



# Q

SERIES

## PRODUCT BULLETIN

### DOUBLE ACTING & SPRING RETURN

Torques to 500,000 in-lb (56,500 Nm)

Pressure to suit size

Temperatures from

-20°F to +185°F (-28°C to +85°C)

90° Rotation ( $\pm 5^\circ$  at each end of travel)

PNEUMATIC ACTUATORS





## TABLE OF CONTENTS

<b>Operation &amp; Piping</b>	<b>P5</b>
<b>Dimensions &amp; Technical Data</b>	<b>P6</b>
<b>Imperial data</b>	<b>P8</b>
<b>Metric data</b>	<b>P14</b>
<b>Double Acting Torque Data</b>	<b>P20</b>
<b>Spring Return Imperial Torque data</b>	<b>P22</b>
<b>Spring Return Metric Torque data</b>	<b>P26</b>
<b>Parts Diagram &amp; Materials Of Construction</b>	<b>P46</b>
<b>Engineering String</b>	<b>P48</b>

## OPERATION AND PIPING

D series actuators may be operated with instrument air, hydraulic fluid, water, or other power gases and fluids. Always ensure that the media is compatible with the materials of construction and that the pressure does not exceed the maximum allowable.

All QTRCO actuators are shipped in the Fail-Close or Left-Hand orientation unless ordered as Fail-Open or Right-Hand. The mode of operation may be reversed in the field simply by turning the actuator top-side down.

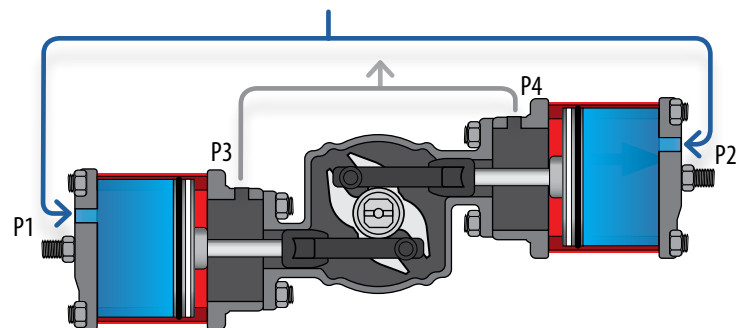
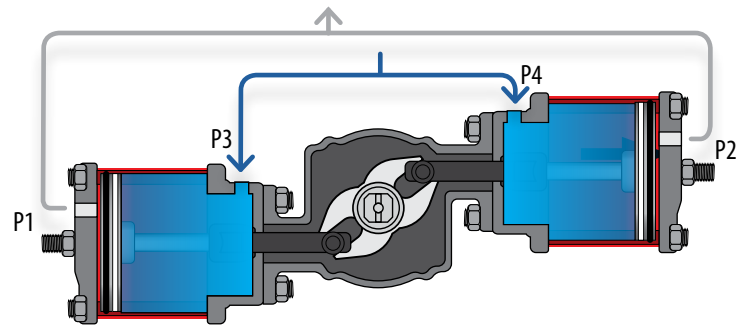
1. **Fail-Close (Left-Hand):** pressure on the end cap ports P1 & P2 pushes the pistons inward resulting in counterclockwise rotation. Exhaustion of pressure allows springs to push outward on the piston and cause clockwise rotation.
2. **Fail-Open (Right-Hand):** pressure on the end cap ports P1 & P2 pushes the pistons inward resulting in clockwise rotation. Exhaustion of pressure allows springs push outward on the piston and cause counterclockwise rotation.
3. **Double Acting (Left-Hand):** pressure on the end cap ports P1 & P2 pushes the piston inward and causes counterclockwise rotation. Pressure to ports P3 & P4 pushes outward on the pistons and cause clockwise rotation.
4. **Double Acting (Right-Hand):** pressure on the end cap port(s) pushes the piston(s) inward and causes clockwise rotation. Pressure to ports P3 & P4 pushes outward on the piston(s) and cause counterclockwise rotation.

## D SERIES-PRODUCT BULLETIN

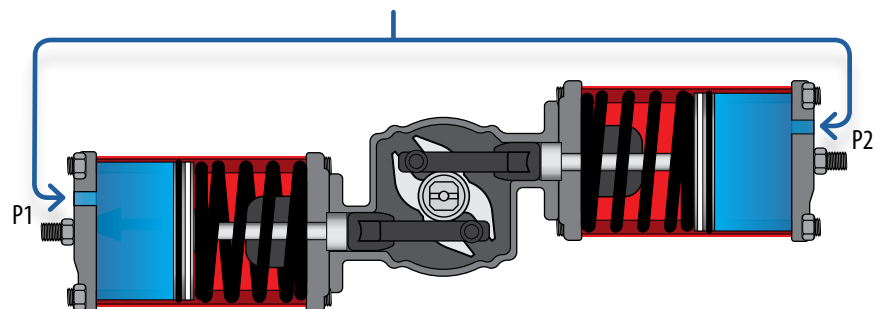
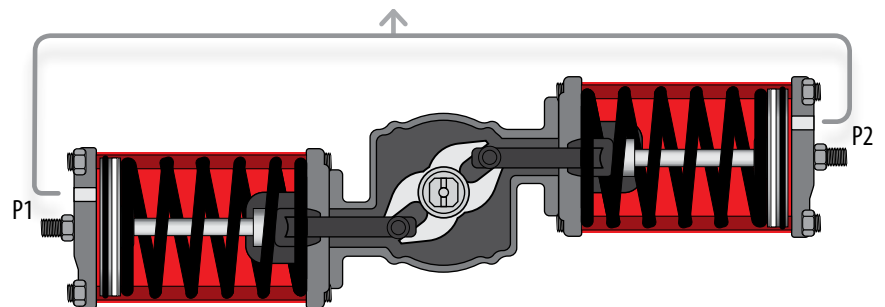
### PIPING GUIDELINES:

1. Both endcap pressure ports P1 and P2 must be pressurized simultaneously for proper operation.
2. Pressure ports P1 and P2 are typically connected together and powered by a single pathway.
3. For all Double Acting (DA) models, both base plate pressure ports P3 and P4 must be pressurized simultaneously for proper operation. These ports are not present on SR models.
4. Pressure ports P3 and P4 are typically connected together and powered by a single pathway.
5. Body ports P5 and P6 (shown in dimensional drawing on page 6) are breather vents which should be fitted with a strainer on SR models and may be plugged on DA models.

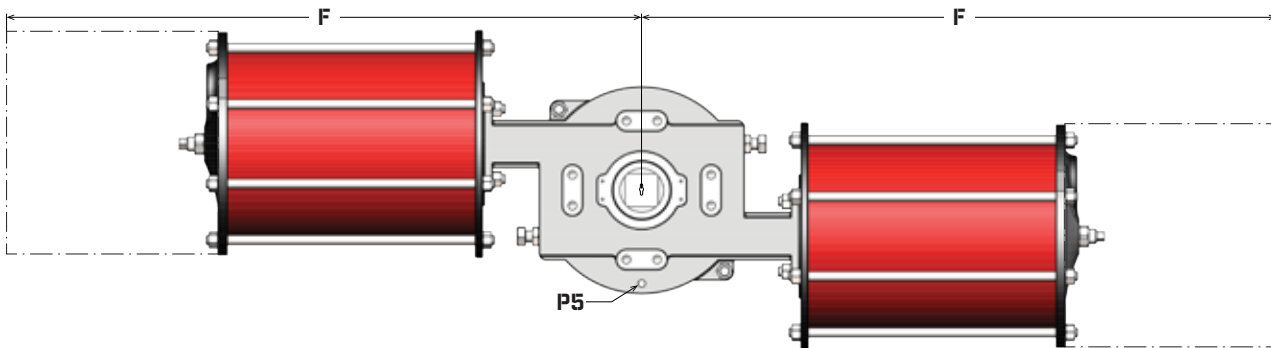
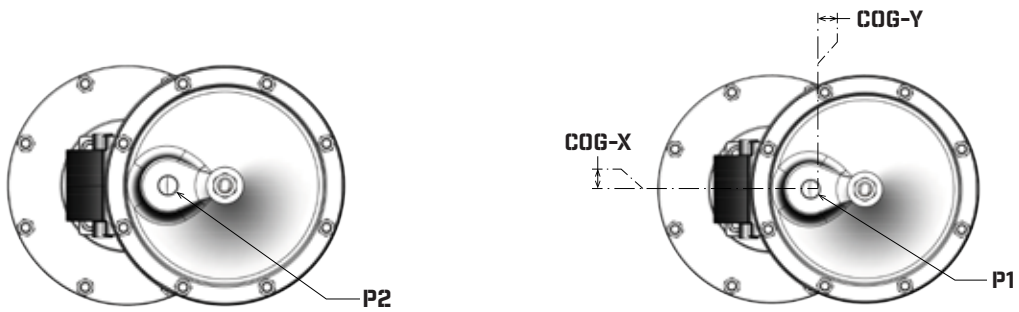
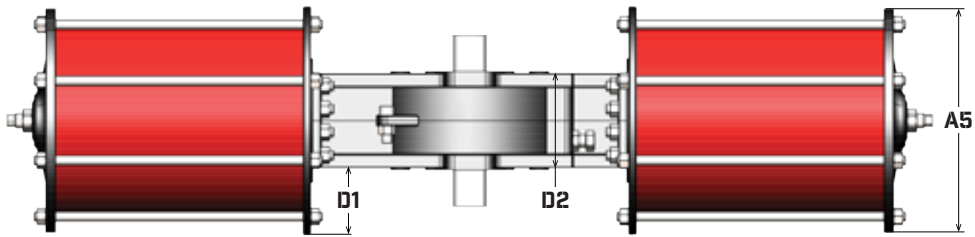
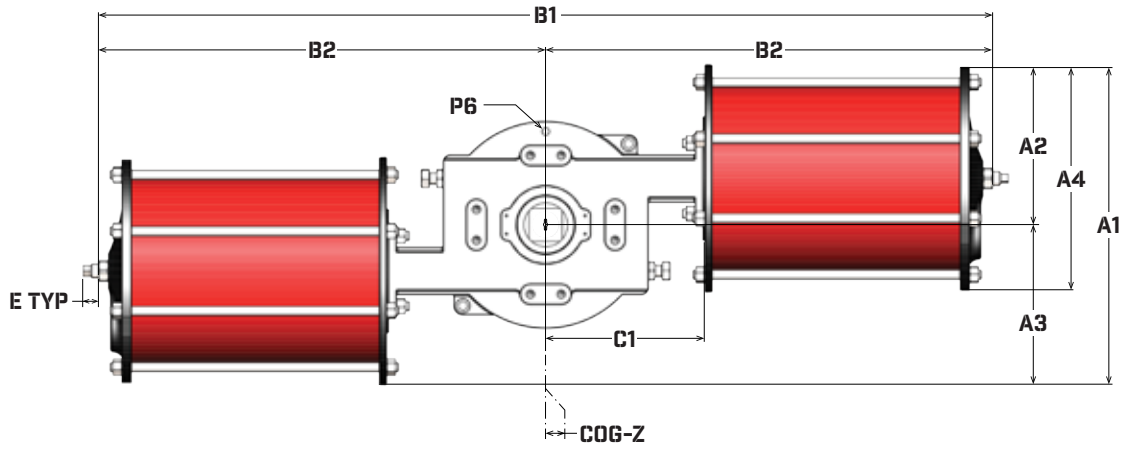
### DOUBLE ACTING (DA)



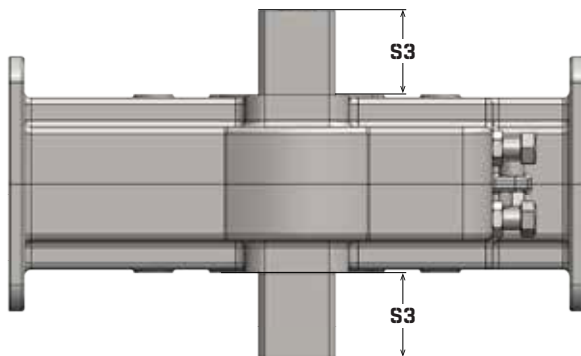
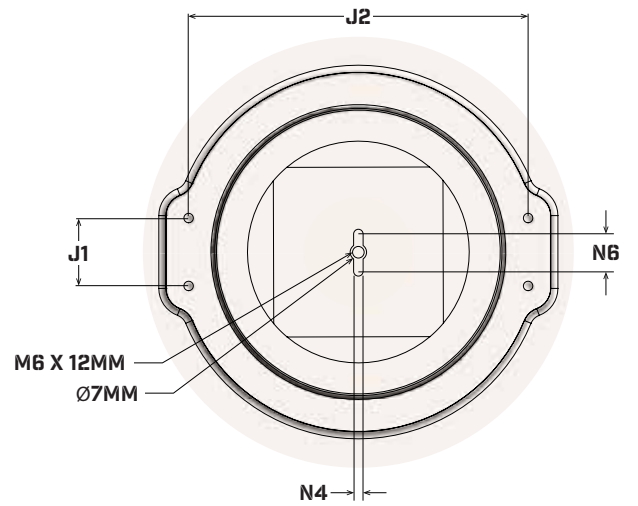
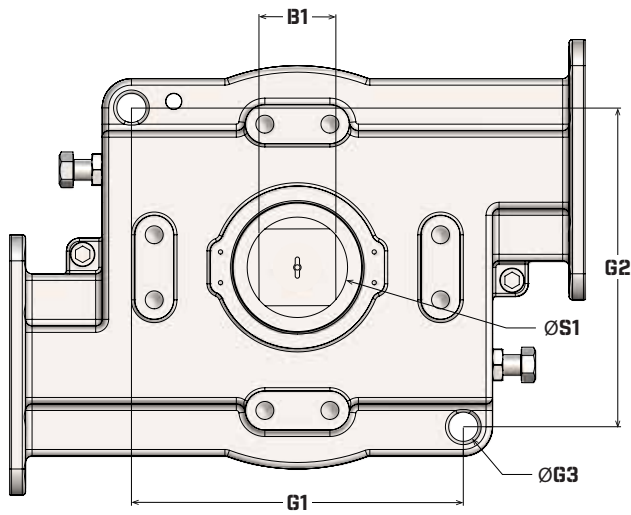
### SPRING RETURN (SR)



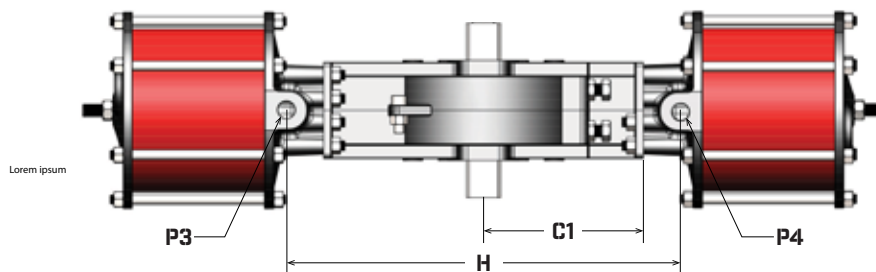
**DIMENSIONS AND TECHNICAL DATA**



## DIMENSIONS AND TECHNICAL DATA



### DIMENSIONS BELOW FOR DOUBLE ACTING MODELS ONLY



## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

ENVELOPE DIMENSIONS		DD04			DD06				DD08			
		DA-C030	SR-C030	SR-C040	DA-C030	DA-C040	SR-C040	SR-C050	DA-C040	DA-C050	SR-C050	SR-C060
Width Total	<b>A1</b>	4.88	4.88	6.05	5.38	6.55	6.55	7.54	7.55	8.54	8.54	9.56
Width Side 1	<b>A2</b>	2.44	2.44	3.02	2.69	3.28	3.27	3.77	3.77	4.27	4.27	4.78
Width Side 2	<b>A3</b>	2.44	2.44	3.02	2.69	3.28	3.27	3.77	3.77	4.27	4.27	4.78
Width Cylinder	<b>A4</b>	3.38	3.38	4.55	3.38	4.55	4.55	5.54	4.55	5.54	5.54	6.56
Height Cylinder	<b>A5</b>	3.38	3.38	4.55	3.38	4.55	4.55	5.54	4.55	5.54	5.54	6.56
Length Total	<b>B1</b>	15.872	19.00	19.40	18.40	19.08	22.07	22.61	24.45	25.25	28.98	29.58
Length Side 1	<b>B2</b>	7.94	9.50	9.70	9.20	9.54	11.04	11.30	12.23	12.63	14.49	14.79
Length Side 2	<b>B3</b>	7.94	9.50	9.70	9.20	9.54	11.04	11.30	12.23	12.63	14.49	14.79
Flange Distance	<b>C1</b>	8.12	5.91	5.91	8.65	9.46	6.88	6.88	12.42	12.41	9.13	9.14
Max Bracket Width	<b>C2</b>	5.56	5.56	5.56	6.44	6.44	6.44	6.44	8.69	8.69	8.69	8.69
Flange Depth	<b>D1</b>	0.51	0.51	1.01	0.33	0.83	0.83	1.33	0.68	1.18	1.18	1.68
Body Depth	<b>D2</b>	2.49	2.49	2.49	2.83	2.83	2.83	2.83	3.14	3.14	3.14	3.14
Stop Extension	<b>ETYP</b>	0.47	0.47	0.47	0.71	0.63	0.63	0.71	0.66	0.72	0.72	0.66
Maint Clearance	<b>F1</b>	11	15	15	13	13	17	17	17	17	23	23
Maint Clearance	<b>F2</b>	11	15	15	13	13	17	17	17	17	23	23
Lifting Eye Dim X	<b>G1</b>											
Lifting Eye Dim Y	<b>G2</b>											
Lifting Eye Diameter	<b>G3</b>											
P3 - P4 Distance	<b>H</b>	7.8			9.1	9.0			12.0	12.1		

### MOUNTING PATTERN

Pattern X	J1	4 BOLT MOUNTING PATTERN ON A 3.5" BCD	0.75	0.75	0.75	0.75	1.25	1.25	1.25	1.25
Pattern Y	J2		3.31	3.31	3.31	3.31	4.88	4.88	4.88	4.88
Thread	J3	M8-1.25	M10-1.5	M10-1.5	M10-1.5	M10-1.5	M12-1.75	M12-1.75	M12-1.75	M12-1.75
Thread Depth		0.47	0.50	0.50	0.50	0.50	0.63	0.63	0.63	0.63

### ACCESSORY PATTERN

Length	N1											
Width	N2											
Height	N3	0.984	0.984	0.984	0.894	0.894	0.894	0.894	0.894	0.894	0.894	0.894
Slot Width	N4	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Slot Depth	N5	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Thread	N6											
Thread Depth												

Mounting and accessory patterns are identical on both sides.



## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

DRIVE DIMENSIONS		DD04			DD06				DD08			
		DA-C030	SR-C030	SR-C040	DA-C030	DA-C040	SR-C040	SR-C050	DA-C040	DA-C050	SR-C050	SR-C060
Shaft Diameter	<b>S1</b>	0.982	0.982	0.982	1.100	1.100	1.100	1.100	1.652	1.652	1.652	1.652
Square Drive Size	<b>S2</b>	0.746	0.746	0.746	0.864	0.864	0.864	0.864	1.258	1.258	1.258	1.258
Shaft Length	<b>S3</b>	0.984	0.984	0.984	1.142	1.142	1.142	1.142	1.693	1.693	1.693	1.693
<b>AIR/FLUID VOLUME</b> cubic inches (cuin)	BODY SIDE	33			41	70			99	158		
	ENDCAP SIDE	25.08	25.08	44.27	33.09	58.53	58.53	91.38	87.03	135.92	135.92	199
<b>PORT SIZE</b> NPT (P1, P2, P3, P4)		1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
NPT (P5, P6 breather vents)		1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"

Sizes DD04, DD06, and DD08 have a single body port on the side of the actuator

<b>STROKE TIME</b> seconds	RECOMMENDED MINIMUM	0.75	0.75	0.75	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.												

<b>CENTER OF GRAVITY</b>	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	COGz	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01

<b>MAVT</b> (See Page 21 for definition) in-lb	2,625	2,625	2,625	5,250	5,250	5,250	5,250	10,500	10,500	10,500	10,500
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### TEMPERATURE LIMITS

STANDARD

-20°F to 185°F

Environmental temperature requirements may limit the use of certain trim materials.  
Temperature ranges may be extended with proper insulation.

## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

ENVELOPE DIMENSIONS		DD10		DD12				DD14			
		DA-C060	SR-C060	DA-C060	DA-C080	SR-C080	SR-C100	DA-C080	DA-C100	DA-C120	SR-C120
Width Total	<b>A1</b>	10.50	10.50	10.50	13.19	13.19	17.50	14.80	18.50	20.70	20.80
Width Side 1	<b>A2</b>	5.25	5.25	5.25	6.59	6.59	8.75	7.40	9.25	10.35	10.40
Width Side 2	<b>A3</b>	5.25	5.25	5.25	6.59	6.59	8.75	7.40	9.25	10.35	10.40
Width Cylinder	<b>A4</b>	6.50	6.50	6.50	8.75	8.75	12.50	8.75	12.50	14.80	14.80
Height Cylinder	<b>A5</b>	6.50	6.50	6.50	8.75	8.75	12.50	8.75	12.50	14.80	14.80
Length Total	<b>B1</b>	31.40	37.20	40.20	41.40	43.40	45.00	47.00	48.50	49.00	58.00
Length Side 1	<b>B2</b>	15.70	18.60	20.10	20.70	21.70	22.50	23.50	24.20	24.50	29.00
Length Side 2	<b>B3</b>	15.70	18.60	20.10	20.70	21.70	22.50	23.50	24.20	24.50	29.00
Flange Distance	<b>C1</b>	6.38	6.38	7.41	7.41	7.41	7.41	10.19	12.50	12.00	10.19
Max Bracket Width	<b>C2</b>	9.34	9.34	13.83	13.83	13.83	13.83	19.09	19.09	19.09	19.09
Flange Depth	<b>D1</b>	1.22	1.22	0.05	1.57	1.44	3.44	1.20	3.07	4.21	4.21
Body Depth	<b>D2</b>	4.10	4.10	5.60	5.60	5.60	5.60	6.40	6.40	6.40	6.40
Stop Extension	<b>ETYP</b>	0.66	0.72	0.66	0.43	0.43	0.86	0.80	1.30	1.30	1.15
Maint Clearance	<b>F1</b>	23	30	28	29	34	35	34	33	33	45
Maint Clearance	<b>F2</b>	23	30	28	29	34	35	34	33	33	45
Lifting Eye Dim X	<b>G1</b>										
Lifting Eye Dim Y	<b>G2</b>										
Lifting Eye Diameter	<b>G3</b>										
P3 - P4 Distance	<b>H</b>	14.1		20.0	19.5			22.8	25.1	24.1	

### MOUNTING PATTERN

Pattern X	J1	1.75	1.75	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Pattern Y	J2	6.50	6.50	8.00	8.00	8.00	8.00	8.00	9.00	9.00	9.00
Thread	J3	M12-1.75	M12-1.75	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2
Thread Depth		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75

### ACCESSORY PATTERN

Length	N1	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118	5.118
Width	N2	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Height	N3	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Slot Width	N4	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Slot Depth	N5	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38

Mounting and accessory patterns are identical on both sides.

## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

DRIVE DIMENSIONS		DD10		DD12				DD14			
		DA-C060	SR-C060	DA-C060	DA-C080	SR-C080	SR-C100	DA-C080	DA-C100	DA-C120	SR-C120
Shaft Diameter	<b>S1</b>	1.888	1.888	2.360	2.360	2.360	2.360	2.833	2.833	2.833	2.833
Square Drive Size	<b>S2</b>	1.415	1.415	1.809	1.809	1.809	1.809	2.163	2.163	2.163	2.163
Shaft Length	<b>S3</b>	1.530	1.530	1.960	1.960	1.960	1.960	2.371	2.371	2.371	2.371
AIR/FLUID VOLUME cubic inches (cuin)	BODY SIDE	306		335	701			788	1,071	1,539	
	ENDCAP SIDE	273		370	589	589	943	686	1,122	1,640	1,640
PORT SIZE											
NPT (P1, P2, P3, P4)		1/4"	1/4"	1/4"	1/4"	1/4"	1/2"	1/4"	1/2"	1"	1"
NPT (P5, P6 breather vents)		1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
STROKE TIME seconds	RECOMMENDED MINIMUM	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0

Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.

CENTER OF GRAVITY	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	COGy	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.05	0.13	0.03
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

<b>MAVT</b> (See Page 21 for definition) in-lb	14,000	14,000	28,000	28,000	28,000	28,000	56,000	56,000	56,000	56,000
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### TEMPERATURE LIMITS

STANDARD

-20°F to 185°F

Environmental temperature requirements may limit the use of certain trim materials.  
Temperature ranges may be extended with proper insulation.

## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

ENVELOPE DIMENSIONS		DD16			DD18				DD20				
		DA-C100	DA-C120	SR-C160	DA-C120	DA-C160	SR-C160	SR-C200	DA-C120	DA-C160	DA-C200	SR-C200	SR-C240
Width Total	<b>A1</b>	20.25	22.30	26.50	24.20	28.50	28.50	33.20	26.75	30.22	34.96	35.00	39.00
Width Side 1	<b>A2</b>	10.13	11.15	13.25	12.10	14.25	14.25	16.60	13.375	15.11	17.48	17.50	19.50
Width Side 2	<b>A3</b>	10.13	11.15	13.25	12.10	14.25	14.25	16.60	13.375	15.11	17.48	17.50	19.50
Width Cylinder	<b>A4</b>	12.70	14.80	19.00	14.80	19.00	18.70	23.40	15.25	18.7	23.4	23.40	27.40
Height Cylinder	<b>A5</b>	12.70	14.80	19.00	14.80	19.00	18.75	23.40	15.25	18.75	23.4	23.40	27.40
Length Total	<b>B1</b>	58.000	58.60	69.00	69.00	70.80	90.20	92.60	86	86	90.2	99.00	101.00
Length Side 1	<b>B2</b>	29.00	29.30	34.50	34.50	35.40	45.10	46.30	43	43	45.1	49.50	50.50
Length Side 2	<b>B3</b>	29.00	29.30	34.50	34.50	35.40	45.10	46.30	43	43	45.1	49.50	50.50
Flange Distance	<b>C1</b>	11.06	11.06	11.06	13.13	13.13	13.13	13.13	15.75	15.75	15.75	15.75	15.75
Max Bracket Width	<b>C2</b>	18.64	18.64	18.64	22.78	22.78	22.78	22.78	27.2	27.2	27.2	27.2	27.2
Flange Depth	<b>D1</b>	2.90	3.90	6.10	3.00	5.10	5.10	7.50	2.52	4.066	6.5	6.50	8.50
Body Depth	<b>D2</b>	6.90	6.90	6.90	8.50	8.50	8.50	8.50	10.5	10.5	10.5	10.50	10.50
Stop Extension	<b>ETYP</b>	0.63	1.35	1.50	1.30	1.50	1.50	2.50	1.24	2.3	2.5	3.50	4.75
Maint Clearance	<b>F1</b>	40	40	55	48	49	74	75	59	58	61	80	81
Maint Clearance	<b>F2</b>	40	40	55	48	49	74	75	59	58	61	80	81
Lifting Eye Dim X	<b>G1</b>	12.26	12.26	12.29	9.00	9.00	9.00	9.00	9.91	9.91	9.91	9.91	9.91
Lifting Eye Dim Y	<b>G2</b>	6.38	6.38	6.38	7.30	7.30	7.30	7.30	8.83	8.83	8.83	8.83	8.83
Lifting Eye Diameter	<b>G3</b>	1.13	1.13	1.13	0.94	0.94	0.94	0.94	1.06	1.06	1.06	1.06	1.06
P3 - P4 Distance	<b>H</b>	30.2	29.7		34.5	35.2			44.1	47.0	46.2		

### MOUNTING PATTERN

Pattern X	J1	2.50	2.50	2.50	3.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	4.00
Pattern Y	J2	11.00	11.00	11.00	14.00	14.00	14.00	14.00	16.50	16.50	16.50	16.50	16.50
Thread	J3	M20-2.5	M20-2.5	M20-2.5	M24-3	M24-3	M24-3	M24-3	M30-3.5	M30-3.5	M30-3.5	M30-3.5	M30-3.5
Thread Depth		1.00	1.00	1.00	1.50	1.50	1.50	1.50	1.5	1.5	1.5	1.5	1.5

### ACCESSORY PATTERN

Length	N1	5.906	5.906	5.906	7.480	7.480	7.480	7.480	9.252	9.252	9.252	9.252	9.252
Width	N2	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Height	N3	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181	1.181
Slot Width	N4	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157	0.157
Slot Depth	N5	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38

Mounting and accessory patterns are identical on both sides.

## DIMENSIONS AND TECHNICAL DATA (IMPERIAL, INCHES)

DRIVE DIMENSIONS		DD16			DD18				DD20				
		DA-C100	DA-C120	SR-C160	DA-C120	DA-C160	SR-C160	SR-C200	DA-C120	DA-C160	DA-C200	SR-C200	SR-C240
Shaft Diameter	<b>S1</b>	3.856	3.856	3.856	6.140	6.140	6.140	6.140	7.636	7.636	7.636	7.636	7.636
Square Drive Size	<b>S2</b>	2.951	2.951	2.951	4.722	4.722	4.722	4.722	5.982	5.982	5.982	5.982	5.982
Shaft Length	<b>S3</b>	3.240	3.240	3.240	4.724	4.724	4.724	4.724	5.984	5.984	5.984	5.984	5.984

Note: Sizes D18 and D20 have a removable accessory slot attached to the output drive. The accessory slot does not have a threaded center hole.

AIR/FLUID VOLUME cubic inches (cuin)	BODY SIDE	1,305	1,913		2,395	4,393			2,911	5,114	8,260		
	ENDCAP SIDE	1,344	2,033	3,607	2,604	4,613	4,613	7,273	3,055	5,407	8,518	8,518	12,403

PORT SIZE NPT (P1, P2, P3, P4)	1/2"	1"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
NPT (P5, P6 breather vents)	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"

STROKE TIME seconds	RECOMMENDED MINIMUM	4.0	4.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0
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Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.

CENTER OF GRAVITY	COGx	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COGy	0.03	0.08	0.02	0.10	0.10	0.00	0.00	0.00	0.00	0.10	0.00	0.00
	COGz	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00

<b>MAVT</b> (See Page 21 for definition) in-lb	112,000	112,000	112,000	280,000	280,000	280,000	280,000	500,000	500,000	500,000	500,000	500,000	500,000
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### TEMPERATURE LIMITS

STANDARD

-20°F to 185°F

Environmental temperature requirements may limit the use of certain trim materials. Temperature ranges may be extended with proper insulation.

**DIMENSIONS AND TECHNICAL DATA (METRIC, MILLIMETERS)**

ENVELOPE DIMENSIONS		DD04			DD06				DD08			
		DA-C030	SR-C030	SR-C040	DA-C030	DA-C040	SR-C040	SR-C050	DA-C040	DA-C050	SR-C050	SR-C060
Width Total	<b>A1</b>	124.0	124.0	153.7	136.7	166.4	166.4	191.5	191.8	216.9	216.9	242.8
Width Side 1	<b>A2</b>	62.0	62.0	76.7	68.3	83.3	83.1	95.8	95.8	108.5	108.5	121.4
Width Side 2	<b>A3</b>	62.0	62.0	76.7	68.3	83.3	83.1	95.8	95.8	108.5	108.5	121.4
Width Cylinder	<b>A4</b>	85.9	85.9	115.6	85.9	115.6	115.6	140.7	115.6	140.7	140.7	166.6
Height Cylinder	<b>A5</b>	85.9	85.9	115.6	85.9	115.6	115.6	140.7	115.6	140.7	140.7	166.6
Length Total	<b>B1</b>	403.1	482.6	492.8	467.4	484.6	560.6	574.3	621.0	641.4	736.1	751.3
Length Side 1	<b>B2</b>	201.7	241.3	246.4	233.7	242.3	280.4	287.0	310.6	320.8	368.0	375.7
Length Side 2	<b>B3</b>	201.7	241.3	246.4	233.7	242.3	280.4	287.0	310.6	320.8	368.0	375.7
Flange Distance	<b>C1</b>	206.2	150.1	150.1	219.7	240.3	174.8	174.8	315.5	315.2	231.9	232.2
Max Bracket Width	<b>C2</b>	141.2	141.2	141.2	163.6	163.6	163.6	163.6	220.7	220.7	220.7	220.7
Flange Depth	<b>D1</b>	13.0	13.0	25.7	8.4	21.1	21.1	33.8	17.3	30.0	30.0	42.7
Body Depth	<b>D2</b>	63.2	63.2	63.2	71.9	71.9	71.9	71.9	79.8	79.8	79.8	79.8
Stop Extension	<b>ETYP</b>	11.9	11.9	11.9	18.0	16.0	16.0	18.0	16.8	18.3	18.3	16.8
Maint Clearance	<b>F1</b>	279.4	381.0	381.0	330.2	330.2	431.8	431.8	431.8	431.8	584.2	584.2
Maint Clearance	<b>F2</b>	279.4	381.0	381.0	330.2	330.2	431.8	431.8	431.8	431.8	584.2	584.2
Lifting Eye Dim X	<b>G1</b>											
Lifting Eye Dim Y	<b>G2</b>											
Lifting Eye Diameter	<b>G3</b>											
P3 - P4 Distance	<b>H</b>	198.1			231.1	228.6			304.8	307.3		

**MOUNTING PATTERN**

Pattern X	J1	4 BOLT MOUNTING PATTERN ON A 88.9 mm BCD	19.1	19.1	19.1	19.1	31.8	31.8	31.8	31.8
Pattern Y	J2		84.1	84.1	84.1	84.1	124.0	124.0	124.0	124.0
Thread	J3	M8-1.25	M10-1.5	M10-1.5	M10-1.5	M10-1.5	M12-1.75	M12-1.75	M12-1.75	M12-1.75
Thread Depth		11.9	12.7	12.7	12.7	12.7	16.0	16.0	16.0	16.0

**ACCESSORY PATTERN**

Length	N1											
Width	N2											
Height	N3	25.0	25.0	25.0	22.7	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Slot Width	N4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Slot Depth	N5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Thread	N6											
Thread Depth												

Mounting and accessory patterns are identical on both sides.

