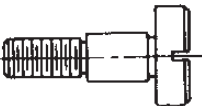
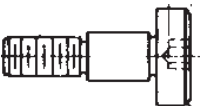
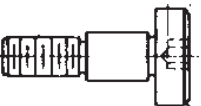
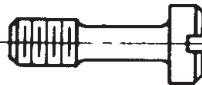




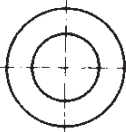
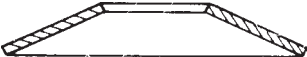

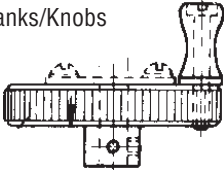

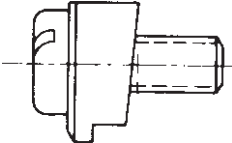

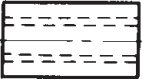


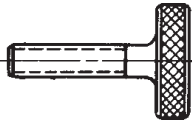
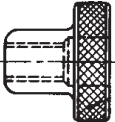
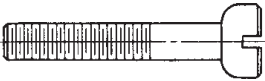


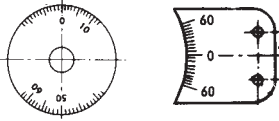


PIC Design offers an extensive line of precision Hardware which contains various items for fastening and/or locating of precision industrial components. The hardware is manufactured from Stainless Steel to the PIC high quality standards, in either inch or metric styles of thread, diameter and length.

The following pages have been included as a technical guide to aid the designer or engineer in selecting the appropriate screw type and size. The drill and tap data in inch for both the UNF and the UNC pieces,

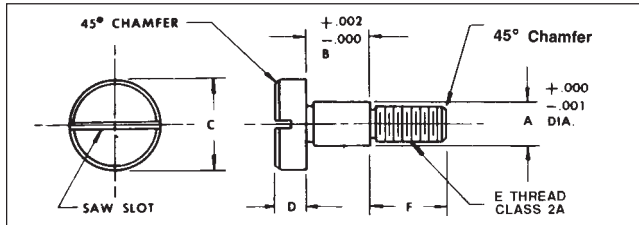
selects the correct drill to be used for the appropriate tap. For the metric ISO thread, the correct drill is recommended for the thread size and pitch.

The screw head detail data for both inch and metric heads enables the designer to select the appropriate type of head required and to allow for the clearance of the heads.

Slotted head shoulder screws. 	Socket head shoulder screws. 	Phillips head shoulder screws. 	Captive Screws 
No-Mar set screws 	Silver-Grip set screws 	Cup point set screws 	Brass tip set screws 
Precision washers 	Belleville spring washers 	Curved washers 	Cranks/Knobs 
Retaining rings 	Motor mount cleats 	Spacers 	Standoffs 
Dowel pins 	Woodruff keys 	Knurled thumb screws 	Knurled thumb nuts 
Swivel studs, nuts and washers 	Handles 	Springs 	Dials and verniers 

SLOTTED HEAD SHOULDER SCREWS

303 & Hardened 416 Stainless Steel



Material: 303 Stainless Steel — 43XX
416 Stainless Steel — 45XX (Hardness 26-32 RC)

A	B	C	D	E	F	303 P / N	416 P / N
1/8 .1245	1/8-.1255	1/4	1/8	# 4-40	5/32	4310	4510
	3/16-.1880					4311	4511
	1/4-.2505					4312	4512
	5/16-.3130					4313	4513
	3/8-.3755					4314	4514
5/32 .1557	1/8-.1255	9/32	1/8	# 6-32	3/16	4361	4561
	3/16-.1880					4362	4562
	1/4-.2505					4363	4563
	5/16-.3130					4364	4564
	3/8-.3755					4365	4565
3/16 .1870	1/8-.1255	5/16	5/32	# 8-32	3/16	4315	4515
	3/16-.1880					4316	4516
	1/4-.2505					4317	4517
	5/16-.3130					4318	4518
	3/8-.3755					4319	4519
	1/2-.5005					4320	4520
	5/8-.6255					4321	4521
	3/4-.7505					4322	4522
	1 - 1.0005					4323	4523
	1-1/4-1.2505					4324	4524
1-1/2-1.5005	4325	4525					

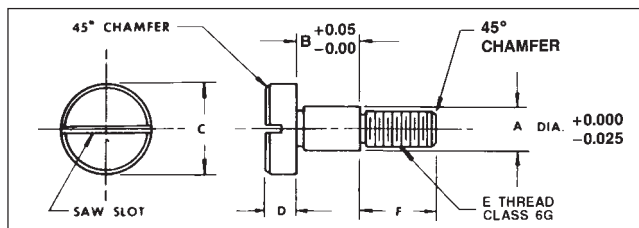
A	B	C	D	E	F	303 P / N	416 P / N
1/4 .2495	1/8-.1255	3/8	3/16	# 10-32	1/4	4326	4526
	3/16-.1880					4327	4527
	1/4-.2505					4328	4528
	5/16-.3130					4329	4529
	3/8-.3755					4330	4530
	1/2-.5005					4331	4531
	5/8-.6255					4332	4532
	3/4-.7505					4333	4533
	1 - 1.0005					4334	4534
	1-1/4-1.2505					4335	4535
1-1/2-1.5005	4336	4536					
5/16 .3120	1/4-.2505	1/2	7/32	1/4-20	7/16	4337	4537
	5/16-.3130					4338	4538
	3/8-.3755					4339	4539
	1/2-.5005					4340	4540
	5/8-.6255					4341	4541
3/4-.7505	4342	4542					
3/8 .3745	5/16-.3130	1/2	7/32	1/4-20	7/16	4343	4543
	3/8-.3755					4344	4544
	1/2-.5005					4345	4545
	5/8-.6255					4346	4546
3/8 .3745	5/16-.3130	9/16	1/4	5/16-18	1/2	4347	4547
	3/8-.3755					4348	4548
	1/2-.5005					4349	4549
	5/8-.6255					4350	4550
1/2 .4995	1/2-.5005	3/4	5/16	3/8-16	5/8	4351	4551
	5/8-.6255					4352	4552
	3/4-.7505					4353	4553
	1 - 1.0005					4354	4554

Shoulder Screw Kits			Qty.	303 P / N	416 P / N
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 1/8" and thread of # 4-40			50	Y34K	Y37K
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 3/16" and thread of # 8-32			50	Y35K	Y38K
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 1/4" and thread of # 10-32			50	Y36K	Y39K

METRIC SLOTTED HEAD SHOULDER SCREWS

303 & Hardened 416 Stainless Steel

All Dimensions in Millimeters



Material: 303 Stainless Steel — MSB1-XX
416 Stainless Steel — MSB3-XX (Hardness 26-32 RC)

A	B	C	D	E	F	303 P / N	416 P / N
3.987 (4)	4.013 (4)	6	3	M3 x 0.5	4	MSB1-1	MSB3-1
	5.013 (5)					MSB1-2	MSB3-2
	6.013 (6)					MSB1-3	MSB3-3
	8.013 (8)					MSB1-4	MSB3-4
	10.013 (10)					MSB1-5	MSB3-5
4.987 (5)	4.013 (4)	8	4	M4 x 0.7	5	MSB1-6	MSB3-6
	5.013 (5)					MSB1-7	MSB3-7
	6.013 (6)					MSB1-8	MSB3-8
	8.013 (8)					MSB1-9	MSB3-9
	10.013 (10)					MSB1-10	MSB3-10
	12.013 (12)					MSB1-11	MSB3-11
	14.013 (14)					MSB1-12	MSB3-12
	16.013 (16)					MSB1-13	MSB3-13
	20.013 (20)					MSB1-14	MSB3-14
	25.013 (25)					MSB1-15	MSB3-15
30.013 (30)	MSB1-16	MSB3-16					
5.987 (6)	4.013 (4)	10	5	M5 x 0.8	6	MSB1-17	MSB3-17
	5.013 (5)					MSB1-18	MSB3-18
	6.013 (6)					MSB1-19	MSB3-19
	8.013 (8)					MSB1-20	MSB3-20

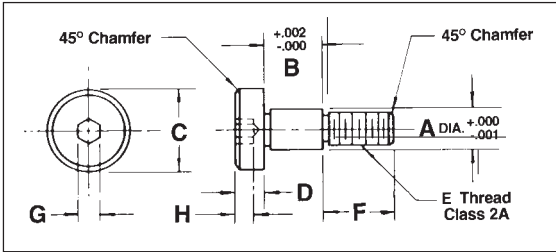
A	B	C	D	E	F	303 P / N	416 P / N
5.987 (6)	10.013 (10)	10	5	M5 x 0.8	6	MSB1-21	MSB3-21
	12.013 (12)					MSB1-22	MSB3-22
	14.013 (14)					MSB1-23	MSB3-23
	16.013 (16)					MSB1-24	MSB3-24
	20.013 (20)					MSB1-25	MSB3-25
	25.013 (25)					MSB1-26	MSB3-26
7.987 (8)	6.013 (6)	12	6	M6 x 1	11	MSB1-27	MSB3-27
	8.013 (8)					MSB1-28	MSB3-28
	10.013 (10)					MSB1-29	MSB3-29
	12.013 (12)					MSB1-30	MSB3-30
	16.013 (16)					MSB1-31	MSB3-31
	20.013 (20)					MSB1-32	MSB3-32
9.987 (10)	8.013 (8)	12	6	M6 x 1	11	MSB1-33	MSB3-33
	10.013 (10)					MSB1-34	MSB3-34
	12.013 (12)					MSB1-35	MSB3-35
	16.013 (16)					MSB1-36	MSB3-36
9.987 (10)	8.013 (8)	14	7	M8 x 1.25	12	MSB1-37	MSB3-37
	10.013 (10)					MSB1-38	MSB3-38
	12.013 (12)					MSB1-39	MSB3-39
	16.013 (16)					MSB1-40	MSB3-40
11.987 (12)	12.013 (12)	20	8	M10 x 1.5	16	MSB1-41	MSB3-41
	16.013 (16)					MSB1-42	MSB3-42
	20.013 (20)					MSB1-43	MSB3-43
	25.013 (25)					MSB1-44	MSB3-44
						MSB1-45	MSB3-45

Shoulder Screw Kits			Qty.	303 P / N	416 P / N
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 4mm and thread of M3 x 0.5			50	MAK19	MAK22
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 5mm and thread of M4 x 0.7			50	MAK20	MAK23
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 6mm and thread of M5 x 0.8			50	MAK21	MAK24

(continued)

SOCKET HEAD SHOULDER SCREWS

303 & Hardened 416 Stainless Steel — Inch



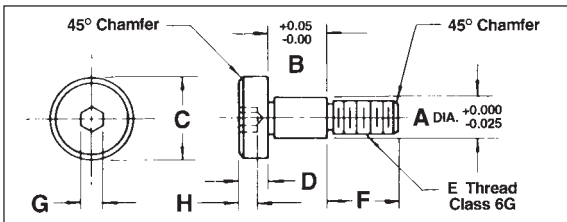
Material: 303 Stainless Steel — 44XX
416 Stainless Steel — 46XX (Hardness 26-32 RC)

A	B	C	D	E	F	G	H (min.)	303 P / N	416 P / N
1/8 .1245	1/8- .1255	1/4	1/8	# 4-40	5/32	5/64	1/16	4410	4610
	3/16- .1880							4411	4611
	1/4- .2505							4412	4612
	5/16- .3130							4413	4613
5/32 .1557	3/8- .3755	9/32	1/8	# 6-32	3/16	3/32	5/64	4414	4614
	1/8- .1255							4461	4661
	3/16- .1880							4462	4662
	1/4- .2505							4463	4663
3/16 .1870	5/16- .3130	5/16	5/32	# 8-32	3/16	3/32	5/64	4464	4664
	3/8- .3755							4465	4665
	1/2- .5005							4415	4615
	5/8- .6255							4416	4616
	3/4- .7505							4417	4617
	1 - 1.0005							4418	4618
	1-1/4- 1.2505							4419	4619
	1-1/2- 1.5005							4420	4620
								4421	4621
								4422	4622

A	B	C	D	E	F	G	H (min.)	303 P / N	416 P / N
1/4 .2495	1/8- .1255	3/8	3/16	# 10-32	1/4	1/8	3/32	4426	4626
	3/16- .1880							4427	4627
	1/4- .2505							4428	4628
	5/16- .3130							4429	4629
	3/8- .3755							4430	4630
	1/2- .5005							4431	4631
	5/8- .6255							4432	4632
	3/4- .7505							4433	4633
	1 - 1.0005							4434	4634
	1-1/4- 1.2505							4435	4635
1-1/2- 1.5005	4436	4636							
5/16 .3120	1/4- .2505	1/2	7/32	1/4-20	7/16	5/32	1/8	4437	4637
	5/16- .3130							4438	4638
	3/8- .3755							4439	4639
	1/2- .5005							4440	4640
	5/8- .6255							4441	4641
3/4- .7505	4442	4642							
3/8 .3745	5/16- .3130	1/2	7/32	1/4-20	7/16	5/32	1/8	4443	4643
	3/8- .3755							4444	4644
	1/2- .5005							4445	4645
3/8 .3745	5/8- .6255	9/16	1/4	5/16-18	1/2	3/16	5/32	4446	4646
	5/16- .3130							4447	4647
	3/8- .3755							4448	4648
1/2 .4995	1/2- .5005	3/4	5/16	3/8-16	5/8	1/4	3/16	4449	4649
	5/8- .6255							4450	4650
	3/4- .7505							4451	4651
	1 - 1.0005							4452	4652
	1-1/4- 1.2505							4453	4653
1-1/2- 1.5005	4454	4654							

Shoulder Screw Kits	Qty.	303 P / N	416 P / N
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 1/8" and thread of # 4-40.	50	Y34K	Y37K
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 3/16" and thread of # 8-32.	50	Y35K	Y38K
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 1/4" and thread of # 10-32.	50	Y36K	Y39K

303 & Hardened 416 Stainless Steel — Metric



Material: 303 Stainless Steel — MSB2-XX
416 Stainless Steel — MSB4-XX (Hardness 26-32 RC)

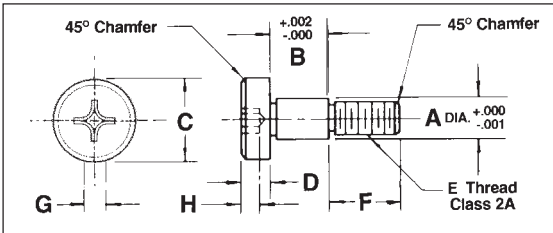
A	B	C	D	E	F	G	H (min.)	303 P / N	416 P / N
3.987 (4)	4.013 (4)	6	3	M3 x 0.5	4	2	1.6	MSB2-1	MSB4-1
	5.013 (5)							MSB2-2	MSB4-2
	6.013 (6)							MSB2-3	MSB4-3
	8.013 (8)							MSB2-4	MSB4-4
	10.013 (10)							MSB2-5	MSB4-5
4.987 (5)	4.013 (4)	8	4	M4 x 0.7	5	2.5	2	MSB2-6	MSB4-6
	5.013 (5)							MSB2-7	MSB4-7
	6.013 (6)							MSB2-8	MSB4-8
	8.013 (8)							MSB2-9	MSB4-9
	10.013 (10)							MSB2-10	MSB4-10
	12.013 (12)							MSB2-11	MSB4-11
	14.013 (14)							MSB2-12	MSB4-12
	16.013 (16)							MSB2-13	MSB4-13
	20.013 (20)							MSB2-14	MSB4-14
	25.013 (25)							MSB2-15	MSB4-15
	30.013 (30)							MSB2-16	MSB4-16
5.987 (6)	4.013 (4)	10	5	M5 x 0.8	6	3	2.4	MSB2-17	MSB4-17
	5.013 (5)							MSB2-18	MSB4-18
	6.013 (6)							MSB2-19	MSB4-19
	8.013 (8)							MSB2-20	MSB4-20

