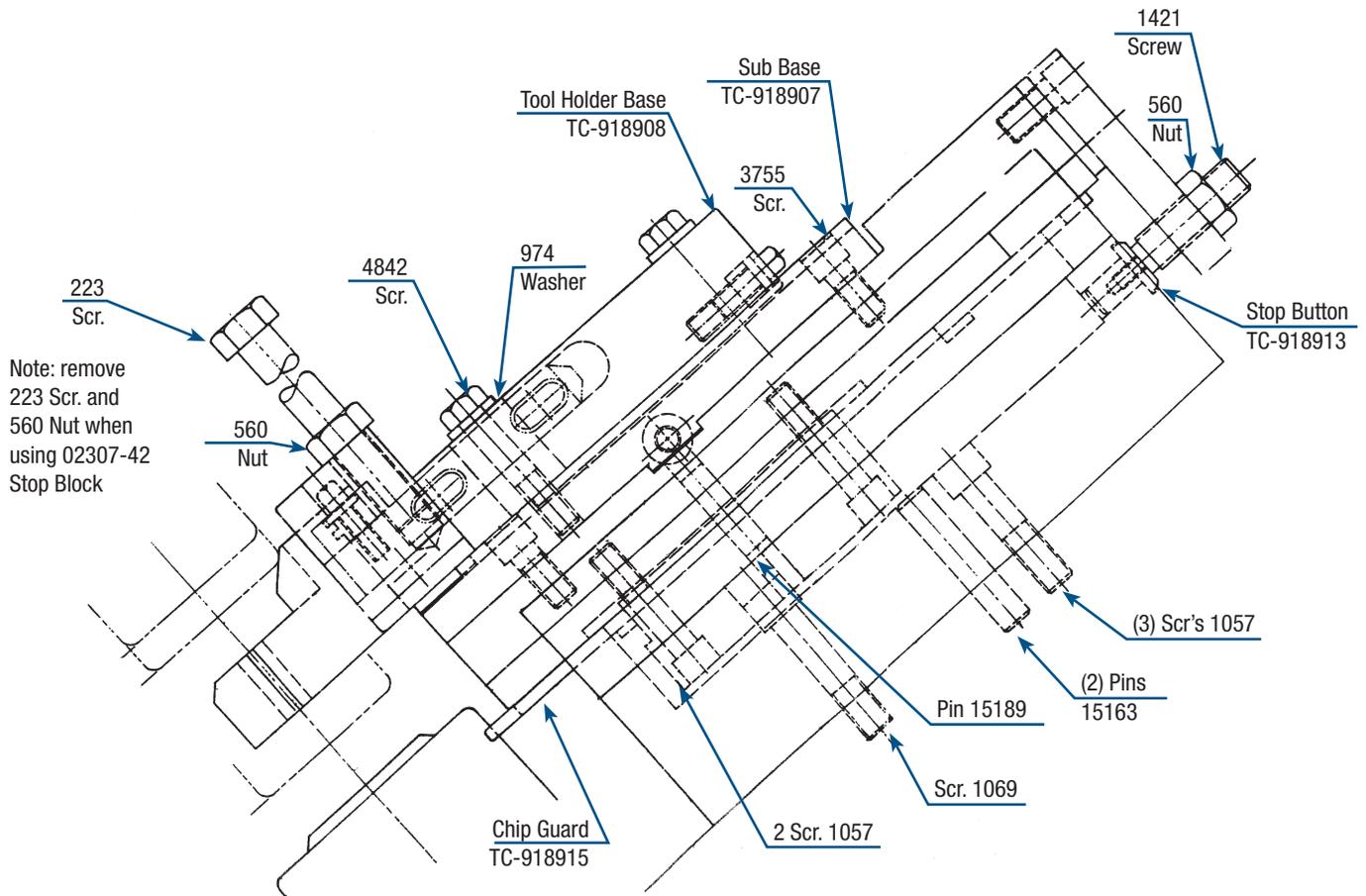
Machine Size
1-1/4 RA-6

Backfinish Slide Assy.



Backfinish Slide Assy.

Machine Size
1-1/4 RA-6



Backfinish

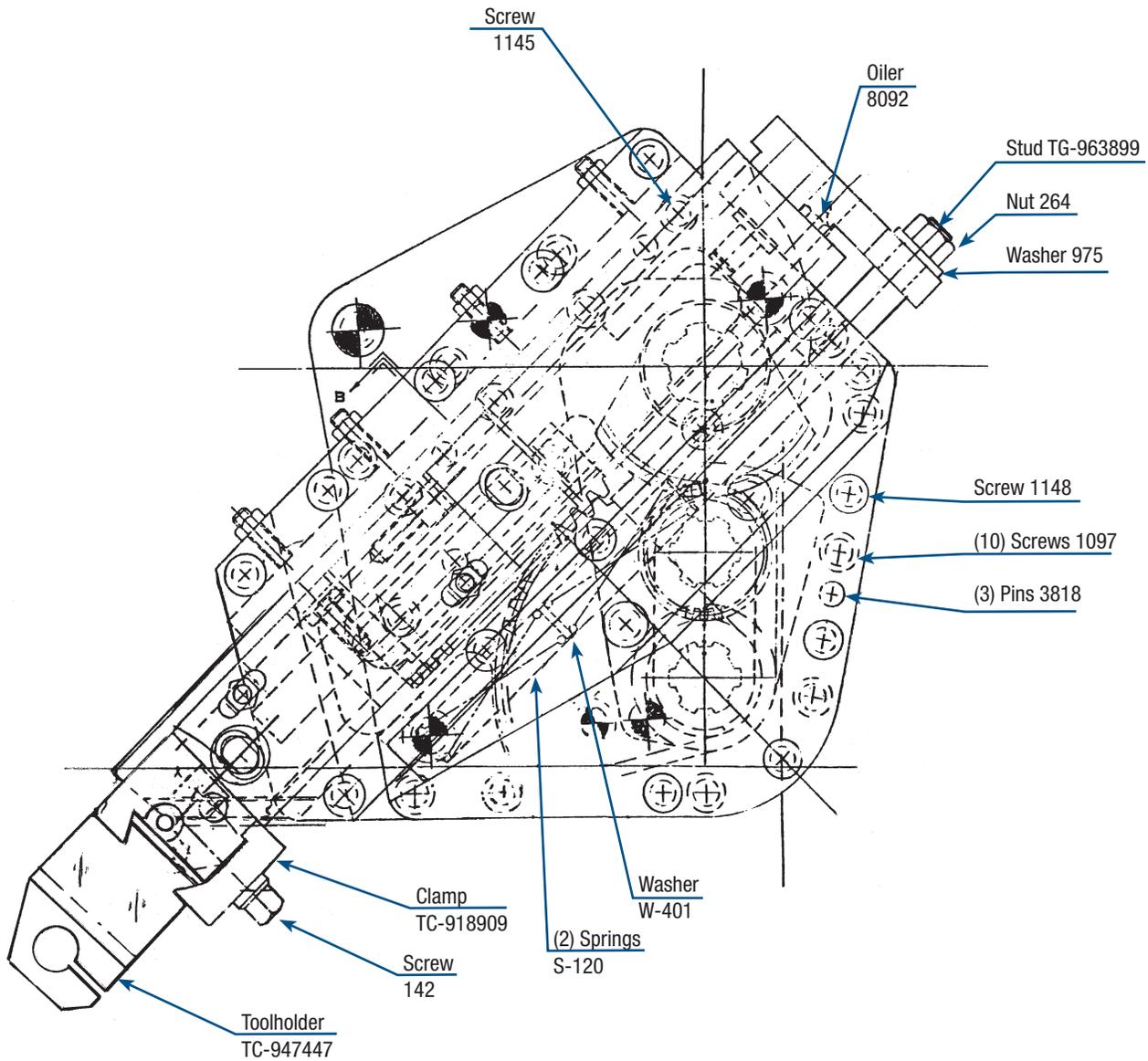
Machine Size

1-1/4 RB-8

1-5/8 RBN-8

Page 1 of 3

Backfinish Slide Assy.



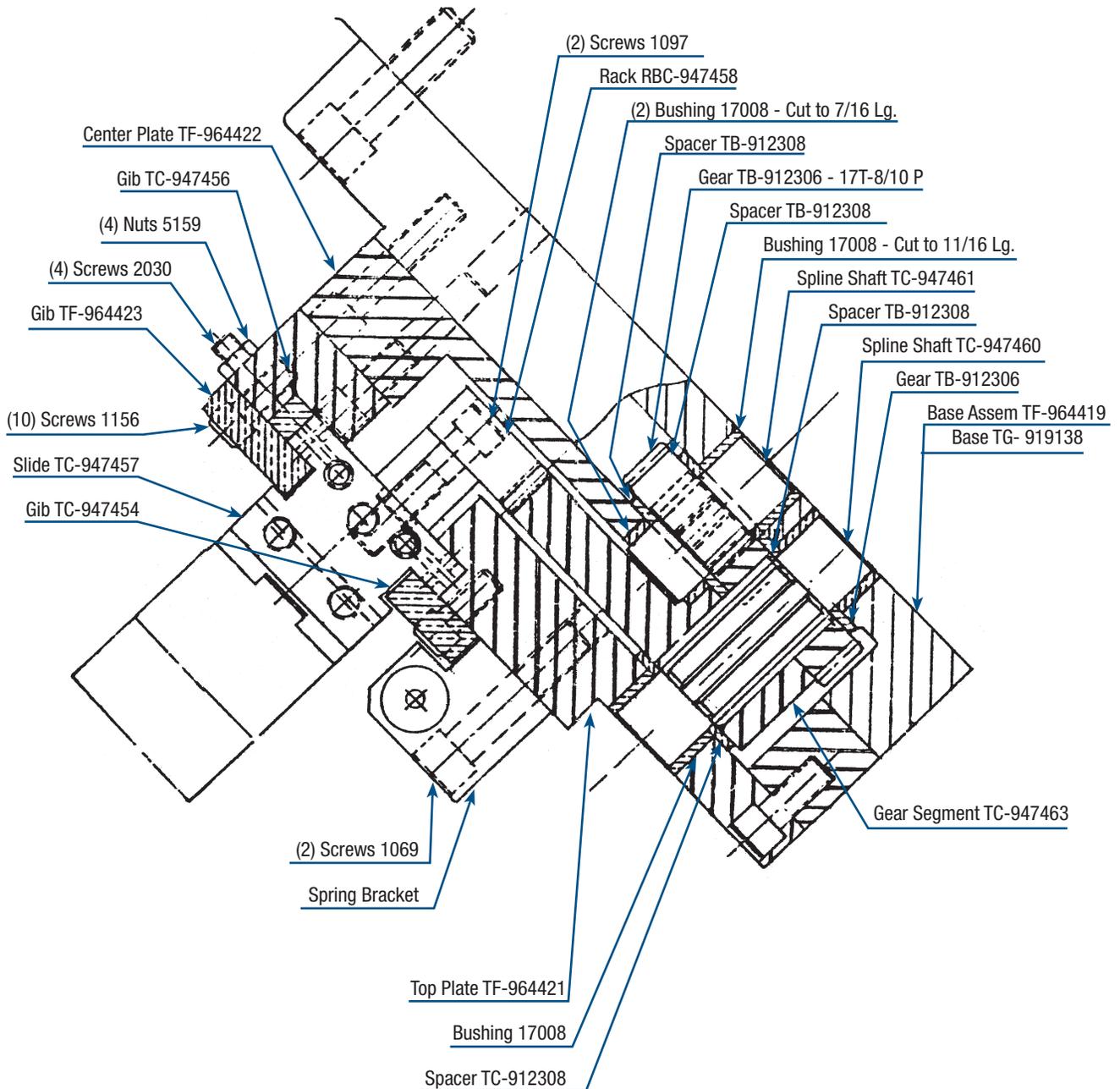
Backfinish Slide Assy.

Machine Size

1-1/4 RB-8

1-5/8 RBN-8

Page 2 of 3



Backfinish

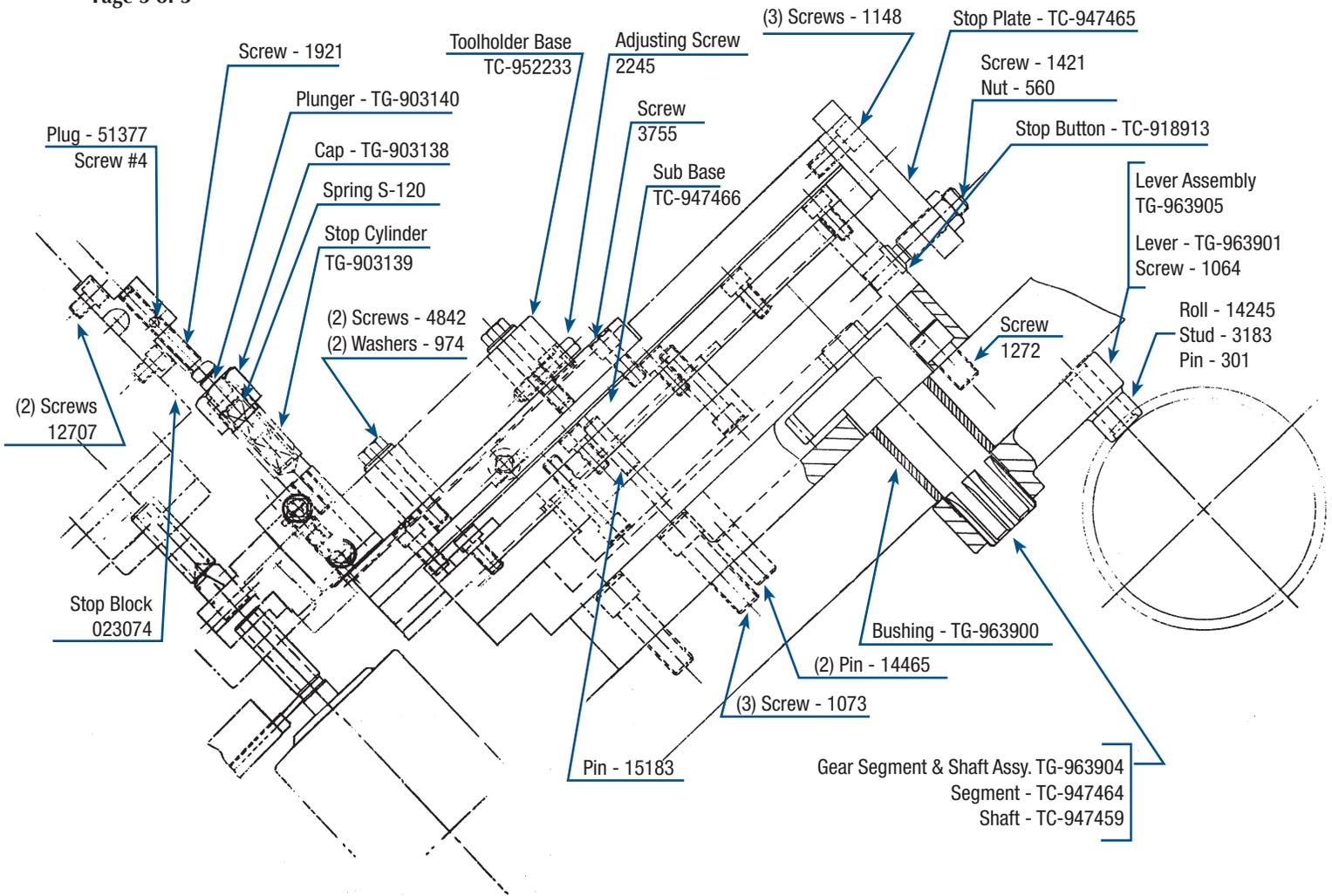
Machine Size

1-1/4 RB-8

1-5/8 RBN-8

Page 3 of 3

Backfinish Slide Assy.



Backfinish Cams

Machine Size
All Acme Machines



9/16 RA-6	Cams are available for long part and short part timing
1" RA-6	Short Part Caming (1" or less) Cam Set TA-929395
9/16 RAN-6	Long Part Caming (over 1") Cam Set TA-931245
1" RAN-6	
<hr/>	
1-1/4 RA-6	Cam Set TB-930143
<hr/>	
All Larger Machines	Cam Sets made to Order

National Acme Pick-Off and Backfinish Cams

Do you want: Late Cutoff _____

Early Cutoff _____

Late Cutoff Cams are also sometimes called cutoff for shorter parts or seventh part type. They cutoff at the end of the cycle, hold the part and then backfinish early in the next cycle. Early Cutoff Cams are also called cutoff for longer parts or low-point cutoff. They hold and cutoff the part in the first part of the cycle and backwork at the end of the same cycle.

What Rise do you want on Cam? _____ (or _____ + _____)
(reference page 472) **Approach rise**

Attachments generally have a 2:1 lever ratio so take this into account when ordering rise on cam. Also note, on the late cutoff style, not all of the rise is in slow-time. Part is in rapid and is more like a fast approach to the part. Rises are also often specified as a double rise (for example: 1/16 + 1/8, or 1/16 approach + 1/8 rise), so please specify either a single rise (for example: 1/4" rise) which will be in both rapid & slow time or a double rise, explained above. On the early cutoff type, the entire rise is in slow time, although a double rise can be requested.

Do you need the Backfinish Slide Cams also? _____

This is a separate set of cams that mount on the intermediate slide drum or plate. They have no rise and only move the backfinish tool into position.

Chasers & Blocks

Machine Size
All Acme Machines

Die Heads
Chaser Blocks
Circular Chasers
Insert Chasers

Champion supplies quality chasers and blocks for a wide range of threading die equipment.

Call for a quote today

Die Heads and Chasers for-

- Geometric
- Vers-O-Tool
- Cleveland
- Landis

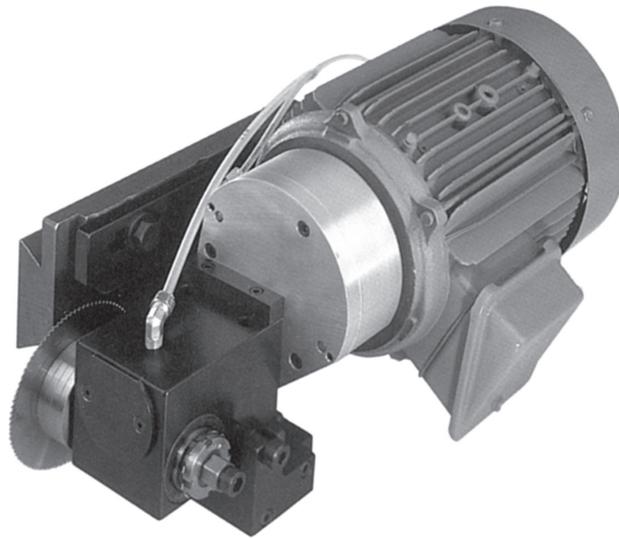


Watkins Attachments

SAW-lution™ Systems and Kerf Cutter™ Systems replace conventional tooling for cutting off, grooving, and forming on screw machines and turning machines. Technical improvements: reduced material usage, faster cycle times, reduced secondary operations, improved quality (nibless, less burr, square, flat), increased capabilities (tubing, irregular shapes, exotics), and easier material handling (less material, no stringy chips).

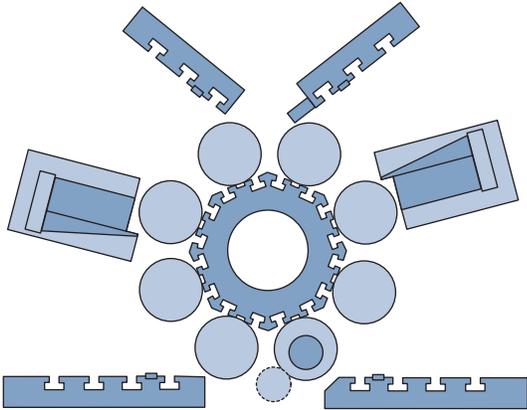
Standardized attachments and parts are available to fit most multi spindle automatic screw machines: Acme Gridley, New Britain, Conomatic, Wickman, Gildemeister, Warner & Swasey, Bardons & Oliver, Modern, Traub, Schuette, Euroturn, Brown & Sharpe, Davenport, Index, etc. Custom attachments can be designed.

In addition to SAW-lution Systems, Watkins manufactures drilling attachments, straddle-milling attachments, high speed steel saws, and solid carbide saws.



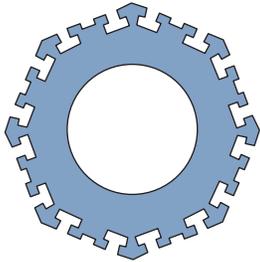
Specialty Attachments

Cross Slide Mounted Attachments



- Flat Generating
- Thread Milling
- Cross Drilling
- Polygon Turning

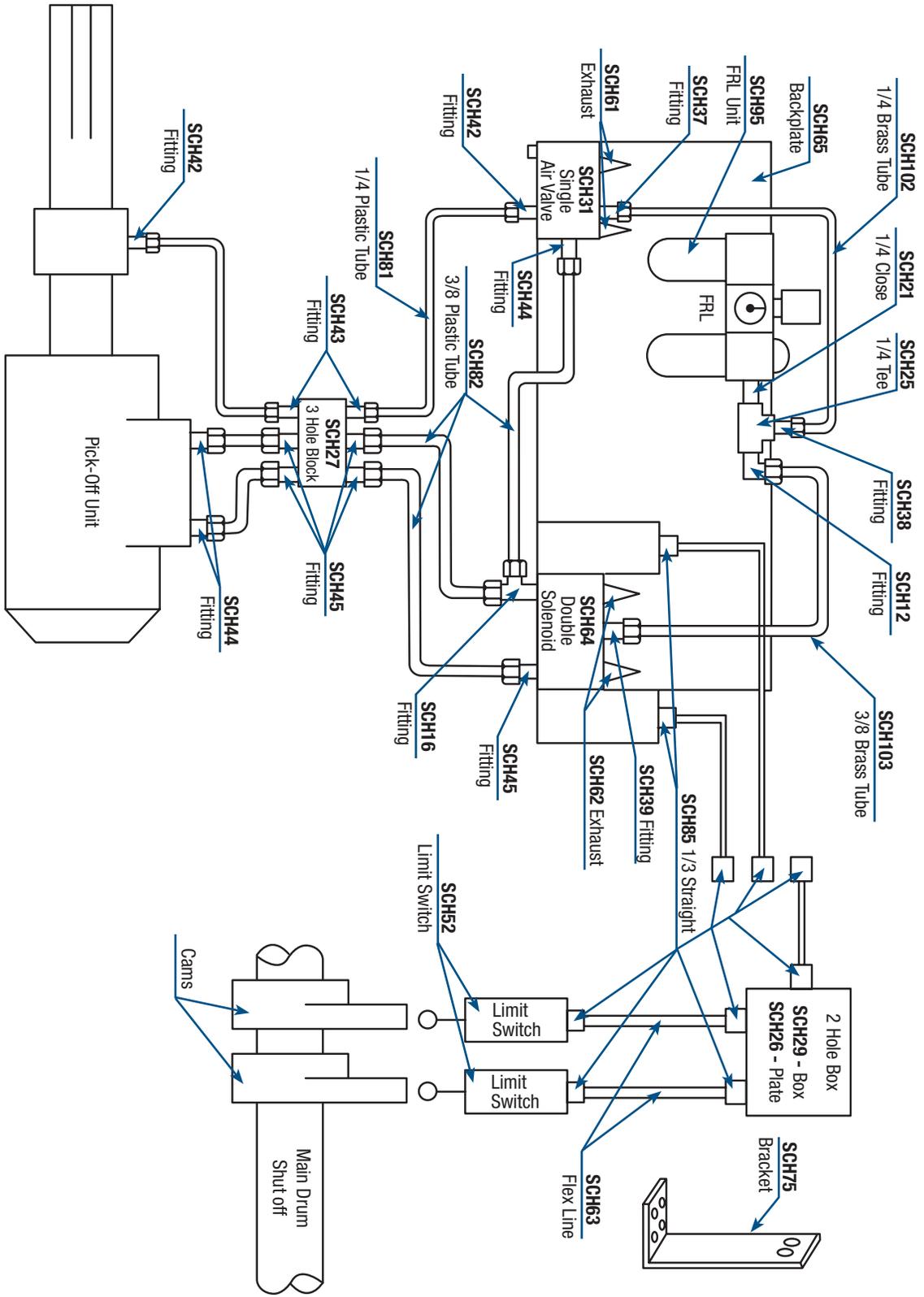
Toolslide Mounted Attachments



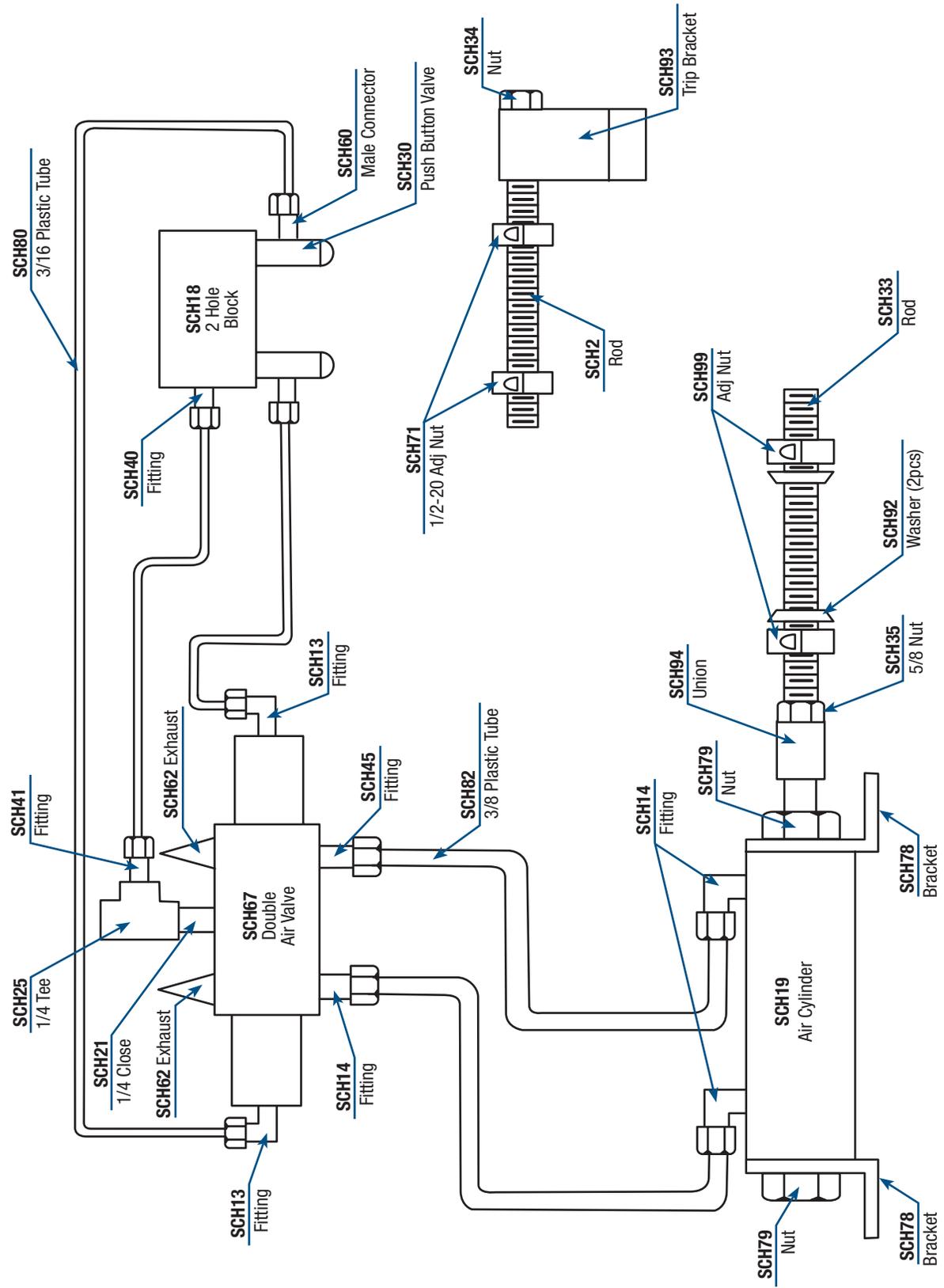
- End Slotting/Milling
- Polygon Turning
- Eccentric Drilling
- Rotary Broach
- Rotary Recess
- Burnishing

Specialty Attachments per application can be quoted upon request.

