

Actuation & Controls



Pneumatic Actuators ■ Electric Actuators
PLC ■ AS-i-Bus Systems ■ Positioners



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Actuators, Positioners & Accessories



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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 80psi air supply. Series 79P can be cycled using air, water, or non-combustable gas.

Three standard actuator materials are offered: glass-reinforced polyamide, cataphoresis and 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 and corrosive process materials.

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

Dual Stage Corrosion Resistance: Internal and external **Cataphoresis** and **Rilsan®** coating

Cataphoresis is an electro-chemical process of uniformly applying 20 microns of epoxy resin to the internal and external surfaces. Once this resin is applied, the next step is curing in a 400 degree oven (very similar to a powder coating process). This process provides high corrosion resistance

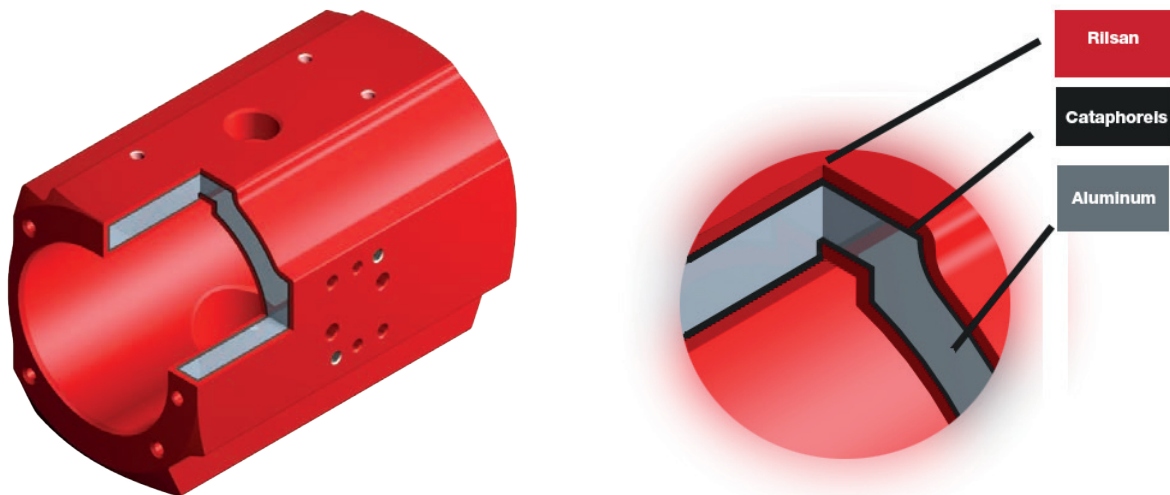
Rilsan® is a Nylon 11 that is uniformly applied to the internal and external surfaces to a thickness of 250 microns. This process offers high corrosion resistance, high resistance to wearing, and is also impact resistant

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: 60psi minimum, 120psi 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:

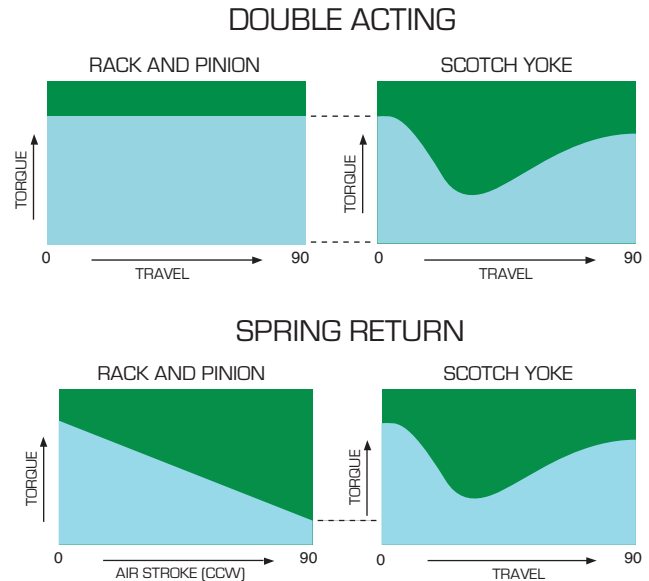
- Air-to-air or Air-to-spring?
- Supply air available?
- On/off or modulating?
- Modulating 3-15psi or 4-20 mA (Analogue or digital?)
- Solenoid Nema Type rating? 4 or 7?
- Environment ? Temp, corrosion resistance?
- Feedback? Switches Type 4 or Type 7?

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 decreases in the spring stroke as the springs relax and extend. Reference the torque charts on pages xxx - xxx and use it to determine the correct number of springs required for your application.

Torque and Air Pressure

Two 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.



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 80psi. But if the actuator is located 100 yards away with leaky air fittings, then the actuator may see only a fraction of the 80psi that the compressor is producing. So, if an actuator is sized for a supply of 80psi, and the actuator sees 60psi 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 = 60psi

FIND: Required valve torque 281 in./lbs.

Spring end torque (362)

Air start torque at 60psi (307)

ANSWER: C579PASN with 5 springs per side

Pneumatic Actuator Options

- **Solenoid:** The solenoid is a means of supplying and exhausting the compressed air required to the cycle the actuator. Every pneumatic actuator requires a solenoid.
- **Voltages:** There are solenoid voltage options available to meet a variety of customer needs: 230 VAC, 12 VDC, 24 VDC, 12VAC, 24 VAC
- **Double limit switches:** Double (additional) limit switches are typically used as valve position confirmation (end of travel) with a PLC, DCS, etc. Other applications are for interlocking with other equipment or valves. These switches are SPDT with a 15 amp rating, and dry contact.
- **Feedback potentiometer:** This option is typically installed within a double limit switch enclosure. A 1000-ohm, 1 watt feedback potentiometer provides position feedback to a PLC, DCS, etc. This varies from the auxiliary limit switches, as the feedback potentiometer provides a varying degree opening percentage from 0-1000 ohms.
- **Electro-Pneumatic Positioner:** A smart positioner can be installed on top of the actuator for precise modulating control. The positioner accepts a 4-20mA control signal.
- **Transmitter:** A 4-20mA transmitter, which is standard equipment for our Smart positioner, will provide precise valve position (position feedback) to a PLC, DCS, etc. This feedback is output from the actuator NOT a control signal to the actuator.
- **Pneumatic Positioner:** A pneumatic positioner that operates via a 3-15 psi control signal can be installed on top of the actuator for precise modulating control. This positioner can be provided with an optional transmitter or limit switches.
- **De-Clutchable Manual Override:** This option is essentially a gear operator that allows for the automated valve to be cycled manually when compressed air is not present.



Series 79P (Aluminum)

Specifications - Series 79P

Type: Double Piston, Double Rack and Pinion

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

Torque: 59 to 40,710 in-lbs.

Models: Air-Air

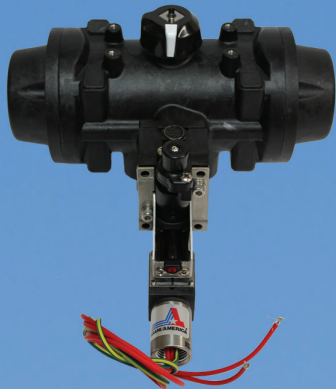
Spring Return (Fail Open)

Spring Return (Fail Closed)

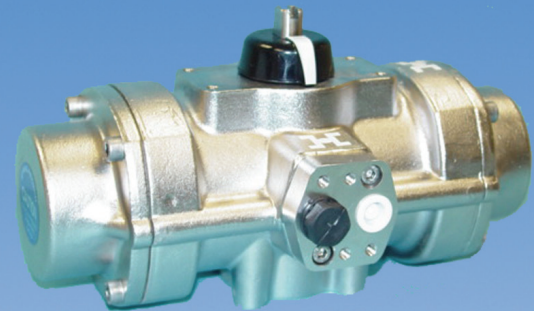
Air Supply: 60psi - 120psi

Air Connections: 1/4" NPT

Mounting Dim.: ISO and NAMUR



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



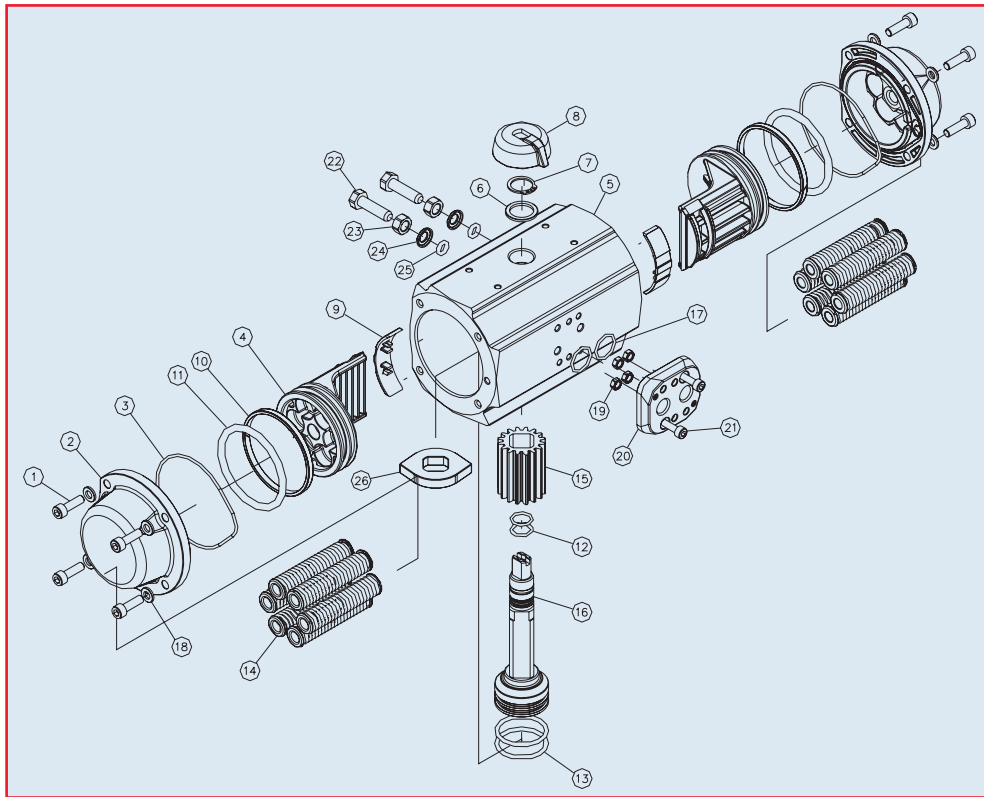
Series 79P (316 Stainless Steel)

Standard Features

- Actuator body and end caps constructed of glass-filled polyamide (PAG), aluminum encompassed in a two-part cathaphoresis 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 range
- Can be cycled with air, water or non-combustable gas
- Spring return models have cathaphoresis coating, or chromium passivation for spring protection
- Available in air-to-air (double acting) and air-to-spring (single acting, or spring return fail safe) models
- Position indication through visible indicator knob
- Actuator shaft constructed of cathaphoresis coated steel or stainless steel with double O-ring seals top and bottom
- End position adjustable travel stops (aluminum [B79P-E79P, G79P-M79P] and 316 stainless steel [CS79P-FS79P] models only)
- Polyacetal or PTFE/bronze piston guides
- Self-lubricating BUNA-N O-ring seals
- -25° F - 195° F temperature range
- 1/4" NPT air connections

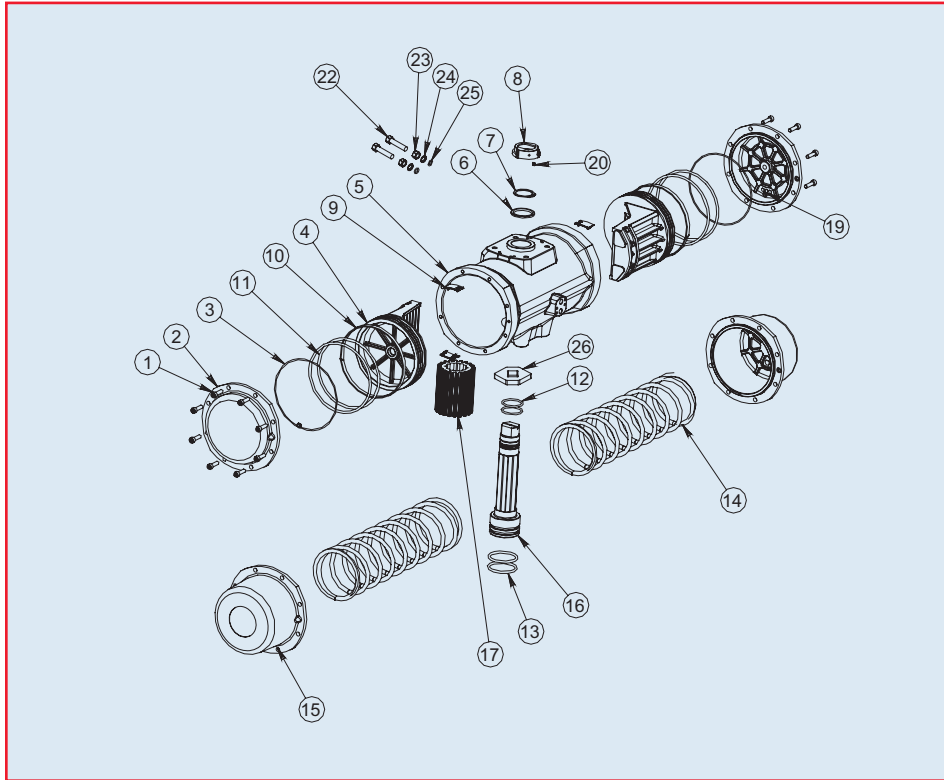
Options

- 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 AND Polyurethane Coated Aluminum Alloy
3	End Cap O-Ring	NBR
4	Piston	Cataphoresis Coated Aluminum Alloy and Rilsan
5	Actuator Body	PA Cataphoresis Coated Aluminum Alloy
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Steel
8	Position Indicator	Polyacetal
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	Ball Burnished 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
21	Bolt for Air Connection Plate	304 Stainless Steel
22	Adjustment Bolt	Steel With Chromium Passivation
23	Adjustment Locknut	304 Stainless Steel
24	Bushing	Stainless Steel (303, 304, or 316)
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 and Rilsan Coated Aluminum Alloy
3	End Cap O-Ring	NBR
4	Piston	Cataphoresis Coated Aluminum Alloy
5	Actuator Body	PA Cataphoresis Coated Aluminum Alloy
6	Washer	Polyamide 6
7	Shaft Retaining Ring	Cataphoresis Coated Steel
8	Position Indicator	Polyamide
9	Piston Guide	Teflon & Bronze
10	Guide Ring	Teflon & Bronze
11	Piston O-Ring	NBR
12	Upper Shaft O-Ring	NBR
13	Lower Shaft O-Ring	NBR
14	Spring Set	DIN 17223 - C With Cataphoresis
15	Spring Return End Cap	Cataphoresis and Rilsan Coated Aluminum Alloy
16	Shaft	Cataphoresis Coated Steel
17	Pinion Gear	Ball Burnished 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	117	162	230	297	342
B579PA	208	286	401	517	594
C79PA	291	404	573	741	853
C579PA	489	669	940	1,212	1,393
D79PA	688	947	1,335	1,724	1,982
D579PA	1,240	1,682	2,344	3,008	3,486
E79PA	2,005	2,720	3,795	4,868	5,584
F79P	5,155	6,917	9,560	12,204	13,967
G79PA	8,832	11,983	16,718	21,452	24,603
L79PA	14,496	19,868	27,922	35,975	41,347
M79PA	21,143	28,966	40,710	52,454	60,286

Cycle Time (Seconds)

Model	Air to Air		Air to Spring	
	Open Port A	Open Port B	Open Port A	Open 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
G79PA	3.00	2.50	4.00	3.00
L79PA	3.00	3.00	6.00	5.00
M79PA	4.00	4.00	8.00	6.00

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	183.06	125.09	-
F79P	323.41	323.41	323.41	-
G79PA	640.71	427.14	640.71	-
L79PA	1,189.89	1,263.11	1,189.89	-
M79PA	1,891.62	1,830.60	1,891.62	-

Weight (lbs.)

Model	Air to Air	Air to Spring
A79PA	2.03	2.20
B79PA	3.09	3.53
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	25.57	33.72
F79P	38.79	80.23
G79PA	67.66	128.71
L79PA	106.45	183.37
M79PA	171.69	260.51

Pneumatic Actuators

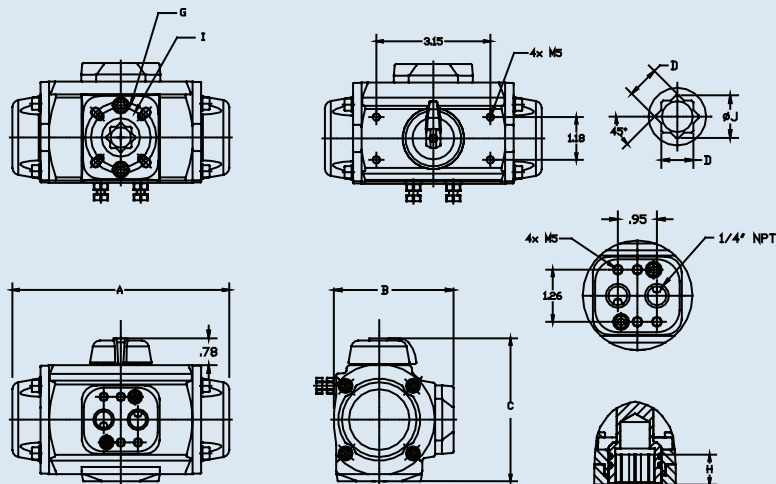
P/PA Series

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	81	60	126	104	194	172	261	239	306	284	58	36
	3	59	32	103	76	172	144	239	212	284	257	86	59
	4	-	-	85	50	153	119	220	186	266	231	112	77
	5	-	-	67	22	135	90	203	158	248	203	140	95
	6*	-	-	-	-	118	64	185	131	230	176	166	112
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	1,104	971	422	289
	5	-	-	307	142	578	412	850	684	1,031	866	527	362
	6*	-	-	-	-	506	307	778	579	959	760	633	434
D79PAS	2	494	379	753	638	1,143	1,027	-	-	-	-	309	194
	3	396	225	656	484	1,045	873	1,433	1,261	-	-	463	291
	4	299	71	558	329	948	719	1,335	1,106	1,594	1,365	618	389
	5	-	-	462	175	851	565	1,239	952	1,497	1,211	772	485
	6*	-	-	-	-	754	410	1,142	797	1,400	1,056	927	582
D579PAS	2	888	704	1,330	1,146	1,992	1,808	-	-	-	-	536	352
	3	712	435	1,154	878	1,816	1,540	2,480	2,204	-	-	804	528
	4	535	167	978	610	1,640	1,272	2,304	1,935	2,782	2,413	1,073	704
	5	-	-	802	342	1,464	1,004	2,128	1,667	2,605	2,145	1,341	881
	6*	-	-	-	-	1,288	735	1,951	1,399	2,429	1,877	1,609	1,057
E79PAS	2	1,427	1,147	2,142	1,863	3,216	2,937	-	-	-	-	856	577
	3	1,138	719	1,854	1,435	2,927	2,509	4,001	3,582	-	-	1,285	866
	4	849	291	1,565	1,007	2,639	2,080	3,712	3,154	4,428	3,870	1,713	1,155
	5	-	-	1,276	579	2,350	1,652	3,423	2,726	4,139	3,441	2,141	1,443
	6	-	-	-	-	2,062	1,225	3,137	2,299	3,853	3,015	2,569	1,732
F79PS	1	3,589	2,719	5,351	4,481	7,995	7,125	-	-	-	-	2,436	1,566
	2	2,371	913	4,133	2,914	6,776	5,559	9,420	8,202	-	-	4,003	2,784
	3	-	-	3,089	1,348	5,732	3,992	8,376	6,636	10,139	8,398	5,569	3,829
	4*	-	-	-	-	5,207	2,774	7,853	5,417	9,616	7,180	6,787	4,351
GP79PAS	2	5,335	2,750	8,485	5,900	13,220	10,635	17,955	15,370	21,105	18,520	6,083	3,498
	3	4,363	1,533	7,786	4,683	12,521	9,418	17,256	14,153	20,406	17,304	7,299	4,197
	4	-	-	6,949	3,224	11,681	7,959	16,416	12,694	19,566	15,844	8,759	5,037
	5	-	-	5,939	1,472	10,674	6,207	15,409	10,941	18,559	14,092	10,511	6,044
	6*	-	-	-	-	9,465	4,104	14,200	8,838	17,350	11,989	12,614	7,253
L79PAS	2	10,416	8,368	15,788	13,744	23,842	21,798	-	-	-	-	6,124	4,089
	3	8,372	5,315	13,744	10,682	21,798	18,735	29,851	26,789	-	-	9,177	6,124
	4	6,337	2,255	11,700	7,624	19,753	15,682	27,816	23,736	33,179	29,099	12,240	8,160
	5	-	-	9,664	4,564	17,718	12,620	25,771	20,674	31,143	26,037	15,302	10,204
	6*	-	-	-	-	15,682	9,558	23,736	17,612	29,099	22,983	18,364	12,240
M79PAS	2	15,921	10,700	23,753	18,532	35,497	30,276	-	-	-	-	10,443	5,222
	3	13,310	5,478	21,143	13,310	32,887	25,054	44,631	36,798	-	-	15,656	7,832
	4	-	-	18,532	8,089	30,276	19,833	42,020	31,577	49,843	39,409	20,877	10,443
	5	-	-	-	-	27,665	14,611	39,409	26,355	47,241	34,188	26,099	13,054
	6*	-	-	-	-	25,054	9,399	36,798	21,143	44,631	28,966	31,320	15,656

