

# Bettis CBB Series

Imperial and Metric Data



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## Performance Data Double-Acting Actuators - CBB-Series

Table 1.

Actuator Model	Volume ▲				Maximum Operating Pressure (MOP)*		Maximum Allowable Working Pressure (MAWP)**		Approximate Weight of Actuator			
	Outboard		Inboard (Housing)						Ductile Iron Housing		Carbon Steel Housing	
	cu. in.	cu. cm	cu. in.	cu. cm	psig	bar	psig	bar	lb	kg	lb	kg
CBB 315	24	393.3	54	885.0	120	8.3	200	13.8	16.5	7.5	17.4	7.9
CBB 420	53	868.5	115	1884.5	120	8.3	200	13.8	27.5	12.5	28.9	13.1
CBB 520	83	1360.1	148	2425.3	70	4.8	174	12.0	32.0	14.5	33.5	15.2
CBB 525	105	1720.6	207	3392.1	120	8.3	200	13.8	45.1	20.5	47.3	21.5
CBB 725	208	3408.5	327	5358.6	80	5.5	174	12.0	65.8	29.8	68.4	31.0

## Spring-Return Actuators - CBB-Series

Table 2.

Actuator Model	Volume ▲		Maximum Operating Pressure (MOP)*		Maximum Allowable Working Pressure (MAWP)**		Approximate Weight of Actuator			
							Ductile Iron Housing		Carbon Steel Housing	
	cu. in.	cu. cm	psig	bar	psig	bar	lb	kg	lb	kg
◆ CBB 315-SR40 SR60 SR80 SR100	54	885	155	10.7	200	13.8	20.9	9.5	21.9	9.9
	54	885	152	10.5	200	13.8	21.5	9.8	22.5	10.2
	54	885	150	10.3	200	13.8	22.6	10.3	23.6	10.7
	54	885	164	11.3	200	13.8	21.9	9.9	22.9	10.4
◆ CBB 415-SR4 SR60 SR80 SR100	75	1229	100	6.9	174	12.0	26.5	12.0	27.8	12.6
	75	1229	112	7.7	174	12.0	29.3	13.3	30.6	13.9
	75	1229	117	8.1	174	12.0	30.0	13.6	31.3	14.2
	75	1229	114	7.9	174	12.0	29.8	13.5	31.1	14.1
◆ CBB 420-SR40 SR60 SR80 SR100	115	1884.5	157	10.8	200	13.8	36.2	16.4	37.9	17.2
	115	1884.5	156	10.8	200	13.8	38.4	17.4	40.1	18.2
	115	1884.5	161	11.0	200	13.8	39.4	17.9	41.1	18.6
	115	1884.5	166	11.4	200	13.8	40.5	18.4	42.2	19.1
◆ CBB 520-SR40 SR60 SR80 SR100	148	2425.3	110	7.6	174	12.0	44.0	20.0	46.1	20.9
	148	2425.3	116	8.0	174	12.0	47.4	21.5	49.5	22.5
	148	2425.3	120	8.3	174	12.0	48.0	21.8	50.1	22.7
	148	2425.3	132	9.1	174	12.0	52.9	24.0	55.0	24.9
◆ CBB 525-SR40 SR60 SR80 SR100	207	3392	146	10.1	200	13.8	59.7	27.1	62.4	28.3
	207	3392	151	10.4	200	13.8	62.7	28.4	65.4	29.7
	207	3392	159	11.0	200	13.8	63.3	28.7	66.0	29.9
	207	3392	163	11.2	200	13.8	65.3	29.6	68.0	30.8
◆ CBB 725-SR40 SR60 SR80 SR100	327	5358.6	102	7.0	174	12.0	95.9	43.5	99.5	45.1
	327	5358.6	115	8.0	174	12.0	99.7	45.2	102.3	46.4
	327	5358.6	124	8.6	174	12.0	103.8	47.1	107.4	48.7
	327	5358.6	124	8.6	174	12.0	107.2	48.6	110.8	50.3

**NOTES:**

- ◆ CBB-SRXX-M mechanical handwheel overrides are available on these models. The override adds approximately 2 lb / 0.9 kg to the weight of the standard CBB model.
- ▲ Maximum volume including cavity required for calculating consumption per stroke.
- \* Maximum Operating Pressure (MOP) is the pressure required to produce the maximum rated torque of the actuator.
- \*\* Maximum Allowable Working Pressure (MAWP) is the maximum static pressure that may be applied to a fully stroked actuator against the travel stops.

Standard installation produces clockwise rotation when the outboard side of piston is pressurized.

Standard installation produces counterclockwise rotation when the inboard side of piston is pressurized.

Note: Actuator may be installed opposite of that shown.



# Actuator Dimensions (in.)

## Double-Acting Actuators - CBBXXX

Figure 1.

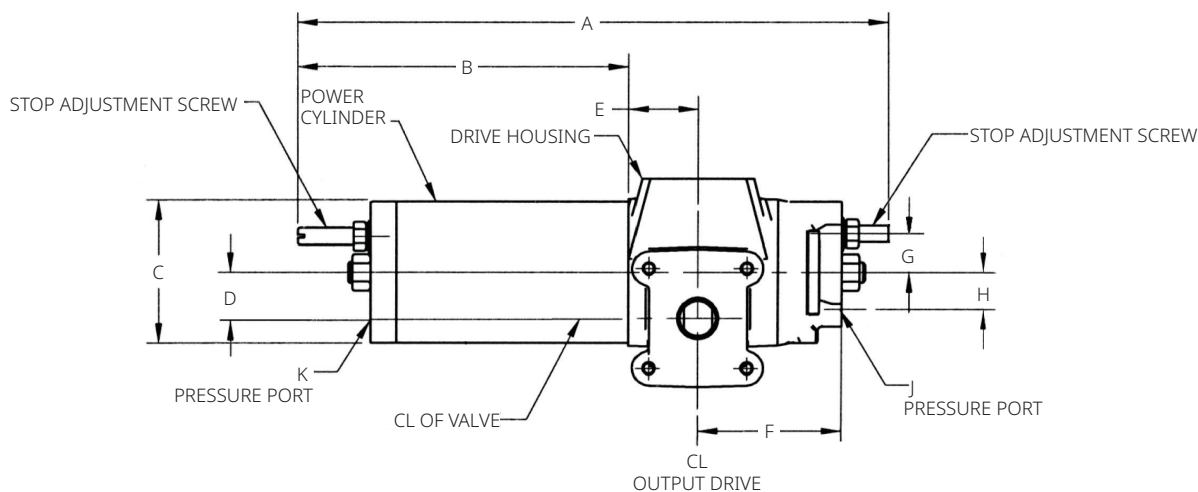


Table 3.