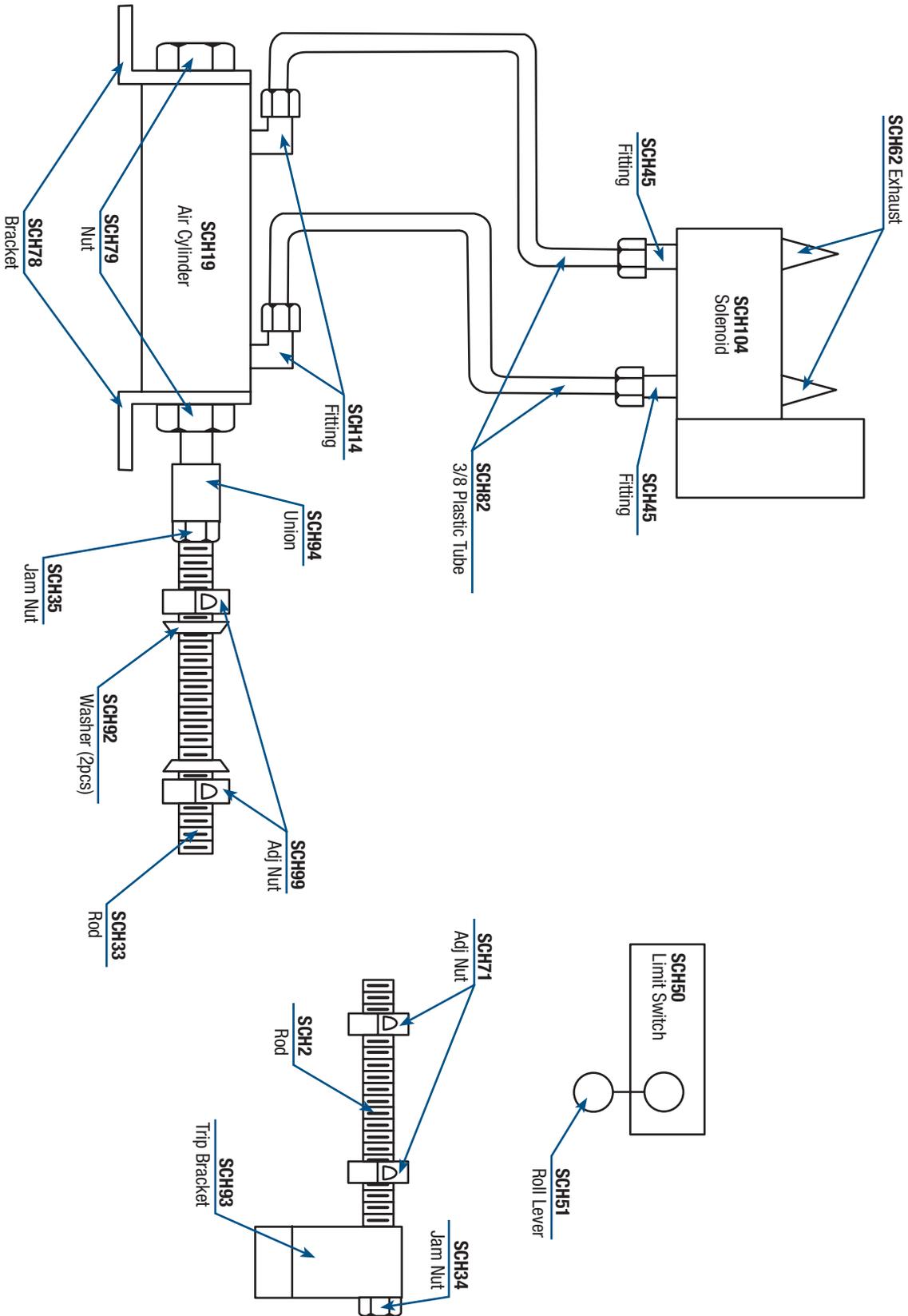
Pick-Off - 0423241 - Electric



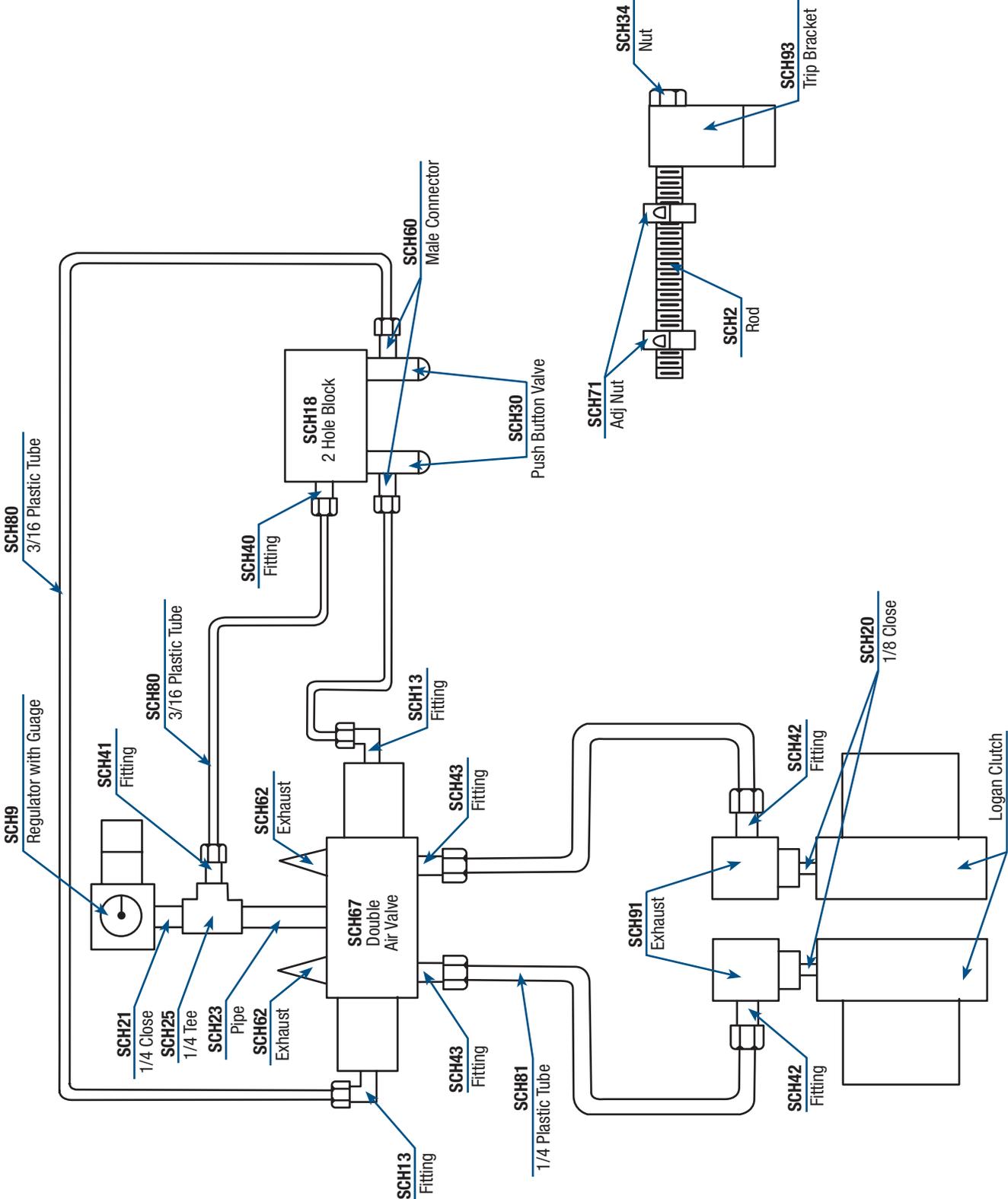
Threading - Air Trip



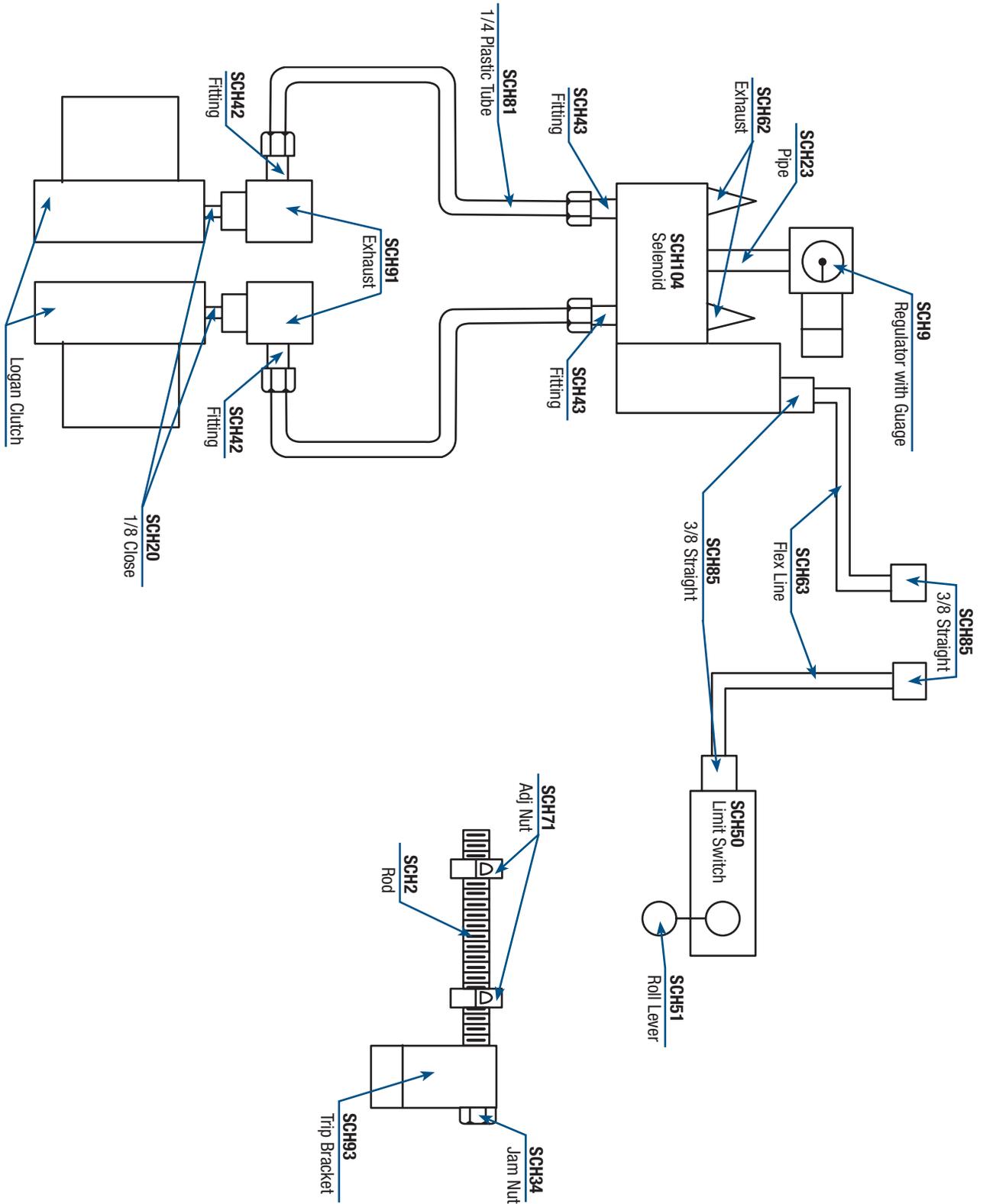
Threading - Air Trip Electric



Logan Threading - Logan Air Operated



Logan Threading - Logan Electric Operated



SECTION	DESCRIPTION	PAGE
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Logan XT	PLC Machine Control	507-508

Socket Head Cap Screw
N.C. (Coarse)



THREAD DIAMETER									
10-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13	5/8-11	3/4-10	1"-8	OVERALL LENGTH
1303	1302	A-541							3/8
1152	1300	1188	1201						1/2
A-559	1102	1170	1270	1198	A-579				5/8
A-504	1174	1137	1063	1150	1068				3/4
A-498	A-536	A-506	1156	1254	1222				7/8
A-505	1118	1101	1106	1148	1103	1272			1
A-554	A-525	1151	1064	1058	1053	1074			1-1/4
A-546	1186	1110	1065	1109	1052	1191	1139		1-1/2
A-562	A-523	1117	1114	1252	1056	1059	1050		1-3/4
A-530	1166	1284	1200	1097	1057	1073	A-512		2
	1268	1239	1066	A-508	1069	1120	1158	A-567	2-1/4
	A-539	1171	1095	1083	1098	1075	A-521	A-513	2-1/2
A-587	1322	A-537	1173	1206	1055	1157	1146		2-3/4
	1323	1176	1314	1155	1070	1076	1062		3
		A-577	1112	1488	1061	A-510	1275		3-1/4
		A-507	1067	A-509	1153	1100	A-522		3-1/2
	A-569		1113	1251	1072	1077	A-511	A-515	4
			1088	A-553	1475	1194	A-565	A-519	4-1/2
			1269		1096	1094			5
			1341		1105	1487	1090	A-516	5-1/2
			1179	1079	1154	1078	A-503	A-517	6
					A-520	1104	1086	A-514	6-1/2
					A-623	A-502		1142	7
						1357	1054		8
									8-1/2
								A-518	9
							1093		9-1/2

Hardware

Socket Head Cap Screw N.F. (Fine)



THREAD DIAMETER									
6-32	8-32	10-32	1/4-28	5/16-24	3/8-24	7/16-20	1/2-20	5/8-18	OVERALL LENGTH
	A-581								1/4
A-588		1391	A-543						3/8
	A-556	A-566	1221	A-564	A-526				1/2
A-584		1263	A-812						5/8
	A-555	A-532	1220	A-572	A-545				3/4
		A-534	1735						7/8
A-622		A-225	1237	1167	A-552		A-590		1
	A-574	A-558	A-224	1099	A-575	A-621	1084	1108	1-1/4
		A-557	1333	1334	A-586	1332	A-575		1-1/2
		A-595	A-550	A-574	A-561		A-591		1-3/4
		A-578	A-551	1335	A-596		A-524		2
				A-585			A-592		2-1/4
				A-563			1209		2-1/2
							1208		2-3/4
									3
									3-1/4
								A-598	3-1/2
								1296	4

Low Head Cap Screw N.C. (Coarse)



THREAD DIAMETER								
8-32	10-24	1/4-20	5/16-18	3/8-16	7/16-14	1/2-13	5/8-11	OVERALL LENGTH
A-1500	A-1508	A-1516						3/8
A-1501	A-1509	A-1517	A-1525					1/2
A-1502	A-1510	A-1518	A-1526	A-1534				5/8
	A-1511	A-1519	A-1527	A-1535				3/4
A-1504		A-1520	A-1528	A-1536	3755			7/8
					1389			1-1/8
	A-1513	A-1521	A-1529	A-1537		1234	A-1580	1
A-1506			A-1530			1260		1-1/4
			A-1531	A-1539			A-1581	1-1/2
							A-1584	1-3/8
						A-1582		1-3/4
						A-1583		2-3/4

Button Head Socket Cap Screw



THREAD DIAMETER									
6-32	8-32	10-24	10-32	1/4-20	1/4-28	3/8-16	3/8-24	1/2-13	OVERALL LENGTH
	A-1807		A-1824						1/4
			A-1825	A-1831	A-1837				3/8
A-1805	A-1809	A-1819	A-1826	A-1832	A-1838	A-1855	A-1861		1/2
	A-1810		A-1827	A-1833		A-1856			5/8
	A-1811			A-1834	A-1840	A-1857		A-1875	3/4
						A-1858			7/8
				A-1836		A-1859		A-1867	1
						A-1860	A-1866		1-1/4

Square Head Set Screw Half Dog Point



THREAD DIAMETER							
1/4-20	5/16-18	3/8-16	7/16-14	1/2-13	5/8-11	3/4-10	OVERALL LENGTH
A-1900		89					1/2
A-1901	50518						5/8
A-1902	50519	90		187			3/4
50556	1902		133	53431			7/8
50557	50	91	134	4430	3189		1
50804	50806	3288	135	50814	668		1-1/4
1924	50584	50503	4276	190	50547		1-1/2
1920	1925	1910	61.D.22	191	237		1-3/4
1915	1908	50502	132	192	50549	50552	2
1916	1904	1921	138	193	50550	234	2-1/2
		1922	140	50543	594	1905	3
				201	1903		3-1/2
		1909		1926	1485	2183	4
		1928		1911	1927		4-1/2
		A-1906		195	1918	2241	5
							5-1/2
				A-1904	1906		6
					1923		7

Hardware

Socket Set Screw



Cone



Cup



Flat



Half Dog

SOCKET SET SCREW

CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (24)	NF (32)	NC (24)	NF (32)	NC (24)	NF (32)	NC (24)	NF (32)	LENGTH	#10
			A-236		A-719			3/16	
	A-846					A-721	1992	1/4	
								5/16	
						A-722	A-235	3/8	
								7/16	
	1439		A-840			A-723	A-237	1/2	
				A-713				5/8	
				A-712	50611		A-238	3/4	
							A-709	1	
		A-758		1450			A-710	1-1/4	

SOCKET SET SCREW

CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (20)	NF (28)	NC (20)	NF (28)	NC (20)	NF (28)	NC (20)	NF (28)	LENGTH	1/4
A-761		77771	A-727	A-760		2047	A-691	1/4	
						1273		5/16	
	A-702			1479	A-753	4	A-736	3/8	
1345	1366					1420		1/2	
	1432	A-855				1990	53495	5/8	
		1447				1989	1495	3/4	
A-765		1444				1422	A-724	1	
A-749			A-759			13		1-1/4	
					A-745	A-764		1-1/2	
		A-735			A-751			2	

SOCKET SET SCREW

CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (18)	NF (24)	NC (18)	NF (24)	NC (18)	NF (24)	NC (18)	NF (24)	LENGTH	5/16
			A-775	1478				1/4	
				1445		A-766		5/16	
1305	1469	1437				1401	A-737	3/8	
1999	A-741					1426		1/2	
				9918	53274	34		5/8	
	A-747					1406		3/4	
						1490		1	
						2030		1-1/4	
						1492		1-1/2	
						1482		1-3/4	
						1486		2	
						50688		2-1/2	
						1467		3	

Socket Set Screw



Cone



Cup



Flat



Half Dog

SOCKET SET SCREW									
CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (16)	NF (24)	NC (16)	NF (24)	NC (16)	NF (24)	NC (16)	NF (24)	LENGTH	
			A-769	2048				5/16	3/8
		1457		50790	A-730	A-703		3/8	
2046		1452	61.D.46	1480	A-701	1405		1/2	
		A-772		1481		1385		5/8	
		A-757	A-762			1402		3/4	
						1400		1	
		A-776				1407	A-706	1-1/4	
			A-740			1454		1-1/2	
						1483		1-3/4	
A-768						1408	A-744	2	
						2000	A-620	2-1/2	
						2025		3	
						1466		3-1/2	

SOCKET SET SCREW									
CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (14)	NF (20)	NC (14)	NF (20)	NC (14)	NF (20)	NC (14)	NF (20)	LENGTH	
					1464			7/16	7/16
						1414		1/2	
						1324		5/8	
						1418		3/4	
						A-731		1	
						1430		1-1/4	

SOCKET SET SCREW									
CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (13)	NF (20)	NC (13)	NF (20)	NC (13)	NF (20)	NC (13)	NF (20)	LENGTH	
1413		995		50791	2038			1/2	1/2
		43		1412	61.D.72	1412	1442	5/8	
	53325			A-718		A-705		3/4	
		A-848				1410		7/8	
						1491		1	
						1403	A-697	1-1/4	
1417						1443	A-692	1-1/2	
								1-3/4	
						1356		2	
						1424		2-1/2	
				2002		A-852		2-3/4	

Hardware

Socket Set Screw



Cone



Cup



Flat



Half Dog

SOCKET SET SCREW

CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (11)	NF (18)	NC (11)	NF (18)	NC (11)	NF (18)	NC (11)	NF (18))	LENGTH	
		44		1326			52685	5/8	5/8
								3/4	
						1404		7/8	
	A-700					1493		1	
						1409		1-1/4	
		A-693						1-1/2	
								1-3/4	
						1421		2	
								2-1/2	
						A-707		3-1/4	

SOCKET SET SCREW

CONE POINT		CUP POINT		FLAT POINT		HALF DOG POINT		OAL	SIZE
NC (10)	NF (16)	NC (10)	NF (16)	NC (10)	NF (16)	NC (10)	NF (16)	LENGTH	
		A-714		51896				5/8	3/4
				50903				3/4	
				50792				7/8	
				994	1298			1	
					A-739	1415		1-1/4	
								1-1/2	
		1419						1-3/4	
								2	
								2-1/2	
							A-770	3-1/2	

Hex Nut



HEX NUT			
COARSE		FINE	
THREAD	PART NO.	THREAD	PART NO.
5-40	XA-629		
6-32	A-613		
8-32	XA-630		
10-24	XA-623	10-32	XA-622
1/4-20	2806	1/4-28	52773
5/16-18	260	5/16-24	7724
3/8-16	261	3/8-24	51164
7/16-14	262	7/16-20	51217
1/2-13	264	1/2-20	3157
9/16-12	265	9/16-18	51776
5/8-11	266	5/8-18	51216
3/4-10	267	3/4-16	51195
7/8-9	268	7/8-14	2842
1"-8	269	1"-14	913
1-1/8-7	270	1-1/8-12	
1-1/4-7		1-1/4-12	2847

Jam Nut



JAM NUT			
COARSE		FINE	
THREAD	PART NO.	THREAD	PART NO.
1/4-20	6460	1/4-28	A-606
5/16-18	51159	5/16-24	51158
3/8-16	50313	3/8-24	51163
7/16-14	4244	7/16-20	A-607
1/2-13	263	1/2-20	51479
9/16-12	51179	9/16-18	XA-621
5/8-11	560	5/8-18	51650
3/4-10	51188	3/4-16	51190
7/8-9	795	7/8-14	XA-613
1"-8	51204	1"-14	51209
1-1/8-7		1-1/8-12	A-609
1-1/4-7		1-1/4-12	A-603

Hardware

Lockwasher & Locknut



LOCKWASHER & LOCKNUT			
THREAD O.D.	PITCH	LOCKNUT	LOCKWASHER
.391	32	44166	44165
.469	32	44234	17954
.586	32	44164	44163
.664	32	17966	17967
.781	32	9971	9972
.969	32	27920	27919
1.173	18	17949	17948
1.376	18	9892	27916
1.563	18	27910	27915
1.767	18	27913	27917
1.967	18	17956	17955
2.157	18	8621	8622
2.360	18	17962	17963
2.548	18	17969	17968
2.751	18	17970	17971
2.933	11	27914	27918
2.933	12	279140	27918
3.137	12	17957	27617
3.340	12	17965	17964
3.527	12	XA-3912	XA-3911
3.730	12	XA-3913	12018
3.918	12	XA-3914	12008

Washers



WASHERS		
SCREW SIZE	LIGHT DUTY	HEAVY DUTY
1/4	W-400	971
5/16	W-401	972
3/8	W-402	973
7/16	W-403	974
1/2	W-404	975
9/16	W-405	385
5/8	W-406	976
3/4	W-407	977



WASHERS		
SCREW SIZE	STANDARD LOCKWASHER	HI-COLLAR LOCKWASHER
No. 6	W-50	W-55
No. 8	W-51	W-56
No. 10	53313	W-57
1/4	8057	2499
5/16	53225	2497
3/8	50981	2425
7/16	53227	2546
1/2	50968	2498
9/16	W-52	2547
5/8	50969	2548
3/4	W-53	W-58
7/8	XA-4550	2544
1"	2545	

Hardware

Taper Pins, Dowel Pins & Cotter Pins



TAPER PIN			
No.	PART NO.	LENGTH	HEAD DIA.
1	50022	2"	.172
2	50023	4"	.193
3	50025	4"	.219
4	50029	4"	.250
5	50034	4"	.289
6	50038	6"	.341
7	XA-4637	6"	.409
8	50044	6"	.492
9	786	6"	.591
10	2501	6"	.706
11	2523	6"	.860



DOWEL PINS								
DIAMETER								
1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	LENGTH
XA-1928								3/8
XA-1747	XA-1925	XA-1769	XA-1752					1/2
XA-1575		XA-1565				XA-1733		5/8
XA-1983	XA-1960	XA-1574	15360	XA-1920				3/4
			XA-1962	3472				7/8
	XA-1299	XA-1745	XA-1742	XA-1756	XA-1963	XA-1789		1"
XA-1975	XA-1588	XA-1923	XA-1916	XA-1760		15352		1-1/4
	XA-1792	XA-1653	XA-1594	XA-1741	XA-1753	14465		1-1/2
		XA-6452		XA-1568	XA-1721			1-3/4
				XA-2066	XA-1711	15351		2"
				XA-1625	XA-1714	15349	XA-1722	2-1/4
					XA-1654	XA-1761	15355	2-1/2
					XA-1655	XA-1658	XA-1724	3"
						XA-1738	XA-1656	3-1/2
							XA-1659	4"



COTTER PIN				
PIN DIAMETER				LENGTH
1/16	3/32	1/8	3/16	
52048		9765		1/2
51653	9767	51660	9766	3/4
51654		51661		1
	51659	51662	A-999	1-1/4
51655		51663		1-1/2
8051	A-993			1-3/4

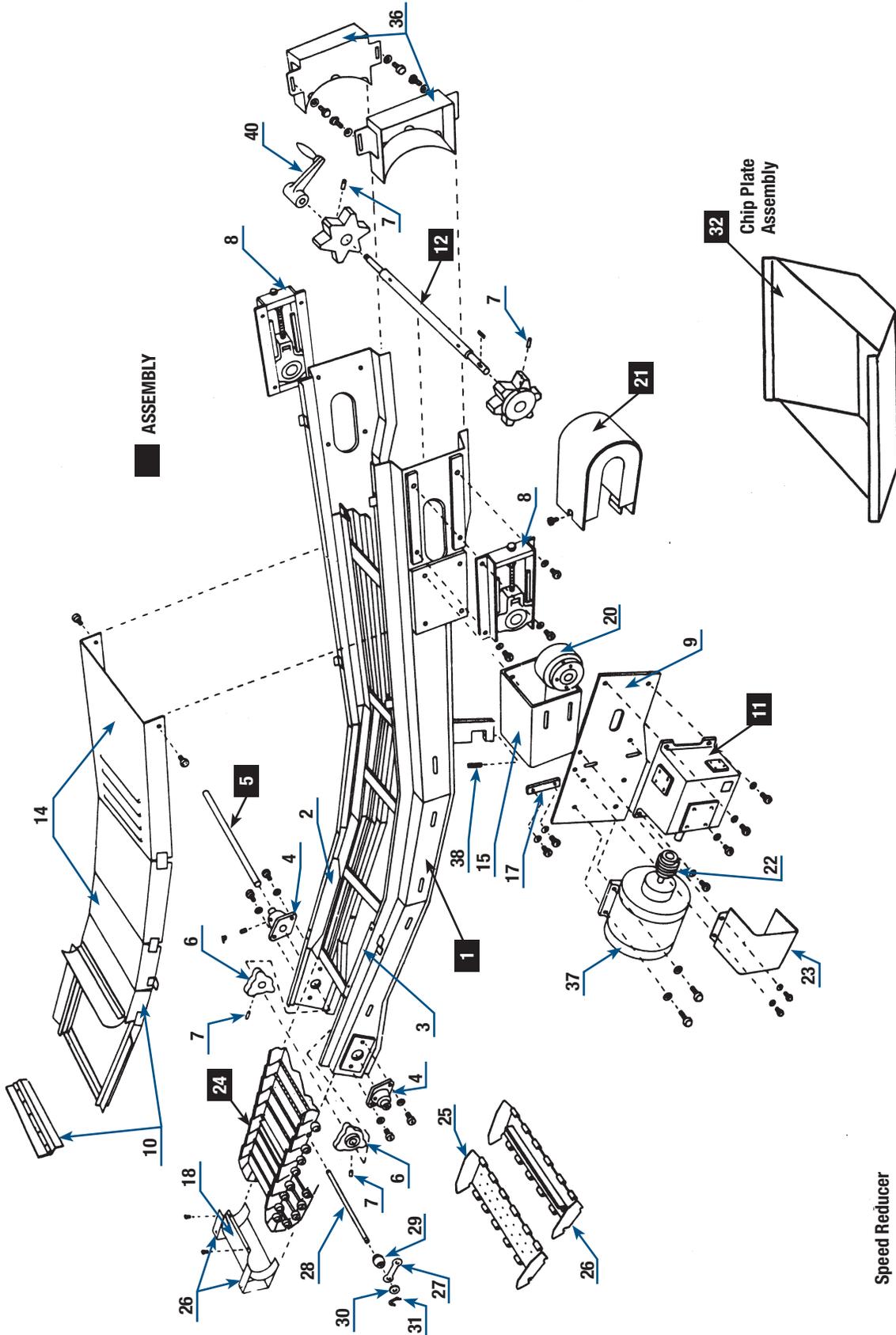
Roll Pins



WASHERS		
HOLE DIA.	PART No.	LENGTH (INCHES)
5/64	01485-34	1/4
5/64	01485-45	3/8
5/64	01485-7	7/16
5/64	01485-8	5/8
5/64	01485-57	1-1/4
3/32	01485-60	1/4
3/32	01485-37	11/16
3/32	01485-11	3/4
3/32	01485-44	1-1/8
1/8	01485-36	5/16
1/8	01485-31	3/8
1/8	01485-12	1/2
1/8	01485-3	5/8
1/8	01485-6	3/4
1/8	01485-5	7/8
1/8	01485-1	1
1/8	01485-2	1-1/8
5/32	01485-35	5/16
5/32	01485-48	3/8
5/32	01485-9	1/2
5/32	01485-10	3/4
5/32	01485-58	1
3/16	01485-49	3/8
3/16	01485-41	1/2
3/16	01485-16	3/4
3/16	01485-17	1
3/16	01485-18	1-1/8
3/16	01485-19	1-1/4
3/16	01485-4	1-3/8