A	B	C	D	E	F	G	H (min.)	303 P / N	416 P / N
5.987 (6)	10.013 (10)	10	5	M5 x 0.8	6	3	2.4	MSB2-21	MSB4-21
	12.013 (12)							MSB2-22	MSB4-22
	14.013 (14)							MSB2-23	MSB4-23
	16.013 (16)							MSB2-24	MSB4-24
	20.013 (20)							MSB2-25	MSB4-25
	25.013 (25)							MSB2-26	MSB4-26
7.987 (8)	6.013 (6)	12	6	M6 x 1	11	4	3.2	MSB2-27	MSB4-27
	8.013 (8)							MSB2-28	MSB4-28
	10.013 (10)							MSB2-29	MSB4-29
	12.013 (12)							MSB2-30	MSB4-30
	16.013 (16)							MSB2-31	MSB4-31
	20.013 (20)							MSB2-32	MSB4-32
9.987 (10)	8.013 (8)	12	6	M6 x 1	11	4	3.2	MSB2-33	MSB4-33
	10.013 (10)							MSB2-34	MSB4-34
	12.013 (12)							MSB2-35	MSB4-35
	16.013 (16)							MSB2-36	MSB4-36
9.987 (10)	8.013 (8)	14	7	M8 x 1.25	12	5	4	MSB2-37	MSB4-37
	10.013 (10)							MSB2-38	MSB4-38
	12.013 (12)							MSB2-39	MSB4-39
	16.013 (16)							MSB2-40	MSB4-40
11.987 (12)	12.013 (12)	20	8	M10 x 1.5	16	6	4.8	MSB2-41	MSB4-41
	16.013 (16)							MSB2-42	MSB4-42
	20.013 (20)							MSB2-43	MSB4-43
	25.013 (25)							MSB2-44	MSB4-44
								MSB2-45	MSB4-45

Shoulder Screw Kits	Qty.	303 P / N	416 P / N
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 4mm and thread of M3 x 0.5.	50	MAK19	MAK22
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 5mm and thread of M4 x 0.7.	50	MAK20	MAK23
Shoulder Screws — Stainless Steel — Slotted and Socket Head. Assorted Lengths for shoulder dia. of 6mm and thread of M5 x 0.8.	50	MAK21	MAK24

PHILLIPS HEAD SHOULDER SCREWS

303 & Hardened 416 Stainless Steel — Inch

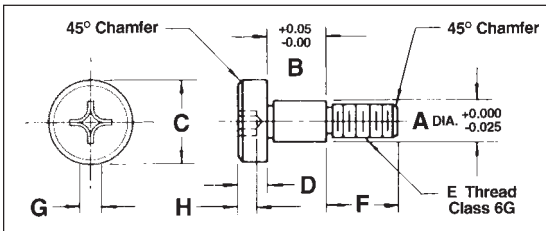


Material: 303 Stainless Steel — 47XX
416 Stainless Steel — 48XX (Hardness 26-32 RC)

A	B	C	D	E	F	*Drive Size	H (min.)	303 P/N	416 P/N	*Drive Size
1/8 .1245	1/8- .1255	1/4	1/8	# 4-40	5/32	1	1/16	4710	4810	1
	3/16- .1880							4711	4811	
	1/4- .2505							4712	4812	
	5/16- .3130							4713	4813	
	3/8- .3755							4714	4814	
3/16 .1870	1/8- .1255	5/16	5/32	# 8-32	3/16	2	5/64	4715	4815	2
	3/16- .1880							4716	4816	
	1/4- .2505							4717	4817	
	5/16- .3130							4718	4818	
	3/8- .3755							4719	4819	
	1/2- .5005							4720	4820	
	5/8- .6255							4721	4821	
	3/4- .7505							4722	4822	
	1 - 1.0005							4723	4823	
	1-1/4- 1.2505							4724	4824	
1-1/2- 1.5005	4725	4825								

A	B	C	D	E	F	*Drive Size	H (min.)	303 P/N	416 P/N	*Drive Size
1/4 .2495	1/8- .1255	3/8	3/16	# 10-32	1/4	2	3/32	4726	4826	2
	3/16- .1880							4727	4827	
	1/4- .2505							4728	4828	
	5/16- .3130							4729	4829	
	3/8- .3755							4730	4830	
	1/2- .5005							4731	4831	
	5/8- .6255							4732	4832	
	3/4- .7505							4733	4833	
	1 - 1.0005							4734	4834	
	1-1/4- 1.2505							4735	4835	
1-1/2- 1.5005	4736	4836								
5/16 .3120	1/4- .2505	1/2	7/32	1/4-20	7/16	3	1/8	4737	4837	3
	5/16- .3130							4738	4838	
	3/8- .3755							4739	4839	
	1/2- .5005							4740	4840	
	5/8- .6255							4741	4841	
3/4- .7505	4742	4842								
3/8 .3745	5/16- .3130	1/2	7/32	1/4-20	7/16	3	1/8	4743	4843	3
	3/8- .3755							4744	4844	
	1/2- .5005							4745	4845	
	5/8- .6255							4746	4846	
3/8 .3745	5/16- .3130	9/16	1/4	5/16-18	1/2	4	5/32	4747	4847	4
	3/8- .3755							4748	4848	
	1/2- .5005							4749	4849	
	5/8- .6255							4750	4850	
1/2 .4995	1/2- .5005	3/4	5/16	3/8-16	5/8	4	3/16	4751	4851	4
	5/8- .6255							4752	4852	
	3/4- .7505							4753	4853	
	1 - 1.0005							4754	4854	

303 & Hardened 416 Stainless Steel — Metric



Material: 303 Stainless Steel — MSB7-XX
416 Stainless Steel — MSB8-XX (Hardness 26-32 RC)

A	B	C	D	E	F	*Drive Size	H (min.)	303 P/N	416 P/N	*Drive Size
3.987 (4)	4.013 (4)	6	3	M3 x 0.5	4	1	1.6	MSB7-1	MSB8-1	1
	5.013 (5)							MSB7-2	MSB8-2	
	6.013 (6)							MSB7-3	MSB8-3	
	8.013 (8)							MSB7-4	MSB8-4	
	10.013 (10)							MSB7-5	MSB8-5	
4.987 (5)	4.013 (4)	8	4	M4 x 0.7	5	2	2	MSB7-6	MSB8-6	2
	5.013 (5)							MSB7-7	MSB8-7	
	6.013 (6)							MSB7-8	MSB8-8	
	8.013 (8)							MSB7-9	MSB8-9	
	10.013 (10)							MSB7-10	MSB8-10	
	12.013 (12)							MSB7-11	MSB8-11	
	14.013 (14)							MSB7-12	MSB8-12	
	16.013 (16)							MSB7-13	MSB8-13	
	20.013 (20)							MSB7-14	MSB8-14	
	25.013 (25)							MSB7-15	MSB8-15	
30.013 (30)	MSB7-16	MSB8-16								
5.987 (6)	4.013 (4)	10	5	M5 x 0.8	6	2	2.4	MSB7-17	MSB8-17	2
	5.013 (5)							MSB7-18	MSB8-18	
	6.013 (6)							MSB7-19	MSB8-19	
	8.013 (8)							MSB7-20	MSB8-20	

A	B	C	D	E	F	*Drive Size	H (min.)	303 P/N	416 P/N	*Drive Size
5.987 (6)	10.013 (10)	10	5	M5 x 0.8	6	2	2.4	MSB7-21	MSB8-21	2
	12.013 (12)							MSB7-22	MSB8-22	
	14.013 (14)							MSB7-23	MSB8-23	
	16.013 (16)							MSB7-24	MSB8-24	
	20.013 (20)							MSB7-25	MSB8-25	
	25.013 (25)							MSB7-26	MSB8-26	
7.987 (8)	6.013 (6)	12	6	M6 x 1	11	3	3.2	MSB7-28	MSB8-28	3
	8.013 (8)							MSB7-29	MSB8-29	
	10.013 (10)							MSB7-30	MSB8-30	
	12.013 (12)							MSB7-31	MSB8-31	
	16.013 (16)							MSB7-32	MSB8-32	
20.013 (20)	MSB7-33	MSB8-33								
9.987 (10)	8.013 (8)	12	6	M6 x 1	11	3	3.2	MSB7-34	MSB8-34	3
	10.013 (10)							MSB7-35	MSB8-35	
	12.013 (12)							MSB7-36	MSB8-36	
	16.013 (16)							MSB7-37	MSB8-37	
9.987 (10)	8.013 (8)	14	7	M8 x 1.25	12	4	4	MSB7-38	MSB8-38	4
	10.013 (10)							MSB7-39	MSB8-39	
	12.013 (12)							MSB7-40	MSB8-40	
	16.013 (16)							MSB7-41	MSB8-41	
11.987 (12)	12.013 (12)	20	8	M10 x 1.5	16	4	4.8	MSB7-42	MSB8-42	4
	16.013 (16)							MSB7-43	MSB8-43	
	20.013 (20)							MSB7-44	MSB8-44	
	25.013 (25)							MSB7-45	MSB8-45	

"SILVER-GRIP" SET SCREWS

Inch and Metric

How It Works: The "Silver-Grip" Inset

This diagram shows how the principle works. Note the pellet of silver alloy inset into the nose of the gear. The silver is just soft enough so that it adjusts, as you tighten the set screw, to mate with the exact contours of the opposing surface. The silver and shaft are in complete contact with each other over the total surface of the point of the screw. No wonder that no other set screw has greater holding power than the "Silver-Grip."

Never Mars The Opposing Surface

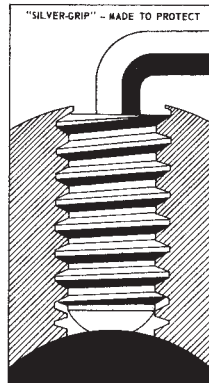
No matter how much torque you apply to the socket head, the "Silver-Grip" set screw will not scratch, mar or deform the opposing surface. When you remove the set screw, the surface will be as smooth as new!

Unscrews Easily

When it's time to re-set, the "Silver-Grip" unscrews without creating any problems.

Use It Over And Over

And you can reset the "Silver-Grip" over and over again, with the same perfect results you enjoy the first time you use it. The "Silver-Grip" is ideally suited — it's a must for any situation where a set screw must be periodically re-set or removed.



* Nominal Screw length excludes silver tip

300 Series Stainless Steel.
Class 3A Threads

Screw Size	L *	Part No.
# 2-56	1/8	CS-51
# 4-40	1/8 1/4	CS-52 CS-53
# 6-32	1/8 1/4	CS-54 CS-55
# 8-32	3/16 3/8	CS-56 CS-57
#10-32	3/16 3/8	CS-59 CS-60
1/4 -20	1/4 3/8	CS-61 CS-62
5/16-18	1/2 3/4	CS-64 CS-65
3/8 -16	1/2 1	CS-66 CS-67

"SILVER-GRIP" KITS

Description of Contents	Number of Parts	Part No.
"Silver-Grip" Set Screws-Stainless Steel. Hex Head. Assorted Sizes from #4-40 to #8-32.	75	Y20K
"Silver-Grip" Set Screws-Stainless Steel. Hex Head. Assorted Sizes from #8-32 to 1/4-20.	75	Y21K
"Silver-Grip" Set Screws-Stainless Steel. Hex Head. Assorted Sizes from 1/4-20 to 3/8-16.	75	Y22K

METRIC "SILVER-GRIP" KITS

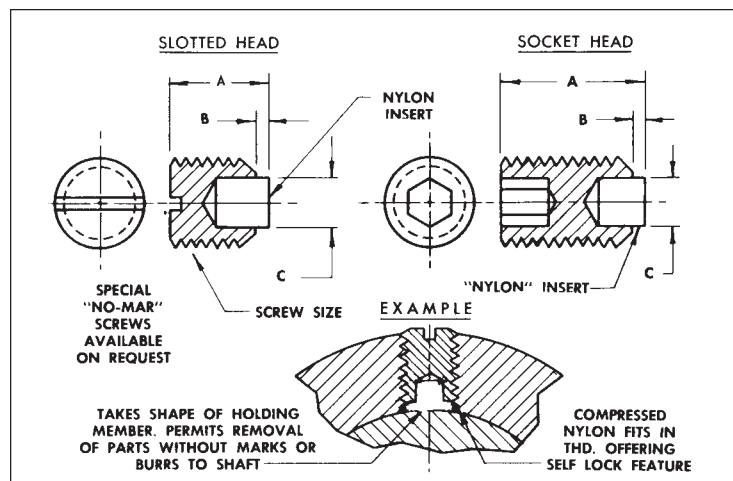
Description of Contents	Number of Parts	Part No.
"Silver-Grip" Set Screws-Socket Hexagon Type, stainless steel. Assorted lengths in sizes M2 x 0.4 and M3 x 0.5	75	MAK15
"Silver-Grip" Set Screws-Socket, Hexagon Type, stainless steel. Assorted lengths in sizes M4 x 0.7 and M5 x 0.8.	75	MAK16
"Silver-Grip" Set Screws-Socket, Hexagon Type, stainless steel. Assorted lengths in sizes M6 x 1 to M10 x 1.5.	75	MAK17

Dimensions Below Are In Millimeters.

Screw Size	L *	Part No.
M2 x 0.4	3	MSS3-1
	4	MSS3-2
	5	MSS3-3
	6	MSS3-4
M3 x 0.5	3	MSS3-5
	4	MSS3-6
	5	MSS3-7
	6	MSS3-8
M4 x 0.7	4	MSS3-9
	6	MSS3-10
	10	MSS3-11
	14	MSS3-12
M5 x 0.8	6	MSS3-13
	10	MSS3-14
	14	MSS3-15
	20	MSS3-16
M6 x 1	6	MSS3-17
	10	MSS3-18
	16	MSS3-19
	25	MSS3-20
M10 x 1.5	12	MSS3-21
	20	MSS3-22
	30	MSS3-23

"NO-MAR" SET SCREWS

Inch and Metric



Features:

- "No-Mar" Set Screws are self-locking as expanding nylon insert compresses against shaft and into thread of holding member
- Parts may be assembled or dis-assembled numerous times without damage to the shaft
- "No-Mar" Set Screws afford secure full force contact regardless of shape of the shaft
- "No-Mar" Set Screws will not scratch, mar or deform the opposing surface

Material: Screw — Stainless Steel
Insert — Nylon

Sold in Increments of 10 Pieces.

SOCKET HEAD — Class 3A

Screw Size	A	B	C	Part No.
# 2-56	5/32	1/32	1/32	CS-8
	9/32			CS-24
# 4-40	5/32	1/32	1/16	CS-9
	9/32			CS-25
	13/32			CS-26
# 6-32	5/32	1/32	1/16	CS-10
	9/32			CS-15
	17/32			CS-27
	15/64			CS-11
# 8-32	27/64	3/64	3/32	CS-16
	43/64			CS-28
	15/64			CS-12
#10-24	27/64	3/64	3/32	CS-17
	15/64			CS-13
#10-32	27/64	3/64	3/32	CS-18
	43/64			CS-29
	5/16			CS-14
	7/16			CS-19
1/4-20	13/16	1/16	1/8	CS-30
	1- 1/16			CS-31
	7/16			CS-20
	19/32			CS-21
5/16-18	27/32	3/32	3/16	CS-32
	1- 3/32			CS-33
	19/32			CS-22
3/8-16	27/32	3/32	3/16	CS-34
	1- 3/32			CS-35
	3/4			CS-23
1/2-13	1- 1/8	1/8	1/4	CS-36

SLOTTED HEAD — Class 2A

Screw Size	A	B	C	Part No.
# 2-56	5/32	1/32	1/32	CS-1
# 4-40	5/32	1/32	1/16	CS-2
# 6-32	5/32	1/32	1/16	CS-3
# 8-32	15/64	3/64	3/32	CS-4
#10-24	15/64	3/64	3/32	CS-5
#10-32	15/64	3/64	3/32	CS-6
1/4-20	5/16	1/16	1/8	CS-7

SOCKET HEAD — Class 6G

Dimensions Below Are In Millimeters.