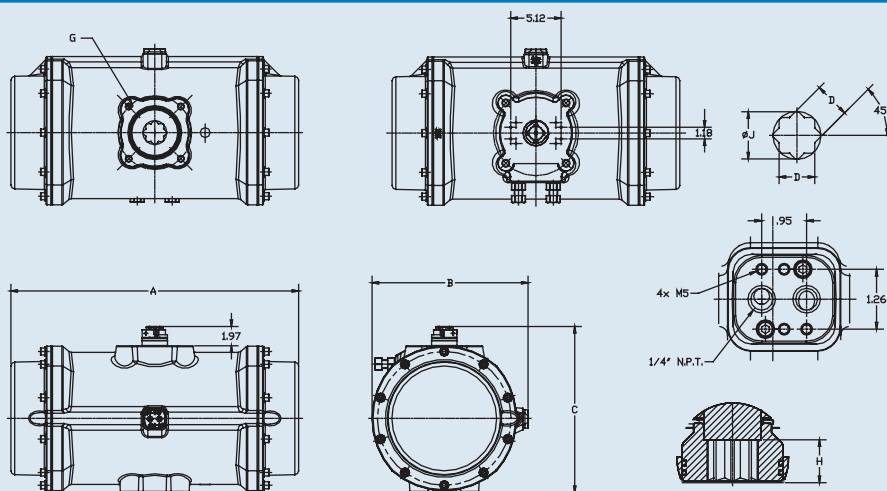
Pneumatic Actuators

P/PA Series



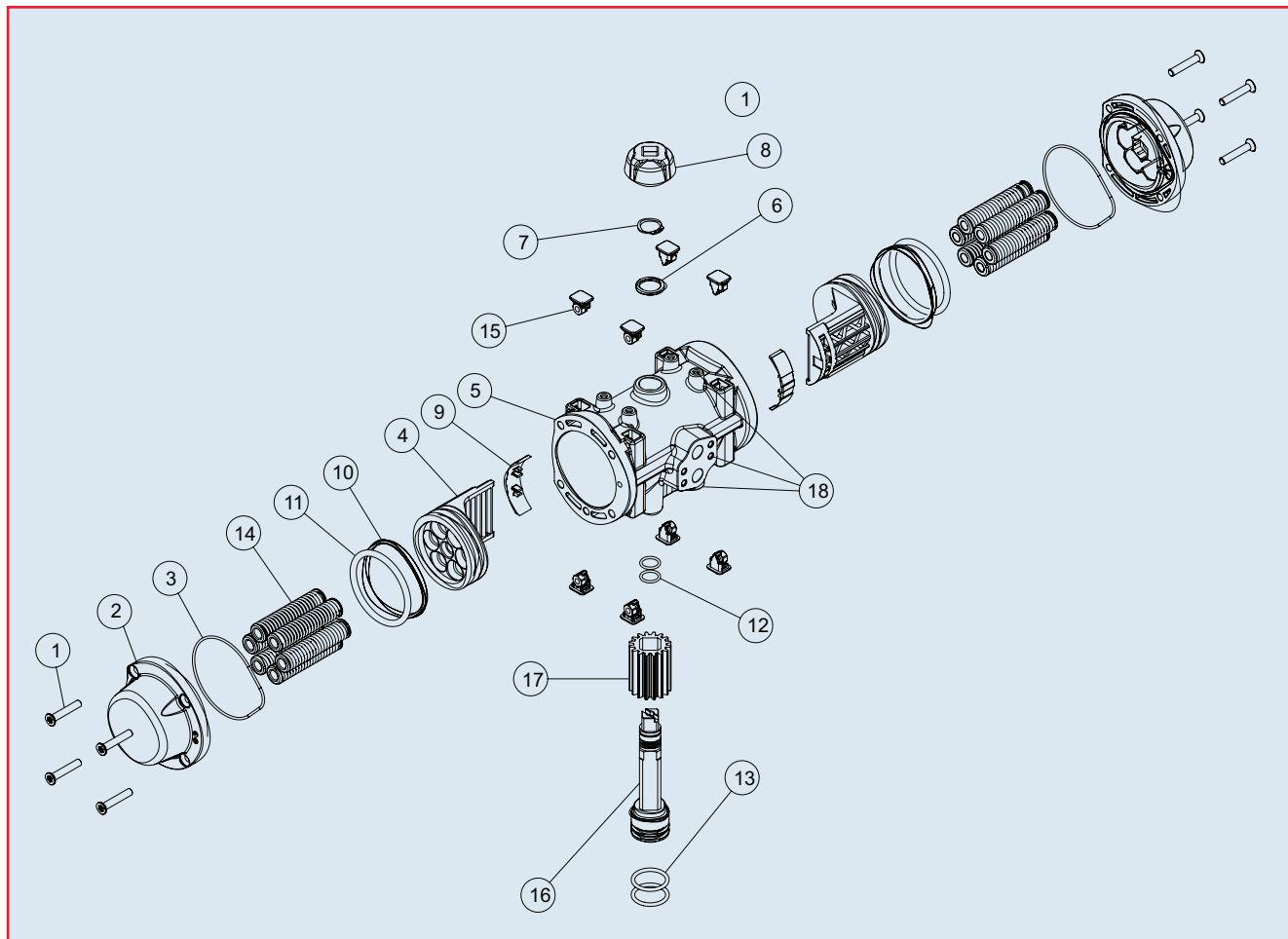
Conforming to standards: ISO 5211, DIN 3337, VDE 3845, NAMUR

Model	A		B	C	D	G	H	I		J	
	A-S	A-A									
A79PA	5.52		3.00	3.50	0.43	ø1.65	M5 X 8 DEEP	0.63	ø1.42	M5 X 8 DEEP	0.56
B79PA	6.10		3.31	4.02	0.55	ø1.97	M6 X 10 DEEP	0.63	ø1.65	M5 X 10 DEEP	0.75
B579PA	7.91		4.02	4.68	0.67	ø2.76	M8 X 14 DEEP	0.75	ø1.97	M6 X 9 DEEP	0.91
C79PA	8.90		4.08	4.85	0.67	ø2.76	M8 X 14 DEEP	0.75	ø1.97	M6 X 9 DEEP	0.91
C579PA	10.43		4.70	5.47	0.67	ø2.76	M8 X 14 DEEP	0.75	ø1.97	M6 X 9 DEEP	0.91
D79PA	12.28		5.00	5.79	0.87	ø2.76	M8 X 14 DEEP	0.75	ø1.97	M6 X 9 DEEP	1.14
D579PA	14.09		6.02	6.90	1.06	ø2.76	M8 X 14 DEEP	1.14	-	-	1.44
E79PA	16.90		6.65	7.52	1.06	ø4.02	M10 X 15 DEEP	1.14	-	-	1.44
G79PA	27.32		10.57	12.17	1.41	ø5.51	M16 X 25 DEEP	1.54	-	-	1.93
L79PA	26.40		13.57	14.49	1.81	ø6.50	M20 X 25 DEEP	1.89	-	-	2.40
M79PA	29.23		15.85	16.85	1.81	ø6.50	M20 X 25 DEEP	1.89	-	-	2.40



Conforming to standards: ISO 5211, DIN 3337, VDE 3845, NAMUR

Model	A		B	C	D	G	H	J	
	A-S	A-A							
F79P	17.48	23.53	8.90	10.71	1.41	ø4.92	M12 X 18 DEEP	1.50	1.93



Parts List (Typical PAG Series Actuator)

PARTS		
No	Description	Material
1	End Cap Bolt	304 Stainless Steel
2	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	DIN-17223-C with Chromium Passivation
15	Nut Protector	Polyamide
16	Shaft	303 Stainless Steel
17	Pinion Gear	Aluminum Alloy
18	Thread Inserts	304 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
AP79PAS	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
BP79PAS	2	81	60	126	104	194	172	261	239	306	284	58	36
	3	59	32	103	76	172	144	239	212	284	257	86	59
	4			85	50	153	119	220	186	266	231	112	77
	5			67	22	135	90	203	158	248	203	140	95
	6*					118	64	185	131	230	176	166	112
CP79PAS	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
DP79PAS	2	494	379	753	638	1,143	1,027					309	194
	3	396	225	656	484	1,045	873	1,433	1,261			463	291
	4	299	71	558	329	948	719	1,335	1,106	1,594	1,365	618	389
	5			462	175	851	565	1,239	952	1,497	1,211	772	485
	6*					754	410	1,142	797	1,400	1,056	927	582

*Number of springs in standard unit.

Torque Air-to-Air (Inch-Pounds)

Model	Supply Pressure (psi)				
	40	60	80	100	120
AP79P	70	100	137	175	203
BP79P	117	162	230	297	342
CP79P	291	404	573	741	853
DP79P	688	947	1335	1724	1982

Cycle Time (Seconds)

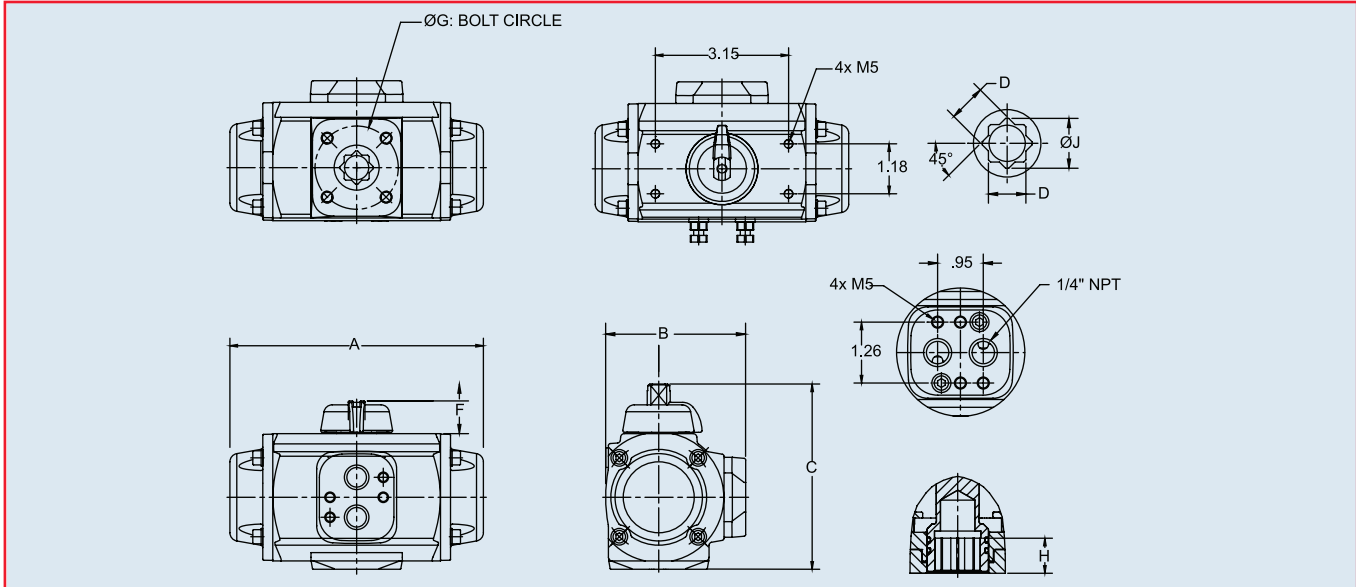
Model	Air-to-Air		Air-to-Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
AP79P	0.10	0.10	0.15	0.15
BP79P	0.15	0.15	0.20	0.20
CP79P	0.25	0.25	0.30	0.30
DP79P	0.40	0.40	0.50	0.50

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	10.98	9.15	-
CP79P	21.36	27.46	21.36	-
DP79P	48.82	70.17	48.82	-

Weight (lbs.)

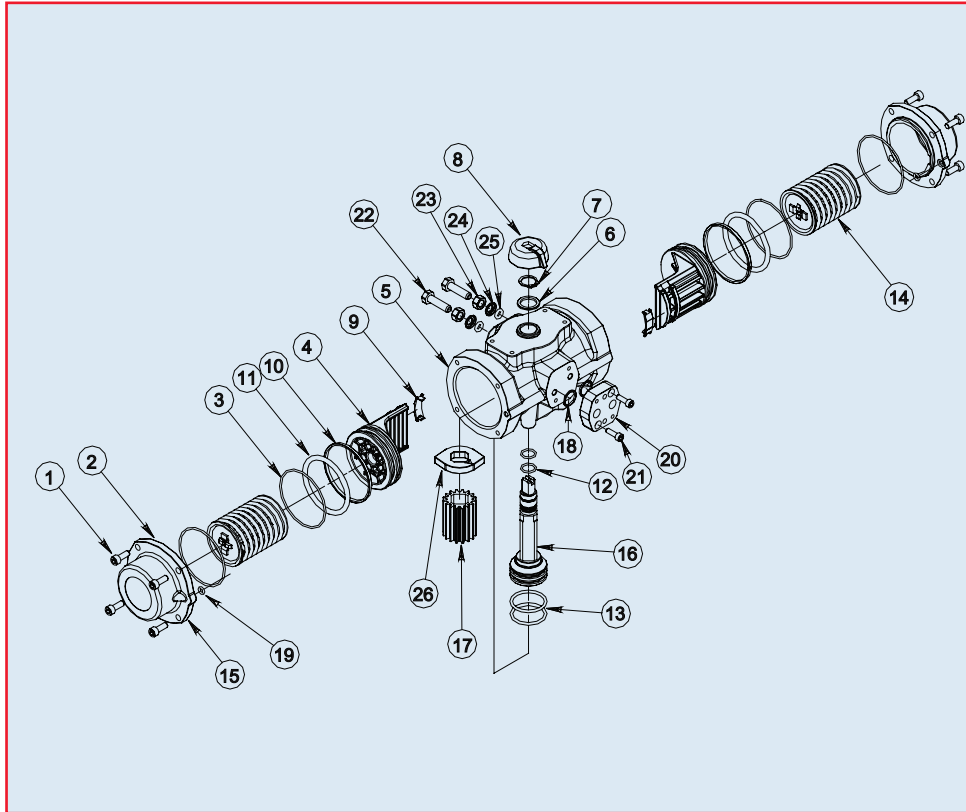
Model	Air-to-Air	Air-to-Spring
AP79PA	1.04	1.21
BP79PA	1.83	2.20
CP79PA	3.64	4.48
DP79PA	7.10	9.30



Conforming to standards: ISO 5211, DIN 3337, VDE 3845, NAMUR

Dimensions (in.)

Model	A	B	C	D	F	G		H	J
AP79PA	5.67	2.76	3.50	0.43	0.78	φ 1.65	M5 X 7 DEEP	0.63	0.56
BP79PA	6.18	3.11	4.02	0.55	0.78	φ 1.97	M6 X 15 DEEP	0.63	0.75
CP79PA	9.05	3.82	4.84	0.67	0.78	φ 2.76	M8 X 18 DEEP	0.75	0.91
DP79PA	12.32	4.80	5.79	0.87	0.78	φ 2.76	M8 X 18 DEEP	0.75	1.41



Parts List (Typical SS Series Actuator)

PARTS		
NO.	DESCRIPTION	MATERIAL
1	End Cap Bolt	316 Stainless Steel
2	End Cap	316 Stainless Steel
3	End Cap O-Ring	NBR
4	Piston	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
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 (Captive)	Cataphoresis Coated DIN-17223-C
16	Shaft	316 Stainless Steel
17	Pinion Gear	Cataphoresis Coated Aluminum
18	Air Connection Plate O-Ring	NBR
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	304 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	-	-	-	-	57	42
	2	37	10	77	50	136	109	196	168	-	-	87	66
	3	-	-	51	27	111	86	170	144	209	184	118	83
	4*	-	-	-	-	102	61	160	119	200	159	135	104
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	4,338	3,785	1799	1246
	4*	-	-	1128	298	2203	1373	3276	2446	3,992	3,162	2422	1592
FS79PS	1	3589	2718	5355	4485	7995	7125	-	-	-	-	2436	1566
	2	2370	1152	4136	2918	6776	5558	9420	8202	-	-	4003	2785
	3	-	-	3092	1352	5732	3992	8376	6635	10138	8398	5569	3829
	4*	-	-	-	-	5207	2773	7854	5417	9616	7180	6787	4351

*Number of springs in standard unit

Torque Air-to-Air (Inch-Pounds)

Model	Supply Pressure (psi)				
	40	60	80	100	120
BS79P	117	162	230	297	342
CS79P	291	404	573	741	853
DS79P	688	947	1335	1724	1982
ES79P	2005	2720	3795	4868	5584
FS79P	5155	6917	9560	12204	13967

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
FS79P	1.20	1.20	2.00	2.00

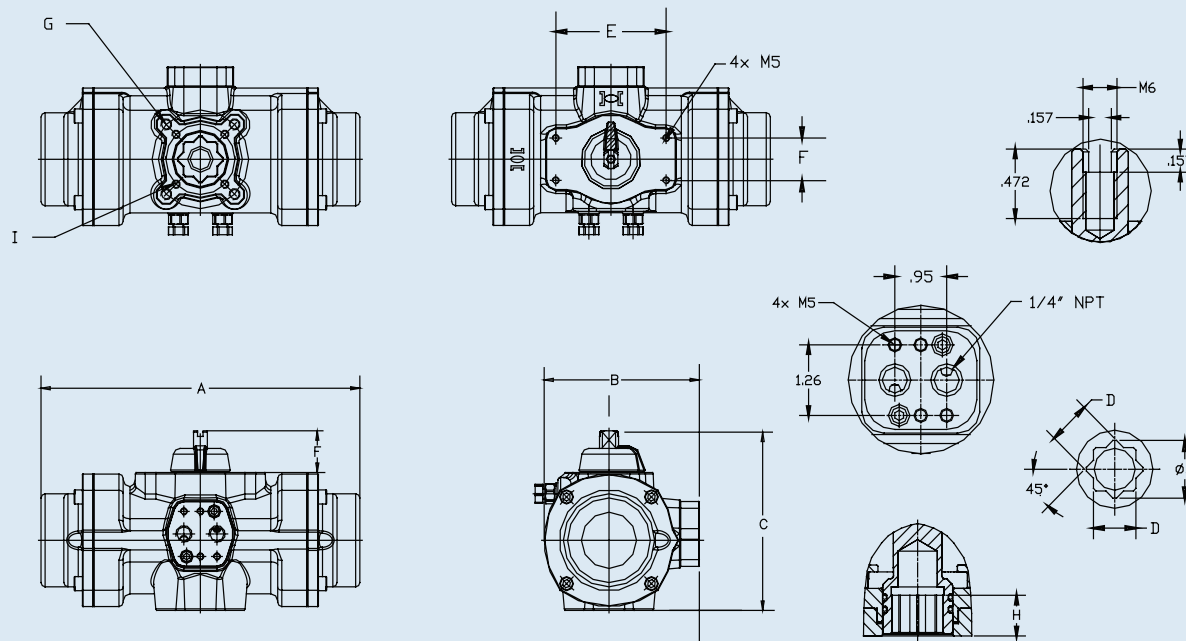
Air Consumption (Cubic Inches)

Model	Air to Air		Air to Spring	
	Open Port A	Closed Port B	Open Port A	Closed Port B
BS79P	9.15	10.98	9.15	-
CS79P	21.36	19.53	21.36	-
DS79P	48.82	42.71	48.82	-
ES79P	125.09	115.94	125.09	-
FS79P	323.41	323.41	323.41	-

Weight (lbs.)

Model	Air to Air	Air to Spring
BS79P	5.43	6.17
CS79P	10.36	12.34
DS79P	13.00	21.82
ES79P	39.45	55.98
FS79P	84.66	127.00

CONFORMING TO STANDARDS: ISO 5211, DIN 3337, VDE-3845, NAMUR



Dimensions (in.)

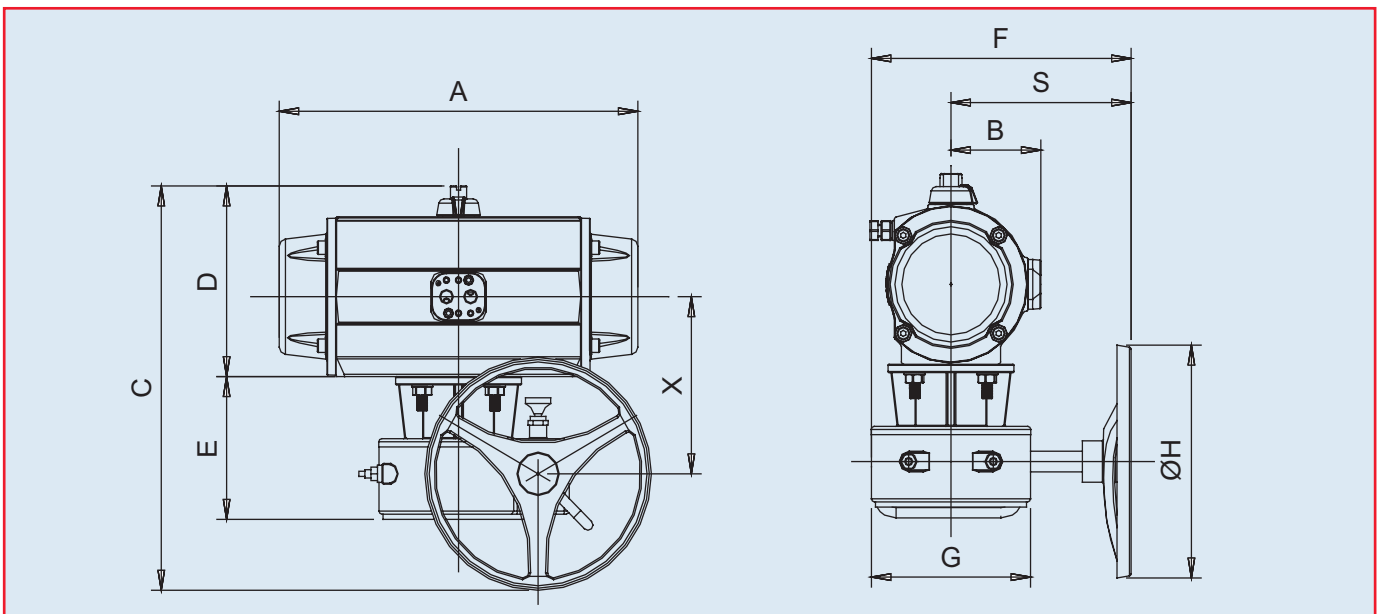
Model	A		B	C	D	E	F	G	H	I		J	
	A-A	A-S											
BS79P	6.57	6.30	3.58	4.06	0.55	3.15	1.18	∅ 1.97	M6 X 10 DEEP	0.63	-	-	0.57
CS79P	9.09	9.10	4.41	4.96	0.67	3.15	1.18	∅ 2.76	M8 X 14 DEEP	0.74	∅ 1.97	M6 X 9 DEEP	0.91
DS79P	12.13	12.13	5.47	6.29	0.87	3.15	1.18	∅ 2.76	M8 X 14 DEEP	0.74	∅ 1.97	M6 X 9 DEEP	1.14
ES79P	18.82	18.82	7.32	8.31	1.06	3.15	1.18	∅ 4.02	M10 X 15 DEEP	1.14	∅ 2.76	M8 X 14 DEEP	1.14
FS79P	23.54		8.78	10.71	1.41	5.12	1.18	∅ 4.92	M12 X 18 DEEP	1.50	∅ 4.02	M10 X 15 DEEP	1.93

Declutchable Manual Override for Series 79P



Standard Features:

- Output torque range of 1,100 in.x lbs. through 65,938 in.x lbs.
- Polyester coating
- End position travel stop
- ISO mounting
- Direct mount



Dimensions (in.)