WASHERS		
HOLE DIA.	PART No.	LENGTH (INCHES)
3/16	01485-20	1-1/2
3/16	01485-21	1-5/8
3/16	01485-22	1-3/4
3/16	01485-23	1-7/8
3/16	01485-24	2
1/4	01485-51	1/2
1/4	01485-42	5/8
1/4	01485-97	3/4
1/4	01485-14	7/8
1/4	01485-15	1-1/8
1/4	01485-43	1-1/2
1/4	01485-52	1-3/4
1/4	01485-40	2
1/4	01485-46	2-1/2
1/4	01485-25	2-5/8
1/4	01485-26	2-3/4
5/16	01485-59	1-1/4
5/16	01485-30	1-1/2
5/16	01485-39	2
5/16	01485-32	2-1/2
3/8	01485-47	3/4
3/8	01485-56	1-3/4
3/8	01485-54	2-1/4
3/8	01485-29	2-1/2
3/8	01485-27	3-1/4
1/2	01485-55	1-1/2
1/2	01485-53	2
1/2	01485-28	2-1/2
1/2	01485-33	3

Universal Chip Conveyors Specify machine when ordering parts



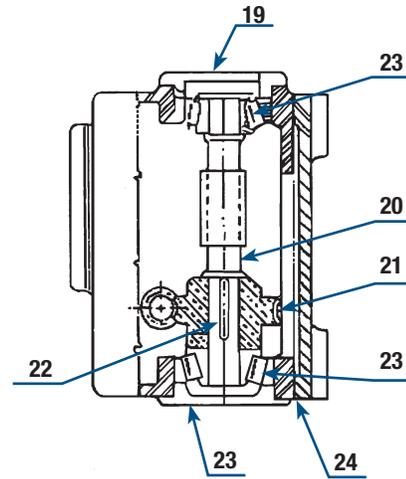
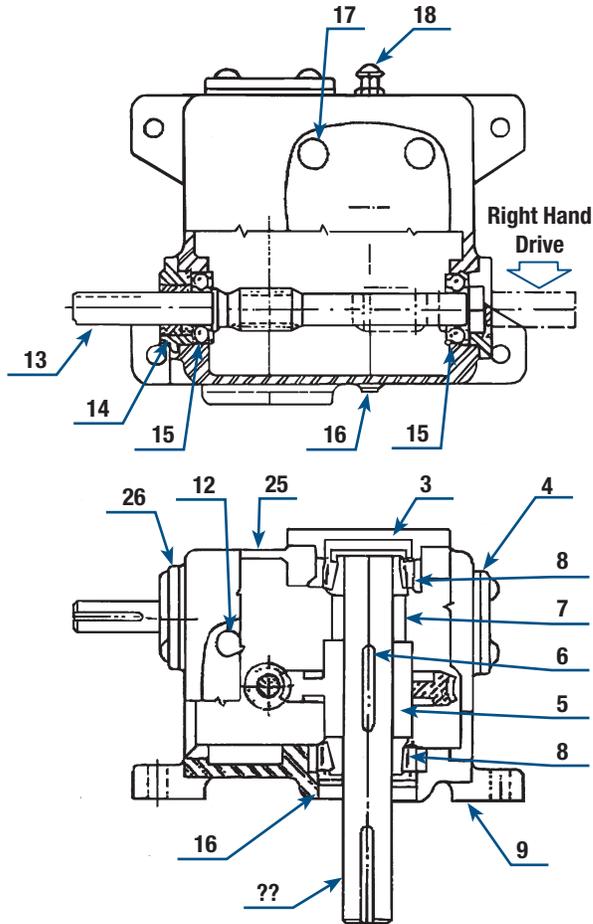
Speed Reducer - See page 490
 -Ohio Gearbox - See page 490
 -Winsmith Gearbox - See page 491

Universal Conveyors

KEY No.	DESCRIPTION	QTY.	9/16 RA-6 1" RA-6	QTY.	1-1/4 RA-6	QTY.	1-1/4 RB-8 1-5/8 RBN-8
1	Channel Assembly	1	02037-34	1	02037-32	1	02037-36
2	Link Guard R.H.	1	01914-10	1	01914-12	1	01914-12
3	Link Guard L.H.	1	01914-11	1	01914-13	1	01914-13
4	Pillow Block	2	02011-94	2	02011-94	2	02011-94
	Screw	4	1148	4	1148	4	1148
	Washer	4	53227	4	53227	4	53227
5	Driven Shaft Assembly	1	02011-33	1	02011-33	1	02025-50
6	Sprocket	2	02011-35	2	02011-35	2	02011-35
7	Taper Pin	2	50033	2	50033	2	50033
8	Take-Up Unit	2	02541-77	2	02541-77	2	02541-77
	Screw	8	1068	8	1068	12	1068
	Washer	8	2498	8	2498	12	2498
9	Motor Mounting Plate	1	01914-8	1	01914-8	1	01914-8
10	Slider Assy.	1	no number	1	no number	1	no number
11	Speed Reducer	1	page 490-491	1	page 490-491	1	page 490-491
	Screw	4	1106	4	1106	4	1106
	Washer	4	50981	4	50981	4	50981
12	Drive Shaft Assembly	1	02011-32	1	02011-32	1	02025-49
13	Sprocket	2	02011-35	2	02011-35	2	02011-35
	Key	2	51590	2	51590	2	51590
14	Top Cover	1	02037-86	1	02037-90	1	02037-96
15	Motor Base Mounting Bracket	1	02011-78	1	02011-78	1	02011-78
17	Clamping Plate	1	01800-58	1	01800-58	1	01800-58
	Screw	2	1106	2	1106	2	1106
	Washer	2	W-417	2	W-417	2	W-417
18	Cover Plate	1	02037-88	1	02037-82	1	02037-82
19	Lower Channel End Cover	1	02025-94	1	02025-94	2	02025-94
20	Safety Clutch	1	02538-19	1	02538-19	1	02538-19
21	Clutch Guard Assembly	1	02539-5	1	02539-5	1	02539-5
	Screw	1	A-177	1	A-177	3	A-177
22	Flexible Coupling	1	02037-87	1	02037-87	1	02037-87
	Key	1	51769	1	51769	1	51769
23	Coupling Guard	1	02539-4	1	02539-4	1	02539-4
24	Conveyor Belt Assembly	1	02019-11	1	02037-24	1	02027-85
25	Conveyor Link	66	02011-66	72	02011-66	92	02025-51
26	Link and Paddle Assembly	10	02011-82	10	02011-82	10	02025-60
27	Link	146	02011-30	164	02011-30	204	02011-30
28	Link Rod	73	02011-28	82	02011-28	102	02025-52
29	Roll	146	02011-29	164	02011-29	204	02011-29
30	Washer	146	02027-88	164	02027-88	204	02027-88
31	Pin	146	2542-63	164	2542-63	204	2542-63
32	Chip Plate Assy.	1	02037-85	1	02037-89	1	02027-40
36	Upper End Cover	2	02011-83	2	02011-83	2	02011-83
37	Motor (1/3 HP)	1	02099-40	1	02099-40	1	02099-40
	Screw	4	50146	4	50146	4	50146
	Washer	4	W-401	4	W-401	4	W-401
38	Screw	2	2000	2	2000	2	2000
40	Crank	1	02030-55	1	02030-55	1	02030-55

Gearbox Universal Conveyors

Ohio Gearbox



1 SPEED REDUCER ASSEMBLY
Left Hand Drive

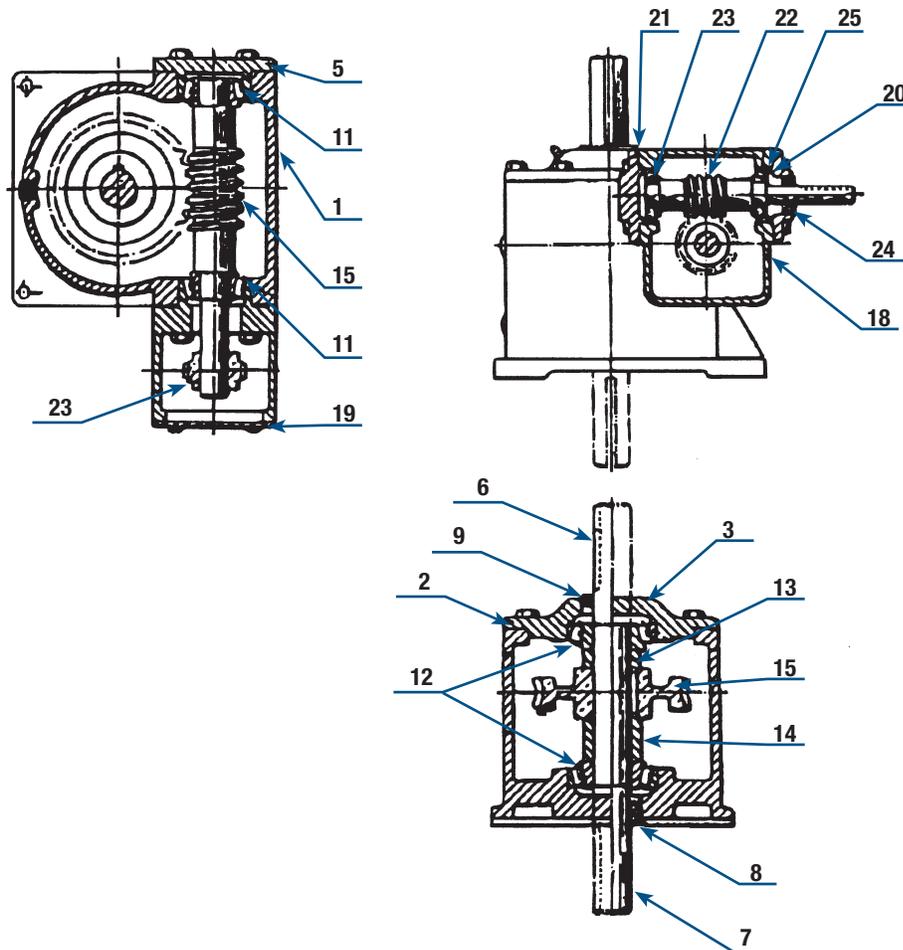
2 SPEED REDUCER ASSEMBLY
Right Hand Drive

KEY No.	QTY.	DESCRIPTION	PART No.
1	1	Assembly - L.H.	02019-57
2	1	Assembly - R.H.	02019-58
3	1	Cover	01914-35
4	1	Cover	01914-36
5	1	Output Worm Gear	01914-37
6	1	Key	01914-38
7	1	Spacer	01914-39
8	2	Bearing	01914-40
9	1	Housing Base	01914-41
10	1	Oil Seal	01914-42
11	1	Output Shaft	01914-43
12	4	Screw	01914-44
13	1	Input Shaft	01914-45

KEY No.	QTY.	DESCRIPTION	PART No.
14	1	Oil Seal	01914-46
15	2	Bearing	01914-47
16	1	Pipe Plug	01914-48
17	4	Screw	01914-49
18	1	Vent Plug	01914-50
19	1	Cover	01914-51
20	1	Intermediate Shaft	01914-52
21	1	Intermediate Gear	01914-53
22	1	Key	01914-54
23	2	Bearing	01914-55
24	1	Gasket	01914-56
25	1	Reducer Housing	01914-33
26	1	Cover	01914-34

**Gearbox
Universal Conveyors**

Winsmith Gearbox

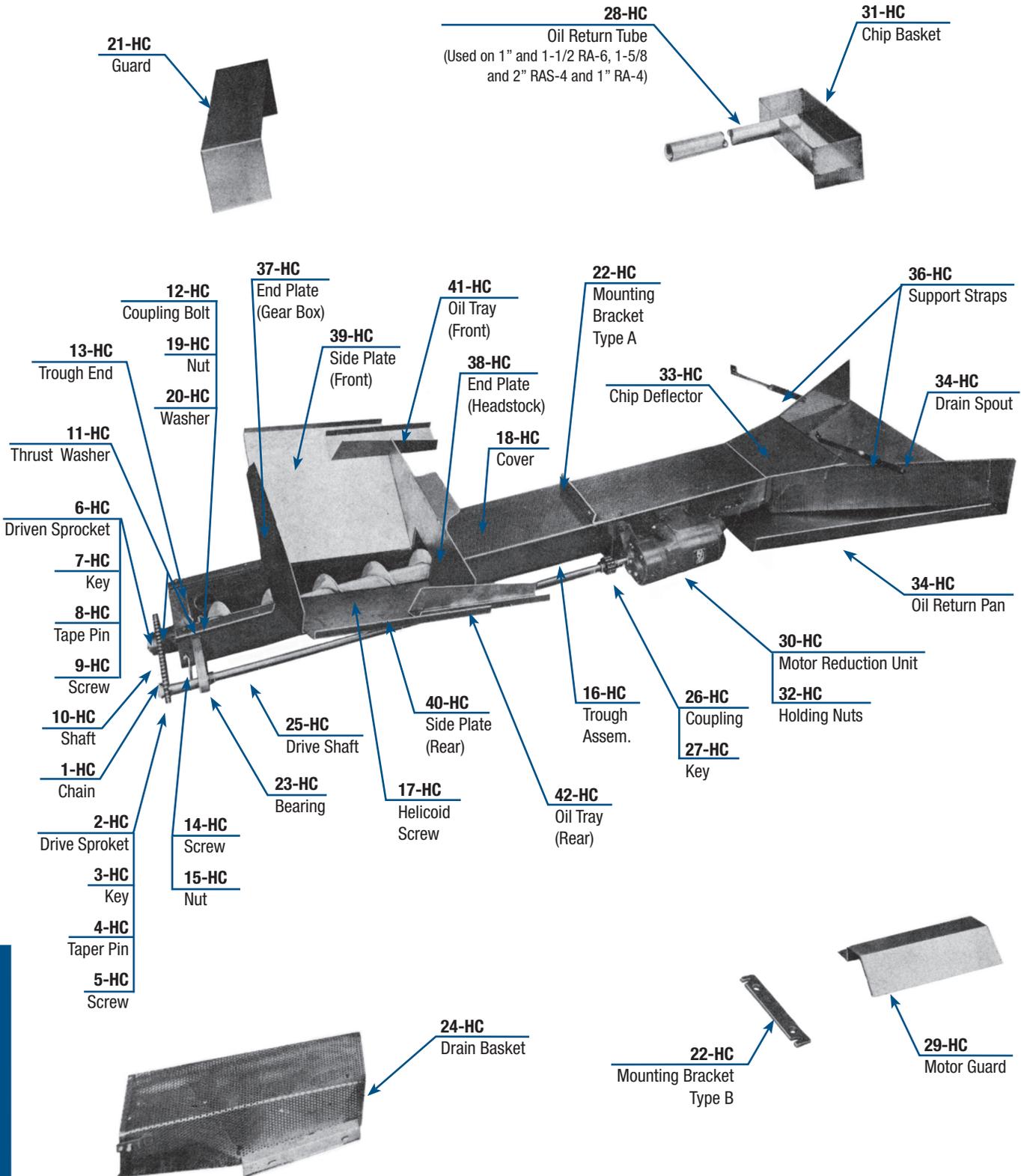


KEY No.	QTY.	DESCRIPTION
1		Housing
2		Slow Speed Cover - Open
3		Slow Speed Cover - Closed
5		Intermediate Cover - Closed
5A		Intermediate Adapter - not shown used with Inter. Cover - Closed
6		Slow Speed Shaft - Top Ext.
7		Slow Speed Shaft - Bot. Ext.
9		Oil Seal - Slow Speed Shaft
11		Roller Bearing - Inter. Shaft
12		Roller Bearing - Slow Speed Shaft
13		Slow Speed Spacer - Short
14		Slow Speed Spacer - Long

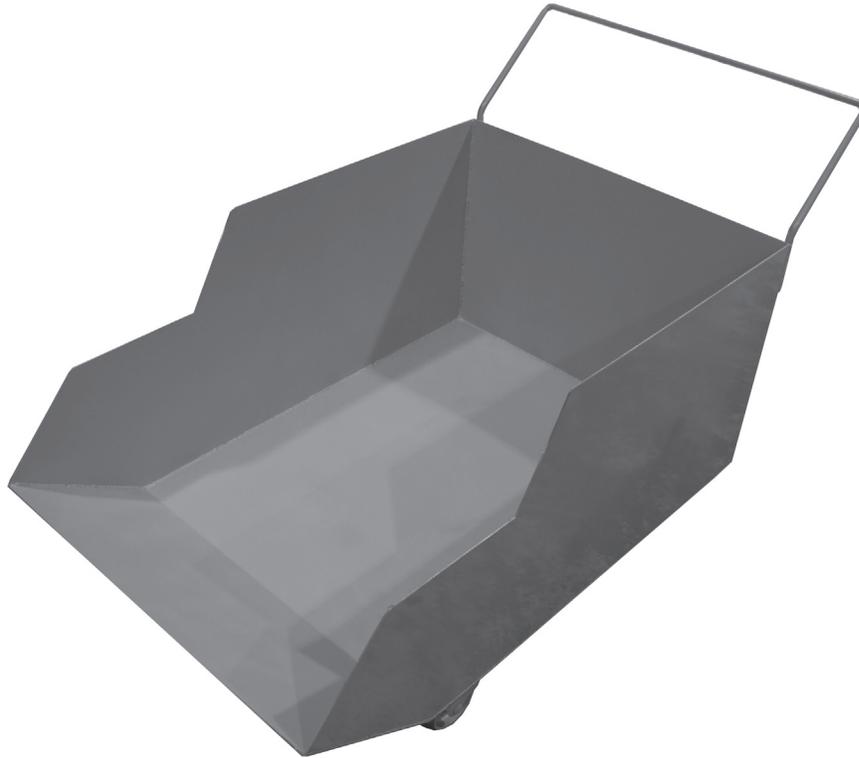
KEY No.	QTY.	DESCRIPTION
15		Slow Speed Worm Gear - Bronze
16		Intermediate Speed Worm & Shaft
18		High Speed Housing
19		High Speed Housing Cover
20		High Speed Cover - Open
21		High Speed Cover - Closed
22		High Speed Worm & Shaft
23		High Speed Worm Gear - Bronze
24		Oil Seal - High Speed
25		Roller Bearing - High Speed
26		Intermediate Lock Nut not shown
28		Intermediate Lock Nut Spacer not shown

Auger Conveyors

Auger Conveyor Parts Diagram



Steel Chip Carts

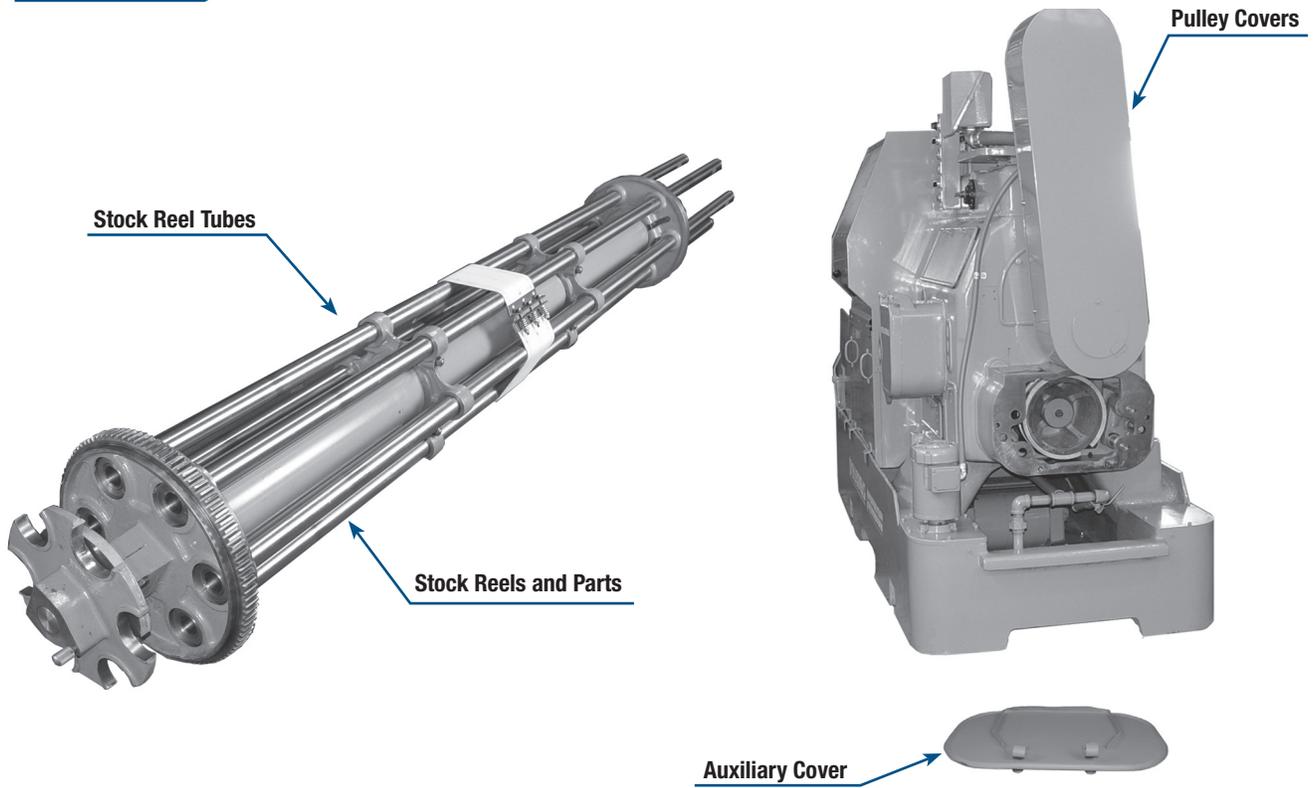
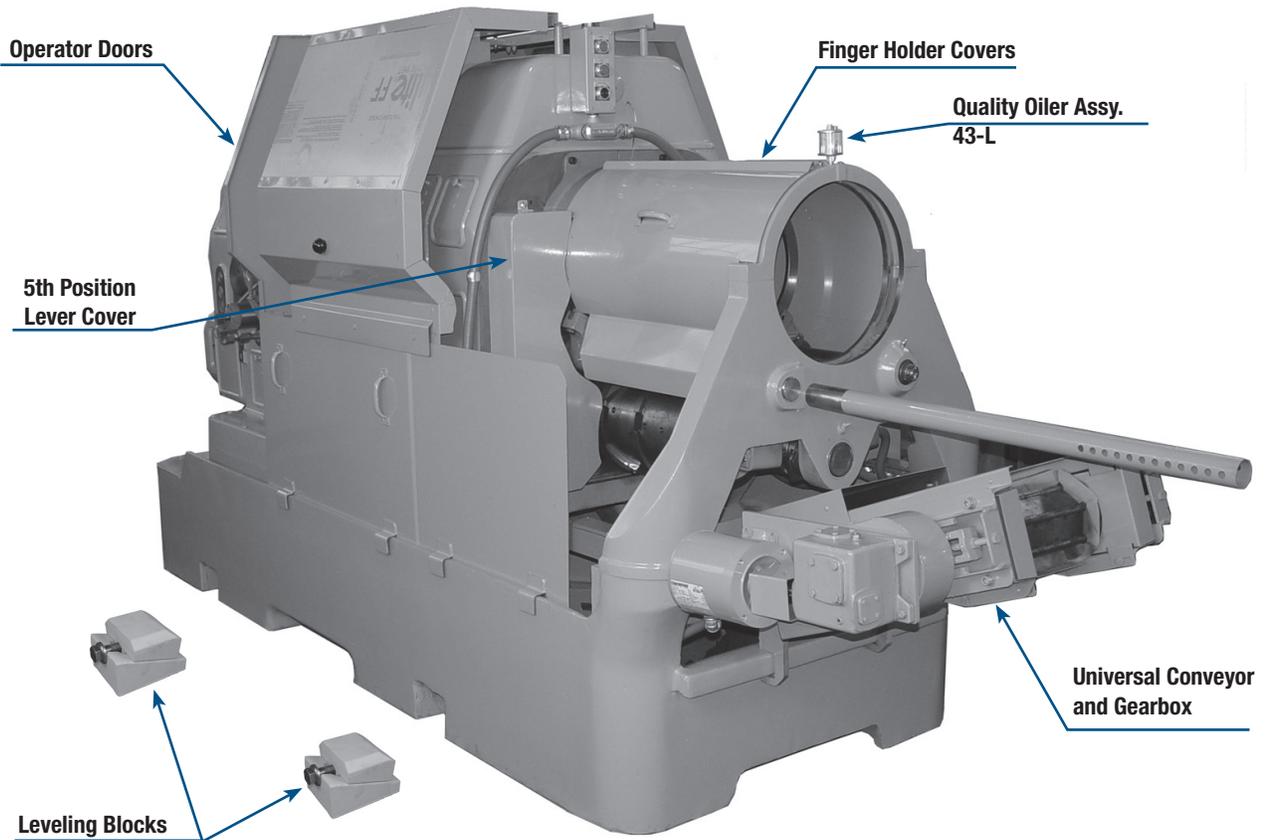


Chip carts can be made to your specifications and dimensions with the following options:

- 3 or 4 wheel carts
- Steel or neoprene wheels
- With or without drain plug

External Machine Components

External Machine Components



LOC-LINE



Loc-Line's unique ball and socket design is fully hand adjustable for position and length.

Bending does not decrease the inside diameter and it will not kink or fatigue like copper tubing.

Unlike metal hoses Loc-Line will not damage machine tool cutters if contact occurs.

Loc-Line is electrically non-conductive. It is ideal for use as an EDM flushing hose.

Loc-Line has no internal positioning rod that can break or restrict fluid flow.

Repeated Positioning is easy and the line will stay in position without any springback. Creep due to machine vibration is eliminated.