Screw Size	A	B	C	Part No.
M2 x 0.4	3.8	0.8	0.8	MSS2-1
	4.8			MSS2-2
	5.8			MSS2-3
	6.8			MSS2-4
M3 x 0.5	3.8	0.8	1.6	MSS2-5
	4.8			MSS2-6
	5.8			MSS2-7
	6.8			MSS2-8
M4 x 0.7	5.2	1.2	2.4	MSS2-9
	7.2			MSS2-10
	11.2			MSS2-11
	15.2			MSS2-12
M5 x 0.8	7.2	1.2	2.4	MSS2-13
	11.2			MSS2-14
	15.2			MSS2-15
	21.2			MSS2-16
M6 x 1	7.6	1.6	3.2	MSS2-17
	11.6			MSS2-18
	17.6			MSS2-19
	26.6			MSS2-20
M10 x 1.5	14.4	2.4	4.8	MSS2-21
	22.4			MSS2-22
	32.4			MSS2-23

"NO-MAR" KITS

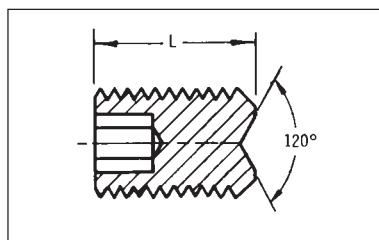
Description of Contents	Number of Parts	Part No.
"No-Mar" Set Screws-Stainless Steel Hex Head. Assorted Sizes from #2-56 to #10-32	100	Y18K
"No-Mar" Set Screws-Stainless Steel Hex Head. Assorted Sizes from #10-32 to 1/2-13	75	Y19K

METRIC "NO-MAR" KITS

Description of Contents	Number of Parts	Part No.
"No-Mar" Set Screws-Socket, Hexagon Type, stainless steel. Assorted sizes from M2 x 0.4 to M4 x 0.7.	100	MAK13
"No-Mar" Set Screws-Socket, Hexagon Type, stainless steel. Assorted sizes from M5 x 0.8 to M10 x 1.5	75	MAK14

SET SCREWS — CUP POINT

Conforming To DIN 916



Material: 300 Series Stainless Steel

SOCKET HEAD

Screw Size	L	Part No.
# 0-80	1/8	Y11-1
	3/16	Y11-2
# 2-56	1/8	Y11-3
	3/16	Y11-4
	1/4	Y11-5
# 4-40	1/8	Y11-6
	3/16	Y11-7
	1/4	Y11-8
# 6-32	1/8	Y11-9
	1/4	Y11-10
	3/8	Y11-11
	1/2	Y11-12
	5/8	Y11-16
# 8-32	1/4	Y11-13
	3/8	Y11-14
	1/2	Y11-15
	5/8	Y11-16
	1 1/8	Y11-16
#10-32	1/4	Y11-17
	1/2	Y11-18
	3/4	Y11-19
1/4-20	1/2	Y11-22
	3/4	Y11-23

SLOTTED HEAD

Screw Size	L	Part No.
#0-80	1/8	C2-15
#2-56	1/8	BE-1-A
#4-40	1/8	BE-2-A
#6-32	1/8	BE-3-A

SOCKET HEAD

Dimensions Below Are In Millimeters.

Screw Size	L	Part No.
M1.6 x 0.35	3	MSS4-1
	4	MSS4-2
	5	MSS4-3
M2 x 0.4	3	MSS4-4
	4	MSS4-5
	5	MSS4-6
	6	MSS4-7
M3 x 0.5	3	MSS4-8
	4	MSS4-9
	5	MSS4-10
	6	MSS4-11
M4 x 0.7	4	MSS4-12
	6	MSS4-13
	10	MSS4-14
	14	MSS4-15
M5 x 0.8	6	MSS4-16
	10	MSS4-17
	14	MSS4-18
	20	MSS4-19
M6 x 1	6	MSS4-20
	10	MSS4-21
	16	MSS4-22
	25	MSS4-23
M10 x 1.5	12	MSS4-24
	20	MSS4-25
	30	MSS4-26

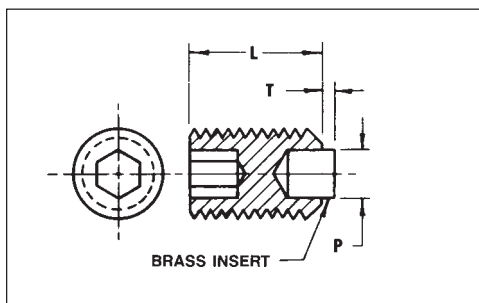
SET SCREWS-CUP POINT KITS

Description of Contents	Number of Parts	Part No.
Cup Point Set Screws-Stainless Steel, Hex Head. Assorted Sizes from #2-56 to 1/4-20.	200	Y23K

METRIC SET SCREWS-CUP POINT KITS

Description of Contents	Number of Parts	Part No.
Socket Set Screws-Hexagon Type. Cup Point, stainless steel. Assorted Sizes from M1.6 x 0.35 to M10 x 1.5.	200	MAK18

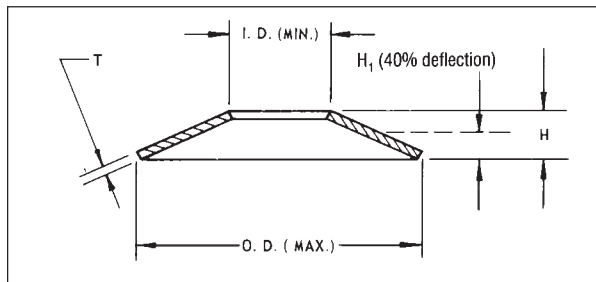
BRASS TIP SET SCREWS



Material: Heat treated alloy steel with brass insert
Finish: Black Oxide

Scw Size	L	P	T	Part Number
2-56	1/8	1/32	1/32	CS-85
	1/4			CS-86
4-40	1/8	1/16	1/32	CS-87
	1/4			CS-88
	3/8			CS-89
6-32	1/8	1/16	1/32	CS-90
	1/4			CS-91
	1/2			CS-92
8-32	1/8	3/32	3/64	CS-93
	1/4			CS-94
	3/8			CS-95
	1/2			CS-96
	5/8			CS-96
10-32	1/8	3/32	3/64	CS-97
	3/8			CS-98
	1/2			CS-98
	5/8			CS-99

BELLEVILLE SPRING WASHER



Inside Dia.	Outside Dia.	T	H (Approx.)	H ₁ (Approx.)	*P ₁ ± 10%	Calculated Load at Flat Position—Lbs.	Part No.
.093	.187	.010	.015	.013	14	25	D6-20
.125	.250	.0133	.020	.017	23	43	D6-21
.156	.312	.0166	.025	.021	37	67	D6-22
.190	.375	.020	.030	.025	54	99	D6-23
.255	.500	.025	.038	.031	85	144	D6-24
.317	.625	.032	.048	.040	130	234	D6-25
.380	.750	.040	.059	.049	211	373	D6-26
.505	1.000	.050	.075	.062	306	540	D6-27

*LOAD AT H₁

Material: 300 Series Stainless Steel
Spring Steel

STACKED BELLEVILLE SPRING WASHERS

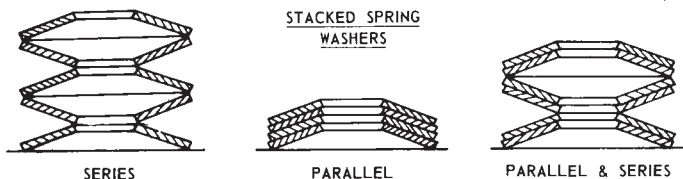
Deflection in a single Belleville Spring Washer is small. Series stacking increases the deflection in proportion to the number of washers, but the load remains the same as a single washer. Parallel stacking increases the load approximately proportional to the number of washers (a 5% to 10% load loss per washer is introduced).

ADVANTAGES:

- Stainless Steel non-corrosive
- High loads in small space.
- Combine washers (series or parallel) to vary load carrying possibilities.

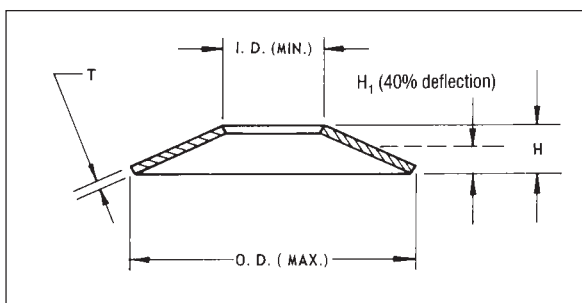
BELLEVILLE SPRING WASHER KITS

Description of Contents	Number of Parts	Part No.
Belleville Spring Washers-Stainless Steel. Eight Sizes from .093 to .505 Inside Diameters.	150	Y13K



METRIC BELLEVILLE SPRING WASHER

All Dimensions In Millimeters



Inside Dia.	Outside Dia.	T	H (Approx.)	H ₁ (Approx.)	*P ₁ ± 10%	Load at Flat Position Newtons	Part No.
3.2	8	0.3	0.55	0.45	66	126	MBW1-1
4.2	8	0.4	0.60	0.52	120	267	MBW1-2
6.2	12.5	0.7	1.00	0.88	369	846	MBW1-3
8.2	18	0.8	1.30	1.10	465	977	MBW1-4
10.2	20	1.1	1.55	1.37	846	1967	MBW1-5
12.2	25	1.5	2.05	1.83	1615	3786	MBW1-6

*LOAD AT H₁

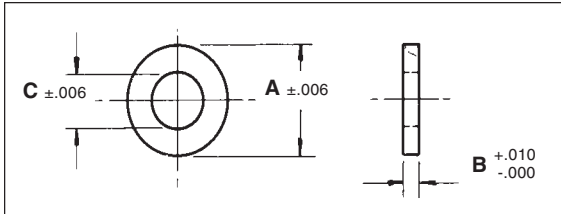
Material: Carbon Spring Steel,
Optional Bright Zinc Finish

METRIC BELLEVILLE SPRING WASHER KITS

Description of Contents	Number of Parts	Part No.
Belleville Spring Washers, carbon spring steel, plated. Six sizes from 3.2 to 12.2 inside diameters.	120	MAK11

PRECISION WASHERS

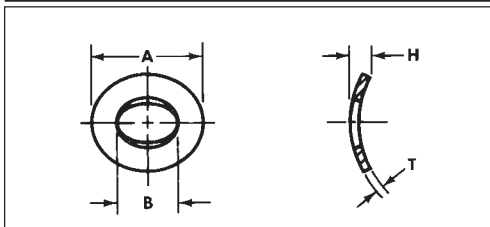
Machined



Material: 300 Series Stainless Steel

Screw Size (Ref.)	A	B	C	Part No.
# 4	1/4		.116	3150
# 6	5/16	1/16	.144	3151
# 8	3/8		.169	3152
#10	7/16	5/64	.196	3153
1/4	1/2		.257	3154
5/16	5/8	3/32	.323	3155
3/8	3/4		.386	3156

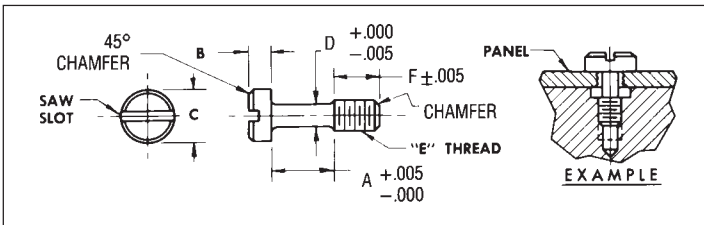
CURVED WASHERS



Material: 300 Series Stainless Steel
Spring Tempered

A	B	T	H (Approx.)	Hole Size	Screw Size	Part No.
.245	.135	.006	.034	1/4	# 5	D33-1
.270	.148	.007	.035	9/32	# 6	D33-2
.322	.174	.0075	.042	11/32	# 8	D33-3
.370	.200	.009	.047	3/8	#10	D33-4
.490	.265	.011	.063	1/2	1/4	D33-6
.612	.327	.013	.077	5/8	5/16	D33-7

CAPTIVE SCREWS

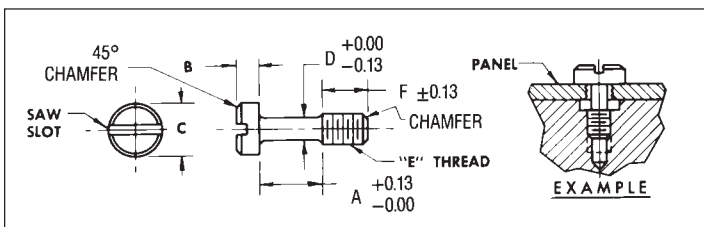


Material: 300 Series Stainless Steel

For Panel Thickness	A	B	C	D	E	F	Part No.
1/16	.281						Y9-1
1/8	.343	1/8	1/4	.072	# 4-40	.187	Y9-2
1/16	.312						Y9-3
1/8	.375	1/8	9/32	.086	# 6-32	.218	Y9-4
3/16	.437						Y9-5
1/8	.406						Y9-6
3/16	.468	5/32	5/16	.114	# 8-32	.250	Y9-7
1/4	.531						Y9-8
3/16	.531	3/16	3/8	.136	#10-32	.312	Y9-9
1/4	.593						Y9-10

METRIC CAPTIVE SCREWS

All Dimensions In Millimeters

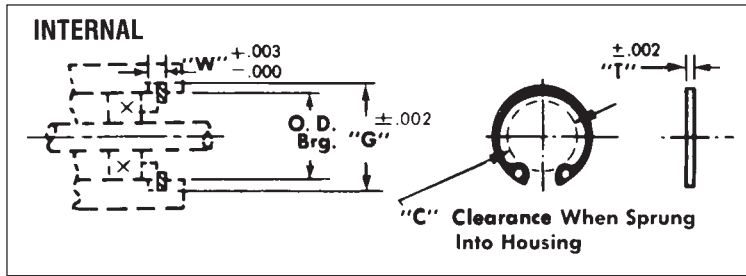


Material: 300 Series Stainless Steel

For Panel Thickness	A	B	C	D	E	F	Part No.
1.5	6.75						MCS1-1
3	8.25	2	5.2	2.14	M3	4.50	MCS1-2
3	9.75						MCS1-3
5	11.75	2.8	7	2.89	M4	6.00	MCS1-4
6	12.75						MCS1-5
5	13.25	3.5	9	3.77	M5	7.50	MCS1-6
6	14.25						MCS1-7

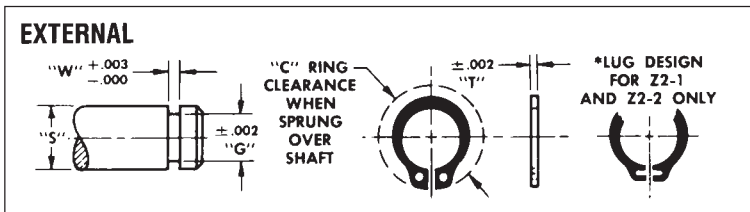
RETAINING RINGS

Internal, External, External-E Ring, Bowed Series



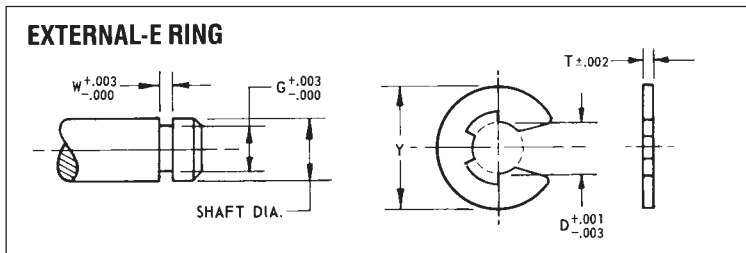
Material: PH 15-7 MO Stainless Steel

Maximum Shaft Dia. (Ref.)	Groove Dims.		T	C	O.D. Brg.	Part No.
	G	W				
.156	.397	.029	.025	.20	.375	Z1-1
.187	.530	.039	.035	.26	.500	Z1-2
.250	.665	.039	.035	.34	.625	Z1-3
.375	.931	.046	.042	.54	.875	Z1-5