Actuator Model	A	B	C	D	E	F	G	H	J/K	L	M	N
CBB315	14.16	7.38	3.25	1.00	1.88	3.46	0.94	0.94	1/4 in. NPT	.313-18 UNC	0.38	2.250
CBB420	16.43	8.57	4.25	1.44	2.13	4.37	1.10	1.10	3/8 in. NPT	.375-16 UNC	0.50	3.000
CBB520	16.46	8.63	5.38	1.44	2.07	4.37	1.10	1.10	3/8 in. NPT	.375-16 UNC	0.50	3.000
CBB525	19.22	9.88	5.38	1.44	2.56	5.00	1.25	1.25	3/8 in. NPT	.500-13 UNC	0.50	3.500
CBB725	19.40	10.24	7.50	1.75	2.53	5.00	1.25	1.25	3/8 in. NPT	.500-13 UNC	0.50	3.500

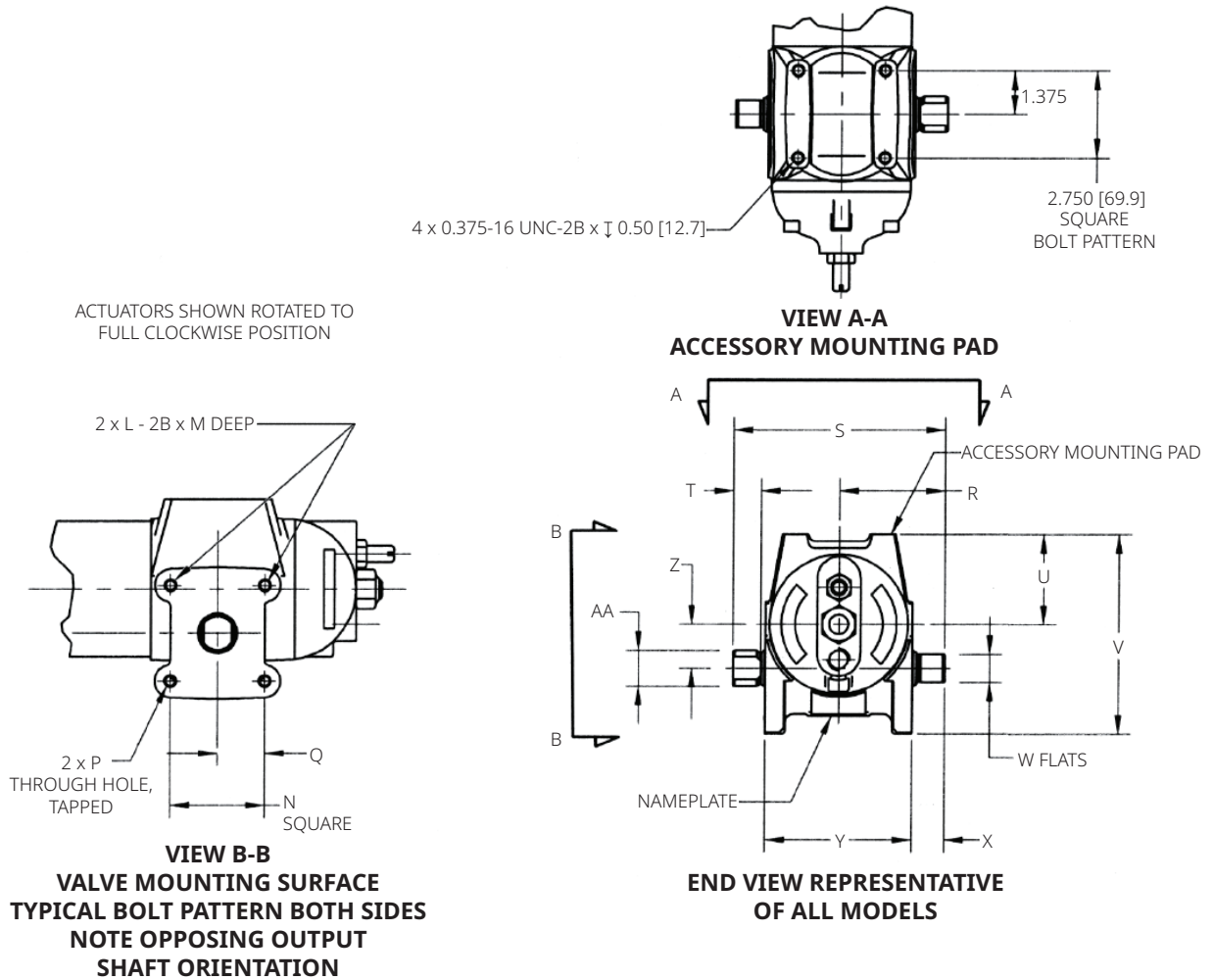
Table 4.

Actuator Model	P	Q	R	S	T	U	V	W	X	Y	Z	AA
CBB315	.313-18 UNC	1.125	2.91	5.81	0.75	2.22	5.18	0.614 0.620	1.03	3.75	1.09	0.873 0.875
CBB420	.375-16 UNC	1.500	3.35	6.69	0.75	2.81	6.25	0.864 0.870	1.03	4.63	1.38	1.123 1.125
CBB520	.375-16 UNC	1.500	3.35	6.69	0.75	2.81	6.25	0.864 0.870	1.03	4.63	1.38	1.123 1.125
CBB525	.500-13 UNC	1.750	4.38	8.75	1.12	3.50	7.58	1.115 1.121	1.50	5.75	1.69	1.498 1.500
CBB725	.500-13 UNC	1.750	4.38	8.75	1.12	3.50	7.58	1.115 1.121	1.50	5.75	1.69	1.498 1.500

**NOTES:**

Not Certified dimensional drawings. Such drawings are available on request.  
 Contact factory with correct model designation and serial number.  
 All dimensions are expressed in inches.

**Figure 2.**



**NOTES:**

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### Spring-Return Actuators - CBBXXX-SRX

Figure 3.

