

Actuation & Controls



Pneumatic Actuators ▪ Electric Actuators
▪ AS-i-Bus Systems ▪ Positioners



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Asahi/America's Series 79P pneumatic actuators for quarter turn ball and butterfly valves provide accurate and dependable control, especially in corrosive applications.

The units are compact, yet extremely durable and available in output torques from 59 to 40,710 inch-pounds based on an 80-psi air supply.

Three standard actuator materials are offered: glass reinforced polyamide, cataphoresis & Rilsan coated cast aluminum alloy, and 316 Stainless Steel; all of which incorporate ISO and NAMUR mounting configurations for simple installation of valves and accessories. These material choices provide excellent protection from adverse environments & corrosive process materials.

Two versions of this actuator are offered: single acting (air to spring or "failsafe") and double acting (air-to-air), both versions utilize a double piston, double rack and pinion design.

There are definitive advantages for using the rack and pinion design; the accuracy of translating linear to rotary torque is one. This is especially important in a modulating application. Another advantage is the constant torque output throughout the travel, which simplifies actuator to valve sizing.

Operation

Single and Double Acting:

Pressurized air non-combustable gas, or liquid is introduced via Port A and displaces two opposed pistons. When the pistons are displaced, they in turn rotate the actuator output shaft counterclockwise, which opens the valve. This action is the same for single acting and double acting actuators.

Single Acting:

When the pressurized air is removed from the Port A, the compressed springs located at the opposite side of the pistons extend. As the springs extend, they in turn rotate the actuator output shaft in a clockwise rotation, which closes the valve.

Double Acting:

When the pressurized air, noncombustable gas or liquid is removed from the Port A, the unit remains in the same position until pressurized air is applied to the Port B (unlike the single acting actuator). When the pressurized air is introduced to Port B, it is channeled to the opposite side of the pistons. This pressure on the pistons drives them to their original position, which in turn rotates the actuator output shaft in a clockwise direction, which closes the valve.

Engineering Specifications

- Body and End Cap Material: Cast Aluminum body (Cataphoresis and Rilsan coated inside and outside), glass filled Polyamide, 316 SS
- Shaft: 303 SS or Cataphoresis coated with double O-ring seal on top and bottom
- Temperature Range: -25°F to 195°F
- O-ring Material: Self Lubricating BUNA-N
- Output Torque Range: 59 in/lbs to 40,710 in/lbs
- Supply Air: 60 psi minimum, 120 psi maximum
- Air Connections: 1/4" FNPT
- Mounting Dimensions: ISO and NAMUR Standards
- Springs: Captive design
- Travel stops: end adjustment
- End Caps: Bolt design

Sample Specification

All Series 79 Pneumatic Actuators shall be double piston, double rack and pinion design with body and end cap materials cast aluminum Cataphoresis and Rilsan coated inside and outside, glass filled Polyamide, or 316 Stainless Steel. Shaft shall be 303 Stainless Steel or Cataphoresis coated steel with double O-ring seals on top and bottom. Actuators shall have 1/4" FNPT air connections, end adjustment travel stops, and visual position indicator. Single acting versions (spring return) shall have captive springs. All actuators shall have ISO bolt circle and NAMUR mounting dimensions for the installation of valve and optional accessories, as manufactured by Asahi/America, Inc.

Pneumatic Actuator Sales Questionnaire

The following questions need to be asked to make a proper recommendation:

- Air to Air or Air to Spring?
- Supply Air Available?
- On/Off Modulating?
- Positioner? 3-15 psi or 4-20 mA (analogue or digital) ?
- Solenoid Type Rating? 4 or 7?
- Environment ? Temp, Corrosion Resistance?
- Feedback? Switches Type 4 or Type 7?

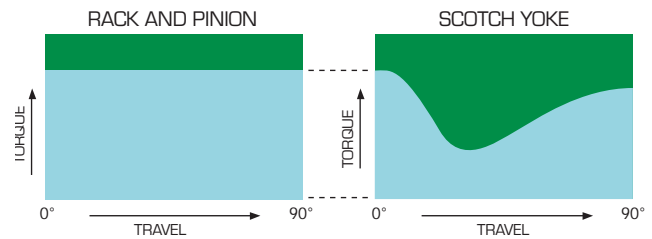
Torque output for single acting (spring return) models varies according to the compression rate of the springs. Output torque decreases on the air stroke as the springs are compressed, and increases in the spring stroke as the springs relax and extend. Reference the torque charts on pages 140-146 and use it to determine the correct number of springs required for your application.

Torque and Air Pressure

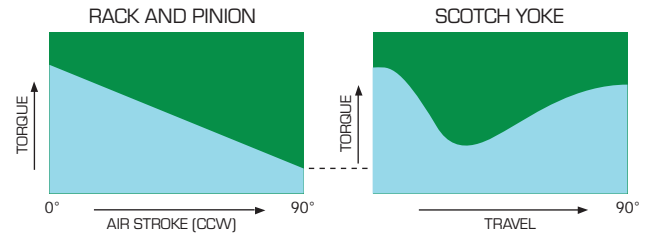
Two (2) pieces of information are required for proper selection of a pneumatic actuator:

First is Valve breakaway torque. This is the amount of torque required to “break” the ball, plug or disc away from the seat. It is calculated from the differential pressure, type of media, contact area between sealing members, etc. Once this is determined, it is multiplied by a safety factor to take into account unknowns such as the amount of time a valve has been in the closed position (some sealing members may take a set, making them difficult to separate) and corrosion buildup.

DOUBLE ACTING



SPRING RETURN



Second is the air supply to which a conservative approach is required. If an actuator is located adjacent to the compressor, it will most likely see the full 80 psi. But if the actuator is located 100 yards away with leaky air fittings, then the actuator may see only a fraction of the 80 psi that the compressor is producing. So if an actuator is sized for a supply of 80 psi, and the actuator sees 60 psi because of leaky fittings, there will not be enough output torque from the actuator to cycle the valve.

If the required torque of a valve (including the safety factor) equals or exceeds the output torque of the actuator, then the next size actuator should be selected.

Example of Pneumatic Actuator Selection

Select the proper actuator for the following application:

Single Acting (Spring Return) Fail Close

- SPECS:** Valve torque = 225 in/lbs
Air supply pressure = 60 psi
- FIND:** Required valve torque 281 in/lbs
Spring end torque (362)
Air start torque @ 60 psi (307)
- ANSWER:** C579PASN with 5 springs per side

Pneumatic Actuators

Specifications

Series 79 P: Type – Double Piston, Double Rack and Pinion

Bodies – Aluminum, Glass-filled Polyamide, and 316 ss

Torque – 59 to 40,710 in-lbs

Models – Air-to-Air

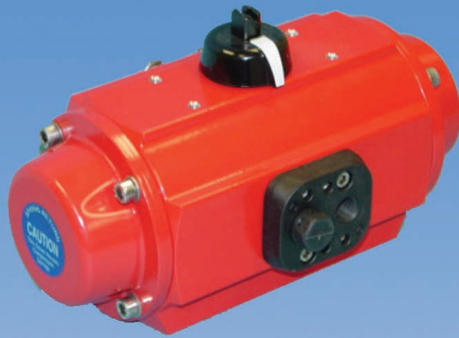
Spring Return (Fail Open)

Spring Return (Fail Closed)

Air Supply – 60 psi – 120 psi

Air Connections – 1/4" NPT

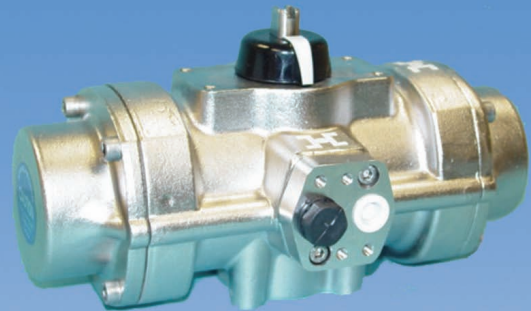
Mounting Dim. – ISO and NAMUR



Series 79P (Aluminum)



**Series 79P (Glass-filled Polyamide)
with solenoid valve**



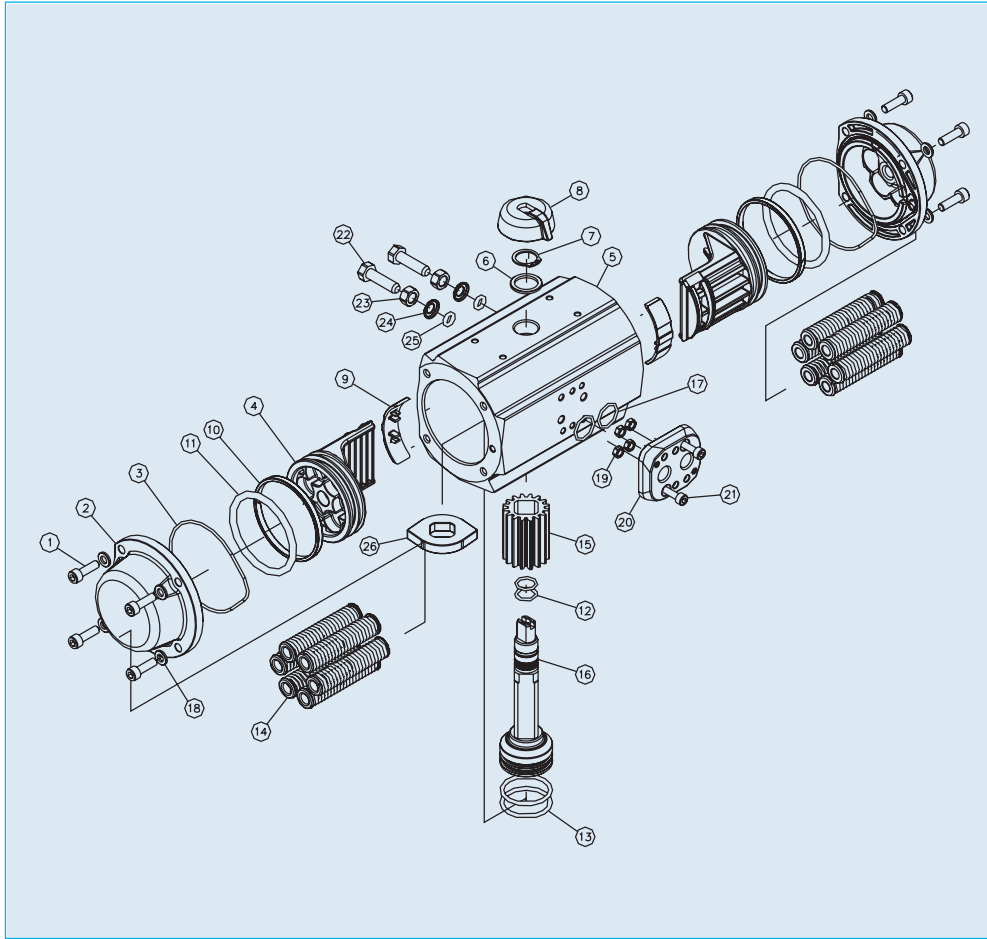
Series 79P (316 Stainless Steel)

Standard Features

- Actuator body and end caps constructed of Glass-filled Polyamide (PAG), Aluminum encompassed in a 2-part Cataphoresis and Rilsan finish, or 316 Stainless Steel
- Double piston, double rack and pinion
- ISO valve mounting pattern
- ISO Female star output drive
- NAMUR accessory mounting pattern
- 80psi (recommended) to 120psi (maximum) filtered air supply
- Spring return models have cataphoresis coating, or chromium passivation for spring protection
- Available in air-to-air (double acting) and air-to-spring (single acting, or spring return failsafe) models
- Position indication through visible indicator knob and flats on actuator shaft
- Actuator shaft constructed of Cataphoresis coated steel or Stainless Steel with double o-ring seals top and bottom
- End position adjustable travel stops
- Polyacetal or PTFE/Bronze piston guides
- Self-lubricating BUNA-N o-ring seals
- -25 F – 195 F temperature range
- 1/4" NPT air connections

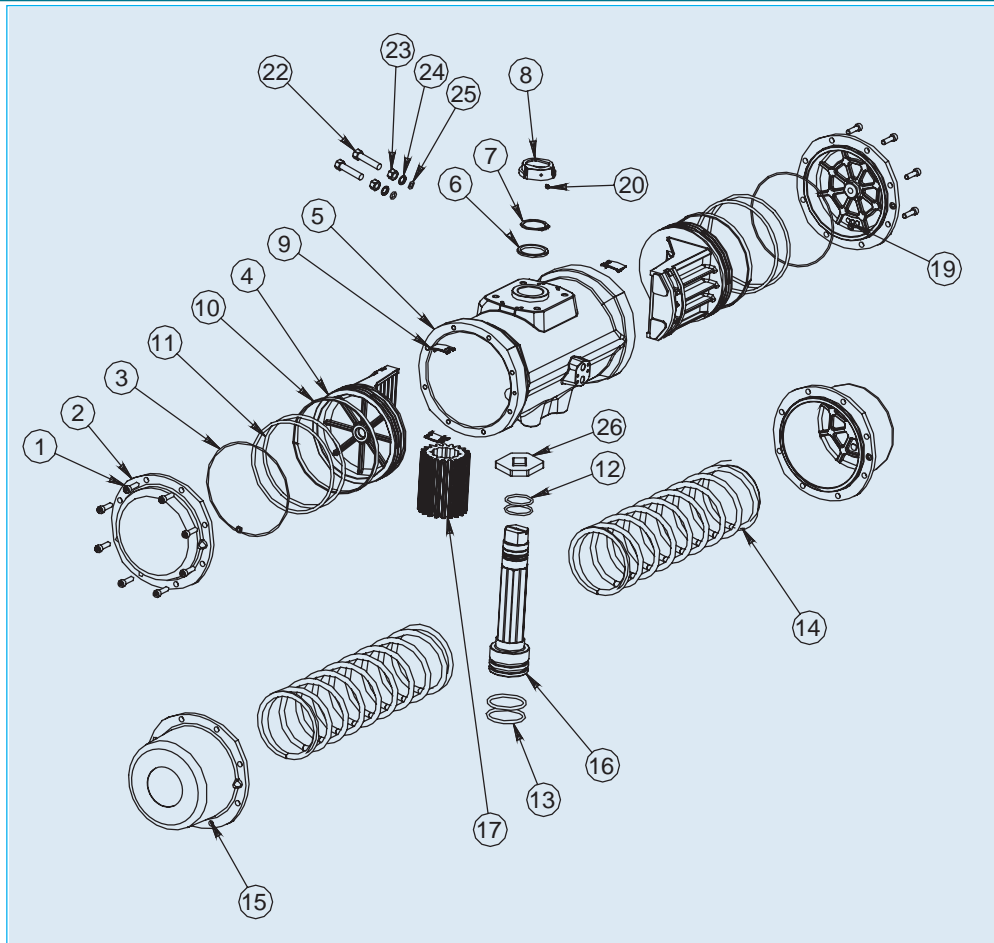
Options

- Sizing for low air supply pressure (60psi)
- Direct mount NAMUR solenoids in various Type and voltage ratings (solenoids piped in a closed loop design)
- NAMUR double limit switches in various Type and voltage ratings
- NAMUR pneumatic positioners (3-15psi)
- NAMUR electro-pneumatic positioners (4-20mA)
- Limit switch or transmitter available for positioners
- Bus systems



Parts List (Typical PA Series Actuator)

PARTS		
NO.	DESCRIPTION	MATERIAL
1	End Cap Bolt	304 Stainless Steel
2	End Cap	Cataphoresis & Polyurethane Coated Aluminum Alloy
3	End Cap O-Ring	NBR
4	Piston	Cataphoresis Coated Aluminum Alloy
5	Actuator Body	Cataphoresis & Rilsan Coated Aluminum Alloy
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Nickel PTFE Coated Steel
8	Position Indicator	Polyamide
9	Piston Guide	Polyacetal
10	Guide Ring	Polyacetal
11	Piston O-Ring	NBR
12	Upper Shaft O-Ring	NBR
13	Lower Shaft O-Ring	NBR
14	Spring Set	DIN-17223-C with Chromium Passivation
15	Pinion Gear	Aluminum Alloy
16	Shaft	Cataphoresis Coated Steel
17	Air Connection Plate O-Ring	NBR
18	End Cap Washer	304 Stainless Steel
19	Nut for Air Connection Plate	304 Stainless Steel
20	Air Connection Plate	Polyamide GF
21	Bolt for Air Connection Plate	304 Stainless Steel
22	Adjustment Bolt	Steel
23	Adjustment Locknut	304 Stainless Steel
24	Bushing	304 Stainless Steel
25	Travel Stop O-Ring	NBR
26	Travel Stop Cam	Cataphoresis Coated Steel



Parts List (Typical P Series Actuator)

PARTS		
NO.	DESCRIPTION	MATERIAL
1	End Cap Bolt	304 Stainless Steel
2	Double Acting End Cap	Cataphoresis & Rilsan Coated Aluminum Alloy
3	End Cap O-Ring	NBR
4	Piston	Aluminum Alloy
5	Actuator Body	Cataphoresis & Rilsan Coated Aluminum Alloy
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Cataphoresis Coated Steel
8	Position Indicator	Polyamide
9	Piston Guide	PTFE + Bronze
10	Guide Ring	PTFE + Bronze
11	Piston O-Ring	NBR
12	Upper Shaft O-Ring	NBR
13	Lower Shaft O-Ring	NBR
14	Spring Set	Cataphoresis Coated DIN-17223-C
15	Spring Return End Cap	Cataphoresis & Rilsan Coated Aluminum Alloy
16	Shaft	Cataphoresis Coated Steel
17	Pinion Gear	Aluminum Alloy
19	End Cap Gasket	NBR
22	Adjustment Bolt*	Steel with Chromium Passivation
23	Adjustment Locknut*	304 Stainless Steel
24	Bushing*	304 Stainless Steel
25	Travel Stop O-Ring*	NBR
26	Cam*	Cataphoresis Coated Steel

*Optional at time of order

Torque Air to Air (Inch-Pounds)

Model	Supply Pressure (psi)				
	40	60	80	100	120
A79PA	70	100	137	175	203
B79PA	103	142	201	261	300
B579PA	208	286	401	517	594
C79PA	291	404	575	741	853
C579PA	489	669	940	1212	1393
D79PA	688	947	1336	1724	1982
D579PA	1240	1682	2344	3008	3486
E79PA	2005	2720	3794	4868	5584
F79P	5155	6917	9558	12204	13965
G79P	8832	11983	16718	21452	24603
L79P	14496	19868	27922	35975	41347
M79P	21143	28966	40710	52454	60286

Cycle Time (Seconds)

Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
A79PA	0.10	0.10	0.15	0.15
B79PA	0.15	0.15	0.20	0.20
B579PA	0.20	0.20	0.25	0.25
C79PA	0.25	0.25	0.30	0.30
C579PA	0.30	0.30	0.40	0.40
D79PA	0.40	0.40	0.50	0.50
D579PA	0.50	0.50	0.80	0.80
E79PA	0.60	0.60	1.20	1.20
F79P	1.20	1.20	2.00	2.00
G79P	2.00	2.00	6.00	6.00
L79P	4.00	4.00	11.00	8.00
M79P	6.00	6.00	15.00	10.00

Air Consumption (Cubic Inches)

Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
A79PA	4.58	6.71	4.58	-
B79PA	9.15	10.98	9.15	-
B579PA	17.09	22.58	17.09	-
C79PA	21.36	27.46	21.36	-
C579PA	39.66	50.04	39.66	-
D79PA	48.82	70.17	48.82	-
D579PA	91.53	123.26	91.53	-
E79PA	125.09	115.94	125.09	-
F79P	323.41	323.41	323.41	-
G79P	640.71	427.14	640.71	-
L79P	1189.89	1263.11	1189.89	-
M79P	1891.62	1830.60	1891.62	-

Weight (Pounds)

Model	Air to Air	Air to Spring
A79PA	2.03	2.20
B79PA	3.09	3.58
B579PA	5.66	6.48
C79PA	6.79	7.67
C579PA	9.26	11.11
D79PA	12.36	14.61
D579PA	20.50	24.91
E79PA	20.06	35.04
F79P	38.79	80.23
G79P	67.66	128.71
L79P	106.45	142.82
M79P	171.69	260.51

Pneumatic Actuators

P/PA Series

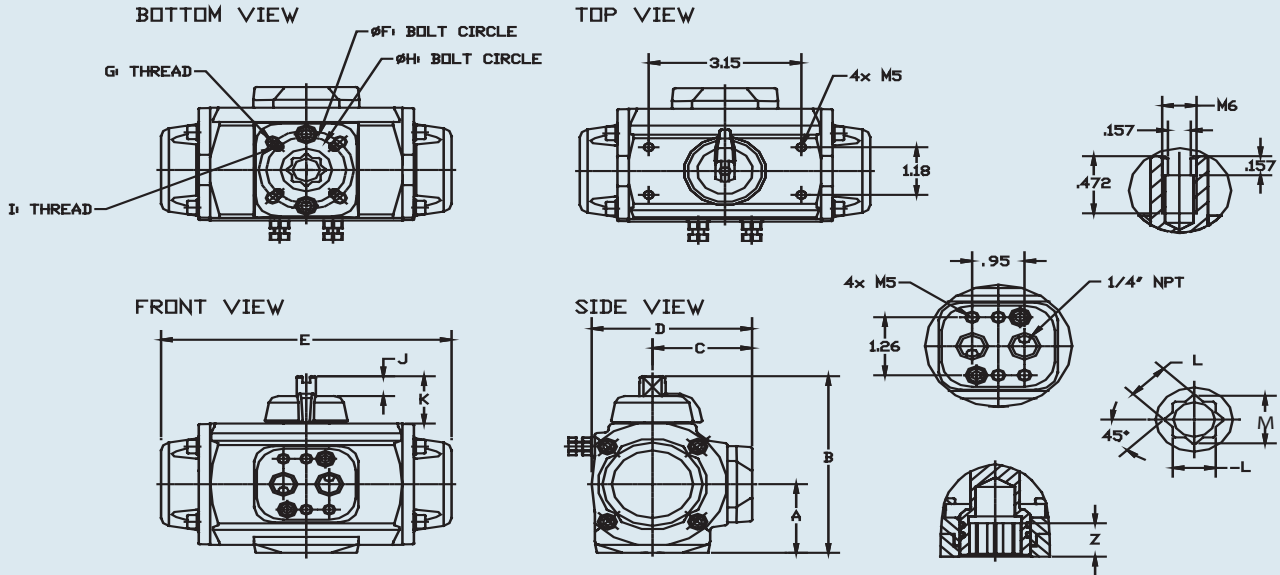
Torque Air to Spring (Inch-Pounds)