## DIMENSIONS AND TECHNICAL DATA (METRIC, MILLIMETERS)

DRIVE DIMENSIONS		DD04			DD06				DD08			
		DA-C030	SR-C030	SR-C040	DA-C030	DA-C040	SR-C040	SR-C050	DA-C040	DA-C050	SR-C050	SR-C060
Shaft Diameter	<b>S1</b>	24.95	24.95	24.95	27.95	27.95	27.95	27.95	41.95	41.95	41.95	41.95
Square Drive Size	<b>S2</b>	18.95	18.95	18.95	21.95	21.95	21.95	21.95	31.95	31.95	31.95	31.95
Shaft Length	<b>S3</b>	25.00	25.00	25.00	29.00	29.00	29.00	29.00	43.00	43.00	43.00	43.00
<b>AIR/FLUID VOLUME</b> cubic inches (L)	BODY SIDE	0.5			0.7	1.1			1.6	2.6		
	ENDCAP SIDE	0.4	0.4	0.7	0.5	1.0	1.0	1.5	1.4	2.2	2.2	3.3
<b>PORT SIZE</b> NPT (P1, P2, P3, P4)		1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
NPT (P5, P6 breather vents)		1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"

Sizes DD04, DD06, and DD08 have a single body port on the side of the actuator

<b>STROKE TIME</b> seconds	RECOMMENDED MINIMUM	0.75	0.75	0.75	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5
Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.												

<b>CENTER OF GRAVITY</b>	COGx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	COGy	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	COGz	-0.3	-0.3	-0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3

<b>MAVT</b> (See Page 21 for definition) N-m	297	297	297	583	583	583	583	1,186	1,186	1,186	1,186
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### TEMPERATURE LIMITS

STANDARD

-28°C to 85°C

Environmental temperature requirements may limit the use of certain trim materials.  
Temperature ranges may be extended with proper insulation.

## DIMENSIONS AND TECHNICAL DATA (METRIC, MILLIMETERS)

ENVELOPE DIMENSIONS		DD10		DD12				DD14			
		DA-C060	SR-C060	DA-C060	DA-C080	SR-C080	SR-C100	DA-C080	DA-C100	DA-C120	SR-C120
Width Total	<b>A1</b>	266.7	266.7	266.7	335.0	335.0	444.5	375.9	469.9	525.8	528.3
Width Side 1	<b>A2</b>	133.4	133.4	133.4	167.4	167.4	222.3	188.0	235.0	262.9	264.2
Width Side 2	<b>A3</b>	133.4	133.4	133.4	167.4	167.4	222.3	188.0	235.0	262.9	264.2
Width Cylinder	<b>A4</b>	165.1	165.1	165.1	222.3	222.3	317.5	222.3	317.5	375.9	375.9
Height Cylinder	<b>A5</b>	165.1	165.1	165.1	222.3	222.3	317.5	222.3	317.5	375.9	375.9
Length Total	<b>B1</b>	797.6	944.9	1021.1	1051.6	1102.4	1143.0	1193.8	1231.9	1244.6	1473.2
Length Side 1	<b>B2</b>	398.8	472.4	510.5	525.8	551.2	571.5	596.9	614.7	622.3	736.6
Length Side 2	<b>B3</b>	398.8	472.4	510.5	525.8	551.2	571.5	596.9	614.7	622.3	736.6
Flange Distance	<b>C1</b>	162.1	162.1	188.2	188.2	188.2	188.2	258.8	317.5	304.8	258.8
Max Bracket Width	<b>C2</b>	237.2	237.2	351.3	351.3	351.3	351.3	484.9	484.9	484.9	484.9
Flange Depth	<b>D1</b>	31.0	31.0	1.3	39.9	36.6	87.4	30.5	78.0	106.9	106.9
Body Depth	<b>D2</b>	104.1	104.1	142.2	142.2	142.2	142.2	162.6	162.6	162.6	162.6
Stop Extension	<b>ETYP</b>	16.8	18.3	16.8	10.9	10.9	21.8	20.3	33.0	33.0	29.2
Maint Clearance	<b>F1</b>	584.2	762.0	711.2	736.6	863.6	889.0	863.6	838.2	838.2	1143.0
Maint Clearance	<b>F2</b>	584.2	762.0	711.2	736.6	863.6	889.0	863.6	838.2	838.2	1143.0
Lifting Eye Dim X	<b>G1</b>										
Lifting Eye Dim Y	<b>G2</b>										
Lifting Eye Diameter	<b>G3</b>										
P3 - P4 Distance	<b>H</b>	358.1		508.0	495.3			579.1	637.5	612.1	

### MOUNTING PATTERN

Pattern X	J1	44.5	44.5	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8
Pattern Y	J2	165.1	165.1	203.2	203.2	203.2	203.2	203.2	228.6	228.6	228.6
Thread	J3	M12-1.75	M12-1.75	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2	M16-2
Thread Depth		19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1

### ACCESSORY PATTERN

Length	N1	130.0	130.0	130.0	130.0	130.0	130.0	130.0	130.0	130.0	130.0
Width	N2	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Height	N3	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Slot Width	N4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Slot Depth	N5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7

Mounting and accessory patterns are identical on both sides.



## DIMENSIONS AND TECHNICAL DATA (METRIC, MILLIMETERS)

DRIVE DIMENSIONS		DD10		DD12				DD14			
		DA-C060	SR-C060	DA-C060	DA-C080	SR-C080	SR-C100	DA-C080	DA-C100	DA-C120	SR-C120
Shaft Diameter	<b>S1</b>	47.95	47.95	59.95	59.95	59.95	59.95	71.95	71.95	71.95	71.95
Square Drive Size	<b>S2</b>	35.95	35.95	45.95	45.95	45.95	45.95	54.95	54.95	54.95	54.95
Shaft Length	<b>S3</b>	38.86	38.86	49.78	49.78	49.78	49.78	60.22	60.22	60.22	60.22
AIR/FLUID VOLUME liters (L)	BODY SIDE	5.0	/	5.0	11.5	/	/	13.0	17.5	25.2	/
	ENDCAP SIDE	4.5	4.5	6.0	9.7	9.7	15.5	11.0	18.4	26.9	26.9
PORT SIZE NPT (P1, P2, P3, P4)		1/4"	1/4"	1/4"	1/4"	1/4"	1/2"	1/4"	1/2"	1"	1"
	NPT (P5, P6 breather vents)	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
STROKE TIME seconds	RECOMMENDED MINIMUM	2.0	2.0	2.5	2.5	2.5	2.5	3.0	3.0	3.0	3.0

Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.

CENTER OF GRAVITY	COGx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	COGy	0.0	0.0	0.0	0.0	0.0	0.8	0.0	1.3	3.3	0.8
	COGz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

<b>MAVT</b> (See Page 21 for definition) N-m	<b>1,582</b>	<b>1,582</b>	<b>3,164</b>	<b>3,164</b>	<b>3,164</b>	<b>3,164</b>	<b>3,164</b>	<b>6,327</b>	<b>6,327</b>	<b>6,327</b>	<b>6,327</b>
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### TEMPERATURE LIMITS

STANDARD

-28°C to 85°C

Environmental temperature requirements may limit the use of certain trim materials.  
Temperature ranges may be extended with proper insulation.

## DIMENSIONS AND TECHNICAL DATA [METRIC, MILLIMETERS]

ENVELOPE DIMENSIONS		DD16			DD18				DD20				
		DA-C100	DA-C120	SR-C160	DA-C120	DA-C160	SR-C160	SR-C200	DA-C120	DA-C160	DA-C200	SR-C200	SR-C240
Width Total	<b>A1</b>	514.4	566.4	673.1	614.7	723.9	723.9	843.3	679.5	767.6	888.0	889.0	990.6
Width Side 1	<b>A2</b>	257.3	283.2	336.6	307.3	362.0	362.0	421.6	339.7	383.8	444.0	444.5	495.3
Width Side 2	<b>A3</b>	257.3	283.2	336.6	307.3	362.0	362.0	421.6	339.7	383.8	444.0	444.5	495.3
Width Cylinder	<b>A4</b>	322.6	375.9	482.6	375.9	482.6	475.0	594.4	387.4	475.0	594.4	594.4	696.0
Height Cylinder	<b>A5</b>	322.6	375.9	482.6	375.9	482.6	476.3	594.4	387.4	476.3	594.4	594.4	696.0
Length Total	<b>B1</b>	1473.2	1488.4	1752.6	1752.6	1798.3	2291.1	2352.0	2184.4	2184.4	2291.1	2514.6	2565.4
Length Side 1	<b>B2</b>	736.6	744.2	876.3	876.3	899.2	1145.5	1176.0	1092.2	1092.2	1145.5	1257.3	1282.7
Length Side 2	<b>B3</b>	736.6	744.2	876.3	876.3	899.2	1145.5	1176.0	1092.2	1092.2	1145.5	1257.3	1282.7
Flange Distance	<b>C1</b>	280.9	280.9	280.9	333.5	333.5	333.5	333.5	400.1	400.1	400.1	400.1	400.1
Max Bracket Width	<b>C2</b>	473.5	473.5	473.5	578.6	578.6	578.6	578.6	27.2	27.2	27.2	27.2	27.2
Flange Depth	<b>D1</b>	73.7	99.1	154.9	76.2	129.5	129.5	190.5	64.0	103.3	165.1	165.1	215.9
Body Depth	<b>D2</b>	175.3	175.3	175.3	215.9	215.9	215.9	215.9	266.7	266.7	266.7	266.7	266.7
Stop Extension	<b>ETYP</b>	16.0	34.3	38.1	33.0	38.1	38.1	63.5	31.5	58.4	63.5	88.9	120.7
Maint Clearance	<b>F1</b>	1016.0	1016.0	1397.0	1219.2	1244.6	1879.6	1905.0	1488.4	1483.4	1546.1	2029.7	2061.7
Maint Clearance	<b>F2</b>	1016.0	1016.0	1397.0	1219.2	1244.6	1879.6	1905.0	1488.4	1483.4	1546.1	2029.7	2061.7
Lifting Eye Dim X	<b>G1</b>	311.4	311.4	312.2	228.6	228.6	228.6	228.6	533.4	533.4	533.4	533.4	533.4
Lifting Eye Dim Y	<b>G2</b>	162.1	162.1	162.1	185.4	185.4	185.4	185.4	448.3	448.3	448.3	448.3	448.3
Lifting Eye Diameter	<b>G3</b>	28.7	28.7	28.7	23.9	23.9	23.9	23.9	26.9	26.9	26.9	26.9	26.9
P3 - P4 Distance	<b>H</b>	767.1	754.4		876.3	894.1			1120.9	1193.5	1174.2		

### MOUNTING PATTERN

Pattern X	J1	63.5	63.5	63.5	76.2	76.2	76.2	76.2	101.60	101.60	101.60	101.60	101.60
Pattern Y	J2	279.4	279.4	279.4	355.6	355.6	355.6	355.6	419.10	419.10	419.10	419.10	419.10
Thread	J3	M20-2.5	M20-2.5	M20-2.5	M24-3	M24-3	M24-3	M24-3	M30-3.5	M30-3.5	M30-3.5	M30-3.5	M30-3.5
Thread Depth		25.4	25.4	25.4	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1

### ACCESSORY PATTERN

Length	N1	150.0	150.0	150.0	190.0	190.0	190.0	190.0	235	235	235	235	235
Width	N2	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30	30	30	30	30
Height	N3	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30	30	30	30	30
Slot Width	N4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4	4	4	4	4
Slot Depth	N5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5	5	5	5	5
Thread	N6	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8	M5-0.8
Thread Depth		9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.53	9.53	9.53	9.53	9.53

Mounting and accessory patterns are identical on both sides.

## DIMENSIONS AND TECHNICAL DATA (METRIC, MILLIMETERS)

DRIVE DIMENSIONS		DD16			DD18				DD20				
		DA-C100	DA-C120	SR-C160	DA-C120	DA-C160	SR-C160	SR-C200	DA-C120	DA-C160	DA-C200	SR-C200	SR-C240
Shaft Diameter	<b>S1</b>	97.95	97.95	97.95	155.95	155.95	155.95	155.95	193.95	193.95	193.95	193.95	193.95
Square Drive Size	<b>S2</b>	74.95	74.95	74.95	119.95	119.95	119.95	119.95	151.95	151.95	151.95	151.95	151.95
Shaft Length	<b>S3</b>	82.30	82.30	82.30	120.00	120.00	120.00	120.00	152.00	152.00	152.00	152.00	152.00

Note: Sizes D18 and D20 have a removable accessory slot attached to the output drive. The accessory slot does not have a threaded center hole.

AIR/FLUID VOLUME liters (L)	BODY SIDE	21.4	31.3		39.2	72.0			47.7	83.8	135.4		
	ENDCAP SIDE	22.0	33.3	59.0	42.7	75.6	75.6	119.2	50.0	88.6	139.6	139.6	203.2

PORT SIZE NPT (P1, P2, P3, P4)	1/2"	1"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	1 1/2"
	NPT (P5, P6 breather vents)	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"	3/4"	3/4"	3/4"	3/4"	3/4"

STROKE TIME seconds	RECOMMENDED MINIMUM	4.0	4.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0
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Stroke time varies with supply pressure, temperature, spring rate, travel adjustment, working medium, and valve torque. Values shown with no valve resistance.

CENTER OF GRAVITY	COGx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	COGy	0.8	2.0	0.5	2.5	2.5	0.0	0.0	0.0	0.0	0.1	0.0	0.0
	COGz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

<b>MAVT</b> (See Page 21 for definition) N-m	<b>12,654</b>	<b>12,654</b>	<b>12,654</b>	<b>31,636</b>	<b>31,636</b>	<b>31,636</b>	<b>31,636</b>	<b>79,089</b>	<b>79,089</b>	<b>79,089</b>	<b>79,089</b>	<b>79,089</b>	<b>79,089</b>
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### TEMPERATURE LIMITS

STANDARD Environmental temperature requirements may limit the use of certain trim materials.  
-28°C to 85°C Temperature ranges may be extended with proper insulation.

## WEIGHT (IMPERIAL, POUNDS)

### DOUBLE ACTING (LB)

	Actuator	Ductile (FD)
<b>04</b>	DA-C030	15
	DA-C030	21
<b>06</b>	DA-C040	29
	DA-C040	41
<b>08</b>	DA-C050	49
	DA-C060	83

	Actuator	Ductile (FD)
<b>12</b>	DA-C060	127
	DA-C080	162
<b>14</b>	DA-C080	215
	DA-C100	295
	DA-C120	360
<b>18</b>	DA-C100	417
	DA-C120	480

	Actuator	Ductile (FD)
<b>18</b>	DA-C120	662
	DA-C160	834
<b>20</b>	DA-C120	1,100
	DA-C160	1,246
	DA-C200	1,606

### SPRING RETURN (LB)

	Actuator	Ductile (FD)
<b>04</b>	SR03-S42	15
	SR03-S62	15
	SR03-S72	15
	SR03-S82	16
	SR03-S92	16
	SR04-S42	22
	SR04-S47	22
	SR04-S52	22
	SR04-S55	23
	SR04-S62	24
	SR04-S67	23
	SR04-S71	24
	SR04-S72	25
	SR04-S75	25
	SR04-S79	26
	SR04-S82	25
	SR04-S85	26
	SR04-S89	26
	SR04-S92	26
	SR04-S94	26
SR04-S96	27	
SR04-S98	27	

	Actuator	Ductile (FD)
<b>06</b>	SR04-S22	28
	SR04-S32	29
	SR04-S43	29
	SR04-S58	29
	SR04-S65	30
	SR04-S66	30
	SR04-S75	31
	SR04-S77	32
	SR04-S81	32
	SR04-S83	32
	SR04-S85	32
	SR04-S87	33
	SR04-S89	33
	SR04-S93	33
	SR04-S95	33
	SR04-S97	33
	SR04-S98	33
	SR05-S19	38
	SR05-S34	39
	SR05-S53	41
SR05-S72	43	
SR05-S87	43	
SR05-S88	42	
SR05-S93	45	
SR05-S94	45	

	Actuator	Ductile (FD)	
<b>08</b>	SR05-S22	56	
	SR05-S34	57	
	SR05-S53	59	
	SR05-S65	60	
	SR05-S72	63	
	SR05-S85	63	
	SR05-S87	63	
	SR05-S94	64	
	SR06-S19	66	
	SR06-S32	67	
	SR06-S47	71	
	SR06-S72	75	
	SR06-S75	74	
	SR06-S82	76	
	SR06-S91	77	
	SR06-S94	79	
	<b>10</b>	SR06-S19	99
		SR06-S27	102
		SR06-S34	103
		SR06-S36	104
SR06-S37		104	
SR06-S52		108	
SR06-S55		108	
SR06-S56		110	
SR06-S62		111	
SR06-S64		109	
SR06-S65	112		
SR06-S71	112		
SR06-S73	114		
SR06-S74	113		
SR06-S84	117		
SR06-S93	118		

	Actuator	Ductile (FD)
<b>12</b>	SR08-S03	187
	SR08-S31	191
	SR08-S02	202
	SR08-S21	202
	SR08-S01	217
	SR08-S11	220
<b>14</b>	SR10-S03	229
	SR10-S02	244
	SR10-S01	274
	SR12-S04	424
<b>14</b>	SR12-S03	440
	SR12-S02	461
	SR12-S01	491
<b>2375</b>	SR16-S05	765
	SR16-S04	831
	SR16-S03	825
<b>2375</b>	SR16-S02	893
	SR16-S01	953
	SR16-S03	1,102
<b>2488</b>	SR16-S02	1,245
	SR16-S01	1,471
	SR20-S03	1,485
<b>2575</b>	SR20-S02	1,628
	SR20-S01	1,854
	SR20-S04	2,444
	SR20-S03	2,609
	SR20-S02	2,714
	SR20-S01	2,932
	SR24-S06	2,965
	SR24-S05	3,070
	SR24-S04	3,288
	SR24-S03	3,571
SR24-S02	3,676	
SR24-S01	3,894	