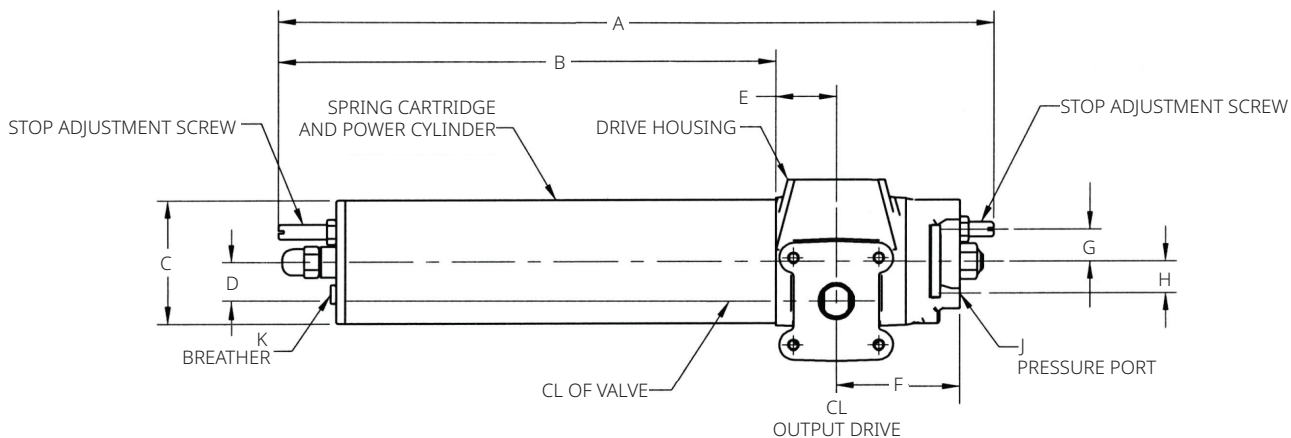


Table 5.

Actuator Model	A	B	C	D	E	F	G	H	K	L
CBB315-SRX	20.13	13.66	3.25	0.94	1.88	3.46	0.94	0.94	1/4 in. NPT	.313-18 UNC
CBB415-SRX	20.20	13.71	4.25	1.12	1.88	3.46	0.94	0.94	1/4 in. NPT	.313-18 UNC
CBB420-SRX	24.54	17.07	4.25	1.12	2.13	4.37	1.10	1.10	3/8 in. NPT	.375-16 UNC
CBB520-SRX	24.88	17.44	5.38	1.25	2.07	4.37	1.10	1.10	3/8 in. NPT	.375-16 UNC
CBB525-SRX	28.21	18.01	5.38	1.25	2.56	5.00	1.25	1.25	3/8 in. NPT	.500-13 UNC
CBB725-SRX	28.09	18.37	7.50	2.5	2.53	5.00	1.25	1.25	3/8 in. NPT	.500-13 UNC

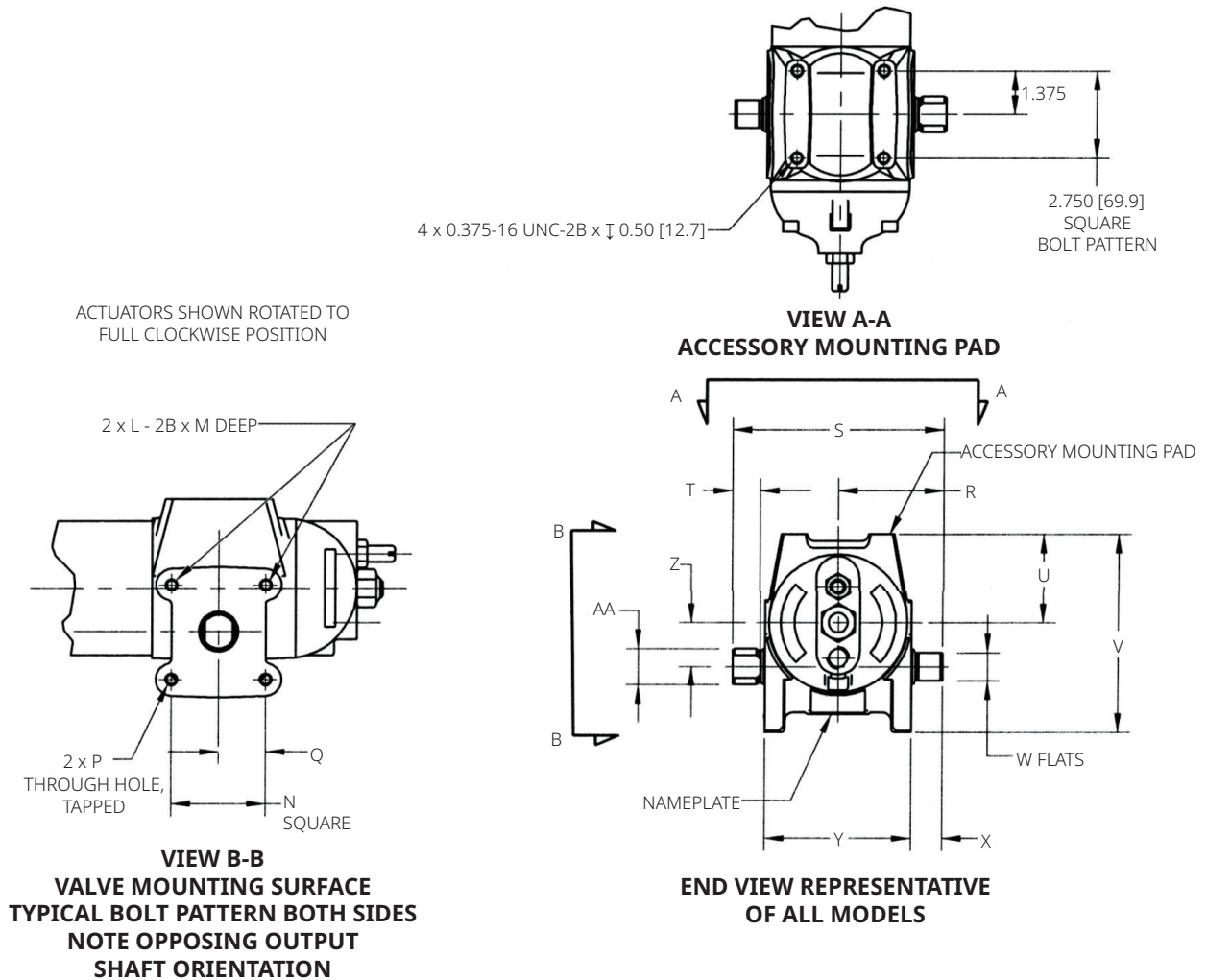
Table 6.