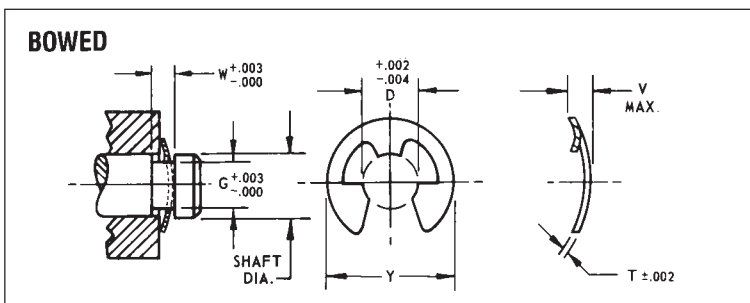
Material: PH 15-7 MO Stainless Steel
*Beryllium Copper

Shaft Dia. (Ref.)	Groove Dims.		T	C	Part No.
	G	W			
.125	.117	.012	.010	.22	*Z2-1
.187	.175	.018	.015	.30	*Z2-2
.250	.230	.029	.025	.45	Z2-3
.375	.352	.029	.025	.61	Z2-5
.500	.468	.039	.035	.77	Z2-6



Material: PH 15-7 MO Stainless Steel

Shaft Dia.	Groove Dims.		Y	D	T	Part No.
	G	W				
.093	.074	.018	.187	.073	.015	Z3-7
.125	.095	.018	.230	.094	.015	Z3-1
.156	.116	.029	.282	.114	.025	Z3-8
.187	.147	.029	.335	.145	.025	Z3-2
.250	.210	.029	.527	.207	.025	Z3-3
.312	.250	.029	.500	.243	.025	Z3-4
.375	.303	.039	.660	.300	.035	Z3-5
.500	.396	.046	.800	.392	.042	Z3-6



Material: PH 15-7 MO Stainless Steel

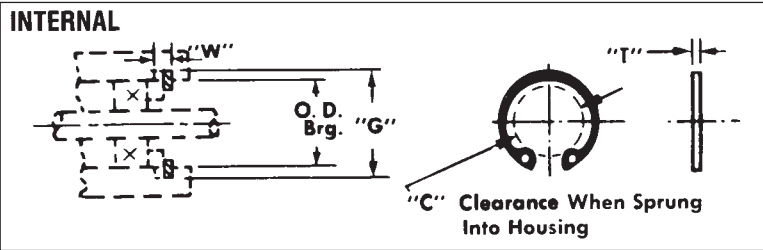
Shaft Dia.	Groove Dims.		Y	D	T	V Max.	Part No.
	G	W					
.125	.095	.022	.230	.094	.010	.033	Z4-1
.187	.147	.030	.335	.145	.015	.043	Z4-2
.250	.210	.049	.527	.207	.025	.067	Z4-3
.312	.250	.047	.500	.243	.025	.065	Z4-4
.375	.303	.060	.660	.300	.035	.076	Z4-5
.500	.395	.073	.800	.392	.042	.093	Z4-6

RETAINING RINGS KIT

Description of Contents	Number of Parts	Part No.
Retaining Rings-Stainless Steel Bearing, Shaft, and Snap Types for shaft sizes 1/8" to 1/4".	400	Y9K

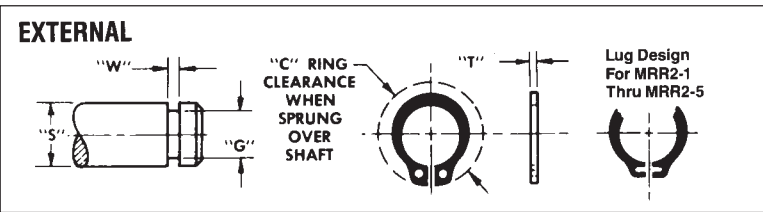
METRIC RETAINING RINGS

All Dimensions In Millimeters ■ Internal, External, External-E Ring Series



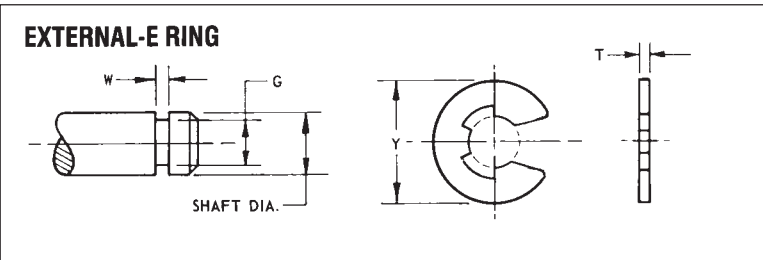
O.D. BRG.	Groove Dims.			T	C	Part No.
	G	tol	W (min.)			
10	10.4	+0.11	1.1	1.0	4.0	MRR1-2
11	11.4	+0.11	1.1	1.0	4.8	MRR1-3
13	13.6	+0.11	1.1	1.0	6.4	MRR1-4
15	15.7	+0.11	1.1	1.0	8.3	MRR1-5
16	16.8	+0.11	1.1	1.0	9.2	MRR1-6
19	20.0	+0.15	1.1	1.0	11.8	MRR1-7
22	23.0	+0.15	1.1	1.0	14.6	MRR1-8
26	27.2	+0.21	1.3	1.2	17.8	MRR1-9

Material: Spring Steel



Shaft Dia. (S)	Groove Dims.			T	C	Part No.
	G	tol	W (min.)			
4	3.8	-0.04	0.5	0.4	8.2	MRR2-2
5	4.8	-0.04	0.7	0.6	9.8	MRR2-3
6	5.7	-0.04	0.8	0.7	11.1	MRR2-4
8	7.6	-0.06	0.9	0.8	14.0	MRR2-5
10	9.6	-0.11	1.1	1.0	16.2	MRR2-6
12	11.5	-0.11	1.1	1.0	18.1	MRR2-7

Material: Spring Steel



Shaft Dia.	Groove Dims.			Y (Fitted)	T (max.)	Part No.
	G	tol	W (min.)			
2	1.2	-0.06	0.34	3.0	0.32	MRR3-1
3	1.9	-0.06	0.54	4.5	0.52	MRR3-2
4	2.3	-0.06	0.64	6.0	0.62	MRR3-3
5	3.2	-0.07	0.64	7.0	0.62	MRR3-4
6	4.0	-0.07	0.74	9.0	0.72	MRR3-5
8	5.0	-0.07	0.74	11.0	0.72	MRR3-6
10	7.0	-0.09	0.94	14.0	0.92	MRR3-7
12	8.0	-0.09	1.05	16.0	1.03	MRR3-8

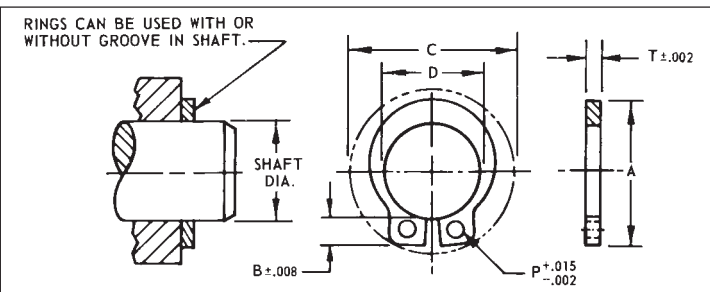
Material: Spring Steel

METRIC RETAINING RINGS KIT

Description of Contents	Number of Parts	Part No.
Retaining Rings, spring steel, zinc plated. Bearing, shaft and snap type for shaft sizes 3 to 5mm.	400	MAK8

RETAINING RINGS

Gripping External Series



Shaft Dia.	A (Ref.)	B	C	D	T	P Dia.	Part No.
.125	.268	.078	.33	.120	.025	.042	Z5-1
.187	.364	.097	.44	.181	.035	.051	Z5-2
.250	.437	.097	.49	.238	.035	.051	Z5-3
.375	.620	.141	.74	.354	.042	.078	Z5-4
.500	.768	.158	.90	.470	.050	.078	Z5-5

Material: PH 15-7 MO Stainless Steel



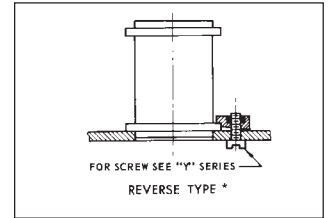
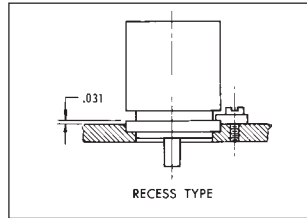
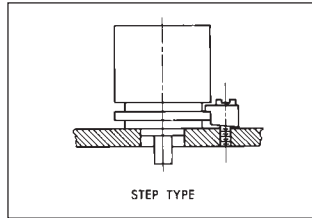
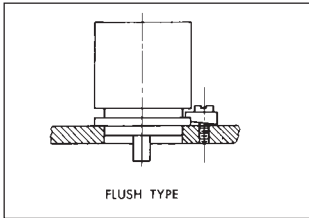
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MOTOR MOUNT CLEATS

Instant Nulling (Zeroing), Quick Releasing, Self Locking



TO DETERMINE BOLT CIRCLE FOR CLEAT LOCATIONS	
FOR CLEAT NO.	USE THE LARGER OF 2 TEST BOLT CIRCLES
L3-(1-12) L3-(30-31)	ADD .270" (2 x E) TO MAX. FLANGE DIA. OR ADD .400" TO MAX. DIA. OF BASE OF GROOVE
L3-(20-24)	ADD .192" (2 x E) TO MAX. FLANGE DIA. OR ADD .275" TO MAX. DIA. OF BASE OF GROOVE

SPECIFICATIONS

MATERIAL

Clamp: Sintered stainless steel Type 316; tensile strength 60,000 psi; shear strength 25,000 psi.

Screw: Slotted pan head CRES per MS-35233 and MS-35234.

Insert: Nylon (Polyamide) Type 1 per ASTM D 4066. Natural color.

FINISH

Screw: Treated per MIL-S-5002.

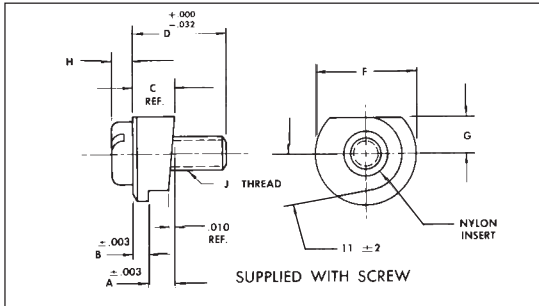
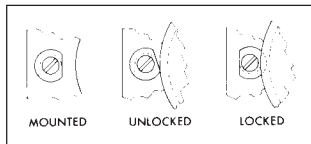
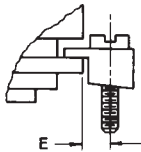
Clamp: As cast and tumbled.

Operating Temperature Range: -55°C to +177°C.

Vibration: 5 to 2000 cps at 15 g's acceleration with size 15 synchro.

Shock: 2000 ft. lb. shock, size 15 synchro per MIL-S-901.

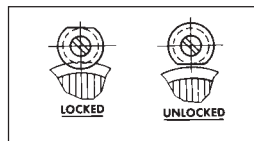
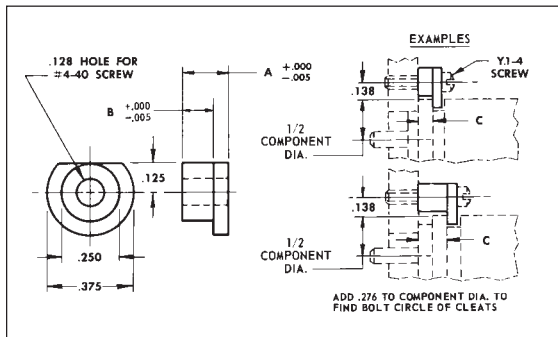
Meets all requirements of MIL-E-5272C and MIL-S-901.



Type Mount	A	B	C	D	E	F	G	H	J	Part No.
Flush & Recess	.031	.040	.071	.312						L3-1
Flush	.062	.040	.102	.312						L3-2
Flush	.062	.050	.112	.375						L3-3
Flush	.062	.063	.125	.375						L3-4
Flush	.093	.040	.133	.375	.135	.390	.125	.068	#4-40	L3-6
Flush	.093	.050	.143	.375		.385		Max.		L3-7
Flush	.093	.063	.156	.375						L3-8
Step	.125	.050	.175	.375						L3-9
Step	.156	.040	.196	.375						L3-10
Step	.225	.063	.288	.437						L3-11
Flush	.250	.063	.312	.625						L3-12
Flush & Recess	.031	.040	.071	.250						L3-20
Flush	.062	.040	.102	.250						L3-22
Flush	.093	.040	.133	.312	.096	.265	.091	.053	#2-56	L3-23
Step	.125	.040	.165	.312		.260		Max.		L3-24
Reverse	.062	.063	.125	*	.135	.390	.125	*	#4-40	L3-30*
Reverse	.093	.063	.156	*		.385				L3-31*

*Supplied Less Screw

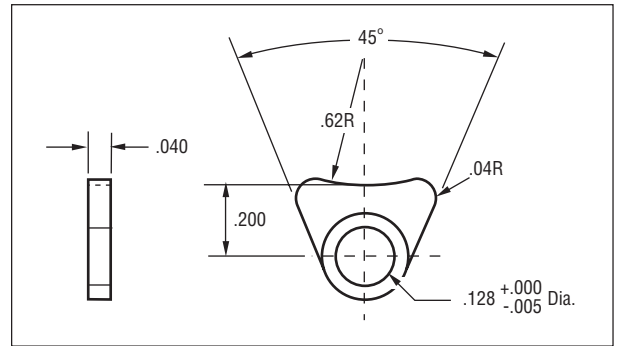
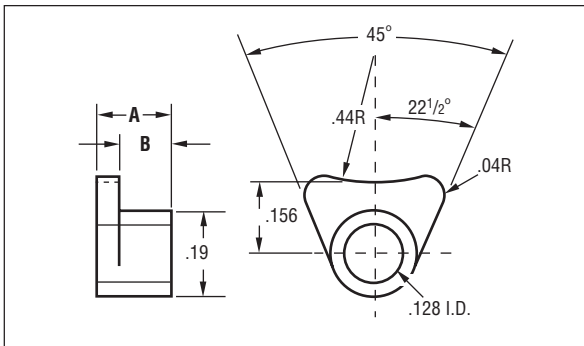
MOTOR MOUNT CLEATS



A	B	Order Screw Separately	C	Part No.
300 Series Stainless Steel				
.100	.052	Y1-4-T	.062	L2-1
.131	.081	Y1-4-U	.093	L2-2
.160	.109	Y1-4-U	.125	L2-3
.288	.238	Y1-4-W	.250	L2-4
.113	.063	Y1-4-U	.072	L2-5
.162	.112	Y1-4-U	.125	L2-6
.193	.143	Y1-4-V	.156	L2-7
.263	.213	Y1-4-W	.225	L2-8
400 Series Stainless Steel				
.100	.052	Y1-4-T	.062	L2-11
.131	.081	Y1-4-U	.093	L2-12
.160	.109	Y1-4-U	.125	L2-13
.162	.112	Y1-4-U	.125	L2-16
.193	.143	Y1-4-V	.156	L2-17
.263	.213	Y1-4-W	.225	L2-18