MODEL	Spring Set	40 psi		60 psi		80 psi		100 psi		120 psi		Spring Torque	
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
A79PAS	2	49	35	79	65	116	102	-	-	-	-	35	21
	3	38	21	68	51	105	89	143	127	-	-	49	32
	4	29	8	59	38	96	75	135	113	162	141	62	41
	5	-	-	49	25	86	62	124	100	151	127	75	51
	6*	-	-	-	-	78	49	116	87	143	114	89	59
B79PAS	2	71	51	111	91	169	150	-	-	-	-	51	32
	3	51	27	91	67	150	126	210	186	-	-	75	51
	4	-	-	75	44	134	103	194	163	233	202	98	67
	5	-	-	59	20	118	79	178	139	217	178	122	83
	6*	-	-	-	-	100	55	163	115	202	154	146	98
B579PAS	2	139	100	217	178	332	293	-	-	-	-	108	69
	3	108	46	186	124	301	239	417	355	-	-	162	100
	4	85	15	163	93	278	208	394	324	471	401	193	123
	5	-	-	132	47	247	162	363	278	440	355	239	154
	6*	-	-	-	-	216	123	332	239	409	316	278	185
C79PAS	2	200	157	312	269	484	441	-	-	-	-	135	91
	3	155	89	267	202	439	373	604	539	-	-	202	136
	4	110	22	222	135	394	306	559	472	672	584	269	181
	5	-	-	176	67	348	239	513	404	626	517	336	227
	6*	-	-	-	-	303	172	468	337	581	450	404	273
C579PAS	2	344	278	525	458	796	729	-	-	-	-	211	144
	3	272	173	452	353	723	624	995	896	-	-	316	217
	4	199	66	380	247	650	518	922	789	1104	971	422	289
	5	-	-	307	142	578	412	850	684	1031	866	527	362
	6*	-	-	-	-	506	307	778	579	959	760	633	434
D79PAS	2	494	379	753	638	1143	1027	-	-	-	-	309	194
	3	396	225	656	484	1045	873	1433	1261	-	-	463	291
	4	299	71	558	329	948	719	1335	1106	1594	1365	618	389
	5	-	-	462	175	851	565	1239	952	1497	1211	772	485
	6*	-	-	-	-	754	410	1142	797	1400	1056	927	582
D579PAS	2	888	704	1330	1146	1992	1808	-	-	-	-	536	352
	3	712	435	1154	878	1816	1540	2480	2204	-	-	804	528
	4	535	167	978	610	1640	1272	2304	1935	2782	2413	1073	704
	5	-	-	802	342	1464	1004	2128	1667	2605	2145	1341	881
	6*	-	-	-	-	1288	735	1951	1399	2429	1877	1609	1057
E79PS	1	1520	1174	2236	1890	3311	2965	-	-	-	-	830	484
	2	1174	689	1890	1405	2965	2478	4038	3553	-	-	1315	830
	3	759	205	1474	921	2549	1996	3622	3069	4338	3785	1799	1246
	4*	-	-	1128	298	2203	1373	3276	2446	3992	3162	2422	1592
F79PS	1	3589	2719	5351	4481	7995	7125	-	-	-	-	2436	1566
	2	2371	913	4133	2914	6776	5559	9420	8202	-	-	4003	2784
	3	-	-	3089	1348	5732	3992	8376	6636	10139	8398	5569	3829
	4*	-	-	-	-	4945	2774	7853	5417	9616	7180	6787	4351
G79PS	1	7003	5783	10157	8939	14886	13673	19621	18402	-	-	3050	1829
	2	5783	3649	8938	6803	13673	11532	18402	16267	21556	19421	5184	3050
	3	-	-	7413	4668	12142	9399	16877	14133	20031	17287	7319	4574
	4*	-	-	-	-	10319	6045	15047	10778	18202	13933	10673	6404
L79PS	2	10416	8368	15788	13744	23842	21798	-	-	-	-	6124	4089
	3	8372	5315	13744	10682	21798	18735	29851	26789	-	-	9177	6124
	4	6337	2255	11700	7624	19753	15682	27816	23736	33179	29099	12240	8160
	5	-	-	9664	4564	17718	12620	25771	20674	31143	26037	15303	10204
	6*	-	-	7624	1504	15682	9558	23736	17612	29099	22983	18364	12240
M79PS	2	15921	10700	23753	18532	35497	30276	-	-	-	-	10443	5222
	3	13310	5478	21143	13310	32887	25054	44631	36798	-	-	15656	7832
	4	-	-	18532	8089	30276	19833	42020	31577	49843	39409	20877	10443
	5	-	-	-	-	27665	14611	39409	26355	47241	34188	26099	13054
	6*	-	-	-	-	25054	9399	36798	21143	44631	28966	31320	15656

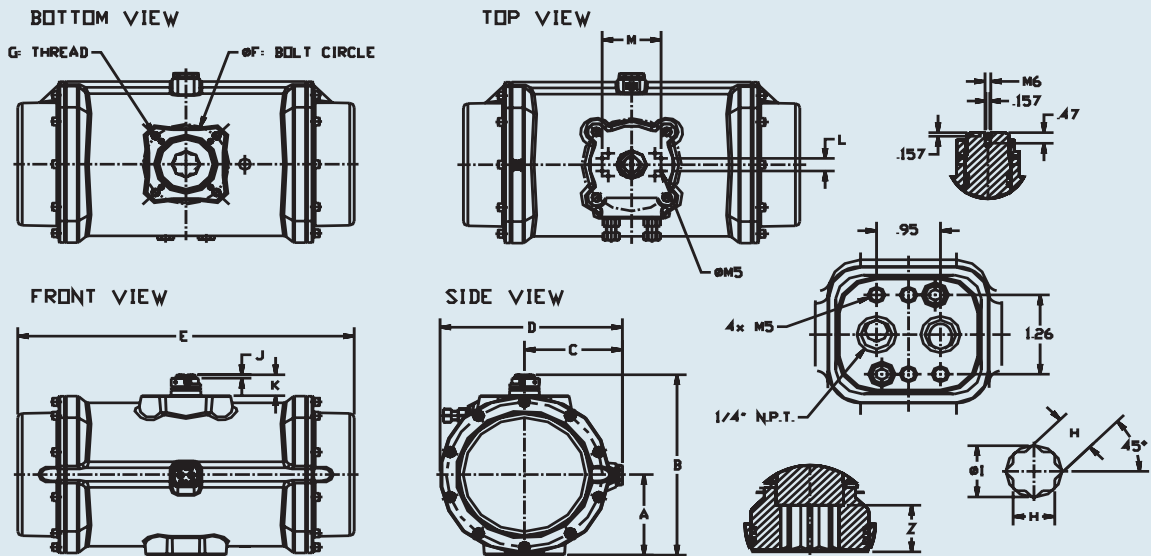
* Number of springs in standard unit

Pneumatic Actuators

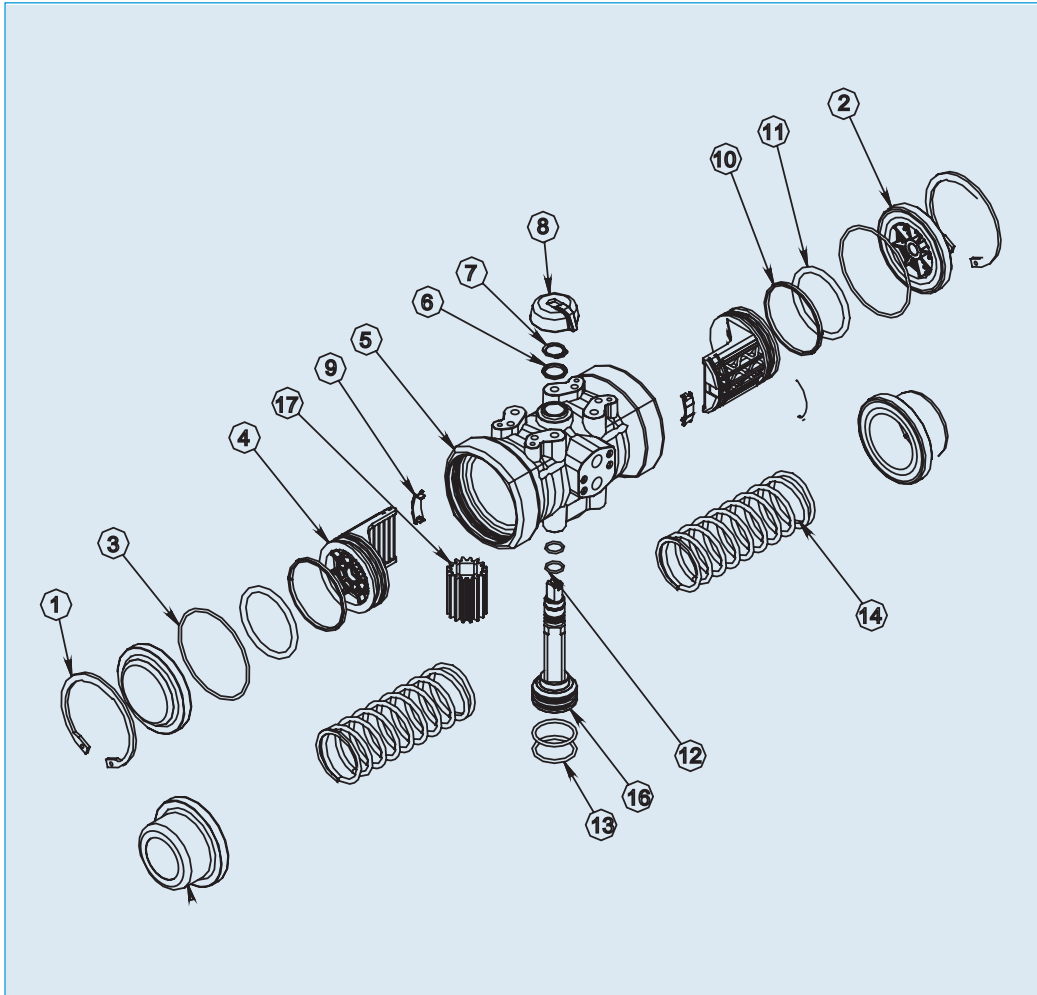
P/PA Series



Model	A	B	C	D	E	F	G	H	I	J	K	L	M	Z
A79PA	1.47	3.52	1.90	3.00	5.52	1.65	M5 x 8 mm DEEP	1.42	M5 x 8mm DEEP	.32	.79	0.43	0.56	0.69
B79PA	1.70	4.38	2.06	3.31	6.00	1.97	M6 x 10 mm DEEP	1.65	M5 x 10mm DEEP	.49	1.18	0.55	0.75	0.70
B579PA	1.95	5.05	2.43	4.00	7.91	2.76	M8 x 14 mm DEEP	1.97	M6 x 9mm DEEP	.49	1.18	0.67	0.91	0.81
C79PA	2.06	5.21	2.47	4.08	8.84	2.76	M8 x 14 mm DEEP	1.97	M6 x 9mm DEEP	.49	1.18	0.67	0.91	0.82
C579PA	2.35	5.82	2.78	4.70	10.40	2.76	M8 x 14 mm DEEP	1.97	M6 x 9mm DEEP	.49	1.18	0.67	0.91	0.82
D79PA	2.51	6.15	2.96	5.02	12.19	2.76	M8 x 14 mm DEEP	1.97	M6 x 9mm DEEP	.49	1.18	0.67	0.91	0.82
D579PA	3.04	7.26	3.51	6.04	14.02	4.02	M10 x 15 mm DEEP	2.76	M8 x 14mm DEEP	.49	1.18	1.06	1.44	1.22



Model	A	B	C	D	E		F	G	H	I	J	K	L	M	Z
					A-A	A-S									
E79P	3.78	8.31	3.70	6.97	13.74	18.86	4.02	M10 x 15 mm DEEP	1.06	1.44	0.49	1.18	1.18	3.15	1.18
F79P	4.57	10.71	4.72	8.90	17.48	23.54	4.92	M12 x 18 mm DEEP	1.42	1.93	0.79	1.97	1.18	5.12	1.50
G79P	5.24	12.32	5.32	10.14	20.63	27.32	5.51	M16 x 25 mm DEEP	1.42	1.93	0.79	1.97	1.18	5.12	1.50
L79P	6.39	14.49	7.31	13.57	26.40	26.40	6.50	M20 x 25 mm DEEP	1.81	2.40	0.53	1.97	1.18	5.12	1.97
M79P	7.52	16.85	8.50	15.85	29.23	29.23	6.50	M20 x 25 mm DEEP	1.81	2.40	0.32	1.97	1.18	5.12	2.05



Parts List (Typical PAG Series Actuator)

PARTS		
NO.	DESCRIPTION	MATERIAL
1	End Cap Retaining Ring	Cataphoresis Coated Steel
2	Double Acting End Cap	Polyamide
3	End Cap O-Ring	NBR
4	Piston	Polyarilamide
5	Actuator Body	Polyamide
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Stainless Steel
8	Position Indicator	Polyamide
9	Piston Guide	Polyacetal
10	Guide Ring	Polyacetal
11	Piston O-Ring	NBR
12	Upper Shaft O-Ring	NBR
13	Lower Shaft O-Ring	NBR
14	Spring Set	Cataphoresis Coated DIN-17223-C
15	Spring Return End Cap	Polyamide
16	Shaft	303 Stainless Steel
17	Pinion Gear	Aluminum Alloy

Torque Air to Spring (Inch-Pounds)

MODEL	Spring Set	40 psi		60 psi		80 psi		100 psi		120 psi		Spring Torque	
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
AP79PS	1	44	31	71	58	112	98	-	-	-	-	40	27
	2	33	12	59	40	100	81	140	120	-	-	58	38
	3	-	-	46	16	87	56	127	96	151	121	82	51
	4*	-	-	-	-	81	46	120	86	145	111	92	58
BP9PS	1	60	42	100	81	159	140	-	-	-	-	62	42
	2	37	10	77	50	136	109	196	168	-	-	93	65
	3	-	-	51	27	111	86	170	144	209	184	116	91
	4*	-	-	-	-	102	61	160	119	200	184	141	100
CP79PS	1	176	126	289	238	458	407	-	-	-	-	165	115
	2	-	-	228	157	397	325	566	494	-	-	248	175
	3	-	-	-	-	319	215	488	383	600	496	358	253
	4*	-	-	-	-	287	160	455	328	567	441	412	286
DP79PS	1	466	317	725	577	1113	965	-	-	-	-	371	222
	2	342	95	601	354	989	743	1378	1131	-	-	593	346
	3	-	-	453	132	841	519	1230	908	1489	1167	816	495
	4*	-	-	-	-	767	421	1156	810	1414	1068	914	568

*Number of springs in standard unit

Torque Air to Air (Inch-Pounds)

Model	Supply Pressure (psi)				
	40	60	80	100	120
AP79P	70	100	138	175	203
BP79P	103	142	202	261	300
CP79P	291	404	573	741	853
DP79P	688	947	1335	1724	1982

Cycle Time (Seconds)

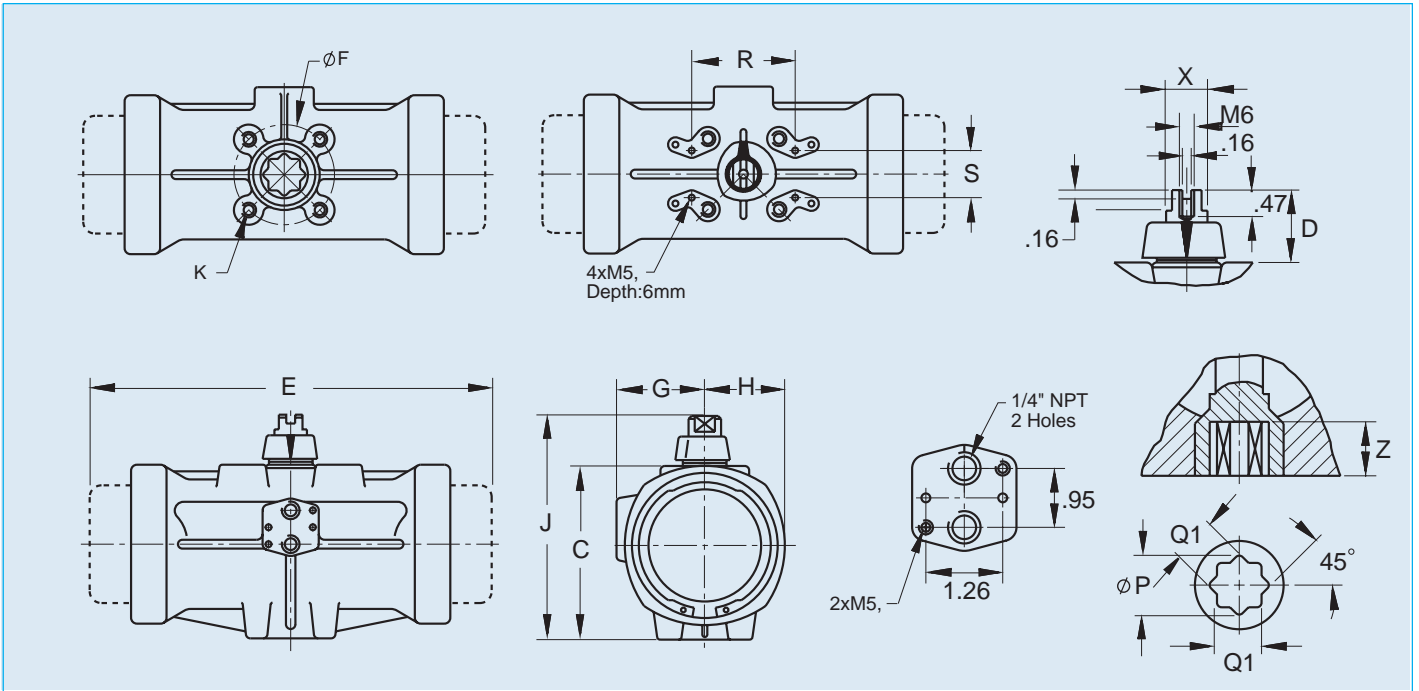
Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
AP79P	0.10	0.10	0.15	0.15
BP79P	0.15	0.15	0.20	0.20
CP79P	0.25	0.25	0.30	0.30
DP79P	0.40	0.40	0.50	0.50

Air Consumption (Cubic Inches)

Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
AP79P	4.58	3.05	4.58	-
BP79P	9.15	6.10	9.15	-
CP79P	21.36	19.53	21.36	-
DP79P	48.82	42.71	48.82	-

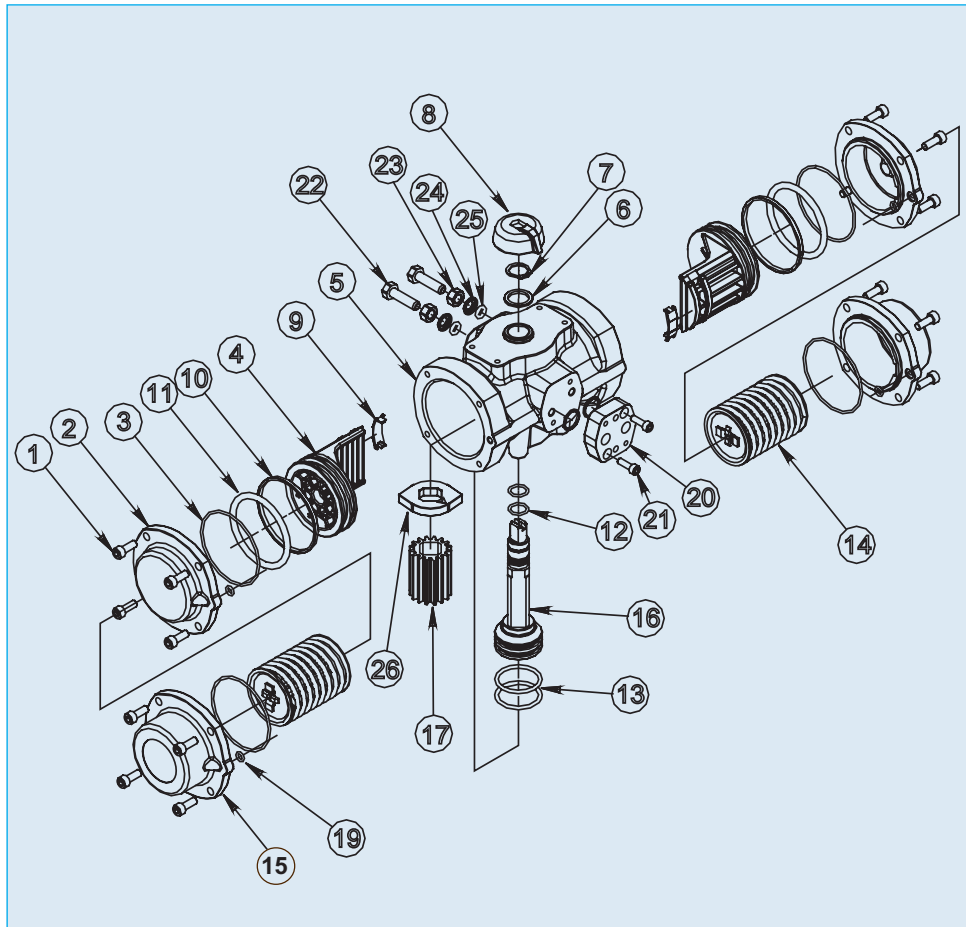
Weight (Pounds)

Model	Air to Air	Air to Spring
AP79P	0.73	1.04
BP79P	1.68	2.27
CP79P	3.11	4.74
DP79P	6.48	10.91



Dimensions (IN.)