Line Pressure & Flow Rates

1/4" System	30-50 PSI	250 Gal / Hr
1/2" System	20-30 PSI	478 Gal / Hr
3/4" System	10-20 PSI	1,140 Gal / Hr

Temperature Specifications

Melting point: 329 F
Maximum operating temperature: 170 F



1/4" System

40413 1/4" Hose Kit 13" Length with Fittings

2 - Segments, 5 3/4" Long
1/4", 1/8", 1/16" Nozzles
1/4" & 1/8" Male NPT Connectors

40452 1/4" Flared Tubing Replacement Pack

8 - Segments, 5 3/4" Long
1 - 1" Flare Nozzle
Includes 4 each of:
3/8" Flare Nut Adapters
1/8" Round Nozzles
1/4" Round Nozzles



41474 1/4" 90° Nozzle Kit

1 Each: 1/16", 1/8", 1/4" & 1/4" Spray Bar Nozzles

41475 1/4" Extended Element Kit with Element Clamps

Includes 4 each of:
1/4" Extended Elements
1/4" Element Clamps

41479 1/4" Circle Flow Nozzle Kit

Assembled with 15 Side Flow Nozzles 1/4" & 1 End Cap 1/4"

1/4" Segment Pack

41401 2 - Segments, 5 3/4" Long
49420 Bulk 25 ft., 55 Segments
49421 1/4" 50 Foot Coil

1/4" Extended Element

41476 pack of 4
49445 pack of 20

1/4" Element Clamp

41477 pack of 4 (w/ screws)
49446 pack of 20 (w/ screws)

1/16" Round Nozzle

41402 pack of 4
49422 pack of 50

1/8" Round Nozzle

41403 pack of 4
49423 pack of 50

1/4" Round Nozzle

41404 pack of 4
49424 pack of 50

1/16" 90° Nozzle

41470 pack of 4
49439 pack of 20

1/8" 90° Nozzle

41471 pack of 4
49440 pack of 20

1/4" 90° Nozzle

41472 pack of 4
49441 pack of 20

1/4" 90° Spray Bar Nozzle

41473 pack of 2
49442 pack of 20

1" Flare Nozzle

41407 pack of 2
49427 pack of 20

1/8" NPT Connector

41405 pack of 4
49425 pack of 50

1/8" BSPT* Connector

41417 pack of 4
49437 pack of 50
* British Standard Pipe Thread

1/4" NPT Connector

41406 pack of 4
49426 pack of 50

1/4" BSPT* Connector

41418 pack of 4
49438 pack of 50
* British Standard Pipe Thread

1/4" Y Fitting

41408 pack of 2
49428 pack of 20

1/4" Double Socket

41409 pack of 4
49429 pack of 20

1/4" Socket to 1/8" FNPT

41411 pack of 4
49431 pack of 20

3/8" SAE Flare Nut Adapter

41412 pack of 4
49432 pack of 20
• 5/8 - 18 Thread

1/4" SAE Flare Nut Adapter

41414 pack of 4
49434 pack of 20
• 7/16 - 20 Thread

1/4" Elbow Fitting

41415 pack of 2
49435 pack of 20

1/4" System



1/4" T Fitting

41416 pack of 2
49436 pack of 20



1/4" Side Flow Nozzles

41478 pack of 4
49443 pack of 20



1/4" End Cap

41480 pack of 4
49447 pack of 20



1/4" Swivel Nozzle 40

41481 pack of 2
49449 pack of 20
• .040 Hole diameter



1/4" Swivel Nozzle 60

41482 pack of 2
49450 pack of 20
• .060 Hole diameter



2 1/4" Swivel Nozzle 75

41488 pack of 2
49455 pack of 20
• .075 Hole diameter



1" Straight Flow Nozzle

41489 pack of 2
49456 pack of 20



1/4" Male NPT Valve*

21192 pack of 2
29452 pack of 10



1/4" Female NPT Valve*

21193 pack of 2
29453 pack of 10



1/4" In-Line Valve*

21194 pack of 2
29454 pack of 10

In-Line Check Valve



21191 pack of 2
29451 pack of 10

1/4" Flat Slot 40 Nozzle



41483 pack of 4
49451 pack of 20
• .040 Slot height

1/4" Flat Slot 60 Nozzle



41484 pack of 4
49452 pack of 20
• .060 Slot height

1/4" Flat 5 Hole Nozzle



41485 pack of 4
49453 pack of 20
• .060 Hole diameter

1/4" Flat 7 Hole Nozzle



41486 pack of 4
49454 pack of 20
• .040 Hole diameter



41487 1/4" Flat Nozzle Assortment Pack

Includes one each of:
Flat Slot 40 Nozzle
Flat Slot 60 Nozzle
Flat 5 Hole Nozzle
Flat 7 Hole Nozzle

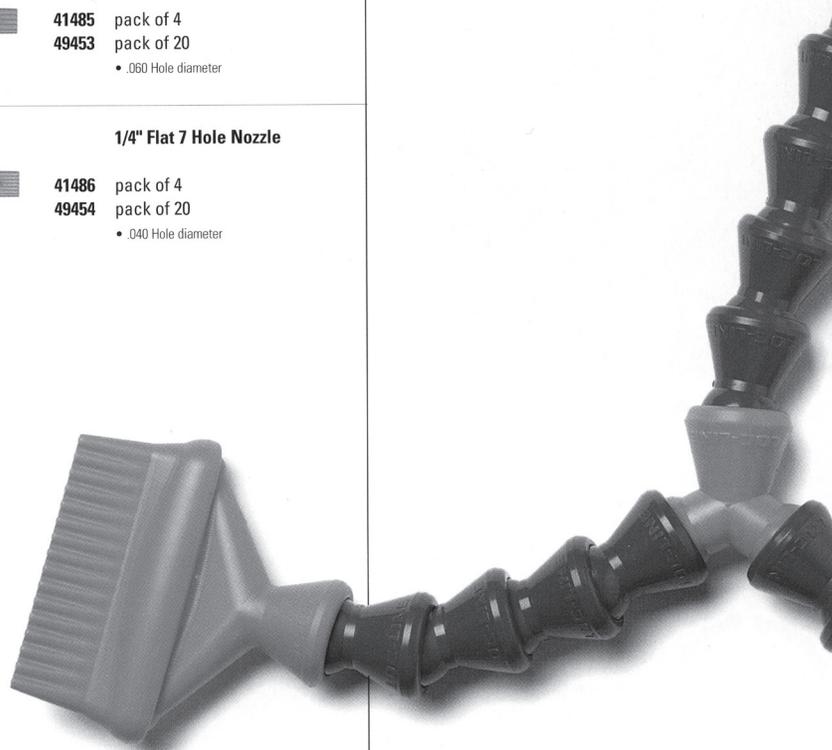


1/4" Hose Assembly Pliers

78001 one 1/4" pliers
78003 1/4" & 1/2" Pliers Set

*** 1/4" Valve Specifications**

- Full 1/4" inside diameter
- Maximum Working Pressures:
1/4" Hose: 30 PSI
1/4" In-Line Valve: 30 PSI
1/4" Male and Female NPT Valves: 100 PSI
(1/4" Hose limits most applications to 30 PSI)
- Body and stem material: Acetal Copolymer
- Stem seal: Nitrile (Buna N)
- 1/4 turn shut off



Loc-Line

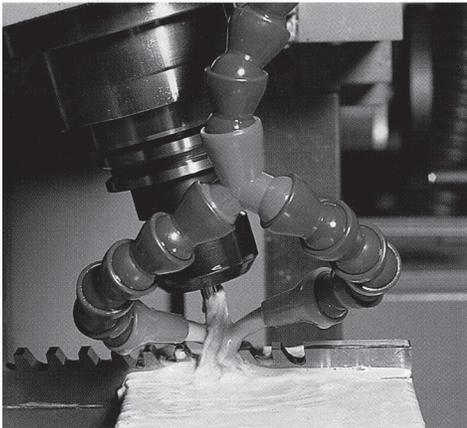
1/2" System



50813 1/2" Hose Kit
 13" Length with Fittings:
 2 - Segments, 5 1/2" Long
 1/4", 3/8", 1/2" Nozzles
 3/8" & 1/2" Male NPT
 Connectors



51832 1/2" 90° Nozzle Kit
 1 Each: 1/4", 3/8", 1/2"
 & Spray Bar Nozzles



**51835 1/2" Extended
 Element Kit with
 Element Clamps**
 Includes 4 each of:
 1/2" Extended Elements
 1/2" Element Clamps



**51837 1/2" Circle Flow
 Nozzle Kit**
 Assembled with 15 Side
 Flow Nozzles 1/2" &
 1 End Cap 1/2"



1/2" Segment Pack
51801 2 - Segments, 5 1/2" Long
59860 Bulk 25 ft., 59 Segm'ts
59861 1/2" 50 Foot Coil



1/2" Extended Element
51833 pack of 4
59883 pack of 20



1/2" Element Clamp
51834 pack of 4 (w/ screws)
59884 pack of 20 (w/ screws)



1/4" Round Nozzle for 1/2"
51806 pack of 4
59866 pack of 50



3/8" Round Nozzle
51802 pack of 4
59862 pack of 50



1/2" Round Nozzle
51803 pack of 4
59863 pack of 50



1/4" 90° Nozzle
51828 pack of 4
59878 pack of 20



3/8" 90° Nozzle
51829 pack of 4
59879 pack of 20



1/2" 90° Nozzle
51830 pack of 4
59880 pack of 20



1/2" 90° Spray Bar Nozzle
51831 pack of 2
59881 pack of 20



1/4" Flare Nozzle
51807 pack of 2
59867 pack of 20



2 1/2" Flare Nozzle
51809 pack of 2
59871 pack of 20



3/8" NPT Connector
51804 pack of 4
59864 pack of 50



3/8" BSPT* Connector
51826 pack of 4
59876 pack of 50
 * British Standard Pipe Thread



1/2" NPT Connector
51805 pack of 4
59865 pack of 50



1/2" BSPT* Connector
51827 pack of 4
59877 pack of 50
 * British Standard Pipe Thread



1/2" Y Fitting
51808 pack of 2
59868 pack of 20



1/2" to 1/4" Y Reducer
51822 pack of 2
59870 pack of 20



1/2" to 1/4" Adapter
51821 pack of 2
59869 pack of 20



1/2" Double Socket
51811 pack of 4
59872 pack of 20

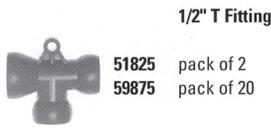


3/8" SAE Flare Nut Adapter
51823 pack of 4
59873 pack of 20
 • 5/8 - 18 Thread



1/2" Elbow Fitting
51824 pack of 2
59874 pack of 20

1/2" System



1/2" T Fitting
51825 pack of 2
59875 pack of 20



1/2" Side Flow Nozzle
51836 pack of 4
59889 pack of 20



1/2" End Cap
51838 pack of 4
59885 pack of 20



2 1/2" Swivel Nozzle 75 for 1/2"
51845 pack of 2
59895 pack of 20
 • .075 Hole diameter



1/2" In-Line Check Valve
32091 pack of 2
39851 pack of 10



1/2" Male NPT Valve
32092 pack of 2
39852 pack of 10



1/2" Female NPT Valve
32093 pack of 2
39853 pack of 10



1/2" In-Line Valve
32094 pack of 2
39854 pack of 10

- * 1/2" Valve Specifications**
- Full 1/2" inside diameter
 - Maximum Working Pressures:
 1/2" Hose: 20 PSI
 1/2" In-Line Valve: 20 PSI
 1/2" Male and Female NPT Valves: 100 PSI
 (1/2" Hose limits most applications to 20 PSI)
 - Body and stem material: Acetal Copolymer
 Stem seal: Nitrile (Buna N)
 - 1/4 turn shut off



1/2" Hose Assembly Pliers
78002 one 1/2" pliers
78003 1/4" & 1/2" pliers set



1/2" Flat Slot 80 Nozzle
51840 pack of 4
59890 pack of 20
 • .080 Slot height



1/2" Flat Slot 125 Nozzle
51841 pack of 4
59891 pack of 20
 • .125 Slot height



1/2" Flat 5 Hole Nozzle
51842 pack of 4
59892 pack of 20
 • .125 Hole diameter



1/2" Flat 7 Hole Nozzle
51843 pack of 4
59893 pack of 20
 • .080 Hole diameter



1/2" Flat Nozzle Assortment
 Includes one each of:
 Flat Slot 80 Nozzle
 Flat Slot 125 Nozzle
 Flat 5 Hole Nozzle
 Flat 7 Hole Nozzle



NEW
1/2" Fixed Mount
51895 pack of 2
59896 pack of 20
 • Mounts with 1/4" bolt, not included.



NEW
1/2" Magnetic Base
51846 pack of 1
 • 60# holding force



3/4" System



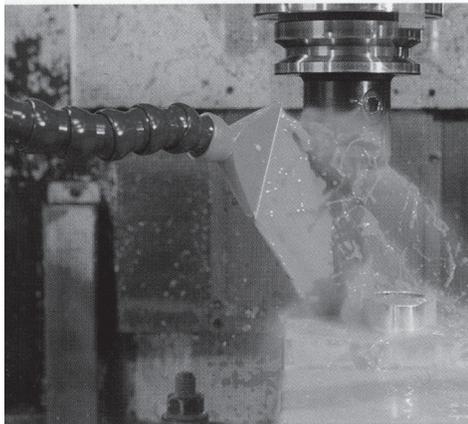
60513 3/4" Hose Kit

14" Length with Fittings:
2 - Segments, 5 3/4" Long
5/8" & 3/4" Nozzles
3/4" Male NPT Connector



3/4" Segment Pack

61501 2 - Segments, 5 3/4" Long
69540 Bulk 25 ft., 54 Segm'ts
69541 3/4" 50 Foot Coil



5/8" Round Nozzle

61503 pack of 4
69543 pack of 50



3/4" Round Nozzle

61502 pack of 4
69542 pack of 50



3" Flare Nozzle

61507 pack of 2
69547 pack of 20



3/4" NPT Connector

61505 pack of 4
69545 pack of 50



3/4" BSPT* Connector

61509 pack of 4
69549 pack of 50
* British Standard Pipe Thread



3/4" Y Fitting

61511 pack of 2
69551 pack of 20



3/4" to 1/2" Y Reducer

61512 pack of 2
69552 pack of 20



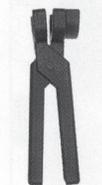
3/4" to 1/2" Adapter

61508 pack of 2
69548 pack of 20



3/4" Double Socket

61514 pack of 4
69554 pack of 20

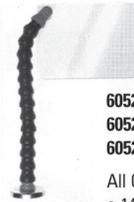


3/4" Hose Assembly Pliers

78004 pack of one

SHIELDS AND ACCESSORIES

Provides protection from flying chips and splashing fluids • Shield rotates 360 degrees
• Two mounting options include a movable magnetic base or a direct mount • 1/8" thick polycarbonate • Filled magnetic base prevents chip entrapment



Quick-Set Shield™ Kit

60525 6"x8" Shield Kit
60526 7 1/2"x10" Shield Kit
60527 8 1/2"x12" Shield Kit

All Quick-Set Shield Kits include a 14" adjustable 3/4" Loc-Line® arm, magnetic base and fitting for fixed mounting.

Replacement Shield

60528 6"x8" Shield
60529 7 1/2"x10" Shield
60530 8 1/2"x12" Shield



Shield Mounting Elbow

60531 pack of 2
• Washer and screw included.



3/4" Magnetic Base

60532 pack of one
• 60# holding force



3/4" Fixed Mount

60533 pack of 2
• Mounts with 1/4" bolt, not included.

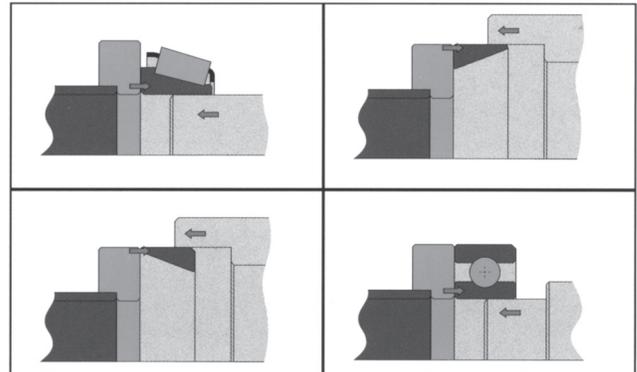
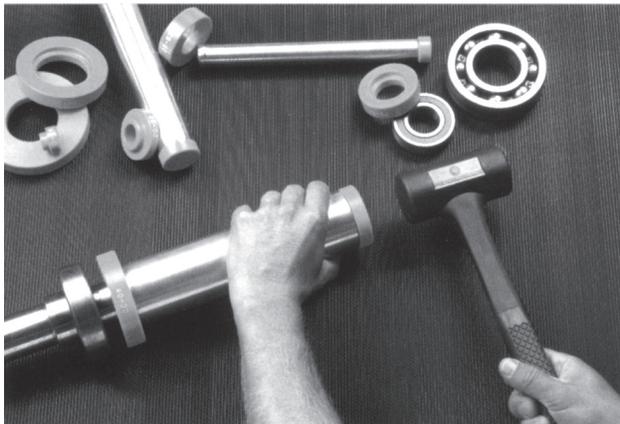
Proper mounting is essential to ensure long bearing life. Timken's impact fitting tools are designed to facilitate safe, precise and quick mounting. Each kit features impact-resistant plastic collets. These help avoid metal-to-metal contact and the resulting shaft damage.

During the mounting of bearings, where the faces lie in the same plane, the collets enable the load to be transmitted to the ring experiencing the interference fit. If the impact mounting tool is used, mounting forces are not transmitted via the rolling elements and damage to the raceways is avoided.

Metric Mounting Set VIFT 3300

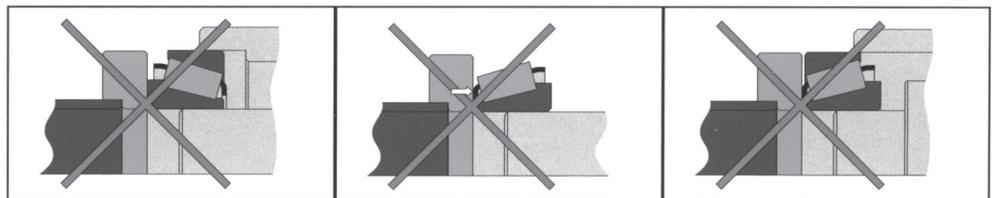
Design Attributes

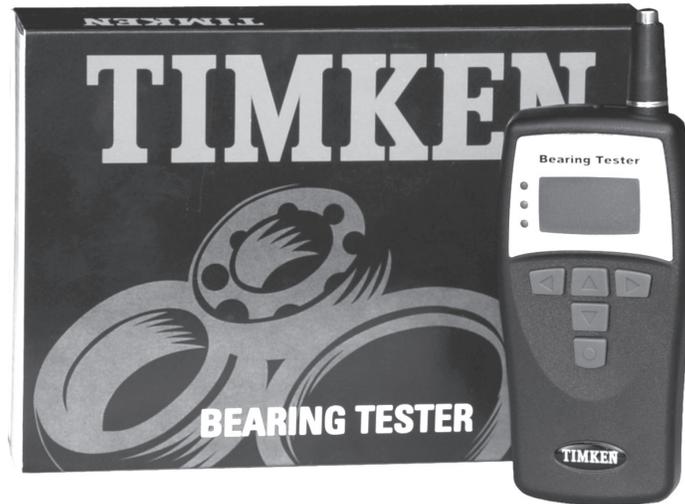
- 33 collets ranging from 10 mm to 110 mm
- Three sleeves
- One impact hammer



Proper mounting allows the load to be transmitted to the ring experiencing the interference fit. Mounting forces are not transmitted via the rolling elements, helping to prevent damage to the raceways.

Care should be taken when mounting tapered roller bearings. The cup can be mounted in either direction, but the cone can only be mounted from the back face. This ensures that the cage does not overhang. Never mount a cup and cone together or mount a cone from the front face. This will avoid damage to the cage and raceways which could lead to catastrophic failure.





Hand Held Bearing Tester

Timken's bearing tester is a portable, pocket-sized condition monitoring instrument. It is reliable, affordable and easy to use. The compact and lightweight design makes the bearing tester a convenient tool for assessing the health and lubrication condition of ball- and roller-type bearings in many industrial environments.

Features

- Portable and pocket-sized with built-in sensors.
- Measures shock pulse for early detection of bearing and marginal lube film conditions.
- Infrared temperature sensor measures surface temperature.
- Electronic stethoscope function detects sound irregularities.
- Readings given on green-yellow-red condition scale. Stores up to 10 readings.
- Automatic Power Off conserves battery power. When switched back on, Bearing Tester resumes its last mode.

Benefits

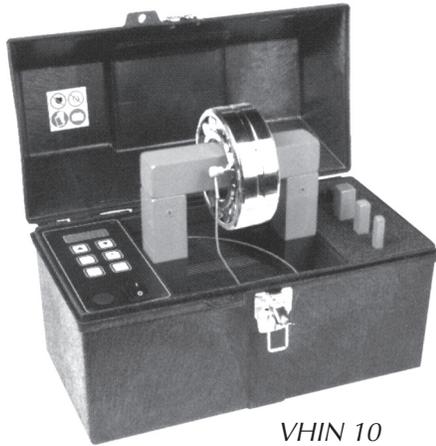
- Helps to detect bearing problems before malfunctions occur.
- Aids in preventing unplanned downtime and unnecessary repairs.
- Helps reduce operating costs.
- Easy to use. No specialized training required.

Ordering information

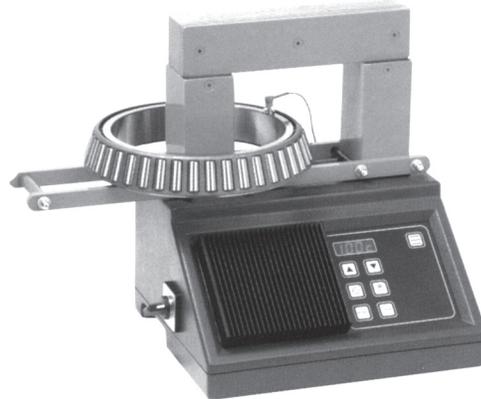
BT2100 Bearing tester with shock pulse, infrared temperature and stethoscope functionality (protective cover included)

Accessories

- EAR-12 Earphones for BT2100
TRA-73T Handheld probe with cable, 5 ft. long
TRA-74T Quick connector transducer with cable, 5 ft. long



VHIN 10



VHIN 35

VHIN 10 Model

Portable design, easy to use, ideal for on-site jobs.

Includes four yokes.

Min. Bore 15 mm (0.6")

Max. O.D. 210 mm (8.3")

Max. Width 120 mm (4.8")

Max. Weight 15 kg (33 lbs.)

Part Number Available:

VHIN 120V, Yoke set: 10/14/20/40

VHIN 35 Model

Basic model with choice of four yokes. Picture at right shows optional vertical support arm.

Min. Bore 15 mm (0.6")

Max. O.D. 480 mm (18.9")

Max Width 150 mm (5.9")

Max. Weight 35 kg (77 lbs.)

Heats parts in horizontal and vertical positions.

Part Number Available:

VHIN 351US 120V, Yoke set: 10/20/40/60, Horizontal Support

Timken - Bearing Pullers

Hydraulic Pullers

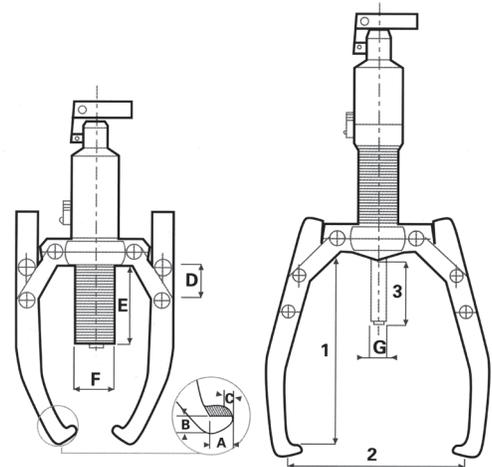
MODEL	MAX. FORCE	1	2	3	A	B	C	D	E	F	G	WEIGHT
VHPT4	4 t	185 mm (7.3")	275 mm (10.8")	60 mm (2.4")	11 mm (0.4")	6 mm (0.2")	22 mm (0.9")	32 mm (1.3")	84 mm (3.3")	42 mm (1.7")	22 mm (0.9")	4.5 kg (9.9 lbs.)
VHPT6A	8 t	230 mm (9.1")	350 mm (13.8")	85 mm (3.4")	11 mm (0.4")	10 mm (0.4")	25 mm (1.0")	51 mm (2.0")	122 mm (4.8")	50 mm (2.0")	25 mm (1.0")	6.5 kg (14.3 lbs.)
VHPT8	8 t	230 mm (9.1")	350 mm (13.8")	85 mm (3.4")	11 mm (0.4")	10 mm (0.4")	25 mm (1.0")	51 mm (2.0")	122 mm (4.8")	50 mm (2.0")	25 mm (1.0")	6.5 kg (14.3 lbs.)
VHPT12	12 t	270 mm (10.6")	375 mm (14.8")	85 mm (3.4")	14 mm (0.6")	10 mm (0.4")	29 mm (1.1")	51 mm (2.0")	118 mm (4.6")	60 mm (2.4")	28 mm (1.1")	8 kg (17.6 lbs.)
VHPT20	20 t	360 mm (14.2")	520 mm (20.5")	111 mm (4.4")	20 mm (0.8")	27 mm (1.1")	33 mm (1.3")	60 mm (2.4")	161 mm (6.3")	80 mm (3.2")	40 mm (1.6")	22 kg (48.5 lbs.)
VHPT30	30 t	360 mm (14.2")	550 mm (21.7")	111 mm (4.4")	20 mm (0.8")	27 mm (1.1")	38 mm (1.5")	60 mm (2.4")	155 mm (6.1")	98 mm (3.9")	50 mm (2.0")	32 kg (70.6 lbs.)

Splitter Accessory Sets (Hydraulic Pump Not Included)

MODEL	PULLER	ARM LENGTH	WIDTH OF GRIP	MIN O. D.	MAX. O.D.	WEIGHT
VHPT490	VHPT4	250 mm (9.8")	110 mm (4.3")	25 mm (1.0")	110 mm (4.3")	8.5 kg (18.7 lbs.)
VHPT690A	VHPT6	280 mm (11.0")	220 mm (8.7")	50 mm (2.0")	150 mm (5.9")	12.5 kg (21.6 lbs.)
VHPT890	VHPT8	280 mm (11.0")	210 mm (8.3")	50 mm (2.0")	150 mm (5.9")	12.5 kg (21.6 lbs.)
VHPT1290	VHPT12	325 mm (12.8")	290 mm (11.4")	80 mm (3.2")	225 mm (8.9")	18 kg (39.7 lbs.)

Design Attributes

- Integrated pump, cylinder, hose and puller with safety-release valve
- Compact design: The self-contained hydraulic pump and puller saves space
- Sets are supplied in handy carrying case
- Multi-purpose: Ideal for pulling a wide variety of press-fit parts including bearings, wheels, bushings, gears and pulleys
- The pump handle is able to rotate 360-degrees, providing flexibility to use the puller in the most convenient position
- Pullers can be used with two or three legs
- Available with accessories



- 1 - Reach
- 2 - Spread
- 3 - Stroke



Accessories Set

- For use with up to and including 12 tons.
- These accessory sets are supplied without the hydraulic pump.
- Use the hydraulic pump off the puller set.

Lever Type Grease Guns

- Heavy-duty cast iron head, with port for optional filler nipple.
- Curved outlet pipe and coupler with ball check and hardened jaws.
- Heavy-duty barrel with large threads and O-ring seal.
- Heavy-duty rod, spring and follower.
- Rugged baked-enamel finish.
- Filler nipple for three-way loading.
- Vinyl handle grip.

Timken grease guns are available in kits, with all the accessories you need for greasing shipped in a single box.

Included in the lever-type grease gun kit are:

- Lever-type grease gun
- 1 tube of Timken Premium All-Purpose Industrial Grease
- Metal neck
- Flexible 30-inch (760 mm) long whip hose with standard button-head coupler
- 1/8" replacement zerk fitting
- 1/4" replacement zerk fitting
- 1/8" replacement button-head fitting
- 1/8" replacement button-head fitting



PART NO.	DESCRIPTION
GRG1205	Deluxe Series lever-type grease gun with metal barrel
GRG1205KIT	GRG1205 Deluxe Series grease gun kit

Battery Powered Grease Guns

The fastest and most convenient way to lubricate your Timken® bearings is with the Timken battery-powered grease gun. Its powerful 18-volt rechargeable battery helps you grease more machinery in less time. And with the included extra battery, you'll have no downtime waiting for a battery to recharge.

Design Attributes

- Heavy-duty head.
- 30.5-inch (775 mm) flexible hose and coupler with ball check and hardened jaws.
- Two 18V NiCad rechargeable batteries with 110VAC electrical charger.
- Heavy-duty, steel-plated barrel with large threads and O-ring seal.
- Heavy-duty rod, spring and follower.
- Filler nipple for three-way loading.



PART NO.	DESCRIPTION
GRG1220	Deluxe Series battery-powered grease gun with metal barrel and two NiCad rechargeable batteries <ul style="list-style-type: none"> • Sturdy suitcase-style carrying case • Flexible three-inch-long whip hose with standard button-head coupler • Extra 18VDC battery • 110VAC battery charger
GRG1220UK	Deluxe Series battery-powered grease gun with metal barrel and two NiCad rechargeable batteries Battery Charger: United Kingdom 220-230V 3 Pin Plug
GRG1220EU	Deluxe Series battery-powered grease gun with metal barrel and two NiCad rechargeable batteries Battery Charger: European 220-230V2 Pin Plug

Timken - Grease/Grease Guns

Premium Industrial All-Purpose Grease

Designed for industrial bearings that operate at higher-than-average temperatures and shock loading, Timken's Premium All-Purpose Industrial Grease protects against rust, corrosion and wear.