PRECISION SYNCHRO MOUNTING CLAMPS

Table of Pitch Diameters



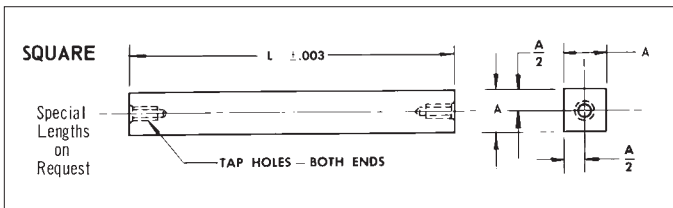
Material: 303 Stainless Steel
Aluminum — Anodized

Material: 302 Stainless Steel
Aluminum — Anodized

A ± .005	B ± .000 -.005	Part Number	
		Stainless Steel	Aluminum
.093	.047	L2-30	L2-33
.156	.110	L2-31	L2-34
.272	.210	L2-32	L2-35

A ± .005	Part Number	
	Stainless Steel	Aluminum
.040	L2-36	L2-37

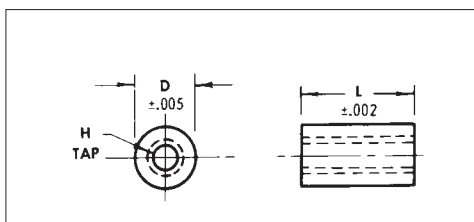
PRECISION SPACER POSTS



Material: 2024-T4 Aluminum Anodized

A = 1/4" Square Stock			A = 5/16" Square Stock			A = 3/8" Square Stock		
L	Tap Hole	Part No.	L	Tap Hole	Part No.	L	Tap Hole	Part No.
1	#6-32 UNC-2B 1/4" Deep	F1-1	3/4	#6-32 UNC-2B 1/4" Deep	F3-10	1-1/2	#8-32 UNC-2B 5/16" Deep	F2-1
1-1/2		F1-2	1		F3-11	2		F2-2
2		F1-3	1-1/4		F3-12	2-1/2		F2-3
2-1/2		F1-4	1-1/2		F3-13	3		F2-4
3		F1-5	1-3/4		F3-14	3-1/2		F2-5
3-1/2		F1-6	2		F3-15	4		F2-6
4		F1-7	2-1/2		F3-16	4-1/2		F2-7
4-1/2		F1-8	3		F3-17	5		F2-8
5		F1-9	3-1/2		F3-18	5-1/2		F2-9

STAND-OFF THREADED TYPE



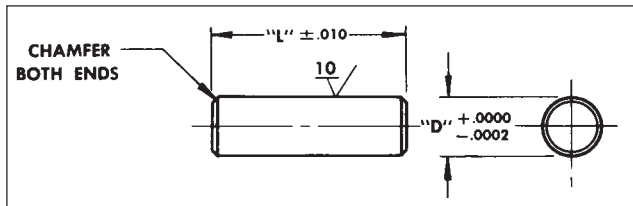
Material: 303 Stainless Steel

Minimum Thread Depth 3/8" from Each End.

H Tap	D	L	Part No.
#4-40	3/16	.250	EG-1
		.375	EG-2
		.500	EG-3
		.750	EG-13
#6-32	1/4	.375	EG-5
		.500	EG-6
#8-32	3/8	.375	EG-9
		.500	EG-10
		.625	EG-11
		.750	EG-12
		1.000	EG-15

PRECISION DOWEL PINS — SLIP FIT

1/32, 1/16, 5/64, 3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8 and 1/2 Inch Diameters



Material: 303 Stainless Steel

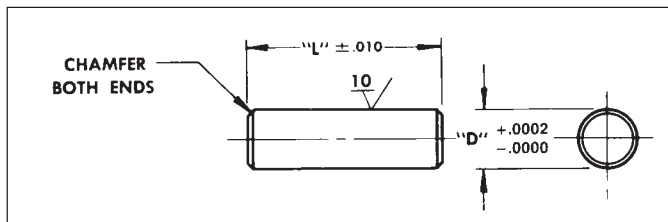
L	1/32 Dia. Pin D = .0313	1/16 Dia. Pin D = .0626	5/64 Dia. Pin D = .0781	3/32 Dia. Pin D = .0938
	Part No.	Part No.	Part No.	Part No.
3/32	D2-093	D3-093	—	D4-093
1/8	D2-125	D3-125	—	D4-125
5/32	D2-156	D3-156	D7-156	D4-156
3/16	D2-187	D3-187	D7-187	D4-187
7/32	D2-218	D3-218	—	D4-218
1/4	D2-250	D3-250	D7-250	D4-250
5/16	D2-312	D3-312	D7-312	D4-312
3/8	D2-375	D3-375	D7-375	D4-375
7/16	D2-437	D3-437	—	D4-437
1/2	D2-500	D3-500	—	D4-500
5/8	D2-625	D3-625	—	D4-625
3/4	D2-750	D3-750	—	D4-750
7/8	D2-875	D3-875	—	D4-875
1	D2-1000	D3-1000	—	D4-1000

L	1/8 Dia. Pin D = .1251	5/32 Dia. Pin D = .1562	3/16 Dia. Pin D = .1875
	Part No.	Part No.	Part No.
1/8	D5-125	—	—
5/32	D5-156	—	—
3/16	D5-187	D8-187	—
7/32	D5-218	—	—
1/4	D5-250	D8-250	D9-250
5/16	D5-312	D8-312	D9-312
3/8	D5-375	D8-375	D9-375
7/16	D5-437	D8-437	D9-437
1/2	D5-500	D8-500	D9-500
5/8	D5-625	D8-625	D9-625
3/4	D5-750	—	D9-750
7/8	D5-875	—	D9-875
1	D5-1000	—	D9-1000
1-1/8	D5-1125	—	—

L	1/4 Dia. Pin D = .2500	5/16 Dia. Pin D = .3125	3/8 Dia. Pin D = .3750	1/2 Dia. Pin D = .5000
	Part No.	Part No.	Part No.	Part No.
3/8	D11-375	—	—	—
7/16	D11-437	—	—	—
1/2	D11-500	D12-500	—	—
9/16	D11-562	—	D13-562	—
5/8	D11-625	—	D13-625	—
3/4	D11-750	D12-750	D13-750	D14-750
7/8	D11-875	—	D13-875	—
1	D11-1000	D12-1000	D13-1000	D14-1000
1-1/4	D11-1250	D12-1250	D13-1250	—
1-1/2	D11-1500	—	D13-1500	—

PRECISION DOWEL PINS — INTERFERENCE FIT

1/32, 1/16, 5/64, 3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8 and 1/2 Inch Diameters



Material: 303 Stainless Steel

L	1/32 Dia. Pin D = .0313	1/16 Dia. Pin D = .0626	5/64 Dia. Pin D = .0781	3/32 Dia. Pin D = .0938
	Part No.	Part No.	Part No.	Part No.
3/32	D40-093	D41-093	—	D43-093
1/8	D40-125	D41-125	—	D43-125
5/32	D40-156	D41-156	D42-156	D43-156
3/16	D40-187	D41-187	D42-187	D43-187
7/32	D40-218	D41-218	—	D43-218
1/4	D40-250	D41-250	D42-250	D43-250
5/16	D40-312	D41-312	D42-312	D43-312
3/8	D40-375	D41-375	D42-375	D43-375
7/16	D40-437	D41-437	—	D43-437
1/2	D40-500	D41-500	—	D43-500
5/8	D40-625	D41-625	—	D43-625
3/4	D40-750	D41-750	—	D43-750
7/8	D40-875	D41-875	—	D43-875
1	D40-1000	D41-1000	—	D43-1000

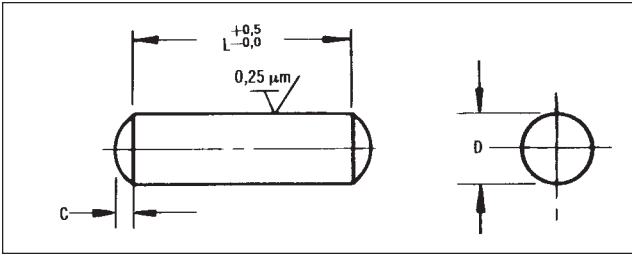
L	1/8 Dia. Pin D = .1251	5/32 Dia. Pin D = .1562	3/16 Dia. Pin D = .1875
	Part No.	Part No.	Part No.
1/8	D44-125	—	—
5/32	D44-156	—	—
3/16	D44-187	D45-187	—
7/32	D44-218	—	—
1/4	D44-250	D45-250	D46-250
5/16	D44-312	D45-312	D46-312
3/8	D44-375	D45-375	D46-375
7/16	D44-437	D45-437	D46-437
1/2	D44-500	D45-500	D46-500
5/8	D44-625	D45-625	D46-625
3/4	D44-750	—	D46-750
7/8	D44-875	—	D46-875
1	D44-1000	—	D46-1000
1-1/8	D44-1125	—	—

L	1/4 Dia. Pin D = .2500	5/16 Dia. Pin D = .3125	3/8 Dia. Pin D = .3750	1/2 Dia. Pin D = .5000
	Part No.	Part No.	Part No.	Part No.
3/8	D47-375	—	—	—
7/16	D47-437	—	—	—
1/2	D47-500	D48-500	—	—
9/16	D47-562	—	D49-562	—
5/8	D47-625	—	—	—
3/4	D47-750	D48-750	D49-750	D50-750
7/8	D47-875	—	—	—
1	D47-1000	D48-1000	D49-1000	D50-1000
1-1/4	D47-1250	D48-1250	D49-1250	—
1-1/2	—	—	D49-1500	—

METRIC PRECISION DOWEL PINS — PRESS FIT

All Dimensions In Millimeters

1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12 mm Diameters



Material: 303 Series Stainless Steel

L	D=1 ^{+0.009} C=0.15	D=1.5 ^{+0.009} C=0.23	D=2 ^{+0.009} C=0.3	D=2.5 ^{+0.009} C=0.4
	Part No.	Part No.	Part No.	Part No.
3	MDP1-1	—	—	—
4	MDP1-2	MDP2-2	MDP3-2	MDP4-2
5	MDP1-3	MDP2-3	MDP3-3	MDP4-3
6	MDP1-4	MDP2-4	MDP3-4	MDP4-4
8	MDP1-5	MDP2-5	MDP3-5	MDP4-5
10	MDP1-6	MDP2-6	MDP3-6	MDP4-6
12	MDP1-7	MDP2-7	MDP3-7	MDP4-7
14	—	MDP2-8	MDP3-8	MDP4-8
16	—	MDP2-9	MDP3-9	MDP4-9
18	—	—	MDP3-10	MDP4-10
20	—	—	MDP3-11	MDP4-11
24	—	—	—	MDP4-12

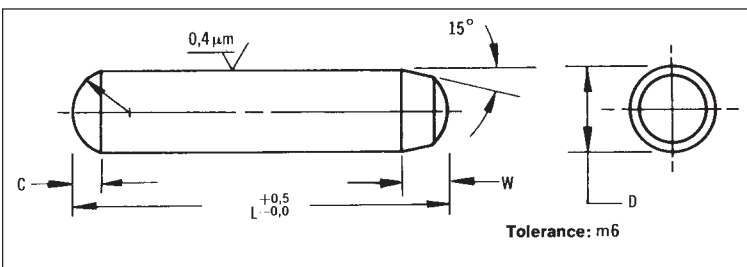
L	D=3 ^{+0.012} C=0.45	D=4 ^{+0.012} C=0.6	D=5 ^{+0.012} C=0.75	D=6 ^{+0.015} C=0.9
	Part No.	Part No.	Part No.	Part No.
4	MDP5-1	—	—	—
5	MDP5-2	MDP6-2	MDP7-2	—
6	MDP5-3	MDP6-3	MDP7-3	MDP8-3
8	MDP5-4	MDP6-4	MDP7-4	MDP8-4
10	MDP5-5	MDP6-5	MDP7-5	MDP8-5
12	MDP5-6	MDP6-6	MDP7-6	MDP8-6
14	MDP5-7	MDP6-7	MDP7-7	MDP8-7
16	MDP5-8	MDP6-8	MDP7-8	MDP8-8
18	MDP5-9	MDP6-9	MDP7-9	MDP8-9
20	MDP5-10	MDP6-10	MDP7-10	MDP8-10
24	MDP5-11	MDP6-11	MDP7-11	MDP8-11
28	MDP5-12	MDP6-12	MDP7-12	MDP8-12

L	D=8 ^{+0.015} C=1.2	D=10 ^{+0.015} C=1.5	D=12 ^{+0.018} C=1.8
	Part No.	Part No.	Part No.
12	MDP9-2	—	—
14	MDP9-3	MDP10-3	—
16	MDP9-4	MDP10-4	—
18	MDP9-5	MDP10-5	MDP11-5
20	MDP9-6	MDP10-6	MDP11-6
24	MDP9-7	MDP10-7	MDP11-7
28	MDP9-8	MDP10-8	MDP11-8
32	MDP9-9	MDP10-9	MDP11-9
36	—	MDP10-10	MDP11-10
40	—	MDP10-11	MDP11-11
50	—	—	MDP11-12

METRIC HARDENED DOWEL PINS — PRESS FIT

All Dimensions In Millimeters

2, 2.5, 3, 4, 5, 6, 8, 10 mm Diameters



Material: 416 Stainless Steel
Hardened to: 36-42 Rockwell C

L	D=2 ^{+0.009} W=0.78 C=0.3	D=2.5 ^{+0.009} W=0.95 C=0.4	D=3 ^{+0.012} W=1.1 C=0.45	D=4 ^{+0.012} W=1.4 C=0.6
	Part No.	Part No.	Part No.	Part No.
5	MDP13-1	MDP14-1	—	—
6	MDP13-2	MDP14-2	—	—
8	MDP13-3	MDP14-3	MDP15-2	—
10	MDP13-4	MDP14-4	MDP15-3	—
12	MDP13-5	MDP14-5	MDP15-4	MDP16-4
14	MDP13-6	MDP14-6	MDP15-5	MDP16-5
16	MDP13-7	MDP14-7	MDP15-6	MDP16-6
20	MDP13-8	MDP14-8	MDP15-7	MDP16-7
24	MDP13-9	MDP14-9	MDP15-8	MDP16-8
			MDP15-9	MDP16-9

L	D=5 ^{+0.012} W=1.7 C=0.75	D=6 ^{+0.015} W=2.1 C=0.9	D=8 ^{+0.015} W=2.6 C=1.2	D=10 ^{+0.018} W=3.0 C=1.5
	Part No.	Part No.	Part No.	Part No.
10	MDP17-1	—	—	—
12	MDP17-2	MDP18-2	—	—
16	MDP17-3	MDP18-3	MDP19-3	—
20	MDP17-4	MDP18-4	MDP19-4	MDP20-4
24	MDP17-5	MDP18-5	MDP19-5	MDP20-5
30	MDP17-6	MDP18-6	MDP19-6	MDP20-6
40	—	MDP18-7	MDP19-7	MDP20-7

METRIC DOWEL PIN KIT

Description of Contents	Number of Parts	Part No.
Dowel Pins, hardened stainless steel. Eight diameters (2 to 10) with assorted lengths (5 to 24).	140	MAK9