Model	C	D	E		F	G	H	J	K	P	Q1	R	S	X	Z
			A-A	AS											
AP79P	2.56	0.78	4.21	5.59	1.65	1.47	1.22	3.35	M5 x 7mm deep	.56	0.43	3.15	1.18	0.31	0.53
BP79P	3.15	1.18	4.92	6.10	1.96	1.73	1.42	4.33	M6 x 15mm deep	1.03	0.55	3.15	1.18	0.39	0.59
CP79P	3.86	1.18	7.16	9.06	2.76	2.09	1.93	5.04	M8 x 18mm deep	1.26	0.67	3.15	1.18	0.39	0.59
DP79P	5.20	1.18	9.17	11.97	2.76	2.56	2.36	6.38	M8 x 18mm deep	1.26	0.87	3.15	1.18	0.63	0.75



Parts List (Typical SS Series Actuator)

PARTS		
NO.	DESCRIPTION	MATERIAL
1	End Cap Bolt	316 Stainless Steel
2	Double Acting End Cap	316 Stainless Steel
3	End Cap O-Ring	NBR
4	Piston	Polyarilamide or Cataphoresis Coated Aluminum
5	Actuator Body	316 Stainless Steel
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Stainless Steel
8	Position Indicator	Polyamide
9	Piston Guide	Polyacetal or PTFE/Bronze
10	Guide Ring	Polyacetal or PTFE/Bronze
11	Piston O-Ring	NBR
12	Upper Shaft O-Ring	NBR
13	Lower Shaft O-Ring	NBR
14	Spring Set	Cataphoresis Coated DIN-17223-C
15	Spring Return End Cap	316 Stainless Steel
16	Shaft	316 Stainless Steel
17	Pinion Gear	Aluminum Alloy
19	End Cap Gasket	NBR
20	Air Connection Plate	316 Stainless Steel
21	Bolt for Air Connection Plate	316 Stainless Steel
22	Adjustment Bolt	316 Stainless Steel
23	Adjustment Locknut	316 Stainless Steel
24	Bushing	316 Stainless Steel
25	Travel Stop O-Ring	NBR
26	Cam	316 Stainless Steel

Torque Air to Spring (Inch-Pounds)

MODEL	Spring Set	40 psi		60 psi		80 psi		100 psi		120 psi		Spring Torque	
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End
BS79PS	1	60	42	100	81	159	140	-	-	-	-	62	42
	2	37	10	77	50	136	109	196	168	-	-	93	65
	3	-	-	51	27	111	86	170	144	209	184	116	91
	4*	-	-	-	-	102	61	160	119	200	159	141	100
CS79PS	1	176	126	289	238	458	407	-	-	-	-	165	115
	2	-	-	267	157	397	325	566	494	-	-	248	175
	3	-	-	-	-	319	215	488	383	600	496	358	253
	4*	-	-	-	-	287	160	455	328	567	441	412	286
DS79PS	1	466	317	725	577	1113	965	-	-	-	-	371	222
	2	342	95	601	354	989	743	1378	1131	-	-	593	346
	3	-	-	453	132	841	519	1230	908	1489	1167	816	495
	4*	-	-	-	-	767	421	1156	810	1414	1068	914	568
ES79PS	1	1520	1174	2236	1890	3311	2965	-	-	-	-	830	484
	2	1174	689	1890	1405	2965	2478	4038	3553	-	-	1315	830
	3	759	205	1474	921	2549	1996	3622	3069	4338	3785	1799	1246
	4*	-	-	1128	298	2203	1373	3276	2446	3992	3162	2422	1592

*Number of springs in standard unit

Torque Air to Air (Inch-Pounds)

Model	Supply Pressure (psi)				
	40	60	80	100	120
BS79P	103	142	202	261	300
CS79P	291	404	573	741	853
DS79P	688	947	1335	1724	1982
ES79P	2005	2720	3795	4868	5584

Cycle Time (Seconds)

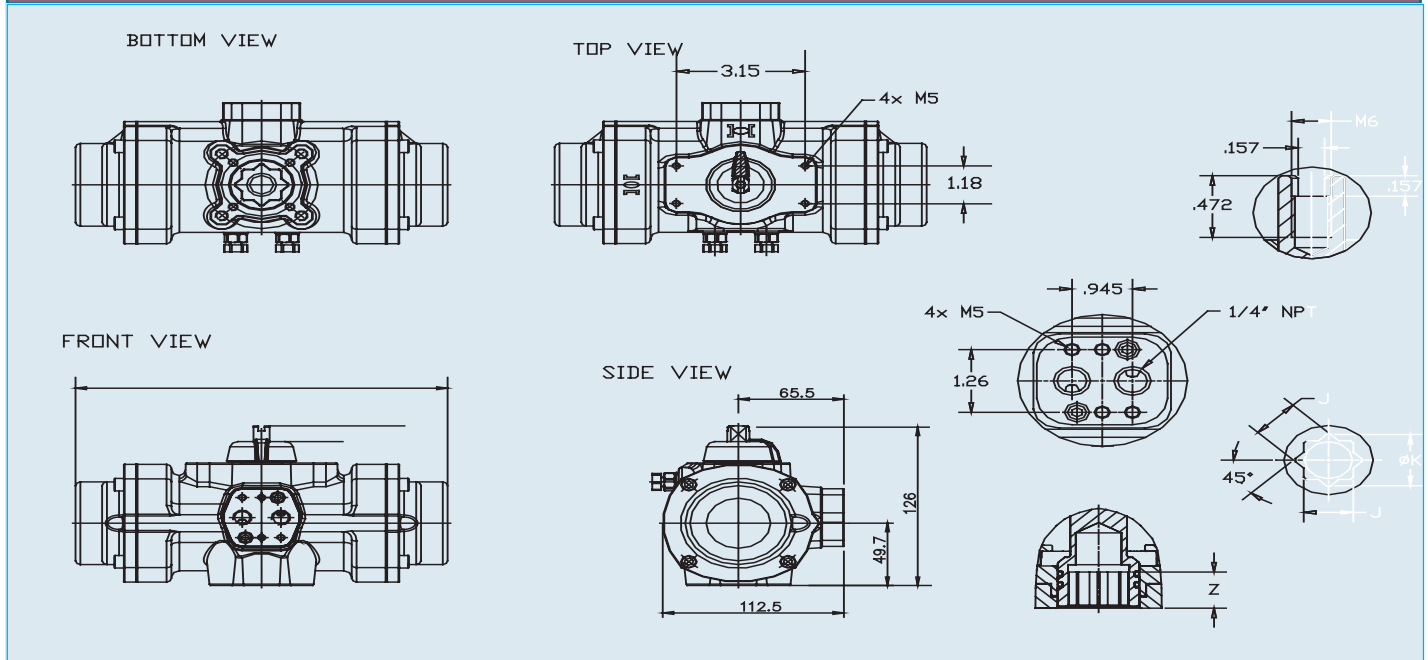
Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
BS79P	0.15	0.15	0.20	0.20
CS79P	0.25	0.25	0.30	0.30
DS79P	0.40	0.40	0.50	0.50
ES79P	0.60	0.60	1.20	1.20

Air Consumption (Cubic Inches)

Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
BS79P	9.15	6.10	9.15	-
CS79P	21.36	19.53	21.36	-
DS79P	48.82	42.71	48.82	-
ES79P	125.09	115.94	125.09	-

Weight (Pounds)

Model	Air to Air	Air to Spring
BS79P	4.85	5.73
CS79P	10.36	12.34
DS79P	13.00	21.82
ES79P	39.45	55.98



Dimensions (IN.)

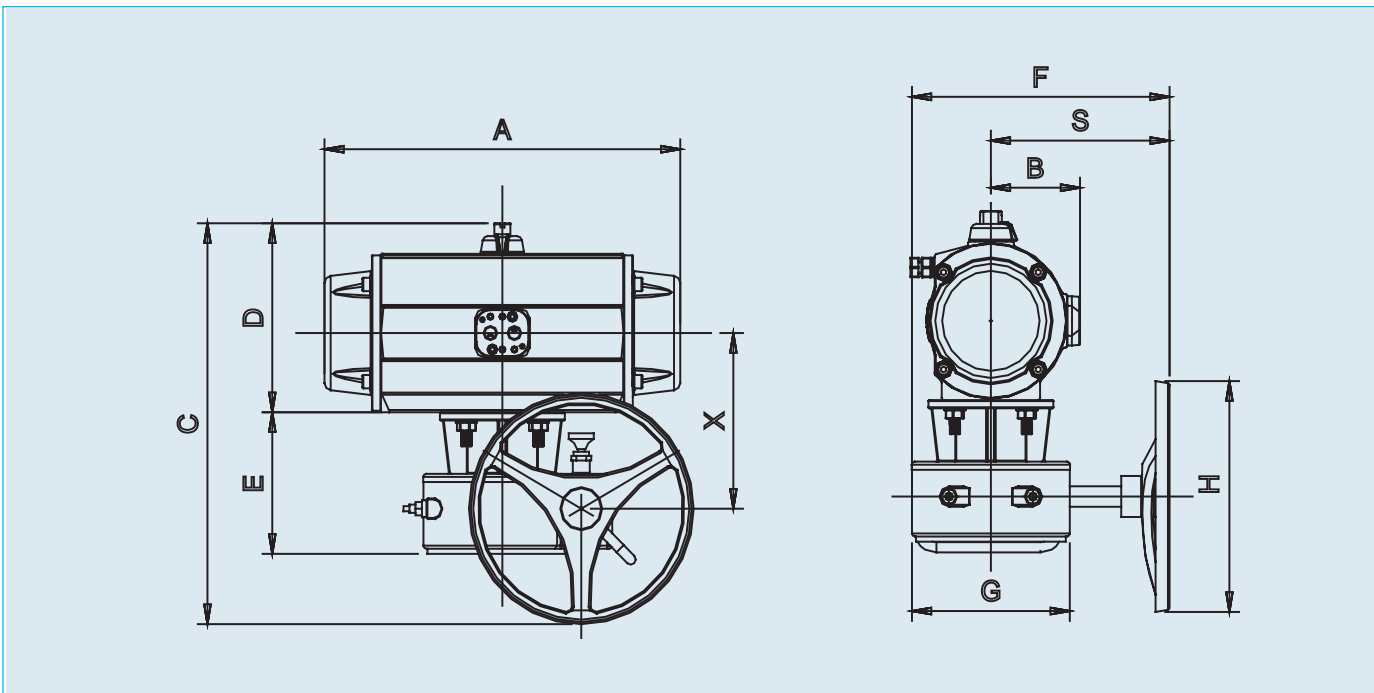
Model	A	B	C	D	E		F	G	H	I	J	K	L	M	Z
					A-A	AS									
BS79P	1.77	4.37	2.17	3.58	5.47	6.30	-	-	1.97	M5 x 8mm DEEP	.43	1.18	0.78	1.03	0.59
CS79P	1.96	4.96	2.58	4.43	7.80	9.09	2.76	M8 x 12mm DEEP	1.97	M6 x 9mm DEEP	.43	1.18	0.95	1.27	0.59
DS79P	2.80	6.30	3.19	5.47	10.12	12.13	2.76	M8 x 12mm DEEP	1.97	M6 x 9mm DEEP	.43	1.18	0.95	1.27	0.75
ES79P	3.78	8.31	4.05	7.30	13.78	18.82	4.02	M10 x 15mm DEEP	1.97	M8 x 12mm DEEP	.43	1.18	1.06	1.44	1.18

Declutchable Manual Override for Series 79P



Standard Features:

- Outout torque range of 1100 in/lbs through 65.938 in/lbs
- Polyester Coating
- End Position Travel Stop
- ISO Mounting
- Direct Mount



Dimensions

Model	Gearbox	A		B	C	D	E	F	G	S	H	X
		S.R	D.A									
B79PA	RD-415	5.98	5.98	2.05	10.51	4.37	4.57	7.40	4.65	5.08	5.51	5.08
B579PA	RD-415	7.91	7.91	2.45	11.18	5.04	4.57	7.40	4.65	5.08	5.51	5.31
C79PA	RD-415	8.82	8.82	2.48	11.34	5.20	4.57	7.40	4.65	5.08	5.51	5.43
C579P	RD-415	10.39	10.39	2.80	11.97	5.83	4.57	7.40	4.65	5.08	5.51	5.75
D79PA	RD-420	12.20	12.20	2.95	13.50	6.14	4.80	9.53	5.59	6.73	8.87	5.94
D579PA	RD-420	14.02	14.02	3.50	14.61	7.24	4.80	9.53	5.59	6.73	7.87	6.46
E79PA	RD-535	18.86	13.74	3.70	17.72	8.31	5.12	12.09	5.31	9.45	11.81	7.24
F79PA	RD-550.12	23.54	17.48	4.72	25.00	10.71	6.14	15.67	7.09	12.13	19.68	9.02
G79P	RD-560	27.32	20.63	5.31	29.84	12.32	7.91	20.28	11.10	14.88	23.62	10.94
L79P	RD-560	26.42	26.42	6.77	32.00	14.49	7.91	20.28	11.10	14.88	23.62	12.09
M79P	RD-370	29.25	29.25	8.50	38.00	16.85	8.23	22.24	13.58	16.10	31.50	12.91

P Series Limit Switch



Specifications
Temperature: -20C to 80C
Limit Switches: 16A mechanical switches
Weight: 1.2 lbs
Voltages: AC: 20 - 250V
 DC: 10 - 300V
Housing: Aluminum
Shaft: 304SS
Indicator Cover: Polycarbonate
Fasteners: 304SS
Bracket: 304SS

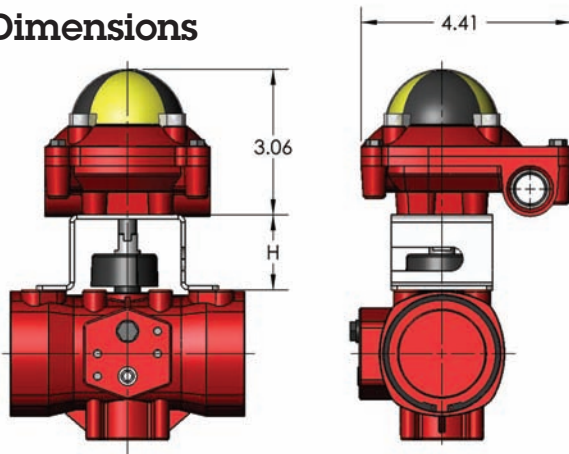
Standard Features

- Low cost valve position indication solution
- Thermally bonded & baked powder coating finish enclosure
- 2-SPDT mechanical switches rated at 16 amps
- Indication of open/closed status with highly visible globe
- Easily adjustable cams for simple field calibration. No tools required.
- Two 1/2" NPT conduit entries

Options

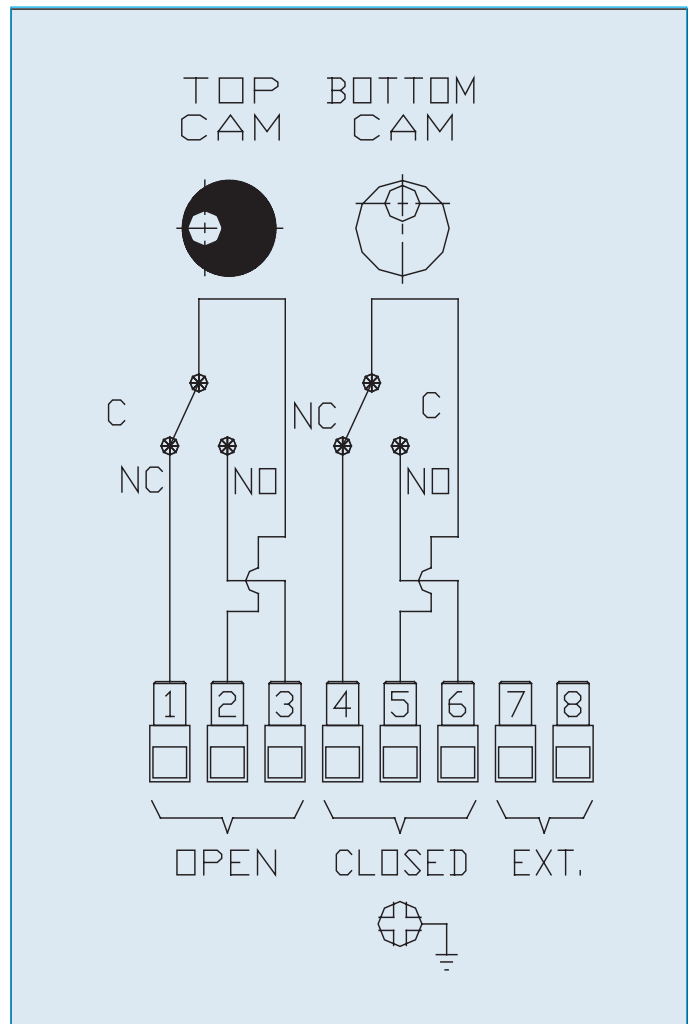
- Inductive limit switches

Dimensions



Actuator	DIM 'H'
A79	1.16
B79 - E79	1.57
F79 - M79	2.36

Wiring Diagram



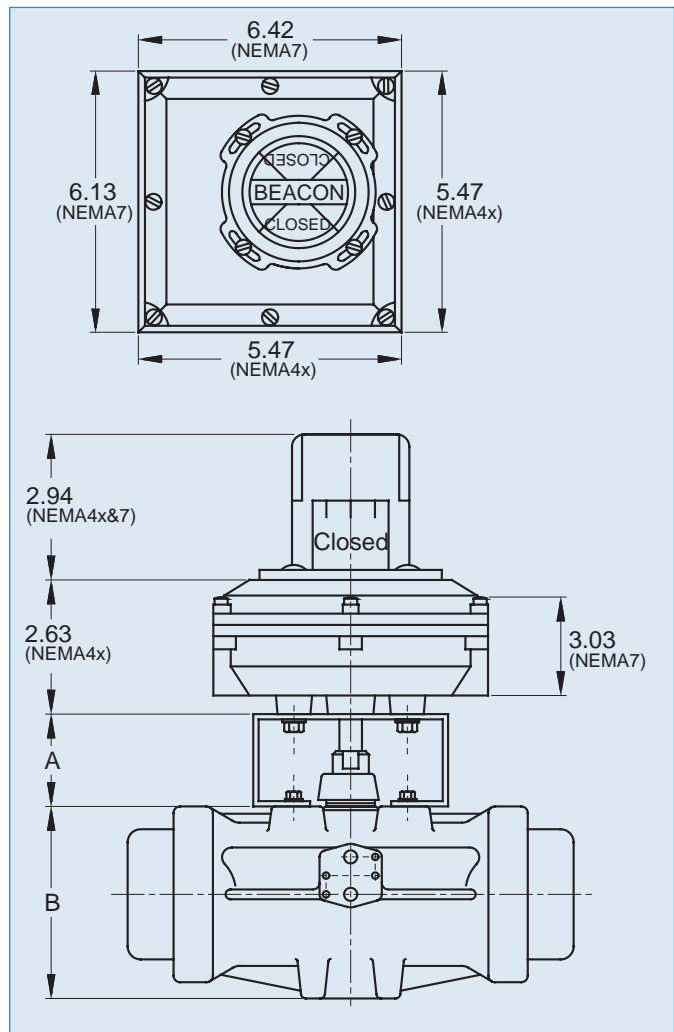
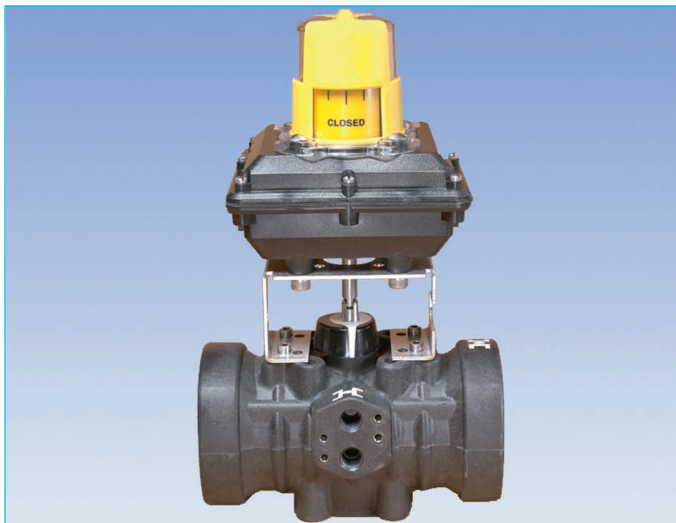
Westlock Top-Mounted Switch Box

A limit switch box is mounted on and coupled to the actuator in order to operate position-indicating lights on control panels, to control other equipment such as pumps, compressors and mixers, to sequence other valves, or for feedback and PLC position confirmation. Two single-pole, double throw (SPDT) switches are mounted in one enclosure and are activated by individual, adjustable cams.

The cams are connected to the cam shaft, which is direct coupled to the actuator shaft. Switches can be set to be activated in fully open or closed positions, or in any position in the quadrant of the actuator's operation.

The limit switch box is available in Type 4X and Type 7 enclosures, and switches can be supplied in mechanical or proximity models.

The electrical rating of the standard mechanical switches is 15 amps at 250 VAC, which qualifies them for the following voltages: 12 and 24 VDC, 12, 24 and 115 VAC.



Standard Features

- Type 4X Engineered resin enclosure
- UL 94H-B Flammability rating
- NAMUR shaft
- CSA approved
- Beacon position Indication
- Touch set cams
- Stainless Steel Trim
- Two (2) 1/2" FNPT conduit entries
- Two (2) single pole, double throw (2-SPDT) limit switches; 15 amp rated

Options

- Two (2) Double pole, double throw (2-DPDT) limit switches
- 4-20mA transmitter
- Type 4x, 7, & 9 Class 1, Div 1 powder coated aluminum enclosure
- UL, CSA and FM approved Type 7

Dimensions (IN.)

Model No.	A	B
AP79P	1.75	2.56
BP79P	2.16	3.15
B579PA	2.16	3.62
CP79P	2.16	3.82
C579PA	2.16	4.64
DP79P	2.16	5.16
D579PA	2.16	6.34
E79P	2.16	7.12
F79P	2.95	8.74
G79P	2.95	10.35
M79P	2.95	16.85

Pneumatic Actuators with Solenoid

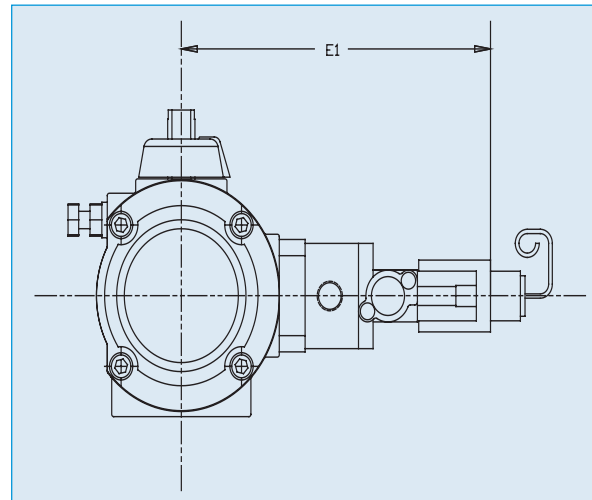
The solenoid valve used for our pneumatic actuators is a 4-way, on/off, electrically controlled valve. An electrical signal to the solenoid's coil switches the compressed air supply to the appropriate actuator ports.

The solenoids are furnished with mufflers and speed controls. The muffler reduces the sound of the exhausting air, and the speed control determines the cycle time of the actuator. The speed controls are manually set needle valves which can be adjusted. The cycle time can be slowed by restricting the flow of the exhausting air, thus maintaining back pressure on the opposite side of the pressured actuator cavity.

During the absence of electric power, the actuator can be cycled by operating the manual override on the solenoid, providing that supply air is still available.

Upon electric failure, actuators will return to the de-energized position. This position can be either actuator position depending upon how the plumbing is connected from the solenoid block to the air connection of the actuator.

Solenoids are available in Type 4X and Type 7 ratings, and in all voltages.



Standard Features

- Engineered resin body
- Type 4X 115 VAC coil
- NAMUR mount
- Stainless Steel Trim
- 1/4" FNPT air connection
- Combination 3-way/4-way
- 1/2" FNPT SS conduit entry
- Manual override
- Speed controls
- Mufflers

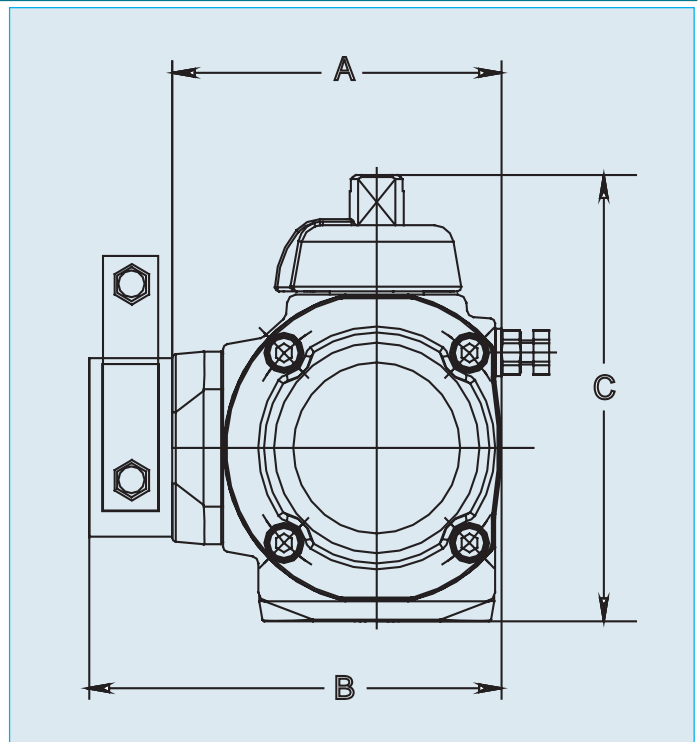
Dimensions (IN.)

Model No.	E1
A79PA	5.77
B79PA	6.02
B579PA	6.38
C79PA	6.46
C579PA	6.65
D79PA	6.93
D579PA	7.36
E79P	8.00
F79P	9.01
G79P	9.61
M79P	12.80

Options

- Combination Type 4X, 7, & 9 coil
- Voltages: 12 or 24 VAC
230 VAC
12 or 24 VDC

P-Series General Purpose Solenoid



P-Series General Purpose (IP65) NAMUR mount Solenoid

Standard Features

- Anodized aluminum body
- IP-65 protection
- NAMUR mount
- Stainless Steel Trim
- 1/4" FNPT air connection
- Combination 3-way/4-way
- 1/2" FNPT conduit entry
- Manual override
- Speed controls
- Mufflers

Dimensions (in.)