## WEIGHT (METRIC, KILOGRAMS)

### DOUBLE ACTING (KG)

	Actuator	Ductile (FD)
<b>04</b>	DA-C030	7
	DA-C030	9
<b>06</b>	DA-C040	13
	DA-C040	18
<b>08</b>	DA-C050	22
	DA-C060	38

	Actuator	Ductile (FD)
<b>12</b>	DA-C060	58
	DA-C080	73
<b>14</b>	DA-C080	98
	DA-C100	134
	DA-C120	163
<b>18</b>	DA-C100	189
	DA-C120	218

	Actuator	Ductile (FD)
<b>18</b>	DA-C120	300
	DA-C160	378
<b>20</b>	DA-C120	499
	DA-C160	565
	DA-C200	728

### SPRING RETURN (KG)

	Actuator	Ductile (FD)
<b>04</b>	SR03-S42	7
	SR03-S62	7
	SR03-S72	7
	SR03-S82	7
	SR03-S92	7
	SR04-S42	10
	SR04-S47	10
	SR04-S52	10
	SR04-S55	10
	SR04-S62	11
	SR04-S67	10
	SR04-S71	11
	SR04-S72	11
	SR04-S75	11
	SR04-S79	12
	SR04-S82	11
	SR04-S85	12
	SR04-S89	12
	SR04-S92	12
	SR04-S94	12
SR04-S96	12	
SR04-S98	12	

	Actuator	Ductile (FD)
<b>06</b>	SR04-S22	13
	SR04-S32	13
	SR04-S43	13
	SR04-S58	13
	SR04-S65	14
	SR04-S66	14
	SR04-S75	14
	SR04-S77	15
	SR04-S81	15
	SR04-S83	15
	SR04-S85	15
	SR04-S87	15
	SR04-S89	15
	SR04-S93	15
	SR04-S95	15
	SR04-S97	15
	SR04-S98	15
	SR05-S19	17
	SR05-S34	18
	SR05-S53	19
SR05-S72	20	
SR05-S87	20	
SR05-S88	19	
SR05-S93	20	
SR05-S94	20	

	Actuator	Ductile (FD)
<b>08</b>	SR05-S22	25
	SR05-S34	26
	SR05-S53	27
	SR05-S65	27
	SR05-S72	29
	SR05-S85	29
	SR05-S87	29
	SR05-S94	29
	SR06-S19	30
	SR06-S32	30
	SR06-S47	32
	SR06-S72	34
	SR06-S75	33
	SR06-S82	34
	SR06-S91	35
	SR06-S94	36
	SR06-S19	45
	SR06-S27	46
	SR06-S34	47
	SR06-S36	47
SR06-S37	47	
SR06-S52	49	
SR06-S55	49	
SR06-S56	50	
SR06-S62	51	
SR06-S64	50	
SR06-S65	51	
SR06-S71	51	
SR06-S73	52	
SR06-S74	51	
SR06-S84	53	
SR06-S93	54	

	Actuator	Ductile (FD)
<b>12</b>	SR08-S03	85
	SR08-S31	87
	SR08-S02	92
	SR08-S21	92
	SR08-S01	98
	SR08-S11	100
<b>14</b>	SR10-S03	104
	SR10-S02	111
	SR10-S01	124
<b>16</b>	SR12-S04	192
	SR12-S03	200
	SR12-S02	209
	SR12-S01	223
<b>18</b>	SR16-S05	347
	SR16-S04	377
	SR16-S03	374
<b>20</b>	SR16-S02	405
	SR16-S01	432
	SR16-S03	500
	SR16-S02	565
	SR16-S01	667
	SR20-S03	673
	SR20-S02	738
	SR20-S01	841
	SR20-S04	1,109
	SR20-S03	1,183
SR20-S02	1,231	
SR20-S01	1,330	
SR24-S06	1,345	
SR24-S05	1,392	
SR24-S04	1,491	
SR24-S03	1,620	
SR24-S02	1,667	
SR24-S01	1,766	



## OUTPUT TORQUE DATA

The following tables show output torque for common pressures. For additional output information, download the interactive torque tables at QTRCO.com. Actuators may generate more torque than the maximum rating at higher pressures (refer to page 6 for torque ratings). Actuators should not be sized above their maximum torque rating unless there is no possibility that the valve will resist with a value above that rating.

**AMT – Actuator Maximum Torque:** The maximum possible torque output that the actuator can produce with a given springset at a given pressure (Usage: AMT@80psig, AMT@4barg, AMT@MAWP, etc). This number is often used to determine whether or not actuator torque output will exceed valve MAST.

**MAVT – Max Allowable Valve Torque:** The maximum torque resistance that the actuator can overcome without risk of unexpected fatigue or failure.

**MAVTP – Max Allowable Valve Torque Pressure:**  
The pressure at which MAVT may be reached for a given actuator.

**MAWP – Max Allowable Working Pressure:** The maximum pressure that may be safely applied to the actuator cylinder(s). (MAWP is always greater than or equal to MAVTP.)

### MAVTP vs MAWP explanation:

QTRCO actuators may be operated at pressures up to the MAWP in cases where the valve torque requirement will not exceed the MAVT rating of the actuator. When it is conceivable that the valve may resist with a torque greater than the MAVT rating of the actuator, such as with a torque seated valve or in an application that commonly sees higher than specified valve resistance due to sticking, the maximum pressure should be limited to MAVTP. Operating an actuator at a pressure greater than MAVTP when the torque resistance is greater than MAVT may result in unexpected fatigue or failure.

**DOUBLE ACTING (IN-LB)**

The torque values below indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*	
<b>04DA</b>	-C030	Start	873	1,309	1,745	2,181	2,618	120	150	2,625	
		Minimum	382	573	763	954	1,145				1,431
		End	614	921	1,229	1,536	1,843				2,304
<b>06DA</b>	-C030	Start	1,163	1,745	2,327	2,908	3,490	150	150	5,250	
		Minimum	509	763	1,018	1,272	1,527				1,909
		End	819	1,229	1,638	2,048	2,457				3,072
<b>06DA</b>	-C040	Start	2,068	3,102	4,136	5,170	6,204	101	150	5,250	
		Minimum	905	1,357	1,810	2,262	2,714				3,393
		End	1,456	2,184	2,912	3,640	4,368				5,461
<b>08DA</b>	-C040	Start	3,102	4,653	6,204	7,756	9,307	135	150	10,500	
		Minimum	1,357	2,036	2,714	3,393	4,072				5,089
		End	2,184	3,276	4,368	5,461	6,553				8,191
<b>08DA</b>	-C050	Start	4,847	7,271	9,694	12,118	14,542	86	150	10,500	
		Minimum	2,121	3,181	4,241	5,301	6,362				7,952
		End	3,413	5,119	6,826	8,532	10,239				12,798
<b>10DA</b>	-C060	Start	9,854	14,781	19,708	24,635	29,562	56	150	14,000	
		Minimum	4,072	6,107	8,143	10,179	12,215				15,268
		End	6,938	10,407	13,876	17,346	20,815				26,018
<b>12DA</b>	-C060	Start	12,318	18,477	24,635	30,794	36,953	90	150	28,000	
		Minimum	5,089	7,634	10,179	12,723	15,268				19,085
		End	8,673	13,009	17,346	21,682	26,018				32,523
<b>12DA</b>	-C080	Start	21,898	32,847	43,796	54,745	65,694	51	150	28,000	
		Minimum	9,048	13,572	18,096	22,619	27,143				33,929
		End	15,418	23,127	30,836	38,546	46,255				57,818
<b>14DA</b>	-C080	Start	26,278	39,417	52,556	65,694	78,833	85	150	56,000	
		Minimum	10,857	16,286	21,715	27,143	32,572				40,715
		End	18,502	27,753	37,004	46,255	55,506				69,382
<b>14DA</b>	-C100	Start	41,059	61,589	82,118	102,648	123,177	54	120	56,000	
		Minimum	16,965	25,447	33,929	42,412	50,894				
		End	28,909	43,364	57,818	72,273	86,728				
<b>14DA</b>	-C120	Start	59,125	88,687	118,250	147,812	177,375	37	120	56,000	
		Minimum	24,429	36,644	48,858	61,073	73,287				
		End	41,629	62,444	83,258	104,073	124,888				



## D SERIES-PRODUCT BULLETIN

### DOUBLE ACTING (IN-LB)

The torque values below indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
<b>16DA</b>	-C100	Start	51,324	76,986	102,648	128,309	153,971	87	120	112,000
		Minimum	21,206	31,809	42,412	53,014	63,617			
		End	36,136	54,205	72,273	90,341	108,409			
	-C120	Start	73,906	110,859	147,812	184,766	221,719	60	120	112,000
		Minimum	30,536	45,804	61,073	76,341	91,609			
		End	52,037	78,055	104,073	130,091	156,110			
<b>18DA</b>	-C120	Start	96,078	144,117	192,156	240,195	288,234	116	120	280,000
		Minimum	39,697	59,546	79,394	99,243	119,091			
		End	67,647	101,471	135,295	169,119	202,942			
	-C160	Start	170,806	256,208	341,611	427,014	512,417	65	120	280,000
		Minimum	70,573	105,859	141,145	176,432	211,718			
		End	120,262	180,393	240,524	300,655	360,787			
<b>20DA</b>	-C120	Start	113,323	169,984	226,646	283,307	339,969	120	120	700,000
		Minimum	46,822	70,233	93,645	117,056	140,467			
		End	79,789	119,684	159,579	199,473	239,368			
	-C160	Start	201,463	302,194	402,926	503,657	604,389	120	120	700,000
		Minimum	83,240	124,859	166,479	208,099	249,719			
		End	141,848	212,772	283,695	354,619	425,543			
	-C200	Start	314,786	472,179	629,572	786,965	944,358	88	120	700,000
		Minimum	130,062	195,093	260,124	325,155	390,186			
		End	221,637	332,456	443,274	554,093	664,911			
	-C240	Start	453,292	679,937	906,583	1,133,229	1,359,875	61	120	700,000
		Minimum	187,289	280,934	374,578	468,223	561,868			
		End	319,157	478,736	638,315	797,893	957,472			

**DOUBLE ACTING (N-M)**

The torque values below indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		2.8 bar	4.1 bar	5.5 bar	6.9 bar	8.3 bar	12 bar	Normal Operation bar	MAWP bar	Max Rated Torque N.m.*
<b>04DA</b>	-C030	Start	107	143	197	250	286	8.27	10.34	297
		Minimum	47	63	86	109	125			
		End	76	101	138	176	201			
<b>06DA</b>	-C030	Start	143	191	262	334	381	10.34	10.34	593
		Minimum	63	83	115	146	167			
		End	101	134	185	235	268			
<b>06DA</b>	-C040	Start	254	339	466	593	678	6.96	10.34	593
		Minimum	111	148	204	259	297			
		End	179	239	328	418	477			
<b>08DA</b>	-C040	Start	381	508	699	890	1,017	9.31	10.34	1,186
		Minimum	167	222	306	389	445			
		End	268	358	492	626	716			
<b>08DA</b>	-C050	Start	596	794	1,092	1,390	1,589	5.93	10.34	1,186
		Minimum	261	347	478	608	695			
		End	419	559	769	979	1,119			
<b>10DA</b>	-C060	Start	1,211	1,615	2,220	2,826	3,230	3.86	10.34	1,582
		Minimum	500	667	917	1,168	1,334			
		End	853	1,137	1,563	1,990	2,274			
<b>12DA</b>	-C060	Start	1,514	2,019	2,775	3,532	4,037	6.21	10.34	3,164
		Minimum	625	834	1,147	1,459	1,668			
		End	1,066	1,421	1,954	2,487	2,842			
<b>12DA</b>	-C080	Start	2,691	3,588	4,934	6,280	7,177	3.52	10.34	3,164
		Minimum	1,112	1,483	2,039	2,595	2,965			
		End	1,895	2,527	3,474	4,422	5,053			
<b>14DA</b>	-C080	Start	3,230	4,306	5,921	7,536	8,612	5.86	10.34	6,327
		Minimum	1,334	1,779	2,446	3,114	3,558			
		End	2,274	3,032	4,169	5,306	6,064			
<b>14DA</b>	-C100	Start	5,046	6,728	9,252	11,775	13,457	3.72	8.27	6,327
		Minimum	2,085	2,780	3,822	4,865	5,560			
		End	3,553	4,737	6,514	8,290	9,475			
<b>14DA</b>	-C120	Start	7,267	9,689	13,322	16,955	19,378	2.55	8.27	6,327
		Minimum	3,002	4,003	5,504	7,006	8,006			
		End	5,116	6,822	9,380	11,938	13,644			

## D SERIES-PRODUCT BULLETIN

### DOUBLE ACTING (N-M)

The torque values below indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		2.8 bar	4.1 bar	5.5 bar	6.9 bar	8.3 bar	12 bar	Normal Operation bar	MAWP bar	Max Rated Torque N.m.*			
<b>16DA</b>	-C100	Start	6,308	8,410	11,564	14,718	16,821	6.00	8.27	12,654			
		Minimum	2,606	3,475	4,778	6,081	6,950						
		End	4,441	5,922	8,142	10,363	11,843						
	-C120	Start	9,083	12,111	16,653	21,194	24,222				4.14	8.27	12,654
		Minimum	3,753	5,004	6,880	8,757	10,008						
		End	6,395	8,527	11,725	14,923	17,055						
<b>18DA</b>	-C120	Start	11,808	15,744	21,649	27,553	31,489	8.00	8.27	31,636			
		Minimum	4,879	6,505	8,945	11,384	13,010						
		End	8,314	11,085	15,242	19,399	22,171						
	-C160	Start	20,992	27,990	38,486	48,982	55,980				4.48	8.27	31,636
		Minimum	8,674	11,565	15,902	20,238	23,130						
		End	14,781	19,707	27,098	34,488	39,415						
<b>20DA</b>	-C120	Start	13,928	18,570	25,534	32,498	37,141	8.27	8.27	79,089			
		Minimum	5,755	7,673	10,550	13,427	15,346						
		End	9,806	13,075	17,978	22,881	26,150						
	-C160	Start	24,760	33,014	45,394	57,774	66,028				8.27	8.27	79,089
		Minimum	10,230	13,641	18,756	23,871	27,281						
		End	17,433	23,245	31,961	40,678	46,489						
-C200	Start	38,688	51,584	70,928	90,272	103,168	6.07	8.27	79,089				
	Minimum	15,985	21,313	29,306	37,298	42,627							
	End	27,240	36,320	49,940	63,560	72,640							
-C240	Start	55,711	74,281	102,137	129,992	148,562				4.21	8.27	79,089	
	Minimum	23,018	30,691	42,200	53,710	61,382							
	End	39,225	52,300	71,913	91,526	104,601							

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	175 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
SR-C030- <b>S42</b>	Start	308	581	1,018	1,454	1,890	2,326	2,981	3,526	40	175	2,625
	Minimum	162	213	401	589	777	965	1,247	1,481			
	End	291	306	614	921	1,228	1,535	1,996	2,380			
SR-C030- <b>S62</b>	Start	532	427	863	1,299	1,736	2,172	2,826	3,372	60	175	2,625
	Minimum	268	105	291	478	664	850	1,130	1,363			
	End	446	83	390	697	1,004	1,311	1,772	2,156			
SR-C030- <b>S72</b>	Start	619	/	720	1,156	1,592	2,029	2,683	3,228	70	175	2,625
	Minimum	327	/	236	424	612	800	1,082	1,316			
	End	589	/	302	609	916	1,224	1,684	2,068			
SR-C030- <b>S82</b>	Start	1,079	/	/	961	1,397	1,834	2,488	3,033	110	175	2,625
	Minimum	517	/	/	218	402	586	862	1,092			
	End	784	/	/	149	457	764	1,224	1,608			
SR-C030- <b>S92</b>	Start	1,210	/	/	843	1,279	1,715	2,369	2,915	130	175	2,625
	Minimum	585	/	/	152	337	521	797	1,027			
	End	902	/	/	19	326	633	1,094	1,478			