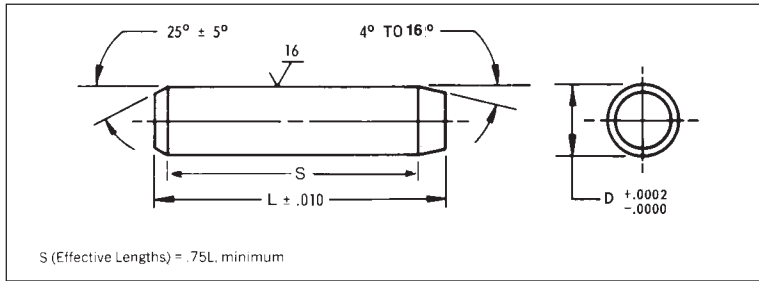
1-800-453-1692
www.aboveboardelectronics.com



Phone: 800-243-6125 ■ FAX: 203-758-8271
E-Mail: sales@pic-design.com

DOWEL PINS — HARDENED - PRESS FIT

1/16, 3/32, 1/8, 5/32, 3/16, 1/4, 5/16 and 3/8 Inch Diameters



Material: Conforms to specification NASM 16555, 416 Stainless Steel

Finish: Clear Passivate

Hardened To: 36-42 Rockwell C. *Pins not to MS lengths

L	1/16 Dia. Pin D = .0626 Part No.	3/32 Dia. Pin D = .0939 Part No.	1/8 Dia. Pin D = .1251 Part No.	5/32 Dia. Pin D = .1563 Part No.
3/16	D15-187	*D16-187	—	—
1/4	D15-250	*D16-250	*D17-250	—
5/16	D15-312	D16-312	*D17-312	—
3/8	D15-375	D16-375	D17-375	*D18-375
7/16	D15-437	D16-437	D17-437	*D18-437
1/2	D15-500	D16-500	D17-500	D18-500
5/8	D15-625	D16-625	D17-625	D18-625
3/4	D15-750	D16-750	D17-750	D18-750
7/8	*D15-875	D16-875	D17-875	D18-875
1	D15-1000	D16-1000	D17-1000	D18-1000

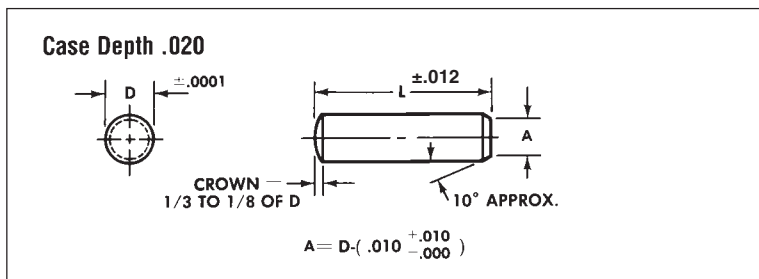
L	3/16 Dia. Pin D = .1876 Part No.	1/4 Dia. Pin D = .2501 Part No.	5/16 Dia. Pin D = .3126 Part No.	3/8 Dia. Pin D = .3753 Part No.
3/8	*D19-375	—	—	—
1/2	*D19-500	*D20-500	—	—
5/8	D19-625	*D20-625	—	—
3/4	D19-750	D20-750	*D21-750	*D22-750
1	D19-1000	D20-1000	D21-1000	*D22-1000
1-1/4	D19-1250	D20-1250	D21-1250	D22-1250
1-1/2	—	D20-1500	D21-1500	D22-1500

DOWEL PINS KIT

Description of Contents	Number of Parts	Part No.
Dowel Pins—Hardened Stainless Steel Meet MS Spec. Eight Diameters (1/16 to 3/8) with Assorted Lengths (1/4" to 1-1/2")	140	Y10K

DOWEL PINS — HARDENED AND GROUND - PRESS FIT

1/16, 3/32, 1/8, 3/16, 1/4, 5/16 and 3/8 Inch Diameters



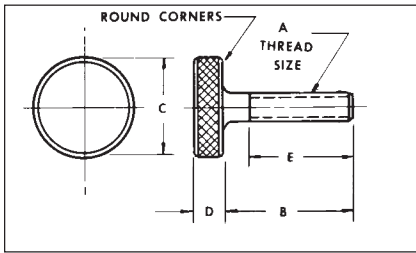
Material: Carbon Steel
Carburized, RC60

L	1/16 Dia. Pin D = .0627 Part No.	3/32 Dia. Pin D = .0940 Part No.	1/8 Dia. Pin D = .1252 Part No.
3/16	D25-187	—	—
1/4	D25-250	D26-250	D27-250
3/8	D25-375	D26-375	D27-375
1/2	D25-500	D26-500	D27-500
5/8	D25-625	D26-625	D27-625
3/4	D25-750	D26-750	D27-750
1	D25-1000	D26-1000	D27-1000
1-1/4	—	—	D27-1250
1-1/2	—	—	D27-1500

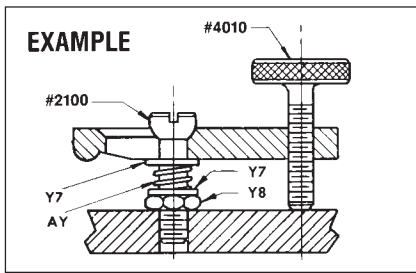
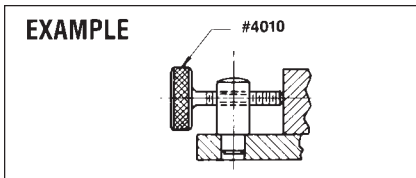
L	3/16 Dia. Pin D = .1877 Part No.	1/4 Dia. Pin D = .2502 Part No.	5/16 Dia. Pin D = .3127 Part No.	3/8 Dia. Pin D = .3752 Part No.
1/2	D29-500	D30-500	D31-500	D32-500
3/4	D29-750	D30-750	D31-750	D32-750
1	D29-1000	D30-1000	D31-1000	D32-1000
1-1/4	D29-1250	D30-1250	D31-1250	D32-1250
1-1/2	D29-1500	D30-1500	D31-1500	D32-1500

KNURLED THUMB SCREWS

#4-40 To 1/4-20



Material: 303 Stainless Steel

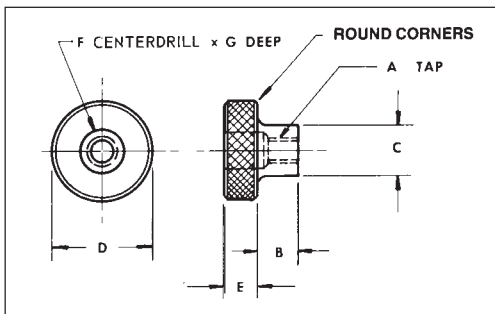


	A	B	C	D	E	Part No.
# 4-40	3/8	1/4	1/8	5/16	4010	
	1/2	1/4	1/2	7/16	4011	
	3/4	1/4	1/2	5/8	4012	
	3/8	3/8	1/8	5/16	4013	
	1/2	3/8	1/8	7/16	4014	
# 6-32	1/2	1/4	1/2	7/16	4015	
	3/4	1/4	1/2	5/8	4016	
	1	1/4	1/2	13/16	4017	
	3/8	3/8	1/8	5/16	4018	
	1/2	3/8	1/8	3/8	4019	
# 8-32	1/2	1/4	1/2	7/16	4020	
	3/4	1/4	1/2	5/8	4021	
	1	1/4	1/2	13/16	4022	
	3/8	3/8	1/8	5/16	4023	
	1/2	3/8	1/8	3/8	4024	
	#10-24	1/2	3/8	3/16	7/16	4025
		3/4			5/8	4026
1		13/16			4027	
3/4		5/8	4029			
1		13/16	4030			
1-1/4	1	4031				
1-1/2	1-1/4	4032				
3/4	3/4	5/8	4033			

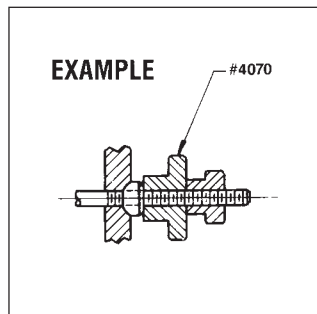
	A	B	C	D	E	Part No.
#10-32	3/4	1	3/8	3/16	7/16	4037
					5/8	4038
					13/16	4039
					1	4040
					1-1/4	4041
	1	1-1/4	1/2		5/8	4042
					13/16	4043
					1	4044
					1-1/4	4045
					5/8	4046
1-1/4	1	3/4	1	4047		
			1-1/4	4048		
			5/8	4049		
			13/16	4050		
			1	4051		
1/4-20	3/4	1	3/4	3/16	1	4052
					1-1/4	4053
					1-1/2	4054
					5/8	4055
					13/16	4056
	1	2	1		1-1/4	4057
					1-5/8	4058
					5/8	4059
					13/16	4060
					1	4061

KNURLED THUMB NUTS

#4-40 To 1/4-20

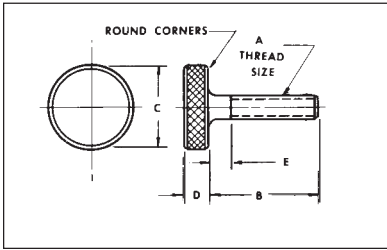


Material: 303 Stainless Steel



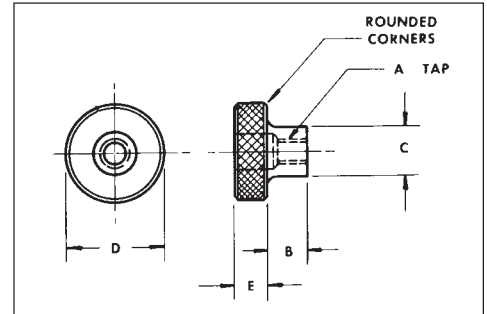
	A	B	C	D	E	F	G	Part No.
# 4-40	1/4	1/4	1/2	1/8	1/8	1/8	1/8	4070
	1/2	1/4	1/2	1/8	1/8	3/8	3/8	4071
# 6-32	1/4	1/4	1/2	—	—	3/32	3/32	4074
	1/2	1/4	1/2	1/8	#26	11/32	11/32	4075
	1/4	1/4	3/4	—	—	—	3/32	4076
# 8-32	1/4	5/16	1/2	1/8	#15	—	—	4078
	1/2		1/4			4079		
	1/4		—			—	4080	
	1/2		1/4			—	4081	
#10-24	1/4	3/8	1/2	3/16	—	—	—	4082
	1/4		1			—	—	4084
	1/2		1			13/64	1/4	4085
#10-32	1/4	3/8	1/2	3/16	—	—	—	4086
	1/2		1/2			13/64	1/4	4087
	1/4		1			—	—	4088
	1/2		1			13/64	1/4	4089
1/4-20	1/4	1/2	3/4	1/4	—	—	—	4090
	1/2		3/4			17/64	1/4	4091
	1/4		1			—	—	4092
	1/2		1			17/64	1/4	4093
	3/4		1			17/64	1/2	4094

METRIC KNURLED THUMB SCREWS & NUTS



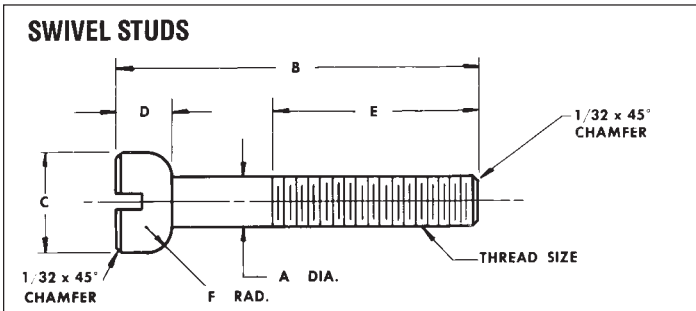
Material: 303 Stainless Steel

	A	B	C	D	E	Part No.
M3 x 0.5	8	10	12	2.5	0	MTS1-1
	10	12			0	MTS1-2
	12	14			2	MTS1-3
	16	18			2	MTS1-4
M4 x 0.7	10	12	16	3.5	0	MTS1-5
	12	14			0	MTS1-6
	16	18			0	MTS1-7
	20	24			3	MTS1-8
	25	30			3	MTS1-9
M5 x 0.8	12	16	20	4	0	MTS1-10
	16	20			0	MTS1-11
	20	24			3	MTS1-12
	30	36			3	MTS1-13
M6 x 1	16	20	24	5	0	MTS1-14
	20	24			4	MTS1-15
	25	29			4	MTS1-16
	30	34			4	MTS1-17



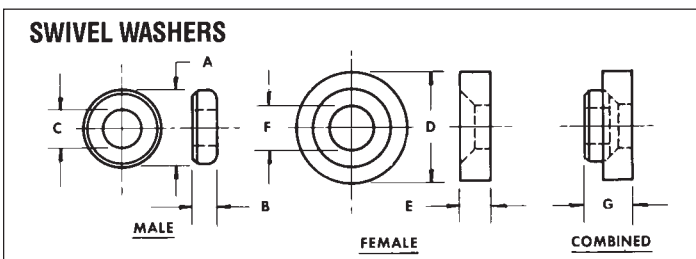
	A	B	C	D	E	Part No.
M3 x 0.5	5	6	12	2.5		MTN1-1
M4 x 0.7	6	8	16	3.5		MTN1-2
M5 x 0.8	7.5	10	20	4		MTN1-3
M6 x 1	10	12	24	5		MTN1-4

SWIVEL STUDS, NUTS & WASHERS



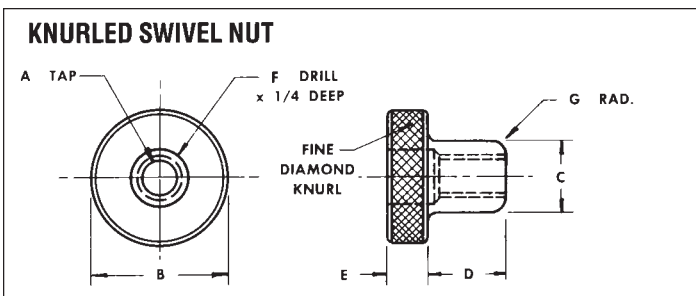
Material: 303 Stainless Steel

Thread Size	A	B	C	D	E	F	Part No.
#10-32	.190	1	3/8	3/16	5/8	1/8	2100
		1-1/4					2101
		1-1/2					2102
1/4-20	.250	1-1/4	7/16	1/4	7/8	1/8	2103
		1-1/2					2104
		1-3/4					2105
		2					2106



Material: 303 Stainless Steel

Screw Size	Male				Female				Part No.
	A	B	C	Part No.	D	E	F	G	
# 4	9/32		.116	3160			5/32		3170
# 6	9/32	1/8	.144	3161	3/8	1/8	11/64	13/64	3171
# 8	5/16		.169	3162			3/16		3172
#10	3/8	5/32	.196	3163	7/16	1/8	7/32	15/64	3173
1/4	7/16	3/16	.257	3164	1/2	5/32	9/32	17/64	3174
5/16	1/2	3/16	.323	3165	9/16	3/16	11/32	21/64	3175
3/8	5/8	1/4	.386	3166	11/16	1/4	13/32	27/64	3176

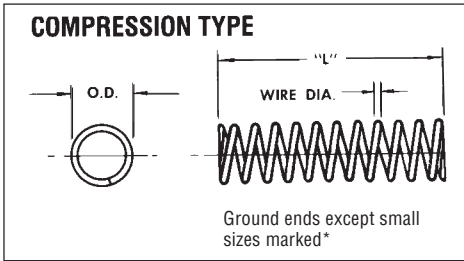


Material: 303 Stainless Steel

	A	B	C	D	E	F	G	Part No.
# 4-40			9/32			1/8		3140
# 6-32		1/2	9/32	1/2	1/8	#26	3/32	3141
# 8-32			5/16			#15		3142
#10-24		3/4	3/8	9/16	3/16	13/64		3143
#10-32		3/4	3/8	9/16	3/16	13/64	1/8	3144
1/4-20		1	7/16		1/4	17/64		3145

STAINLESS PRECISION SPRINGS

Compression Extension Anti-Backlash & Experimental Springs



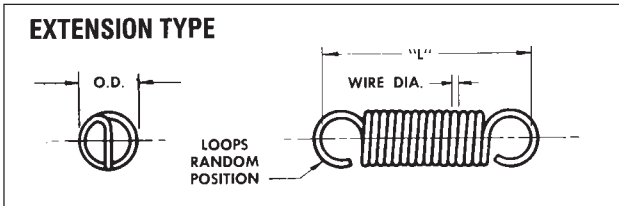
Material: 302 Stainless Steel (Spring Temper)

K = Average spring rate-LB./IN.