Model	A	B	C
A79PA	2.99	8.70	3.50
B79PA	3.31	9.57	4.37
B579PA	4.02	10.24	5.04
C79P	4.09	10.39	5.20
C579PA	4.69	11.02	5.83
D79PA	5.04	11.34	6.14
D579PA	6.06	12.44	7.24
E79PA	6.97	14.09	8.31
F79P	8.90	16.50	10.71
G79P	10.16	18.27	12.48
L79P	15.86	17.64	16.85
M79P	15.87	22.05	16.85

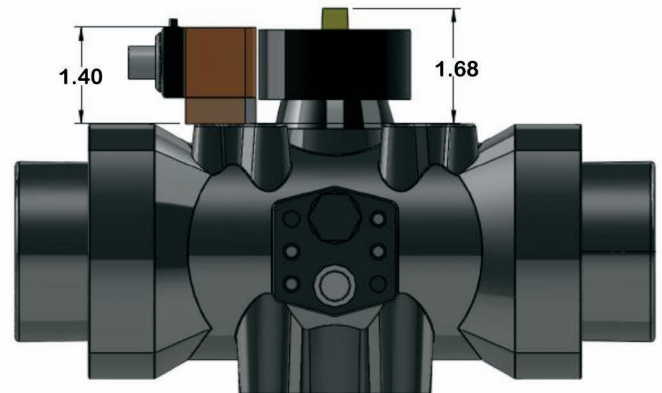
Inductive Switches



Inductive Sensor	2 x NO Contacts
Operating Voltage	10 - 36 vdc
Current Rating (mA)	250
Reverse Polarity Protection	yes
Overload Protection	yes
Voltage Drop	< 2.5
Current Consumption (mA)	< 15 (24V)
Temperature (F)	- 13F - 175F
Protection	IP 67 (Type 6)
Materials	PBT/SS
Status Indicators	2 x Yellow LED
Connection	M12 Connector

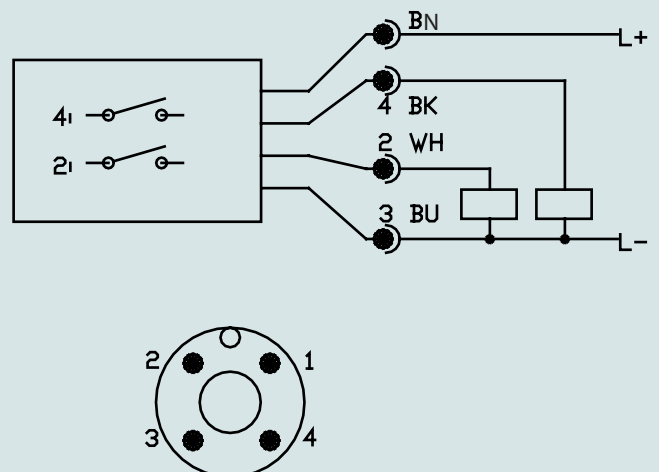
Standard Features

- Low profile
- Engineered resin with SS trim
- 2-SPST N/O (PNP) hermetically sealed inductive switches
- M12 connection
- Visual position indication
- Low current consumption
- Temperature limit of 175 F



Options

- Patch cable (M12F x M12M)
 - Industrial - General Purpose
 - Sanitary - Wash down
 - Hazardous Environment
 - .3M, .6M, 1M, 2M, 5M Lengths
 - Straight or Angled
- Cord set (M12F x Flying Leads)
 - Industrial - General Purpose
 - Sanitary - Wash down
 - Hazardous Environment
 - 2M, 5M, 10M Lengths
 - Straight or Angled



Westlock K-10 Pneumatic Positioner

The Westlock K-10 electro-pneumatic positioner accepts variable instrumentation signals (between 4 and 20 milliamps) from a PLC, DCS, set point controller, etc. and regulates the 80-psi air supply to and from the actuator. This process regulates the actuator position within its quadrant for precise modulation.



Engineering Specifications

Input current: 4 to 20 mA (analog)

Supply air pressure: 40 to 120 psi

Resolution: 0.2% of span

Linearity: 1% of span

Hysteresis: 0.2% of span

Repeatability: 0.2% of span

Air connections: 1/4" NPT

Sample Specification

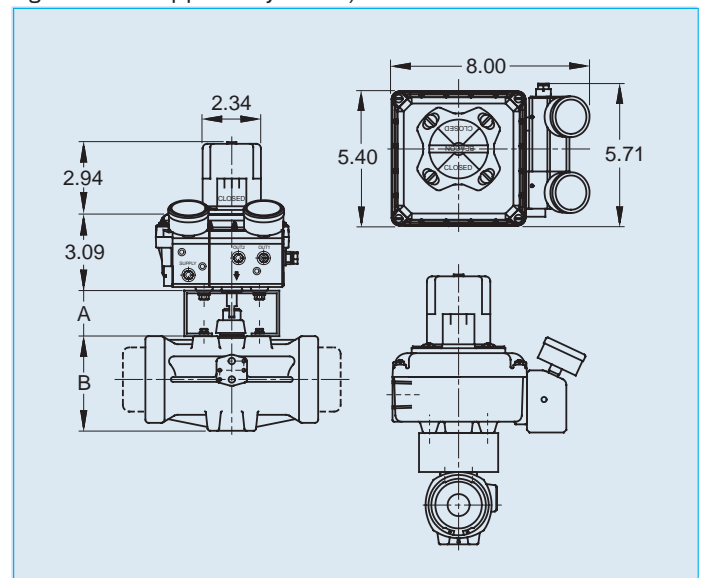
All I/P modulating valves shall be equipped with a K-10 I/P positioner manufactured by Westlock Controls. Positioner housing shall be engineered resin meeting Type 4X, with stainless steel shaft & hardware, an anodized aluminum manifold with gauges, and a visual position indicator. Positioner shall be calibrated via AutoCal pushbuttons located inside of housing or with optional hand held calibration tool, and allow for standard (4-20 mA), split range (4-12 mA or 12-20 mA), or reverse acting (20-4 mA) instrument signals, as supplied by Asahi/America, Inc.

Standard Features

- Simple calibration of positioner with AutoCal pushbuttons located inside of housing
- Corrosion resistant engineered resin enclosure, meets Type 4X
- FM-CSA Approved as general purpose
- Nonincendive for Class 1, Div 2
- Intrinsically safe for Class 1, Div 1
- Beacon visual position indication
- Pressure Gauges
- 3/4" FNPT conduit entry
- Split range capability
- Reverse acting capability
- NAMUR mount

Options

- Hand held I/R calibration tool
- Type 7 enclosure (Aluminum)
- Mechanical switches
- 4 - 20 mA transmitter



Dimensions

Model No.	A	B
AP79P	1.75	2.56
BP79P	2.16	3.15
B579PA	2.16	3.62
CP79P	2.16	3.82
C579PA	2.16	4.64
DP79P	2.16	5.16
D579PA	2.16	6.34
E79P	2.16	7.12
F79P	2.95	8.74
G79P	2.95	10.35
M79P	2.95	16.85

Series 79P PST-202 SMART (Electro-Pneumatic)



Standard Features

- Simple calibration of positioner with Autocal pushbuttons located inside of positioner housing
- Transmitter
- Type 4X Enclosure
- Corrosion Resistant Polyester Powder Coated Enclosure
- SS Trim
- LCD Visual Position Indication shown in percentage
- Pressure Gauges
- 1/2" Conduit Entry
- 1/4" NPT Air Connection
- Split Range Capability
- Reverse Acting Capability
- Temperature limit of 185° F

Options

- 2-SPDT Mechanical Switches
- Hart Capability
- 316SS Enclosure
- ATEX Enclosure

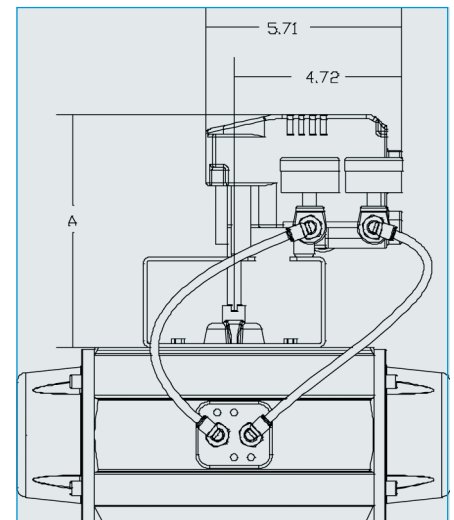
Specifications

- Input Current:** 4 to 20mA
- Supply Air Pressure:** 60 to 100psi
- Resolution:** 0.2% of Span
- Linearity:** (plus/minus) 0.51% of Span
- Hysteresis:** 0.5% of Span
- Repeatability:** 0.2% of Span
- Air Connections:** 1/4" NPT
- Conduit Entry:** 1/2" NPT

Sample Specification

All PST-202 I/P modulating valves shall be equipped with the PST-202 SMART (Electro-Pneumatic) Positioner. Positioner housing shall be polyester powder coated meeting Type 4X, with SS shaft and hardware, and visual position indication (LCD). Positioner shall be Autocal design, equipped with pressure gauges, and a transmitter as supplied by Asahi America, Inc.

ACTUATOR	A
A79P	6.22
B79P	6.61
B579P	6.61
C79P	6.61
C579P	6.61
D79P	6.61
D579P	6.61
E79P	6.61
F79P	7.40
G79P	7.40
L79P	7.40
M79P	7.40



Series 79P PST-101 Pneumatic Positioner



Specifications

Input Signal: 3-15 psi
Supply Air Pressure: 60 to 100 psi
Air Consumption: 0.4 CFM @ 60 psi
Linearity: (plus/minus) 2% of Span
Hysteresis: (plus/minus) 1% of Span
Repeatability: (plus/minus) 0.5% of Span
Conduit Entry: 1/2" NPT
Air Connection: 1/4" NPT

Sample Specification

All PST-101 modulating valves shall be equipped with the PST-101 Pneumatic Positioner. Positioner housing shall be polyester powder coated meeting Type 4X, with SS shaft and hardware, and visual position indication. Positioner shall be capable of operating in high vibration environments with short and precise response time, equipped with pressure gauges, and be a low air consumption unit as supplied by Asahi America, Inc.

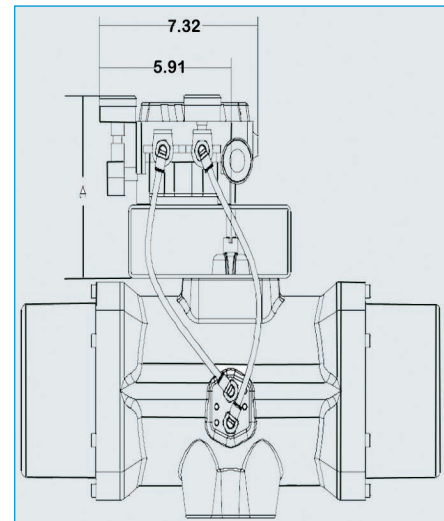
Standard Features

- Simple calibration of positioner with independent Zero and Span
- Short and precise response time
- Type 4X Enclosure
- Corrosion Resistant Polyester Powder Coated Enclosure
- SS Trim
- Low air consumption
- Pressure Gauges
- 1/4" NPT Air Connection
- Can operate in high vibration environments
- Reverse Acting Capability
- Temperature limit of 185° F

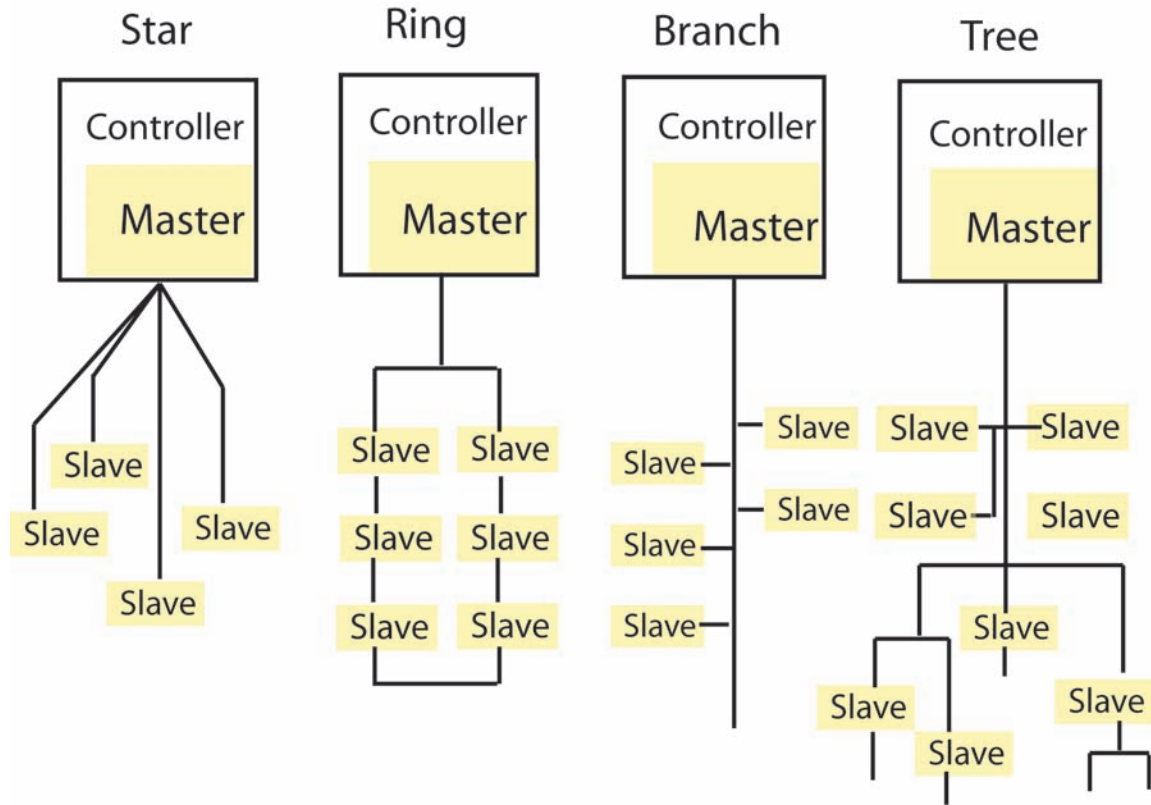
Options

- 2-SPDT Mechanical Switches
- 2-SPST Inductive Switches
- 4-20mA Transmitter

ACTUATOR	A
A79P	5.04
B79P	5.43
B579P	5.43
C79P	5.43
C579P	5.43
D79P	5.43
D579P	5.43
E79P	5.43
F79P	6.22
G79P	6.22
L79P	6.22
M79P	6.22



AS-i Bus System



AS-i (Actuator-Sensor Interface) offers many of the benefits of more complex and costly bus systems, but does it at a substantially lower cost and with greater simplicity. The Actuator-Sensor Interface is ideally suited for controlling valves, actuators and many other field devices in your processing application. This interface can be used for stand-alone process control, or it can be used together with a higher-level bus control system. AS-interface does not compete with higher-level bus systems; it should be seen as a complimentary system that offers low cost, reliable device control for binary and analog devices. Reliability, simplicity and interoperability make AS-interface a cost effective connection/control solution, particularly where low installation costs are imperative. A single pair of wires, which handles power and communications, is used to control the network by means of "chaining" the actuators with the PLC. Each actuator (or device) will then have its own unique address within the system and only that device with the proper address will respond to system commands. AS-i is best known for its yellow flat cable, which is pierced by insulation displacement connectors so that the expense of tees and complex connectors is avoided. Devices are simply clamped onto the cable.

Digital signals are encoded on this cable in a sinusoidal signal, which has a very narrow frequency bandwidth. Filtering which is distributed through the network rejects all extraneous frequencies, and in this way AS-i can be operated in electrically noisy environments without experiencing transmission errors. The yellow flat cable carries low current (30 VDC) for input devices as well as the AS-i signal. If power for outputs (such as energizing relays) is required, an additional BLACK flat cable is available. Standard networking is capable of 62 units with a distance up to 100 meters, and a cycle time of 5ms. A maximum of 300 meters is achieved by installing repeaters. This system also responds well with products from other manufacturers, by installing a gateway to "translate" the commands of higher-level networks. This allows an existing system to be expanded simply by using the AS-i networking system. There are various wiring structures that can be used with this system such as the "star", "ring", "branch", "tree", etc. All are practiced and acceptable, but the loop has a distinguished property; if there were a "break" in the network cable the units **would still cycle** and the master would detect the loss of a node. This feature is unique to the ring structure.



AS-i Bus System

Pneumatic Specifications

Mounting: ISO/NAMUR
 Connection: M12 SS
 AS-i Current Draw: .16 AMP
 Electrical Design: 2-input/2-output
 Voltage Range: 26.5-31.6 VDC
 Sensor/Relay Supply: AS-i
 Sensor Protection: Type 4X
 Air Connection: 1/4" FNPT
 Solenoid Coil: Epoxy encapsulated
 Solenoid Protection: Type 4x
 Reverse polarity protected

Standard Features

- Low profile, compact package for ease in mounting where space limitations are an issue.
- Actuators and accessories meet ISO and NAMUR Standards, therefore no special training is required for field installation/conversion.
- M12 SS connection utilized for network interfacing - Type 4X rated.
- No moving parts with proximity sensor triggered by a target puck.
- Sealed proximity switch so open cavity condensation is not an issue.
- Each actuator has visual indication and proximity feedback to the PLC.
- Each component meets Type 4X.
- Low power consumption allows power and data communications via the same two-wire cable.
- A system of 31 valves requires less than 5 amps of AS-i power.
- Expandability with gateway and/or insulation displacement connector.
- 5 ms reaction time from PLC to cycling of unit.
- Conformance to AS-i Certificate ZU15101.

Accessories

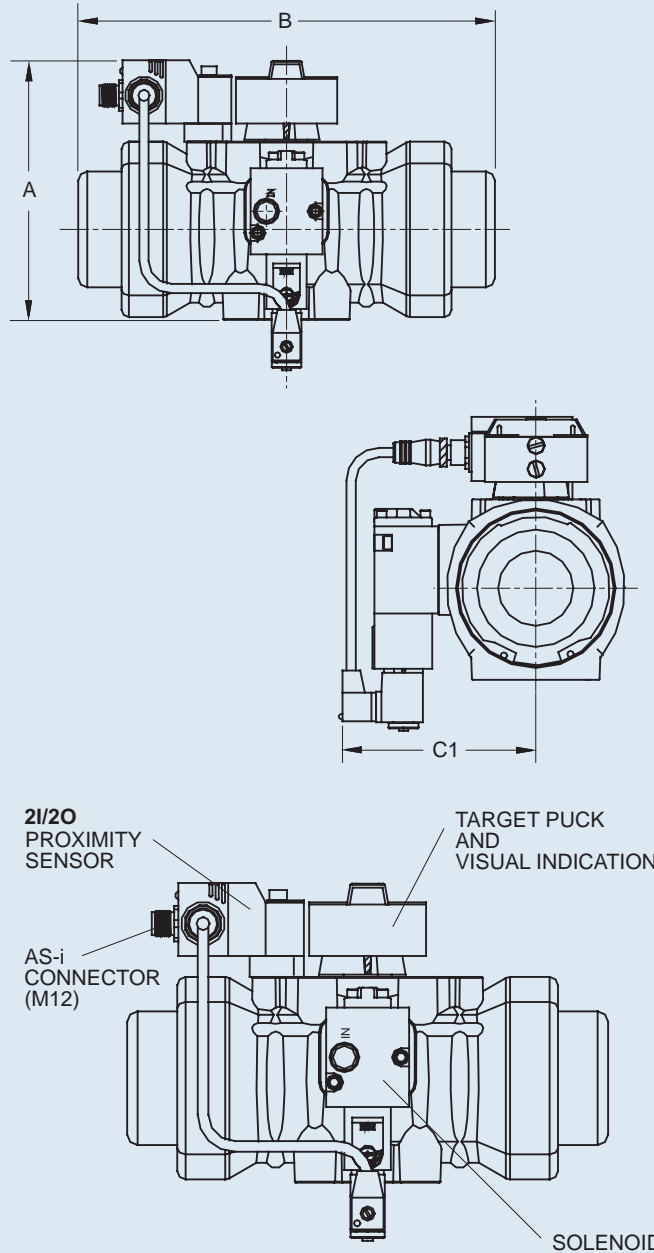
- Master/Controller - AS-i
- Master/Controller - Gateway
- Power Supply
- Addressing Unit
- Operating Software
- Yellow Communications Cable
- Black Power Cable
- Displacement Connectors
- Displacement Splitter
- Cable Clip

Sample Specification

All pneumatically actuated AS-interface systems shall have a 2-input/2-output proximity sensor and a solenoid directly mounted to a Series 79 Actuator. The sensor shall be constructed of Pocan[®] Thermoplastic Polyester, Type 4X protection, operation and function LED's, voltage range of 20-30 VDC, and a stainless steel M12 socket connection to the network. The solenoid shall have an anodized aluminum body with a 1/4" NPT air inlet, manual over ride, and Type 4X protection. Spool/piston shall be synthetic resin with NBR and FKM O-rings, and fitted with an epoxy-encapsulated coil directly coupled to the proximity sensor, as supplied by Asahi/America, Inc.



AS-i Bus System



Dimensions (IN.)

Series	A	B	C1
A79PN	4.33	4.29	3.52
A79PSN	4.33	5.65	3.52
B79PN	4.92	4.92	3.78
B79PSN	4.92	6.30	3.78
B579PN	5.39	5.75	4.14
B579PSN	5.39	7.64	4.14
C79PN	5.59	7.16	4.22
C79PSN	5.59	9.29	4.22
C579PN	6.42	7.99	4.41
C579PSN	6.42	10.12	4.41

Dimensions (IN.)

Series	A	B	C1
D79PN	6.93	9.21	4.69
D79PSN	6.93	12.28	4.69
D579PN	8.11	10.87	5.12
D579PSN	8.11	14.25	5.12
E79PN	8.90	13.74	5.75
E79PSN	8.90	18.86	5.75
F79PN	10.51	17.48	6.77
F79PSN	10.51	23.54	6.77
G79PN	12.12	20.63	7.36
G79PSN	12.12	27.32	7.36

Basics of Operation

An electric actuator is basically a geared motor. The motor can be of various voltages and is the primary torque-generating component. To prevent heat damage from overwork or excessive current draw, electric actuator motors are usually equipped with a thermal overload sensor embedded in the motor windings. This sensor is wired in series with the power source and opens the circuit should the motor be overheated, then closes the circuit when the motor reaches a safe operating temperature.

An electric motor consists of an armature, an electrical winding, and a gear train. When power is supplied to the winding, a magnetic field is generated causing the armature to rotate. The armature will rotate as long as there is power to the windings when the power is cut, the motor stops. Standard end of travel limit switches, which are a necessity for an electric actuator handle this task.

Electric actuators rely on a gear train, which is coupled directly from the motor to enhance the motor torque and dictate the output speed of the actuator. The only way to change the output speed is to install a cycle length control module. This module allows an *increase* in cycle time only. If a *decrease* in cycle time is required, an alternate actuator with the desired cycle time and proper output torque must be used.

Types of Motors

There are two (2) types of motors used for electric actuators; uni-directional and bi-directional (commonly known as reversing motors).