Actuator Model	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA
CBB315-SRX	0.38	2.250	.313-18 UNC	1.125	2.91	5.81	0.75	2.22	5.18	0.614 0.620	1.03	3.75	1.09	0.873 0.875
CBB415-SRX	0.38	2.250	.313-18 UNC	1.125	2.91	5.81	0.75	2.22	5.18	0.614 0.620	1.03	3.75	1.09	0.871 0.875
CBB420-SRX	0.50	3.000	.375 -16 UNC	1.500	3.35	6.69	0.75	2.81	6.25	0.864 0.870	1.03	4.63	1.38	1.123 1.125
CBB520-SRX	0.50	3.000	.375 -16 UNC	1.500	3.35	6.69	0.75	2.81	6.25	0.864 0.870	1.03	4.63	1.38	1.123 1.125
CBB525-SRX	0.50	3.500	.500 -13 UNC	1.750	4.38	8.75	1.12	3.50	7.58	1.115 1.121	1.50	5.75	1.69	1.498 1.500
CBB725-SRX	0.50	3.500	.500 -13 UNC	1.750	4.38	8.75	1.12	3.50	7.58	1.115 1.121	1.50	5.75	1.69	1.498 1.500

**NOTES:**

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**Figure 4.**



**NOTES:**

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# Handwheel Override Dimensions (in.)

## Double-Acting Actuators - CBBXXX-M3HW

Figure 5.

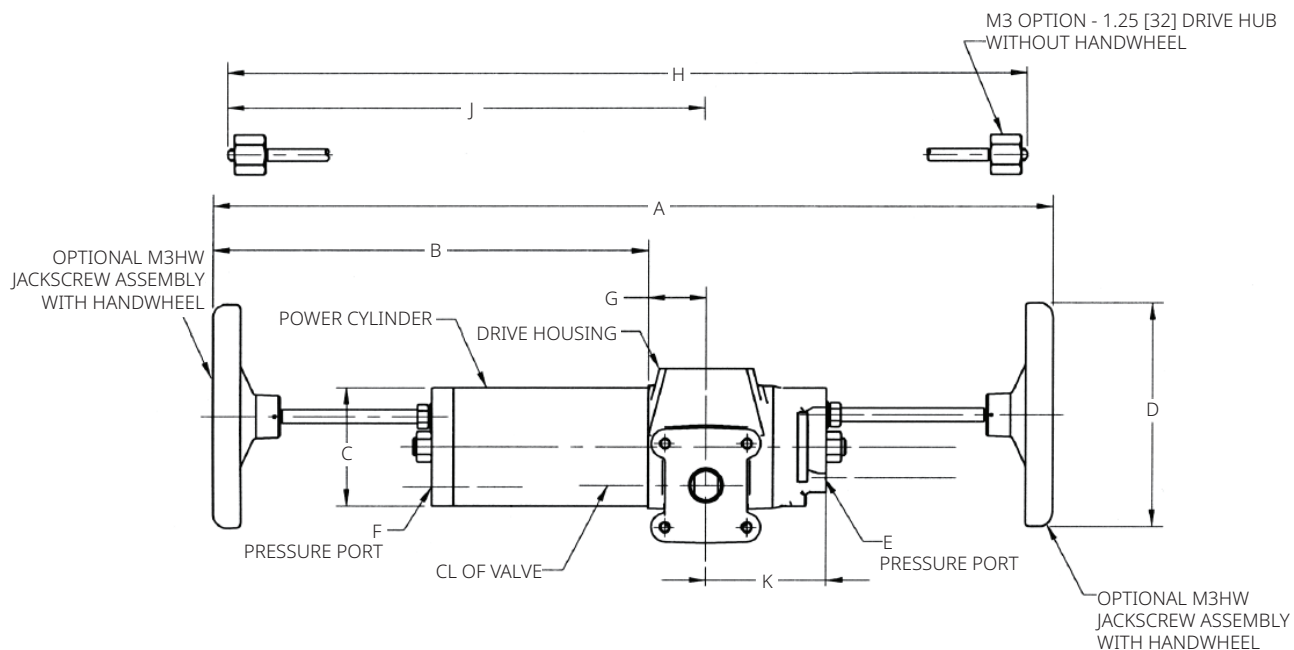


Table 7.

Actuator Model	A	B	C	D	E	F	G	H	J	K
CBB315-M3HW	26.25	13.79	3.25	6.00	1/4 in. NPT	1/4 in. NPT	1.88	25.18	15.13	3.46
CBB420-M3HW	31.20	16.15	4.25	8.00	3/8 in. NPT	3/8 in. NPT	2.13	29.21	17.28	4.37
CBB520-M3HW	31.20	16.21	5.38	8.00	3/8 in. NPT	3/8 in. NPT	2.07	29.21	17.28	4.37
CBB525-M3HW	37.23	19.44	5.38	10.00	3/8 in. NPT	3/8 in. NPT	2.56	33.90	20.08	5.00
CBB725-M3HW	37.23	19.47	7.50	10.00	3/8 in. NPT	3/8 in. NPT	2.53	34.65	20.71	5.00

**NOTES:**

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## Spring-Return Actuators - CBBXXX-SRX-M3HW

Figure 6.