04

# D SERIES-PRODUCT BULLETIN

## OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	175 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
SR-C040 <b>S42</b>	Start	308	1,260	2,036	2,811	3,587	4,362	5,526	6,495	20	175	2,625
	Minimum	162	506	840	1,174	1,508	1,842	2,344	2,761			
	End	291	784	1,330	1,876	2,422	2,968	3,788	4,470			
SR-C040 <b>S47</b>	Start	532	1,105	1,881	2,657	3,432	4,208	5,371	6,340	40	175	2,625
	Minimum	268	396	727	1,059	1,391	1,723	2,220	2,635			
	End	446	561	1,107	1,653	2,199	2,745	3,564	4,246			
SR-C040 <b>S52</b>	Start	619	962	1,738	2,513	3,289	4,064	5,228	6,197	40	175	2,625
	Minimum	327	341	675	1,009	1,343	1,678	2,179	2,597			
	End	589	473	1,019	1,565	2,111	2,657	3,476	4,159			
SR-C040 <b>S55</b>	Start	1,079	767	1,543	2,318	3,094	3,869	5,033	6,002	70	175	2,625
	Minimum	517	137	465	792	1,119	1,446	1,936	2,345			
	End	784	13	559	1,105	1,651	2,197	3,016	3,699			
SR-C040 <b>S62</b>	Start	988	552	1,327	2,103	2,878	3,654	4,817	5,787	70	175	2,625
	Minimum	534	136	471	806	1,141	1,476	1,979	2,398			
	End	999	104	651	1,197	1,743	2,289	3,108	3,790			
SR-C040 <b>S67</b>	Start	1,210	/	1,424	2,200	2,975	3,751	4,914	5,884	70	175	2,625
	Minimum	585	/	397	724	1,051	1,379	1,869	2,278			
	End	902	/	428	974	1,520	2,066	2,885	3,568			
SR-C040 <b>S71</b>	Start	1,280	/	1,102	1,877	2,653	3,428	4,592	5,561	80	175	2,625
	Minimum	679	/	323	657	991	1,325	1,826	2,243			
	End	1,225	/	358	904	1,450	1,996	2,815	3,498			
SR-C040 <b>S72</b>	Start	1,296	/	1,036	1,812	2,587	3,363	4,526	5,496	80	175	2,625
	Minimum	697	/	307	641	976	1,310	1,812	2,230			
	End	1,291	/	343	889	1,435	1,981	2,800	3,483			
SR-C040 <b>S75</b>	Start	1,519	/	882	1,657	2,433	3,208	4,372	5,341	100	175	2,625
	Minimum	803	/	198	532	866	1,200	1,700	2,118			
	End	1,445	/	119	665	1,211	1,757	2,576	3,259			
SR-C040 <b>S79</b>	Start	1,588	/	810	1,586	2,362	3,137	4,300	5,270	106	175	2,625
	Minimum	841	/	162	497	831	1,166	1,667	2,085			
	End	1,516	/	50	596	1,142	1,688	2,507	3,190			
SR-C040 <b>S82</b>	Start	1,607	/	738	1,514	2,289	3,065	4,228	5,198	108	175	2,625
	Minimum	862	/	142	477	811	1,146	1,648	2,066			
	End	1,588	/	31	577	1,123	1,669	2,488	3,171			
SR-C040 <b>S85</b>	Start	1,812	/	/	1,431	2,207	2,983	4,146	5,115	110	175	2,625
	Minimum	947	/	/	385	718	1,051	1,550	1,966			
	End	1,671	/	/	372	918	1,464	2,283	2,966			
SR-C040 <b>S89</b>	Start	2,067	/	/	1,319	2,094	2,870	4,033	5,003	113	175	2,625
	Minimum	1,052	/	/	272	604	935	1,432	1,846			
	End	1,783	/	/	117	663	1,209	2,029	2,711			
SR-C040 <b>S92</b>	Start	1,900	/	/	1,288	2,064	2,839	4,003	4,972	114	175	2,625
	Minimum	1,006	/	/	330	664	998	1,499	1,917			
	End	1,814	/	/	284	830	1,377	2,196	2,878			
SR-C040 <b>S94</b>	Start	2,198	/	/	/	1,976	2,752	3,915	4,884	116	175	2,625
	Minimum	1,120	/	/	/	537	869	1,366	1,780			
	End	1,902	/	/	/	533	1,079	1,898	2,580			
SR-C040 <b>S96</b>	Start	2,360	/	/	/	1,869	2,644	3,808	4,777	119	175	2,625
	Minimum	1,196	/	/	/	459	790	1,286	1,699			
	End	2,009	/	/	/	371	917	1,736	2,418			
SR-C040 <b>S98</b>	Start	2,490	/	/	/	1,750	2,526	3,689	4,659	122	175	2,625
	Minimum	1,263	/	/	/	391	722	1,218	1,631			
	End	2,128	/	/	/	240	786	1,605	2,288			

04

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	175 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
SR-C040 <b>S22</b>	Start	407	1,750	2,784	3,818	4,852	5,886	7,438	8,730	20	175	5,250
	Minimum	200	681	1,122	1,562	2,003	2,443	3,104	3,654			
	End	318	1,049	1,777	2,505	3,234	3,962	5,054	5,964			
SR-C040 <b>S32</b>	Start	701	1,622	2,656	3,690	4,725	5,759	7,310	8,602	40	175	5,250
	Minimum	321	546	980	1,413	1,847	2,281	2,931	3,473			
	End	446	755	1,483	2,211	2,939	3,667	4,759	5,670			
SR-C040 <b>S43</b>	Start	819	1,422	2,457	3,491	4,525	5,559	7,110	8,402	50	175	5,250
	Minimum	403	480	921	1,363	1,804	2,246	2,908	3,460			
	End	646	638	1,366	2,094	2,822	3,550	4,642	5,552			
SR-C040 <b>S58</b>	Start	1,420	1,382	2,416	3,450	4,484	5,518	7,070	8,362	60	175	5,250
	Minimum	595	245	664	1,084	1,504	1,924	2,554	3,079			
	End	686	36	764	1,492	2,220	2,948	4,040	4,950			
SR-C040 <b>S65</b>	Start	1,593	/	2,290	3,324	4,359	5,393	6,944	8,236	70	175	5,250
	Minimum	679	/	586	1,008	1,429	1,851	2,483	3,010			
	End	812	/	591	1,319	2,047	2,775	3,868	4,778			
SR-C040 <b>S66</b>	Start	1,307	929	1,963	2,997	4,031	5,065	6,616	7,909	70	175	5,250
	Minimum	668	219	663	1,107	1,551	1,995	2,660	3,215			
	End	1,139	149	877	1,605	2,334	3,062	4,154	5,064			
SR-C040 <b>S75</b>	Start	1,693	/	1,753	2,787	3,822	4,856	6,407	7,699	80	175	5,250
	Minimum	837	/	480	918	1,357	1,796	2,455	3,003			
	End	1,349	/	492	1,220	1,948	2,676	3,768	4,678			
SR-C040 <b>S77</b>	Start	1,714	/	1,645	2,679	3,713	4,747	6,298	7,591	80	175	5,250
	Minimum	868	/	455	896	1,337	1,778	2,440	2,991			
	End	1,457	/	470	1,199	1,927	2,655	3,747	4,657			
SR-C040 <b>S81</b>	Start	2,008	/	1,517	2,551	3,585	4,620	6,171	7,463	90	175	5,250
	Minimum	990	/	326	764	1,202	1,641	2,298	2,846			
	End	1,585	/	176	904	1,632	2,360	3,453	4,363			
SR-C040 <b>S83</b>	Start	2,099	/	1,435	2,469	3,503	4,538	6,089	7,381	100	175	5,250
	Minimum	1,037	/	279	718	1,157	1,596	2,254	2,802			
	End	1,667	/	85	813	1,541	2,269	3,361	4,271			
SR-C040 <b>S85</b>	Start	2,126	/	1,317	2,351	3,386	4,420	5,971	7,263	100	175	5,250
	Minimum	1,071	/	250	691	1,131	1,572	2,233	2,783			
	End	1,785	/	59	787	1,515	2,243	3,335	4,245			
SR-C040 <b>S87</b>	Start	2,394	/	/	2,342	3,376	4,410	5,961	7,253	100	175	5,250
	Minimum	1,159	/	/	584	1,020	1,456	2,110	2,654			
	End	1,795	/	/	519	1,247	1,975	3,067	3,977			
SR-C040 <b>S89</b>	Start	2,511	/	/	2,142	3,176	4,210	5,761	7,054	120	175	5,250
	Minimum	1,240	/	/	515	953	1,392	2,050	2,598			
	End	1,995	/	/	401	1,129	1,857	2,949	3,859			
SR-C040 <b>S93</b>	Start	2,727	/	/	2,311	3,345	4,379	5,930	7,223	120	175	5,250
	Minimum	1,271	/	/	458	890	1,322	1,970	2,510			
	End	1,825	/	/	185	913	1,641	2,733	3,643			
SR-C040 <b>S95</b>	Start	2,900	/	/	2,185	3,219	4,254	5,805	7,097	130	175	5,250
	Minimum	1,354	/	/	381	814	1,248	1,898	2,440			
	End	1,951	/	/	12	740	1,469	2,561	3,471			
SR-C040 <b>S97</b>	Start	3,113	/	/	/	3,136	4,170	5,721	7,013	130	175	5,250
	Minimum	1,439	/	/	/	717	1,149	1,795	2,334			
	End	2,035	/	/	/	527	1,255	2,348	3,258			
SR-C040 <b>S98</b>	Start	3,286	/	/	/	3,010	4,044	5,595	6,888	140	175	5,250
	Minimum	1,522	/	/	/	640	1,072	1,721	2,261			
	End	2,161	/	/	/	355	1,083	2,175	3,085			

06

## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

SPRING RETURN (IN-LB)									Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
Left Hand (FAIL CLOSE)	SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig				
SR-C050 <b>S19</b>	Start	580	2,767	4,382	5,998	7,614	9,230	11,653	20	150	5,250
	Minimum	287	1,094	1,784	2,474	3,165	3,855	4,891			
	End	465	1,696	2,833	3,971	5,109	6,246	7,953			
SR-C050 <b>S34</b>	Start	1,199	2,261	3,877	5,493	7,109	8,724	11,148	40	150	5,250
	Minimum	596	776	1,463	2,149	2,836	3,522	4,552			
	End	970	1,076	2,214	3,351	4,489	5,626	7,333			
SR-C050 <b>S53</b>	Start	1,796	1,596	3,212	4,828	6,444	8,059	10,483	60	150	5,250
	Minimum	934	452	1,145	1,838	2,531	3,224	4,264			
	End	1,635	479	1,617	2,754	3,892	5,030	6,736			
SR-C050 <b>S72</b>	Start	2,376	/	2,747	4,363	5,979	7,594	10,018	70	150	5,250
	Minimum	1,221	/	854	1,545	2,237	2,929	3,966			
	End	2,100	/	1,037	2,175	3,312	4,450	6,157			
SR-C050 <b>S87</b>	Start	2,995	/	2,242	3,858	5,473	7,089	9,513	90	150	5,250
	Minimum	1,530	/	541	1,232	1,922	2,613	3,648			
	End	2,605	/	417	1,555	2,693	3,830	5,537			
SR-C050 <b>S88</b>	Start	3,484	/	/	4,638	6,254	7,870	10,294	87	150	5,250
	Minimum	1,496	/	/	1,130	1,787	2,444	3,429			
	End	1,825	/	/	1,067	2,205	3,342	5,049			
SR-C050 <b>S93</b>	Start	4,063	/	/	4,174	5,789	7,405	9,829	93	150	5,250
	Minimum	1,786	/	/	863	1,525	2,187	3,180			
	End	2,289	/	/	487	1,625	2,763	4,469			
SR-C050 <b>S94</b>	Start	4,683	/	/	/	5,284	6,900	9,324	99	150	5,250
	Minimum	2,097	/	/	/	1,236	1,903	2,903			
	End	2,795	/	/	/	1,005	2,143	3,849			

06

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
<b>S22</b>	SR-C050 Start	1,096	4,137	6,561	8,985	11,408	13,832	17,467	30	150	10,500
	Minimum	505	1,534	2,553	3,573	4,592	5,611	7,141			
	End	710	2,317	4,024	5,730	7,437	9,143	11,703			
<b>S34</b>	SR-C050 Start	1,838	3,479	5,903	8,326	10,750	13,173	16,809	40	150	10,500
	Minimum	888	1,159	2,182	3,205	4,228	5,251	6,786			
	End	1,368	1,575	3,281	4,987	6,694	8,400	10,960			
<b>S53</b>	SR-C050 Start	2,677	2,493	4,917	7,340	9,764	12,188	15,823	60	150	10,500
	Minimum	1,373	702	1,739	2,776	3,814	4,851	6,407			
	End	2,354	736	2,443	4,149	5,856	7,562	10,122			
<b>S65</b>	SR-C050 Start	3,573		4,738	7,162	9,586	12,009	15,645	70	150	10,500
	Minimum	1,697		1,360	2,379	3,398	4,417	5,945			
	End	2,532		1,546	3,253	4,959	6,666	9,225			
<b>S72</b>	SR-C050 Start	3,772		4,207	6,631	9,054	11,478	15,113	80	150	10,500
	Minimum	1,878		1,213	2,243	3,273	4,304	5,849			
	End	3,064		1,347	3,053	4,760	6,466	9,026			
<b>S85</b>	SR-C050 Start	4,669		4,029	6,452	8,876	11,299	14,935	90	150	10,500
	Minimum	2,202		850	1,868	2,885	3,903	5,429			
	End	3,242		451	2,157	3,863	5,570	8,130			
<b>S87</b>	SR-C050 Start	4,515		3,548	5,972	8,396	10,819	14,455	90	150	10,500
	Minimum	2,260		835	1,867	2,898	3,930	5,478			
	End	3,723		604	2,311	4,017	5,724	8,283			
<b>S94</b>	SR-C050 Start	5,411			5,794	8,217	10,641	14,276	100	150	10,500
	Minimum	2,584			1,498	2,518	3,539	5,069			
	End	3,901			1,414	3,121	4,827	7,387			
<b>S19</b>	SR-C060 Start	1,434	5,883	9,373	12,863	16,353	19,843	25,078	20	150	10,500
	Minimum	699	2,257	3,735	5,213	6,692	8,170	10,387			
	End	1,097	3,481	5,938	8,395	10,852	13,310	16,996			
<b>S32</b>	SR-C060 Start	2,484	5,080	8,570	12,060	15,550	19,040	24,275	40	150	10,500
	Minimum	1,211	1,741	3,217	4,693	6,169	7,645	9,859			
	End	1,900	2,430	4,887	7,345	9,802	12,259	15,945			
<b>S47</b>	SR-C060 Start	3,404	3,755	7,245	10,735	14,225	17,715	22,950	50	150	10,500
	Minimum	1,798	1,206	2,707	4,209	5,710	7,212	9,464			
	End	3,226	1,510	3,968	6,425	8,882	11,339	15,025			
<b>S72</b>	SR-C060 Start	4,838	2,658	6,148	9,638	13,128	16,618	21,853	70	150	10,500
	Minimum	2,497	495	1,991	3,486	4,982	6,478	8,721			
	End	4,322	76	2,534	4,991	7,448	9,905	13,591			
<b>S75</b>	SR-C060 Start	6,235		6,704	10,194	13,684	17,174	22,409	80	150	10,500
	Minimum	2,804		1,519	2,961	4,402	5,843	8,004			
	End	3,766		1,137	3,594	6,052	8,509	12,195			
<b>S82</b>	SR-C060 Start	5,889		5,344	8,834	12,324	15,814	21,049	80	150	10,500
	Minimum	3,009		1,467	2,959	4,451	5,943	8,181			
	End	5,126		1,483	3,940	6,398	8,855	12,541			
<b>S91</b>	SR-C060 Start	7,669			9,097	12,587	16,077	21,312	88	150	10,500
	Minimum	3,507			2,294	3,744	5,194	7,369			
	End	4,863			2,160	4,618	7,075	10,761			
<b>S94</b>	SR-C060 Start	8,719			8,294	11,784	15,274	20,509	92	150	10,500
	Minimum	4,022			1,792	3,246	4,699	6,879			
	End	5,666			1,110	3,567	6,024	9,710			