- Uni-directional motors are motors in which the armature rotates in one (1) direction, causing the valve to rotate in one direction. These actuators are typically used with a ball valve and rotate in 90 or 180 degree increments strictly for an on/off type of service.
- Reversing motors are motors in which there are two (2) sets of windings allowing the armature to rotate in either direction depending on which set of windings is powered. One (1) set of windings controls the clockwise direction for closing a valve, while the other set of winding controls the counter-clockwise direction for opening the valve. A major benefit of a bi-directional actuator is precise flow control, as the actuator is not required to travel the full stroke to begin the reverse stroke.

Electric or Pneumatic?

The pneumatic actuator will probably continue to be the actuator of choice in the process industry however there are many applications where an electric actuator should be considered.

No Air Supply:

In many remote installations, it may be impractical to run an air supply line and maintain it.

Colder Climate:

Compressed air systems are vulnerable to freezing and clogging of the air lines, or potentially damaging the equipment if located in a climate that frequently sees temperatures below freezing.

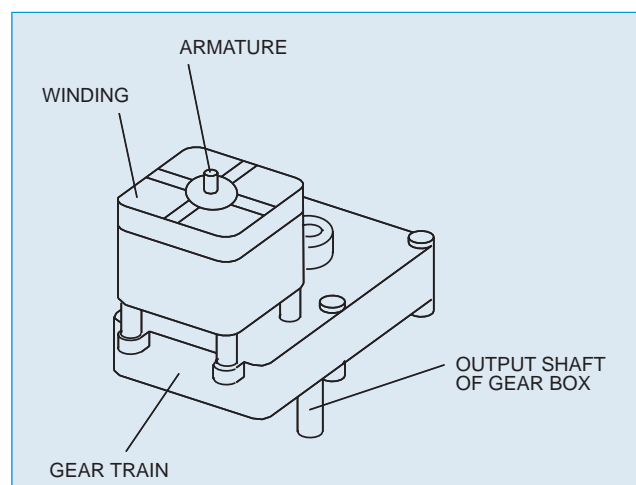
PLC/DCS Controlled Process:

In the past, standard engineering practice called for pneumatically actuated valves even when the rest of the system was electronically controlled. This required a conversion from electric to pneumatic (I/P) that made systems more complicated to startup and maintain. With the increasing popularity of PLC/DCS systems, many process and instrumentation engineers are now specifying fully electronic actuation packages.

Installation Savings:

The cost to prepare a plant for pneumatically actuating a few valves (compressor, regulators, air lines, etc) far exceeds the cost of using electrically actuated valves.

* Even though pneumatic actuators are used, electricity is still required to energize the solenoid valve coils that cycle the pneumatic actuators.



Standard Features

- **Motor:** Reversing, brushless, capacitor run 115 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated, solid gear that is Rockwell hardened
- **Corrosion resistant housing:** Thermally bonded baked powder coating with stainless steel trim
- **ISO mounting configuration**
- **Conduit:** Two 1/2" NPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** Highly visible beacon position indicator for positive indication of valve position, even at a distance
- **Dec clutchable manual override:** Pull up on indicator knob, insert 5/8" wrench onto flats and rotate in the appropriate direction (CCW for open, CW for close). Models with handwheel override do not require a wrench. Simply push down on handwheel until engaged with cam and rotate
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **Enclosure:** Combination Type 4X, 7 & 9 enclosure for use in various environments
- **Corrosion resistant mounting:** Mounting is with PPG or stainless steel bracket, stainless steel coupling, and stainless steel hardware
- **CE compliant motor:** All 115 VAC and 230 VAC motors are CE compliant and stamped as such
- **Extended duty cycles:** Our extended duty cycles are ideal for modulating and high cycling applications
- **Output torque:** Series 92 Electric Actuators have an output torque range from 400 in/lbs to 2000 in/lbs
- **RoHS Compliant**



Options

- Auxiliary (additional) limit switches
- Feedback potentiometer
- Heater and thermostat
- Positioner (Modulating PCB)
- Mechanical brake
- Transmitter
- Cycle length control module (CLC)
- Two-wire control
- Failsafe battery back up (Protek)
- Voltages
- Local Remote Station

See page 177 for more details regarding options.

Engineering Specifications

Size: S92, A92, B92, C92
 Torque: 400-2000 in/lbs
 Voltage: 120 VAC 1Ph 50/60 Hz
 Amp Draw: S92, B92 .5A, A92 .8A, C92 1.0A
 Conduit Entry: Two (2) 1/2" NPT
 Max Ambient Temperature: 150°F
 Switches: Two (2) single pole, double throw (2SPDT) 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds* Approx.
 B92, C92: 32 seconds* Approx

Engineering Data

ENGINEERING DATA															
Model	Torque (in/lbs)	115 Vac		230 Vac		12 Vdc		24 Vdc		12 Vac		24 Vac		Cycle Time per 90 Degrees (seconds)*	Weight (lbs)
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
S92	400	0.5	100%	0.4	100%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	15	15.3
A92	700	0.8	75%	0.6	75%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	15	15.3
B92	1100	0.5	100%	0.4	100%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	32	15.3
C92	2000	1.0	50%	0.6	50%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	32	18.3

Note: Amp rating is considered locked rotor. Duty cycles are for ambient temperature (73°F)

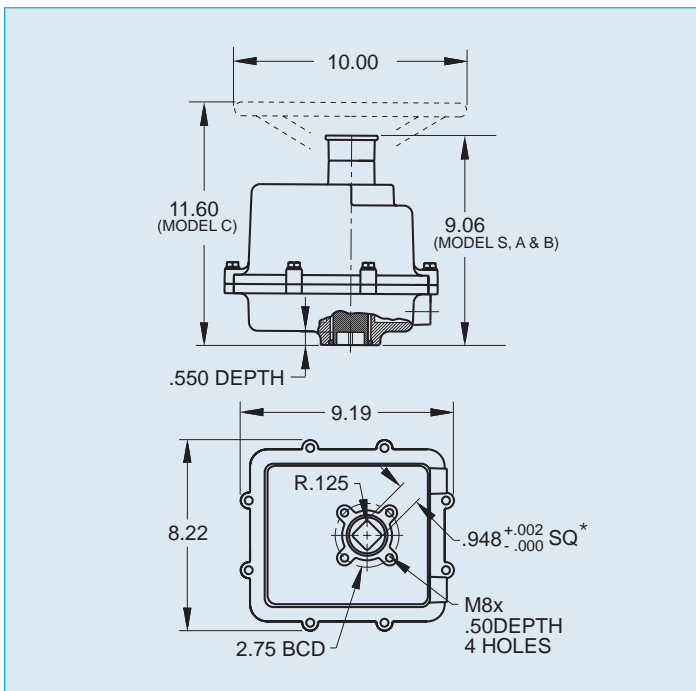
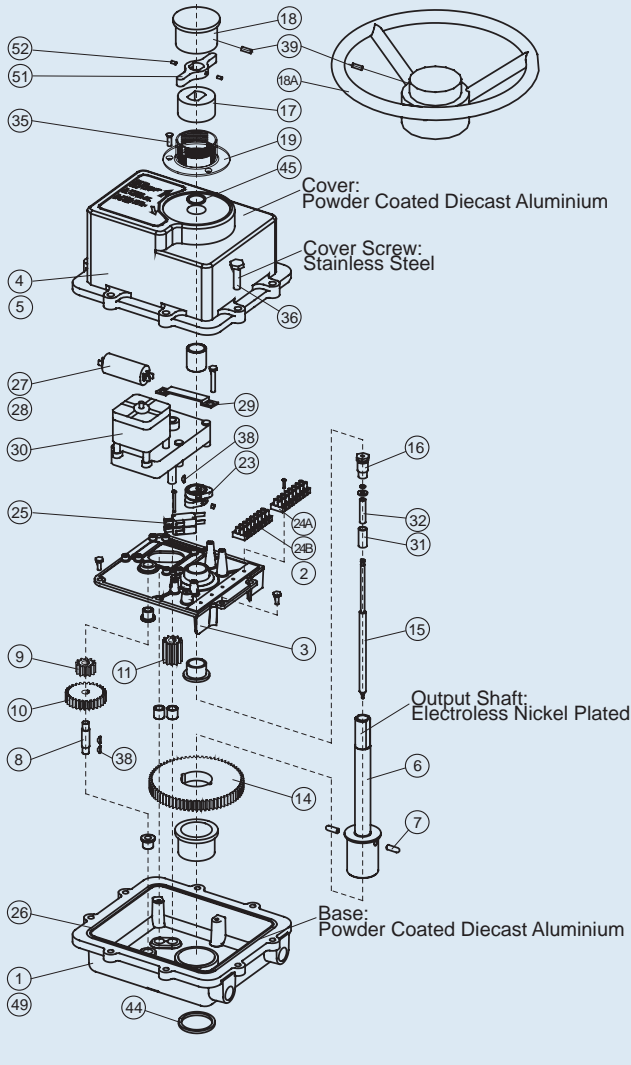
* Cycle times are approximate

Parts List

NO.	Part Number	PCS.				Description
		S92	A92	B92	C92	
1	7401920	1	1	1	1	Base
3	7401060	1	1	1	1	Base Plate
4	7401940	1	1	1	1	Cover
6	7401900	1	1	1	-	Shaft Main
6A	7401905	-	-	-	1	Shaft Main
7	7401360	2	2	2	2	Pin
8	7401280	-	-	1	1	Shaft Stub
9	7402003	-	-	1	1	Spur Gear 1B
10	7402002	-	-	1	1	Spur Gear 1A
11	7401400	1	1	1	1	Gear Pinion
14	7401380	1	1	1	1	Gear Main
15	7401200	1	1	1	-	Shaft Inner
15A	7401210	-	-	-	1	Shaft Inner
16	7401180	1	1	1	1	Shaft Retainer
17	7401300	1	1	1	1	Knob Lower
18	7401320	1	1	1	-	Knob Upper
18A	7401995	-	-	-	1	Handwheel
19	7401260	1	1	1	1	Collar
23	7401480	2	2	2	2	Cam
24A	7401420	1	1	1	1	Terminal Block 1-8
24B	7401425	1	1	1	1	Terminal Block 9-16
25	7401460	2	2	2	2	Switch
26	7401560	1	1	1	1	O-Ring Base/Cover
27	7402948	1	-	1	1	Capacitor 4.2 mFD
27A	7402004	-	1	-	-	Capacitor 6.7 mFD
28	7403008	-	-	-	1	Capacitor 7.6 mFD
29	7401520	1	1	1	1	Capacitor Bracket
30	7401340	1	1	1	1	Motor
31	7401250	1	1	1	1	Shell
32	7401220	1	1	1	-	Spring
32A	7401230	-	-	-	1	Spring
35	7401680	3	3	3	3	Collar Screw
36	7401640	8	8	8	8	Cover Screw
38	7401880	1	1	3	3	Key, Woodruff 3/32
39	7401700	1	1	1	1	Knob Set Screw
44	7401040	1	1	1	1	Seal Base
45	7401140	1	1	1	1	Seal Cover
51	7401485	-	-	-	1	Handwheel Cam
52	8100179	-	-	-	2	Cam Set Screw

Sample Specification

All Series 92 electric actuators shall have a thermally protected, bi-directional (reversing type), capacitor run motor with a permanently lubricated gear train. 115 VAC & 230 VAC motors shall conform to CE and be indicated on motor housing. Actuator shall have solid, heat-treated gearing encompassed in a baked powder coated die cast aluminum housing with stainless steel trim, which meets Type 4X, 7 & 9. Each actuator to have a declutchable manual override, visual position indication, ISO mounting configuration, and be RoHS compliant as manufactured by Asahi/America Inc.



* Changing to .675 ^{+.002}/_{.000} Sq 1st Qtr 2012

Standard Features

- **Motor:** Reversing, brushless, capacitor run 115 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated
- **Corrosion resistant housing:** Zytel FR50 engineered resin with stainless steel trim
- **ISO mounting configuration**
- **Conduit:** Two 1/2" NPT conduit entries to eliminate cross feed between control, feedback, & power signals
- **Position indication:** Highly visible position indicator for positive position of valve, even at a distance
- **Declutchable manual override:** Push down on handle and rotate in the appropriate direction (CCW for open, CW for close)
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **Corrosion resistant mounting:** Mounting is with PPG or stainless steel bracket, stainless steel coupling, and stainless steel hardware
- **CE compliant motor:** All 115 VAC and 230 VAC motors are CE compliant and stamped as such
- **Extended duty cycles:** Our extended duty cycles are ideal for modulating and high cycling applications
- **Output torque:** Series 94 Electric Actuators have an output torque range from 150 in/lbs to 300 in/lbs
- **Enclosure:** Type 4X
- **RoHS compliant**



Options

- Auxiliary (additional) limit switches
- Feedback potentiometer
- Heater and thermostat
- Positioner (Modulating PCB)
- Mechanical brake
- Transmitter
- Cycle length control module (CLC)
- Two-wire control
- Center-off
- Failsafe battery back up (Protek)
- Voltages
- Local Remote Station

See page 177 for more details regarding options.

Engineering Specifications

Size: A94, B94

Torque: 150-300 in/lbs

Voltage: 120 VAC 1Ph 50/60 Hz

Amp Draw: A94 .5A, B94 .8A

Conduit Entry: Two (2) 1/2" NPT

Max Ambient Temperature: 150°F

Switches: Two (2) single pole, double throw (2SPDT) 15 amp rated

Cycle Time per 90°: A94, B94: 5 seconds

Engineering Data

ENGINEERING DATA															
Model	Torque (in/lbs)	115 Vac		230 Vac		12 Vdc		24 Vdc		12 Vac		24 Vac		Cycle Time per 90 Degrees (seconds)*	Weight (lbs)
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
A94	150	0.5	100%	0.4	100%	2.0	75%	4.0	75%	2.0	75%	4.0	75%	5	3.5
B94	300	0.8	75%	0.6	75%	2.0	75%	4.0	75%	2.0	75%	4.0	75%	5	3.5

Note: Amp rating is considered locked rotor. Duty cycles are for ambient temperature (73°F)

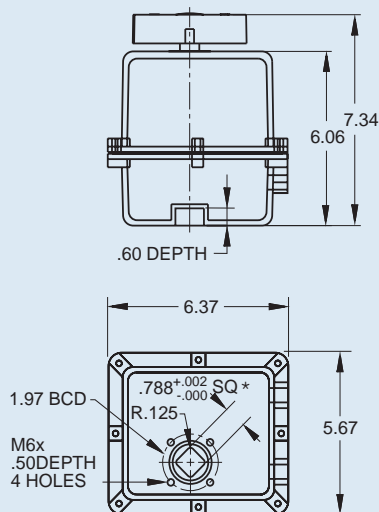
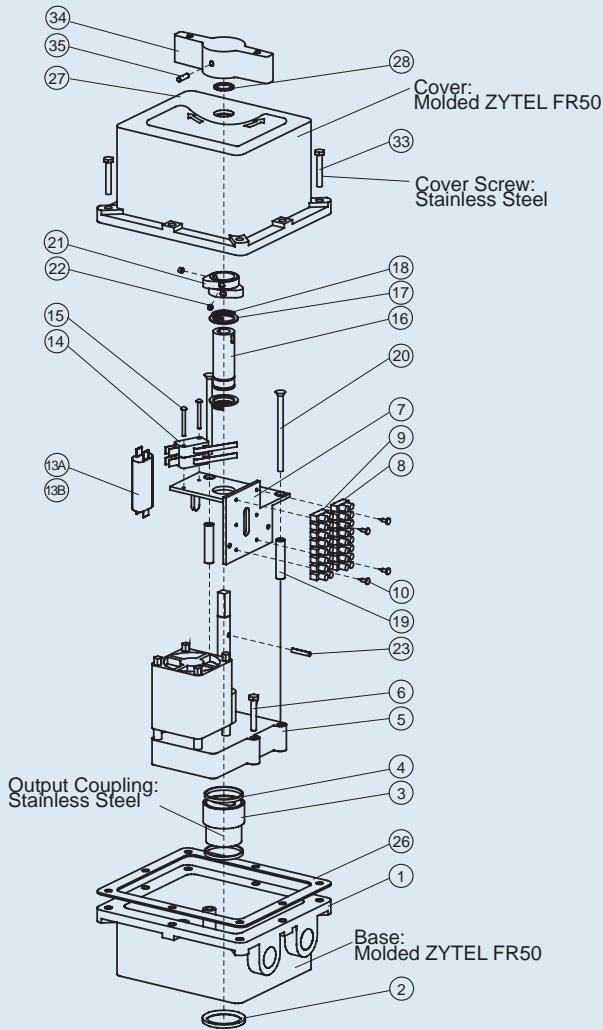
*Cycle times are approximate

Parts List

PARTS LIST			
NO.	Part Number	Quantity	Description
1	7403002	1	Base
2	7403000	1	Base Seal
3	7403017	1	Output Coupling
4	7403005	2	Coupling Gasket
5	7403004	1	Motor
6	7403022	2	Motor Screw
7	7403011	1	Base Plate
8	7401420	1	Terminal Block 1-8
9	7401425	1	Terminal Block 9-16
10	7401600	4	Terminal Block Screw
13A	7401948	1	4.2 mFD Capacitor-A94
13B	7402004	1	6.7 mFD Capacitor-B94
14	7401460	2	Limit Switch
15	7401620	2	Limit Switch Screw
16	7403016	1	Outer Shaft
17	7403006	2	Outer Shaft Gasket
18	7403009	2	Retaining Ring
19	7403018	2	Standoff
20	7403014	2	Base Plate Screw
21	7401480	2	Cam
22	7401740	4	Cam Set Screw
23	7403010	1	Pin
26	7403007	1	Base Gasket
27	7403001	1	Cover
28	7403020	1	Cover Seal
33	7403032	8	Cover Screw
34	7403003	1	Handle
35	7401700	1	Handle Screw

Sample Specification

All Series 94 electric actuators shall have a thermally protected, bi-directional (reversing type), capacitor run motor with a permanently lubricated gear train. 115 VAC & 230 VAC motors shall conform to CE and be indicated on motor housing. Actuator shall have a Zytel FR50 engineered resin housing with stainless steel trim, which meets Type 4X. Each actuator to have a declutchable manual override, visual position indication, ISO mounting configuration, and be RoHS compliant as manufactured by Asahi/America Inc.



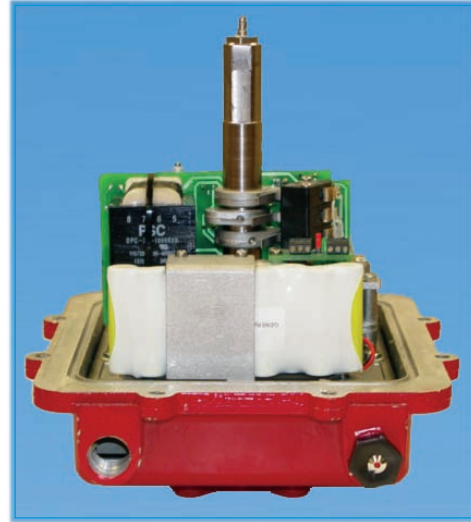
* Changing to .557 ^{+0.002}/_{-.000} Sq 1st Qtr 2012

The Quarter master Protek Failsafe Electric Actuator features a rechargeable battery pack that is capable of 25 cycles under full load conditions, a built-in trickle charger, a low battery indicator, and an auxiliary limit switch that is calibrated with the fail position. The battery pack is installed inside of the actuator housing, so a separate enclosure to house the battery in not required.

When power is received from the primary power source, it is directed to the actuator motor and switches for normal cycling of the actuator. When the primary power source is interrupted, the battery pack is then connected to the motor and switches, and powers the actuator to the failsafe position. In this failsafe position, the auxiliary limit switch is tripped, and can be wired to an alarm. Once the primary power source is restored, the battery pack is disconnected and normal operation resumes.

Standard Features

- Compact design: Rechargeable battery pack is installed inside of actuator housing
- Battery indicator: "Low battery charge" indicator light is installed in one of the conduit entries for visual status of battery charge
- Trickle charger: Standard unit is equipped with built-in, automatic trickle charger to maintain full charge to battery pack
- Battery power: Unit is capable of 25 continuous cycles, under full load, using only battery pack
- Remote-local switch: Located inside of housing facilitates start-up and maintenance
- Fail position: Calibrated for fail open or fail close
- Extended duty cycle: 50% - 75% duty cycle motor
- Gear train: Permanently lubricated, Rockwell hardened solid gearing
- Enclosure: Combination Type 4X, 7, & 9 enclosure for use in various environments
- Corrosion resistant enclosure: Thermally bonded baked powder coating with stainless steel trim
- ISO mounting configuration
- Conduit: 1/2" FNPT conduit entry
- Position indication: Highly visible beacon position indicator for positive position of valve, even at a distance
- Dec clutchable manual override: Pull up on indicator knob, insert 5/8" wrench onto flats and rotate in the appropriate direction (CCW for open/CW for close).



Standard Features (continued)

- Models with handwheel override do not require a wrench. Simply push down on handwheel until engaged with cam and rotate
- Limit switches: Unit is standard with two end of travel limit switches, and one auxiliary limit switch that is calibrated with the fail position
- Corrosion resistant mounting: Mounting is with PPG or stainless steel bracket, stainless steel coupling, and stainless steel fasteners
- Output torque: Series 92 actuators have an output torque range from 400 in/lbs to 2000 in/lbs

Options

- Voltages
- Heater and thermostat
- Additional limit switch
- Feedback potentiometer

Engineering Specifications

Size: S92, A92, B92, C92

Torque: 400 in/lbs - 2000 in/lbs

Voltage: 120 VAC, 1-phase, 50/60Hz

Amp Draw: 0.2A - 4.0A

depending on supply voltage

Conduit Entry: one (1) 1/2" FNPT

Maximum Ambient Temperature: 150 F

Switches: three (3) SPDT, 15 amp rated. two (2) for

end of travel, one (1) auxiliary calibrated with fail position.

Cycle Time per 90 : 15 seconds for S92 & A92 *

32 seconds for B92 & C92 *

Maximum Battery Current Charge: 200mA

(13 Volts)

*Cycle times are approximate

The Quarter master Protek Failsafe Electric Actuator features a rechargeable battery pack that is capable of 25 cycles under full load conditions, a built-in trickle charger; a low battery indicator; and an auxiliary limit switch that is calibrated with the fail position. The battery pack is installed inside of the actuator housing, so a separate enclosure to house the battery in not required.

When power is received from the primary power source, it is directed to the actuator motor and switches for normal cycling of the actuator. When the primary power source is interrupted, the battery pack is then connected to the motor and switches, and powers the actuator to the failsafe position. In this failsafe position, the auxiliary limit switch is tripped, and can be wired to an alarm. Once the primary power source is restored, the battery pack is disconnected and normal operation resumes.

Standard Features

- Compact design: Rechargeable battery pack is installed inside of actuator housing
- Battery indicator: "Low battery charge" indicator light is installed in one of the conduit entries for visual status of battery charge
- Trickle charger: Standard unit is equipped with built-in, automatic trickle charger to maintain full charge to battery pack
- Battery power: Unit is capable of 25 continuous cycles, under full load, using only battery pack
- Remote-local switch: Located inside of housing facilitates start-up and maintenance
- Fail position: Calibrated for fail open or fail close
- Extended duty cycle: 75% duty cycle motor
Gear train: Permanently lubricated
- Enclosure: Type 4X
- Corrosion resistant enclosure: Zytel FR50 engineered resin with SS trim
- ISO mounting configuration
- Conduit: 1/2" FNPT conduit entry
- Position indication: Highly visible position indicator for positive position of valve, even at a distance
- Dec clutchable manual override: Push down on handle and rotate in appropriate direction



Standard Features (continued)

- Limit switches: Unit is standard with two end of travel limit switches, and one auxiliary limit switch that is calibrated with the fail position
- Corrosion resistant mounting: Mounting is with PPG bracket, stainless steel coupling, and stainless steel fasteners

Output torque: Series 94 actuators have an output torque range from 150 in/lbs to 300 in/lbs

Options

- Voltages
- Heater and thermostat
- Additional limit switch
- Feedback potentiometer

Engineering Specifications

Size: A94, B94

Torque: 150 in/lbs - 300 in/lbs

Voltage: 120 VAC, 1-phase, 50/60Hz

Amp Draw: 0.2A - 4.0A

depending on supply voltage

Conduit Entry: one (1) 1/2" FNPT

Maximum Ambient Temperature: 150 F

Switches: three (3) SPDT, 15 amp rated. two (2) for end of travel, one (1) auxiliary calibrated with fail position.