O.D.	Wire Dia.	Free Length "L"	K	Aprox. of Coils	Part Number
1/16	.008	1/4	4.3	20	*AY-20
	.008	1/2	2	23	*AY-22
3/32	.010	1/4	4.1	8	*AY-24
	.010	1/2	1.9	16	*AY-26
	.010	3/8	5.4	13	*AY-28
	.010	3/4	2.7	24	*AY-30
1/8	.016	1/4	14.6	7	AY-32
	.016	1/2	6.9	12	AY-34
	.018	3/8	15	10	AY-36
	.018	3/4	7.1	19	AY-38
	.020	3/8	23.1	11	AY-40
	.020	3/4	11	20	AY-42
	.022	1/2	25.8	14	AY-44
	.022	1	12.2	27	AY-46
3/16	.018	1/2	5.6	7	AY-48
	.018	1	2.7	13	AY-50
	.020	1/2	8.1	8	AY-52
	.020	1	3.7	15	AY-54

O.D.	Wire Dia.	Free Length "L"	K	Aprox. of Coils	Part Number
3/16	.022	1/2	11.8	8	AY-56
	.022	1	5.4	16	AY-58
	.024	1/2	15.8	9	AY-60
	.024	1	7.5	17	AY-62
	.026	1/2	22.2	9	AY-64
	.026	1	10.2	17	AY-66
	.029	3/4	21.5	14	AY-68
	.029	1-1/2	10.4	27	AY-70
	.032	3/4	34.3	14	AY-72
	.032	1-1/2	15.6	28	AY-74
1/4	.026	1/2	14.5	6	AY-76
	.026	1	6.2	11	AY-78
	.035	1/2	40.9	7	AY-80
	.035	1	22.50	13	AY-82

*Ground ends except small sizes marked

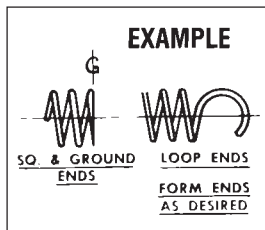
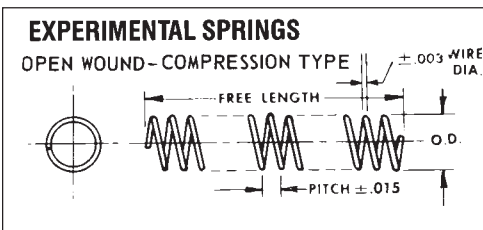


Material: 302 Stainless Steel (Spring Temper)

K = AVERAGE SPRING RATE-LB./IN.

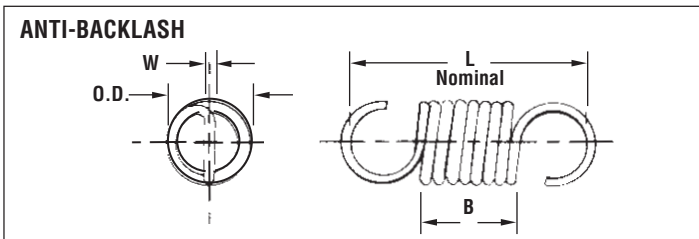
O.D.	Wire Dia.	Free Length "L"	K	Part No.
1/16	.008	1/2	.6	AZ-22
3/32	.010	3/4	.4	AZ-26
	.016	3/4	1.7	AZ-28
1/8	.016	1-1/4	1.0	AZ-30
	.020	3/4	6.2	AZ-32
3/16	.022	3/4	3.2	AZ-36
	.022	1-1/4	1.5	AZ-38
	.031	3/4	20.0	AZ-44

O.D.	Wire Dia.	Free Length "L"	K	Part No.
1/4	.026	1-1/4	1.6	AZ-50
	.029	1-1/4	2.8	AZ-54
	.031	3/4	10.0	AZ-56
	.031	1-1/4	4.1	AZ-58
	.034	3/4	14.8	AZ-60
	.034	1-1/4	6.6	AZ-62



Material: 302 Stainless Steel-Spring Temper

O.D.	Fits Over Pin or Screw Dia.	Wire Dia.	Aprox. No. of Coils	Pitch	Free Length	Part No.
3/32	—	.0159	32	.042	1-1/2	AY-1
1/8	—	.0179	37	.062	2	AY-2
3/16	—	.0226	37	.075	2-1/2	AY-3
1/4	—	.0253	29	.093	3	AY-4
5/16	—	.0320	29	.125	3-1/2	AY-5
9/64	3/32	.0159	17	.042	1	AY-7
11/64	1/8	.0179	19	.062	1-1/4	AY-8
1/4	3/16	.0226	22	.075	1-1/2	AY-9
21/64	1/4	.0253	19	.093	1-3/4	AY-10
25/64	5/16	.0320	16	.125	2	AY-11
15/32	3/8	.0403	12	.156	2-1/4	AY-12
39/64	1/2	.0465	15	.156	2-1/2	AY-13

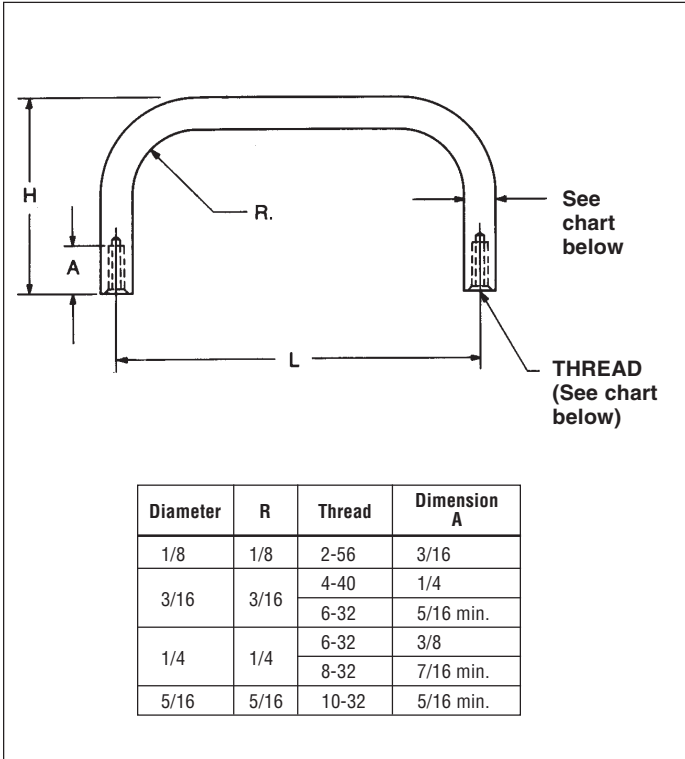


Type Gear	Pitch	W Wire Dia.	L Nominal	O.D. ±.010	K	B Approx.	Part Number
Spur	48 to 120	.012	.350	.115	1.7	.170	BE-16
Worm	48 & 64	.015	.350	.115	5.7	.170	BE-66
Spur	24 & 32	.018	.350	.115	16	.170	BE-67
Mini Spur	Miniature	.012	.240	.093	0.6	.120	BE-16M

STAINLESS PRECISION SPRING KITS

Description of Contents	Number of Parts	Part No.
Compression Springs-Stainless Steel Assorted diameters from .057 to .240 and lengths from 1/4" to 2".	150	Y7K
Extension Springs-Stainless Steel Assorted diameters from 1/16 to 1/2 and lengths from 1/4" to 2".	150	Y8K

HANDLES — CHASSIS



Material: Aluminum, Stainless Steel

Aluminum

Finish: Anodize — Black

1/8 Round Internal Thread Handle

Center to Center L	Leg Height H	Part Number Prefix	Thread	Material / Finish
3/4"	1/2"	EF000-	for 2-56 add 256 -	for Aluminum Black Anodize add A1 or for Stainless Steel add SS
1"	1/2"	EF003-		
1-1/4"	1/2"	EF004-		
1-1/2"	1/2"	EF005-		
2"	1/2"	EF006-		

Example: 1/8" Round Aluminum, Black Anodize, 1-1/2" length: **EF005-256-A1**

3/16 Round Internal Thread Handle

Center to Center L	Leg Height H	Part Number Prefix	Thread	Material / Finish
1"	3/4"	EF054-	for 4-40 add 440 -	for Aluminum Black Anodize add A1
1-1/4"	3/4"	EF055-		
1-1/2"	3/4"	EF056-		
2"	3/4"	EF058-		
3"	3/4"	EF059-		
4"	3/4"	EF060-	for 6-32 add 632 -	for Aluminum Black Anodize add A1 or for Stainless Steel add SS
1"	3/4"	EF054-		
1-1/4"	3/4"	EF055-		
1-1/2"	3/4"	EF056-		
2"	3/4"	EF058-		
3"	3/4"	EF059-		
4"	3/4"	EF060-		

Example: 3/16" Round Stainless Steel, 3" length, 6-32 thread: **EF059-632-SS**

1/4 Round Internal Thread Handle

Center to Center L	Leg Height H	Part Number Prefix	Thread	Material / Finish
1-1/8"	1"	EF102-	for 6-32 add 632 - or for 8-32 add 832 -	for Aluminum Black Anodize add A1 or for Stainless Steel add SS
1-1/4"	1"	EF103-		
1-1/2"	1"	EF104-		
2"	1"	EF106-		
3"	1"	EF110-		
4"	1"	EF111-		
5"	1"	EF112-		

Example: 1/4" Round Aluminum, Black Anodize, 2" length, 8-32 thread: **EF106-832-A1**

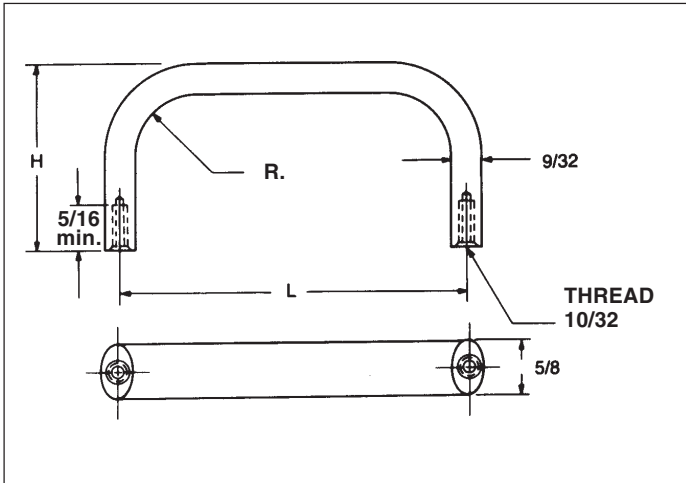
5/16 Round Internal Thread Handle

Center to Center L	Leg Height H	Part Number Prefix	Thread	Material / Finish
2"	1-1/2"	EF172 —	for 10-32 add 1032 -	for Aluminum Black Anodize add A1 or for Stainless Steel add SS
2-1/2"	1-1/2"	EF176 —		
3"	1-1/2"	EF178 —		
3-1/2"	1-1/2"	EF181 —		
4"	1-1/2"	EF182 —		
4-1/2"	1-1/2"	EF184 —		
5"	1-1/2"	EF187 —		
5-1/2"	1-1/2"	EF189 —		
6"	1-1/2"	EF191 —		
6-1/2"	1-1/2"	EF193 —		

Example: 5/16" Round Stainless Steel, 5" length, 10-32 thread: **EF187-1032-SS**

HANDLES — CHASSIS

5/8 x 9/32 Oval Internal Thread Handle Aluminum — Black Anodize (10-32 Thread)

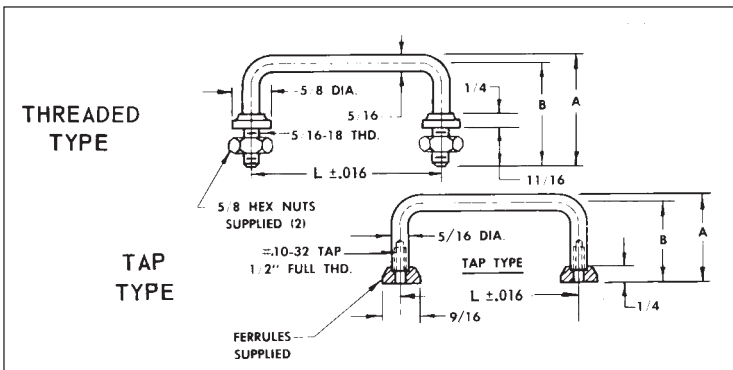


Center to Center L	Leg Height H	Part Number
3"	1"	EF349-1032-A1
4"	1"	EF350-1032-A1
4-9/16"	1"	EF353-1032-A1
3"	1-9/32"	EF358-1032-A1
4"	1-9/32"	EF359-1032-A1
4-1/2"	1-9/32"	EF361-1032-A1
4-9/16"	1-9/32"	EF362-1032-A1
5"	1-9/32"	EF363-1032-A1
6"	1-9/32"	EF364-1032-A1
4"	1-1/2"	EF368-1032-A1
4-1/2"	1-1/2"	EF370-1032-A1
4-9/16"	1-1/2"	EF371-1032-A1
5"	1-1/2"	EF372-1032-A1
6"	1-1/2"	EF373-1032-A1
6-7/16"	1-1/2"	EF374-1032-A1
7"	1-1/2"	EF375-1032-A1
3"	1-3/4"	EF376-1032-A1
4"	1-3/4"	EF377-1032-A1
4-9/16"	1-3/4"	EF380-1032-A1
5"	1-3/4"	EF381-1032-A1
6"	1-3/4"	EF383-1032-A1
6-7/16"	1-3/4"	EF384-1032-A1
7"	1-3/4"	EF385-1032-A1

Material: Aluminum
Aluminum
Finish: Anodize — Black

HANDLES — CHASSIS

Original Style Threaded & Tap Type

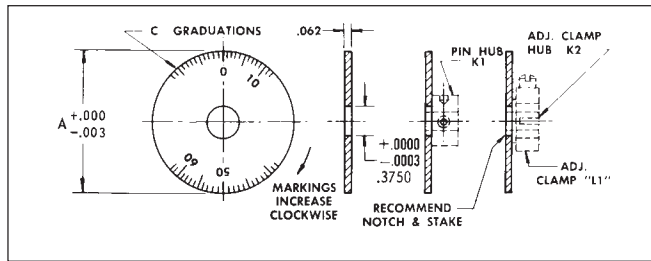


L	B	Threaded Type		Tap Type	
		A	Part Number	A	Part Number
3.000	1-1/2	1-21/32	EF-1	1-21/32	EF-5
4.500	1-1/2	1-21/32	EF-2	1-21/32	EF-6
5.500	1-5/8	1-25/32	EF-3	1-25/32	EF-7
6.500	1-3/4	1-29/32	EF-4	1-29/32	EF-8

Material: Stainless Steel

PRECISION ENGRAVED DISC DIALS

Clockwise & Counter Clockwise



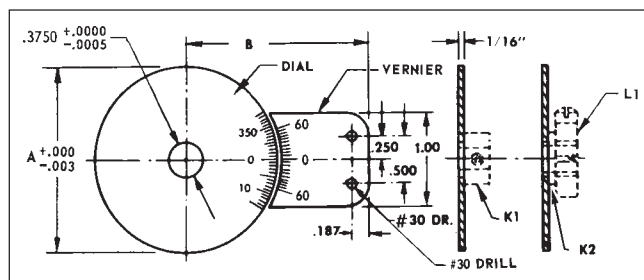
Material: 2024-T4 Aluminum (Black Anodize)

For Dial Hubs See Page 12-67

A	Steps In Degrees	C	Range	Rotation	Part No.
1.500	—	BLANK	—	Clockwise	MI-1
	2°	180	0-360		*MI-2
	3°36'	100	0-100		MI-3
	6°	60	0-60		MI-4
	7°12'	50	0-50		MI-5
	14°24'	25	0-25		MI-6
	36°	10	0-10		MI-7
2.000	—	BLANK	—	Clockwise	MI-8
	2°	180	0-360		*MI-9
	3°	120	0-120		MI-9A
	3°36'	100	0-100		MI-10
	5°	72	0-72		MI-10A
	6°	60	0-60		MI-11
	7°12'	50	0-50		MI-12
14°24'	25	0-25	MI-13		
3.000	—	BLANK	—	Clockwise	MI-15
	1°	360	0-360		MI-15A
	2°	180	0-360		*MI-16
	1°48'	200	0-200		MI-17
	2°	180	0-180		MI-18
	3°	120	0-120		MI-18A
	3°36'	100	0-100		MI-19
5°	72	0-72	MI-19A		
7°12'	50	0-50	MI-20		
36°	10	0-10	MI-21		
4.000	—	BLANK	—	Clockwise	MI-22
	1°	360	0-360		MI-22A
	2°	180	0-360		*MI-23
	1°48'	200	0-200		MI-24
	2°	180	0-180		MI-25
	3°36'	100	0-100		MI-26
	7°12'	50	0-50		MI-27
36°	10	0-10	MI-28		
3.000	1°	360	0-360	Counter-Clockwise	MI-29
	2°	180	0-360		*MI-30
	3°36'	100	0-100		MI-31
4.000	1°	360	0-360	Counter-Clockwise	MI-32
	2°	180	0-360		*MI-33

Numerals Filled with White. *Dial Numbered Every 20°.
Special disc dials engraved to order. Specify blank dial number with sketch of engraving.