ACTUATOR	GEARBOX	A		B	C	D	E	F	G	S	H	X
		A-S	A-A									
B79PA	RD-315	6.10		2.05	10.35	4.02	4.65	9.29	4.65	6.81	5.91	5.12
B579PA	RD-315	7.91		2.44	11.02	4.68	4.65	9.29	4.65	6.81	5.91	5.35
C79PA	RD-315	8.90		2.48	11.18	4.85	4.65	9.29	4.65	6.81	5.91	5.47
C579PA	RD-315	10.43		2.80	11.81	5.47	4.65	9.29	4.65	6.81	5.91	5.79
D79PA	RD-320	12.18		2.95	13.26	5.79	4.80	9.49	5.59	6.69	7.87	6.10
D579PA	RD-330	14.09		3.50	16.25	6.90	5.71	14.57	8.27	11.02	11.81	6.54
E79PA	RD-330	16.90		3.82	16.93	7.52	5.71	14.57	8.27	11.02	11.81	6.89
F79P	RD-345	23.54	17.48	4.72	22.40	10.71	6.38	15.59	9.57	11.26	15.75	8.39
G79PA	RD-350	27.32		5.31	28.54	12.32	6.89	18.07	10.51	13.70	23.62	9.65
L79PA	RD-360	26.40		6.77	34.05	14.49	7.64	19.02	11.81	14.01	29.53	11.18
M79PA	RD-370	29.23		8.50	37.60	16.85	8.23	24.72	13.28	18.43	31.50	12.52

P Series Limit Switch



Specifications

Temperature: -20C to 80C
Limit Switches: 16A mechanical switches

Weight: 1.2 lbs.
Voltages: AC: 20 - 250DC: 10 - 300V
Housing: Aluminum
Shaft: 304SS
Indicator Cover: Polycarbonate
Fasteners: 304SS
Bracket: 304SS

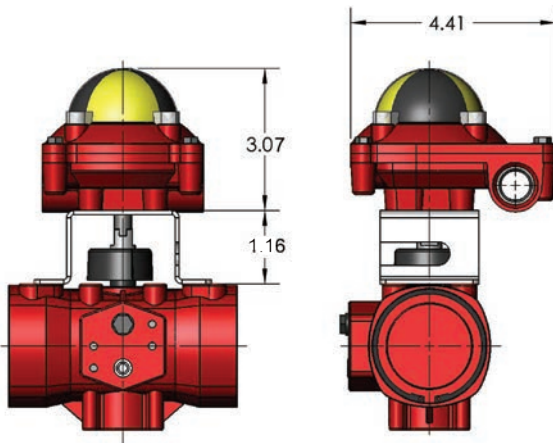
Standard Features

- Low cost valve position indication solution
- Thermally bonded rated powder coat finish Type 4X
- Two 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

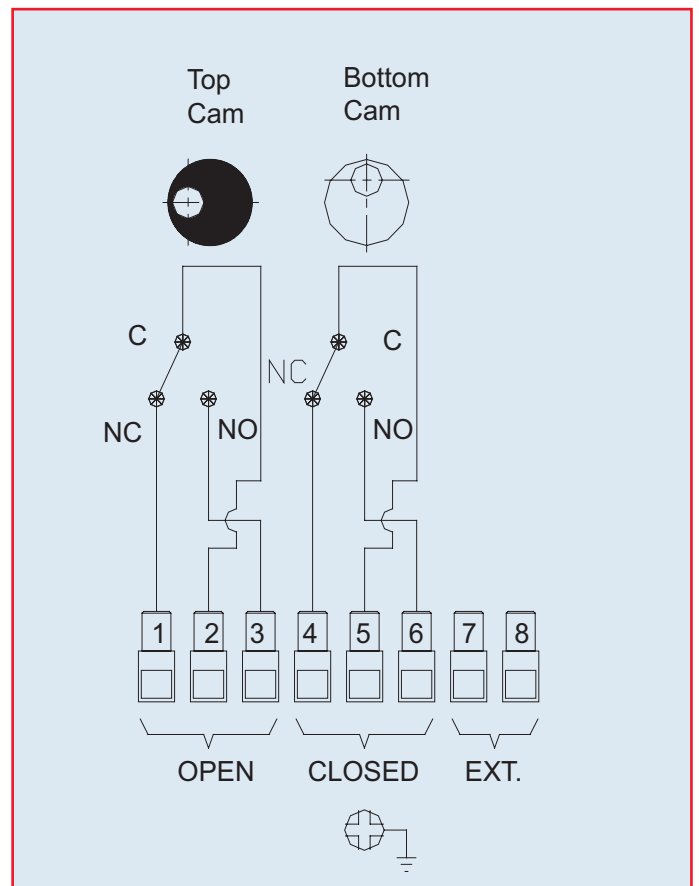
Options

- Inductive limit switches

Dimensions (in.)



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.

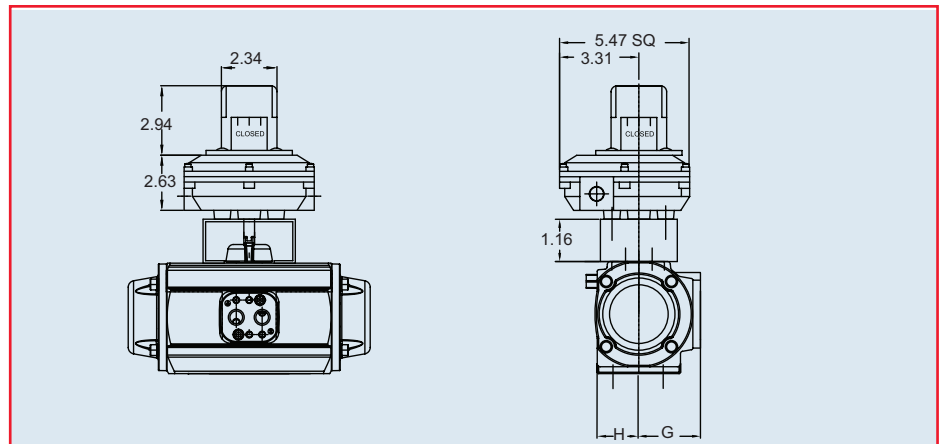
The cams are connected to the cam shaft, which is directly coupled to the actuator shaft. Switches can be set to be activated in fully open or closed positions, or in any position in the quadrant of the actuator's operation.

The limit switch box is available in NEMA 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 1/2" FNPT conduit entries
- Two single pole, double throw (two SPDT) limit switches; 15 amp rated



Options

- Two double pole, double throw (two DPDT) limit switches
- 4-20 mA transmitter
- NEMA 7 powder coated aluminum enclosure
- UL, CSA and FM approved Type 7

Pneumatic Actuators with Solenoid



The solenoid valve used for our pneumatic actuators is a four-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

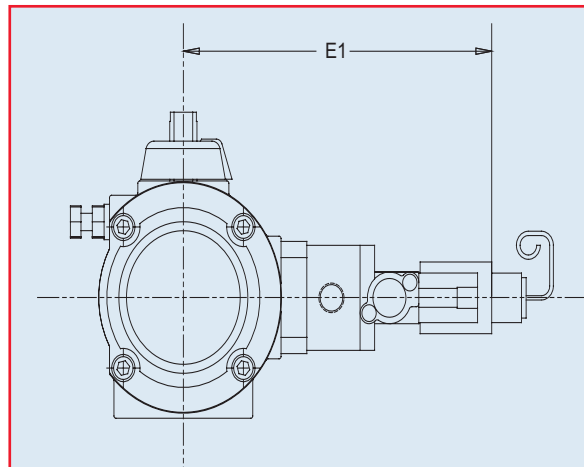
Upon electric failure, actuators will return to the de-energized position. This position can be either actuator position, depending upon how the plumbing is connected from the solenoid block to the air connection of the actuator.

Standard Features

- Engineered resin body
- NEMA Type 4X 120 VAC coil
- NAMUR mount
- Stainless steel trim
- 1/4" FNPT air connection
- Combination three-way/four-way
- 1/2" FNPT stainless steel conduit entry
- Manual override
- Speed controls
- Mufflers

Options

- NEMA 7 coil
- Voltages: 12 or 24 VAC
230 VAC
12 or 24 VDC



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
E79PA	8.00
F79P	9.01
G79PA	9.61
M79PA	12.80

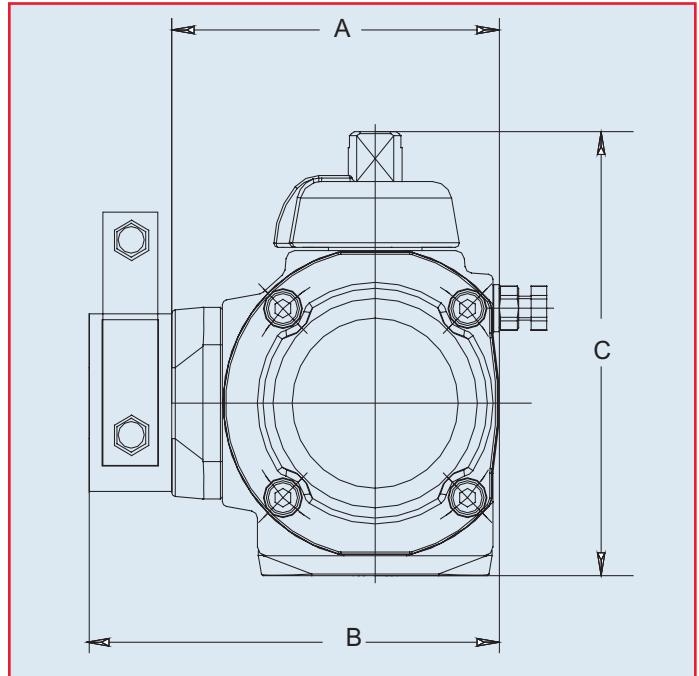
P-Series General Purpose Solenoid



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 three-way/four-way
- 1/2" FNPT conduit entry
- Manual override
- Speed controls
- Mufflers



Dimensions (in.)

Model No.	A	B	C
A79PA	3.00	4.18	3.50
B79PA	3.31	4.49	4.02
B579PA	4.02	5.20	4.68
C79PA	4.08	5.26	4.85
C579PA	4.70	5.88	5.47
D79PA	5.00	6.18	5.79
D579PA	6.02	7.20	6.90
E79PA	6.65	7.83	7.52
F79P	8.90	10.67	10.71
G79PA	10.14	11.91	12.32
L79PA	13.57	15.34	14.49
M79PA	15.85	17.62	16.85

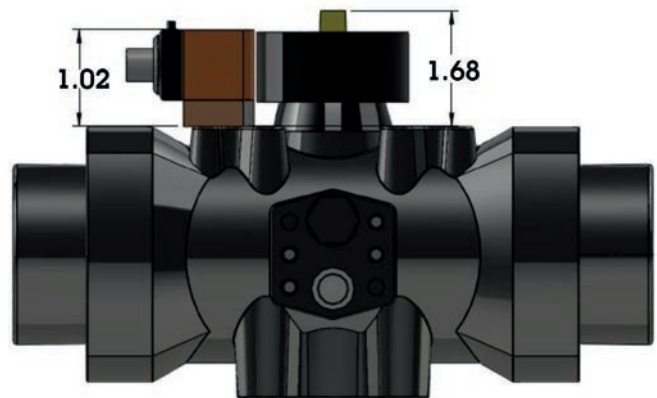
Inductive Switches



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]	-13 ^o F - 175 ^o F
Protection	IP 67 (Type 6)
Materials	PBT/SS
Status Indicators	2 x Yellow LED
Connection	M12 Connection

Standard Features

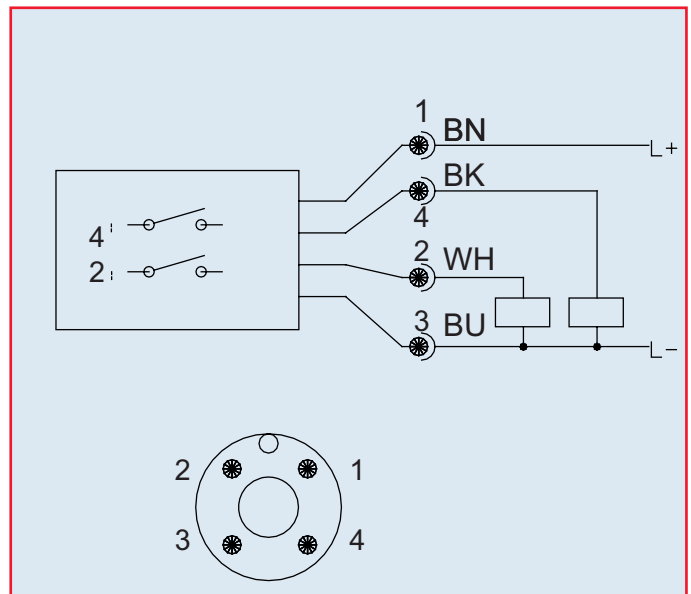
- Low profile
- Engineered resin with stainless steel trim
- Two SPST N/O (PNP) hermetically sealed inductive switches
- M12 connection
- Visual position indication
- Low current consumption
- Temperature limit of 175° F



Options

- Patch cable (M12F x M12M)
 - Industrial - General purpose
 - Sanitary - Wash down
 - .3M, 6M, 1M, 2M, 5M lengths
 - Straight or angled
- Cord set (M12F x Flying Leads)
 - Industrial - General purpose
 - Sanitary - Wash down
 - 2M, 5M, 10M lengths
 - Straight or angled

Wiring



I-Switch



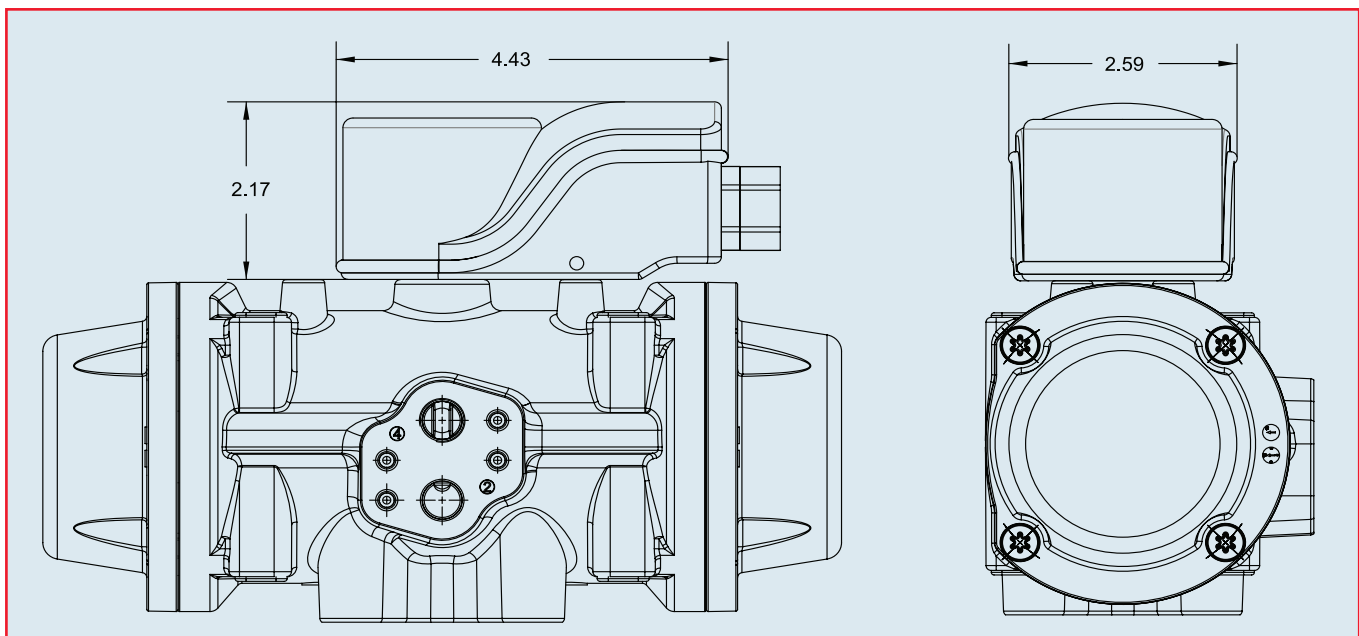
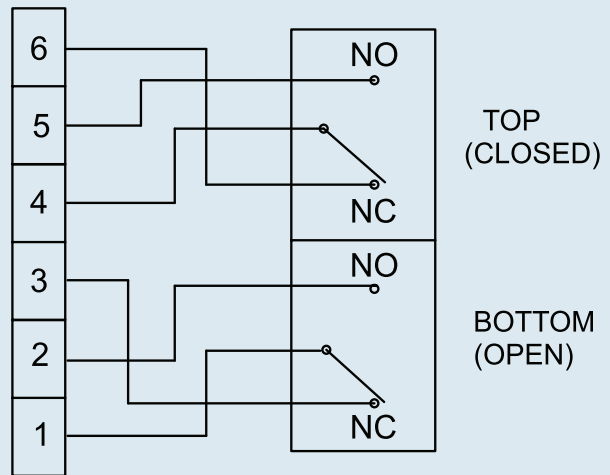
Specifications

Temperature: -25° C to 80° C
Limit Switches: 2-SPDT mechanical
Conduit: 1/2" NPT
Electrical Properties: 10A @ 250VAC
2.5A @ 24VDC
Housing: PAG
Cover: Polycarbonate
Fasteners: SS

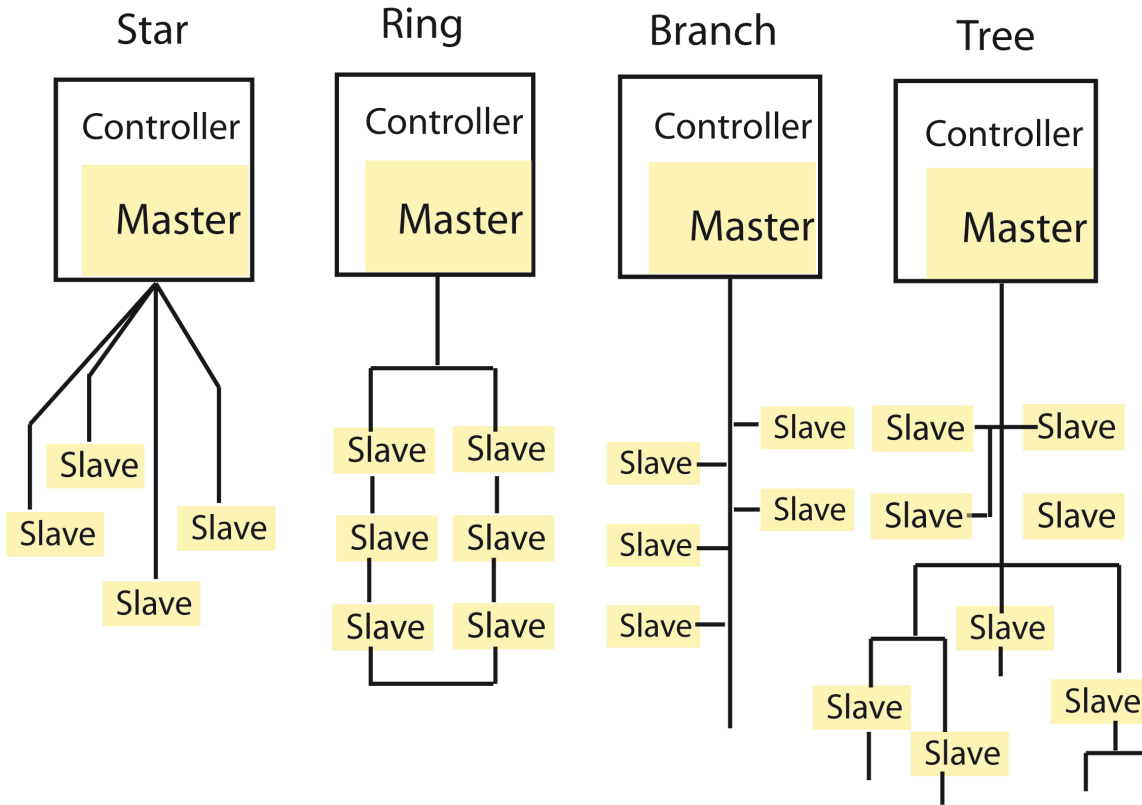
Standard Features

- IP67 PAG/polycarbonate enclosure mounts direct to actuator
- Low profile
- Highly visible position indication
- 1/2" NPT conduit entry
- Two 10A SPDT mechanical switches
- Stainless steel trim

Wiring



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 AS-i 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-i 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-i a cost effective connection/control solution, particularly where low installation costs are imperative. A 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 5 ms. 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, the ring, the branch, and the 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

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 stainless steel 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

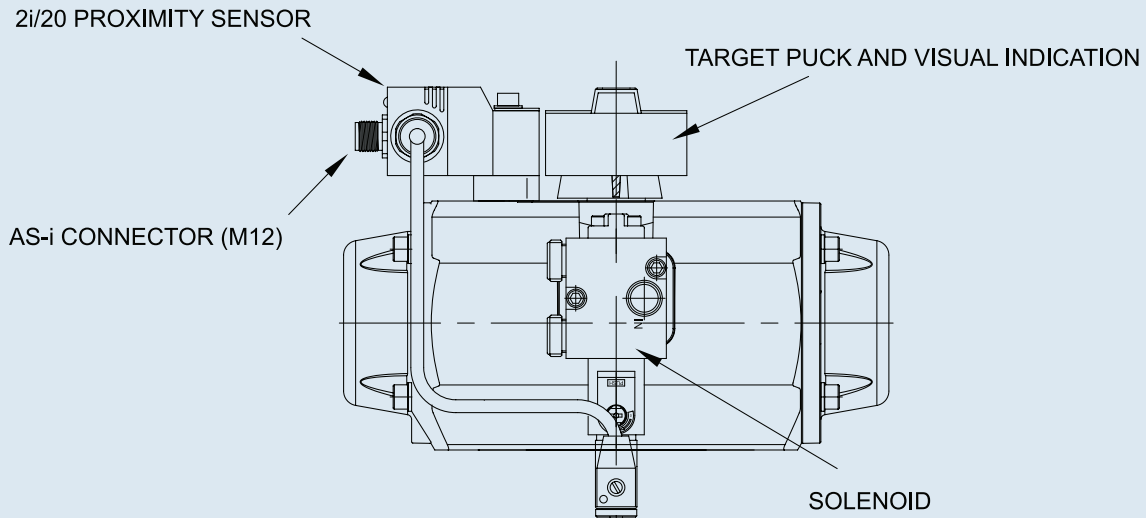
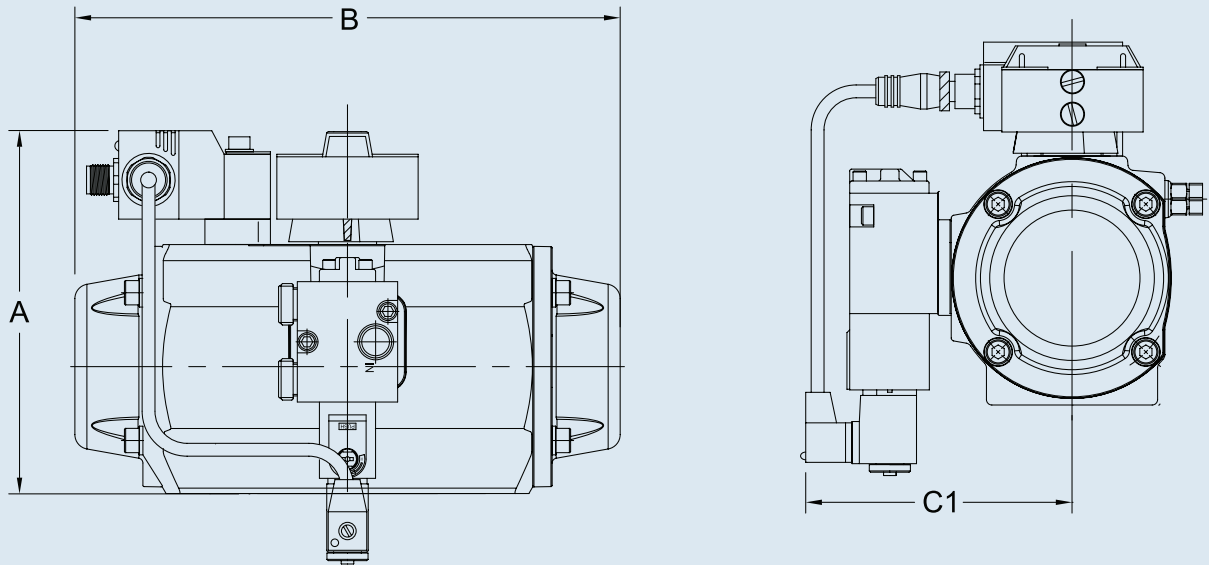
Accessories

- 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-i systems shall have a two-input/two-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 LEDs, voltage range of 27-30 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 override, and Type4X 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
A79PA	4.90	5.52	3.52
A79PAS	4.90	5.52	3.52
B79PA	5.76	6.00	3.78
B79PAS	5.76	6.00	3.78
B579PA	6.06	7.91	4.14
B579PAS	6.06	7.91	4.14
C79PA	6.23	8.83	4.22
C79PAS	6.23	8.83	4.22
C579PA	6.84	10.40	4.41
C579PAS	6.84	10.40	4.41

Dimensions (in.)