Design Attributes

- Contains extreme pressure and anti-wear additives as well as corrosion inhibitors to provide protection in a variety of construction, agriculture and automotive applications.
- Operates in temperatures up to 300° F (149° C).
- Meets requirements for extended lubrication intervals of automotive chassis points and wheel bearings with disc brakes.



Product Specifications – Typical

COLOR	AMBER
NLGI Grade	No. 2Thickener
Type	Lithium Complex
Penetration, Unworked, ASTM D 217	265-295
Penetration, Worked 60 Strokes, ASTM D 217	265-295
Penetration Change, 100000 Strokes, ASTM D 217	-5 to +15%
Wheel Bearing, ASTM D 1263	5 Grams Max.
Dropping Point, ASTM D 2265	260° C Min.
Oxidation Stability, ASTM D 942, 100 hours at 99° C	5 psi
Four-Ball Wear, ASTM D 2266, 40 kg, 1200 RPM, 75° C, Scar mm	0.60 Max.
Four-Ball EP, Weld Point, ASTM D 2596, kgf	250 Min.
Timken OK Load, ASTM D 2509, Pounds	55
Copper Strip Corrosion, ASTM D 4048	1b
Corrosion Preventive Properties, ASTM D 1743	Pass
Oil Separation, ASTM D 1742	5% Max.
Base Fluid Properties:	
Viscosity @ 100° C, ASTM D 445, Centistokes	17 - 20
Viscosity @ 40° C, ASTM D 445, Centistokes	200 – 240
Viscosity Index	95
Pour Point, ASTM D 97	-12°C
Flash Point, ASTM D 92	225° C

Available in:

- 14-oz. cartridges, 10/case - Part #GR217C
- One-pound tubs, 6/case - Part #GR217T
- 35-pound pails - Part #GR217P
- 120-pound kegs - Part #GR217K
- 400-pound drums - Part #GR217D
- Bulk quantities

The New Logan CS2001XT™ Microprocessor Control

Simplify Screw Machine Operation Without Going Overboard Or Over Budget

The CS2001 XT is specifically designed to bring new machine technology to your existing fleet of screw machines. With features such as Tool Counters, Thread Check, Machine LockUp Detection, Stock Load and more, the XT offers screw machine users more flexibility during set-ups, and increases overall machine productivity.

Realize significant productivity gains utilizing the same operator, machine and floor space.

OEM, Factory or Field retrofitted; the CS 2001XT is the right technology for your screw machine. Available for Acme-Gridleys, Wickmans, Davenport, New Britains, Cones, Greenlees, Euroturns and more. Call Logan today for more information.



U.S. Pat # 5, 730, 037

Panel face displays cycle time, parts count and machine position in hundredths or degrees.

Improves Machine Operation and Productivity

- Machine LockUp Detection Minimizes tool crash damage.
- Improve Cycle Time Program high and low speed shift points in degrees.
- Easy to Read Screen Displays cycle time, parts count, parts per hour, accumulated run-time and machine position in degrees or hundredths. Useful during setup, trouble shooting and training of operators.
- Thread Check - Detects tap failure, stopping the machine prior to machine index.
- Stock Load Positioning - Eliminates jogging. Automatically positions the machine for bar loading.

Reduces Set-up Time

- Up to 15 Programmable Tool Counters - Maximize part finish. Reduce perishable tooling costs.
- Auxiliary Outputs - Eliminate auxiliary cams &&& limit switches associated with attachments.
- Programmable Air Pick Off Collet - Opens and closes collets in degrees.
- Interfaces with Popular Barfeeders and Loaders - Accurately Positions machine in "bar load window" to accept bar stock every time.
- "Stock Load" Feature reduces manual stock load time / jogging up to 50%.
- Security Key Protects Set-Up Parameters.

The New Logan CS2001XT™ Microprocessor Control



Partial view of XT Kit hardware and accessories.

Standard Logan CS 2001XT Control Features and Their Benefits

1. Machine Lock-up detection: Detects main drum shaft rotation and shuts down your machine if a lock-up condition occurs. Minimizes damage to clutches etc.

2. Reduce Cycle Time: Program the high and low speed shift points in 1-degree increments, giving the operator more set-up flexibility without having to mechanically re-time the high speed and brake cams. Reduces possibility of going past low point in the high-speed cycle. Go into high speed early or later if your layout completes the machining cycle before or after high point.

3. Fifteen Programmable Tool Change Counters: Shuts the machine down at designated tool service time; minimizing tool changes and maximizing quality finishes and threads. 10 counters are designated for fatal errors, thus stopping the machine; and 5 notify the operator of a tool change, but do not shut the machine down.

4. Programmable Air Pick-off Point: Program the opening and closing of air pick-off collets in degrees. Eliminates mechanical adjustment of Cams. (Additional hardware may be required for Davenport).

5. High Point / Low Point Reference: Automatically stops the machine close to high point or low point. By hand cranking the machine, the operator will confirm the exact high or low point by the display monitor. Useful during set-up, eliminates dial indicator.

6. Easy to Read Screen: Displays cycle time, parts count, parts per hour, accumulated run-time and machine position in degrees. or hundredths. Useful during set-up, troubleshooting and training of operators. (Davenport users have the option to read machine position in hundredths).

7. Revisable Parts Counter / Job Counter Display: Makes it possible to change the counter display. Useful during stock-up, enabling the operator to correct the parts count as needed.

8. Stock Depletion: Takes intelligent input from your stock depletion sensor and shuts down the machine when the bar stock becomes too short to feed out to length.

9. Tapping Right Hand / Left Hand Select: Makes changing from right hand tapping to left hand tapping as easy as pushing a button.

10. Thread Check/Tapping Failure Detection: Shuts the machine down if the tapping cycle does not complete before machine index. Prevents parts without threads, sorting costs etc. (Additional hardware may be required for Davenports).

11. Stockup Mode: Automatically stops the machine in the correct position for hand chucking.

12. Programmable Air Blast: Allows the operator to program the exact time to blast air to the part for chip cleaning; saving compressed air for other uses.

13. Alarm Message Display: Display gives descriptive message of any alarm message that occurs, or causes the machine to stop. Saves messages in series for diagnostic review.

14. Start Interrupt: Shuts machine down if an interlock sensor is faulted.

15. Eight Auxiliary Outputs: Eliminates cams, limit switches and bracket fabrication associated with attachments. Allows operator to program, in degrees, the engagement and disengagement point of attachments, such as broken tool, short part detectors, thread rollers, bar loaders and feeders into the machine cycle. Outputs are capable of operating twice within the machine cycle, (Ideal for slowing the machine down during bar feed out).

16. Ideal for bar Loaders: Intelligent input for bar loader and bar feeder integration. Accurately positions machine in "bar load window" to accept bar stock every time.

Services Section Index: Acme-Gridley

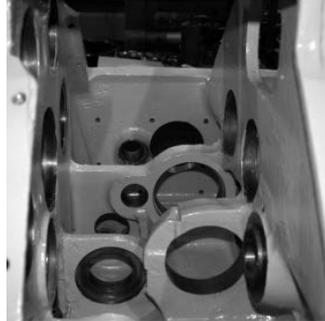
SECTION	DESCRIPTION	PAGE
Rebuilding	Standard Rebuild Procedure	510-512
Reconditioning	Standard Recondition Procedure	513
Carrier Rebuilding	Carrier Rebuilding, Carrier Stem & Toolslide Recondition, Locking Pin & Blocks Recondition, Journal & Bearing Port Repair, Stop Screw Thread Repair	514
Machine Repairs	Main Toolslide Repair or Conversion, Cross Slide Recondition, Clutch Rebuild, Pump Repair/Rebuild, Attachment Recondition	515
Field Service	On-site repairs, Installation, Process Control, Machine Testing	516
Process Engineering	Job Layout, Tool Design, Processing Layouts, Tooling Layouts, Process Troubleshooting, Tooling Troubleshooting & Speciality Attachment Design	517
Machinery Sales	Machinery Sales & Machine Buying Checklist	518-520

Rebuilding

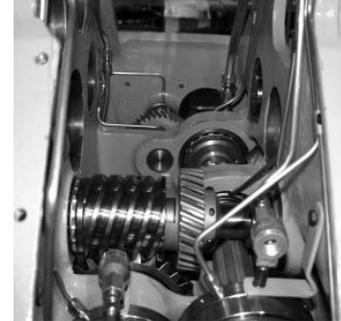
Restore your Acme-Gridley to like new condition
with a *Champion Rebuild or Recondition*



Machine stripped down to casting, primed and painted



Before



After

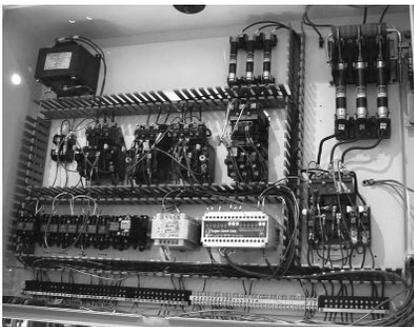
Completely rebuilt gearbox



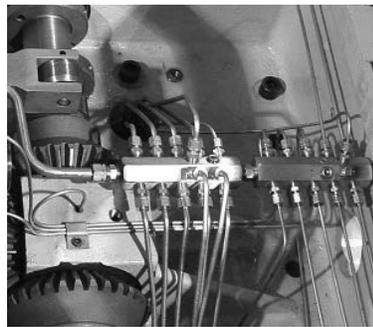
New Spindles, Bearings, Flingers, Gears & Retainers



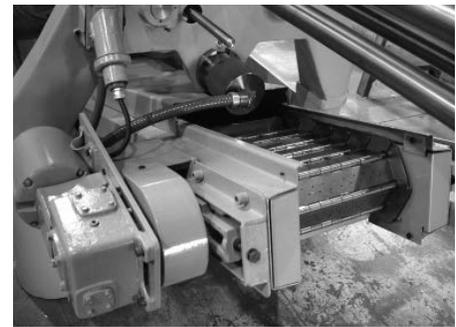
Carrier stem ground and tool slide bushed & bored and new seals installed



Electrical upgrades available

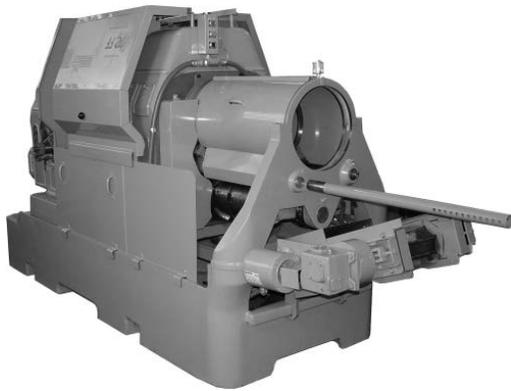


New oil lines

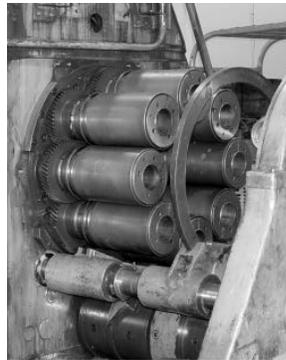


Rebuilt conveyor

Restore your Acme-Gridley to like new condition
with a Champion Rebuild or Recondition



Operator doors & spindle covers

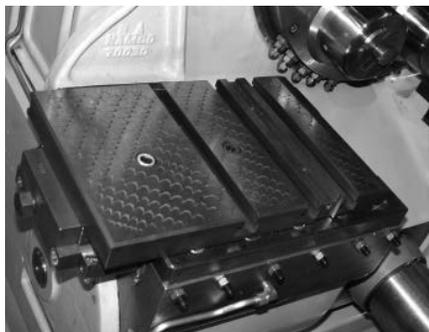


Before



After

Back-end Rebuild



Slides ground, fitted & flanked
Center height correction



Clutches Rebuilt



New Air System



Rebuilt Stock Reel & Stand with
New Stock Reel Tubes

Rebuilding

Standard Rebuild Procedure

- Completely tear down machine
- Castings inspected for excessive wear
- Castings cleaned and painted
- All parts inspected, worn parts repaired or replaced
- New bevel gears
- New 29KK gear and 25H worm
- New 25GA gear and 42DD worm
- New keys
- New bearings
- New rolls and studs
- New bushings
- New oil lines and filter
- All slides ground, fitted, flaked, new gibs, and returned to center height
- Rebuild clutches with new parts
- Back end rebuilt; new spools, 9L and 24L shafts, guide bushings, feed rings, feed plate, chucking shoes, pusher tubes, collet tube and nuts
- Stock reel and stand rebuilt including new silent tubes
- Carrier rebuilt; stem ground and toolslide rebushed & fitted, new seals, spindles rebuilt, new front and rear retainers, front and rear oil flingers, keys, spindle gears and nuts, class 3 spindle bearings
- Rebuild coolant pump, or replace with new style pump
- New drill holders
- New splash guards and spindle covers
- Rebuild chip conveyor
- Electrical system will remain as is, cleaned and re-installed
- Electrical system may be rewired per your instructions, price upon requests
- Air system; filter, regulator/oiler and air lines will be replaced
- New bushings, roll, and studs in index gear
- Re-condition main toolslide
- Re-condition locking pin and blocks

Quality Verifications

- Block test
- Radial test
- Tool slide straightness
- Carrier rock checked
- Carrier end play checked
- Spindle end play checked
- Spindle temperature checked
- Records forwarded with machine

Optional Major Repairs

- Head stock liners
- Spindle carrier bores
- Toolslide repairs

Standard Recondition Procedure

- Machine tear down (not including castings)
- Castings cleaned and painted
- Castings inspected for excessive wear
- Castings cleaned and outside of machine painted only
- Parts replaced as necessary
- Bearings, bushings, rolls and studs replaced as necessary
- Lubrication system cleaned, lines replaced as necessary
- All slides squared, fitted, and flaked
- Back end reconditioned; new 9L & 24L, new rolls and studs, new bronze bushings, new chucking shoes, new feed plates, new feed ring.
- Stock reel and stand cleaned and painted
- Carrier rebuilt including; stem ground and toolslide rebushed & fitted, new seals, spindles rebuilt, new front retainers, new front and rear oil flingers, new class 3 bearings
- Coolant pump re-used
- New drill holders
- Splash guards re-used
- Chip conveyor cleaned and painted
- Electrical system cleaned and re-used
- Air system re-used

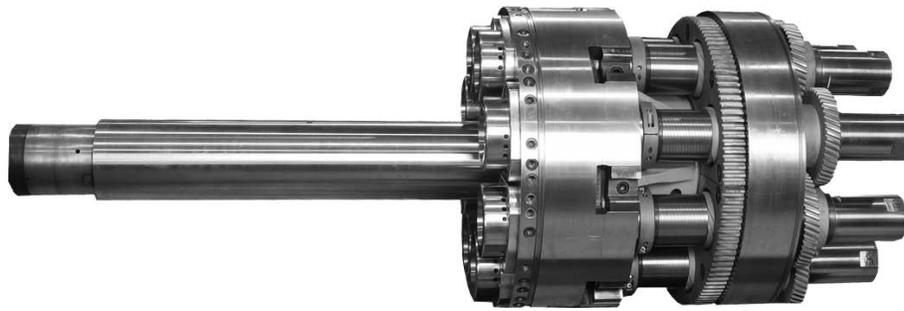
Quality Verifications

- Block test
- Radial test
- Toolslide straightness
- Carrier rock checked
- Carrier end play checked
- Spindle end play checked
- Spindle temperature checked
- Records forwarded with machine

Optional Major Repairs

- Head stock liners
- Spindle carrier bores
- Toolslide repairs

Carrier Rebuilding



- Stem ground
- Toolslide rebushed & bored to fit
- New or reconditioned spindles
- New seals installed
- New front & rear retainers
- New front & rear oil flingers
- New spindle gears
- New spindle nuts
- New keys
- New class III bearings
- 1 yr. warranty parts & workmanship

Additional Services Available

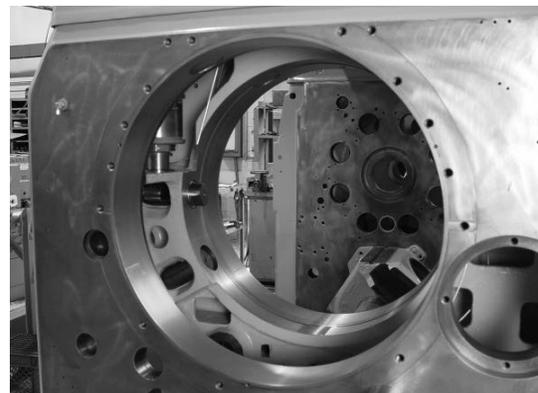
- Head stock liners
- Grind locking pins & sleeves
- Replace locking blocks
- Carrier journal repair
- Repair damaged bearing bores
- Stop screw thread repair



Carrier journal, bearing bores
& stop screw thread repairs



Precision ground locking blocks



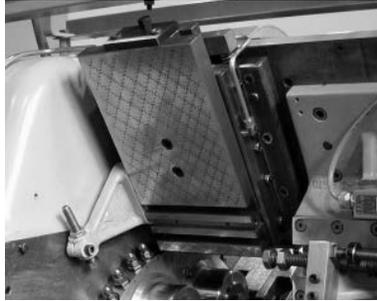
Recondition worn headstocks

Champion offers in-house machine repairs

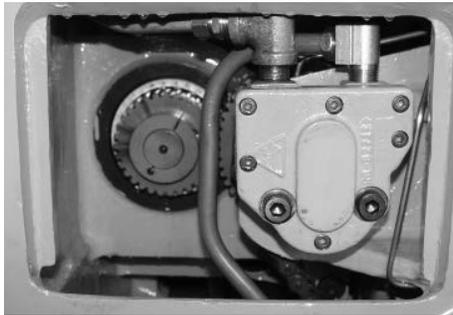
Examples of in-house machine repairs available



Cross Slides Reconditioned



Toolslide repair & conversions



Lube Pumps Rebuilt

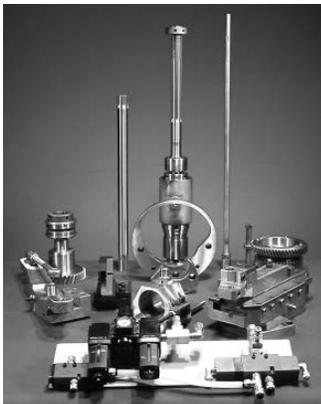


Coolant Pumps Rebuilt



Clutches Rebuilt

Attachment Recondition



Pick-off & Backfinish



Threading



High-Speed Drilling

Field Service

Champion offers the support of our highly skilled team of field service technicians to assist you at your facility. With over one hundred years of machine experience you can rely on Champion Screw Machine Services to give you the support you need.

Field Service

- On-Site Repairs
- Machine Troubleshooting
- Machine Evaluation
- Installations
- Machine Testing
- Process Troubleshooting
- Tooling Troubleshooting

Machine Testing

- Carrier rock
- Carrier endplay
- Carrier gap
- Radial block test
- Toolslide lift
- Toolslide straightness
- Spindle endplay/bearing condition
- Spindle temperature

On-Site Installations

Attachments

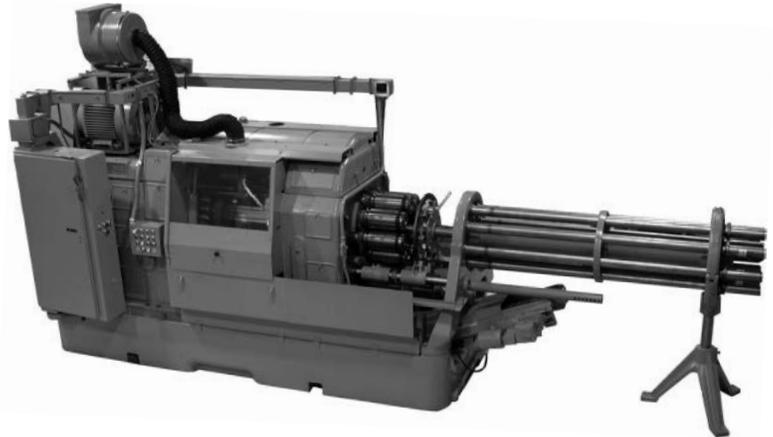
- Pick-off & Backfinish
- Threading
- Reaming
- High Speed Drilling
- Cross drilling
- Mill slotting
- Flat Generating
- Polygon Turning
- Recessing
- Tapping
- Thread Milling
- Eccentric Drilling
- Watkins Saw-lutions

Machine Upgrades

- High-Speed Index
- Logan Hi-Lo Clutches
- Logan XT Control
- PLC Controls
- Electrical Upgrade
- Stock Depletion
- Pneumatics
- Hydraulics
- Servo Slides
- Servo Drive Retrofit
- Air Brake Assist
- One Speed stop and drop pick-off clutch drive
- Two speed stop and drop pick-off clutch drive

Process Control

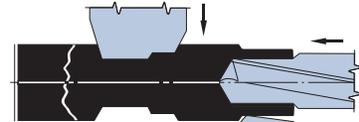
- Length Detection
- Diameter Detection
- Drill/Clear Space Detection
- Roll Stamp Trip/Reset Detection Circuit
- No fault threading circuit
- Part Diversion
- Winter thread roll head fault circuit
- Recess return detection



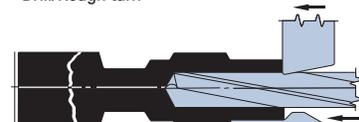
If you need assistance with part process layouts, cycle time estimation, tooling design or special attachments, you can rely on Champion Screw Machine Services for the support you need.

Our process engineers have many years of experience on a wide variety of materials, machines, and tooling and attachment applications.

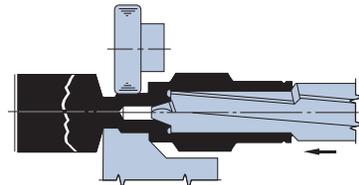
- Job Layout Service
- Tool Design Service
- Processing Layouts
- Tooling Layouts
- Process Troubleshooting
- Tooling Troubleshooting
- Cycle Time Estimation
- Special Attachment Design



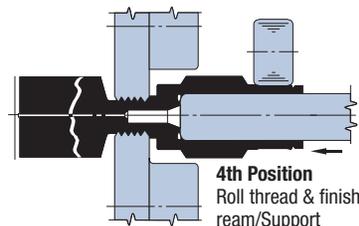
8th Position
Rough form rear
Drill/Rough turn



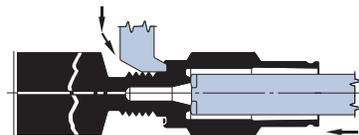
1st Position
Rough form front
Drill remainder/Face end



3rd Position
Shave rear thread dia./Accel. rough c'T bore
& bottom seat & Finish c'bore tap diameters



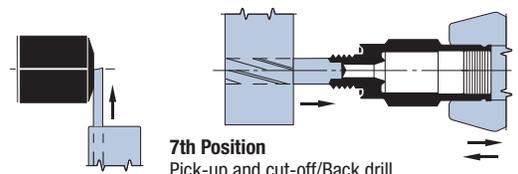
4th Position
Roll thread & finish
ream/Support



5th Position
Undercut rear
Burnish flat at seat



6th Position
Tap



7th Position
Pick-up and cut-off/Back drill

Machines for Sale



Champion stocks machines on our floor

Champion maintains an ongoing inventory of quality surplus machines. Any machine on our floor can be quoted to your specifications. Champion offers complete job layout & turn key operations. Any machine on our floor can be rebuilt, reconditioned & equipped with tooling & attachments per your request.

Machines can be sold

- As is
- Completely Rebuilt
- Reconditioned
- Cleaned, Cycled & Painted
- Equipped with any attachment
- Equipped with any tooling
- Turn-Key operations
- Process Control upgrades



All machines can be equipped to your specs



Completely Rebuilt 2-5/8 RB-8 Acme-Gridley

Machine Evaluation Checklist - Page 1 of 2

MACHINE:	MODEL:	SERIAL NO.	YEAR:
----------	--------	------------	-------

QUALITY MEASUREABLES:	(.001)
Main Toolslide Lift	
Radial Play in Carrier	
Carrier / Headstock Gap	

VISUAL INSPECTION / INVENTORY

CARRIER AND TOOLSLIDE -	GOOD	FAIR	POOR	MISSING	NOTE
Collet Seats					
Collet Tubes and Nuts					
Pusher Tubes					
Main Toolslide					
Tool Slide Stem					

STOCK FEED AND CHUCKING -	GOOD	FAIR	POOR	MISSING	NOTE
Stock Feed Slide					
Chucking Slide					
Stock Feed Ring					
Finger Holders					
Spool Cam & Guard					
Hand Chucking Slide					
Stock Stop & Lever					

INDEX MECHANISM -	GOOD	FAIR	POOR	MISSING	NOTE
Index Mechanism -					
Locking Blocks					
Locking Pin					
Locking Pin Spring					
Index Gear & Slots					
Index & Locking Pin Lever					

STOCK REEL & STAND -	GOOD	FAIR	POOR	MISSING	NOTE
Geared Reel Disc					
Front Reel Support					
Rear Reel Support					
Stock Reel Tubes					
12-T Collars					
22-T Supports					
Aligning Disc & Guard					

CROSS SLIDES & DRIVES -	GOOD	FAIR	POOR	MISSING	TOOLING NOTES
1st Position					
2nd Position					
3rd Position					
4th Position					
5th Position					
6th Position					
7th Position					
8th Position					

Machinery Sales

Machine Evaluation Checklist - Page 2 of 2

VISUAL INSPECTION / INVENTORY

MAIN TOOLSLIDE TOOLING -	GOOD	FAIR	POOR	MISSING	TOOLING NOTES
1st Position					
2nd Position					
3rd Position					
4th Position					
5th Position					
6th Position					
7th Position					
8th Position					

ATTACHMENTS -	GOOD	FAIR	POOR	MISSING	POSITION & TYPE
Threading					
Reaming					
Pickoff					
Backfinish					
High Speed Drilling					
Other					

GEAR BOX -	GOOD	FAIR	POOR	MISSING	NOTE
Clutches					
Gears					
Shafts & Splines					
Roll Clutch					
Brake Mechanism					
Pumps					
Toolslide Oper. Arm					
Lube Pump					
Filter & Lube Lines					

POWER TRAIN -	GOOD	FAIR	POOR	MISSING	NOTE
Motor					
Pulleys					
V-belts					
Spindle Drive Shaft					
Pickoff & Threading Gear					

DRUM SHAFTS -	GOOD	FAIR	POOR	MISSING	NOTE
Drums					
Worm Wheel & Worm Gear					
Stock Stop Disc					
Bevel Gear					

ELECTRICAL -	GOOD	FAIR	POOR	MISSING	NOTE
Panel Box					
Control Boxes					
Switches					
Valves					
Wiring					

OPERATOR DOORS					
CONVEYOR & CHIP PANS					
GUARDS & COVERS					

Machinery Sales

Technical Reference Index: Acme Gridley

SECTION	DESCRIPTION	PAGE
Machine Information	Machine Specifications	522-523
	Tooling Slide Dimensions	524-552
	Toolslide Toolholder Dimensions	553
	Machine Inspection Charts	554-555
Operating Hints and Tips	Acme-Gridley Do's	556-558
	Acme-Gridley Don'ts	559-561
	Machine Malfunctions	562
	Non-conforming Parts	563-564
	Clutch & Carrier End Play Adjustment	565
Preventative Maintenance	Operator Machine Care	566
	Monthly Maintenance Schedule	567
	Semi-annual & Annual Maintenance Schedule	568