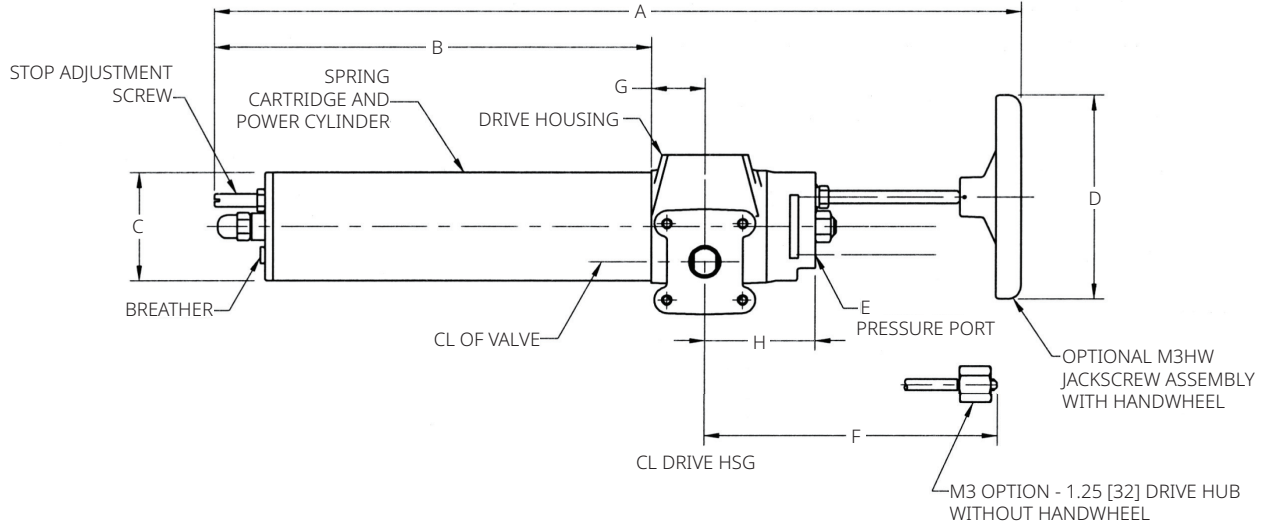


Table 8.

Actuator Model	A	B	C	D	E	F	G	H
CBB315-SR-M3HW	26.66	14.43	3.25	6.00	1/4 in. NPT	10.05	1.88	3.46
CBB415-SR-M3HW	26.74	14.51	4.25	6.00	1/4 in. NPT	10.05	1.88	3.46
CBB420-SR-M3HW	32.13	17.37	4.25	8.00	3/8 in. NPT	11.93	2.13	4.37
CBB520-SR-M3HW	32.16	17.43	5.38	8.00	3/8 in. NPT	11.93	2.07	4.37
CBB525-SR-M3HW	36.93	19.33	5.25	10.00	3/8 in. NPT	13.94	2.56	5.00
CBB725-SR-M3HW	36.98	19.41	7.50	10.00	3/8 in. NPT	13.94	2.53	5.00

**NOTES:**

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Contact factory with correct model designation and serial number.  
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# Actuator Dimensions (mm)

## Double-Acting Actuators - CBBXXX

Figure 7.

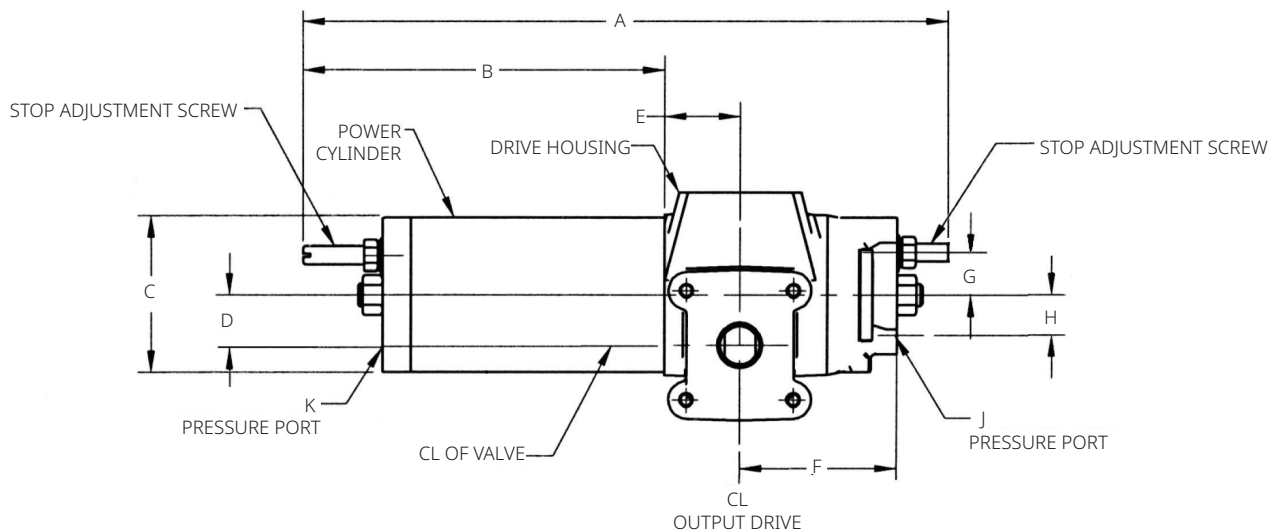


Table 9.

Actuator Model	A	B	C	D	E	F	G	H	J/K	L	M	N
CBB315	359.8	187.5	82.6	25.4	47.8	87.8	23.8	23.9	1/4 in. NPT	.313-18 UNC	9.7	57.2
CBB420	417.3	217.6	108.0	36.6	54.1	111.0	27.9	27.9	3/8 in. NPT	.375-16 UNC	12.7	76.2
CBB520	418.1	219.2	136.7	36.6	52.6	111.0	27.9	27.9	3/8 in. NPT	.375-16 UNC	12.7	76.2
CBB525	488.1	250.9	136.7	36.6	65.0	127.0	31.8	31.8	3/8 in. NPT	.500-13 UNC	12.7	88.9
CBB725	492.7	260.1	190.5	44.5	64.2	127.0	31.8	31.8	3/8 in. NPT	.500-13 UNC	12.7	88.9