# D SERIES-PRODUCT BULLETIN

## OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		SPRING RETURN (IN-LB)							Normal Operation psi	MAWP psi	Max Rated Torque in-lb*
Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig			
SR-C060 <b>S19</b>	Start	1,861	7,852	12,505	17,159	21,812	26,465	33,445	20	150	14,000
	Minimum	914	3,038	5,014	6,990	8,966	10,942	13,906			
	End	1,455	4,692	7,968	11,244	14,521	17,797	22,712			
SR-C060 <b>S27</b>	Start	2,739	7,010	11,663	16,317	20,970	25,623	32,603	30	150	14,000
	Minimum	1,380	2,583	4,565	6,547	8,528	10,510	13,482			
	End	2,297	3,814	7,091	10,367	13,643	16,920	21,834			
SR-C060 <b>S34</b>	Start	3,566	6,803	11,456	16,109	20,763	25,416	32,396	40	150	14,000
	Minimum	1,688	2,224	4,180	6,137	8,093	10,049	12,983			
	End	2,504	2,987	6,263	9,540	12,816	16,093	21,007			
SR-C060 <b>S36</b>	Start	3,861	6,684	11,337	15,991	20,644	25,297	32,277	40	150	14,000
	Minimum	1,808	2,087	4,034	5,981	7,929	9,876	12,797			
	End	2,623	2,691	5,968	9,244	12,521	15,797	20,711			
SR-C060 <b>S37</b>	Start	3,747	6,164	10,817	15,471	20,124	24,777	31,757	40	150	14,000
	Minimum	1,888	2,075	4,057	6,039	8,021	10,003	12,975			
	End	3,143	2,805	6,082	9,358	12,634	15,911	20,825			
SR-C060 <b>S52</b>	Start	5,427	5,348	10,001	14,654	19,308	23,961	30,941	60	150	14,000
	Minimum	2,602	1,321	3,282	5,243	7,205	9,166	12,108			
	End	3,959	1,126	4,402	7,679	10,955	14,231	19,146			
SR-C060 <b>S55</b>	Start	5,722	5,229	9,882	14,536	19,189	23,843	30,823	60	150	14,000
	Minimum	2,722	1,196	3,155	5,114	7,072	9,031	11,970			
	End	4,078	830	4,107	7,383	10,659	13,936	18,850			
SR-C060 <b>S56</b>	Start	5,572	4,597	9,250	13,903	18,557	23,210	30,190	60	150	14,000
	Minimum	2,815	1,153	3,138	5,122	7,106	9,091	12,067			
	End	4,710	981	4,257	7,534	10,810	14,087	19,001			
SR-C060 <b>S62</b>	Start	6,304	4,506	9,159	13,813	18,466	23,119	30,099	60	150	14,000
	Minimum	3,068	864	2,830	4,796	6,761	8,727	11,676			
	End	4,801	248	3,525	6,801	10,078	13,354	18,268			
SR-C060 <b>S64</b>	Start	7,411		10,461	15,114	19,768	24,421	31,401	70	150	14,000
	Minimum	3,083		2,521	4,389	6,256	8,124	10,926			
	End	3,499		2,418	5,694	8,971	12,247	17,162			
SR-C060 <b>S65</b>	Start	6,600		9,041	13,694	18,347	23,001	29,981	70	150	14,000
	Minimum	3,188		2,712	4,679	6,646	8,613	11,563			
	End	4,919		3,229	6,506	9,782	13,058	17,973			
SR-C060 <b>S71</b>	Start	7,313		8,313	12,966	17,620	22,273	29,253	70	150	14,000
	Minimum	3,576		2,328	4,297	6,265	8,233	11,185			
	End	5,647		2,516	5,792	9,069	12,345	17,260			
SR-C060 <b>S73</b>	Start	7,433		7,795	12,448	17,102	21,755	28,735	80	150	14,000
	Minimum	3,729		2,210	4,190	6,170	8,149	11,119			
	End	6,165		2,396	5,673	8,949	12,226	17,140			
SR-C060 <b>S74</b>	Start	7,609		8,195	12,848	17,501	22,155	29,135	80	150	14,000
	Minimum	3,696		2,206	4,174	6,141	8,109	11,060			
	End	5,766		2,220	5,497	8,773	12,049	16,964			
SR-C060 <b>S84</b>	Start	8,310		6,953	11,606	16,260	20,913	27,893	90	150	14,000
	Minimum	4,195		1,758	3,743	5,727	7,712	10,688			
	End	7,007		1,519	4,795	8,072	11,348	16,263			
SR-C060 <b>S93</b>	Start	9,319		6,107	10,760	15,414	20,067	27,047	93	150	14,000
	Minimum	4,704		1,246	3,230	5,213	7,196	10,171			
	End	7,853		510	3,786	7,063	10,339	15,254			

10

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	150 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*	
<b>12</b>	SR-C080	Start	4,915	17,012	27,961	38,910	49,859	60,808	30	150	28,000	
	<b>S03</b>	Minimum	2,509	6,472	10,962	15,452	19,942	24,433				31,168
		End	4,886	10,503	18,212	25,921	33,630	41,339				52,903
<b>12</b>	SR-C080	Start	7,616	14,488	25,438	36,387	47,336	58,285	40	150	28,000	
	<b>S31</b>	Minimum	3,856	5,117	9,604	14,090	18,577	23,063				29,793
		End	7,410	7,802	15,511	23,220	30,929	38,639				50,202
<b>12</b>	SR-C080	Start	11,085	11,023	21,972	32,921	43,870	54,819	50	150	28,000	
	<b>S02</b>	Minimum	5,630	3,347	7,836	12,325	16,813	21,302				28,035
		End	10,875	4,333	12,042	19,752	27,461	35,170				46,733
<b>12</b>	SR-C080	Start	11,430	10,536	21,486	32,435	43,384	54,333	60	150	28,000	
	<b>S21</b>	Minimum	5,833	3,149	7,641	12,132	16,623	21,115				27,852
		End	11,362	3,989	11,698	19,407	27,116	34,825				46,389
<b>12</b>	SR-C080	Start	16,000	/	17,086	28,035	38,984	49,933	79	150	28,000	
	<b>S01</b>	Minimum	8,138	/	5,329	9,818	14,307	18,796				25,530
		End	15,761	/	7,127	14,836	22,545	30,254				41,818
<b>12</b>	SR-C080	Start	19,046	/	14,076	25,025	35,974	46,923	85	150	28,000	
	<b>S11</b>	Minimum	9,689	/	3,777	8,265	12,754	17,242				23,975
		End	18,771	/	4,082	11,791	19,500	27,209				38,773
<b>12</b>	SR-C100	Start	11,085	23,341	40,449	57,557	74,665	91,773	40	120	28,000	
	<b>S03</b>	Minimum	5,630	8,397	15,411	22,424	29,438	36,451				
		End	10,875	13,006	25,052	37,097	49,143	61,188				
<b>12</b>	SR-C100	Start	16,000	18,455	35,563	52,670	69,778	86,886	60	120	28,000	
	<b>S02</b>	Minimum	8,138	5,890	12,904	19,918	26,932	33,946				
		End	15,761	8,091	20,136	32,182	44,227	56,273				
<b>12</b>	SR-C100	Start	23,363	11,136	28,244	45,352	62,460	79,567	59	120	28,000	
	<b>S01</b>	Minimum	11,896	2,133	9,148	16,162	23,177	30,191				
		End	23,080	728	12,773	24,819	36,864	48,910				

## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

SPRING RETURN (IN-LB)								Normal Operation psi	MAWP psi	Max Rated Torque in-lb*	
Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig				
<b>14</b>	SR-C120 <b>S04</b>	Start	25,900	35,293	64,856	94,418	123,981	153,543	50	120	56,000
		Minimum	12,855	11,319	23,406	35,492	47,579	59,666			
		End	23,832	15,729	36,544	57,358	78,173	98,988			
	SR-C120 <b>S03</b>	Start	29,503	31,978	61,540	91,103	120,665	150,228	50	120	56,000
		Minimum	14,643	9,532	21,620	33,707	45,794	57,882			
		End	27,147	12,126	32,941	53,755	74,570	95,384			
	SR-C120 <b>S02</b>	Start	37,246	24,853	54,416	83,978	113,541	143,103	60	120	56,000
		Minimum	18,486	5,685	17,770	29,856	41,941	54,026			
		End	34,272	4,383	25,198	46,013	66,827	87,642			
SR-C120 <b>S01</b>	Start	46,325		46,062	75,625	105,187	134,750	66	120	56,000	
	Minimum	22,991		13,268	25,354	37,440	49,527				
	End	42,625		16,119	36,934	57,748	78,563				
<b>16</b>	SR-C160 <b>S05</b>	Start	34,383	94,749	160,443	226,137	291,832	357,526	30	120	112,000
		Minimum	18,015	36,039	63,067	90,094	117,121	144,148			
		End	36,640	58,127	104,381	150,636	196,891	243,145			
	SR-C160 <b>S04</b>	Start	47,014	81,287	146,982	212,676	278,371	344,065	40	120	112,000
		Minimum	24,633	29,422	56,450	83,478	110,506	137,534			
		End	50,102	45,495	91,750	138,004	184,259	230,514			
	SR-C160 <b>S03</b>	Start	52,628	75,305	140,999	206,694	272,388	338,083	50	120	112,000
		Minimum	27,575	26,474	53,499	80,523	107,548	134,573			
		End	56,084	39,881	86,136	132,391	178,645	224,900			
	SR-C160 <b>S02</b>	Start	63,151	64,091	129,785	195,480	261,174	326,868	50	120	112,000
		Minimum	33,088	20,958	47,981	75,005	102,028	129,051			
		End	67,298	29,358	75,613	121,867	168,122	214,377			
	SR-C160 <b>S01</b>	Start	81,397	44,647	110,341	176,036	241,730	307,425	60	120	112,000
		Minimum	42,648	11,386	38,403	65,420	92,437	119,454			
		End	86,742	11,112	57,367	103,622	149,877	196,131			

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (IN-LB)

Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig	Normal Operation psi	MAWP psi	Max Rated Torque in-lb*	
<b>18</b>	SR-C160 <b>S03</b>	Start	75,223	98,588	183,990	269,393	354,796	50	120	280,000	
		Minimum	37,904	32,053	67,032	102,011	136,990				171,969
		End	72,218	45,039	105,170	165,301	225,432				285,563
	SR-C160 <b>S02</b>	Start	101,571	67,292	152,695	238,097	323,500	60	120	280,000	
		Minimum	52,321	17,818	52,887	87,957	123,026				158,095
		End	103,514	18,692	78,823	138,954	199,085				259,216
	SR-C160 <b>S01</b>	Start	176,794		80,477	165,880	251,282	106	120	280,000	
		Minimum	90,225		14,838	49,860	84,881				119,902
		End	175,731		3,599	63,731	123,862				183,993
<b>18</b>	SR-C200 <b>S03</b>	Start	75,223	194,666	328,108	461,550	594,991	30	120	280,000	
		Minimum	37,904	71,435	126,105	180,775	235,445				290,115
		End	72,218	112,686	206,641	300,596	394,551				488,506
	SR-C200 <b>S02</b>	Start	101,571	163,370	296,812	430,254	563,696	40	120	280,000	
		Minimum	52,321	57,255	112,043	166,830	221,618				276,406
		End	103,514	86,339	180,294	274,249	368,204				462,158
	SR-C200 <b>S01</b>	Start	176,794	91,152	224,594	358,036	491,478	68	120	280,000	
		Minimum	90,225	19,225	73,950	128,676	183,401				238,126
		End	175,731	11,116	105,071	199,025	292,980				386,935

## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		SPRING RETURN (IN-LB)						Normal Operation psi	MAWP psi	Max Rated Torque in-lb*	
Left Hand (FAIL CLOSE)		SPRINGS	40 psig	60 psig	80 psig	100 psig	120 psig				
<b>20</b>	SR-C200 <b>S04</b>	Start	194,540	134,337	291,730	449,123	606,516	763,909	60	120	700,000
		Minimum	96,827	31,939	96,321	160,704	225,086	289,469			
		End	180,449	27,097	137,916	248,734	359,553	470,371			
<b>20</b>	SR-C200 <b>S03</b>	Start	246,715	/	246,007	403,400	560,792	718,185	80	120	700,000
		Minimum	122,288	/	70,733	135,074	199,414	263,754			
		End	226,172	/	85,741	196,559	307,378	418,196			
<b>20</b>	SR-C200 <b>S02</b>	Start	270,815	/	216,551	373,944	531,337	688,730	90	120	700,000
		Minimum	135,632	/	57,609	122,023	186,436	250,850			
		End	255,628	/	61,640	172,459	283,277	394,096			
<b>20</b>	SR-C200 <b>S01</b>	Start	356,035	/	/	298,447	455,840	613,233	110	120	700,000
		Minimum	177,373	/	/	80,146	144,526	208,906			
		End	331,124	/	/	87,239	198,058	308,876			
<b>20</b>	SR-C240 <b>S06</b>	Start	246,715	227,119	453,765	680,411	907,057	1,133,703	60	120	700,000
		Minimum	122,288	63,007	155,654	248,302	340,949	433,596			
		End	226,172	72,442	232,021	391,600	551,178	710,757			
<b>20</b>	SR-C240 <b>S05</b>	Start	270,815	197,664	424,310	650,955	877,601	1,104,247	60	120	700,000
		Minimum	135,632	49,899	142,665	235,431	328,196	420,962			
		End	255,628	48,342	207,921	367,499	527,078	686,657			
<b>20</b>	SR-C240 <b>S04</b>	Start	356,035	/	348,813	575,459	802,105	1,028,751	80	120	700,000
		Minimum	177,373	/	100,768	193,482	286,195	378,909			
		End	331,124	/	122,701	282,280	441,858	601,437			
<b>20</b>	SR-C240 <b>S03</b>	Start	414,389	/	283,388	510,034	736,679	963,325	90	120	700,000
		Minimum	208,564	/	69,877	162,691	255,505	348,318			
		End	396,550	/	64,347	223,925	383,504	543,083			
<b>20</b>	SR-C240 <b>S02</b>	Start	438,489	/	253,932	480,578	707,224	933,869	99	120	700,000
		Minimum	221,908	/	56,718	149,594	242,469	335,345			
		End	426,005	/	40,247	199,825	359,404	518,982			
<b>20</b>	SR-C240 <b>S01</b>	Start	523,709	/	/	405,081	631,727	858,373	106	120	700,000
		Minimum	263,649	/	/	107,588	200,397	293,206			
		End	501,502	/	/	114,606	274,184	433,763			

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (N-M)

Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar	12 bar	Normal Operation bar	MAWP bar	Max Rated Torque N-m*
SR-C030- <b>S42</b>	Start	308	74	110	164	217	253	325	396	2.76	12.07	297
	Minimum	162	28	43	66	89	105	136	166			
	End	291	41	66	104	141	167	217	267			
SR-C030- <b>S62</b>	Start	532	57	93	146	200	236	307	379	4.14	12.07	297
	Minimum	268	16	31	54	77	92	122	153			
	End	446	15	41	78	116	141	192	242			
SR-C030- <b>S72</b>	Start	619	41	76	130	184	219	291	362	4.83	12.07	297
	Minimum	327	9	25	48	71	86	117	148			
	End	589	6	31	68	106	131	182	232			
SR-C030- <b>S82</b>	Start	1,079			108	162	197	269	340	7.58	12.07	297
	Minimum	517			24	47	62	92	122			
	End	784			16	54	79	130	180			
SR-C030- <b>S92</b>	Start	1,210			95	148	184	255	327	8.96	12.07	297
	Minimum	585			17	40	55	85	115			
	End	902			2	39	65	115	165			

04

# D SERIES-PRODUCT BULLETIN

## OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		SPRING RETURN (N-M)								Normal Operation bar	MAWP bar	Max Rated Torque N-m*
Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar	12 bar			
SR-C040 <b>S42</b>	Start	35	158	221	317	412	475	603	730	1.38	12.07	297
	Minimum	18	64	91	132	173	201	255	310			
	End	33	99	144	211	278	323	413	502			
SR-C040 <b>S47</b>	Start	60	140	204	299	394	458	585	712	2.76	12.07	297
	Minimum	30	51	78	119	160	187	242	296			
	End	50	74	119	186	253	298	387	477			
SR-C040 <b>S52</b>	Start	70	124	188	283	378	442	569	696	2.76	12.07	297
	Minimum	37	45	73	114	155	182	237	292			
	End	67	64	109	176	243	288	377	467			
SR-C040 <b>S55</b>	Start	122	102	166	261	356	420	547	674	4.83	12.07	297
	Minimum	58	22	49	89	129	156	210	263			
	End	89	12	57	124	191	236	325	415			
SR-C040 <b>S62</b>	Start	112	78	141	237	332	395	523	650	4.83	12.07	297
	Minimum	60	22	49	91	132	159	214	269			
	End	113	23	67	134	202	246	336	425			
SR-C040 <b>S67</b>	Start	137		152	248	343	406	533	661	4.83	12.07	297
	Minimum	66		41	81	122	148	202	256			
	End	102		42	109	176	221	311	400			
SR-C040 <b>S71</b>	Start	145		116	211	306	370	497	624	5.52	12.07	297
	Minimum	77		33	74	115	142	197	252			
	End	138		34	101	169	213	303	392			
SR-C040 <b>S72</b>	Start	146		108	204	299	363	490	617	5.52	12.07	297
	Minimum	79		31	72	113	141	195	250			
	End	146		33	100	167	212	301	391			
SR-C040 <b>S75</b>	Start	172		91	186	282	345	472	599	6.89	12.07	297
	Minimum	91		19	60	101	128	183	237			
	End	163		7	74	142	186	276	365			
SR-C040 <b>S79</b>	Start	179			178	274	337	464	591	7.31	12.07	297
	Minimum	95			56	97	124	179	234			
	End	171			67	134	178	268	357			
SR-C040 <b>S82</b>	Start	182			170	265	329	456	583	7.45	12.07	297
	Minimum	97			53	95	122	177	232			
	End	179			65	132	176	266	355			
SR-C040 <b>S85</b>	Start	205			161	256	320	447	574	7.58	12.07	297
	Minimum	107			43	84	111	166	220			
	End	189			41	108	153	243	332			
SR-C040 <b>S89</b>	Start	234			148	243	307	434	561	7.79	12.07	297
	Minimum	119			30	71	98	152	207			
	End	201			13	80	124	214	303			
SR-C040 <b>S92</b>	Start	215			145	240	303	430	558	7.86	12.07	297
	Minimum	114			37	78	105	160	215			
	End	205			31	99	143	233	322			
SR-C040 <b>S94</b>	Start	248				230	293	421	548	8.00	12.07	297
	Minimum	127				64	91	145	199			
	End	215				65	110	199	289			
SR-C040 <b>S96</b>	Start	267				218	281	408	536	8.20	12.07	297
	Minimum	135				55	82	136	190			
	End	227				47	91	181	270			
SR-C040 <b>S98</b>	Start	281				204	268	395	522	8.41	12.07	297
	Minimum	143				47	74	128	183			
	End	240				32	77	166	256			