Machine Specifications

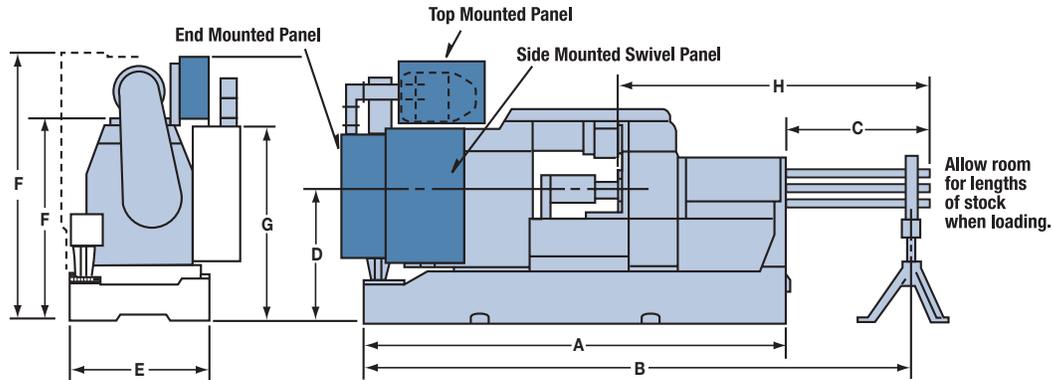
6 Spindle Specifications and Standard Equipment Specifications For Standard Machine (Inches/Millimeters, Pounds/Kilometers)

MACHINE SIZE AND MODEL	MAXIMUM COLLET CAPACITY			SPINDLE SPEEDS (RPM)			END TOOLSLIDE TRAVEL	STOCK FEED (SLIDE TRAVEL)	STANDARD MAIN MOTOR (HP)	IDLE TIME (SECONDS)	WEIGHTS APPROXIMATE	
	ROUND	HEXAGON	SQUARE	MIN.	MAX	MAX. S.S.(1)					NET (2)	EXPORT (3)
7/16" RA-6	7/16" 11.11mm	3/8" 9.52mm	5/16" 7.94mm	770	4889	3556	1" 25.4mm	1-1/2" 38.1mm	7-1/2	.55	4,850 lb. 2,113 kg.	5,900 lb. 2,676 kg.
9/16" RA-6	9/16" 14.28mm	1/2" 12.7mm	25/64" 9.92mm	321	3200	2370	3-3/8" 85.72mm	5" 127.0mm	15	1.2	10,900 lb. 4,944 kg.	11,500 lb. 5,216 kg.
9/16" RAN-6	9/16" 14.28mm	1/2" 12.7mm	25/64" 9.92mm	321	3200	2370	3-3/8" 85.72mm	5" 127.0mm	15	.92	4,944 kg.	5,216 kg.
5/8" RN-6	5/8" 15.87mm	17/32" 13.49mm	7/16" 11.11mm	335	4963	3000	5" 127.0mm	5" 127.0mm	15	1.23	8,250 lb. 3,594 kg.	9,250 lb. 4,196 kg.
1" RA-6	1" 25.4mm	55/64" 21.83mm	45/64" 12.86mm	239	2920	2156	3-3/8" 85.72mm	5" 127.0mm	15	1.2	11,100 lb. 5,035 kg.	11,700 lb. 5,307 kg.
1" RAN-6	1" 25.4mm	55/64" 21.83mm	45/64" 12.86mm	239	2920	2156	3-3/8" 85.72mm	5" 127.0mm	15	.92	5,035 kg.	5,307 kg.
1-1/4" RA-6	1-1/4" 31.75mm	1-3/32" 27.78mm	7/8" 22.22mm	265	2475	2128	4-3/4" 120.65mm	7" 177.8mm	25	1.8	13,800 lb. 6,011 kg.	14,700 lb. 6,668 kg.
1-3/8" AG-6	1-3/8" 34.93mm	1-3/16" 30.16mm	31/32" 24.60mm	373	3475	....	4" 101.6mm	3-1/2" 88.9mm	30	0.98	20,100 lb. 9,117 kg.	....
1-5/8" RB-6	1-5/8" 41.27mm	1-13/32" 35.72mm	1-9/64" 28.95mm	152	1640	1270	7" 177.8mm	7" 177.8mm	30	3	26,700 lb. 11,631 kg.	27,750 lb. 12,587 kg.
2" RB-6	2" 50.8mm	1-3/4" 44.45mm	1-7/16" 36.45mm	152	1640	1270	7" 177.8mm	7" 177.8mm	30	3	27,200 lb. 12,338 kg.	28,250 lb. 12,814 kg.
2-5/8" RB-6	2-5/8" 66.66mm	2-17/64" 57.63mm	1-27/32" 72.21mm	101	1065	845	8" 203.2mm	7" 177.8mm	40	2.9	30,600 lb. 13,880 kg.	31,900 lb. 14,470 kg.
3-1/2" RB-6	3-1/2" 88.9mm	3-1/32" 76.99mm	2-15/32" 62.69mm	68	530	333	8" 203.2mm	7" 177.8mm	40	4	34,000 lb. 15,422 kg.	35,300 lb. 16,012 kg.
4" RB-6	4" 101.6mm	3-7/16" 87.3mm	2-13/16" 75.42mm	31	584	....	8" 203.2mm	7" 177.8mm	40/50	4	35,400 lb. 16,057 kg.	36,700 lb. 16,647 kg.
6" RB-6	6" 152.4mm	5-1/8" 130.2mm	4-1/4" 112.4mm	32	268	....	8" 203.2mm	6" 152.4mm	60	5.5	71,900 lb. 32,614 kg.	73,500 lb. 33,340 kg.

(1) Spindle stopping machine used as standard or spindle stopper.

(2) Net weight of machine includes standard main motor less stock reel, tooling and loose parts.

(3) Export weight of machine include boxing, stock reel and standard parts.



MACHINE SIZE	A	B	C	D	E	F	H
7/16" RA	5' 3"	19' 6"	14' 0"	3' 9"	2' 9"	4' 6"	16' 9-31/32"
9/16" RA	7' 8-1/2"	18' 1/4"	11' 6"	3' 9-5/8"	3' 7"	5' 1"	14' 7-23/32"
9/16" RAN	7' 8-1/2"	18' 1/4"	11' 6"	3' 9-5/8"	3' 7"	5' 1"	14' 7-23/32"
1" RA	7' 8-1/2"	18' 1/4"	11' 6"	3' 9-5/8"	3' 7"	5' 1"	14' 7-53/64"
1" RAN	7' 8-1/2"	18' 1/4"	11' 6"	3' 9-7/8"	3' 7"	5' 1"	14' 7-53/64"
5/8" RN	7' 11-5/8"	18' 3-1/8"	11' 1-15/16"	3' 7-1/16"	2' 8"	4' 10"	12' 1-7/8"
1-1/4" RA	9' 5"	17' 3/4"	9' 0"	3' 9-7/8"	3' 7"	5' 6"	12' 5-15/32"
1-3/8" AG	10' 0"	16' 7"	7' 5-1/2"	3' 11-1/2"	3' 8"	5' 11"	11' 9"
1-5/8" RB	12' 5"	19' 10"	8' 0"	4' 1"	4' 0"	6' 5"	12' 8-9/32"
2" RB	12' 5"	19' 10"	8' 0"	4' 1"	4' 0"	6' 5"	12' 8-9/32"
2-5/8" RB	13' 1-5/8"	20' 7-1/2"	8' 0"	4' 4"	4' 8"	6' 4-3/8"	13' 1-3/32"
3-1/2" RB	13' 1-5/8"	18' 7-3/8"	6' 0"	4' 4"	4' 8"	7' 0"	10' 11-27/32"
4" RB	13' 3-5/8"	18' 11-7/8"	6' 0"	4' 4"	4' 8"	7' 0"	11' 3-21/32"
6" RB	15' 6-5/8"	20' 7-1/2"	5' 11-3/4"	4' 7-3/4"	5' 10-1/4"	8' 1/2"	11' 11-7/8"

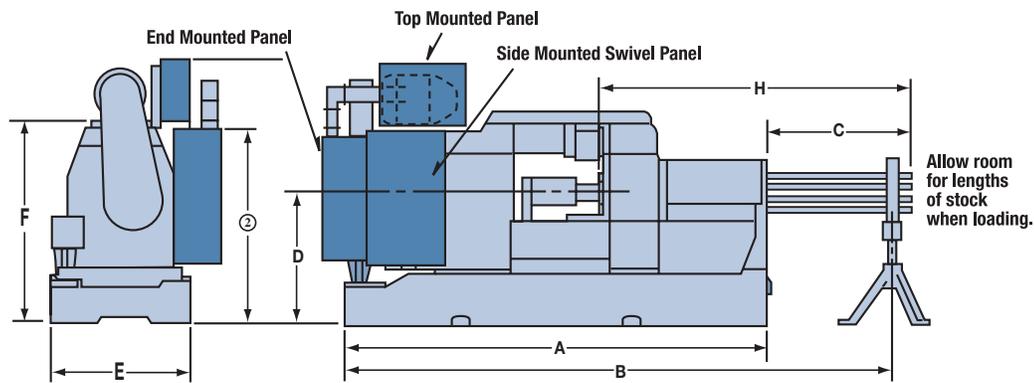
8 Spindle Specifications and Standard Equipment Specifications For Standard Machine (Inches/Millimeters, Pounds/Kilometers)

MACHINE SIZE AND MODEL	MAXIMUM COLLET CAPACITY			SPINDLE SPEEDS (RPM)			END TOOLSLIDE TRAVEL	STOCK FEED (SLIDE TRAVEL)	STANDARD MAIN MOTOR (HP)	IDLE TIME (SECONDS)	WEIGHTS APPROXIMATE	
	ROUND	HEXAGON	SQUARE	MIN.	MAX	MAX. S.S.(1)					NET (2)	EXPORT (3)
3/4" RA-8	3/4" 19.05mm	5/8" 15.87mm	17/32" 13.49mm	463	3880	2389	4-3/4" 120.65mm	7" 177.8mm	30	1.44	13,800 lb. 6,011 kg.	14,700 lb. 6,668 kg.
1-1/4" RB-8	1-1/4" 31.75mm	1-3/32" 27.78mm	7/8" 22.22mm	283	2365	2175	7" 177.8mm	7" 177.8mm	30	2	26,700 lb. 11,631 kg.	27,750 lb. 12,587 kg.
1-5/8" RBN-8	1-5/8" 41.27mm	1-13/32" 35.72mm	1-9/64" 28.95mm	168	1529	1291	7" 177.8mm	7" 177.8mm	30	2	26,900 lb. 12,202 kg.	27,950 lb. 12,678 kg.
1-5/8" RB-8	1-5/8" 41.27mm	1-13/32" 35.72mm	1-9/64" 28.95mm	163	1475	1263	8" 203.2mm	7" 177.8mm	40	2.36	31,700 lb. 14,379 kg.	33,000 lb. 14,969 kg.
2" RB-8	2" 50.8mm	1-3/4" 44.45mm	1-7/16" 36.45mm	163	1475	1263	8" 203.2mm	7" 177.8mm	40	2.36	31,950 lb. 14,492 kg.	33,250 lb. 15,082 kg.
2-5/8" RB-8	2-5/8" 66.66mm	2-17/64" 57.53mm	1-27/32" 72.21mm	137	992	851	8" 203.2mm	7" 177.8mm	40	2.79	33,600 lb. 15,241 kg.	34,900 lb. 15,830 kg.
3-1/2" RB-8	3-1/2" 88.9mm	3-1/32" 76.99mm	2-15/32" 62.69mm	81	541	....	8" 203.2mm	8" 203.2mm	60	4.67	35,200 lb. 14,742 kg.	36,500 lb. 16,556 kg.
4" RB-8	1" 101.6mm	3-7/16" 87.3mm	2-13/16" 75.42mm	56	464	....	8" 203.2mm	6" 152.4mm	60	5.3	69,800 lb. 31,661 kg.	71,400 lb. 32,387 kg.

(1) Spindle stopping machine used as standard or spindle stopper.

(2) Net weight of machine includes standard main motor less stock reel, tooling and loose parts.

(3) Export weight of machine include boxing, stock reel and standard parts.



MACHINE SIZE	A	B	C	D	E	F	H
3/4" RA	9' 5"	17' 3/4"	11' 10-3/4"	3' 9-7/8"	3' 7"	5' 6"	14' 10-3/8"
1-1/4" RB	12' 5"	20' 1"	8' 4"	4' 1"	4' 0"	6' 5"	13' 29/32"
1-5/8" RB	13' 1-5/8"	20' 6-7/8"	8' 0"	4' 4"	4' 8"	6' 4-3/8"	12' 8-29/32"
1-5/8" RBN	12' 5"	19' 10"	8' 0"	4' 1"	4' 0"	6' 5"	12' 11-11/32"
2" RB	13' 1-3/8"	20' 6-7/8"	8' 0"	4' 4"	4' 8"	7' 1-1/2"	12' 11-11/32"
2-5/8" RB	13' 1-5/8"	20' 8-7/8"	8' 0"	4' 4"	4' 8"	7' 0"	12' 10-21/32"
3-1/2" RB	13' 3-5/8"	19' 6"	6' 0"	4' 4"	4' 8"	7' 1-1/8"	11' 3-27/32"
4" RB	15' 6-1/2"	20' 7" *1	5' 11-3/4" *1	4' 7-3/4"	5' 10-1/4"	8' 0"	11' 11-17/32"

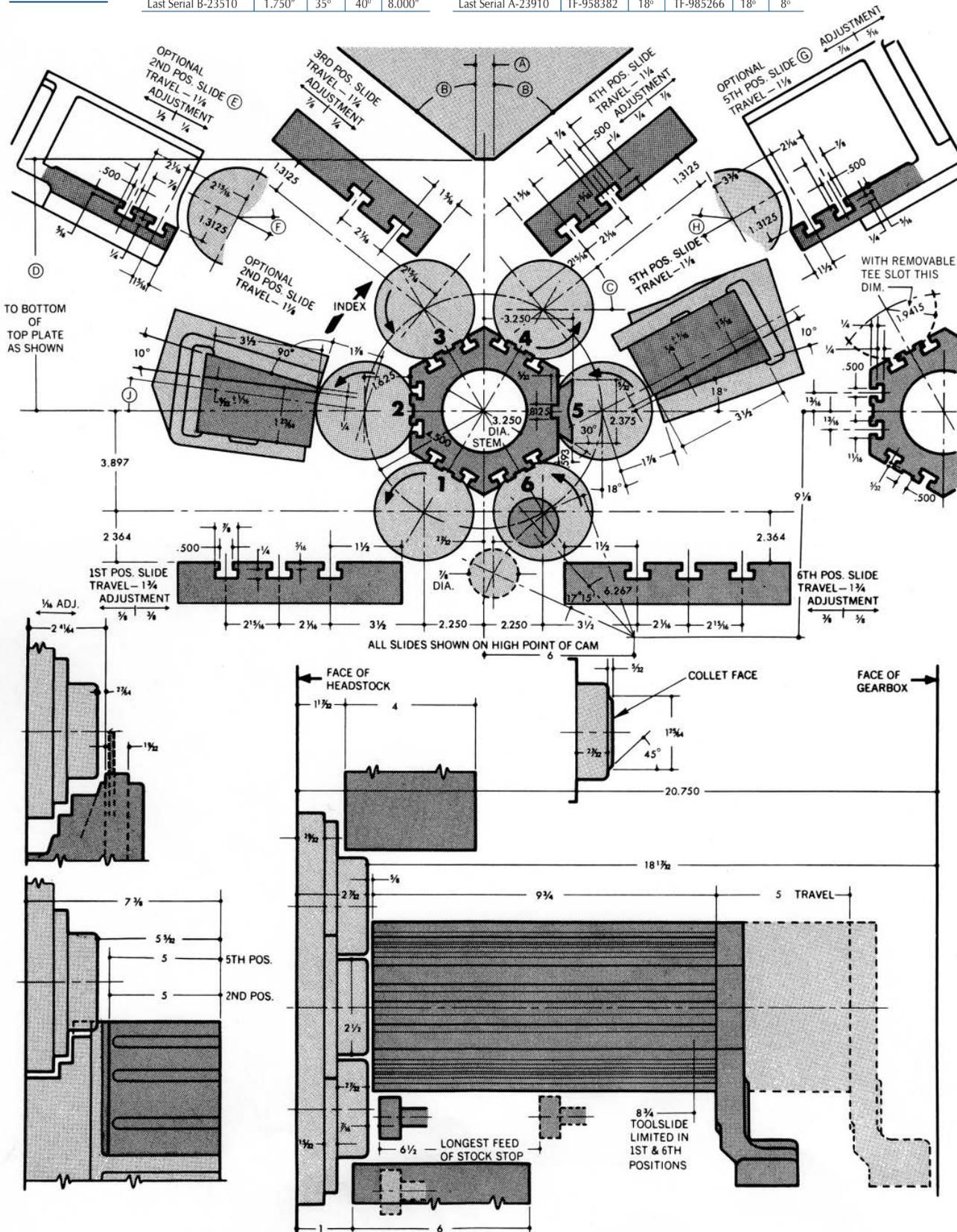
Tooling Slide Dimensions - 9/16" RA-6 / 9/16" RAN-6

Last Serial No. B-23840-N

ALL DIMENSIONS
IN INCHES

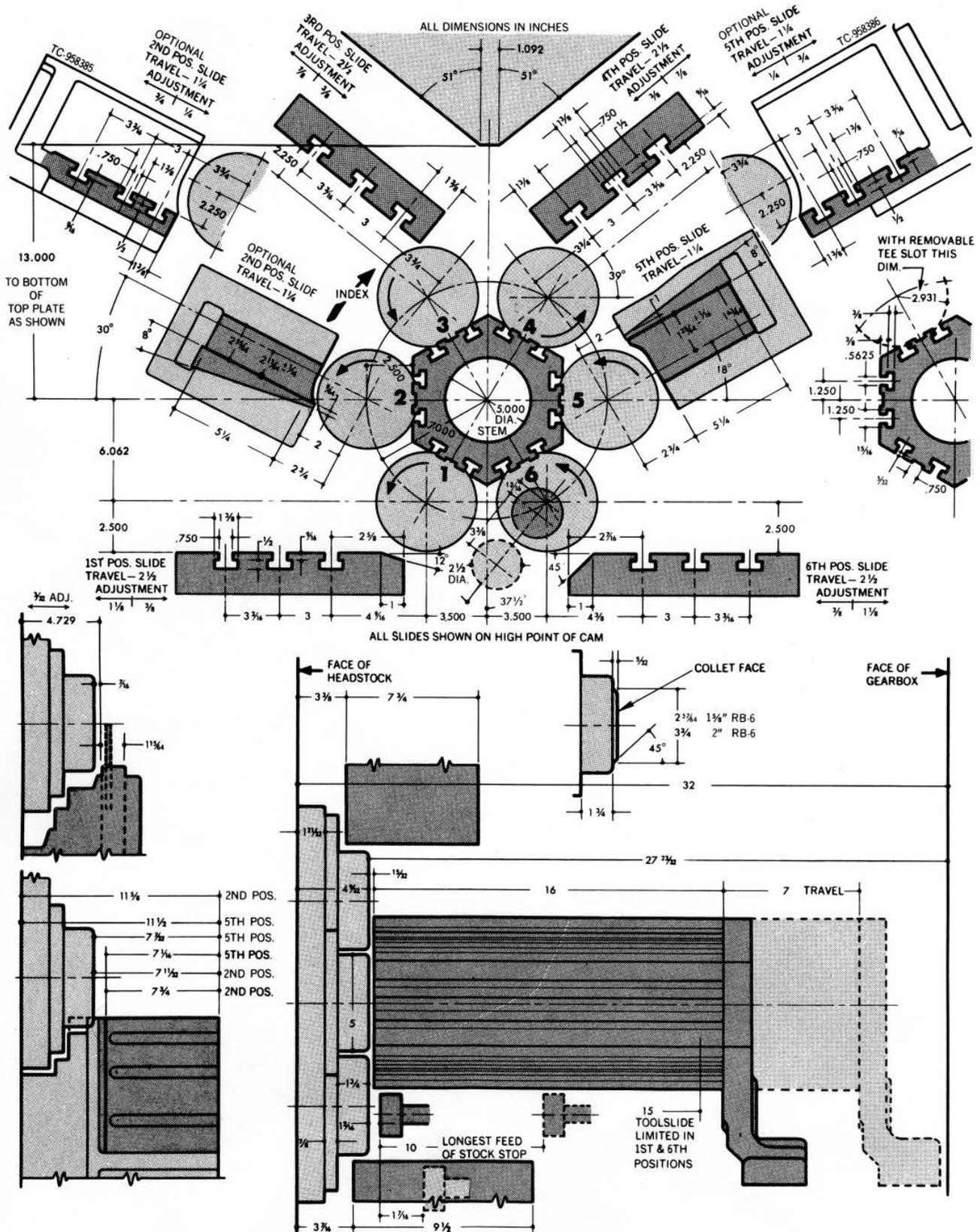
	A	B	C	D
Start Serial B-23511	.866"	30°	60°	9.375"
Last Serial B-23510	1.750"	35°	40°	8.000"

	E	F	G	H	J
Start Serial A-23911	TF-942090	40°	TF-942230	40°	30°
Last Serial A-23910	TF-958382	18°	TF-985266	18°	8°



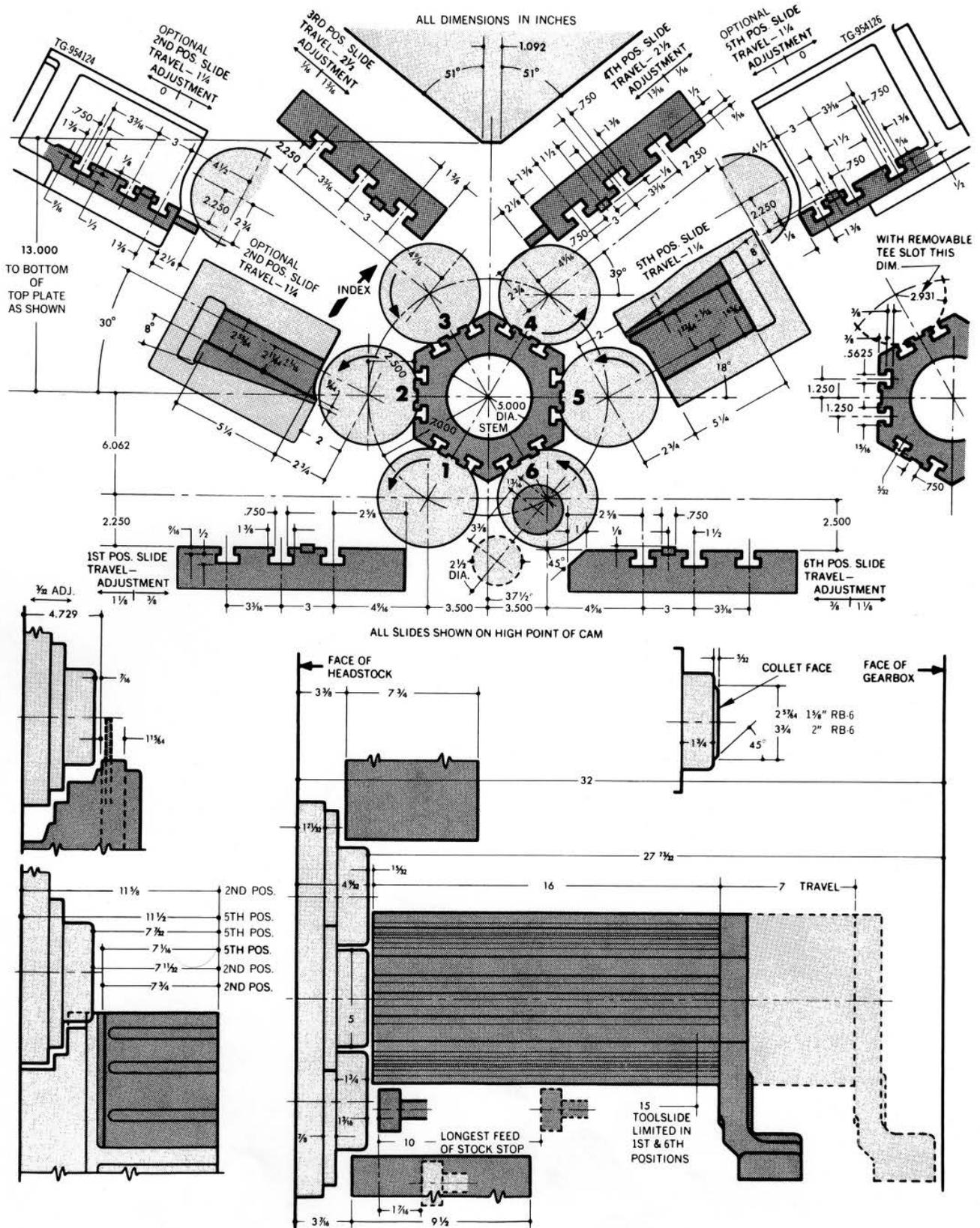
Tooling Slide Dimensions - 1-5/8" RB-6 / 2" RB-6

Last Serial No. 40426-A



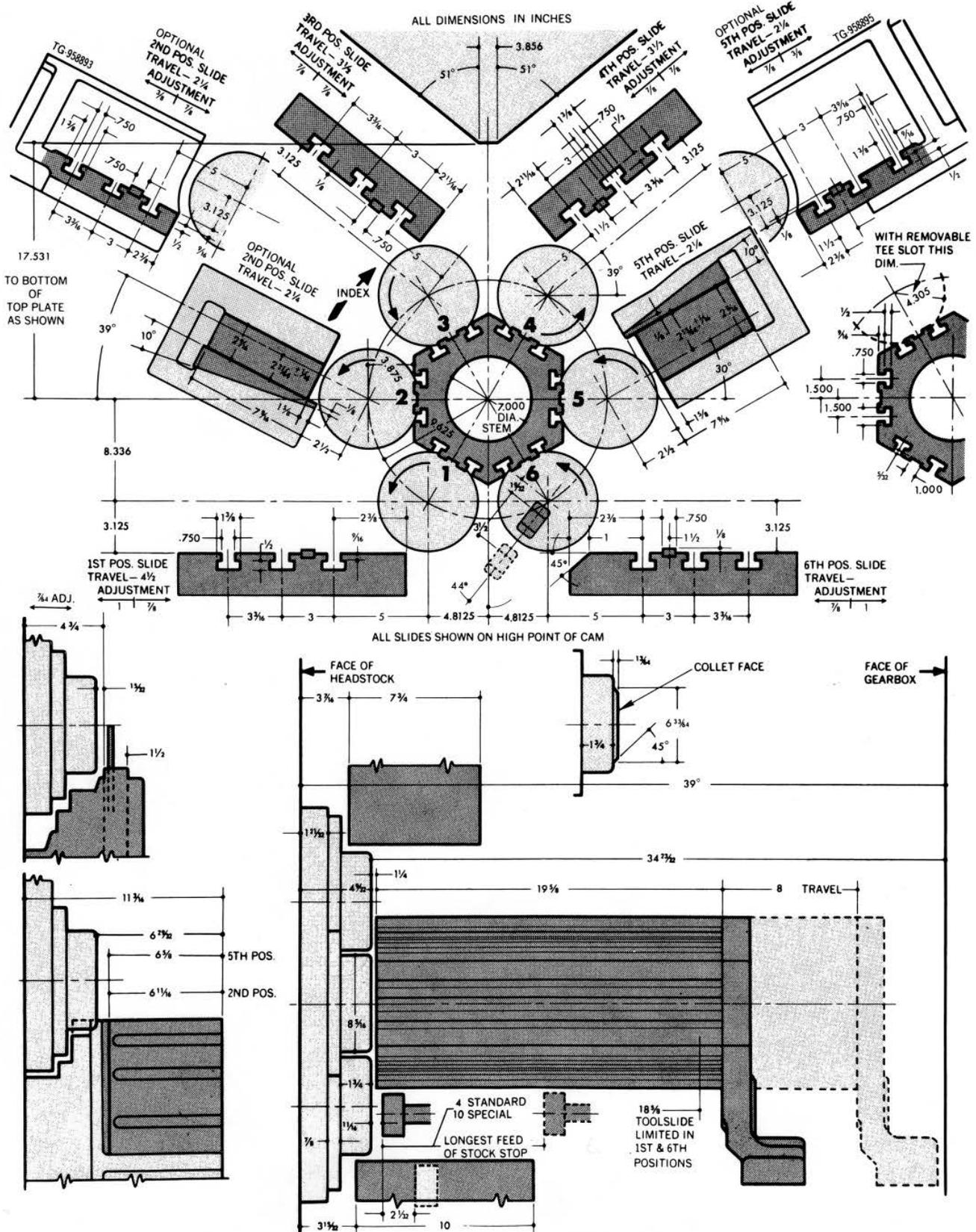
Tooling Slide Dimensions - 1-5/8" RB-6 / 2" RB-6