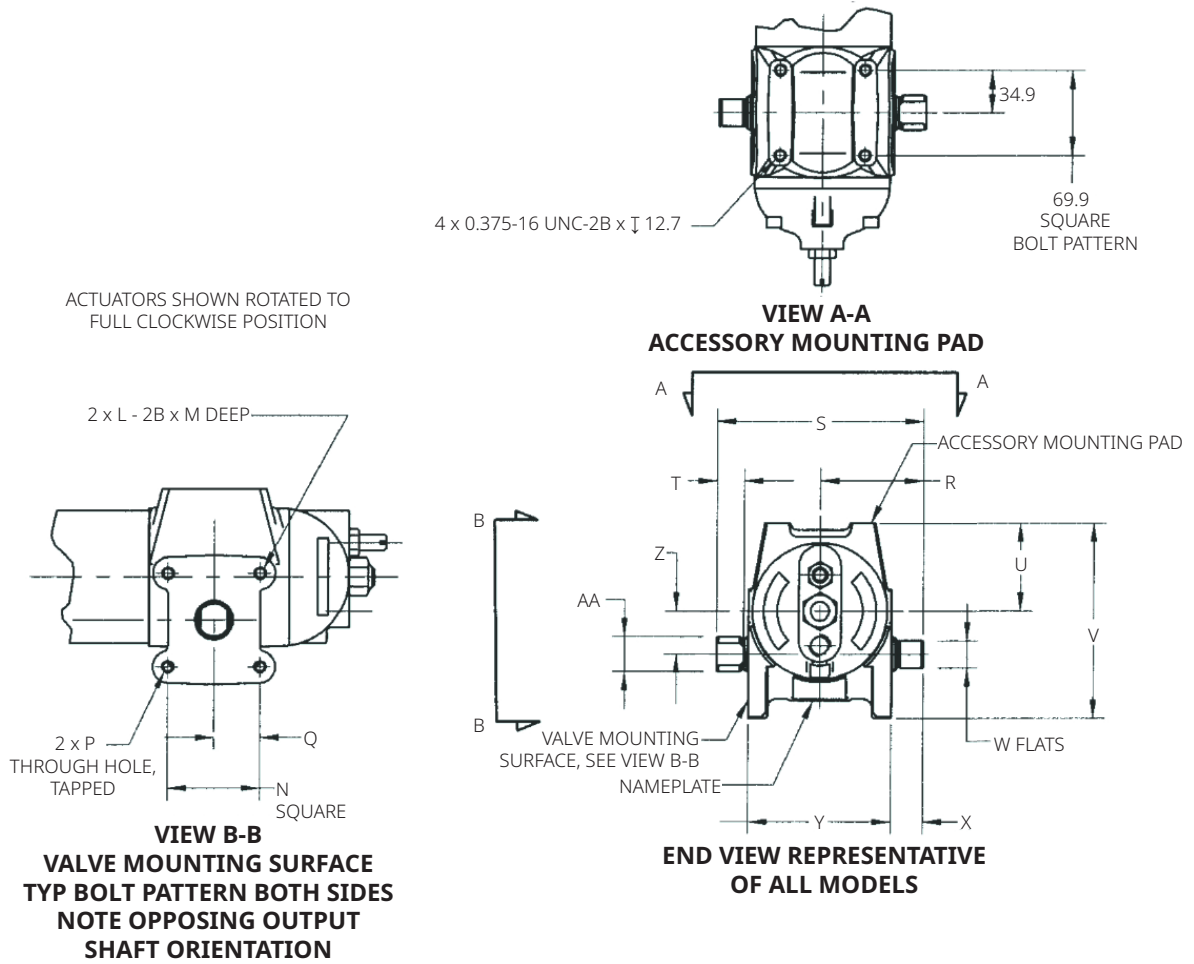
Table 10.

Actuator Model	P	Q	R	S	T	U	V	W	X	Y	Z	AA
CBB315	.313-18 UNC	28.6	73.8	147.6	19.1	56.4	131.5	15.60 15.75	26.2	95.3	27.8	22.17 22.23
CBB420	.375-16 UNC	38.1	85.1	169.9	19.1	71.3	158.9	21.95 22.10	26.2	117.5	35.1	28.52 28.58
CBB520	.375-16 UNC	38.1	85.1	169.9	19.1	71.3	158.9	21.95 22.10	26.2	117.5	35.1	28.52 28.58
CBB520	.500-13 UNC	44.5	111.3	222.3	28.4	88.9	192.6	28.32 28.47	38.1	146.1	42.9	38.05 38.10
CBB725	.500-13 UNC	44.5	111.3	222.3	28.4	88.9	192.6	28.32 28.47	38.1	146.1	42.9	38.05 38.10

**NOTES:**

Not Certified dimensional drawings. Such drawings are available on request.  
 Contact factory with correct model designation and serial number.  
 All dimensions are expressed in millimeters.

**Figure 8.**



**NOTES:**

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 Contact factory with correct model designation and serial number.  
 All dimensions are expressed in millimeters.

## Spring-Return Actuators - CBBXXX-SRX

Figure 9.

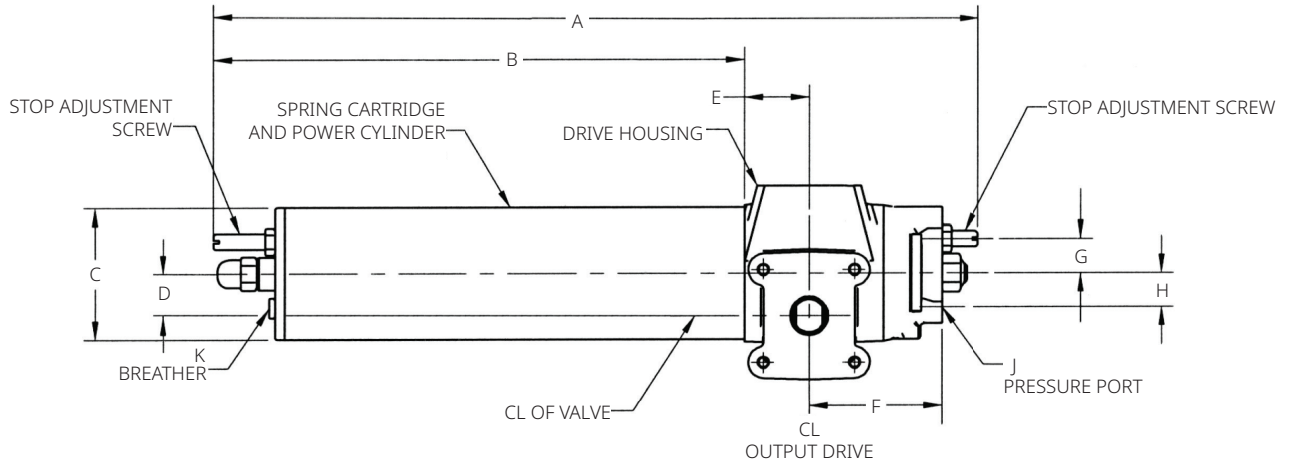


Table 11.