04

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

### SPRING RETURN (N-M)

Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar	12 bar	Normal Operation bar	MAWP bar	Max Rated Torque N-m*
SR-C040 <b>S22</b>	Start	46	218	303	430	557	642	811	981	1.38	12.07	593
	Minimum	23	86	122	176	230	266	338	411			
	End	36	133	193	282	372	431	551	670			
SR-C040 <b>S32</b>	Start	79	204	289	416	543	627	797	966	2.76	12.07	593
	Minimum	36	70	106	159	212	248	319	390			
	End	50	100	159	249	338	398	517	637			
SR-C040 <b>S43</b>	Start	92	181	266	393	520	605	774	944	3.45	12.07	593
	Minimum	46	63	99	153	208	244	316	389			
	End	73	86	146	236	325	385	504	623			
SR-C040 <b>S58</b>	Start	160	177	261	388	516	600	770	939	4.14	12.07	593
	Minimum	67	36	70	122	174	208	277	346			
	End	78	18	78	168	257	317	436	555			
SR-C040 <b>S65</b>	Start	180	/	247	374	501	586	756	925	4.83	12.07	593
	Minimum	77	/	61	113	165	200	269	338			
	End	92	/	59	148	238	297	417	536			
SR-C040 <b>S66</b>	Start	148	125	210	337	464	549	719	888	4.83	12.07	593
	Minimum	75	34	70	124	179	215	288	361			
	End	129	31	91	180	270	330	449	568			
SR-C040 <b>S75</b>	Start	191	/	187	314	441	525	695	864	5.52	12.07	593
	Minimum	95	/	49	103	157	193	265	337			
	End	152	/	47	137	226	286	405	525			
SR-C040 <b>S77</b>	Start	194	/	174	301	428	513	683	852	5.52	12.07	593
	Minimum	98	/	46	101	155	191	263	336			
	End	165	/	45	134	224	284	403	522			
SR-C040 <b>S81</b>	Start	227	/	160	287	414	499	668	838	6.21	12.07	593
	Minimum	112	/	32	86	140	176	247	319			
	End	179	/	12	101	191	250	370	489			
SR-C040 <b>S83</b>	Start	237	/	151	278	405	489	659	828	6.89	12.07	593
	Minimum	117	/	27	81	135	170	242	314			
	End	188	/	1	91	180	240	359	479			
SR-C040 <b>S85</b>	Start	240	/	/	264	391	476	646	815	6.89	12.07	593
	Minimum	121	/	/	77	132	168	240	312			
	End	202	/	/	88	177	237	356	476			
SR-C040 <b>S87</b>	Start	270	/	/	263	390	475	645	814	6.89	12.07	593
	Minimum	131	/	/	65	119	155	226	298			
	End	203	/	/	58	147	207	326	445			
SR-C040 <b>S89</b>	Start	284	/	/	241	368	452	622	791	8.27	12.07	593
	Minimum	140	/	/	58	111	147	219	291			
	End	225	/	/	44	134	194	313	432			
SR-C040 <b>S93</b>	Start	308	/	/	260	387	472	641	811	8.27	12.07	593
	Minimum	144	/	/	51	104	140	210	281			
	End	206	/	/	20	109	169	288	408			
SR-C040 <b>S95</b>	Start	328	/	/	246	373	457	627	796	8.96	12.07	593
	Minimum	153	/	/	42	96	131	202	273			
	End	220	/	/	0	90	150	269	388			
SR-C040 <b>S97</b>	Start	352	/	/	/	363	448	617	787	8.96	12.07	593
	Minimum	163	/	/	/	85	120	191	261			
	End	230	/	/	/	66	126	245	364			
SR-C040 <b>S98</b>	Start	371	/	/	/	349	434	603	773	9.65	12.07	593
	Minimum	172	/	/	/	76	111	182	253			
	End	244	/	/	/	46	106	225	345			

06



## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

SPRING RETURN (N-M)									Normal Operation bar	MAWP bar	Max Rated Torque N-m*
Left Hand (FAIL CLOSE)	SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar				
SR-C050 <b>S19</b>	Start	65	345	477	676	874	1,007	1,271	1.38	10.34	593
	Minimum	32	137	194	279	364	420	533			
	End	53	214	307	447	587	680	867			
SR-C050 <b>S34</b>	Start	136	288	420	619	817	949	1,214	2.76	10.34	593
	Minimum	67	101	158	242	326	383	495			
	End	110	144	237	377	517	610	797			
SR-C050 <b>S53</b>	Start	203	212	345	543	742	874	1,139	4.14	10.34	593
	Minimum	105	65	122	207	292	349	462			
	End	185	77	170	310	450	543	729			
SR-C050 <b>S72</b>	Start	268	160	292	491	689	822	1,087	4.83	10.34	593
	Minimum	138	32	89	174	259	315	429			
	End	237	11	104	244	384	477	664			
SR-C050 <b>S87</b>	Start	338		235	434	632	765	1,030	6.21	10.34	593
	Minimum	173		53	138	223	280	393			
	End	294		34	174	314	407	594			
SR-C050 <b>S88</b>	Start	394			522	721	853	1,118	6.00	10.34	593
	Minimum	169			127	208	261	369			
	End	206			119	259	352	539			
SR-C050 <b>S93</b>	Start	459			469	668	800	1,065	6.41	10.34	593
	Minimum	202			97	178	232	341			
	End	259			54	193	287	473			
SR-C050 <b>S94</b>	Start	529				611	743	1,008	6.83	10.34	593
	Minimum	237				145	200	309			
	End	316				123	217	403			

06

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		SPRING RETURN (N-M)							Normal Operation bar	MAWP bar	Max Rated Torque N-m*	
Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar				
08	SR-C050 <b>S22</b>	Start	124	516	714	1,012	1,310	1,508	1,906	2.07	10.34	1,186
		Minimum	57	194	277	402	528	611	778			
		End	80	296	435	645	855	995	1,274			
SR-C050 <b>S34</b>	Start	208	441	640	938	1,235	1,434	1,831	2.76	10.34	1,186	
	Minimum	100	151	235	361	487	570	738				
	End	155	212	352	561	771	911	1,190				
SR-C050 <b>S53</b>	Start	302	330	528	826	1,124	1,323	1,720	4.14	10.34	1,186	
	Minimum	155	100	185	312	440	525	695				
	End	266	117	257	467	676	816	1,096				
SR-C050 <b>S65</b>	Start	404	310	508	806	1,104	1,303	1,700	4.83	10.34	1,186	
	Minimum	192	59	142	267	393	476	643				
	End	286	16	156	365	575	715	994				
SR-C050 <b>S72</b>	Start	426		448	746	1,044	1,242	1,640	5.52	10.34	1,186	
	Minimum	212		125	252	379	463	632				
	End	346		133	343	553	692	972				
SR-C050 <b>S85</b>	Start	527		428	726	1,024	1,222	1,619	6.21	10.34	1,186	
	Minimum	249		85	210	335	418	585				
	End	366		32	242	451	591	871				
SR-C050 <b>S87</b>	Start	510		374	672	969	1,168	1,565	6.21	10.34	1,186	
	Minimum	255		83	210	336	421	590				
	End	421		49	259	469	608	888				
SR-C050 <b>S94</b>	Start	611			651	949	1,148	1,545	6.89	10.34	1,186	
	Minimum	292			168	293	377	544				
	End	441			158	367	507	787				
SR-C060 <b>S19</b>	Start	162	734	1,020	1,449	1,878	2,164	2,736	1.38	10.34	1,186	
	Minimum	79	284	405	587	769	890	1,132				
	End	124	442	643	945	1,247	1,449	1,851				
SR-C060 <b>S32</b>	Start	281	643	929	1,358	1,787	2,073	2,645	2.76	10.34	1,186	
	Minimum	137	226	347	528	710	831	1,073				
	End	215	323	525	827	1,129	1,330	1,733				
SR-C060 <b>S47</b>	Start	385	493	779	1,208	1,637	1,923	2,495	3.45	10.34	1,186	
	Minimum	203	166	289	474	658	781	1,027				
	End	364	219	421	723	1,025	1,226	1,629				
SR-C060 <b>S72</b>	Start	547	370	655	1,084	1,513	1,799	2,371	4.83	10.34	1,186	
	Minimum	282	86	208	392	576	698	943				
	End	488	57	259	561	863	1,064	1,467				
SR-C060 <b>S75</b>	Start	704		718	1,147	1,576	1,862	2,434	5.52	10.34	1,186	
	Minimum	317		156	333	510	628	864				
	End	426		101	403	705	906	1,309				
SR-C060 <b>S82</b>	Start	665		565	994	1,423	1,709	2,280	5.52	10.34	1,186	
	Minimum	340		149	332	516	638	883				
	End	579		140	442	744	945	1,348				
SR-C060 <b>S91</b>	Start	866			1,023	1,452	1,738	2,310	6.07	10.34	1,186	
	Minimum	396			257	435	554	792				
	End	549			241	543	744	1,147				
SR-C060 <b>S94</b>	Start	985			933	1,361	1,647	2,219	6.34	10.34	1,186	
	Minimum	454			201	379	498	736				
	End	640			122	424	626	1,028				

# D SERIES-PRODUCT BULLETIN

## OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		Left Hand (FAIL CLOSE)	SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar	Normal Operation bar	MAWP bar	Max Rated Torque N-m*
<b>S19</b>	SR-C060 Start		210	979	1,361	1,933	2,505	2,886	3,648	1.38	10.34	1,582
	Minimum		103	382	544	787	1,030	1,192	1,516			
	End		164	595	864	1,266	1,669	1,937	2,474			
<b>S27</b>	SR-C060 Start		309	884	1,266	1,838	2,409	2,791	3,553	2.07	10.34	1,582
	Minimum		156	331	494	737	981	1,143	1,468			
	End		259	496	764	1,167	1,570	1,838	2,375			
<b>S34</b>	SR-C060 Start		403	861	1,242	1,814	2,386	2,767	3,530	2.76	10.34	1,582
	Minimum		191	290	450	691	931	1,091	1,412			
	End		283	402	671	1,074	1,476	1,745	2,282			
<b>S36</b>	SR-C060 Start		436	847	1,229	1,801	2,373	2,754	3,516	2.76	10.34	1,582
	Minimum		204	274	434	673	913	1,072	1,391			
	End		296	369	638	1,040	1,443	1,711	2,248			
<b>S37</b>	SR-C060 Start		423	789	1,170	1,742	2,314	2,695	3,458	2.76	10.34	1,582
	Minimum		213	274	436	680	923	1,086	1,410			
	End		355	382	650	1,053	1,456	1,724	2,261			
<b>S52</b>	SR-C060 Start		613	697	1,078	1,650	2,222	2,603	3,365	4.14	10.34	1,582
	Minimum		294	188	349	590	831	992	1,313			
	End		447	192	461	863	1,266	1,534	2,071			
<b>S55</b>	SR-C060 Start		647	683	1,064	1,636	2,208	2,589	3,352	4.14	10.34	1,582
	Minimum		308	174	334	575	816	976	1,297			
	End		461	159	427	830	1,233	1,501	2,038			
<b>S56</b>	SR-C060 Start		630	612	993	1,565	2,137	2,518	3,281	4.14	10.34	1,582
	Minimum		318	170	332	576	820	983	1,308			
	End		532	176	444	847	1,250	1,518	2,055			
<b>S62</b>	SR-C060 Start		712	601	983	1,555	2,126	2,508	3,270	4.14	10.34	1,582
	Minimum		347	137	298	539	781	942	1,264			
	End		542	93	362	764	1,167	1,435	1,972			
<b>S64</b>	SR-C060 Start		837		1,130	1,702	2,274	2,655	3,417	4.83	10.34	1,582
	Minimum		348		264	493	723	876	1,182			
	End		395		236	639	1,042	1,310	1,847			
<b>S65</b>	SR-C060 Start		746		969	1,541	2,113	2,494	3,257	4.83	10.34	1,582
	Minimum		360		284	526	768	929	1,251			
	End		556		328	731	1,133	1,402	1,939			
<b>S71</b>	SR-C060 Start		826		887	1,459	2,031	2,412	3,175	4.83	10.34	1,582
	Minimum		404		241	483	725	886	1,209			
	End		638		248	650	1,053	1,321	1,858			
<b>S73</b>	SR-C060 Start		840		829	1,400	1,972	2,354	3,116	5.52	10.34	1,582
	Minimum		421		227	471	714	876	1,201			
	End		697		234	637	1,039	1,308	1,845			
<b>S74</b>	SR-C060 Start		860		874	1,446	2,018	2,399	3,161	5.52	10.34	1,582
	Minimum		418		227	469	711	872	1,194			
	End		651		214	617	1,019	1,288	1,825			
<b>S84</b>	SR-C060 Start		939		733	1,305	1,877	2,259	3,021	6.21	10.34	1,582
	Minimum		474		176	420	664	827	1,152			
	End		792		135	538	940	1,209	1,746			
<b>S93</b>	SR-C060 Start		1,053		638	1,210	1,782	2,163	2,925	6.41	10.34	1,582
	Minimum		531		119	362	606	769	1,094			
	End		887		21	424	826	1,095	1,632			

10

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (N-M)

Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	10 bar	Normal Operation bar	MAWP bar	Max Rated Torque N-m*	
<b>12</b>	SR-C080	Start	555	2,139	3,036	4,382	5,728	6,625	8,419	2.07	10.34	3,164
	<b>S03</b>	Minimum	283	820	1,188	1,740	2,292	2,660	3,396			
		End	552	1,340	1,971	2,919	3,866	4,498	5,761			
<b>12</b>	SR-C080	Start	861	1,854	2,751	4,097	5,443	6,340	8,134	2.76	10.34	3,164
	<b>S31</b>	Minimum	436	667	1,035	1,586	2,138	2,505	3,240			
		End	837	1,034	1,666	2,614	3,561	4,193	5,456			
<b>12</b>	SR-C080	Start	1,252	1,463	2,360	3,705	5,051	5,948	7,742	3.45	10.34	3,164
	<b>S02</b>	Minimum	636	467	835	1,387	1,938	2,306	3,042			
		End	1,229	643	1,274	2,222	3,169	3,801	5,064			
<b>12</b>	SR-C080	Start	1,291	1,408	2,305	3,650	4,996	5,893	7,687	4.14	10.34	3,164
	<b>S21</b>	Minimum	659	445	813	1,365	1,917	2,285	3,021			
		End	1,284	604	1,235	2,183	3,130	3,762	5,025			
<b>12</b>	SR-C080	Start	1,808	911	1,808	3,153	4,499	5,396	7,190	5.45	10.34	3,164
	<b>S01</b>	Minimum	920	184	552	1,103	1,655	2,023	2,759			
		End	1,781	87	719	1,666	2,614	3,245	4,509			
<b>12</b>	SR-C080	Start	2,152		1,468	2,813	4,159	5,056	6,850	5.86	10.34	3,164
	<b>S11</b>	Minimum	1,095		376	928	1,480	1,847	2,583			
		End	2,121		375	1,322	2,270	2,901	4,165			
<b>12</b>	SR-C100	Start	1,252	2,977	4,378	6,481	8,583	9,985		2.76	8.27	3,164
	<b>S03</b>	Minimum	636	1,088	1,663	2,525	3,387	3,961				
		End	1,229	1,708	2,695	4,176	5,656	6,643				
<b>12</b>	SR-C100	Start	1,808	2,424	3,826	5,929	8,031	9,433		4.14	8.27	3,164
	<b>S02</b>	Minimum	920	805	1,379	2,241	3,103	3,678				
		End	1,781	1,153	2,140	3,620	5,101	6,088				
<b>12</b>	SR-C100	Start	2,640	1,598	2,999	5,102	7,204	8,606		4.07	8.27	3,164
	<b>S01</b>	Minimum	1,344	380	955	1,817	2,679	3,254				
		End	2,608	321	1,308	2,789	4,269	5,256				

## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

SPRING RETURN (N-M)								Normal Operation bar	MAWP bar	Max Rated Torque N-m*	
Left Hand (FAIL CLOSE)	SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar					
<b>14</b>	SR-C120 <b>S04</b>	Start	2,926	4,574	6,996	10,630	14,263	16,685	3.45	8.27	6,327
		Minimum	1,452	1,519	2,509	3,994	5,480	6,470			
		End	2,693	2,190	3,895	6,454	9,012	10,717			
	SR-C120 <b>S03</b>	Start	3,333	4,199	6,622	10,255	13,888	16,310	3.45	8.27	6,327
		Minimum	1,654	1,317	2,307	3,793	5,278	6,269			
		End	3,067	1,783	3,488	6,047	8,605	10,310			
	SR-C120 <b>S02</b>	Start	4,208	3,394	5,817	9,450	13,083	15,506	4.14	8.27	6,327
		Minimum	2,089	882	1,872	3,358	4,843	5,833			
		End	3,872	908	2,614	5,172	7,730	9,435			
SR-C120 <b>S01</b>	Start	5,234		4,873	8,506	12,139	14,562	4.55	8.27	6,327	
	Minimum	2,598		1,364	2,849	4,334	5,325				
	End	4,816		1,588	4,146	6,704	8,410				
<b>16</b>	SR-C160 <b>S05</b>	Start	3,885	12,008	17,391	25,465	33,539	38,922	2.07	8.27	12,654
		Minimum	2,035	4,608	6,822	10,144	13,466	15,680			
		End	4,140	7,485	11,275	16,960	22,645	26,434			
	SR-C160 <b>S04</b>	Start	5,312	10,487	15,870	23,944	32,018	37,401	2.76	8.27	12,654
		Minimum	2,783	3,860	6,075	9,397	12,719	14,933			
		End	5,661	6,058	9,848	15,532	21,217	25,007			
	SR-C160 <b>S03</b>	Start	5,946	9,811	15,194	23,268	31,342	36,725	3.45	8.27	12,654
		Minimum	3,116	3,527	5,742	9,063	12,384	14,599			
		End	6,337	5,423	9,213	14,898	20,583	24,373			
	SR-C160 <b>S02</b>	Start	7,135	8,544	13,927	22,001	30,075	35,458	3.45	8.27	12,654
		Minimum	3,738	2,904	5,118	8,439	11,761	13,975			
		End	7,604	4,235	8,024	13,709	19,394	23,184			
	SR-C160 <b>S01</b>	Start	9,197	6,348	11,730	19,804	27,878	33,261	4.14	8.27	12,654
		Minimum	4,819	1,822	4,036	7,356	10,677	12,891			
		End	9,801	2,173	5,963	11,648	17,333	21,123			