Start Serial No. 40427-A



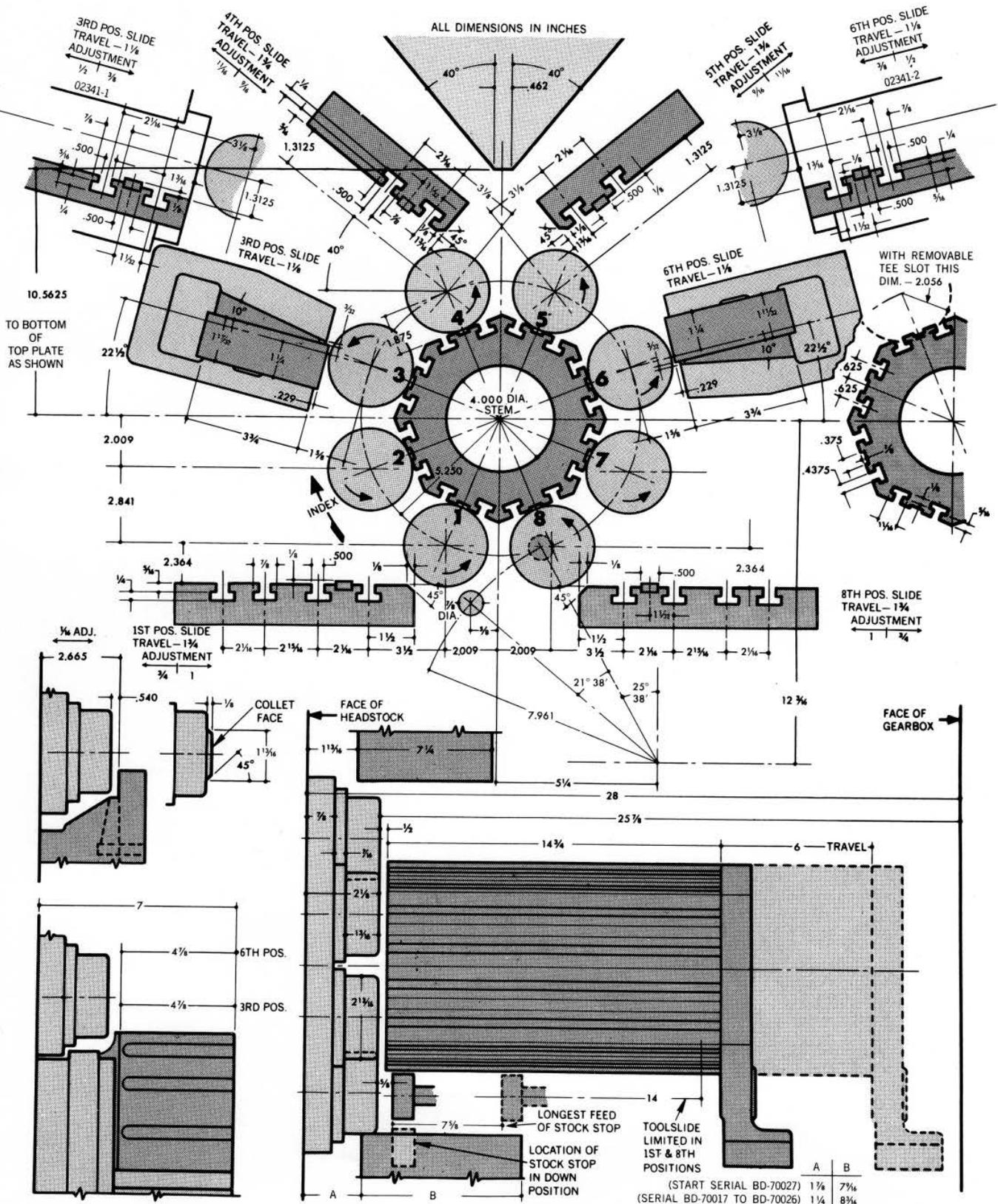
Tooling Slide Dimensions - 4" RB-6

Start Serial No. BA-92230



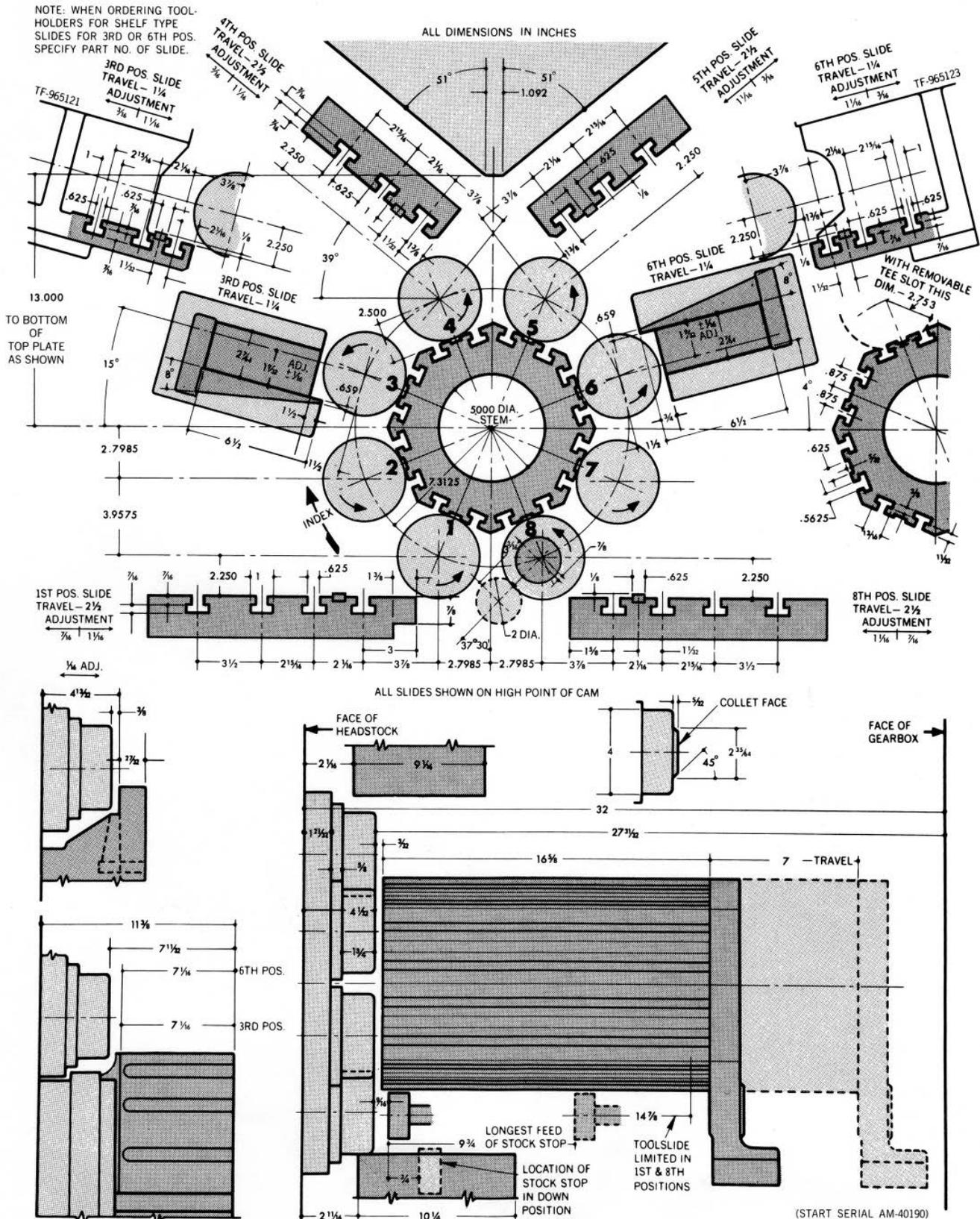
Tooling Slide Dimensions - 3/4" RA-8

Start Serial No. BD-70017



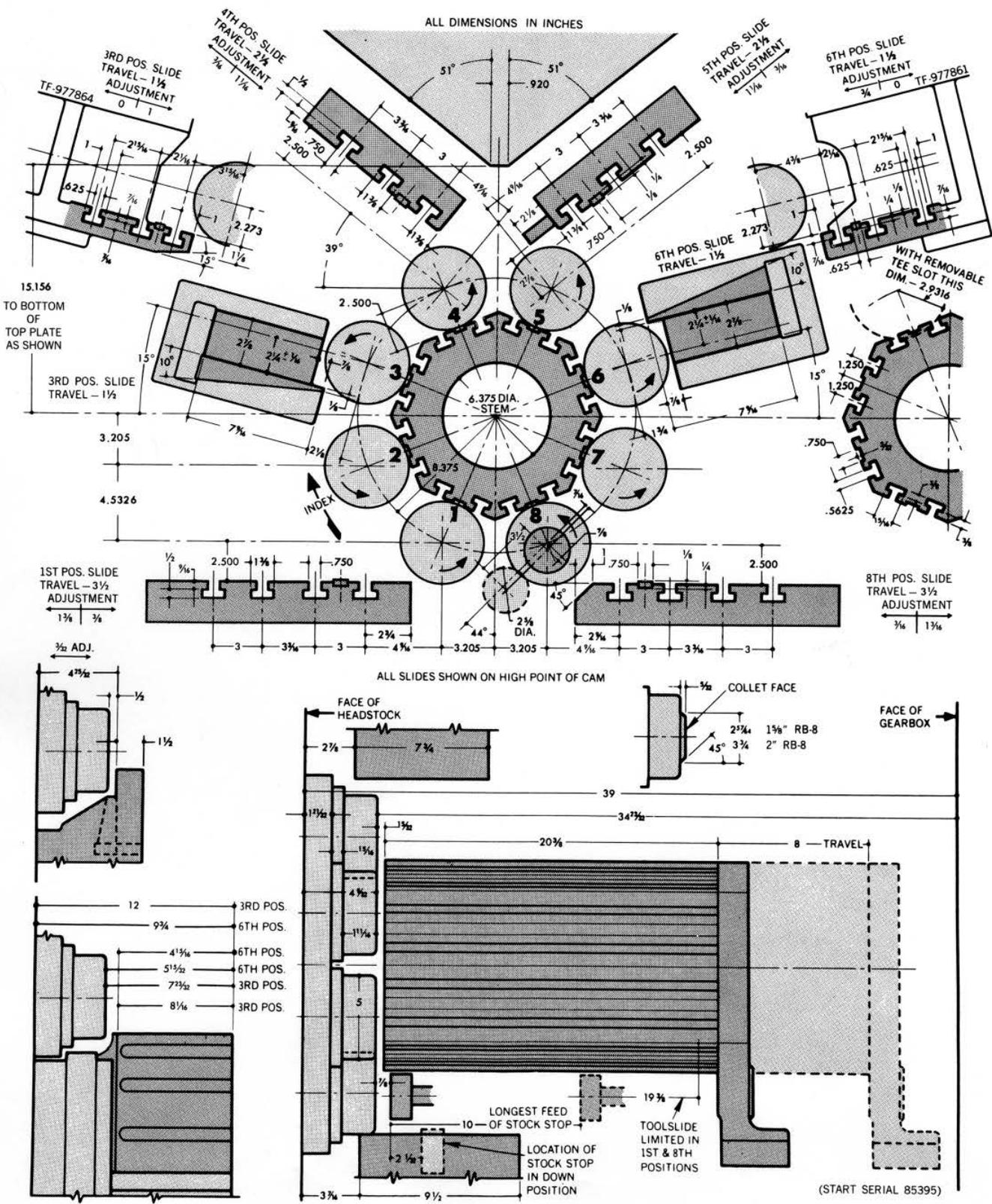
Tooling Slide Dimensions - 1-1/4" RB-8

Start Serial No. AM-40190



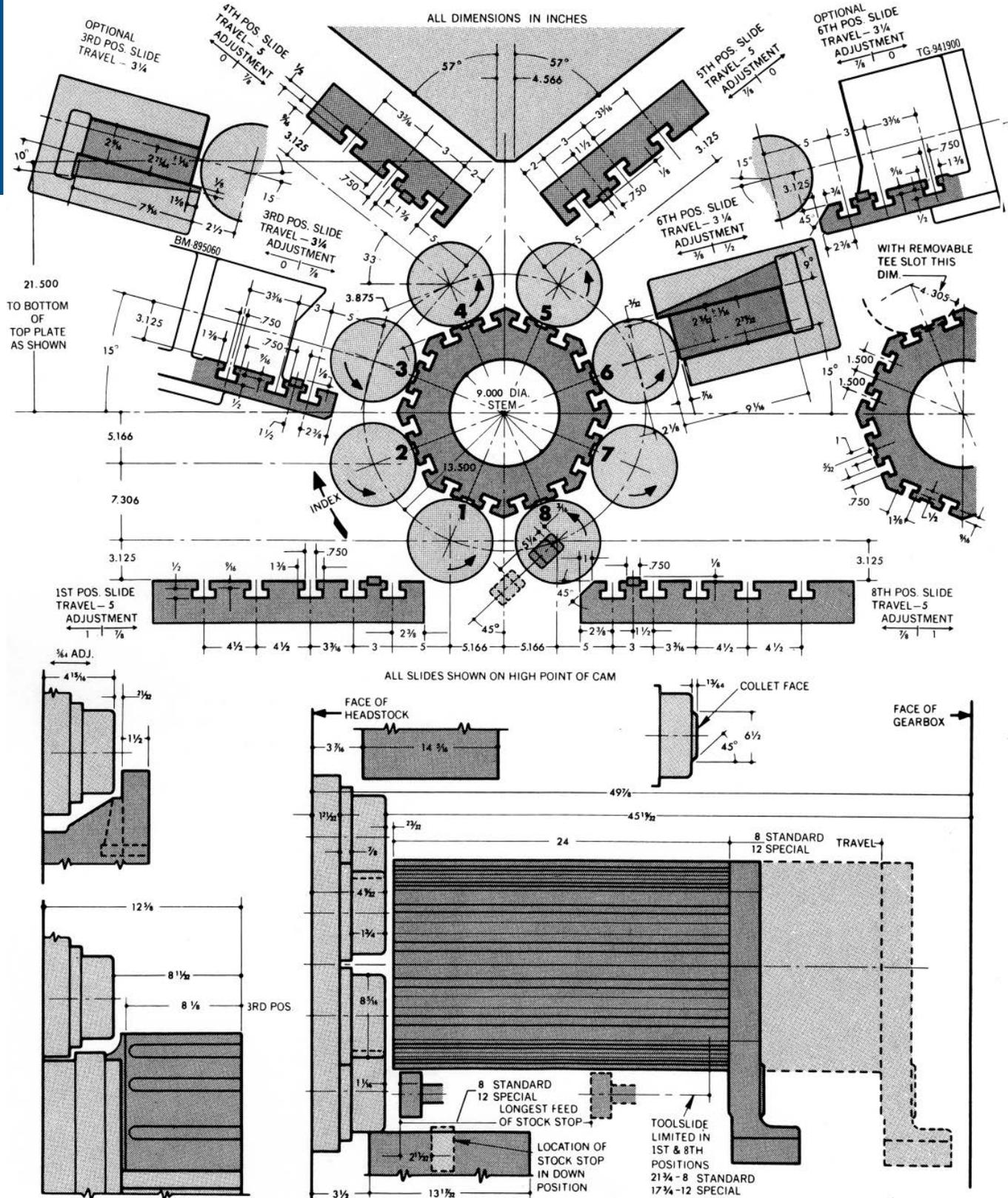
Tooling Slide Dimensions - 1-5/8" RB-6 / 2" RB-8

Start Serial No. 85395



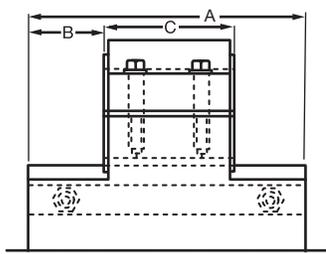
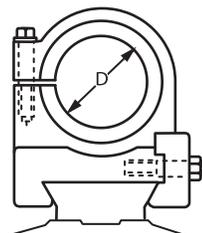
Tooling Slide Dimensions - 4" RB-8

Start Serial No. BM-88006

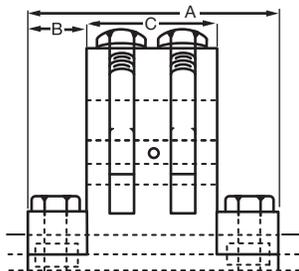
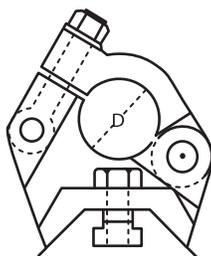


Toolslide Toolholder Dimensions

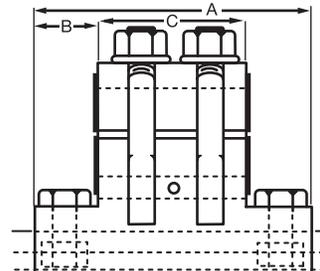
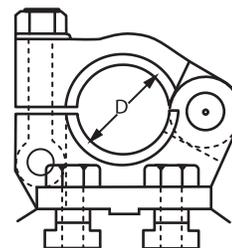
Type I



Type II



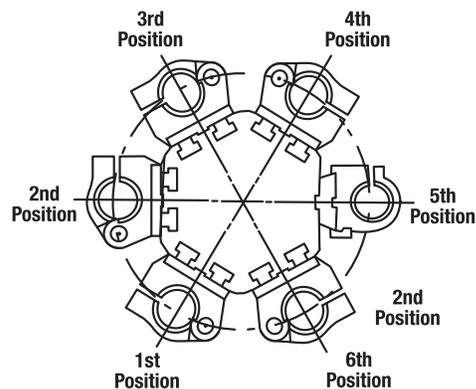
Type III



6 Spindle

MACHINE SIZE	STARTING SERIAL NUMBER	TYPE	A	B	C	D
7/16" RA-6	C-18001	III	2-1/2	1/2	1-1/2	1.000
9/16" RA, RAN-6	A-23711	III	3-7/8	15/16	2	1.500
9/16" RA, RAN-6 *	A-23711	I	3-7/8	15/16	2	1.500
5/8" RN-6	FC-16001	III	3-1/2	3/4	2	1.500
5/8" RN-6 *	FC-16001	I	4	5/8	2	1.500
1" RA, RAN-6	A-23711	III	3-7/8	15/16	2	1.500
1" RA, RAN-6 *	A-23711	I	3-7/8	15/16	2	1.500
1-1/4" RA-6	71463-A	III	5-1/4	1-1/8	3	2.000
1-1/4" RA-6 *	71463-A	I	3-3/4	7/8	2	2.000
1-1/4" RB-6	71463-A	III	5-1/4	1-1/8	3	2.000
1-1/4" RB-6 *	71463-A	I	3-3/4	7/8	2	2.000
1-3/8" AG-6	AG-1386001	III	5-1/4	1-1/8	3	2.000
1-5/8" RB-6	41559	III	5-1/4	1-1/8	3	2.000
2" RB-6	41559	III	5-1/4	1-1/8	3	2.000
2-5/8" RB-6	84071-A	III	5-5/8	1-5/16	3	2.500
3-1/2" RB-6	94296	III	5-7/8	1-3/16	3-1/2	3.000
4" RB-6	BA-92064	III	7	1-3/8	4-1/4	3.500
6" RB-6	BC-88001	III	9-1/2	1-3/4	6	4.000

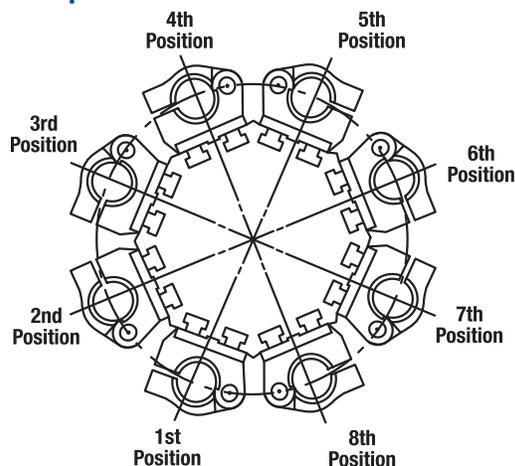
6 Spindle



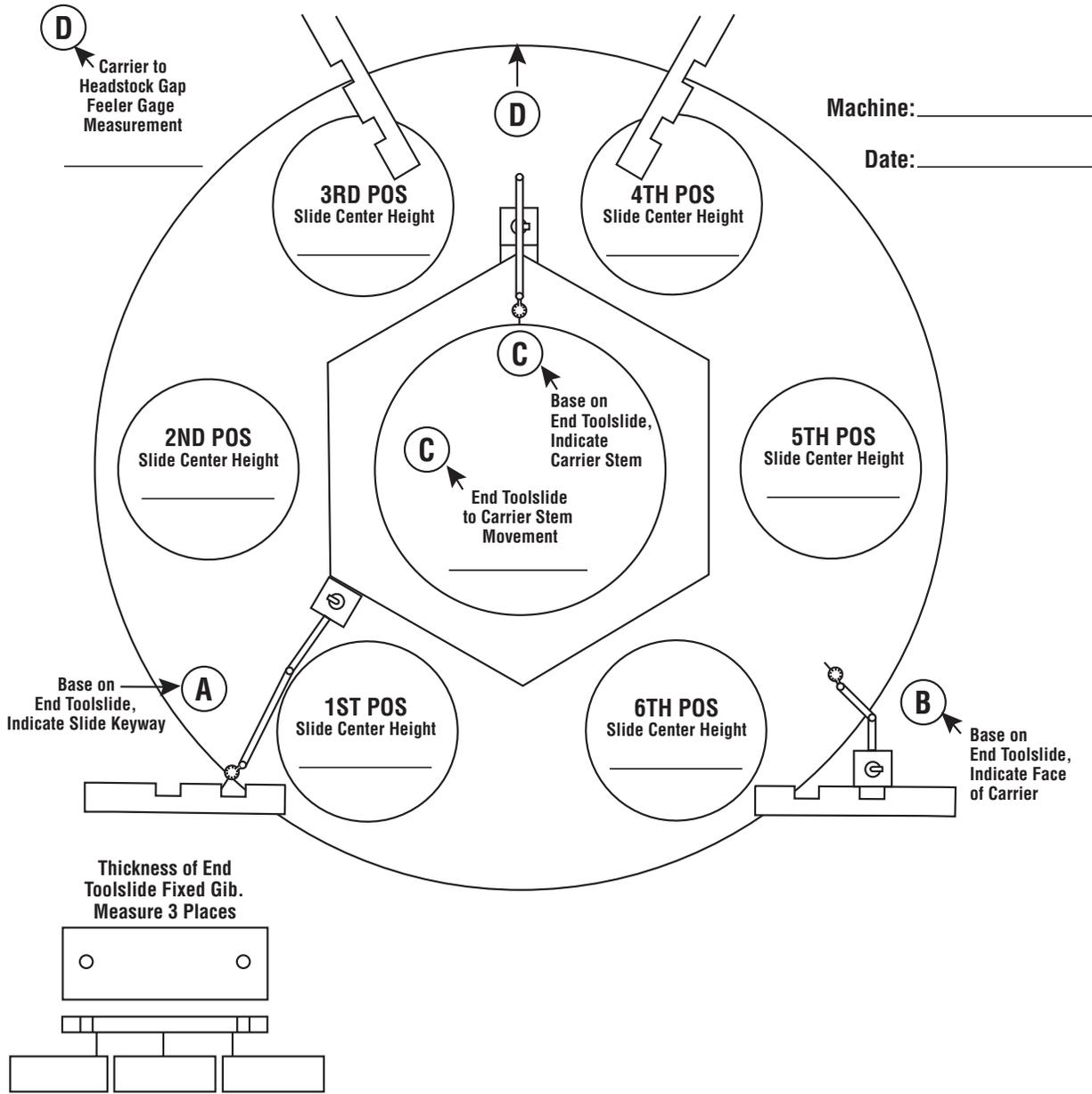
8 Spindle

3/4" RA-8	BD-70001	III	3-7/8	15/16	2	1.500
1-1/4" RB-8	AM-40001	III	5-1/4	1-1/8	3	2.000
1-5/8" RNB-8	BM-40001	III	5-1/4	1-1/8	3	2.000
1-5/8" RB-8	85076	III	5-1/4	1-1/8	3	2.000
2" RB-8	85076	III	5-1/4	1-1/8	3	2.000
2-5/8" RB-8	96155	III	5-7/8	1-3/16	3-1/2	3.000
3-1/2" RB-8	BM-940010	III	5-7/8	1-3/16	3-1/2	3.000
4" RB-8	BM-88003	III	7	1-3/8	4-1/4	3.500

8 Spindle



Machine Inspection Charts



KNEE TURN TEST LOGS

STRAIGHTNESS - _____ @ _____
(ETS GIB) TAPER LENGTH

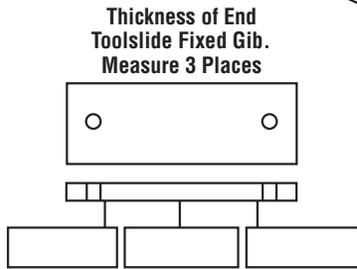
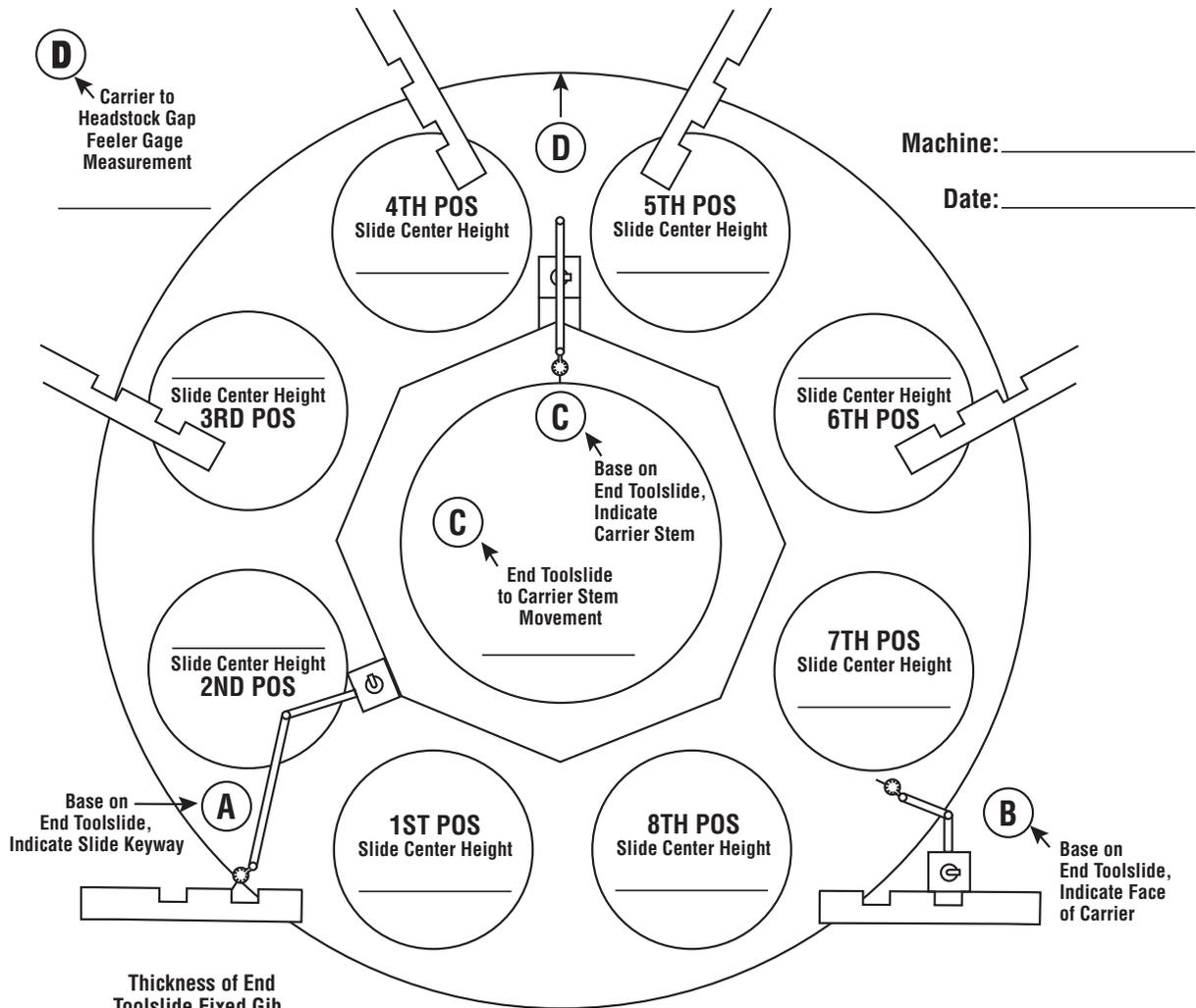
DIAMETER - LOCKING MECHANISM TEST
Measure diameter from spindle to spindle
Four complete sets

1	2	3	4	5	6

CROSS SLIDE SQUARENESS AND TAPER

Inboard - towards carrier
Outboard - away from carrier

CROSS SLIDE POS	A		B	
	TAPER INBOARD	TAPER OUTBOARD	TAPER INBOARD	TAPER OUTBOARD
1				
3				
4				
6				



KNEE TURN TEST LOGS

STRAIGHTNESS - _____ @ _____
(ETS GIB) TAPER LENGTH

DIAMETER - LOCKING MECHANISM TEST
Measure diameter from spindle to spindle
Four complete sets

1	2	3	4	5	6	7	8

CROSS SLIDE SQUARENESS AND TAPER

Inboard - towards carrier
Outboard - away from carrier

CROSS SLIDE POS	A		B	
	TAPER INBOARD	TAPER OUTBOARD	TAPER INBOARD	TAPER OUTBOARD
1				
3				
4				
5				
6				
8				

Acme-Gridley Do's

General

- **Do** establish a working preventative maintenance program.
- **Do** attend the machine while it is in operation to minimize damage in the event of a malfunction.
- **Do** clean the machine regularly when the machine is out of operation.
- **Do** check over the machine occasionally to see that all screws are in place and secure.
- **Do** use wrenches of the correct size and type for all nuts and bolts

Stock, Chucking, and Collets

- **Do** use only collets, pushers, and spool bushings that match the size and shape of the bar stock.
- **Do** chamfer bar stock ends to prevent damage to collets and pushers.
- **Do** close and lock the guard disc on the pusher tube aligning disc after each stock up.
- **Do** check that all spindles are loaded with stock, the finger holder covers are in place, and the guard disc on the pusher tube aligning disc is closed and locked before running the machine.
- **Do** adjust collets so they are tight enough to prevent push back of bar stock, but don't overtighten.
- **Do** make sure the collet in the automatic chucking position is either fully opened or fully closed while the main drive motor is running. Pressure exerted between the finger holder spool and the chucking shoe caused by a partially opened or closed collet will cause rapid wear to the chucking shoe.
- **Do** check to see that the stock stop is retracted after you disengage the feed clutch. A retracted stock stop indicates that the collet is closed.
- **Do** be sure to index the carrier periodically when running the work spindles in order to assure that the spindle bearings receive adequate lubrication.
- **Do** stop the machine after completing an index in normal operation. If the machine has been stopped at half index, be sure that the chucking shoe and finger holder spool are aligned before completing index. Disengage the high speed clutch and jog the machine to complete the index. This will minimize the load on the indexing mechanism.
- **Do** stock the machine with bars of equal length. Bars of unequal length can cause index problems, especially on larger machines.
- **Do** remove and thoroughly clean collets, collet tubes and pusher tubes regularly. Also clean the internal diameter of the work spindles. Small chips and sludge will build up otherwise.