Cycle Time per 90 : 5 seconds.

Maximum Battery Current Charge: 200mA

[13 Volts]

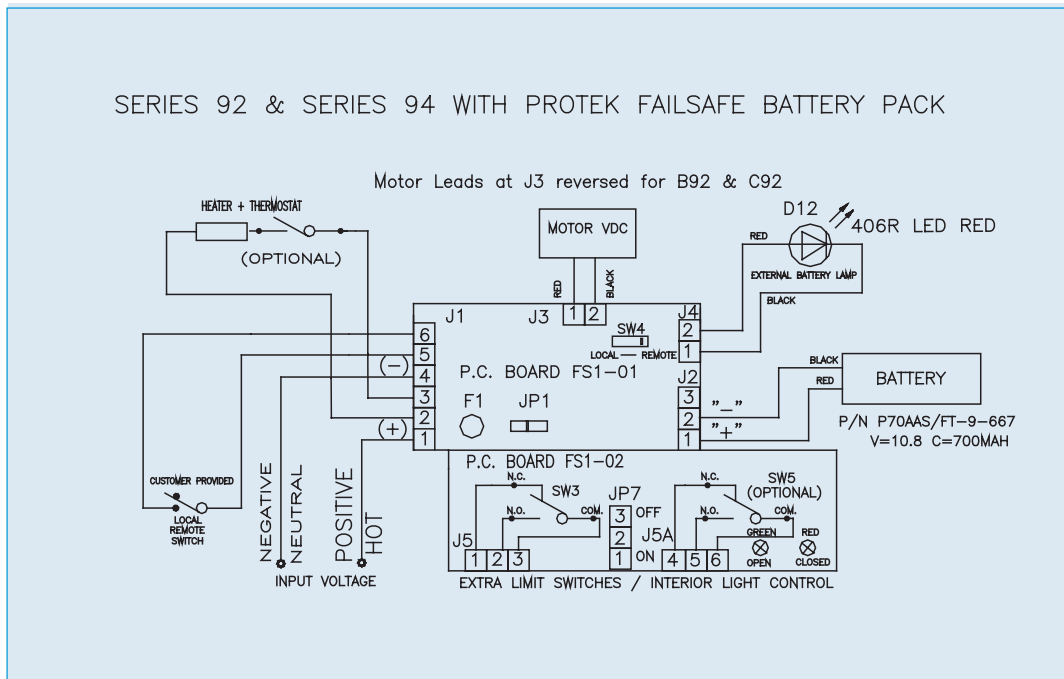
*Cycle times are approximate

Protek Battery Pack

Cycle Time and Wiring Diagram

Size	115 VAC		230 VAC		24 VAC		24 VDC		Cycle Time* 90 (SEC)
	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	
A94	0.4	75%	0.2	75%	4.0	75%	3.3	75%	5
B94	0.4	75%	0.2	75%	4.0	75%	3.3	75%	5
S92	0.4	75%	0.2	75%	4.0	75%	3.3	75%	15
A92	0.4	75%	0.2	75%	4.0	75%	3.3	75%	15
B92	0.4	75%	0.2	75%	4.0	75%	3.3	75%	32
C92	0.4	50%	0.2	50%	4.0	50%	3.3	50%	32

*Cycle times are approximate



Failsafe electric actuators can be wired for operation in one of two ways.

1. Actuated valve in one position indefinitely, and fails to a predetermined position upon loss of power:

With jumper installed in Terminal #'s 5 & 6 (J1), provide constant power to Terminal #'s 1 & 4 (J1). This will hold the actuator in the open position as long as power is present. When the power is interrupted, the battery pack will close the actuator.

NOTE: This wiring configuration is ONLY for a valve that is not cycled.

2. Actuated valve cycles from open to close via supply power, and fails to a predetermined position upon loss of power:

With jumper removed from Terminal #'s 5 & 6 (J1), and a customer provided dry contact switch installed, provide constant power to Terminal #'s 1 & 4 (J1). When the dry contact switch is made, the valve will open. When the dry contact switch is not made, the valve will close. This task is completed via the supply power and does not affect the battery pack. When the supply power is interrupted, the valve will travel via battery pack power to a predetermined position

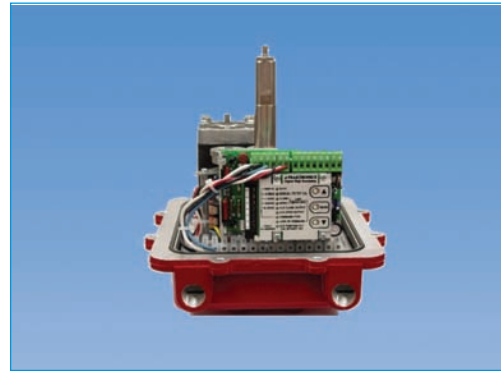
The DHC-100 positioner is a high performance, high resolution digital positioner. A simple three button control is used to configure ALL parameters that the unit needs for a variety of applications, and eliminates the need for special meters and/or tools for calibration. As long as there is supply power, the unit can easily be field calibrated. This positioner can be calibrated for various command types (such as 4-20mA, 1-5vdc, 0-5vdc, 0-10vdc, or digital) and also the default operation upon loss of command (such as fail open, fail close, or fail as is). The optional transmitter/auxiliary limit switch module is installed into the positioner card via plug and socket. This allows a user defined feedback signal of current or voltage, and provides 3-SPST relay contacts for open position, closed position and a fault condition.

Series 92 Standard Features

- Reversing, brushless capacitor run motor (115 VAC & 230 VAC)
- All 115 VAC and 230 VAC motors are CE Compliant, and bear the CE mark
- Integral thermal overload protection for motor windings with automatic reset (115 VAC & 230 VAC)
- 50% - 100% duty cycle motor
- Permanently lubricated, Rockwell hardened solid alloy steel gearing
- Combination Type 4X, 7, & 9 enclosure for use in various environments
- Corrosion Resistant thermally bonded baked powder coating with stainless steel trim
- ISO mounting configuration
- Two (2) 1/2" FNPT conduit entry to eliminate cross feed between control, feedback, and power signals
- Highly visible beacon position indicator for positive position of valve, even at a distance
- Declutchable manual override: Pull up on indicator knob, insert 5/8" wrench onto flats and rotate in the appropriate direction (CCW for open/CW for close). Models with handwheel override do not require a wrench. Simply push down on handwheel until engaged with cam and rotate
- Output torque: Series 92 actuators have an output torque range from 400 in/lbs to 2000 in/lbs

Positioner Standard Features

- High resolution
- Simple Pushbutton calibration
- Calibrated as standard or reverse acting
- Multi-meter not required for potentiometer calibration
- Control signal not required for calibration
- Options install into positioner via plug and socket
- Selectable fail position for loss of input signal; fail open, fail close, or fail as is



Positioner Standard Features (cont.'d)

- Selectable input signal; 4-20mA, 1-5vdc, 0-5 VDC, 0-10 VDC, or digital
- Loss of command & feedback potentiometer fault detection
- Motor stall detection will sense when the motor has reached a stall condition & remove power from the motor

Actuator/Positioner Options

- Voltages: 230 VAC, and low AC or DC
- Heater and thermostat
- Mechanical Brake
- 4-20mA output transmitter with 3-SPST Relay Contacts

Series 92 Engineering Specifications

Size: S92, A92, B92, C92

Torque: 400 in/lbs - 2000 in/lbs

Voltage: 120vac, 1-phase, 50/60Hz

Amp Draw: S92 = 0.5A

A92 = 0.8A

B92 = 0.5A

C92 = 1.0A

Duty Cycle: S92 = 100%

A92 = 75%

B92 = 100%

C92 = 50%

Conduit Entry: two (2) 1/2" FNPT

Maximum Ambient Temperature: 150 F

Switches: two (2) single pole, double throw (2SPDT), 15 amp rated

Cycle Time per 90 : 15 seconds for S92 & A92*,
32 seconds for B92 & C92*

*Cycle times are approximate

The DHC-100 positioner is a high performance, high resolution digital positioner. A simple three button control is used to configure ALL parameters that the unit needs for a variety of applications, and eliminates the need for special meters and/or tools for calibration. As long as there is supply power, the unit can easily be field calibrated. This positioner can be calibrated for various command types (such as 4-20mA, 1-5 VDC, 0-5 VDC, 0-10 VDC, or digital) and also the default operation upon loss of command (such as fail open, fail close, or fail as is). The optional transmitter/auxiliary limit switch module is installed into the positioner card via plug and socket. This allows a user defined feedback signal of current or voltage, and provides 3-SPST relay contacts for open position, closed position and a fault condition.

Series 94 Standard Features

- Reversing, brushless capacitor run motor (115 VAC & 230 VAC)
- All 115 VAC and 230 VAC motors are CE Compliant, and bear the CE mark
- Integral thermal overload protection for motor windings with automatic reset (115 VAC & 230 VAC)
- 75% - 100% duty cycle motor
- Permanently lubricated gearing
- Type 4X enclosure
- ZYTEL FR50 Engineered resin enclosure
- ISO mounting configuration
- Two (2) 1/2" FNPT conduit entry to eliminate cross feed between control, feedback, and power signals
- Highly visible position indicator for positive position of valve, even at a distance
- Declutchable manual override: Push down on handle and rotate
- Output torque: Series 94 actuators have an output torque range from 150 in/lbs to 300 in/lbs

Positioner Standard Features

- High resolution
- Simple Pushbutton calibration
- Calibrated as standard or reverse acting
- Multi-meter not required for potentiometer calibration
- Control signal not required for calibration
- Options install into positioner via plug and socket
- Selectable fail position for loss of input signal; fail open, fail close, or fail as is
- Selectable input signal; 4-20mA, 1-5 VDC, 0-5 VDC, 0-10 VDC, or digital
- Loss of command and feedback potentiometer fault detection
- Motor stall detection will sense when the motor has reached a stall condition and remove power from the motor



Actuator/Positioner Options

- Voltages: 230 VAC, and low AC or DC
- Heater and thermostat
- Mechanical Brake
- 4-20 mA Output transmitter with 3-SPST Relay Contacts

Series 94 Engineering Specifications

Size: A94, B94

Torque: 150 in/lbs - 300 in/lbs

Voltage: 120 VAC, 1-phase, 50/60Hz

Amp Draw: A94 = 0.5A

B94 = 0.8A

Duty Cycle: A94 = 100%

B94 = 75%

Conduit Entry: two (2) 1/2" FNPT

Maximum Ambient Temperature: 150 F

Switches: two (2) single pole, double throw (2SPDT), 15 amp rated

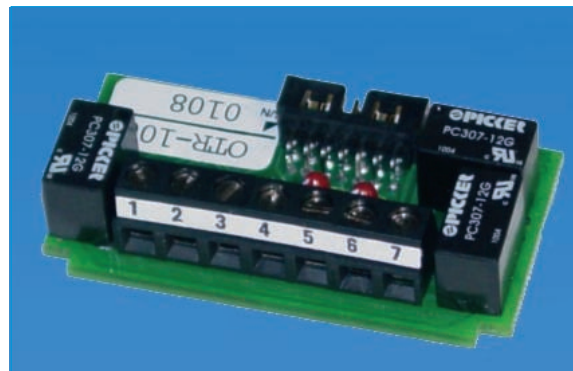
Cycle Time per 90 : A94, B94 5 seconds*

*Cycle times are approximate

The transmitter/relay module has been specifically designed for use with the DHC-100 Positioner via plug and socket installation, and is supplied with its own terminal strip. This module provides a selectable output signal of 0-20mA as a current output signal, or 0-10 VDC as a voltage output signal. It also provides 3-SPST relay contact outputs that are typically used as end of travel limit switches (open and closed), and a fault indicator (loss of power, etc.). These contacts are rated for 1A @ 24vdc / 0.5A @ 125 VAC.

Transmitter/Relay Standard Features

- Transmitter/Relay plugs directly into DHC-100 positioner card
- Its own terminal strip
- Selectable current (0-20mA), or voltage (0-10 VDC) output signal
- 3-SPST independently configurable relay contacts
- Simple calibration via DHC-100 pushbuttons
- Control signal not required for calibration



Positioner

POWER REQUIREMENTS

DHC-100: 117 VAC 10%, 50/60 Hz
 12 VA typical (not including output load)
 Fuse Type: 5A TR5 Slo-Blo (replaceable)

COMMAND SIGNAL INPUT

Input Impedance
 20K ohms (1-5 VDC, 0-5 VDC, 0-10 VDC Input)
 251 ohms 1% (4-20 mA Input)
 Loss of Command threshold
 < 0.75V or > 5.5V (1-5 VDC input)
 < 3mA or > 22mA (4-20mA input)

FEEDBACK SIGNAL INPUT

Input Voltage: 0 to 2.5 VDC
 External Feedback Potentiometer: 1K ohm

POWER SUPPLY OUTPUTS

+15V OUT (J2-8): 125mA maximum (not including option module)
 +5V OUT (J2-7): 5mA maximum
NOTE: Do not connect these outputs to other power supplies.

AC MOTOR OUTPUTS

Off-state Leakage Current: <15mA
 Maximum Load Current @ 150C: 5A

ENVIRONMENTAL

Operating Temperature Range: 32 F to 150F
 Storage Temperature Range: -40 F to 185 F
 Relative Humidity Range: 0 to 90 %(noncondensing)

Specifications

Transmitter/Relay

CURRENT OUTPUT

0 to 20mA @ 8 VDC or 400 \circ maximum
 Resolution: 0.0031mA

VOLTAGE OUTPUT

0-10vdc @ 10mA maximum
 Resolution: 0.0016 VDC

RELAY OUTPUTS

Switch Contact Type: SPST
 Contact Rating (non-inductive):
 1A @ 24 VDC / 0.5A @ 125 VAC

ENVIRONMENTAL

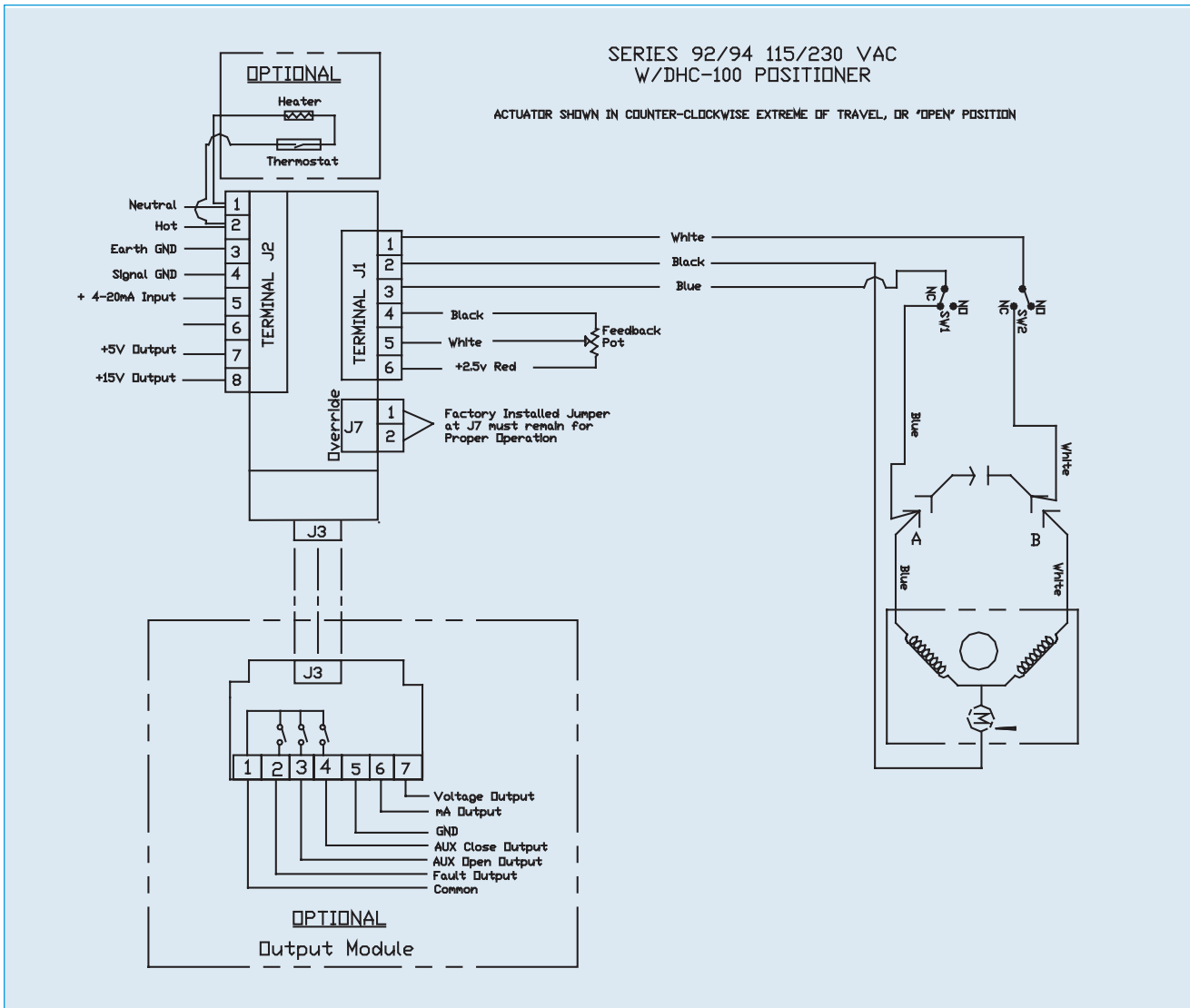
Operating Temperature Range: 32 F to 150 F
 Storage Temperature Range: -40 F to 185 F
 Relative Humidity Range: 0 to 90 %(noncondensing)

Peaktronics Positioner

Specifications

Size	115 VAC		230 VAC		24 VAC		24 VDC		Cycle Time* 90 (SEC)
	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	
A94	0.5	100%	0.4	100%	4.0	75%	4.0	75%	5
B94	0.8	75%	0.6	75%	4.0	75%	4.0	75%	5
S92	0.5	100%	0.4	100%	3.0	75%	4.0	75%	15
A92	0.8	75%	0.6	75%	3.0	75%	4.0	75%	15
B92	0.5	100%	0.4	100%	3.0	75%	4.0 <td 75%	32	
C92	1.0	50%	0.6	50%	3.0	75%	4.0	75%	32

*Cycle times are approximate



The ModBus option module has been specifically designed for use with the DHC-100 Positioner via plug and socket installation. This module provides an isolated RS-485 bus connection using the ModBus protocol. The on-board screw terminal strip provides easy connection to the bus (Terminals A, B, & Common). With an input impedance of 96K ohms, up to 256 units can be connected on the bus. On-board dip switches allow configuring the module for various bus settings: mode, baud rate, parity, node address, and line terminating resistor.

Standard Features

- ModBus option module plugs directly into DHC-100 positioner card
- Selectable RTU or ASCII mode
- Selectable Even Parity or No Parity
- Selectable Baud Rate: 9600, 19.2K, 57.6K, 115.2K
- Node Address Setting: 0 - 255
- Selectable Line Terminating Resistor

Specification

BUS CONNECTION

Type: ANSI TIA/EIA RS-485 (electrically isolated up to 1500 Vrms)

Protocol:

ModBus (selectable RTU or ASCII mode)

Logic "1": +V_{BA}

Logic "0": -V_{BA}

Selectable Address: 0 - 255 (1 to 247 usable)

Selectable Line Terminating Resistor (R_{BA}): 150 ohm

Line Polarization: not required

CABLE CHARACTERISTIC IMPEDANCE

A value of 100 ohms or greater may be preferred, especially for 19.2K and higher baud rates

TRANSMITTER OUTPUT

Differential Output Voltage (V_{BA}):

5V max @ no load

1.5V min @ 54 ohm load

Output Short Circuit Current:

A to B: 95mA typical

A or B to COM: 113mA typical

TRANSMITTER INPUT

Input Impedance (R_{BA}): 96K ohms min (1/8 node)

Input Logic Threshold Voltage (V_{BA}): 30mV min, 200 mV max

Input Hysteresis: 20mV typical

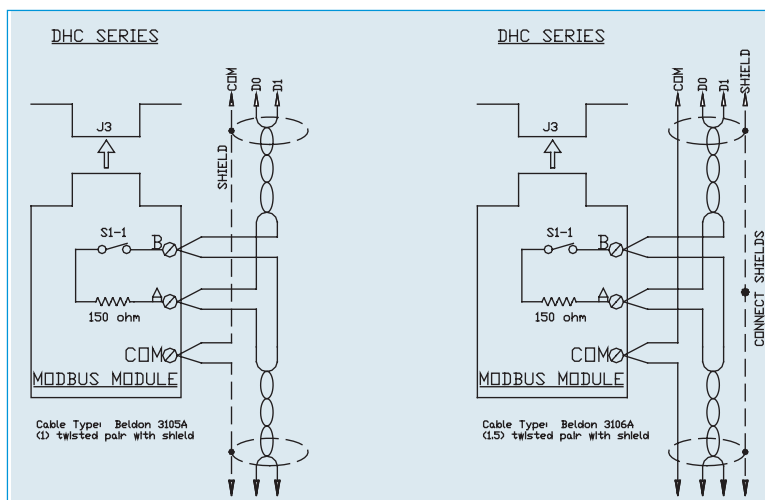
ENVIRONMENTAL

Operating Temperature Range: 0 C to 60 C

Storage Temperature Range: -40 C to 85 C

Relative Humidity Range: 0 to 90% (noncondensing)

Wiring Diagram



Series 10 Electric Actuator



Standard Features

- **Motor:** Reversing, squirrel cage induction motor; 120 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated
- **Conduit:** Two 3/4" FNPT conduit entries to eliminate cross feed between control and power signals
- **Declutchable manual override:** Lockable declutching lever with handwheel
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **Auxiliary (Additional) limit switches:** Each electric actuator is provided as a standard with 2-SPDT auxiliary limit switches
- **Torque Switches:** 2-SPDT Torque switches
- **Mechanical Stops:** Two +/- 10% mechanical travel stops
- **Enclosure:** Type 4X & 6
- **AWWA C542:** Conforms to AWWA C542
- **Self-Locking:** Self-locking worm gear design eliminates the need for a mechanical brake
- **Space Heater:** A space heater is provided as standard equipment
- **Output torque:** Series 10 Electric Actuators have an output torque range from 1320 in/lbs to 10,440 in/lbs
- **Corrosion resistant mounting:** Mounting is with stainless steel bracket, stainless steel coupling, and stainless steel hardware

Specifications

Torque: 1320-10,440 in/lbs
Voltage: 120 VAC 1Ph 50/60 Hz
Amp Draw: 1.65 - 4.10
Conduit Entry: Two (2) 3/4" FNPT
Max Ambient Temperature: 150° F
Limit Switches: Four (4) single pole, double throw (4-SPDT) 10 amp rated
Torque Switches: Two (2) single pole, double throw (4-SPDT) 10 Amp rated
Cycle Time per 90°: 21 - 31 seconds