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

#### SPRING RETURN (N-M)

Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar	Normal Operation bar	MAWP bar	Max Rated Torque N-m*	
<b>18</b>	SR-C160 <b>S03</b>	Start	8,499	12,833	19,830	30,327	40,823	47,820	3.45	8.27	31,636
		Minimum	4,283	4,315	7,181	11,480	15,779	18,645			
		End	8,160	6,281	11,208	18,599	25,989	30,916			
	SR-C160 <b>S02</b>	Start	11,476	9,297	16,295	26,791	37,287	44,285	4.14	8.27	31,636
		Minimum	5,911	2,709	5,582	9,892	14,202	17,076			
		End	11,695	3,305	8,231	15,622	23,012	27,939			
	SR-C160 <b>S01</b>	Start	19,975			18,631	29,128	36,125	7.31	8.27	31,636
		Minimum	10,194			5,588	9,892	12,762			
		End	19,855			7,123	14,513	19,440			
<b>18</b>	SR-C200 <b>S03</b>	Start	8,499	24,641	35,575	51,975	68,376	79,309	2.07	8.27	31,636
		Minimum	4,283	9,156	13,635	20,354	27,073	31,553			
		End	8,160	14,596	22,294	33,841	45,388	53,087			
	SR-C200 <b>S02</b>	Start	11,476	21,105	32,039	48,439	64,840	75,773	2.76	8.27	31,636
		Minimum	5,911	7,556	12,045	18,778	25,512	30,001			
		End	11,695	11,619	19,317	30,864	42,412	50,110			
	SR-C200 <b>S01</b>	Start	19,975	12,946	23,879	40,280	56,680	67,614	4.69	8.27	31,636
		Minimum	10,194	3,258	7,742	14,468	21,193	25,677			
		End	19,855	3,120	10,818	22,365	33,912	41,611			

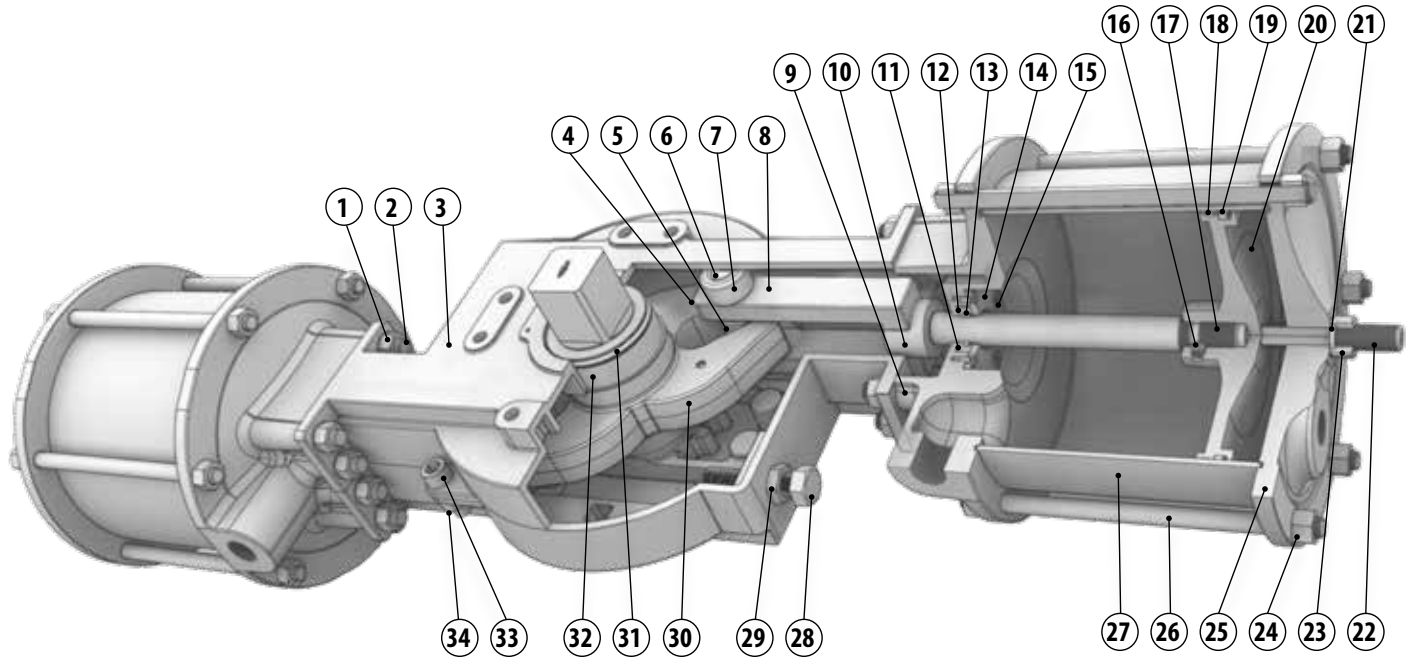
## D SERIES-PRODUCT BULLETIN

### OUTPUT TORQUE DATA (CONTINUED)

The torque values above indicate the actual actuator output torque. Some values may exceed the max rating of the actuator.

		SPRING RETURN (N-M)						Normal Operation bar	MAWP bar	Max Rated Torque N-m*	
Left Hand (FAIL CLOSE)		SPRINGS	3 bar	4 bar	5.5 bar	7 bar	8 bar				
20	SR-C200 <b>S04</b>	Start	21,980	18,300	31,196	50,540	69,884	82,780	4.14	8.27	79,089
		Minimum	10,940	4,886	10,161	18,074	25,987	31,262			
		End	20,388	5,260	14,340	27,960	41,580	50,660			
	SR-C200 <b>S03</b>	Start	27,875		26,030	45,374	64,718	77,614	5.52	8.27	79,089
		Minimum	13,817		7,270	15,178	23,086	28,357			
		End	25,554		8,445	22,065	35,685	44,765			
	SR-C200 <b>S02</b>	Start	30,598		22,702	42,046	61,390	74,286	6.21	8.27	79,089
		Minimum	15,324		5,787	13,703	21,620	26,898			
		End	28,882		5,722	19,342	32,962	42,042			
SR-C200 <b>S01</b>	Start	40,227			33,516	52,860	65,756	7.58	8.27	79,089	
	Minimum	20,040			8,972	16,884	22,159				
	End	37,412			9,713	23,333	32,413				
20	SR-C240 <b>S06</b>	Start	27,875	30,157	48,727	76,583	104,438	123,008	4.14	8.27	79,089
		Minimum	13,817	8,957	16,548	27,934	39,321	46,912			
		End	25,554	11,350	24,425	44,038	63,651	76,726			
	SR-C240 <b>S05</b>	Start	30,598	26,829	45,399	73,254	101,110	119,680	4.14	8.27	79,089
		Minimum	15,324	7,478	15,079	26,480	37,881	45,482			
		End	28,882	8,627	21,702	41,315	60,928	74,003			
	SR-C240 <b>S04</b>	Start	40,227		36,869	64,725	92,580	111,150	5.52	8.27	79,089
		Minimum	20,040		10,346	21,740	33,135	40,732			
		End	37,412		12,074	31,687	51,299	64,374			
	SR-C240 <b>S03</b>	Start	46,820		29,477	57,332	85,188	103,758	6.21	8.27	79,089
		Minimum	23,565		6,854	18,261	29,668	37,273			
		End	44,804		5,481	25,093	44,706	57,781			
	SR-C240 <b>S02</b>	Start	49,543		26,149	54,004	81,860	100,430	6.83	8.27	79,089
		Minimum	25,072		5,367	16,782	28,196	35,806			
		End	48,132		2,758	22,371	41,983	55,058			
	SR-C240 <b>S01</b>	Start	59,171			45,474	73,330	91,900	7.31	8.27	79,089
		Minimum	29,788			12,036	23,442	31,046			
		End	56,662			12,742	32,355	45,430			

### PARTS DIAGRAM & MATERIALS OF CONSTRUCTION - DOUBLE ACTING



Item No.	Part Description	Material
1	Stud Hex Nut	316 SST
2	Stud	316 SST
3	Body	Ductile Iron <sup>3</sup>
4	Clevis Pin Set Screw	316 SST
5	Yoke Roller	316 SST NIT
6	Clevis Pin	316 SST NIT
7	Body Roller	316 SST NIT
8	Clevis	Ductile Iron <sup>3</sup>
9	Base Plate	Ductile Iron <sup>3</sup>
10	Clevis Set Screw	316 SST
11	Seal Carrier	Acetal
12	Carrier Float Seal	Buna
13	Carrier Rod Seal	Buna
14	Carrier Retainer	316 SST
15	Carrier Retainer Screw	316 SST
16	Piston Set Screw	316 SST
17	Piston Bolt	316 SST

Item No.	Part Description	Material
18	Wiper Ring	PTFE
19	Piston Seal	Buna
20	Piston	Ductile Iron <sup>3</sup>
21	Travel Stop Seal	Buna
22	End Cap Travel Stop	316 SST
23	Travel Stop Nut	316 SST
24	Tie Rod Hex Nut	316 SST
25	End Cap	Ductile Iron <sup>2</sup>
26	Tie Rod	316 SST
27	Cylinder	Amalgon Composite <sup>1</sup>
28	Body Travel Stop	316 SST
29	Body Travel Stop Nut	316 SST
30	Yoke	Steel
31	Yoke Seal	Buna
32	Yoke Bushing	Buna
33	Body Fastening Nut	316 SST
34	Body Fastening Bolt	316 SST

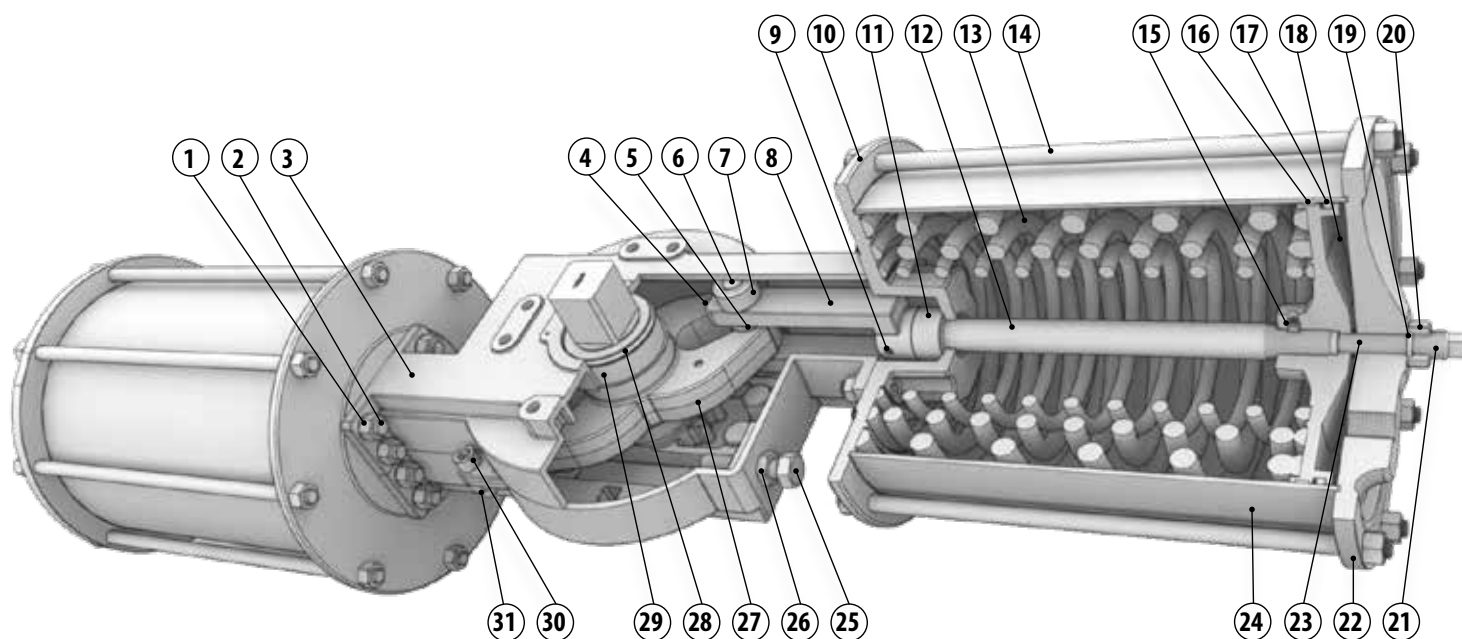
1: "Option" materials depend on trim code, see engineering string.

2: Ductile iron components are coated or plated for corrosion resistance.



# D SERIES-PRODUCT BULLETIN

## PARTS DIAGRAM & MATERIALS OF CONSTRUCTION - SPRING RETURN



Item No.	Part Description	Material
1	Stud Hex Nut	316 SST
2	Stud	316 SST
3	Body	Ductile Iron <sup>3</sup>
4	Clevis Pin Set Screw	316 SST
5	Yoke Roller	316 SST NIT
6	Clevis Pin	316 SST NIT
7	Body Roller	316 SST NIT
8	Clevis	Ductile Iron <sup>3</sup>
9	Clevis Set Screw	316 SST
10	Spring Retainer	316 SST
11	Safety Collar	316 SST
12	Piston Bolt	316 SST
13	Springs	Chrome Silicon <sup>1</sup>
14	Tie Rod	316 SST
15	Piston Set Screw	316 SST
16	Wiper Ring	PTFE

Item No.	Part Description	Material
17	Piston Seal	Buna
18	Piston	Ductile Iron <sup>3</sup>
19	Travel Stop Seal	Buna
20	End Cap Travel Stop Nut	316 SST
21	Tie Rod Hex Nut	316 SST
22	End Cap	Ductile Iron <sup>3</sup>
23	End Cap Travel Stop	316 SST
24	Cylinder	Amalgon Composite <sup>2</sup>
25	Body Travel Stop	316 SST
26	Body Travel Stop Nut	316 SST
27	Yoke	Steel
28	Yoke Seal	Buna
29	Yoke Bushing	Buna
30	Body Fastening Bolt	316 SST
31	Body Fastening Nut	316 SST

1: Chrome Silicon springs are powder coated. Stainless Steel springs available.

2: "Option" materials depend on trim code, see engineering string.

3: Ductile iron components are coated or plated for corrosion resistance.

**ENGINEERING STRING** For ordering actuators with standard options.

MODEL		SIZE		ACTION		CYLINDER SIZE				SPRING SET			TEMP	O-RINGS	CYLINDER MATERIAL		ROTATION		
1	2	3	4	5	6	7	8	9	11	12	13	14	15	16	17	18	19	20	21
<b>D</b>	<b>D</b>					<b>-C</b>				<b>-S</b>			<b>M</b>	<b>4</b>	<b>1</b>				<b>H</b>

MODEL	ACTION	SPRING SET	CYLINDER MATERIAL
<b>DD</b> Ductile Iron	<b>DA</b> ..... Double Acting <b>SR</b> ..... Spring Return	<b>Sxx</b> (Omit for double acting models)	<b>AM</b> ..... Amalgon <b>SS</b> ..... Stainless Steel <b>AL</b> ..... Aluminum

SIZE	CYLINDER SIZE	TEMP	ROTATION
<b>04</b>	<b>14</b>	<b>M</b> -20F to 185F	<b>LH</b> Spring causes clockwise rotation. Air to end caps causes counter-clockwise rotation.
<b>06</b>	<b>16</b>		
<b>08</b>	<b>18</b>	<b>O-RINGS</b> <b>41</b> Buna N	<b>RH</b> Spring causes counter-clockwise rotation. Air to end caps causes clockwise rotation.
<b>10</b>	<b>20</b>		
<b>12</b>	<b>24</b>		
	<b>C030</b> .... 3 in		
	<b>C040</b> .... 4 in		
	<b>C060</b> .... 6 in		
	<b>C080</b> .... 8 in		
	<b>C100</b> .... 10 in		
	<b>C120</b> .... 12 in		
	<b>C160</b> .... 16 in		
	<b>C200</b> .... 20 in		
	<b>C240</b> .... 24 in		

SAMPLE SPECIFICATIONS	DESCRIPTION
DD06DA-C080-M-41-AM-LH	Ductile Iron, size 06, double acting actuator featuring eight inch cylinders, with Buna N o-rings and Amalgon cylinders
DD04SR-C040-S02-M-41-SS-RH	Ductile Iron, size 04, spring return actuator featuring four inch cylinders, , with a S2 spring set, stainless steel cylinders and counter-clockwise fail rotation.
DD18SR-C200-S04-M-41-AM-LH	Ductile Iron, size 18, spring return actuator featuring twenty inch cylinders, , with a S4 spring set, stainless steel cylinders and clockwise fail rotation.



## THE LEADER IN ACTUATOR TECHNOLOGY

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