Series	A	B	C1
D79PA	7.53	12.19	4.69
D79PAS	7.53	12.19	4.69
D579PA	8.64	14.02	5.12
D579PAS	8.64	14.02	5.12
E79PA	9.29	16.83	5.75
E79PAS	9.29	16.83	5.75
F79PA	12.48	17.48	6.77
F79PAS	12.48	23.54	6.77
G79PA	14.09	20.63	7.36
G79PAS	14.09	27.32	7.36

Series 79P PST-A202DN SMART (Electro-Pneumatic)



Standard Features

- Simple calibration of positioner with autocal pushbuttons located inside of positioner housing
- Transmitter
- NEMA 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
- High vibration environments

Options

- 2-SPDT mechanical switches
- 2-SPST proximity switches
- Hart communications
- 316SS enclosure
- ATEX Ex ia IIC T5/T6 enclosure

Specifications

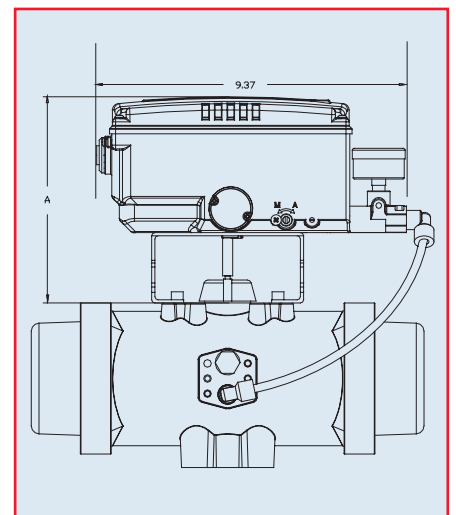
- Input Current:** 4 to 20mA
- Supply Air Pressure:** 60 to 100psi
- Resolution:** 0.2% of Span
- Linearity:** 0.51% of Span
- Hysteresis:** 0.5% of Span
- Repeatability:** 0.2% of Span
- Air Connections:** 1/4" NPT
- Conduit Entry:** 1/2" NPT

Sample Specification

All PST-A202DN I/P modulating valves shall be equipped with the PST-A202D SMART (Electro-Pneumatic) Positioner. Positioner housing shall be polyester powder coated meeting NEMA 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.

Dimensions (in.)

Actuator	A
A79PA	6.40
B79PA	6.40
B579PA	6.40
C79PA	6.40
C579PA	6.40
D79PA	6.40
D579PA	6.40
E79PA	6.40
F79P	7.58
G79PA	7.58
L79PA	7.58
M79PA	7.58



Series 79P PST-101 Pneumatic Positioner



Specifications

Input Signal: 3-15psi

Supply Air Pressure: 60 to 100psi

Air Consumption: 0.4 CFM @ 60psi

Linearity: 2% of Span

Hysteresis: 1% of Span

Repeatability: 0.5% of Span

Conduit Entry: 1/2" NPT

Sample Specification

All PST-101 modulating valves shall be equipped with the PST-101 pneumatic positioner. Positioner housing shall be polyester powder coated rated Type 4X, with stainless steel 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

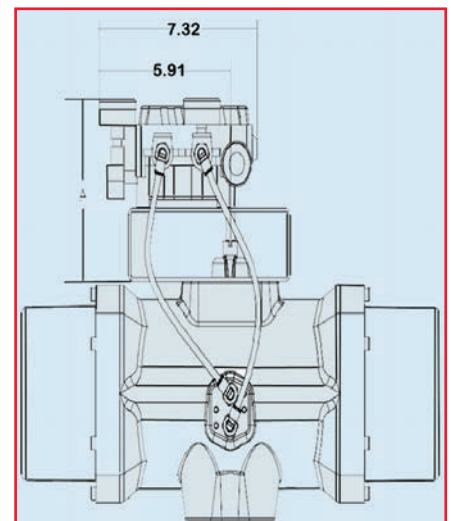
- Simple calibration of positioner with independent zero and span
- Short and precise response time
- Type 4X rated enclosure
- Corrosion resistant polyester powder coated enclosure
- Stainless steel trim
- Low air consumption
- Pressure gauges
- 1/4" NPT air connection
- Can operate in high vibration environments
- Reverse acting capability
- Temperature limit of 185° F

Options

- Two SPDT mechanical switches
- Two SPST inductive switches
- Hart capability
- 4-20 mA transmitter

Dimensions (in.)

Actuator	A
A79PA	5.04
B79PA	5.04
B579PA	5.04
C79PA	5.04
C579PA	5.04
D79PA	5.04
D579PA	5.04
E79PA	5.04
F79P	6.22
G79PA	6.22
L79PA	6.22
M79PA	6.22



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 types of motors used for electric actuators: unidirectional and bidirectional (commonly known as reversing motors).

- Unidirectional motors are motors in which the armature rotates in one 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 sets of windings allowing the armature to rotate in either direction depending on which set of windings is powered. One set of windings controls the clockwise direction for closing a valve, while the other set of windings controls the counter-clockwise direction for opening the valve. A major benefit of a bidirectional 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.

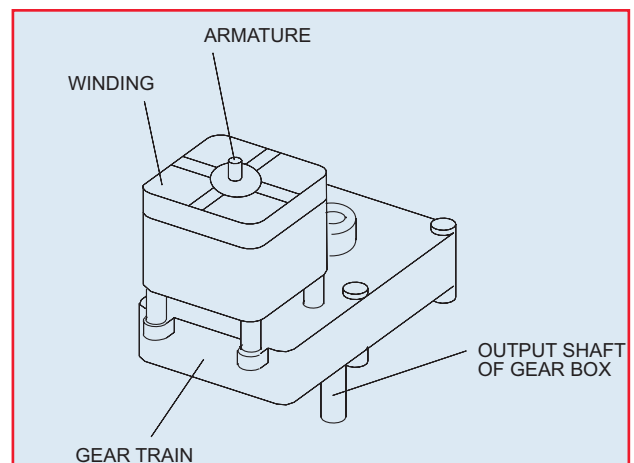
PLC/DCS Controlled Process:

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 start up 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.



- **Auxiliary limit switches:** Auxiliary (additional) limit switches are typically used as valve position confirmation (end of travel) with a PLC, DCS, etc. Other applications are for interlocking with other equipment or valves. These switches are SPDT with a 15 amp rating, and dry contact.
- **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 is effective to -40 degrees F.
- **RHM Module:** The RHM Module is a combination of a 15Watt heater and thermostat arrangement along with 2-SPDT dry contact 8Amp relays that act as auxiliary limit switches. This module operates via standard control wiring, and is a cost effective solution to separate installs of the heater and thermostat option and the auxiliary limit switch option.
- **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 of opening percentage from 0-1000 ohms
- **Modulation/Positioner:** A digital positioner can be installed inside of the actuator for precise modulating control. The positioner accepts a variety of supply voltages and can be calibrated for various control signals (4-20mA, 0-10vdc, 0-5vdc, 1-5vdc, etc.).
- **Transmitter:** A transmitter can be installed in the unit to provide precise valve position (position feedback) to a PLC, DCS, etc. via current or voltage. This feedback is output from the actuator NOT a control signal to the actuator. Certain transmitter models are also equipped with 3-SPST dry relay contacts.
- **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

- **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 is installed inside of the actuator. When supply power is lost, the unit will then travel to a pre-determined "fail position". It is imperative that there be constant supply power to the unit to ensure that the battery pack maintain a full charge.
- **Multiturn:** This option allows the actuator to make multiple revolutions that are needed when automating valves such as diaphragm, gate, needle, etc. This option is only available with the Series 92 Electric Actuator.
- **Voltages:** There are five voltage options available to meet a variety of customer needs: 230 VAC, 12 VDC, 24 VDC, 12VAC, 24 VAC

Standard Features

- **Motor:** Reversing, brushless, capacitor-run 120 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated hardened steel gears
- **Corrosion resistant housing:** Thermally bonded powder coating rated Type 4X with stainless steel trim
- **ISO mounting configuration:** FO7/17mm star
- **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
- **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
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **Enclosure:** Weatherproof enclosure rated Type 4X has a thermally bonded powder coat finish with SS trim
- **Captivated SS hexhead slotted cover screws**
- **Corrosion resistant mounting:** Mounting is with PPG or stainless steel bracket, stainless steel coupling, and stainless steel hardware
- **CE compliant motor:** All 120 VAC and 220 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 2,000 in./lbs.



Options

- Auxiliary (additional) limit switches
- Heater and thermostat
- RHM (see page 189)
- Feedback potentiometer
- Positioner (modulating PCB)
- Mechanical brake
- Transmitter
- Cycle length control module (CLC)
- Two-wire control
- Failsafe battery back up (Protek)
- Voltages
- Local remote station (LL200)
- UL1203 explosion proof enclosure

Engineering Specifications

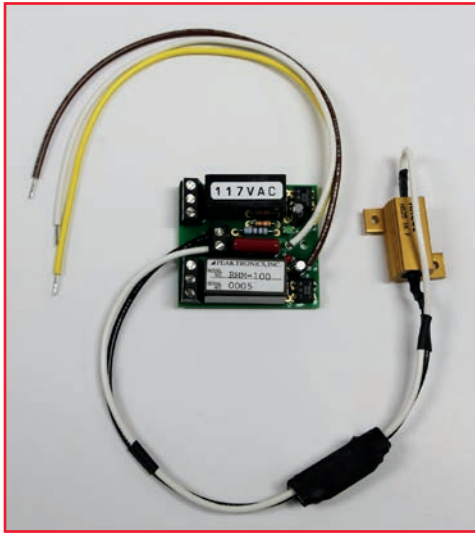
Size: S92, A92, B92, C92
 Torque: 400-2000 in./lbs
 Voltage: 120 VAC 1Ph 50/60 Hz
 Amp Draw: S92, B92 .5A, A92 .8A, C92 1.0A
 Conduit Entry: Two (2) 1/2" NPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw (2SPDT)
 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds*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

Engineering Data

Model	Torque (in./lbs)	120 VAC		220 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.



Specifications

Standard Operating Voltage: 120 VAC
Optional Voltages: 220 VAC, 12 VAC, 24 VAC, 12 VDC, 24 VDC
Operating Current: 42mA @ 120 VAC
 39mA @ 220 VAC
 89mA @ 12 VAC
 43mA @ 24 VAC
 37mA @ 12 VDC
 23mA @ 24 VDC

Relay Outputs (Form C): 8A
Operating Temperature: -40 to 85 C
Approved for UL508 & UL1203 Actuators

Series 92/Series 94 Optional RHM (Relay Heater Module)

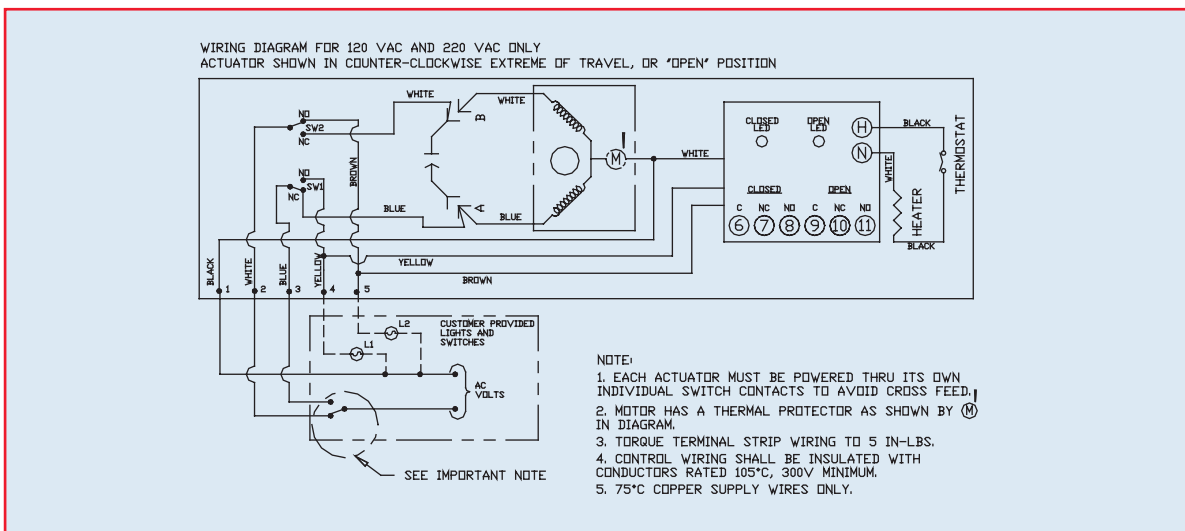
The RHM (Relay Heater Module) is a means of powering an optional heater and thermostat without requiring an additional constant power source or wiring. These modules also provide open and close Form C dry contacts that replace auxiliary switches. A 2-pin terminal block provides wiring connection of the heater and thermostat, while two 3-pin terminal blocks provide easy connection to the relays by the user.

When the actuator is powered to open, the motor runs until the open limit switch is tripped, then sends power to the RHM open connection. At that time power is provided to the heater and thermostat, the open relay coil, and to the on board red LED. This provides contact closure at the end of the open cycle and confirms that power is provided to the heater and thermostat.

When the actuator is powered to close, the motor runs until the close limit switch is tripped, then sends power to the RHM close connection. At that time power is provided to the heater and thermostat, the close relay coil, and to the on board green LED. This provides contact closure at the end of the close cycle and confirms that power is provided to the heater and thermostat.

*Power must be maintained at the end of travel for power to be applied to heater and thermostat. Also note that no power is provided to heater and thermostat when the actuator is in mid travel.

AC Wiring (For 120 VAC and 220 VAC only)



Standard Features

- **Motor:** Reversing, brushless, capacitor run 120 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 Enclosure:** Thermally bonded polyester powder coat finish with stainless steel trim rated Type 4X
- **ISO mounting configuration:** F07/17mm star
- **Conduit:** Two ½" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **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 on to flats and rotate in the appropriate direction. Models with handwheel override, push down on handwheel until engaged with cam and rotate
- **Limit switches:** Two (2) SPDT end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **RHM Module:** Module consisting of a heater and thermostat, and 2-SPDT 8A dry contact relays for PLC position confirmation, or auxiliary equipment
- **Captivated SS hexhead slotted enclosure screws**
- **Corrosion resistant mounting:** Mounting is with PPG or SS bracket, SS coupling and SS fasteners
- **CE compliant motor:** All 120 VAC and 220 VAC motors are CE compliant stamped as such
- **Extended duty cycles:** 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



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) ½" FNPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw (2-SPDT) 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds
 B92, C92: 32 seconds
 RHM Module: Heater and thermostat with two (2) SPDT 8A dry contact relays (Auxiliary switches)

Options

- Feedback Potentiometer
- Mechanical brake
- Transmitter
- Cycle Length Control Module (CLC)
- Two-wire Control
- Hand wheel manual override
- Voltages
- HMI/LRS Control Station
- UL 1203 Explosion Proof

Engineering Data

Model	Torque (in/lbs)	120 VAC		220 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		
S92RHM	400	0.5	100%	0.4	100%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	15	15.3
A92RHM	700	0.8	75%	0.6	75%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	15	15.3
B92RHM	1100	0.5	100%	0.4	100%	2.0	75%	4.0	75%	2.0	75%	3.0	75%	32	15.3
C92RHM	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.

Series 92 LVLC 12 VDC & 24 VDC Multiturn

Standard Features

- **UL508 for General Locations**
- **Motor:** (LVLC) Low Voltage Low Current reversing dc motor
- **Gear train:** Permanently lubricated, solid gear that is rockwell hardened
- **Corrosion Resistant Enclosure:** Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO** mounting configuration (FO7/17 star)
- **Conduit:** Two ½" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** 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 on to 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)
- **Rhm Module:** Module consisting of a heater and thermostat and 2-SPDT 8A dry contact relays for PLC position confirmation or auxiliary equipment
- **UL508 Enclosure:** Weather Proof enclosure for use in general locations
- **Captivated SS hex head slotted enclosure screws**
- **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



Engineering Specifications

Size: S92JBMTRHM, A92JBMTRHM, B92JBMTRHM, C92JBMTRHM

Torque: 400-2000 in/lbs

Voltage: 24 Vdc

Amp Draw: 4.0 Amps

Conduit Entry: Two (2) ½" FNPT

Max Ambient Temperature: 150° F

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

Cycle Time per 90°: S92, A92: 8 seconds

B92, C92: 15 seconds

RHM Module: Heater and thermostat with two (2) SPDT 8A dry contact relays (Auxiliary switches)

Options

- 4-20mA Positioner
- 4-20mA transmitter
- DC control relay
- 12 VDC
- Hand wheel manual override
- No manual override
- Custom wiring configurations
- UI1203 Explosion Proof

Engineering Data

Model	Torque (in/lbs)	12 VDC			24 VDC			Weight (lbs)
		Amp Draw	Duty Cycle	Cycle Time per 90 Degrees (seconds)*	Amp Draw	Duty Cycle	Cycle Time per 90 Degrees (seconds)*	
S92JBMTRHM	400	2.0	75%	15	4.0	75%	8	15.3
A92JBMTRHM	700	2.0	75%	15	4.0	75%	8	15.3
B92JBMTRHM	1100	2.0	75%	38	2.0	75%	15	15.3
C92JBMTRHM	2000	2.0	75%	38	2.0	75%	15	18.3

Note: Amp rating is considered locked rotor.

Duty cycles are for ambient temperature (73° F).

* Cycle times are approximate and will vary depending on load.