Acme-Gridley Do's

Motor and Operating Levers

- **Do** make sure the feed clutch is disengaged when starting the main motor, unless jogging the machine during set-up.
- **Do** allow sufficient time for the lubricating system to start before engaging the feed clutch.
- **Do** disengage the feed clutch before stopping the main drive motor.
- **Do** use the high speed clutch lever only when loading stock or setting up the machine.

Cams, Clutches and Brakes

- **Do** select a stock feed cam that provides just enough stroke to feed the bar against the stop and maintain pressure, but not so much that bar bounce back occurs or the pushers are worn out prematurely.
- **Do** select end tool slide and cross slide cams to allow for length of cut plus approach and stop pressure.
- **Do** check the cam roll path for clearance when changing sets of cams. Slide a roll through the entire cam path and check that all screws are tightened.
- **Do** check periodically to ensure that all clutches are adjusted properly. When adjusted properly reasonable pressure on the hand operating lever will close the clutch completely.
- **Do** remember the high speed clutch must disengage before the brake operates.
- **Do** adjust the tension on the brake to cause a snug drag when hand cranking past the brake cam.
- **Do** be sure to put the main disconnect in the off position before doing any work on the cams, clutches or brake.
- **Do** re-adjust the cross slide and end tool slide stops every time the cams are changed.

Acme-Gridley Do's

Tools, Toolholders and Gibs

- **Do** crank or jog the machine through one complete cycle after installing an attachment or making any major adjustments to the machine before running the machine under power.
- **Do** set tool shanks as deeply into their tool holders as possible to provide maximum support for the tool.
- **Do** set tools to allow for ample chip clearance and coolant flow.
- **Do** use only the correct end tool slide tool holders for each position. Each tool holder has been line bored for a specific position on a specific machine. The bottom of the holder should be marked with the machine serial number and position.
- **Do** use caution when wrenching inside the tooling area. Sudden slips can result in serious injury. Pad sharp tools in the area being worked on.
- **Do** loosen all hold down screws when moving tool holders. Dial indicators and adjusting screws should be used for precise adjustments.
- **Do** grind and set all tools carefully to achieve optimum tool performance and life.
- **Do** check that all drill points are ground properly.
- **Do** keep dies and taps sharp to cut clean and accurate threads.
- **Do** adjust gibs on cross slides and end tool slides to provide a snug fit, but one that does not bind the slide anywhere during travel.

Acme-Gridley Don'ts

General

- **Don't** neglect to go over the machine occasionally to see that all screws are in place and to make such adjustments as seem necessary.
- **Don't** use wrenches that are not a proper fit for the nuts and bolts.
- **Don't** forget that the Acme-Gridley automatic works better and lasts longer if it gets thorough cleaning regularly.
- **Don't** clean the machine while in operation.
- **Don't** forget that, although the Acme-Gridley is a fully automatic screw machine, it should not be neglected after the wheels begin to turn.

Stock, Chucking, and Collets

- **Don't** use stock other than square, hexagon or round without special chuck equipment.
- **Don't** try to use stock of any style (round, hexagon or square) that has not had the end ground tapered, so the rods will pass through the collets properly; otherwise the collets may be broken.
- **Don't** use a long pipe on hand chucking lever in adjusting collets.
- **Don't** start the machine until the spindles are chucked up and guard over the spindle drive gears is in place at rear of headstock.
- **Don't** forget to close gate on pusher tube aligning disc after restocking machine.
- **Don't** get collets adjusted too tight; just be sure you get a good grip on the bar. Be sure pusher fingers are reasonably tight.
- **Don't** run the motor for any length of time with collet in stock feeding position half open; this will wear out your bronze chucking shoe against the revolving finger holder cover. Remember to see that your stock stop is always out of the way after you throw out the feed clutch. This indicates closed collets, because the stock stop is not removed from feeding position until after the collets are closed.

Acme-Gridley Don'ts

Motor and Operating Levers

- **Don't** start the motor with feed clutch engaged except with jog button in setting tools; give lubricating system time to start functioning properly before engaging feed clutch.
- **Don't** stop the motor without first disengaging feed clutch.
- **Don't** use the high speed lever except in setting up a job, and then only when tools are not cutting.
- **Don't** force the machine to operate should it get "hung up".

Cams, Clutches, and Brakes

- **Don't** use stock feed cams that are longer than necessary to push the bar against the stock stop; this will cause unnecessary wear on the pushers.
- **Don't** use tool slide cams with more travel than is necessary.
- **Don't** forget to check roll clearance along the cam track every time you change cams. Be sure all your cams are tight.
- **Don't** set clutches too tight; you should be able to close a clutch all the way with reasonable pressure from the hand lever.
- **Don't** permit brake to operate before high speed is disengaged; tension on brake should be enough to cause a snug drag when hand cranking past the brake cam.

Tools, Stops, and Gibs

- **Don't** set tools with excessive overhand or without adequate support; set the shanks into the tool spindles as far as the nature of the job will allow; also consider chip clearance between tools.
- **Don't** use the wrong tool holders on end tool slide. Each holder should be stamped with serial number of machine and its correct position on the slide. These numbers should face the gear box when holders are mounted.
- **Don't** use hard hammers or blocks of steel to move tool holders.
- **Don't** hit high speed steel with a hard hammer.
- **Don't** be careless about your drill points; use any reliable handbook for exact length of point.
- **Don't** be careless in grinding and setting tools, as their efficiency depends upon proper sharpening and set-up.

Acme-Gridley Don'ts

Tools, Stops, and Gibs

- **Don't** expect dies and taps to cut clean and accurate threads unless they are kept sharp.
- **Don't** forget, in specifying a die or tap, about 70 to 80% depth of thread is very little weaker than full depth, but it is very much easier to cut. This will increase threading tool life.
- **Don't** have excessive pressure on your slide stops; be sure to re-adjust them when you change cams.
- **Don't** forget to release these slide stops when adjusting the slides.
- **Don't** forget to readjust stop nuts on end tool slide when you change cams.
- **Don't** set side and end tool slide gibs too tight.
- **Don't** forget to connect your coolant lines before trying tools, when setting up a job.

Lubricating and Coolant Oils

- **Don't** neglect your oil supply. Ample lubrication is necessary to the machine operation.
- **Don't** forget to keep well lubricated all moving parts not served by the automatic system.
- **Don't** use cheap oils or substitutes. They are expensive in the long run.
- **Don't** forget to look at your sight flow oil gauge to be sure there is a steady stream of oil flowing when machine is running.
- **Don't** neglect your cutting oil; be sure you have enough in the reservoir. Make sure it is the proper coolant for the job, as production and tool life depend a great deal on this coolant.
- **Don't** forget to remove coolant oil from the pan occasionally and give this reservoir a thorough cleaning to remove all sediment and fine chips.
- **Don't** forget to have the screens over the lubricating and coolant oil intake pipes clean and in place at all times.
- **Don't** forget to crank the handle on your lube oil filter at least twice a shift.

Machine Malfunctions

Machine Malfunctions

Malfunction	Cause	Corrective Action
1. Excessive chucking shoe wear. (Observed during daily machine inspection.)	<ul style="list-style-type: none"> a. Stopping feed before collet fully closed. Poor operator technique. b. Collet adjusted too tight, causing excessive pressure during closing. c. Oversize stock preventing complete collet closing. d. Finger holders not operating properly, preventing complete collet closing. e. Rough or bent finger holder chucking spool. f. Insufficient lubrication to chucking shoe. 	<ul style="list-style-type: none"> a. Be sure collet is closed before stopping machine b. Loosen collet setting if too tight. c. Replace oversize stock. d. Repair finger holders. e. Repair or replace finger holder chucking spool. f. Repair lubrication line.
2. Cycle time too slow. Reduces production rate. (Observed when checking cycle with a stop watch.)	<ul style="list-style-type: none"> a. Low speed cam set too early. b. High speed cam set too late. c. Feed clutch or high speed clutch slipping. d. Brake cam incorrectly set. e. Excessive brake tension. f. Loose large worm wheel friction plate. g. Loose V-belt. h. Incorrect spindle speed or feed change gears. Incorrect spindle speed or feed range gears (new setup only). 	<ul style="list-style-type: none"> a. Reset low speed cam. b. Reset high speed cam. c. Adjust or repair feed clutch or high speed clutch. d. Reset brake cam. e. Reset brake band adjusting nuts. f. Readjust large worm wheel friction plate. g. Adjust belt tension. h. Check against gear chart and install correct gears.
3. Cycle time too fast. Can cause tool breakage, excessive tool wear, or rejected parts (Observed when checking cycle with a stop watch.)	<ul style="list-style-type: none"> a. Low brake tension or incorrect cam location. b. Low speed cam set too late. c. High speed cam set too early. d. Incorrect spindle speed or feed change gears. Incorrect spindle speed or feed range gears (new setup only). 	<ul style="list-style-type: none"> a. Adjust brake tension or reset brake cam. b. Reset low speed cam. c. Reset high speed cam. d. Check against gear chart and install correct gears.
4. Stock does not feed. Also see: "Defective - Parts too short (one or more spindles)	<ul style="list-style-type: none"> a. Collet does not open because of dirt and/or chip accumulation. b. Collet does not open because of worn collet seat. c. Collet does not open because of impregnated brass or aluminum in collet seating surfaces. d. Collet does not open because of malfunctioning finger holder. e. Stock feed bounces. 	<ul style="list-style-type: none"> a. Clean collet and collet tube. b. Replace collet, collet seat or both. c. Clean or flash chrome collet seating surfaces. d. Repair finger holder. e. Reduce stock feed cam length.
5. Main drum shaft stops rotating.	<ul style="list-style-type: none"> a. Feed clutch slipping. b. High speed clutch slipping. c. Roll clutch failure. d. Large worm wheel slipping. 	<ul style="list-style-type: none"> a. Adjust feed clutch. b. Adjust high speed clutch. c. Replace roll clutch. d. Adjust large worm wheel.
6. Entire machine stops but main drive motor keeps running.	<ul style="list-style-type: none"> a. Broken shear pins in pulley drive. replace shear pins. 	<ul style="list-style-type: none"> a. Correct cause of problem and
7. Machine stalls during index.	<ul style="list-style-type: none"> a. Machine not level. b. Stock reel out of line. 	<ul style="list-style-type: none"> a. Level machine. b. Align stock reel.
8. Spindle carrier does not lock after index.	<ul style="list-style-type: none"> a. Broken locking pin spring. 	<ul style="list-style-type: none"> a. Replace locking pin spring.
9. High speed clutch not releasing properly.	<ul style="list-style-type: none"> a. Lubricating oil too heavy. b. Lubricating oil contaminated. c. Worn or broken clutch components. 	<ul style="list-style-type: none"> a. Replace lubricating oil. b. Flush machine and replace lubricating oil. c. Replace worn or broken parts.

Non-conforming Parts

Problem	Cause	Corrective Action
Defect - Parts too long (all spindles)		
Setup error.	a. Incorrectly set stock feed stop. b. Misadjusted facing tool or cutoff tool.	a. Reset stock feed stop. b. Readjusting facing or cutoff tool.
Defect - Erratic or varying length between parts		
Excessive spindle carrier end play.	a. Long term wear.	a. Adjust spindle carrier end play.
Worn spindle bearing.	a. Long term wear (one, several or all spindles)	a. Replace spindle bearing. Experienced mechanic may be able to readjust.
Defect - Parts too short (all spindles)		
Setup error.	a. Incorrectly set stock feed stop. b. Misadjusted facing or cutoff tool. c. Stock feed cam too short. d. Stock feed cam too long. Stock bounces off stop. e. Insufficient stock feed spring pressure.	a. Reset stock feed stop. b. Readjust facing or cutoff tool. c. Replace stock feed cam. d. Replace stock feed cam. e. Readjust stock feed spring pressure.
Defect - Parts too short (one or more spindles)		
Short feed out. Bar does not reach stock stop.	a. Inadequate pusher gripping force. b. Oversize pusher. c. Bent or oversize bar. d. Stock feed cam too short. e. Insufficient stock feed spring pressure.	a. Adjust pusher tension or replace pusher. b. Replace pusher. c. Replace bar. d. Replace stock feed cam. e. Readjust stock feed spring pressure.
Stock pushing back into collet.	a. Collet improperly adjusted. b. Oversize collet c. Worn or broken collet or collet seat. d. Undersize stock. e. Excessive end pressure from dull tools. f. End tools hitting work at high speed. g. Collets not gripping evenly	a. Readjust collet. b. Replace collet. c. Replace collet or collet seat. d. Replace undersize bars. e. Replace dull tools. f. Adjust high speed cam or tooling g. Check finger holders for broken pins
Defect - Poor concentricity (consistent error on all output parts)		
Setup error.	a. Misaligned tool. b. Wrong tool. c. Improperly set slides. d. Poor rigidity of part. e. Incorrect tooling sequence.	a. Readjust tool. b. Replace tool, change style of tool to correct concentricity. c. Reset slides. d. Rearrange or design tooling. e. Rearrange or design tooling.
Defect - Poor concentricity (varies part to part)		
Excessive side pressure.	a. Dull or chipped tool. b. Excessive feed.	a. Replace tool. b. Consider need for side pressure support or reduce feed.
Incorrect tool.	a. Wrong style or grind of tool. b. Tool deflection.	a. Replace or alter tool grind. b. Reduce tool overhang or change grind.
Faulty slide system.	a. Worn slide components.	a. Refit or replace slide components as needed.
Wobble in spindle.	a. Worn spindle bearings.	a. Replace spindle bearings. Experienced mechanic may be able to readjust.
Defective collet.	a. Loose collet. b. Worn collet. c. Eccentric collet.	a. Adjust collet. b. Replace collet. c. Replace collet.

Non-conforming Parts

Non-conforming Parts

Problem	Cause	Corrective Action
Defect - Incorrect formed dimension (consistent error on all output parts)		
Setup error.	<ul style="list-style-type: none"> a. Improper tool. b. Improperly adjusted gibs. c. Incorrectly set stop screws. d. Insufficient clean up stock. 	<ul style="list-style-type: none"> a. Replace tool. b. Check for dirt accumulation preventing proper setting. Clean and reset. c. Reset stop screws. d. Reset roughing tool.
Defect - Variations in formed dimensions (vary part to part)		
Faulty cross slide operation.	<ul style="list-style-type: none"> a. Worn cross slide components. b. Accumulated chips occasionally c. Loose cross slide cams. 	<ul style="list-style-type: none"> a. Replace or readjust cross slide components. b. Rearrange tools so chips can't accumulate. c. Tighten cams as needed.
Excessive side pressure.	<ul style="list-style-type: none"> a. Tool above center. b. Worn or chipped tools. c. Excessive feed. d. Varying feed rate. 	<ul style="list-style-type: none"> a. Readjust tool. b. Replace poor tools. c. Consider need for side pressure support or reduce feed. d. Correct erratic feed motion.
Tool vibration (also causes chatter, poor surface finish and short tool life).	<ul style="list-style-type: none"> a. Tool below center. b. Worn or loose tool holding device. c. Cut too wide. d. Insufficient tool support. e. Insufficient work support. f. Loose collet. g. Insufficient bar stock support. h. Loose gibs, rollers, roll blocks or cams. i. End play in cross slide shaft. 	<ul style="list-style-type: none"> a. Readjust tool. b. Tighten or replace tool holding device. c. Reduce tool width. d. Add necessary tool support. e. Add necessary work support. f. Readjust collet. g. Add bar stock support. h. Tighten or replace as needed. i. Remove end play.
Spindle wobble.	<ul style="list-style-type: none"> a. Worn spindle bearings (one or more spindles). 	<ul style="list-style-type: none"> a. Replace spindle bearings. Experienced mechanic may be able to readjust.

Special Note: When a job gets so far out of control that problems are difficult to analyze or each solution creates another problem, it is time to start from the beginning. First check for any external problems and recheck every setup detail. When you positively eliminate the possibility of external or setup errors, analyze the production run as follows:

1. Remove the chuck opening cam and block the feed slide. Run the machine until all pieces are cut off.
2. Feed out one piece manually.
3. Run this piece through the first position. Stop the machine and examine the part. Do not change any adjustments.
4. Repeat the third step above for all positions. Keep notes on the results at each position.
5. When more than one tool operates at a position, check to see if one tool influences the accuracy of another. For example, side pressure from a forming tool can cause a drill to cut oversize or off center. If this problem is suspected, remove the offending tool, run the part through the position and note the results.
6. An accurate list of when and how defects occur will help locate the troubles and causes so they can be solved.

Clutch and Carrier End Play Adjustment

Clutches – General

Disc type clutches are used on the constant speed shaft, large worm shaft and threading attachments. They are also used on spindle stopping machines for independent spindle stopping. The main disconnect must be in the OFF position before any adjustments to the clutches are made. Several styles of adjustable clutches are used, and each has their own method for adjusting pressure. To determine correct pressure shift the clutch to assure that the shipper sleeve has full travel. A hesitation of the shipper sleeve as it engages the clutch indicates that the clutch is properly adjusted.

Clutches – Adjusting Procedure

Twin Disc Clutch –

If slippage occurs disengage the locking pin from the lock plate and tighten the adjusting ring until the locking pin engages the next hole in the lock plate. Check the pressure of the clutch, and repeat this procedure until the correct pressure is obtained.

Pullmore Clutch –

If slippage occurs disengage the clutch and spread the pressure plate away from the adjusting collar enough to clear the teeth. Turn the adjusting collar one tooth at a time until the correct pressure is obtained when the clutch is engaged.

Power Reverse Clutch –

Larger machines are provided with a power reverse clutch to drive the machine in reverse under power. Old style clutches are adjusted by releasing the locking screw and turning the adjustment spider clockwise. The adjustment spider should be rotated approximately one quarter of a turn, the locking screw tightened, and the clutch cycled to see if there is enough pressure to drive the machine.

Do not exceed one quarter of a turn between adjustments to avoid damage.

Newer style machines are equipped with Twin Disc type clutches. See above.

Power reverse is only active through the approach of the end tool slide and the cutting portion of the cycle.

Note: After clutch adjustments are made it is important to check the clutch for proper adjustment before running the machine under power.

Carrier End Play Adjustment

Excessive end play in the spindle carrier can cause defective parts. Control the end play with the adjusting nut located on the end of the carrier stem immediately inside the first wall of the gearbox.

Jog the machine into position so that the locking pin is free and the carrier can move.

Loosen the binder screw on the carrier adjusting nut enough to allow the nut to turn.

Tighten the nut to draw the carrier toward the gearbox until the end play is removed.

Do not over tighten the nut or bearing damage will occur.

Tighten binder screw and jog the machine to complete the index.

Operator Machine Care

National Acme Preventative Maintenance Check List

Operator Machine Care

- The lube oil filter handle should be turned at least twice each shift
- Frequently check the oil flow in the sight glass.
- At the beginning of every shift check for adequate coolant flow to all tooling cutting edges and that coolant flow is directed away from spindles.
- Clean dirt and grit from bars before loading into the machine and then coat with grease. This will aid in reducing noise and load on the feeding mechanism.
- Before loaded into the machine, all leading ends of bars should be chamfered for easier entry into pushers and collets.
- Both the floor and machine should be kept free of accumulated oil, dirt and debris.
- The main disconnect should be turned to OFF at the end of each shift. Clean slides, gibs and toolholders of all chips and grit at the end of each shift. Do not use an air hose to clean. High pressure air is dangerous and drives grit into slides, gibs and other mechanisms.
- DO NOT ATTEMPT TO FORCE THE MACHINE TO OPERATE if there is a malfunction. If there is a hang up, poor indexing, improper clutch operation or any other problem turn OFF the machine and contact a supervisor.
- Clutches must be properly adjusted for machine operation.
- Collet adjustment should be checked and readjusted if necessary when loading new bars.
- After loading new bars pusher tube guard disc should be closed and locked before starting machine.
- Do not run machine with feed OFF and collet half OPEN or half CLOSED. This will result in rapid shoe wear.
- When the machine is stopped on half index the chucking shoe and spool must be in alignment before completing index.
- After each cam change, the roll clearance between the lead and guard cams should be checked.
- Each time a cam is changed, check the condition of cam roll and stud. The path should be greased generously.
- Check the coolant level in pan reservoir.
- Check the coolant intake pipe or pump screen and clean as necessary.
- Check grease fittings and add grease as necessary.
- Check chucking shoe for wear. Oil drip should contact shoe.
- Check condition and alignment of the stock reel and stock reel stand.
- Check delivery of lubricating oil to the spindle bearings.
- Cycle time with a stop watch. If too fast or slow refer to page 562.

Daily Maintenance

- Check the lubricating oil level in the main reservoir.
- Check the oil level in coolant pump and chip conveyor gearboxes.
- Check the oil level of independent motor driven accessories.
- Check the oil supply in oil reservoir of stock reel support.
- Check the oil supply in air line lubricator.
- Check the oil supply in all oil cups and those in the stock reel support.
- Check dripping rate for all oil cups.

Bi-Weekly Maintenance

- Air filter trap should be drained. Or more often as needed.
- The screen of lube oil intake pipe should be cleaned.
- The sludge should be drained from the oil filter.
- Inspect the brake adjustment and clutch adjustments.

National Acme Preventative Maintenance Check List

Monthly Maintenance

Pneumatic System:

- Air pressure gage settings should be checked.
- Air cylinders should be checked for response and leaks.

Hydraulic System:

- Oil pressure gage settings should be checked.

Spindle Carrier:

The following should be removed, cleaned, inspected and replaced:

- Collets
- Collet tubes (for cracks)
- Pusher
- Pusher tubes
- Inside of the spindles

Inspect the following:

- Collet seats for cracks and wear
- Collet tubes and nuts
- Pusher tubes
- Stop screws
- End toolslide and gib adjustment
- Clutches, brakes and yokes (or shoes) of spindle stopper
- Operating shoes

Rear end

Check for wear and damaged condition of:

- The stock reel and stock reel stand
- Stock reel slide, bushings, rolls and studs
- Stock reel feed pusher plate
- Stock feed slide ring
- Stock feed slide pusher pull back roll
- The spool guard inserts
- Index slots in index disc
- Roll(s) and stud on revolving arm
- Roll and stud on locking pin lever
- Locking pin lever stud to be sure it is locked
- Chucking slide, bushings, roll and stud
- Chucking shoes
- Locking pin spring
- Stock feed shaft
- Finger holders for broken or worn fingers, pins rolls and cams
- Hand chucking shoe alignment with shoe in automatic chucking slide

Gearbox

Check for wear, damage and adjusted condition of:

- Spanner nuts
- Bearings
- Clutches
- Roll clutch
- Gears – for tooth wear and mounting
- Shafts and splines
- Pulleys and V-belts
- Brake band and lining
- Clutch operating yokes or shoes

- End toolslide push rod roll nut (nut must have 0.003/0.005" end shake, do not lock solid)
- The end toolslide pusher arm and pusher roll
- Stop pressure for end toolslide
- Check roll clutch shaft
- Large worm and worm gear; small worm and work shaft.
- Constant speed shaft
- Spindle drive shaft

Drum shafts

Inspect for the following:

- Broken arms
- Worn keys or keyways
- Broken taper pins
- Damaged bearings

Quarterly Maintenance

- Lube oil filter should be removed and cleaned. Check to be sure the relief valve is operating.
- Remove the coolant from the pan and clean any fine chips or sediment from the pan. Add new coolant.
- Check adjustments on cross slide gib.
- On long runs when cams aren't changed frequently, remove cross slide drums and clean drums and drum cavity.

Annual Maintenance Schedule

National Acme Preventative Maintenance Check List

Semi-Annual Maintenance

General:

Drain clean, flush and refill the following:

- Reservoir for main lube oil. Also check the screen condition.
- Gearboxes on the independent motor driven accessories. Includes conveyor, pump, etc.
- Check the filter screen condition.

Spindle Carrier:

Check the following:

- Spindles for excessive end play
- End toolslide may need rebushing. To check for this put magnetic base indicator on the carrier and lift toolslide.
- Check carrier end play – locking pin partially out and carrier free to move, end play may be checked by putting magnetic base on headstock and indicator stylus on carrier. Apply lateral force on the carrier by prying with a 3" X 3" X 6" oak pry bar. Adjust end play per page 565 if necessary.

Drum Shafts

- There should be zero backlash in bevel gears between the large drum shaft and the cross slide drum shaft. It may be necessary to remove some shim material from the cross slide drum shaft housing to give zero backlash.

Electrical Controls

Inspect the condition of:

- Switches
- Solenoid valves
- Wiring
- Panel box
- Motors

Annual Maintenance

General:

Drain clean, flush and refill the following:

- High speed, feed and threading clutches. Check plates, pins, fingers and springs. Replace worn parts. Clean, lubricate, reassemble and readjust.
- Roll clutch. Check rolls, springs and cam surfaces. Replace worn parts. Clean, lubricate and reassemble.

Inspect:

- The attachments for alignment with work spindles
- Level of machine
- For damaged cross slides, top slides or intermediate slides.
- Condition of levers, rolls and studs.
- Condition of stock stop
- Condition of chip conveyor

Lubricating and Coolant System

Check:

- Lubricating pump
- Coolant pump
- Oil/coolant lines
- Oil/coolant filter in reservoir

Attachments

Check condition of:

- Threading attachments
- Reaming attachments
- High speed drilling attachments
- Pick-up attachments
- Any other special attachments

Air and/or Hydraulic Operated Mechanisms

Check:

- Gages, lines and valves
- Condition of cylinders
- Tightness of fittings
- Bowl traps
- Pump pressure
- Accumulators
- Distributors