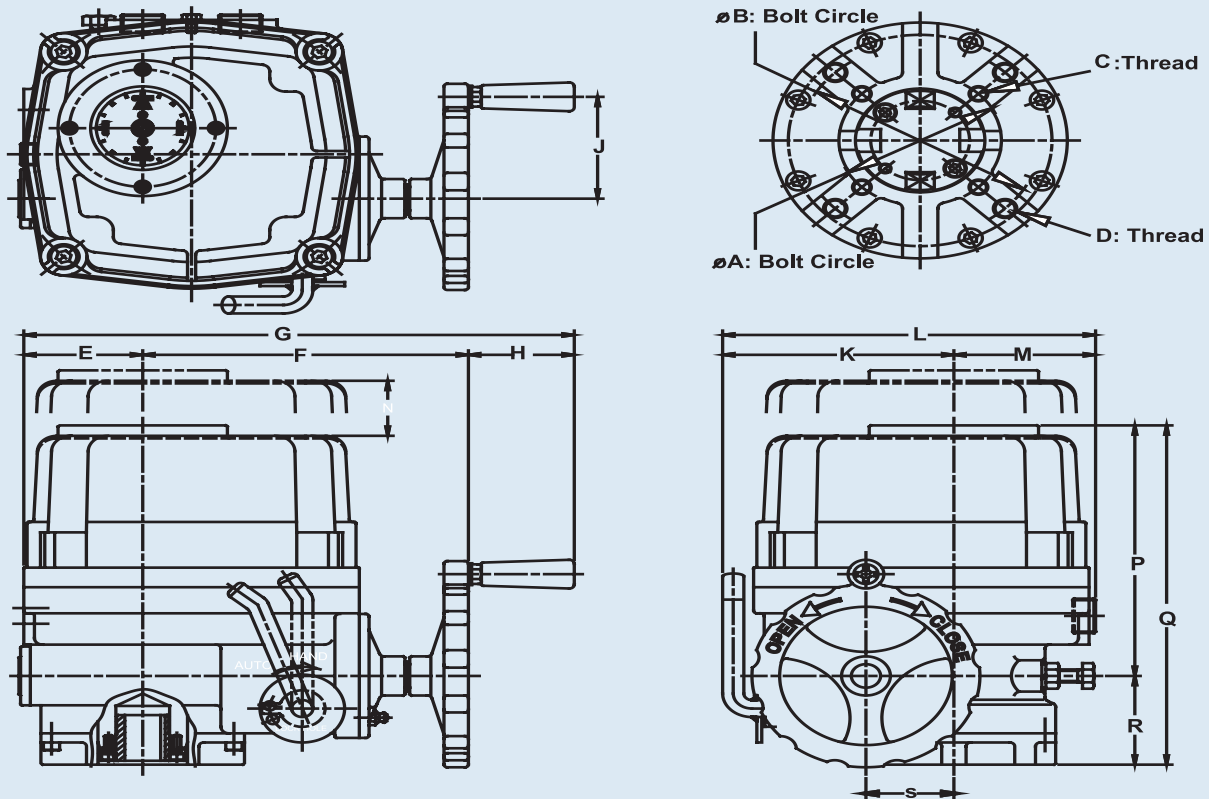
Sample Specifications

All Series 10 electric actuators shall have a thermally protected, bi-directional (reversing type), squirrel cage induction motor with a permanently lubricated gear train. Actuator shall have self-locking worm gearing encompassed in a die-cast aluminum housing anodized inside and outside, with an external polyester powder coat finish, conforming to Type 4X & 6. Each actuator shall have a lockable manual override, visual position indication, two (2) auxiliary limit switches, two (2) torque switches and a space heater as supplied by Asahi/America.

Options

- Positioner
- Transmitter
- Two-wire control
- Voltages: 230/1, 380/3, 460/3, 24VDC
- NEMA 7 Enclosure
- ATEX Enclosure
- Local Remote Station

Series 10 Electric Actuator



Dimensions

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
10-15	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	13.31	2.56	3.07	5.59	9.02	3.43	6.30	7.56	10.24	2.68	2.13
10-20	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	13.31	2.56	3.07	5.59	9.02	3.43	6.30	7.56	10.24	2.68	2.13
10-30	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	7.87	14.46	2.56	3.07	6.30	10.20	3.90	7.09	8.70	11.42	2.72	2.56
10-50	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.70	14.49	2.56	3.07	6.30	10.20	3.90	7.09	8.70	11.42	2.72	2.56
10-60	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.70	14.49	2.56	3.07	6.30	10.20	3.90	7.09	8.70	11.42	2.72	2.56
10-80	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	16.14	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.40	2.91	3.07
10-120	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	16.14	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.40	2.91	3.07

Engineering Data

Model	Torque (in/lbs.)	120/1 VAC		230/1 VAC		380/3 VAC		460/3 VAC		24 VDC		Cycle time per 90 degrees (Seconds)*	Weight
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
10-15	1320	1.65	70	0.88	70	0.31	70	0.30	70	2.20	70	21	37
10-20	1740	1.67	70	0.89	70	0.31	70	0.30	70	2.50	70	21	37
10-30	2580	1.85	70	0.92	70	0.35	70	0.34	70	2.90	70	26	49
10-50	4320	3.60	70	1.55	70	0.59	70	0.58	70	N/A	N/A	26	51
10-60	5220	3.65	70	1.60	70	0.60	70	0.59	70	N/A	N/A	26	51
10-80	6960	4.10	70	2.15	70	0.85	70	0.79	70	N/A	N/A	31	64
10-120	10440	4.20	70	2.35	70	0.87	70	0.81	70	N/A	N/A	31	64

*Cycle times are approximate



Series 87 Electric Actuator

Standard Features

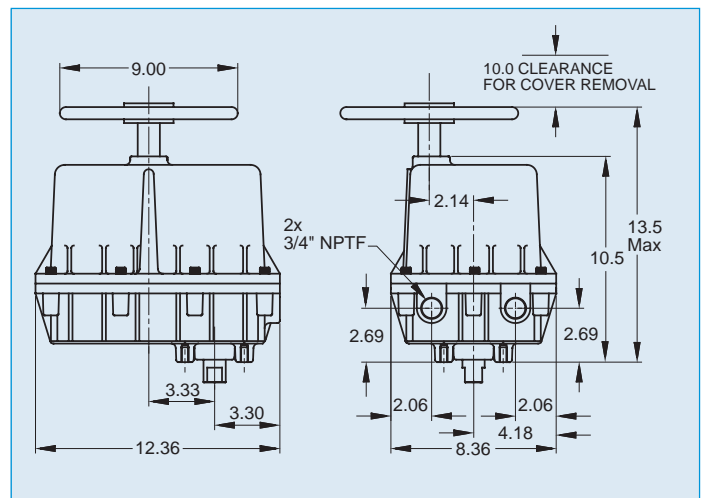
- **Motor:** Reversing, brushless, capacitor run 115 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated
- **Conduit:** Two 3/4" FNPT conduit entries to eliminate cross feed between control and power signals
- **Manual override:** Push down on handwheel until engaged with cam and rotate
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **Auxiliary (Additional) limit switches:** Each electric actuator is provided as a standard with 2-SPDT auxiliary limit switches
- **Enclosure:** Type 4X
- **Mechanical Brake:** Each electric actuator is provided as a standard with a mechanical brake
- **Corrosion resistant mounting:** Mounting is with stainless steel bracket, stainless steel coupling, and stainless steel hardware
- **Output torque:** Series 87 Electric Actuators have an output torque range from 5000 in/lbs to 10,000 in/lbs
- **PTC Space Heater:** A PTC (Positive Temperature Coefficient) space heater is provided as standard equipment

Options

- Two-wire control
- Center-off
- Voltages
- Local Remote Station

Specifications

Size: E87,F87
Torque: 5000-10,000 in/lbs
Voltage: 120 VAC 1 Ph 50/60Hz
AMP Draw: E87 1,7 F87 2.2
Conduit Entry: Two (2) 3/4" FNPT
Max Ambient Temp: 150° F
Switches: Four (4) single pole, double throw (4-SPDT) 15 amp rated
Cycle Time per 90°: E87, F87 30 seconds



Sample Specification

All Series 87 electric actuators shall have a thermally protected, bi-directional (reversing type), capacitor run motor with a permanently lubricated gear train. Actuator shall have planetary gearing encompassed in an die-cast aluminum housing with stainless steel trim, conforming to Type 4X. Each actuator shall have a manual override, visual position indication, two (2) auxiliary limit switches, a PTC heater and a mechanical brake as supplied by Asahi/America.

Engineering Data

ENGINEERING DATA							Weight (lbs)
Model	115 Vac			230 Vac		Cycle Time per 90 Degrees (seconds)	
	Torque (in/lbs)	Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
E87	5,000	1.7	50%	1.0	50%	30	34
F87	10,000	2.2	50%	1.2	50%	30	34



FS24WJ

Electric Spring Return Actuator Standard Features

- Motor: Reversing, brushless, capacitor run 115 VAC 50/60 Hz, single phase
- Overload protection: Integral thermal overload protection for motor windings with automatic
- Gear train: Permanently lubricated
- Conduit: 3/4" FNPT conduit entry
- Enclosure: Type 4X
- Mechanical Brake: Each electric actuator is provided as a standard with a mechanical brake
- Output torque: FS24 electric actuators have an output torque of 300 in/lbs
- PTC Space Heater: A PTC (Positive Temperature Coefficient) space heater is provided as standard equipment
- Springs constructed of oil tempered spring steel with Xylan coating

Options

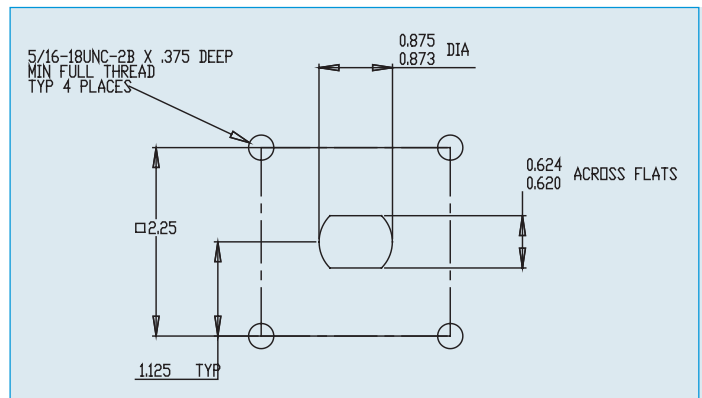
- Feedback potentiometer
- Additional (Auxiliary) limit switches
- Type 7 enclosure
- Local Remote Station

Engineering Data

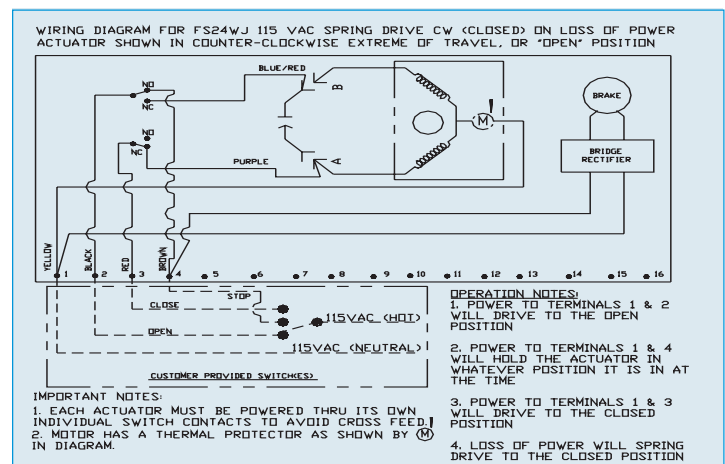
ENGINEERING DATA					
Model	Torque (in/lbs)	AMP Draw	Duty Cycle	Cycle Time per 90 degrees of travel (seconds)	Weight (lbs)
FS24	300	1.05	25%	10 Electrical/ 2 springs	23

Specifications

Size: FS24
Torque: 300 in/lbs
Voltage: 115 VAC 1 Ph 50/60Hz
AMP Draw: 1.05
Conduit Entry: 3.4" FNPT
Max Ambient Temp: 150° F
Switches: Two (2) single pole, double throw (2-SPDT) 15 amp rated
Cycle Time per 90°: 10 sec. electrically driven
 2 sec. sprng driven



Sample Specification



Local Remote Stations



PK-100

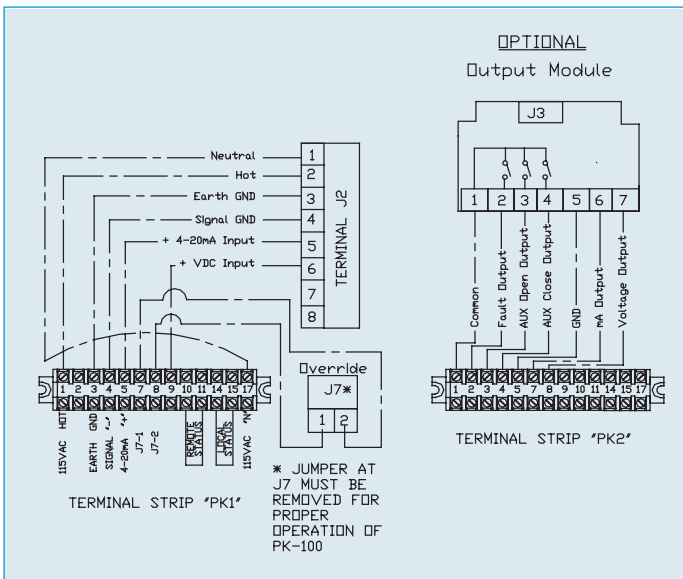
PK-100 is to be used in conjunction with Series 92 or 94, ac powered and DHC-Series positioner card

Standard Features

- Type 4X Enclosure Constructed of Fiberglass Polyester
- Stainless Steel Trim
- Captive Cover Gasket
- Captive Cover Screws
- Two (2) Position Selector Switch (open and close)
- Two (2) Position Selector Switch (local/remote)
- 40°F - 266°F Temperature Range

Options

- Type 7 Enclosure
- 316 Stainless Steel Enclosure
- Contact Factory for Specific Applications



Note:
1. Local Remote Station is not close coupled to actuator.
Field wiring of local remote station to actuator is to be performed by others.



LL-200

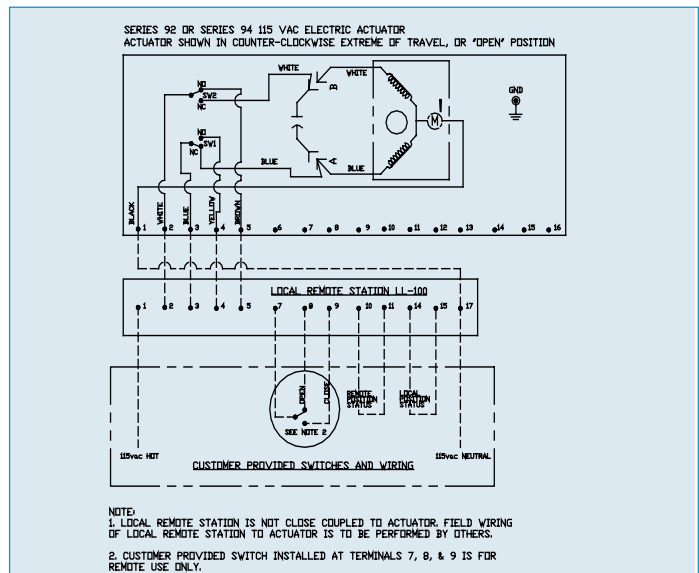
LL-200 is to be used in conjunction with Series 92 or 94, ac powered and On/Off actuator

Standard Features

- Visual Light Indication
- Type 4X Enclosure Constructed of Fiberglass Polyester
- Stainless Steel Trim
- Captive Cover Gasket
- Captive Cover Screws
- Two (2) Position Selector Switch (open and close)
- Three (3) Position Selector Switch (hand, off, auto)
- 40°F - 266°F Temperature Range
- Can be used with any Electric Actuator (must specify before placing order)

Options

- Type 7 Enclosure
- 316 Stainless Steel Enclosure
- Contact Factory for Specific Applications



Note:
1. Local Remote Station is not close coupled to actuator; field wiring of local remote station to actuator is to be performed by others.
2. Customer provided switch installed at Terminals 7, 8, & 9 is for remote use only.

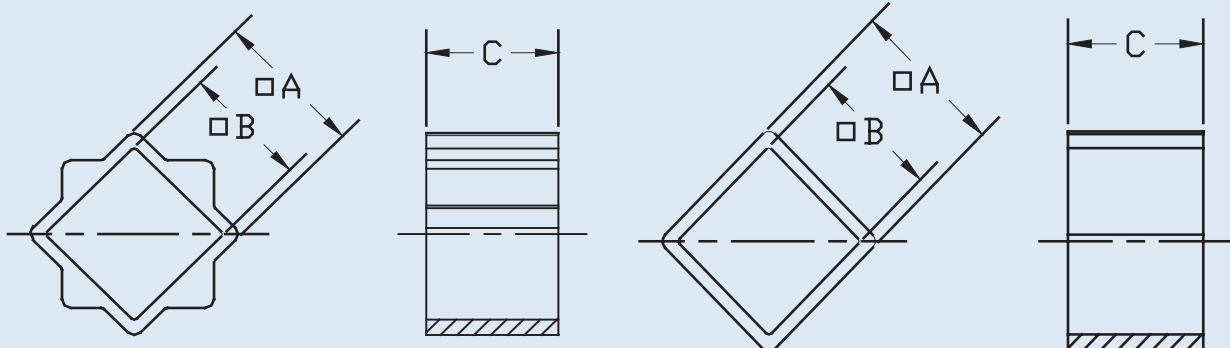
Driver Inserts for Series 79 Actuators

Driver Inserts for all PAG (Engineered Resin) & smaller 316 Stainless Steel Series 79 Pneumatic Actuators

Model	Part Number	A	B	C	D
AP79P	PCA11/09SQ	.433	.354	.393	Square
	PSA12/09.12ST	.551	.354	.492	Star
	PSA14/011.12ST	.551	.433	.492	Star
BP79P BS79P	CP0-09ST	.787	.354	.591	Star
	CP0-11ST	.787	.433	.591	Star
	CPO-14ST	.787	.551	.591	Star
CP79P CS79P	CPI-09ST	.945	.354	.591	Star
	CPI-11ST	.945	.433	.591	Star
	CPI-14ST	.945	.551	.591	Star
	CPI-17ST	.945	.669	.591	Star
	CPI-19ST	.945	.748	.591	Star
DP79P DS79P	CP2-11ST	.945	.433	.591	Star
	CP2-14ST	.945	.551	.591	Star
	CP2-17ST	.945	.669	.591	Star
	CP2-19ST	.945	.748	.591	Star

Driver Inserts for all PA (Aluminum) & larger 316 Stainless Steel Series 79 Pneumatic Actuators

Model	Part Number	A	B	C	D
A79PA B79PA	PSA14/09ST	.551	.354	.630	Star
	PSA14/11ST	.551	.433	.630	Star
B579PA C79PA C579PA D79PA	PSA17-11ST	.669	.433	.748	Star
	PSA17-14ST	.669	.551	.748	Star
D579PA E79PA ES79P	CP27-11SQ	1.063	.433	1.142	Square
	CP27-14SQ	1.063	.551	1.142	Square
	CP27-17SQ	1.063	.669	1.142	Square
	CP27-19SQ	1.063	.748	1.142	Square
F79P G79P	CP27-22SQ	1.063	.866	1.142	Square
	CP4-17SQ	1.417	.669	.748	Square
	CP4-19SQ	1.417	.748	.748	Square
	CP4-22SQ	1.417	.866	.748	Square
M79P	CP4-27SQ	1.417	1.063	.748	Square
	CP46-27SQ	1.811	1.063	1.900	Square



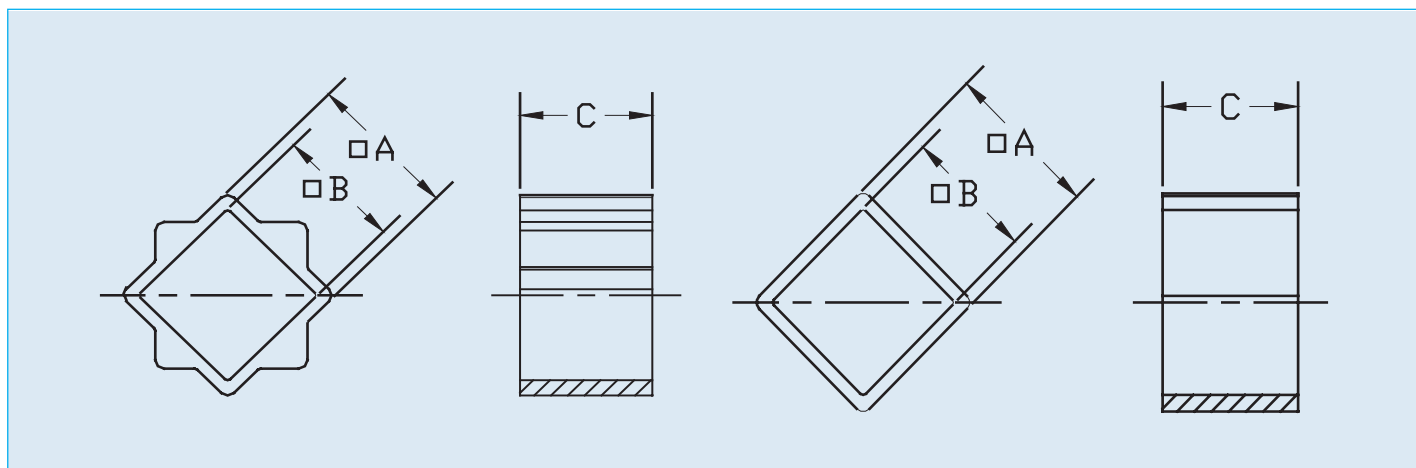
Drive Inserts for Electric Actuators

Driver Inserts for Series 92 Electric Actuators

Model	Part Number	A	B	C	D
S92 A92 B92 C92	CPI-09SQ	.945	.354	.591	Square
	CPI-11SQ	.945	.433	.591	Square
	CPI-14SQ	.945	.551	.591	Square
	CPI-17SQ	.945	.669	.591	Square
	CPI-19SQ	.945	.748	.591	Square

Driver Inserts for Series 94 Electric Actuators

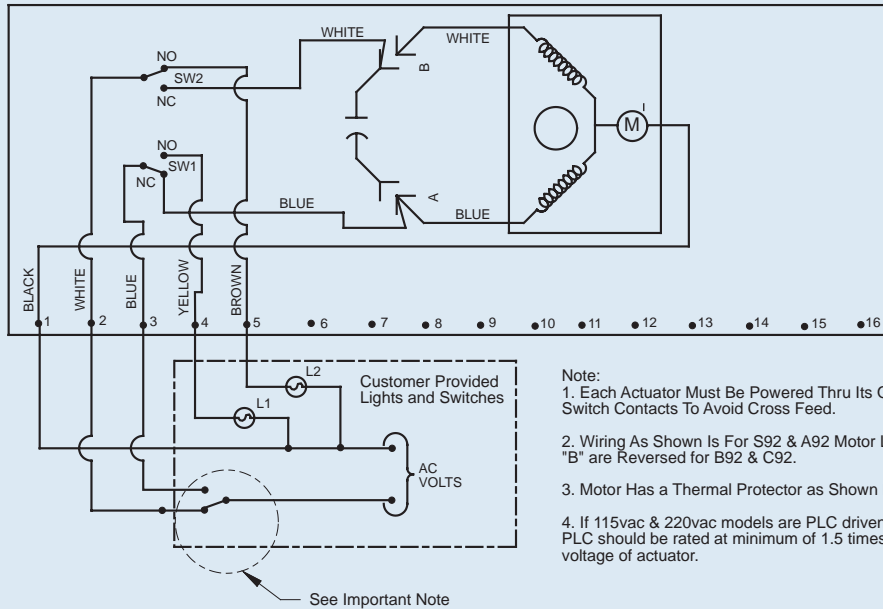
Model	Part Number	A	B	C	D
A94 B94	CP0-09SQ	.945	.354	.551	Square
	CP0-11SQ	.945	.433	.551	Square
	CP0-14SQ	.945	.551	.551	Square