Series 92 LVLC 5000 in/lb

Standard Features

- **UL508 for General Locations**
- **Motor:** [LVLC] Low Voltage/Low Current reversing dc motor
- **Gear train:** Permanently lubricated, solid gear that is Rockwell hardened
- **Corrosion Resistant** Enclosure: Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO mounting configuration:** (F14/36 star)
- **Conduit:** Two 1/2" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** Highly visible beacon position indicator for positive position of valve, even at a distance
- **Limit switches:** Standard end of travel limit switches can be used for light indication
- **UL508 Enclosure:** Weather Proof enclose for use in general locations
- **Captivated SS hex head slotted enclosure screws**
- **Extended duty cycles:** Our extended duty cycles are ideal for modulating and high cycling applications
- **Output torque:** 5000 in/lbs



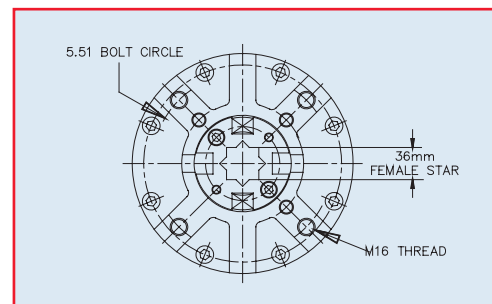
Options

- Auxiliary limit switches
- Heater and Thermostat
- RHM Module (See page 189)
- 4-20mA Positioner
- 4-20mA transmitter
- DC control relay
- Hand wheel manual override
- Custom wiring configurations

Engineering Specifications

Size: C92G
 Torque: 5000 in/lbs
 Voltage: 12 VDC, 24 VDC
 Amp Draw:
 2.0 Amps at 12 VDC
 4.0 Amps at 24 VDC
 Conduit Entry: Two (2) 1/2" FNPT
 Switches: Two (2) single pole, double throw
 [2-SPDT] 15 amp rated
 Cycle Time per 90°: 53 sec

Output



Engineering Data

Model	Torque (in/lbs)	12 VDC		24 VDC		Cycle time Per 90 degrees (Seconds)*	Weight
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
C92GX	5000	2.0	75%	4.0	75%	53 Sec	117

Amp rating is considered locked rotor

Duty cycles are for ambient temperature (73°F)

*Cycle times are approximate and will vary depending on load

Series 92 LVLC 5000 in/lb Explosion Proof

Standard Features

- **UL1203 Certified (CLI, DIV. 1&2)**
- **Motor:** (LVLC) Low Voltage/Low Current reversing dc motor
- **Gear train:** Permanently lubricated, solid gear that is Rockwell hardened
- **Corrosion Resistant** Enclosure: Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO mounting configuration:** (F14/36 star)
- **Conduit:** Two ½" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** Highly visible beacon position indicator for positive position of valve, even at a distance
- **Limit switches:** Standard end of travel limit switches can be used for light indication
- **UL1203 Enclosure:** Combination Weather Proof & Explosion Proof (CLI, Div. 1&2) enclosure for use in various environments
- **Captivated SS hex head slotted enclosure screws**
- **Extended duty cycles:** Our extended duty cycles are ideal for modulating and high cycling applications
- **Output torque:** 5000 in/lbs

Options

- Auxiliary limit switches
- Heater and Thermostat
- RHM Module (see page 189)
- 4-20mA Positioner
- 4-20mA transmitter
- DC control relay
- Hand wheel manual override
- TYPE 7 Breather
- Custom wiring configurations

Engineering Data

Model	Torque (in/lbs)	12 VDC		24 VDC		Cycle time Per 90 degrees (Seconds)*	Weight
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
C92GXW	5000	2.0	75%	4.0	75%	53 Sec	117

Amp rating is considered locked rotor

Duty cycles are for ambient temperature (73°F)

*Cycle times are approximate and will vary depending on load



Engineering Specifications

Size: C92GXW

Torque: 5000 in/lbs

Voltage: 12 Vdc, 24 VDC

Amp Draw:

2.0 Amps at 12 VDC

4.0 Amps at 24 VDC

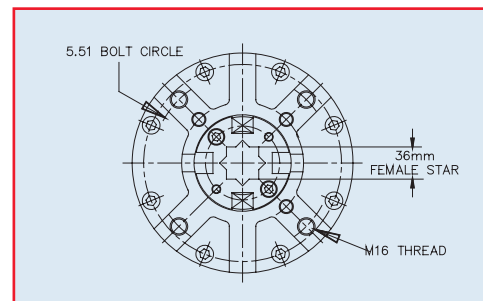
Conduit Entry: Two (2) ½" FNPT

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

Cycle Time per 90°: 53 sec

Enclosure: UL1203 CLI, Div. 1&2

Output



Standard Features

- **Exd IIB T4 Certified**
- **Motor:** Reversing, brushless, capacitor run 120 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 Enclosure:** Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO mounting configuration:** F07/17mm star
- **Conduit:** Two ½" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **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 on to flats 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)
- **ATEX Ex II 2 G Enclosure (Ex d IIB T4):** Combination Weather Proof & Explosion Proof enclosure for use in various environments
- **Captivated SS hexhead slotted enclosure screws**
- **CE compliant motor:** All 120 VAC and 220 VAC motors are CE compliant 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



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) ½" FNPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw [2-SPDT] 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds
 B92, C92: 32 seconds
 Enclosure: Exd IIB T4

Options

- 4-20mA Positioner
- 4-20mA Transmitter
- Auxiliary limit switches
- Mechanical brake
- AC control relay
- 220 VAC
- Hand wheel manual override
- TYPE 7 Breather

Engineering Data

Model	Torque (in/lbs)	120/1 VAC		220/1 VAC		Cycle time Per 90 degrees (Seconds)*	Weight
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
S92	400	0.5	100%	0.4	100%	15	15.3
A92	700	0.8	75%	0.6	75%	15	15.3
B92	1100	0.5	100%	0.4	100%	32	15.3
C92	2000	1.0	50%	0.6	50%	32	18.3

Amp rating is considered locked rotor

Duty cycles are for ambient temperature (73F)

*Cycle times are approximate

Series 92 120 VAC & 220 VAC Explosion Proof Electric Actuator

Standard Features

- **UL1203 Certified (CL.I, DIV. 1&2)**
- **Motor:** Reversing, brushless, capacitor run 120 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 Enclosure:** Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO mounting configuration:** F07/17mm star
- **Conduit:** Two 1/2" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **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 on to 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)
- **UL1203 Enclosure:** Combination weather proof & explosion proof [CL.I, Div. 1&2] enclosure for use in various environments
- **Captivated SS hexhead slotted enclosure screws**
- **CE compliant motor:** All 120 VAC and 220 VAC motors are CE compliant 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

Options

- Auxiliary limit switches
- Heater and Thermostat
- RHM (see page 189)
- Mechanical brake
- DC control relay
- 220 VAC
- Hand wheel manual override
- No manual override
- TYPE 7 breather
- Custom wiring configurations



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" FNPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw [2-SPDT] 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds
 B92, C92: 32 seconds
 Enclosure: UL1203 CL.I, Div. 1&2

Engineering Data

Model	Torque (in/lbs)	120/1 VAC		220/1 VAC		Cycle Time per 90 Degrees (seconds)*	Weight (lbs)
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
S92	400	0.5	100%	0.4	100%	15	15.3
A92	700	0.8	75%	0.6	75%	15	15.3
B92	1100	0.5	100%	0.4	100%	32	15.3
C92	2000	1.0	50%	0.6	50%	32	18.3

Note: Amp rating is considered locked rotor.

Duty cycles are for ambient temperature (73° F).

* Cycle times are approximate and will vary depending on load.

Series 92 LVLC 12 VDC & 24 VDC/DC Explosion Proof

Standard Features

- **UL1203 Certified (CL.I, DIV. 1&2)**
- **Motor:** (LVLC) Low Voltage/Low Current reversing dc motor
- **Gear train:** Permanently lubricated, solid gear that is Rockwell hardened
- **Corrosion Resistant Enclosure:** Thermally bonded polyester powder coat finish with stainless steel trim
- **ISO mounting configuration:** FO7/17mm star
- **Conduit:** Two 1/2" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **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 on to 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)
- **UL1203 Enclosure:** Combination weather proof & explosion proof (CL.I, Div. 1&2) enclosure for use in various environments
- **Captivated SS hex head slotted enclosure screws**
- **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

Options

- Auxiliary limit switches
- Heater and Thermostat
- RHM (see page 189)
- 4-20mA positioner
- 4-20mA transmitter
- DC control relay
- 24 VDC
- Hand wheel manual override
- No manual override
- TYPE 7 breather
- Custom wiring configurations



Engineering Specifications

Size: S92, A92, B92, C92
 Torque: 400-2000 in/lbs
 Voltage: 12 VDC
 Amp Draw: 2.0 Amps
 Conduit Entry: Two (2) 1/2" FNPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw [2-SPDT] 15 amp rated
 Cycle Time per 90°: S92, A92: 15 seconds
 B92, C92: 32 seconds
 Enclosure: UL1203 CL.I, Div. 1&2

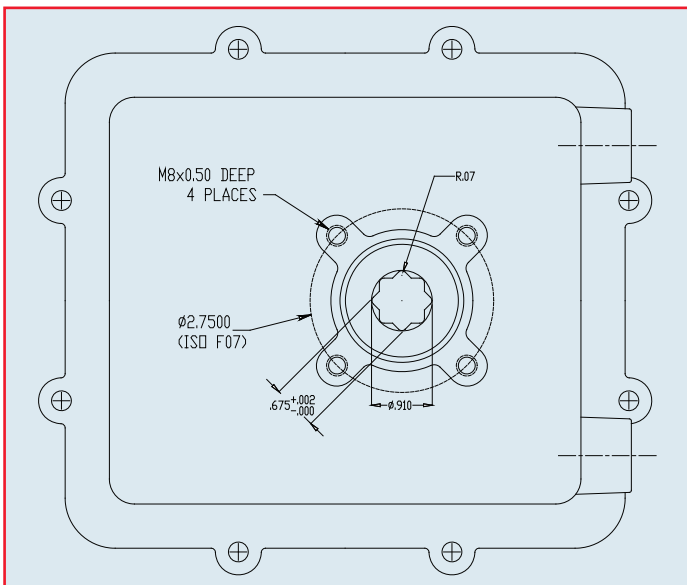
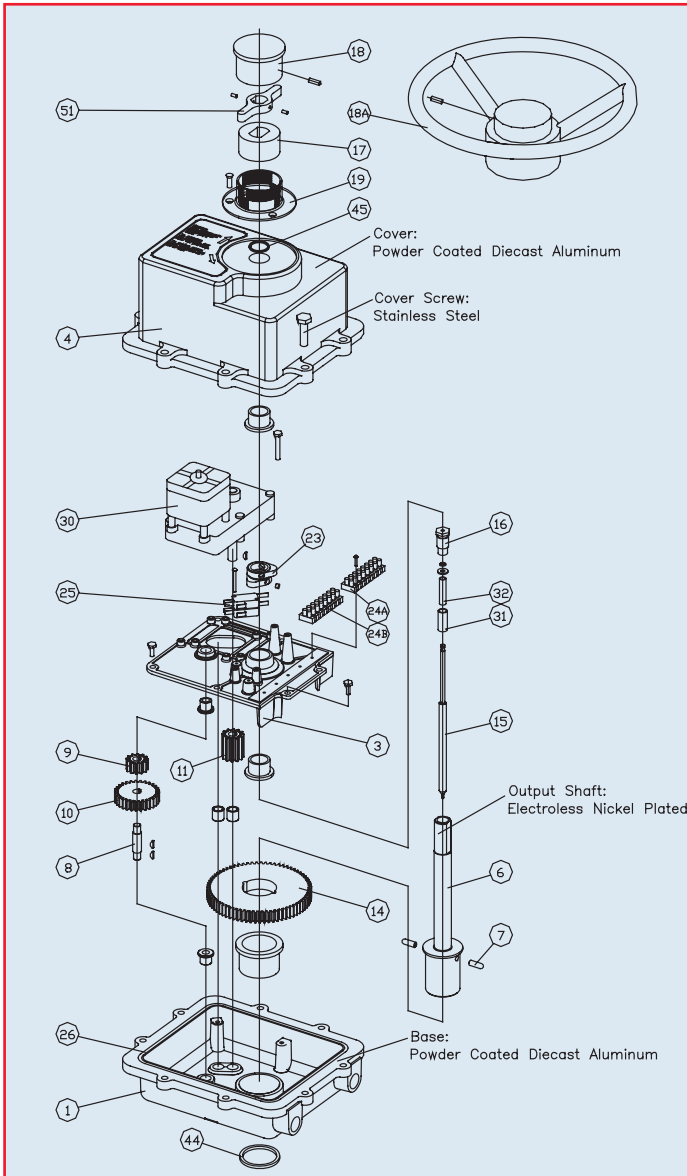
Engineering Data

Model	Torque (in/lbs)	12 VDC		24 VDC		Cycle Time per 90 Degrees (seconds)*	Weight (lbs)
		Amp Draw	Duty Cycle	Amp Draw	Duty Cycle		
S92	400	2.0	75%	4.0	75%	15	15.3
A92	700	2.0	75%	4.0	75%	15	15.3
B92	1100	2.0	75%	4.0	75%	32	15.3
C92	2000	2.0	75%	4.0	75%	32	18.3

Note: Amp rating is considered locked rotor.
 Duty cycles are for ambient temperature (73° F).
 * Cycle times are approximate and will vary depending on load.

Series 92 Parts List

General Parts List



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	7401908	1	1	1		Shaft Main
6A	7401909				1	Shaft Main
7	7401360	2	2	2	2	Pin
8	7401280			1	1	Shaft Stub
9	7402003			1	1	Spur Gear B1
10	7402002			1	1	Spur Gear A1
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	7401948	1		1		Capacitor 4.2mFD
27A	7402004		1			Capacitor 6.7 mFD
28	7403008				1	Capacitor 7.6mFD
29	7401520	1	1	1	1	Capacitor Bracket
30	7401340	1	1	1	1	Motor{120VAC}
31	7401250	1	1	1	1	Shell
32	7401220	1	1	1		Spring
32A	7401230				1	Spring
35	ACTMSC	3	3	3	3	Collar Screw
36	ACTMSC	8	8	8	8	Cover Screw
38	ACTMSC	1	1	3	3	Key, Woodruff 3/32
39	ACTMSC	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	ACTMSC				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. 120 VAC and 220 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 thermally bonded powder coat finish with stainless steel trim rated Type 4X. Each actuator to have a declutchable manual override, visual position indication, ISO mounting configuration, as manufactured by Asahi/America, Inc.

Standard Features

- **Motor:** Reversing, brushless, capacitor-run 120 VAC 50/60 Hz, single phase
- **Overload protection:** Integral thermal overload protection for motor windings with automatic reset
- **Gear train:** Permanently lubricated
- **Corrosion resistant enclosure:** Engineered resin rated NEMA Type 4X with stainless steel trim
- **ISO mounting configuration:** F05 x 14mm star
- **Conduit:** Two 1/2" NPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** Highly visible position indicator for positive position of valve
- **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 120 VAC and 220 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:** Corrosion proof weatherproof rated Type 4X
- **Captivated SS hex head slotted cover screws**



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 single pole, double throw (Two SPDT)
 15 amp rated
 Cycle Time per 90°: A94, B94: 5 seconds

Options

- Auxiliary (additional) limit switches
 - Heater and thermostat
 - RHM (see page 199)
 - Mechanical brake
 - Transmitter
 - Cycle length control module (CLC)
 - Two-wire control
 - Center-off
 - Failsafe battery back up (Protek)
 - Voltages
 - Local Remote Station (LL200)
- See page 187 for more details regarding options.

Engineering Data

Model	Torque (in./lbs)	120 VAC		220 VAC		12 VDC		24 VDC		12 VDC		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.

Standard Features

- **Motor:** Reversing, brushless, capacitor run 120 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 enclosure:** Engineered resin rated Type 4X with stainless steel trim
- **ISO mounting configuration:** F05/14mm star
- **Conduit:** Two 1/2" FNPT conduit entries to eliminate cross feed between control, feedback, and power signals
- **Position indication:** Highly visible position indicator for positive position of valve
- **Decutchable manual override:** Push down on handle and rotate in appropriate direction (CCW for open/CW for close)
- **Limit switches:** Two (2) SPDT end of travel limit switches can be used for light indication (not to be use with PLC for position confirmation)
- **RHM Module:** Module consisting of a heater and thermostat, and 2-SPDT 8A dry contact relays for PLC position confirmation, or auxiliary equipment
- **Captivated SS hexhead slotted enclosure screws**
- **Corrosion resistant mounting:** Mounting is with PPG or SS bracket, SS coupling and SS fasteners
- **CE compliant motor:** All 120 VAC and 220 VAC motors are CE compliant stamped as such
- **Extended duty cycles:** 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:** Corrosion proof weather proof rated Type 4X



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" FNPT
 Max Ambient Temperature: 150° F
 Switches: Two (2) single pole, double throw (2-SPDT) 15 amp rated
 Cycle Time per 90°: A94, B94: 5 seconds
 RHM Module: Heater and thermostat with two (2) SPDT 8A dry contact relays (Auxiliary switches)

Options

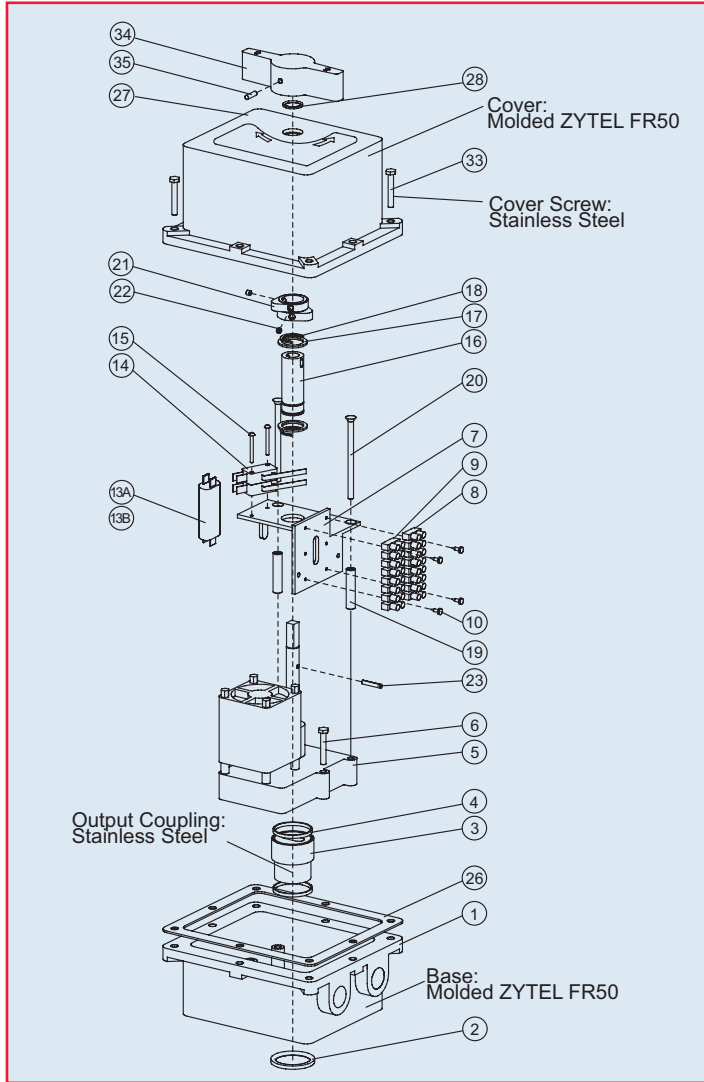
- Feedback Potentiometer
- Positioner (modulating PCB)
- Transmitter
- Mechanical brake
- Cycle Length Control Module (CLC)
- Two-wire Control
- Failsafe Battery Back Up (Protek)
- Voltages
- HMI/LRS Control Station

Engineering Data

Model	Torque (in/lbs)	120 VAC		220 VAC		12 VDC		24 VDC		12 VDC		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

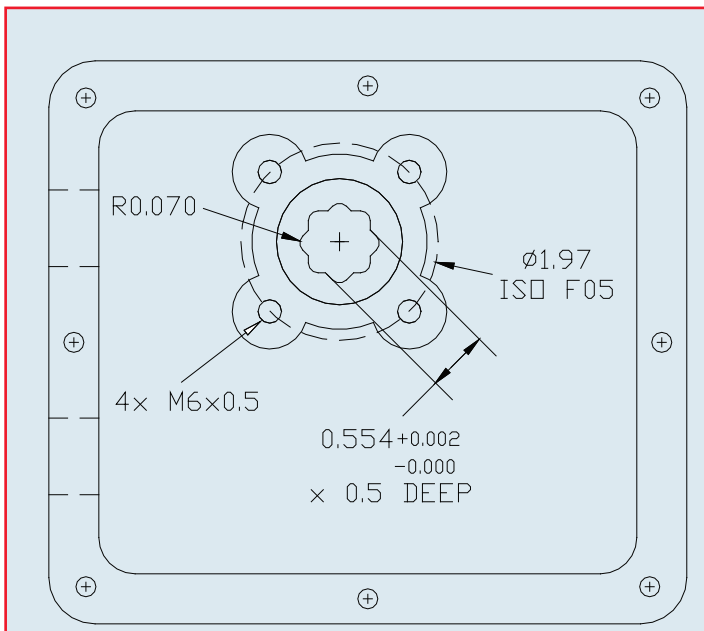
Note: Amp rating is considered locked rotor. Duty cycles are for ambient temperature (73° F).

*Cycle times are approximate.



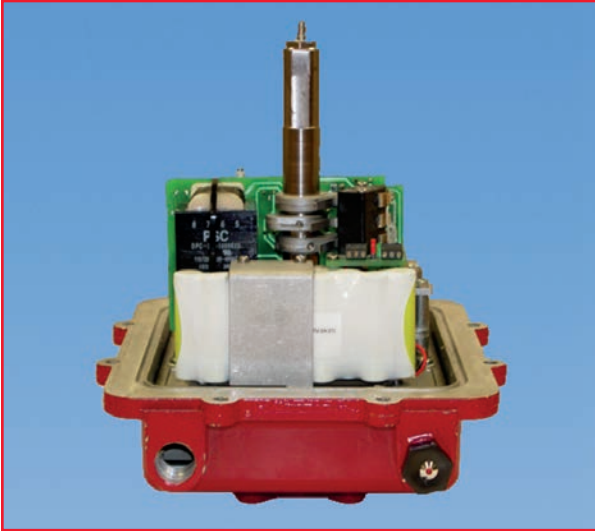
General Parts List

PARTS LIST			
NO.	Part Number	Quantity	Description
1	7403002	1	Base
2	7403000	1	Base Seal
3	7403043	1	Output Coupling
4	7403005	2	Coupling Gasket
5	7403004	1	Motor(120VAC)
6	ACTMSC	2	Motor Screw
7	7403011	1	Base Plate
8	7401420	1	Terminal Block 1-8
9	7401425	1	Terminal Block 9-16
10	ACTMSC	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	ACTMSC	2	Limit Switch Screw
16	7403016	1	Outer Shaft
17	7403006	2	Outer Shaft Gasket
18	ACTMSC	2	Retaining Ring
19	ACTMSC	2	Standoff
20	ACTMSC	2	Base Plate Screw
21	7401480	2	Cam
22	ACTMSC	4	Cam Set Screw
23	ACTMSC	1	Pin
26	7403007	1	Base Gasket
27	7403001	1	Cover
28	7403020	1	Cover Seal
33	ACTMSC	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. 120 VAC and 220 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, rated Type 4X. Each actuator to have a declutchable manual override, visual position indication, ISO mounting configuration, as manufactured by Asahi/America, Inc.



The Quarter master Protek failsafe electric actuator features a rechargeable battery pack, 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 is 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
- **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 percent duty cycle motor
- **Gear train:** Permanently lubricated, hardened steel gearing
- **Weatherproof enclosure** has a thermally bonded powder coat finish with stainless steel trim
- **ISO mounting configuration:** FO7/17mm star
- **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)
- **Manual override** to be used ONLY when there is no supply power and no battery power
- **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 2,000 in./lbs.

Engineering Specifications

Size: S92, A92, B92, C92

Torque: 400 in./lbs. - 2000 in./lbs.