Actuator Model	A	B	C	D	E	F	G	H	J	K	L
CBB315-SRX	511.2	347.0	82.6	23.9	47.8	87.8	23.8	23.9	1/4 in. NPT	1/4 in. NPT	.313-18 UNC
CBB415-SRX	513.3	348.2	108.0	28.4	47.8	87.8	23.9	23.9	1/4 in. NPT	1/4 in. NPT	.313-18 UNC
CBB420-SRX	623.3	433.5	108.0	28.4	54.1	111.0	27.9	27.9	3/8 in. NPT	1/4 in. NPT	.375-16 UNC
CBB520-SRX	631.9	442.9	136.7	31.8	52.6	111.0	27.9	27.9	3/8 in. NPT	1/4 in. NPT	.375-16 UNC
CBB525-SRX	716.6	457.4	136.7	31.8	65.0	127.0	31.8	31.8	3/8 in. NPT	1/4 in. NPT	.500-13 UNC
CBB725-SRX	713.6	466.7	190.5	63.5	64.2	127.0	31.8	31.8	3/8 in. NPT	1/4 in. NPT	.500-13 UNC

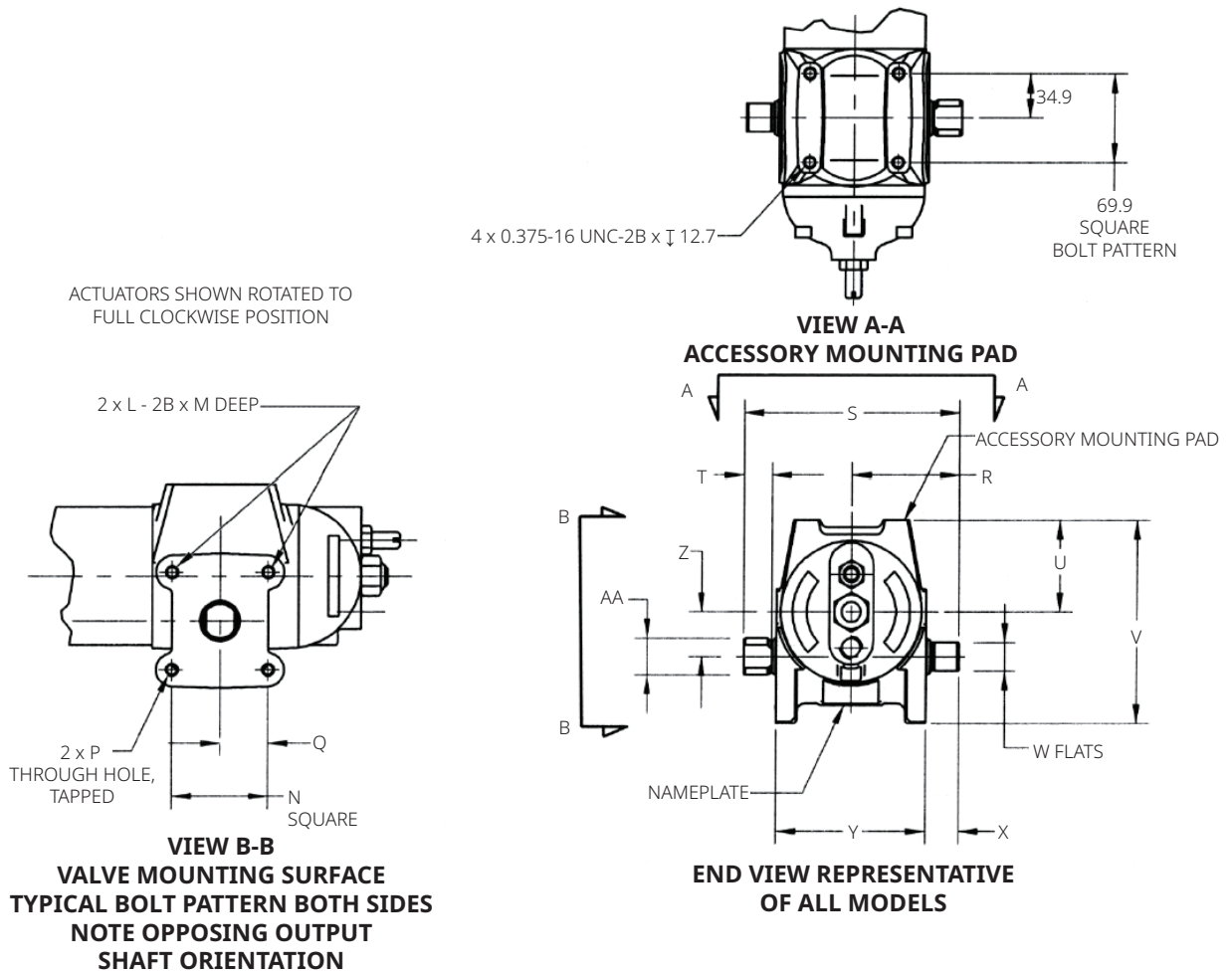
Table 12.

Actuator Model	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	AA
CBB315-SRX	9.7	57.2	.313-18 UNC	28.6	73.8	147.6	19.1	56.4	131.5	15.60 15.75	26.2	95.3	27.8	22.17 22.23
CBB415-SRX	9.7	57.2	.313-18 UNC	28.6	73.8	147.6	19.1	56.4	131.5	15.60 15.75	26.2	95.3	27.8	22.17 22.23
CBB420-SRX	12.7	76.2	.375-16 UNC	38.1	85.1	169.9	19.1	71.3	158.9	21.95 22.10	26.2	117.5	35.1	28.52 28.58
CBB520-SRX	12.7	76.2	.375-16 UNC	38.1	85.1	169.9	19.1	71.3	158.9	21.95 22.10	26.2	117.5	35.1	28.52 28.58
CBB525-SRX	12.7	88.9	.500-13 UNC	44.5	111.1	222.3	28.4	88.9	192.6	28.32 28.47	38.1	146.1	42.9	38.05 38.10
CBB725-SRX	12.7	88.9	.500-13 UNC	44.5	111.1	222.3	28.4	88.9	192.6	28.32 28.47	38.1	146.1	42.9	38.05 38.10

**NOTES:**

Not Certified dimensional drawings. Such drawings are available on request. Contact factory with correct model designation and serial number. All dimensions are expressed in millimeters.

**Figure 10.**



**NOTES:**

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Contact factory with correct model designation and serial number.  
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# Handwheel Override Dimensions (mm)

## Double-Acting Actuators - CBBXXX-M3HW

Figure 11.