Series 92 & 94 Wiring Schematics

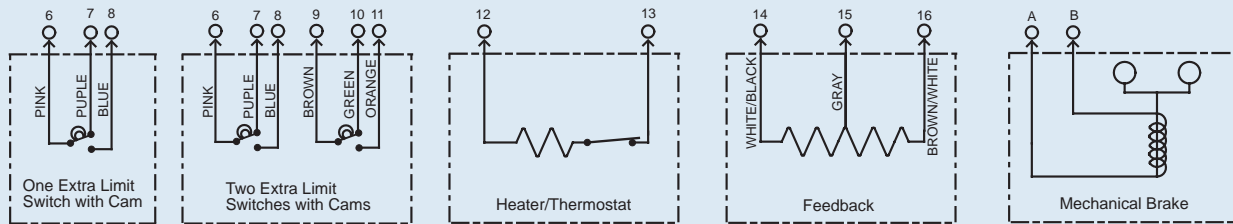
Wiring Diagram for 115 VAC or 230 VAC Units

Actuator Shown is Counter-Clockwise Extreme of Travel, or "Open" Position



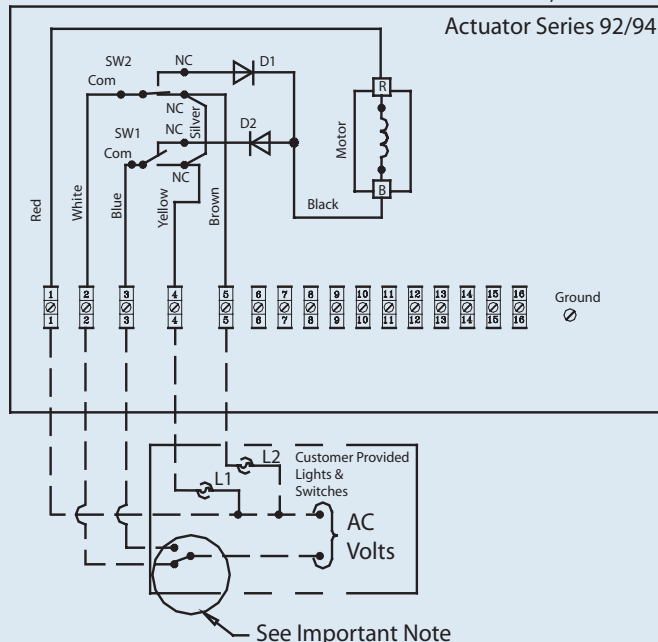
- Note:
1. Each Actuator Must Be Powered Thru Its Own Individual Switch Contacts To Avoid Cross Feed.
 2. Wiring As Shown Is For S92 & A92 Motor Leads at "A" And "B" are Reversed for B92 & C92.
 3. Motor Has a Thermal Protector as Shown By (M) in Diagram.
 4. If 115vac & 220vac models are PLC driven, output contacts of PLC should be rated at minimum of 1.5 times required input voltage of actuator.

Wiring for Optional Equipment



Wiring Diagram for 12 VAC & 24 VAC Units

Actuator shown in counter-clockwise extreme of travel, or "OPEN" Position



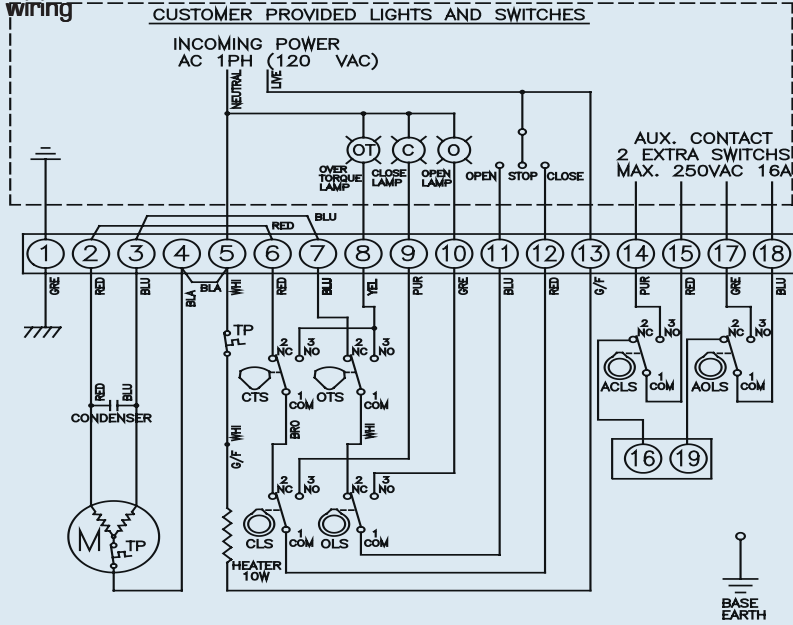
- Notes:
1. Each Actuator must be powered thru its own individual switch contact to avoid cross feed
 2. Motor leads are reversed for 1100 & 2000 in/lb actuator

Switch Location Viewed from Terminal Strip Front

- SW-2 - Open
SW-1 - Close

Series 92, 94 & 10 Wiring Schematics

Series 10 120\1\60 wiring

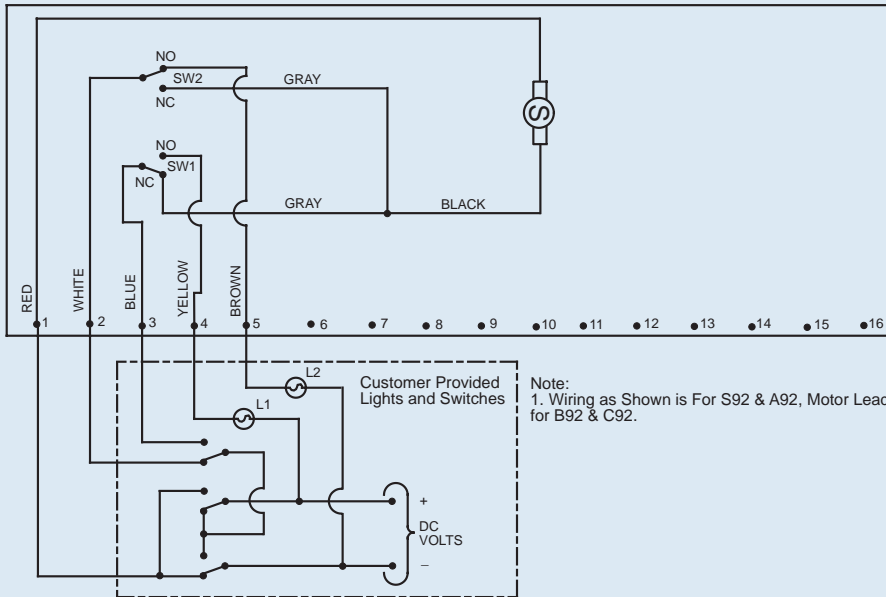


1. EACH ACTUATOR MUST BE POWERED THROUGH ITS OWN SET OF CONTACTS TO AVOID CROSS FEED.
2. MOTOR HAS A THERMAL PROTECTOR.
3. IF 120VAC OR 230 VAC MODELS ARE PLC DRIVEN, OUTPUT CONTACTS OF PLC SHOULD BE RATED AT A MINIMUM OF 1.5 TIMES THE REQUIRED INPUT VOLTAGE OF THE ACTUATOR.

Series 92/94

Wiring Diagram for 12 VDC & 24 VDC Units

Actuator Shown is Counter-Clockwise Extreme of Travel, or "Open" Position



Note:
1. Wiring as Shown is For S92 & A92, Motor Leads are Reversed for B92 & C92.

Options

- **Auxiliary limit switches:**

A total of four additional limit switches can be installed in the Series 92, and a total of two additional limit switches can be installed in the Series 94 for interlocking with other equipment or valves. Also widely used as valve position confirmation (end of travel) with a PLC, DCS, etc. These switches are SPDT with a 15 amp rating.

- **Feedback potentiometer:**

A 1000-ohm, 1 watt feedback potentiometer with 5% linearity can be installed for position feedback. This varies from the auxiliary limit switches, as the feedback potentiometer provides a varying degree opening percentage from 0-1000 ohms.

- **Heater and thermostat:**

A pre-wired heater and thermostat is available for maintaining a constant temperature inside of the actuator housing, eliminating condensation that can form when the temperature fluctuates. It is imperative when the actuator is used in lower operating temperatures. The heater and thermostat are effective to -40 degrees F.

- **Positioners:**

A solid state PCB can be installed inside of the actuator for precise modulating control. The standard PCB accepts 120 VAC supply voltage and a 4-20 mA control signal but can be configured at the factory for various voltage supplies such as 230 VAC, 24 VAC, etc and optional control signals such as 0-10 VDC.

- **Mechanical brake:**

This prevents oscillation typically found with rubber seated Butterfly Valves. The brake is installed on top of the motor armature and is electro-mechanical. When power is applied to the actuator, it is also applied to the brake, which releases the armature and allows the unit to cycle. When the power is lost the springs within the brake lock the armature so that it can no longer rotate, thus eliminating oscillation.

- **Transmitter:**

A solid state PCB installed in the unit will provide precise valve position to a PLC, DCS, etc. via a 4-20 mA signal. This is an output signal *from* the actuator NOT a control signal *to* the actuator. This does not require the use of a modulating PCB as it is not for controlling the actuator only for reporting the position to the appropriate piece of equipment.

- **Cycle length control (CLC):**

This option allows the field adjustment of the cycle time up to 10 minutes. The CLC can be configured at the factory for the open cycle only, for the close cycle only, or for the combination of open and close cycles.

- **Two-wire control:**

The two-wire control option is a relay installed inside of the actuator for direct wiring to timers, level switches (SPST), etc. A constant power supply and a SPST switch of some sort are required for cycling of the actuator: When the SPDT switch is closed, the valve opens, and vice versa.

- **Center off:**

This option is used when a 90-degree "off" position is required while using a three-way ball valve. Two limit switches and two cams are installed in the unit (not to be confused with auxiliary limit switches) and allow three positions for a three way valve; 0 degrees or left port open, 180 degrees or right port open, and 90 degrees or both ports closed.

- **Failsafe battery back up:**

A solid state PCB along with a rechargeable battery pack are installed inside of the actuator. When power is lost, the unit will then travel to a pre-determined "fail position". It is imperative that there be constant power to the unit to ensure that the battery pack maintains a full charge.

- **Multiturn:**

This is more of a necessity than an option. When electrically actuating a Gate or Diaphragm Valve, there must be multiple revolutions to open and close the valve. Asahi installs a 10 position rotary switch in parallel with the standard limit switches to achieve this. By wiring in parallel, the rotary switch overrides the standard switch allowing for multiple revolutions. This parallel wiring also requires that both switches be open for the actuator to stop. This is only available with the Series 92 Electric Actuator.

- **Bus System:**

A single pair of wires, which handles power and communications, is used to control the network by means of "chaining" the actuators with the PLC. Each actuator (or device) will then have its own unique address within the system and only that device with the proper address will respond to system commands.

Pneumatic Actuation Ordering Information

Size	Material	Code	Series	Action	Code	Options	Code
A	Cataphoresis and Rilsan Coated Aluminum	-	79P/79PA	Double Acting	-	No Solenoid	N
B				Single Acting	S	NEMA 4 Solenoid	W115A (115 VAC)
B5	Glass-filled Polyamide 316 SS	P				NEMA 4 Dbl Limit Switch	M2
C							
C5		S				3-15 psi Positioner	C2
D						4-20 mA Positioner	C1
D5							
E							
F							
G							
M							

Examples:

BP79PASN:

B Size, Glass-filled Polyamide, Series 79P, Single Acting, No Options

F79PW115A:

F Size, Aluminum, Series 79P, Double Acting, with 115 VAC NEMA 4 Solenoid

Cataphoresis and Rilsan Coated Aluminum Body

PA-Series

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
A79PAN	2348001	A79PASN	2349001
B79PAN	2348000	B79PASN	2349000
B579PAN	2348005	B579PASN	2349005
C79PAN	2348010	C79PASN	2349010
C579PAN	2348015	C579PASN	2349015
D79PAN	2348022	D79PASN	2349022
D579PAN	2348025	D579PASN	2349025

P-Series

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
E79PN	2354000	E79PSN	2363000
F79PN	2355000	F79PSN	2364000
G79PN	2358000	G79PSN	2368000
L79PN	2358001	L79PSN	2368001
M79PN	2358002	M79PSN	2368002

316 Stainless Steel Body

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
BS79PN	2391000	BS79PSN	2395000
CS79PN	2392000	CS79PSN	2396000
DS79PN	2393000	DS79PSN	2397000
ES79PN	2390000	ES79PSN	2400000

Glass-filled Polyamide

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
AP79PN	2379000	AP79PSN	2380000
BP79PN	2376014	BP79PSN	2382014
CP79PN	2377017	CP79PSN	2383017
DP79PN	2378022	DP79PSN	2384022

Option Series 79

Options	79 Item #
Positioners	
3-15 PSI for Air-Air	2412761
3-15 PSI for Air-Spring	2413761
K-10 4-20 mA for Air-Air	2416762
K-10 4-20 mA for Air-Spring	2416420
AS-i Bus Options	
A79-E79 Air-Air, Air-Spring	2407010
F79-G79 Air-Air, Air-Spring	2407040
Limit Switches	
Type 4, Double (2-SPDT)	2403779
Type 7, Double (2-SPDT)	2403780
Inductive Sensor (2-SPDT)	2408000
Solenoids	
Type 4, Plastic, 120 VAC	2401779
Type 7, Plastic, 120 VAC	2401780
P-Series Solenoid, IP65	2401783
Voltages	
12 VDC	2415749
24 VDC	2415750
12 VAC	2415751
24 VAC	2415752
220 VAV	2415753
Camstops	
BP79P	2221000
CP79P	2222000
DP79P	2223000
E79P	2224000
F79P	2225000
G79P	2439000
Filter Regulator with Gauge	2123000

De-Clutchable Manual Override

Description	Part Number
B79PA Declutch Man O/R-RD415	2219000
B5-C579PA Declutch Man O/R-RD415	2219010
D79PA Declutch Man O/R-RD420	2219020
D579PA Declutch Man O/R-RD420	2219025
E79PA Declutch Man O/R-RD535	2219030
F79P Declutch Man O/R-RD550.12	2219040
G79P Declutch Man O/R-RD560	2219050
L79P Declutch Man O/R-RD560	2219060
M79P Declutch Man O/R-RD370	2219070

Electric Actuation Ordering Information

Size	Series	Options	Code	Type Rating	Code	Output Torque
S	92	1 Extra Limit Switch	M1	4X, 7, 9	XWJ	400
A	92	2 Extra Limit Switches	M2	4X, 7, 9	XWJ	700
B	92	Heater & Thermostat	HT	4X, 7, 9	XWJ	1100
C	92	Feedback Pot	P	4X, 7, 9	XWJ	2000
A	94	Center Off	CO	4X	WJ	150
B	94	2 Wire Control	2WC	4X	WJ	300
		Failsafe Battery Pack	FS			
		4-20 mA Positioner	C1			
		4-20 mA Transmitter	C3			

Examples:

A92M2PXWJ:

A Size, Series 92 with, 2 extra [auxiliary] limit switches and a feedback potentiometer

B94WJ:

B Size, Series 94, no options

Options Series 92 and 94

Options	92 Item #	94 Item #
Extra Limit Switch	2126001	2126003
Double Extra Limit Switch	2126002	2126004
Heater & Thermostat	2127001	2127001
NEMA VII Explosion Proof Housing	Standard	N/A
Feedback Potentiometer	2129001	2129003
Dual Feedback Potentiometer	2129002	2129004
4-20 MA Positioner	2130810	2130812
MOD Bus	2130821	2130821
4-20 Output Source	2130813	2130813
Cycle Length Control	2131001	2131003
Mechanical Brake	2136001	2136001
Center OFF Switch	2132001	2132003
2-Wire Control	2102001	2102008
Protek Failsafe Battery Pack	2154000	2154001
Local/Remote Station (1)	2190000	2190000
PK-100 (2)	2190001	2190001
Voltages:		
12 VDC	2135749	2135749
24 VDC	2135750	2135750
12 VAC	2135751	2135751
24 VAC	2135752	2135752
220 VAC	2135753	2135753

(1) For open/close 120 VAC Units only, all others consult factory

(2) For 120/230 VAC modulating units equipped with DHC positioner

Series 92 Actuators

Model	Output Torque	Part Number
S92XWJ	400 in/lbs	2172000
A92XWJ	700 in/lbs	2173000
B92BRXWJ	1100 in/lbs	2174000
C92BRXWJ	2000 in/lbs	2175000

Series 94 Actuators

Model	Output Torque	Part Number
A94WJ	150 In/Lbs	2070800
B94WJ	300 In/Lbs	2070900

Series 10 Actuators

Series 10	
Part Numbers	Range
2049002	10-15 - 1,360 in/lbs
2049003	10-30 - 2,580 in/lbs
2049004	10-50 - 4,320 in/lbs
2049005	10-80 - 6,960 in/lbs
2049006	10-120 - 10,440 in/lbs
2049007	10-200 - 17,400 in/lbs

Includes heater, 2 auxiliary switches & torque switches
Consult factory for options

Additional Asahi/America Products

Single-Wall Piping Systems

Asahi/America offers piping systems in Proline[®] polypropylene, Purad[®] PVDF, PolyPure[®] natural polypropylene, and UltraPro[®] Halar[®] with pipe diameters ranging from 1/2" to 24" and above. Each system offers a wide assortment of fittings and joining techniques. Air-Pro[®] HDPE compressed air systems and Pro-Vent[®] PP ventilation and exhaust systems are examples of the effective application of thermoplastics.

High Purity Piping Systems

Asahi/America and its partner, Agru, have been providing quality, high purity thermoplastic systems for decades. From state-of-the-art Purad PVDF to cost-effective PolyPure[®], we have the experience and expertise to provide you with the right product for the right application.

EM-Technik Tube Systems

Asahi/America has partnered with EM-Technik of Germany to provide high quality compression fittings, valves and control products for tube systems. Components are available with a variety of connection methods, including common flared ends, and are offered in PFA, PVDF, or polypropylene. EM-Technik Tube Systems are designed to provide you with the right fit.

Double-Contained Piping Systems

Asahi/America has pioneered engineered, thermoplastic double-contained piping systems since 1987. Since then, our comprehensive systems and technical support have provided unsurpassed quality and reliability. Today, Asahi/America offers three systems to match your application requirements, no matter how demanding:

Duo-Pro[®] is fabricated from separate pipes in sizes 20" and above. It is available in polypropylene, PVDF, and E-CTFE with carrier and containment pipes being of the same or different materials.

PolyFlo[®] is of unitary construction, extruded by a patented process, in sizes from 1" to 4" (carrier), in polypropylene, HDPE and PVDF.

Fluid-Lok[®] is a fabricated system made exclusively from single wall HPDE pipe. It is available in a wide assortment of sizes and pressure ratings designed for your specific needs.

Dymatrix Specialty Valves

The Dymatrix[™] specialty valve product line is engineered to offer unique solutions to critical wet process requirements. These valves are ideally suited for Chemical Process, CMP Slurry and UPW Water applications. Asahi/America's large stocking commitments allow us to quickly deliver critical products and leverage larger manufacturing volume. **Pinch Valves (PV3, PVM)** provides superior durability and eliminates particle generation in CMP slurry applications. **Diaphragm Valves (SDV, HDV)** are engineered for high cycle life and a compact design. **Needle Valves (NVM)** utilizes a dual stem for true linear flow control and integrated diaphragm for superior purity. **Pressure Regulators (HPRL, HPRS)** designed to provide precisely accurate and highly stable control.

Warranty: Limitation on Liability

Asahi/America, Inc., ("Seller") warrants, to the original Buyer only, that all products delivered hereunder shall be free from defects in design and manufacture for a period of one year from the date of delivery, provided that such products are installed, used, operated, adjusted and serviced only in a proper and appropriate manner and in strict accordance with any instructions relating thereto furnished to Buyer by Seller. In no event shall the foregoing warranty extend to any products in any way caused or allowed to be, or installed, operated or used in such a manner as to be, subject or exposed to conditions of misuse, abuse or accident.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NO WARRANTY OF MERCHANTABILITY, NO IMPLIED WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, AND NO IMPLIED WARRANTY ARISING BY USAGE OF TRADE, COURSE OF DEALING OR COURSE OF PERFORMANCE IS GIVEN BY SELLER OR SHALL ARISE BY OR IN CONNECTION WITH THIS SALE AND/OR THE SELLER'S AND/OR BUYER'S CONDUCT IN RELATION THERETO OR TO EACH OTHER, AND IN NO EVENT SHALL SELLER BE LIABLE ON ANY SUCH WARRANTY WITH RESPECT TO ANY PRODUCT.

Liability of the Seller under or in connection with this sale and/or the foregoing warranty shall be limited, at the sole option of the Seller, to one repair of, replacement of, or a refund of the purchase price of any products or part thereof (a), with respect to which Seller receives, promptly after Buyer's discovery of any alleged defect and prior to the expiration of the one-year warranty period as provided above, notice from Buyer or Buyer's claim defect and (b) which shall be returned to Seller by Buyer; as provided herein, promptly after Buyer's discovery of such alleged defect and which shall be determined by the Seller to have proven defective within the one-year warranty period provided above; failure by Buyer to notify

Seller and return such products to Seller after Buyer's discovery of such alleged defect shall constitute a waiver by Buyer of any and all claims of any kind with respect thereto. Any products returned by Buyer to Seller under the foregoing terms shall be returned to Seller's place of business freight prepaid, accompanied or preceded by Buyer's particularized statement of the claimed defect. The risk of loss and freight charges to and from Seller in connection with any returned products shall be borne by Buyer; but Seller shall bear such additional freight charges arising in connection with any such returned products ultimately determined by Seller to be defective under the terms of the foregoing warranty, the cost of repair or replacement (if any) of such products, and the risk of loss or damage which such products are in Seller's possession at its place of business. The foregoing remedy shall constitute the sole and exclusive remedy of the Buyer under or in connection with this sale and/or warranty of the Seller. Except as specifically provided herein, Seller shall not be responsible or liable for any costs, expenses or damages of Buyer in connection with any removal, repair or replacement (including any attempts or actions relating thereto) of any allegedly defective products, and no charge of setoff of any kind of Buyer relating thereto shall be made against the Seller without prior and specific written approval of Seller.

IN NO EVENT SHALL SELLER BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN ANY WAY IN CONNECTION WITH ANY PRODUCTS OR THIS SALE.

The agreement of Seller to sell its products is expressly conditioned upon the Buyer's assent to, and Seller agrees to sell its products only upon, all terms and conditions set forth above and on the face hereof. Buyer's acceptance of any products provided under this sale shall constitute such assent.



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