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

Amp Draw: 0.4A

depending on supply voltage

Conduit Entry: one 1/2" FNPT

Maximum Ambient Temperature: 150° F

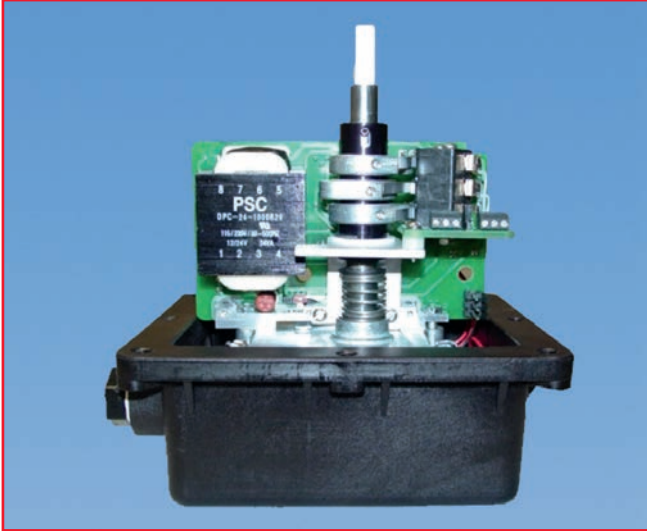
Switches: three SPDT, 11 amp rated. Two (2) for end of travel, one auxiliary calibrated with fail position.

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

*Cycle times are approximate

Options

- Voltages
- Heater and thermostat
- Additional limit switch (Total of four) - 2 - position, 2 dry contact)
- Feedback potentiometer
- Local Remote Station (PT100)



The Quarter Master Protek Failsafe electric actuator features a rechargeable battery pack 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
- **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 percent duty cycle motor
- **Gear train:** Permanently lubricated
- **Enclosure:** Weatherproof rated NEMA Type 4X
- **Corrosion resistant enclosure:** Engineered resin with stainless steel trim
- **ISO mounting:** FO7/17mm star
- **Conduit: one 1/2" FNPT conduit entry**
- **Position indication:** Highly visible position indicator for positive position of valve
- **Dec clutchable manual override:** Push down on handle and rotate in appropriate direction
- **Manual override** to be used ONLY when there is no supply power and no battery power
- **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.

Engineering Specifications

Size: A94, B94

Torque: 150 in./lbs. - 300 in./lbs.

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

Amp Draw: 0.4

depending on supply voltage

Conduit Entry: one 1/2" FNPT

Maximum Ambient Temperature: 150° F

Switches: three SPDT, 11 Amp rated. two for end of travel, one auxiliary calibrated with fail position.

Cycle Time per 90 degree: 5 seconds.

*Cycle times are approximate

Options

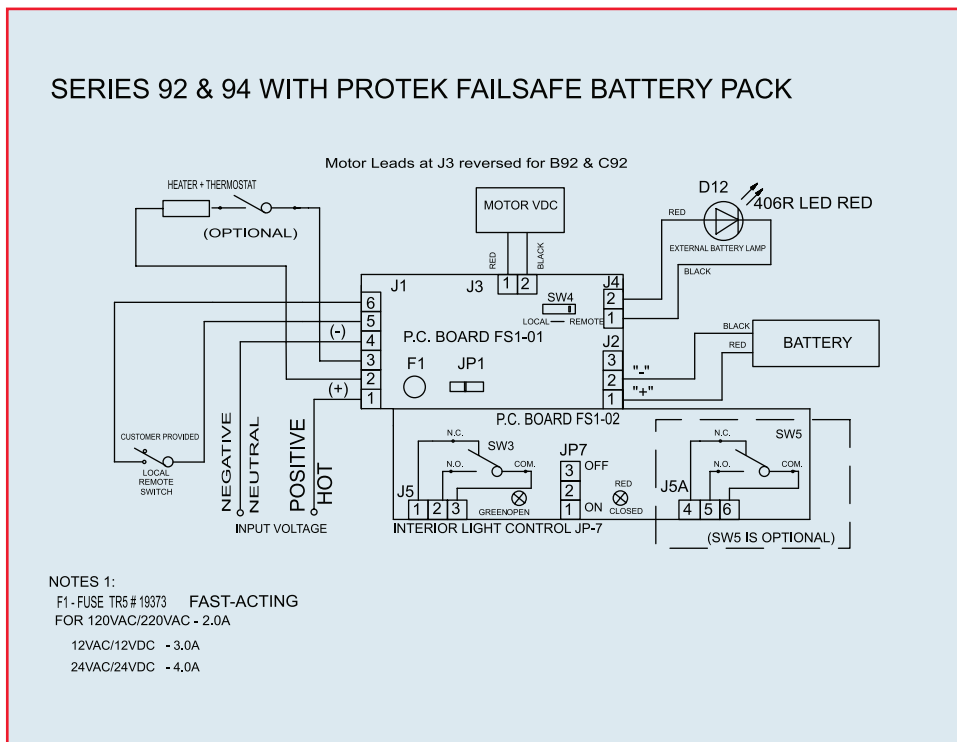
- Voltages
- Heater and thermostat
- Feedback potentiometer
- Local Remote Station (PT100)

Protek Battery Pack

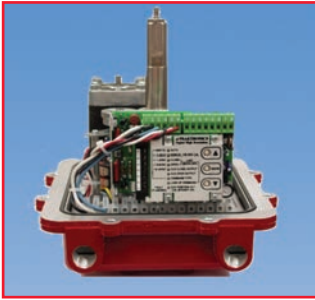
Cycle Time and Wiring Diagram

Size	120 VAC		220 VAC		24 VAC		12 VAC		24 VDC		12 VDC		Cycle Time 90° (SEC)
	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	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	5
B94	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	5
S92	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	15
A92	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	15
B92	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	25
C92	0.4	75%	0.2	75%	4.0	75%	2.0	75%	3.3	75%	2.0	75%	25

*Cycle times are approximate.



With constant power to terminal #'s 1 & 4 (J1) and the dry contact switch is made at terminal #'s 5 and 6, the valve will open. When the dry contact switch at terminal #'s 5 and 6 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 its predetermined fail position.



The DHC 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 4-20 mA, 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 three SPST relay contacts for open position, closed position and a fault condition.

Series 92 Standard Features

- Reversing, brushless capacitor-run motor (120 VAC and 220 VAC)
- All 120 VAC and 220 VAC motors are CE compliant, and bear the CE mark
- Integral thermal overload protection for motor windings with automatic reset (120 VAC and 220 VAC)
- 50 - 100 percent duty cycle motor
- Permanently lubricated, Rockwell hardened solid alloy steel gearing
- Weatherproof enclosure rated Type 4X has a thermally bonded powder coat finish with SS trim
- ISO mounting configuration FO7/17mm star
- Two 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
- Series 92 actuators have an output torque range from 400 in./lbs. to 2,000 in./lbs.

Positioner Standard Features

- High resolution
- Simple push-button 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; 4-20 mA, 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

Series 92 Engineering Specifications

Size: S92, A92, B92, C92

Torque: 400 in./lbs. - 2000 in./lbs.

Voltage: 120 VAC, 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 1/2" FNPT

Maximum Ambient Temperature: 150° F

Switches: two single pole, double throw (Two SPDT) , 15 Amp rated

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

32 seconds for B92 & C9*

*Cycle times are approximate.

Actuator/Positioner Options

- Voltages: 230 VAC, and low AC or DC
- Heater and thermostat
- Mechanical brake
- 4-20 mA output transmitter with three SPST relay contacts
- ModBus
- Local Remote Station (PK100)



The DHC 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 4-20 mA, 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 (120 VAC and 220 VAC)
- All 120 VAC and 220 VAC motors are CE compliant, and bear the CE mark
- Integral thermal overload protection for motor windings with automatic reset (120 VAC & 220 VAC)
- 75- 100 percent duty cycle motor
- Permanently lubricated gearing
- NEMA Type 4X enclosure
- Engineered resin enclosure
- ISO mounting FO5/14mm star
- Two 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
- Series 94 actuators have an output torque range from 150 in./lbs. to 300 in./lbs.

Positioner Standard Features

- High resolution
- Simple push-button 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; 4-20 mA, 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

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 1/2" FNPT

Maximum Ambient Temperature: 150° F

Switches: two single pole, double throw

(Two SPDT) , 15 amp rated

Cycle Time per 90 degree: A94, B94 5 seconds*

*Cycle times are approximate.

Actuator/Positioner Options

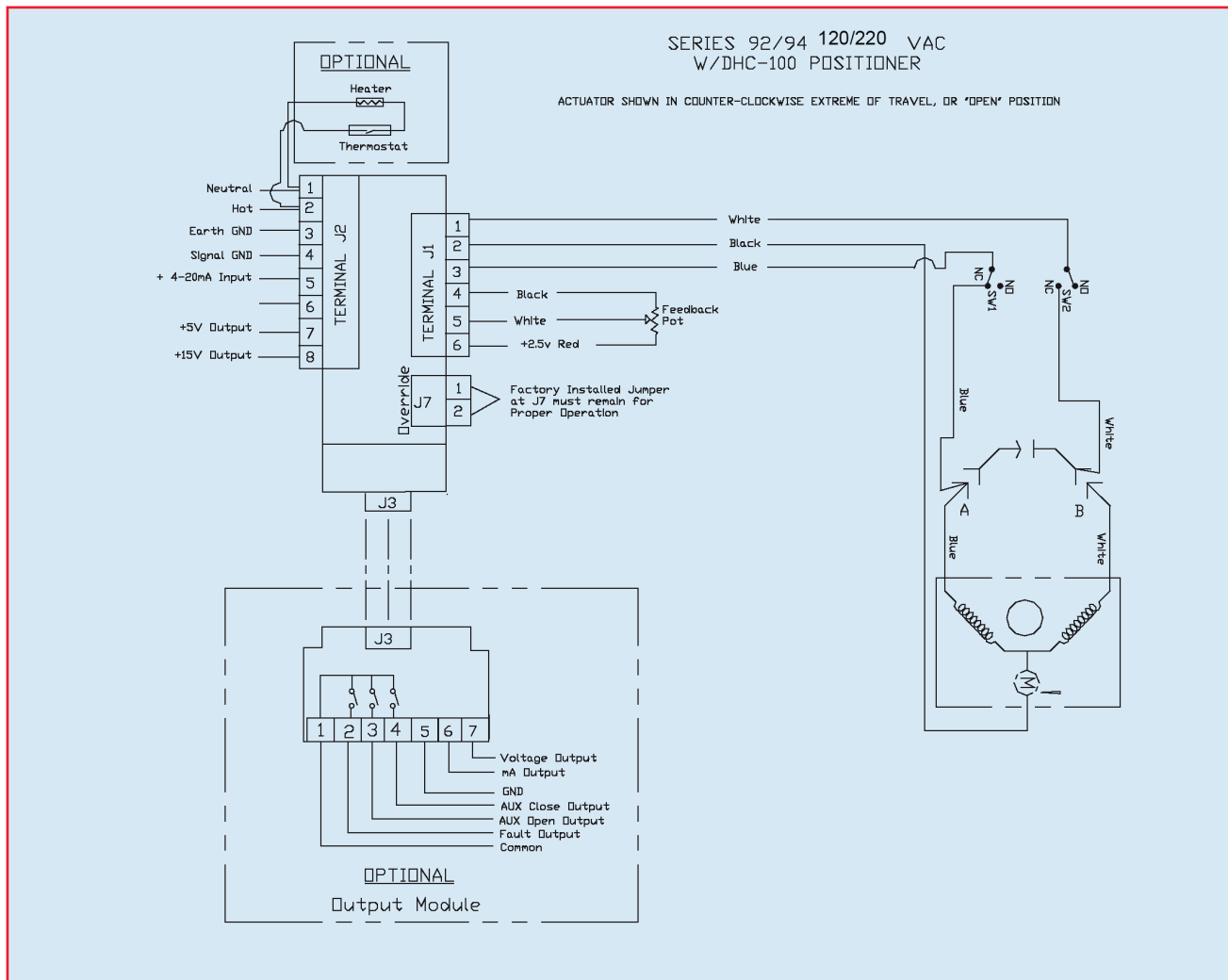
- Voltages: 230 VAC, and low AC or DC
- Heater and thermostat
- Mechanical brake
- 4-20 mA Output transmitter with three SPST relay contacts
- ModBus
- Local Remote Station (PK100)

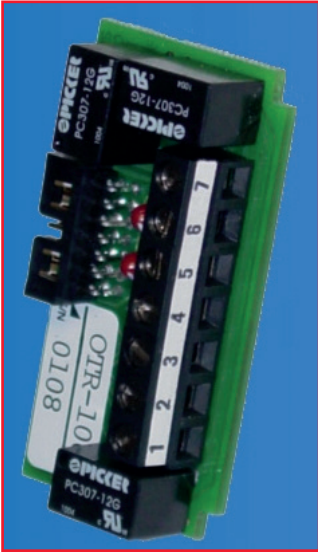
Peaktronics Positioner

Specifications

Size	120 VAC		220 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	75%	32
C92	1.0	50%	0.6	50%	3.0	75%	4.0	75%	32

*Cycle times are approximate.





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

Standard Features

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

Specifications

Positioner

POWER REQUIREMENTS

DHC-100: 117 VAC $\pm 10\%$, 50/60 Hz
12 VA typical (not including output load)
Fuse Type: 6.3A TR5 Slo-Blo (replaceable)

COMMAND SIGNAL INPUT

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

FEEDBACK SIGNAL INPUT

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

POWER SUPPLY OUTPUTS

+15V OUT (J2-8): 125 mA maximum (not including option module)
+5V OUT (J2-7): 5 mA maximum

NOTE: Do not connect these outputs to other power supplies.

AC MOTOR OUTPUTS

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

ENVIRONMENTAL

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

Transmitter/Relay

CURRENT OUTPUT

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

VOLTAGE OUTPUT

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

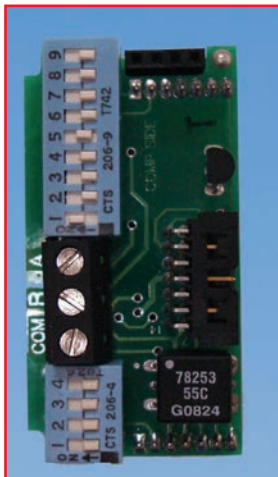
RELAY OUTPUTS

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 percent (non-condensing)

ModBus



The ModBus option module has been specifically designed for use with the DHC 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: 95 mA 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

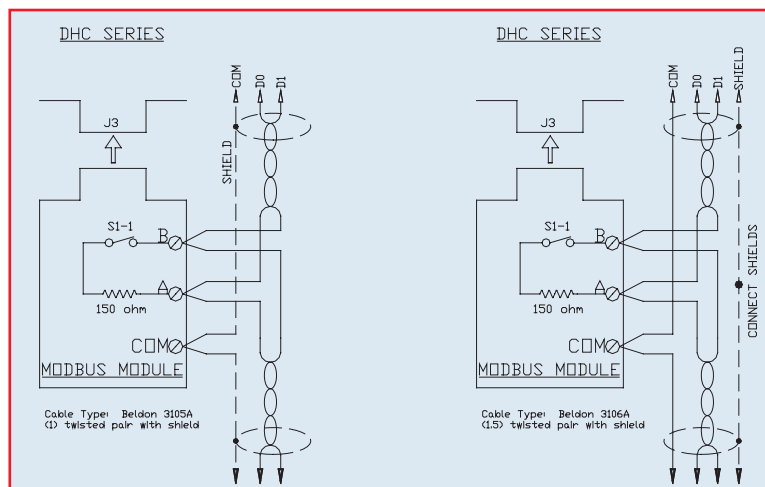
Operating Temperature Range: 0° C to 60° C

Storage Temperature Range: -40° C to 85° C

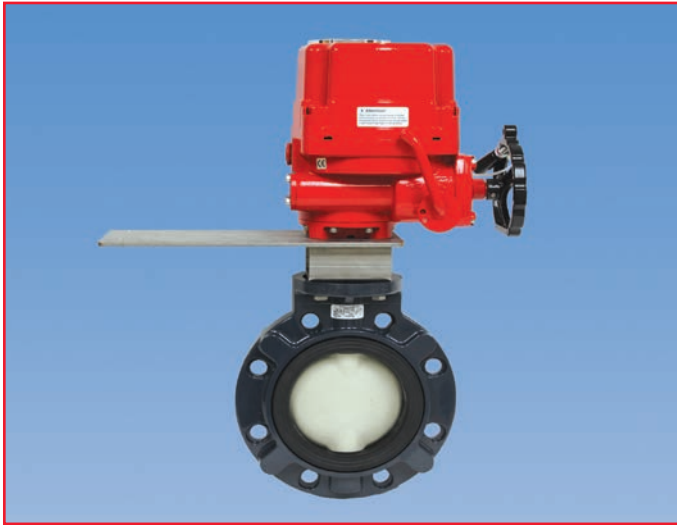
Relative Humidity Range: 0 to 90 percent (noncondensing)

BAUD RATE	RTU MODE CHARACTER PERIODS	
	11.5 (usec)	13. (usec)
9600	1,719	4,010
19.2	859	2,006
57.6K	266	668
115.2K	143	334

Wiring Diagram



Series 10P Electric Actuator



Specifications

Torque: 1,320-26,040 in./lbs.

Voltage: 110 VAC 1Ph 50/60 Hz

Amp Draw: 1.65 – 4.20

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– 93 seconds

Standard Features

- **Motor:** Reversing, squirrel cage induction motor, 110 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 de-clutching lever with handwheel
- **Limit switches:** Standard end of travel limit switches can be used for light indication (not to be used with PLC for position confirmation)
- **Auxiliary (Additional) limit switches:** Each electric actuator is provided as a standard with two SPDT auxiliary limit switches
- **Torque Switches:** two SPDT torque switches
- **Mechanical Stops:** Two +/- 10 percent mechanical travel stops
- **Enclosure:** Weatherproof rated Type 4X and 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 10P electric actuators have an output torque range from 1,320 in./lbs. to 26,040 in./lbs.
- **Corrosion resistant mounting:** Mounting is with stainless steel bracket, stainless steel coupling, and stainless steel hardware
- **Captivated SS socket cap cover screws**

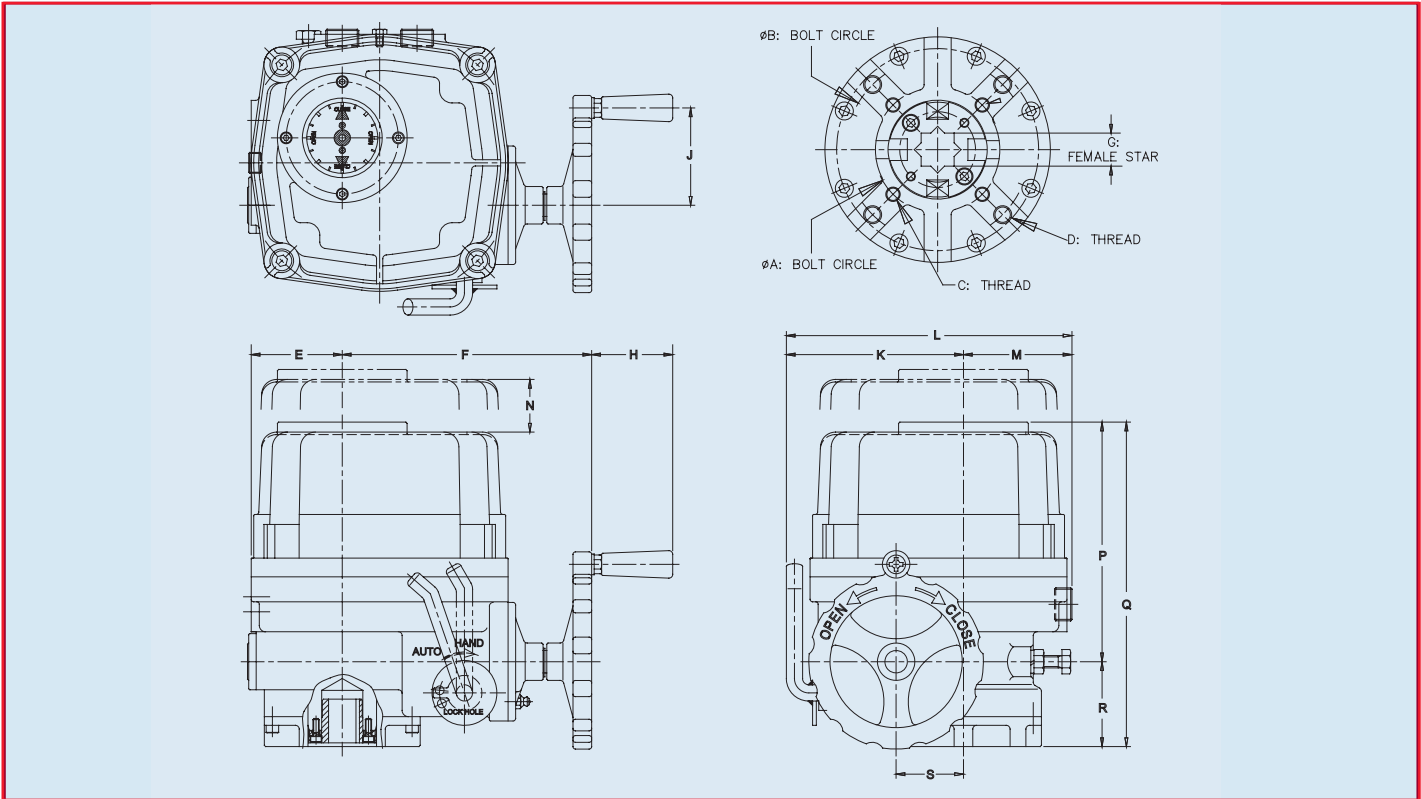
Sample Specifications

All Series 10P electric actuators shall have a thermally protected, bidirectional (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, rated Type 4X and 6. Each actuator shall have a lockable manual override, visual position indication, two auxiliary limit switches, two torque switches and a space heater, as supplied by Asahi/America, Inc.

Options

- Positioner: 4-20 mA or 0-10 VDC input
- 4-20 mA output transmitter
- Two-wire control
- Voltages: 220/1, 380/3, 460/3, 24 VDC
- ModBus
- ATEX enclosure
- Local remote station (LL 200)

Series 10P Electric Actuator



Dimensions (in.)