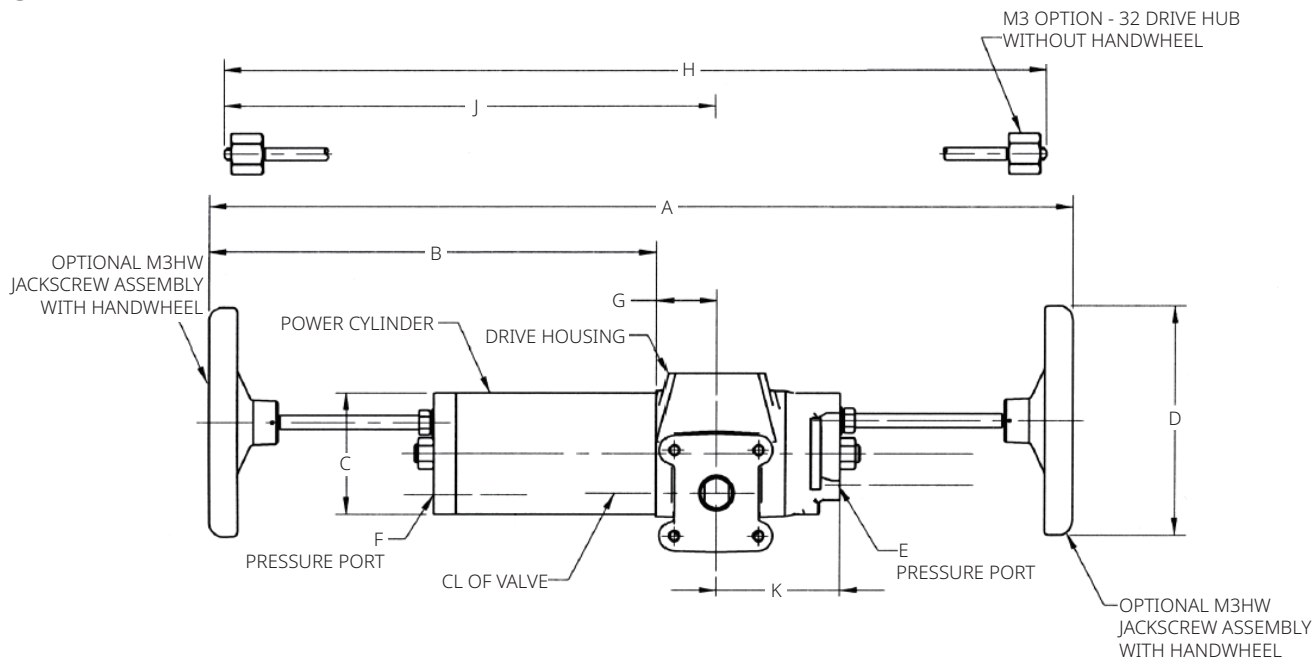


Table 13.

Actuator Model	A	B	C	D	E	F	G	H	J	K
CBB315-M3HW	666.8	350.3	82.6	152.4	1/4 in. NPT	1/4 in. NPT	47.6	639.6	384.3	87.9
CBB420-M3HW	792.5	410.2	108.0	203.2	3/8 in. NPT	3/8 in. NPT	54.0	741.9	438.9	111.1
CBB520-M3HW	792.5	411.7	136.7	203.2	3/8 in. NPT	3/8 in. NPT	52.6	741.9	438.9	111.1
CBB525-M3HW	945.6	493.8	136.7	254.0	3/8 in. NPT	3/8 in. NPT	65.0	861.1	510.0	127.0
CBB725-M3HW	945.6	494.5	190.5	254.0	3/8 in. NPT	3/8 in. NPT	64.2	880.1	526.0	127.0

**NOTES:**

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Contact factory with correct model designation and serial number.  
All dimensions are expressed in millimeters.

## Spring-Return Actuators - CBBXXX-SRX-M3HW

Figure 12.

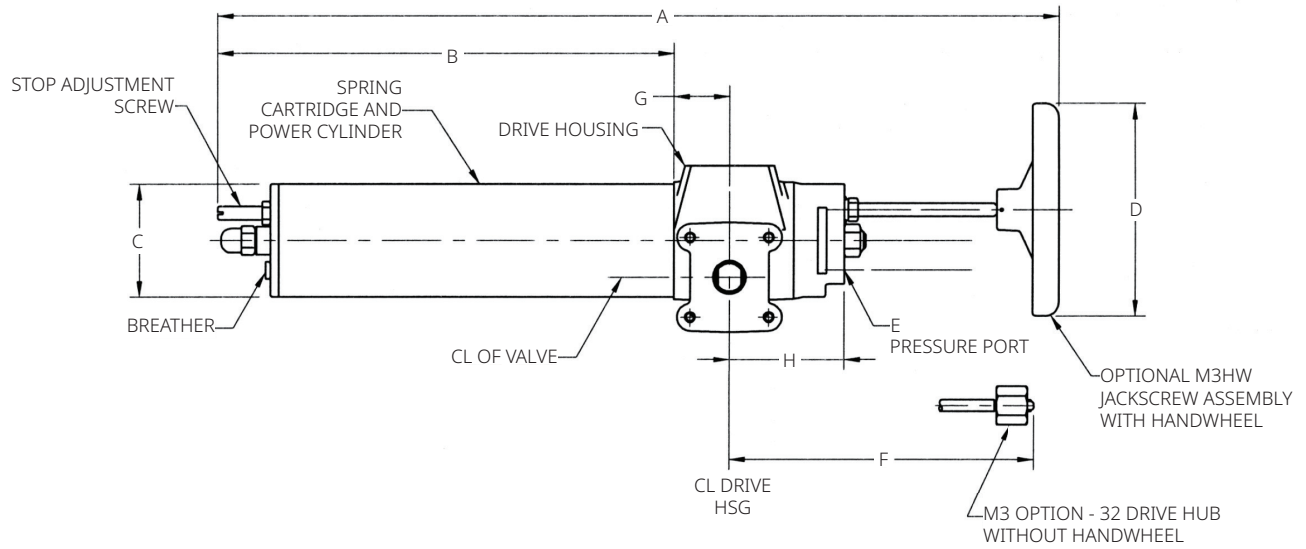


Table 14.

Actuator Model	A	B	C	D	E	F	G	H
CBB315-SR-M3HW	677.1	366.5	82.6	152.4	1/4 in. NPT	255.3	47.6	87.9
CBB415-SR-M3HW	679.1	368.6	108.0	152.4	1/4 in. NPT	255.3	47.6	87.9
CBB420-SR-M3HW	816.2	441.3	108.0	203.2	3/8 in. NPT	303.0	54.0	111.1
CBB420-SR-M3HW	816.8	442.7	136.7	203.2	3/8 in. NPT	303.0	52.6	111.1
CBB525-SR-M3HW	937.9	491.0	133.4	254.0	3/8 in. NPT	354.1	65.0	127.0
CBB725-SR-M3HW	939.2	493.1	190.5	254.0	3/8 in. NPT	354.1	64.2	127.0

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All dimensions are expressed in millimeters.

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