DISC DIALS & VERNIER SETS



Material: 2024-T4 Aluminum
Finish: Black Anodize

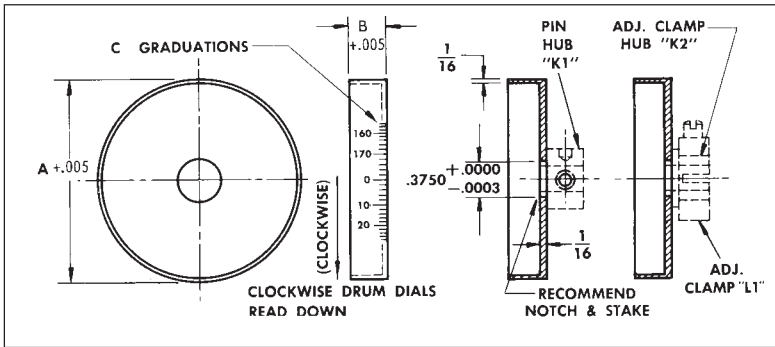
For Dial Hubs See Page 12-67

A	B	Vernier Reading	Graduations	Range	Disc Dial Only Part No.	Disc Vernier Only Part No.	Set Part No.
1.500	1.760	12'	180 in 2° Steps	0-360°	*AW-1-D	AW-1-V	AW-1
2.000	2.010	12'	180 in 2° Steps	0-360°	*AW-2-D	AW-2-V	AW-2
3.000	2.510	6'	360 in 1° Steps	0-360°	AW-3-D	AW-3-V	AW-3
4.000	3.010	6'	360 in 1° Steps	0-360°	AW-4-D	AW-4-V	AW-4

*Dial Numbered Every 20°.

PRECISION ENGRAVED DRUM DIALS

Clockwise & Counter Clockwise



Material: 2024-T4 Aluminum (Black Anodize)

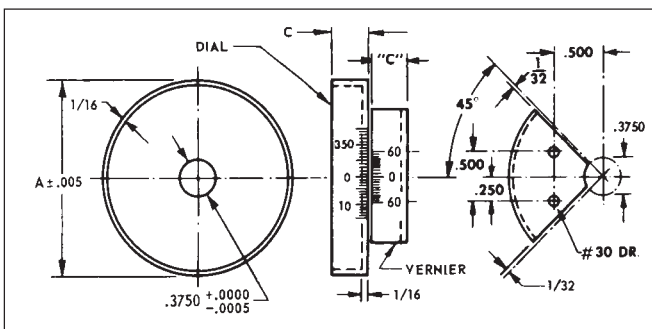
For Dial Hubs See Page 12-67

A	B	Steps In Degrees	C	Range	Rotation	Part No.
.990	.375	—	BLANK	—	Clockwise	M2-1B M2-1 *M2-19
		3°36'	100	0-100		
		2°	180	0-360		
1.490	.375	—	BLANK	—	Clockwise	M2-2B M2-2 M2-20 *M2-12
		6°	60	0-60		
		3°36'	100	0-100		
1.990	.375	—	BLANK	—	Clockwise	M2-3B M2-3 M2-4 M2-5 M2-13 *M2-14
		7°12'	50	0-50		
		14°24'	25	0-25		
		36°	10	0-10		
		2°	180	0-180		
2.490	.500	—	BLANK	—	Clockwise	M2-6B M2-6 M2-15 *M2-16 M2-21 M2-17
		1°48'	200	0-200		
		2°	180	0-180		
		2°	180	0-360		
		1°	360	0-360		
2.990	.500	—	BLANK	—	Clockwise	M2-7B M2-7 M2-8 M2-10 M2-22 *M2-11
		2°	180	0-180		
		3°36'	100	0-100		
		36°	10	0-10		
		1°	360	0-360		
2.990	.500	1°	360	0-360	Counter-Clockwise	M2-23 *M2-24
		2°	180	0-360		
2.490	.500	1°	360	0-360	Counter-Clockwise	M2-25 *M2-26
		2°	180	0-360		

*Dial Numbered Every 20°.

Special drum dials engraved to order. Specify blank dial number with sketch of engraving.

DRUM DIALS & VERNIER SETS



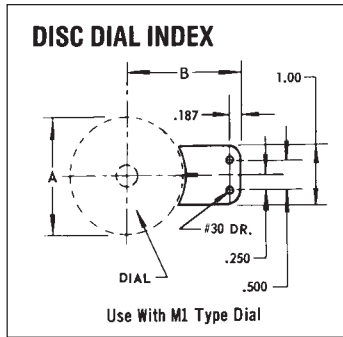
Material: 2024-T4 Aluminum
Finish: Black Anodize

A	C	Vernier Reading	Graduations	Range	Drum Dial Only Part No.	Drum Vernier Only Part No.	Set Part No.
1.490	.375	12'	180 in 2° Steps	0-360°	*AX-1-D	AX-1-V	AX-1
1.990	.375	12'	180 in 2° Steps	0-360°	*AX-2-D	AX-2-V	AX-2
2.490	.500	6'	360 in 1° Steps	0-360°	AX-3-D	AX-3-V	AX-3
2.990	.500	6'	360 in 1° Steps	0-360°	AX-4-D	AX-4-V	AX-4

*Dial Numbered Every 20°. Matching Vernier Numbered 120-0-120.

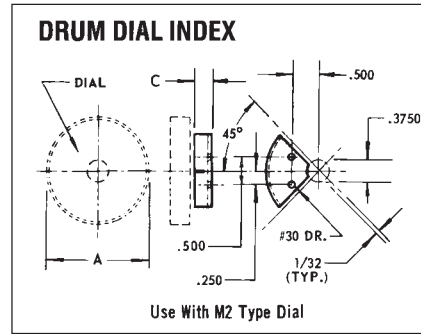
DIAL INDEX — DISC & DRUM

Precision Engraved



DISC DIAL INDEX

A Dial Dia.	B	Part No.
1.500	1.760	M4-1
2.000	2.010	M4-2
3.000	2.510	M4-3
4.000	3.010	M4-4

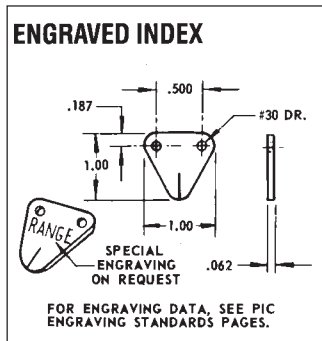


DRUM DIAL INDEX

A Dial Dia.	C	Part No.
1.490	.375	M5-1
1.990	.375	M5-2
2.490	.500	M5-3
2.990	.500	M5-4

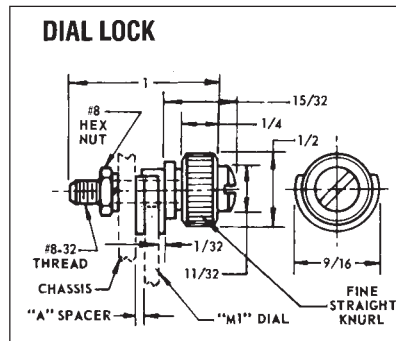
Material: 2024-T4 Aluminum
Finish: Black Anodize

ENGRAVED INDEX & DIAL LOCK



ENGRAVED INDEX

Material	Part No.
Clear Plexiglass	M3-1
2024-T4 Aluminum Black Anodize	M3-2

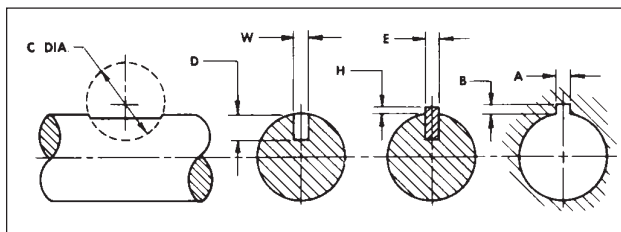


DIAL LOCK

A		Part No.
1/16	All Stainless Steel Mounting Hardware Is Supplied	M1-50
1/8		M1-51

DIAL LOCK DESIGNED TO LOCK FLAT DISC
DIALS SPACED "A" DISTANCE FROM PANEL

WOODRUFF KEYS

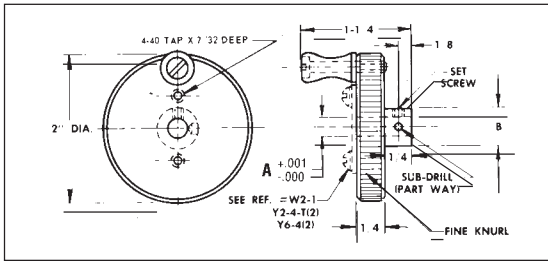


Material: 300 Series Stainless Steel.

A, B, C, D and W are key seat dimensions

Nominal Key	A +.002	B +.005	C +.018	D +.005	W +.0015	H +.010	E +.001	ANSI Key #	Part Number
1/16 x 1/4	.0635	.0372	.250	.0728	.0615	.0262	.0625	202	CR-201
3/32 x 5/16	.0948	.0529	.312	.0882	.0928	.0419	.0938	302.5	CR-207
1/16 x 3/8	.0635	.0372	.375	.1358	.0615	.0262	.0625	203	CR-211
3/32 x 3/8	.0948	.0529	.375	.1202	.0928	.0419	.0938	303	CR-212
1/8 x 3/8	.1260	.0685	.375	.1045	.1240	.0575	.1250	403	CR-213
1/16 x 1/2	.0635	.0372	.500	.1668	.0615	.0262	.0625	204	CR-1
1/8 x 1/2	.1260	.0685	.500	.1355	.1240	.0575	.1250	404	CR-3
1/8 x 5/8	.1260	.0685	.625	.1825	.1240	.0575	.1250	405	CR-5

PRECISION HAND CRANKS

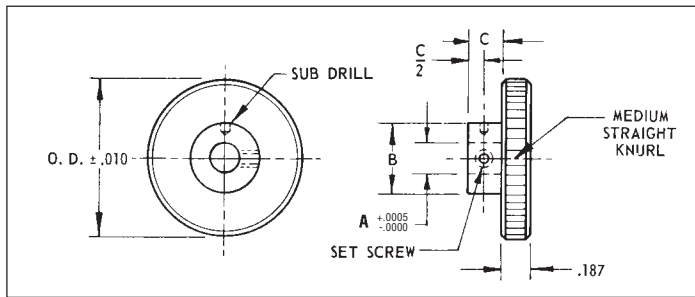


Material: 2024-T4 Aluminum
(Black Anodize)

A	B	Sub Drill	Set Screw	Part No.
.1248	.312	#69	#2-56	W3-1
.1873	.375	#60	#4-40	W3-2
.2498	.500	#50	#6-32	W3-3
.375	.750	—	(2)#8-32	W3-4

KNURLED KNOBS — PIN HUB

.125, .1875, .250 Bores

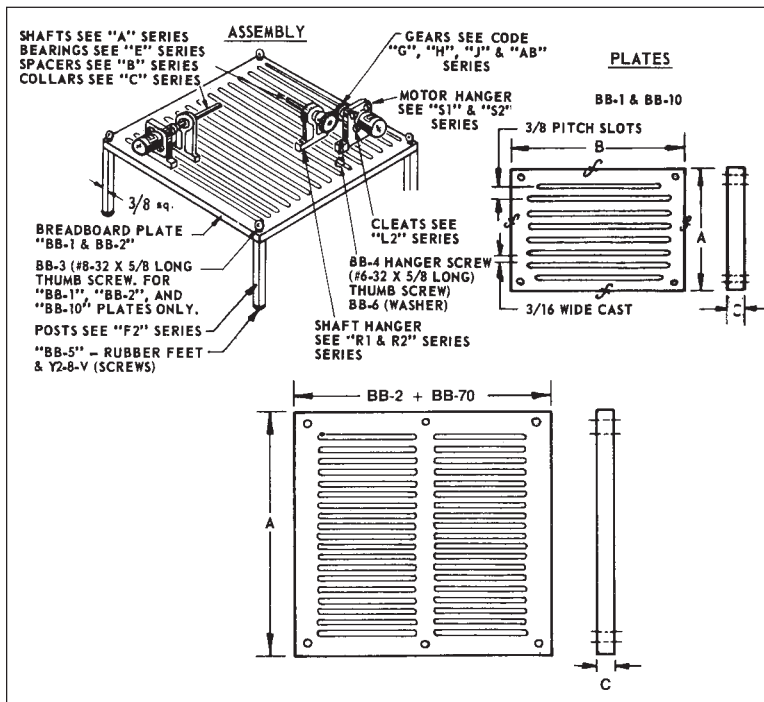


Material: 303 Stainless Steel

O.D.	A	B	C	Sub Drill	Set Screw	Part No.
1.000	.1248	.312	.187	#69	#2-56	BG-1
1.000	.1873	.375	.218	#60	#4-40	BG-4
1.500	.1873	.375	.218	#60	#4-40	BG-5
1.000	.2498	.500	.250	#50	#6-32	BG-7
1.500	.2498	.500	.250	#50	#6-32	BG-8
2.000	.2498	.500	.250	#50	#6-32	BG-9

Note: "A" bore is a thru hole.

BREADBOARD DEVELOPMENT PARTS



Description	Material	Dimensions	Part No.
Breadboard Plate	Aluminum (Anodized)	A=4", B=8", C=3/8	BB-10
		A=8", B=8", C=3/8	BB-1
		A=8", B=16", C=3/8	BB-2
		A=16", B=16", C=3/8	BB-70
Thumb Screw	Stainless Steel	#8-32 x 5/8 Long	BB-3
Washers		#6-32 x 5/8 Long	BB-4
		For #6 Screw	BB-6
Rubber Feet	Black Buna "S"	For F Series Posts	BB-5