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
10-15P	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	17MM	2.56	3.07	5.59	9.02	3.43	6.3	7.56	10.24	2.68	2.13
10-20P	2.76	4.02	M8 X 12 DEEP	M10 X 15 DEEP	2.87	7.87	17MM	2.56	3.07	5.59	9.02	3.43	6.3	7.56	10.24	2.68	2.13
10-30P	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	7.87	27MM	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-50P	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.7	27MM	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-60P	4.02	4.92	M10 X 15 DEEP	M12 X 18 DEEP	3.23	8.7	27MM	2.56	3.07	6.3	10.2	3.9	7.09	8.7	11.42	2.72	2.56
10-80P	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	36MM	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.4	2.91	3.07
10-120P	4.92	5.51	M12 X 18 DEEP	M16 X 25 DEEP	4.06	9.53	36MM	2.56	4.33	7.32	11.69	4.37	8.27	9.49	12.4	2.91	3.07
10-200P	6.49	6.49	M20 x 30 DEEP	M20 x 30 DEEP	4.06	9.53	36MM	2.56	4.33	7.32	12.56	5.24	8.27	9.49	21.57	2.91	3.07
10-300P	6.49	6.49	M20 x 30 DEEP	M20 x 30 DEEP	4.06	9.53	46MM	2.56	4.33	7.32	12.56	5.24	8.27	9.49	21.57	2.91	3.07

Engineering Data

Model	Torque (in./lbs.)	110/1 VAC		220/1 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		
10-15P	1320	1.65	70	0.88	70	0.31	70	0.30	70	2.20	70	21	37
10-20P	1740	1.67	70	0.89	70	0.31	70	0.30	70	2.50	70	21	37
10-30P	2580	1.85	70	0.92	70	0.35	70	0.34	70	2.90	70	26	49
10-50P	4320	3.60	70	1.55	70	0.59	70	0.58	70	N/A	N/A	26	51
10-60P	5220	3.65	70	1.60	70	0.60	70	0.59	70	N/A	N/A	26	51
10-80P	6960	4.10	70	2.15	70	0.85	70	0.79	70	N/A	N/A	31	64
10-120P	10,440	4.20	70	2.35	70	0.87	70	0.81	70	N/A	N/A	31	64
10-200P	17,400	4.10	70	2.15	70	0.85	70	0.79	70	N/A	N/A	93	166
10-300P	26,040	4.20	70	2.35	70	0.87	70	0.81	70	N/A	N/A	93	166

Series 92/94 Local Remote Stations



Standard Features

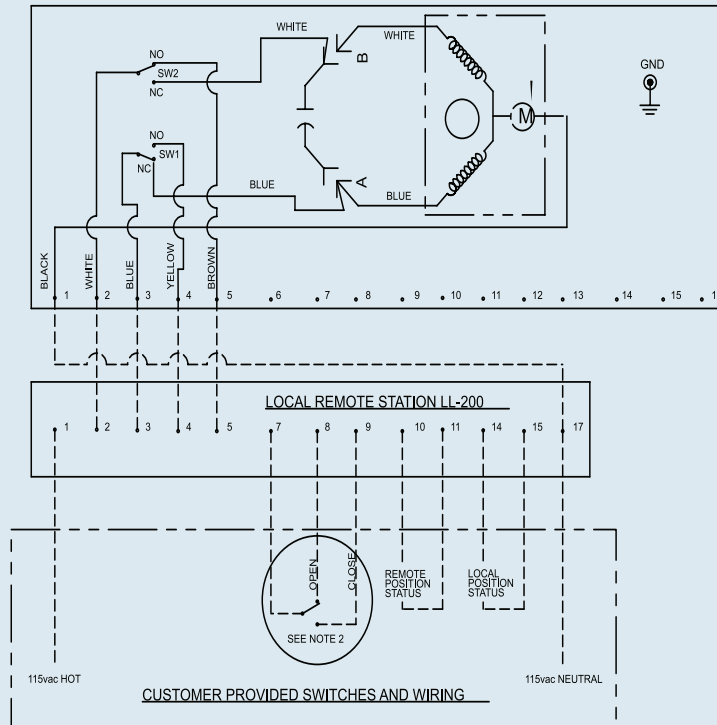
- Visual light indication
- Weatherproof enclosure constructed of fiberglass polyester
- Stainless steel trim
- Captive cover gasket
- Captive cover screws
- Two position selector switch (open and close)
- Three position selector switch (hand, off, auto)
- -40° F - 266° F temperature range

Options

- Explosion proof enclosure
- 316 stainless steel enclosure
- Contact factory for specific applications

LL-200 is to be used in conjunction with Series 92 or 94, AC powered and on/off actuator.

SERIES 92 OR SERIES 94 115 VAC ELECTRIC ACTUATOR
ACTUATOR SHOWN IN COUNTER-CLOCKWISE EXTREME OF TRAVEL, OR "OPEN" POSITION



- 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.

Series 92/94 Local Remote Stations



PT-100

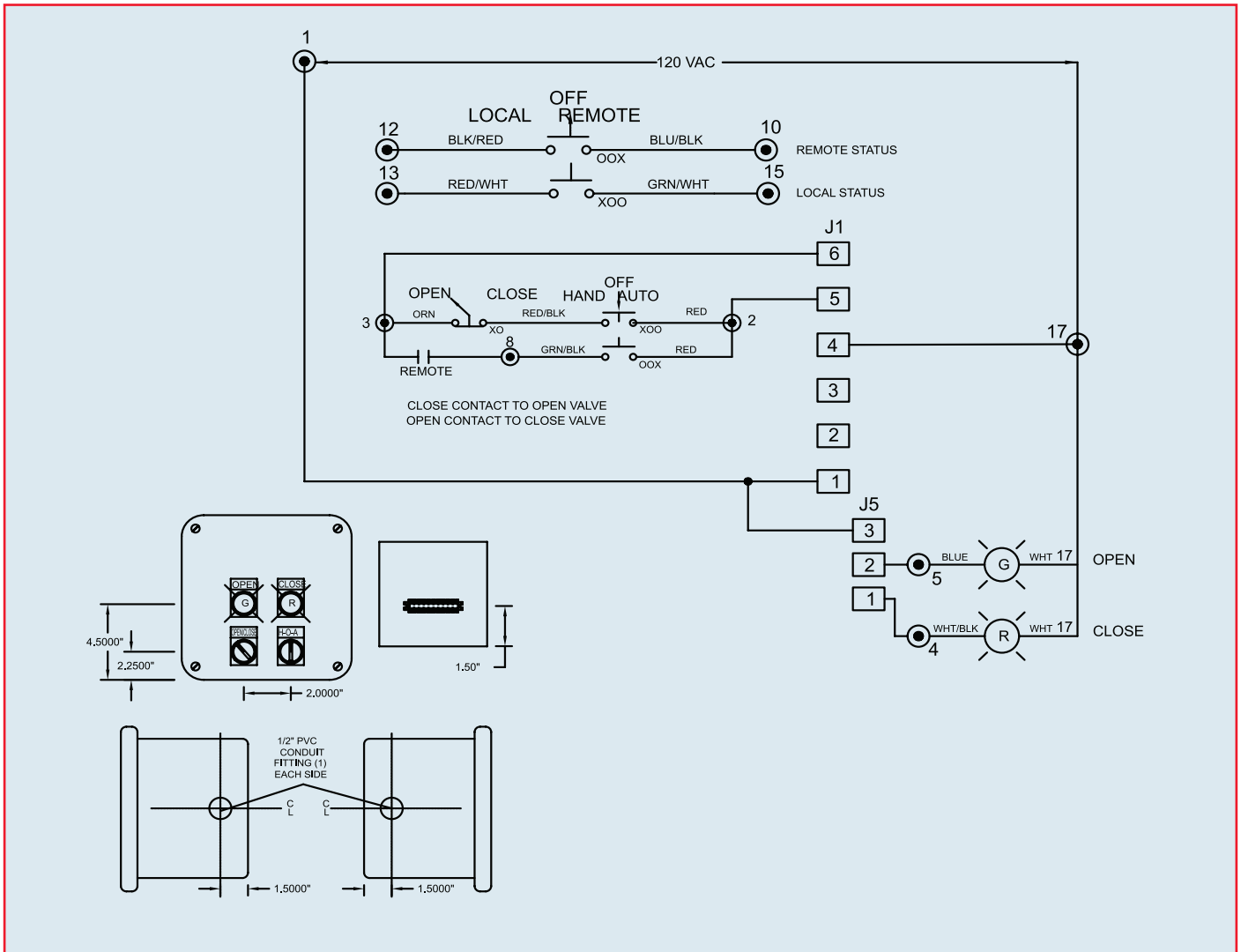
PT-100 is to be used in conjunction with Series 92 or 94 with Protek battery pack.

Standard Features

- Weatherproof enclosure constructed of fiberglass polyester
- Stainless steel trim
- Captive cover gasket
- Captive cover screws
- Two position selector switch (open and close)
- Two position selector switch (local/remote)
- -40° F - 266° F temperature range

Options

- 316 stainless steel enclosure
- Contact factory for specific applications



Series 92/94 Local Remote Stations



PK-100

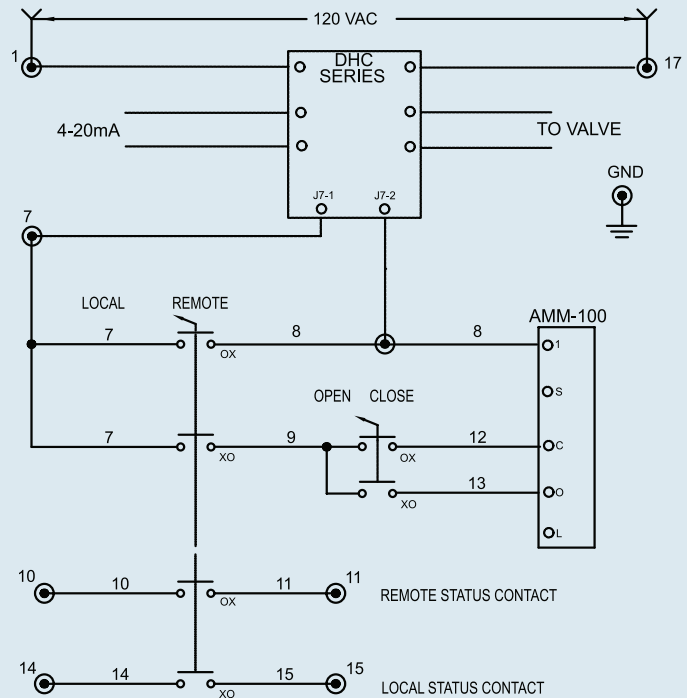
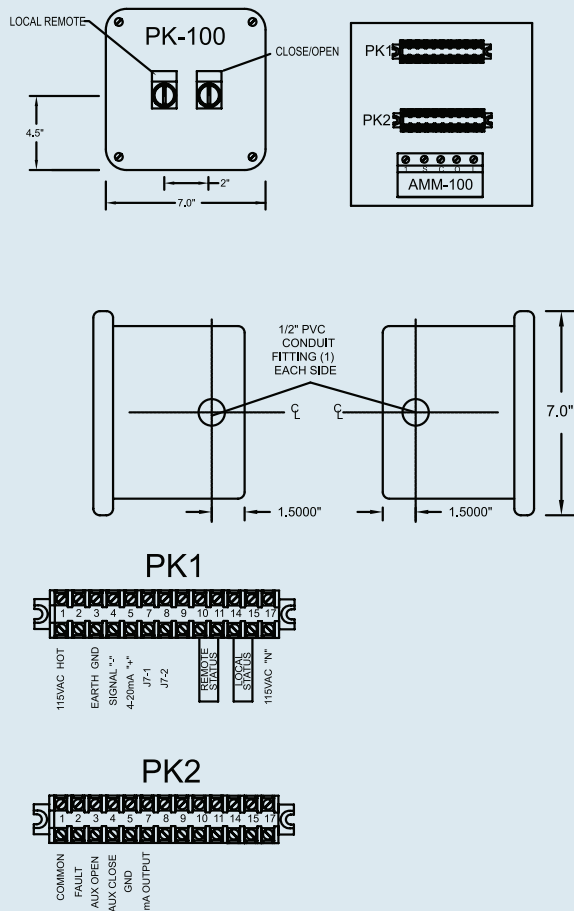
PK-100 is to be used in conjunction with Series 92 or 94, AC powered and DHC-Series positioner card.

Standard Features

- Weatherproof enclosure constructed of fiberglass polyester
- Stainless steel trim
- Captive cover gasket
- Captive cover screws
- Two position selector switch (open and close)
- Two position selector switch (local/remote)
- -40° F - 266° F temperature range

Options

- Explosion proof 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.

Series 10P Local Remote Stations



LL-200 is to be used in conjunction with Series 10, AC powered and on/off actuator.

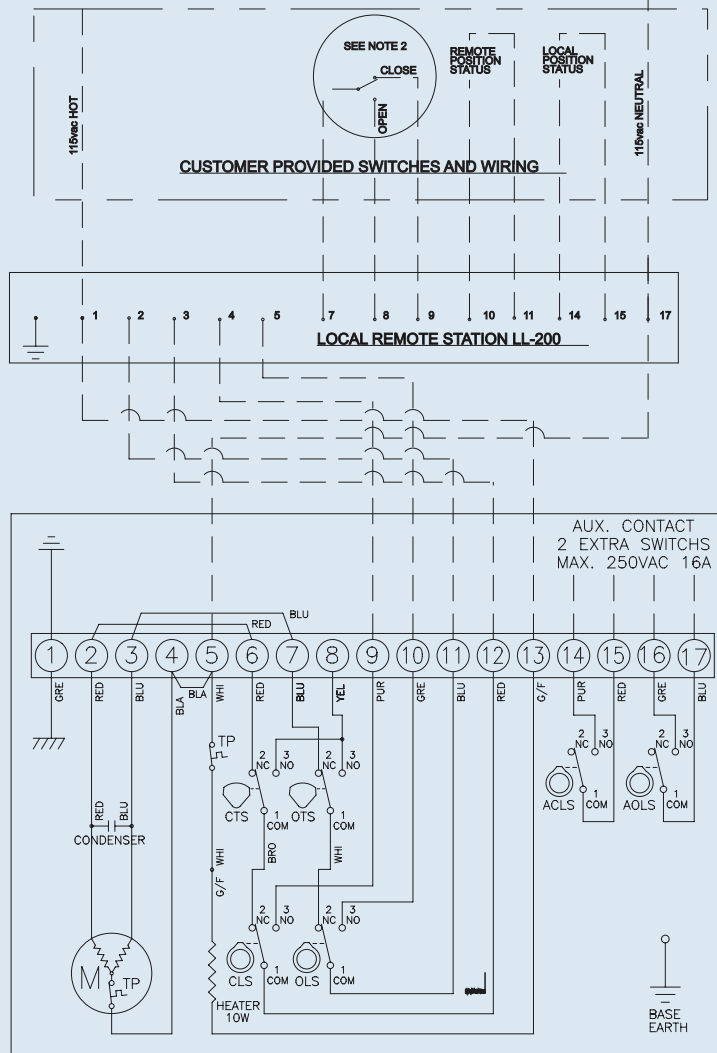
Standard Features

- Visual light indication
- Weatherproof enclosure constructed of fiberglass polyester
- Stainless steel trim
- Captive cover gasket
- Captive cover screws
- Two position selector switch (open and close)
- Three position selector switch (hand, off, auto)
- -40° F - 266° F temperature range

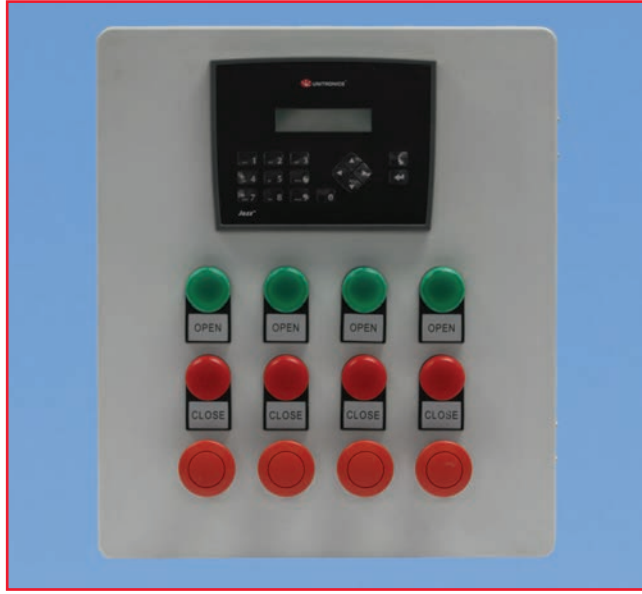
Options

- Explosion proof 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.
 3. EACH ACTUATOR MUST BE POWERED THROUGH ITS OWN INDIVIDUAL SWITCH CONTACTS TO AVOID CROSS FEED.



HMI Local Remote Station for Series 92 & 94



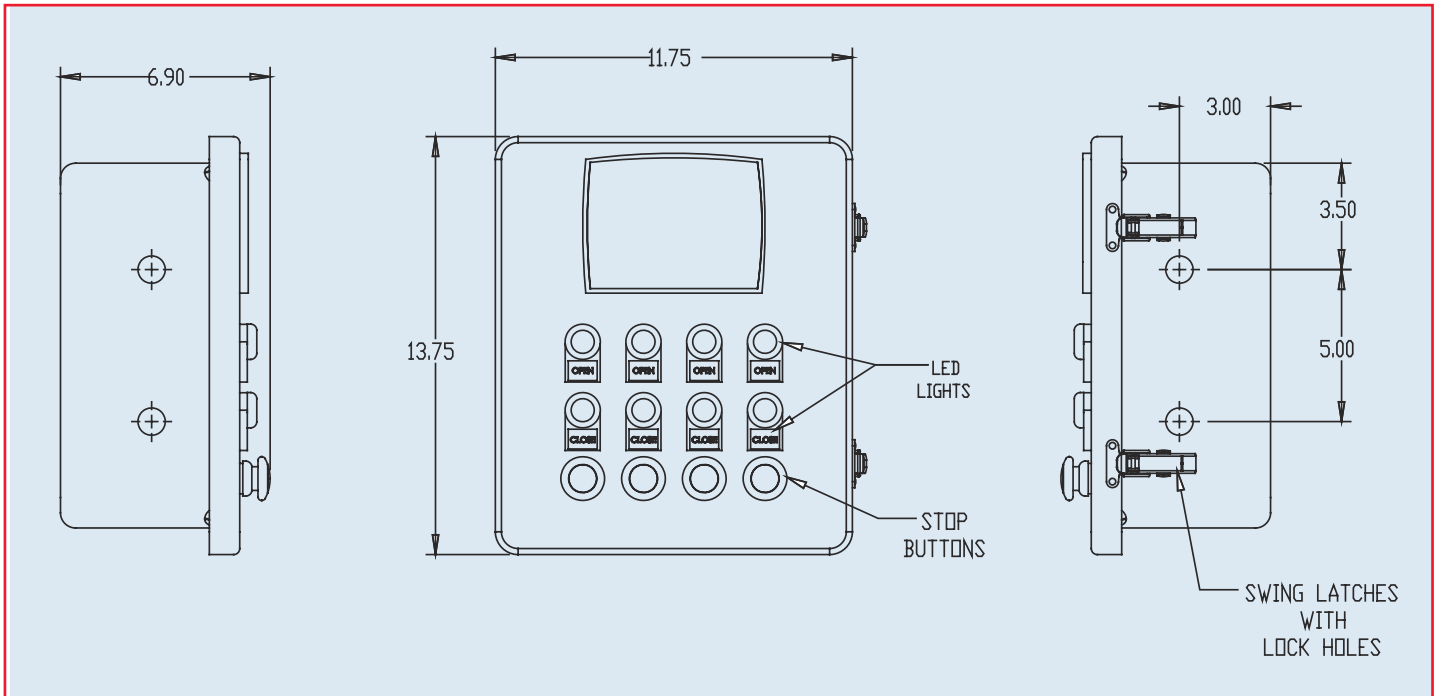
Standard Features

- Controls up to Four (4) Actuators
- Simple Pushbutton Operation
- 2-Lines X 16-Character LCD Display
- NEMA Type 4X Enclosure Constructed of Fiberglass Polyester
- Stainless Steel Trim
- Captive Cover Gasket
- Lockable Latched Cover
- Terminal Blocks for Inputs
- DPDT Relays and Sockets for Outputs
- Local/Remote Status Contacts
- Indicating LED's for Each Actuator (Green Open/Red Close)
- Four Individual STOP Buttons (one for each actuator)
- 32° F - 122° F Temperature Range
- Four (4) Provisions for ½" Conduit
- 120 - 240vac Power Supply Required

Options

- SS enclosure
- Contact factory for specific applications

Dimensions



HMI/PLC Control System



Asahi/America's HMI/PLC control system is a custom designed built to order system that allows you to easily control any number of valves or other process control items using a singular system.

Each system includes to a touchscreen monitor or push-button controls, can be programmed quickly via simple ladder logic and is housed in a NEMA 4X enclosure for ultimate safety and security.

Standard Features

- Complete HMI/PLC package
- Push-button operation
- NEMA Type 4X Enclosure constructed of fiberglass polyester
- Stainless steel trim
- Captive cover gasket
- Lockable latched cover
- Four (4) provisions for 1/2" conduit
- 24 VDC power supply included with HMI/PLC package
(100 VAC – 230 VAC supply power required)
- Programming via simple ladder logic
- Basic starter programs available
- No software licensing fees

Ordering Considerations

What type of user interface do you require?

Push button or touchscreen

What are your graphic requirement?

Graphics available with touchscreen option only

What networking connection(s) will you need?

Modbus, profibus, canbus, ethernet

What inputs will you require and how many?

Digital or analog

What outputs will you require and how many?

Digital, analog, relay, transistor or PWM

Do you require data logging?

Do you require graphs?

What other special considerations do you have?

HMI/PLC Control System

General Features

- Color touch screen
- HMI Graphs and trends
- Up to 1024 user designed screens
- Up to 500 images per application
- Real-time clock functions

Communication

- Discrete I/O
- Analog I/O
- Profibus
- Modbus
- Canbus
- Ethernet

Snap-in Expansion Modules

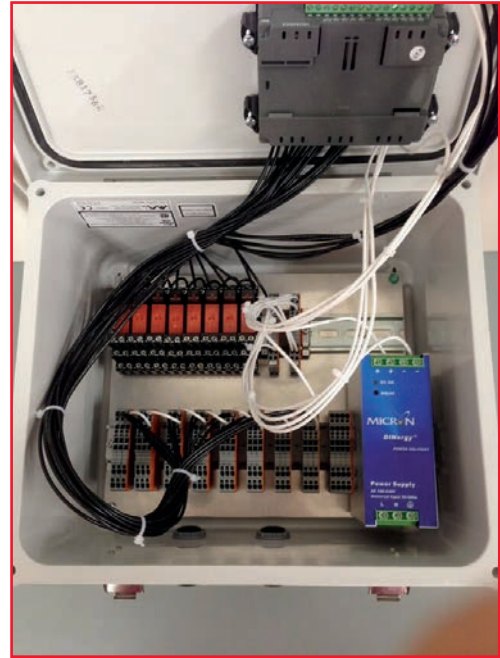
- Data logging
- HMI graphs
- RS232/RS485 ports

Available Inputs and Outputs

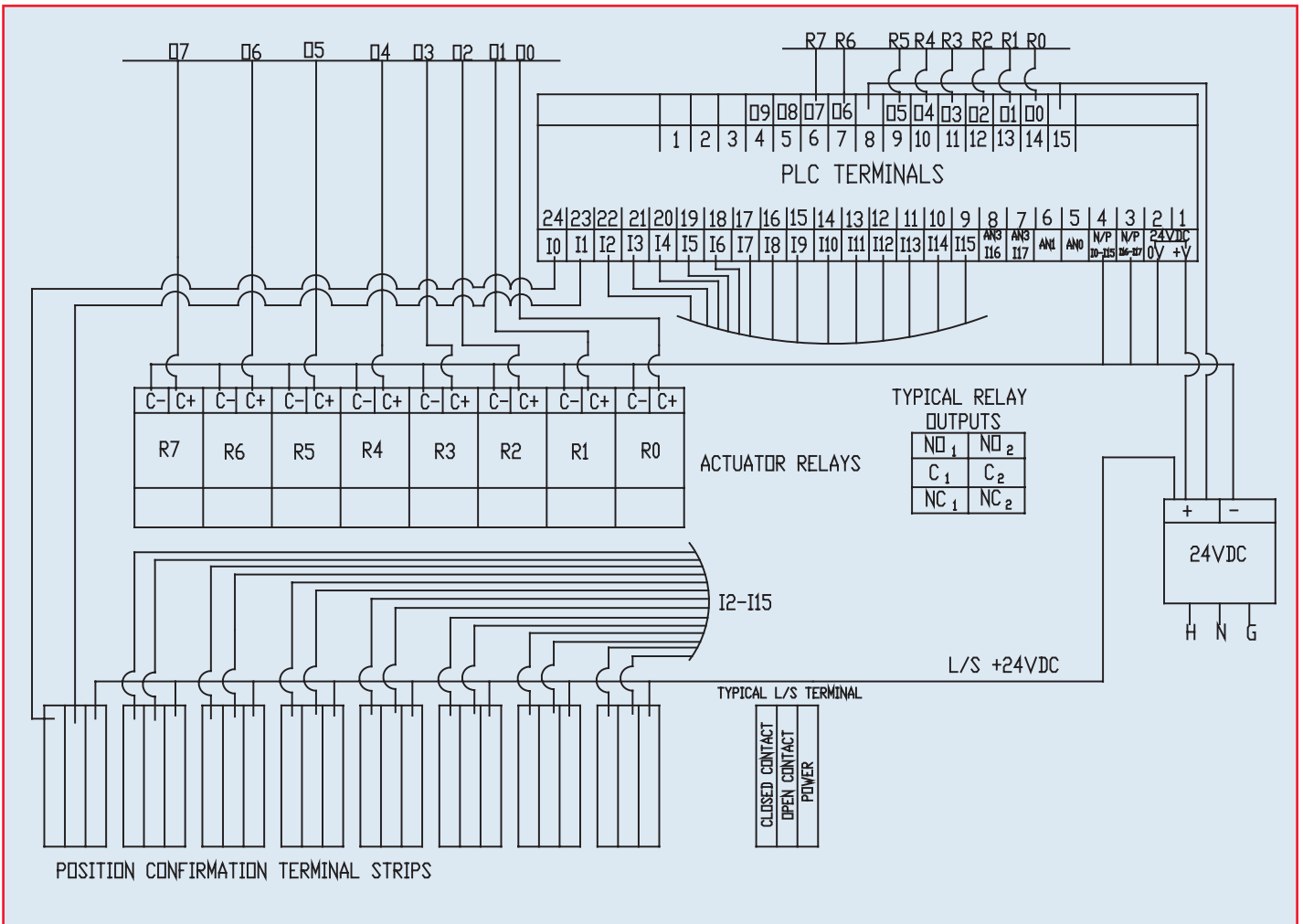
Inputs	Outputs
Digital	Digital
Transistor	Transistor
Relay	Relay
Analog	Analog
Shaft encoder	High-speed/PWM
Temperature measurement	
High-Speed counter	



HMI/PLC Control System

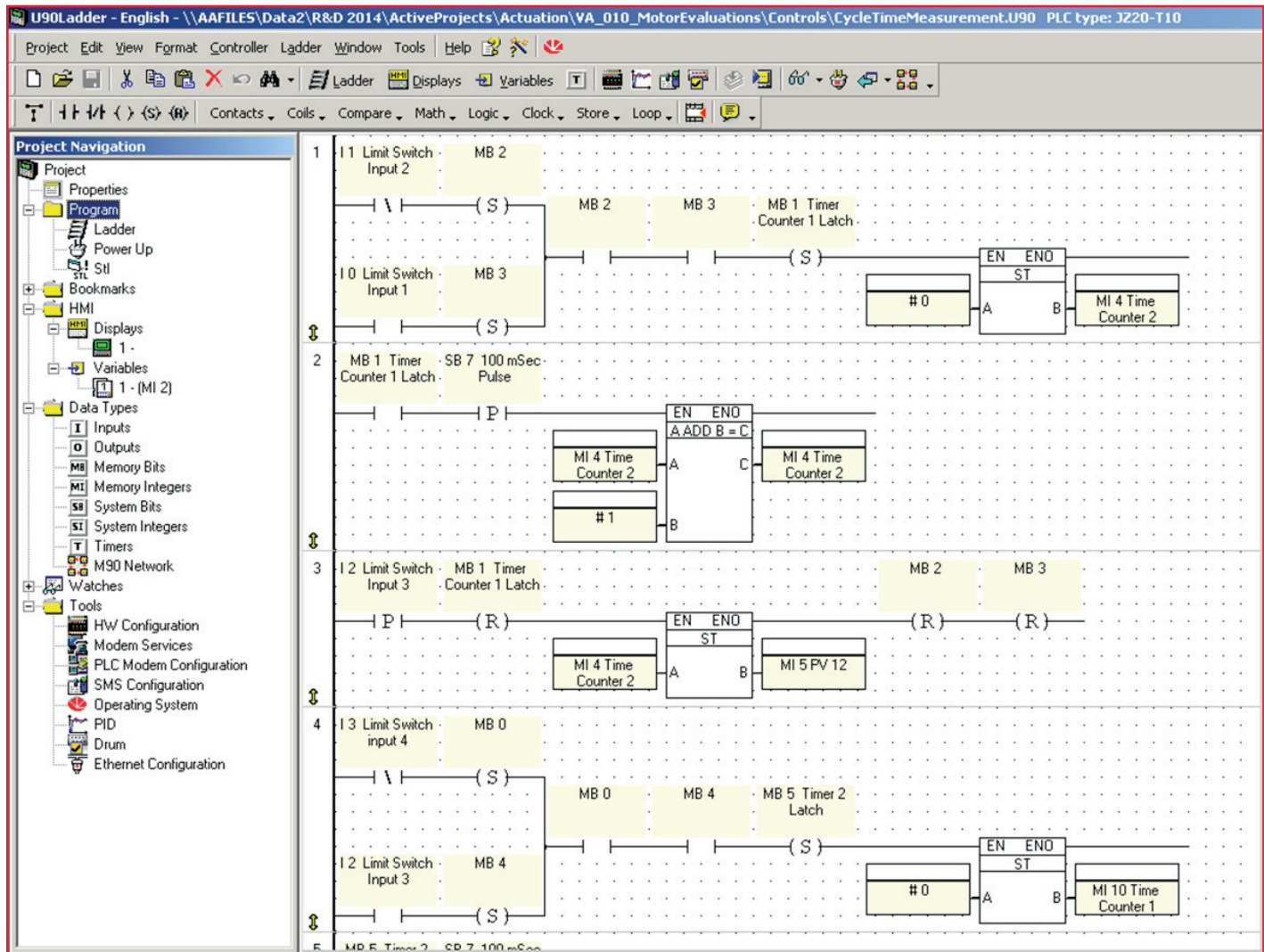


Sample Wiring



HMI/PLC Control System

Screen Shot - Ladder Logic



Programming

- Open platform
- Easy to program
- No software licencing fees

Driver Inserts for Series 79P Actuators

Driver Inserts for all PAG (Engineered Resin) 79 Pneumatic Actuators

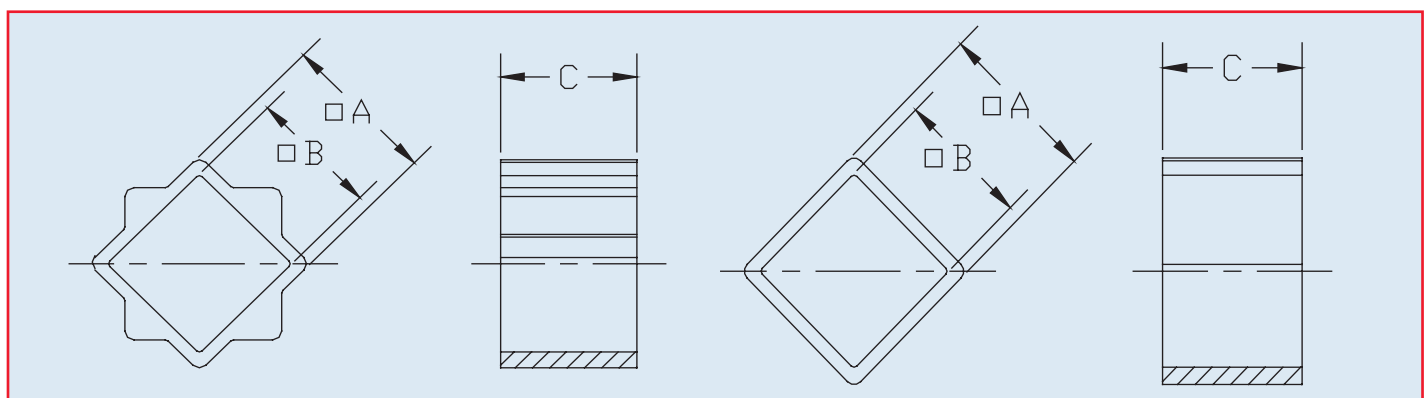
Actuator	Part Number	A	B	C	D
AP79P	PCA1109SQ	11mm	9mm	10mm	Square
	PSA140912ST	14mm	9mm	12.5mm	Star
	PSA1411ST	14mm	11mm	12.5mm	Star
BP79P	PSA1409ST	14mm	9mm	16mm	Star
	PSA1411ST		11mm	16mm	Star
CP79P	PSA1711ST	17mm	11mm	19mm	Star
	PSA1714ST		14mm	19mm	Star
DP79P	CP221119SQ	22mm	11mm	19mm	Square
	CP221419SQ		14mm	19mm	Square
	CP221719SQ		17mm	19mm	Square

Driver Inserts for all PA (Aluminum) 79P Pneumatic Actuators

Actuator	Part Number	A	B	C	D
A79PA B79PA	PSA1409ST	14mm	9mm	16mm	Star
	PSA1411ST		11mm	16mm	Star
B579PA C79PA C579PA	PSA1711ST	17mm	11mm	19mm	Star
	PSA1714ST		14mm	19mm	Star
	CP221119SQ		22mm	11mm	19mm
CP221419SQ	14mm	19mm		Square	
CP221719SQ	17mm	19mm		Square	
D579PA E79PA	CP2711SQ	27mm	11mm	29mm	Square
	CP2714SQ		14mm	29mm	Square
	CP2717SQ		17mm	29mm	Square
	CP2719SQ		19mm	29mm	Square
	CP2722SQ		22mm	29mm	Square
F79P G79PA	CP417SQ	36mm	17mm	38mm	Square
	CP419SQ		19mm	38mm	Square
	CP422SQ		22mm	38mm	Square
	CP427SQ		27mm	38mm	Square
L79PA M79PN	CP4627SQ	46mm	27mm	48mm	Square

Driver Inserts for all Stainless Steel Series 79P Pneumatic Actuators

Actuator	Part Number	A	B	C?	D
BS79P	PSA140912ST	14mm	9mm	12.5mm	Star
	PSA1411ST	14mm	11mm	12.5mm	Star
CS79P	PSA1711ST	17mm	11mm	19mm	Star
	PSA1714ST		14mm	19mm	Star
DS79P	CP221119SQ	22mm	11mm	19mm	Square
	CP221419SQ		14mm	19mm	Square
	CP221719SQ		22mm	19mm	Square



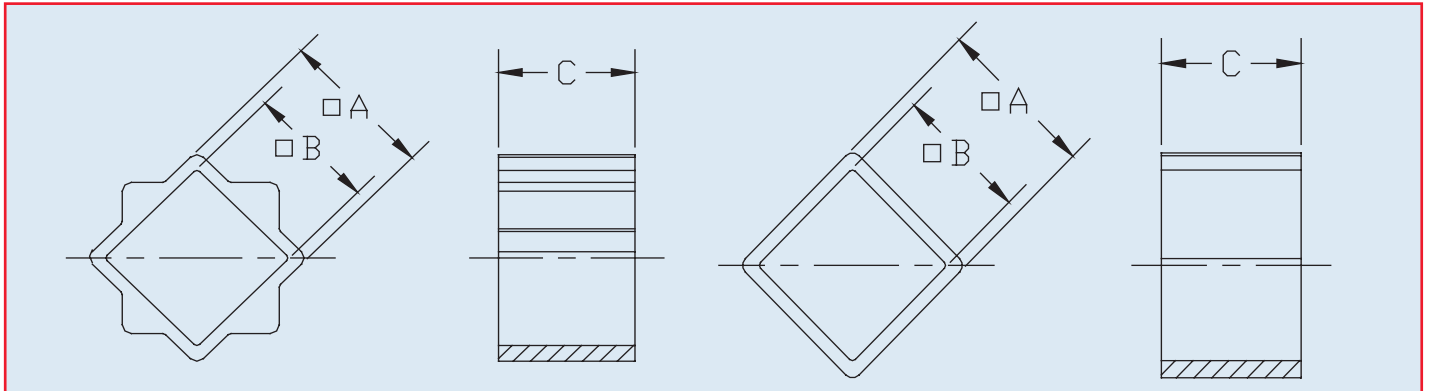
Drive Inserts for Electric Actuators

Driver Inserts for Series 92 Electric Actuators

Actuator	Part Number	A	B	C	D
S92	PSA1711ST PSA1714ST	17mm	11mm	19mm	Star
A92			14mm		Star
B92					
C92					

Driver Inserts for Series 94 Electric Actuators

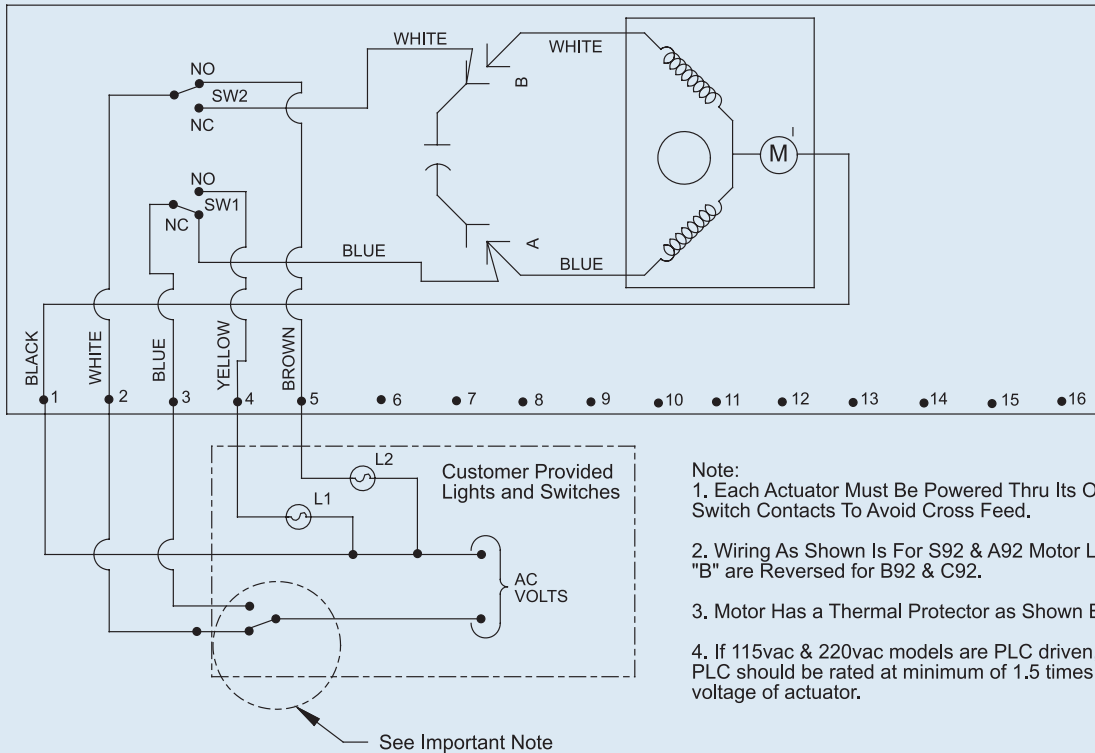
Actuator	Part Number	A	B	C	D
A94	PSA1409ST	14mm	9mm	12.5mm	Star
B94	PSA1411ST		11mm		Star



Series 92 & 94 Non-RHM Wiring Schematics

Wiring Diagram for 120 VAC or 220 VAC Units

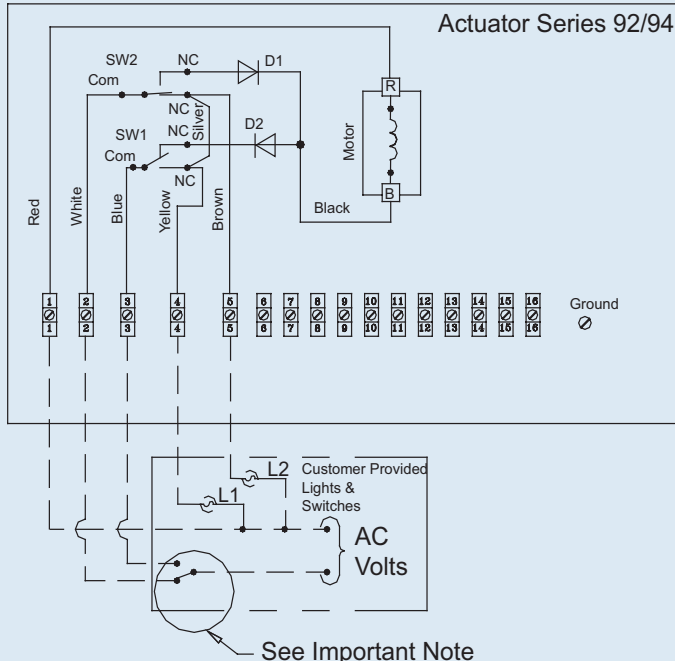
Actuator Shown is Counter-Clockwise Extreme of Travel, or "Open" Position



- 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 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

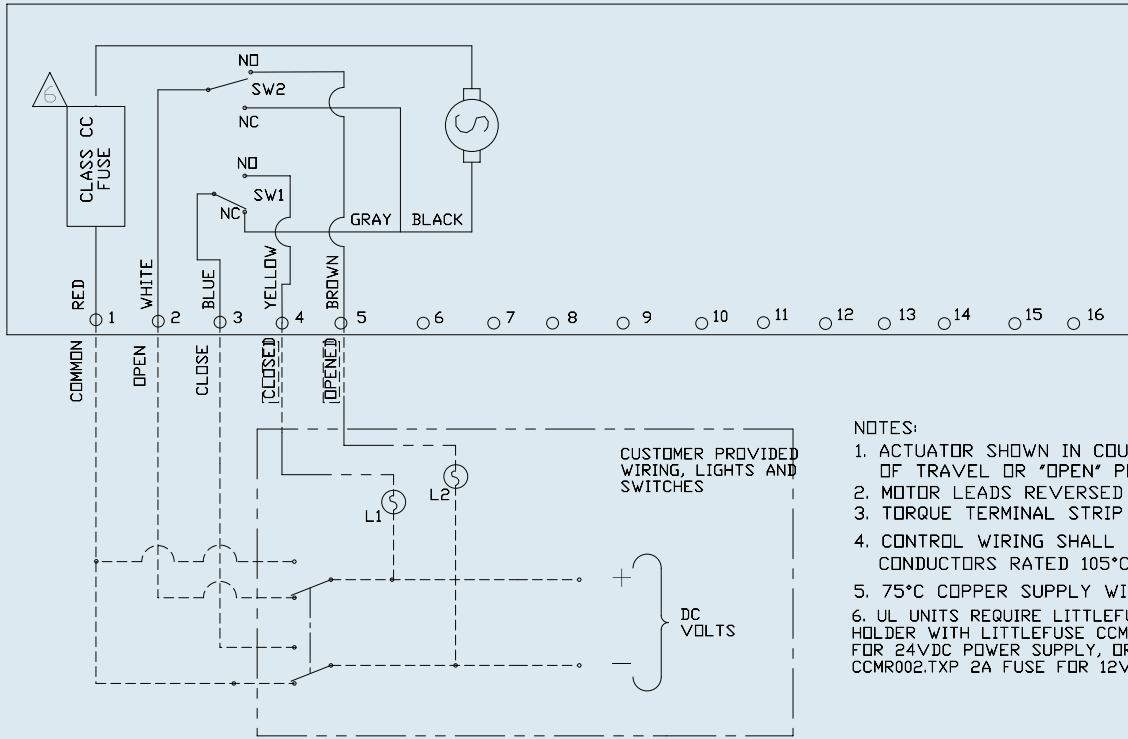
Switch Location Viewed from Terminal Strip Front

- SW-2 - Open
SW-1 - Close

Series 92 & 94 Non-RHM Wiring Schematics

Series 92/94

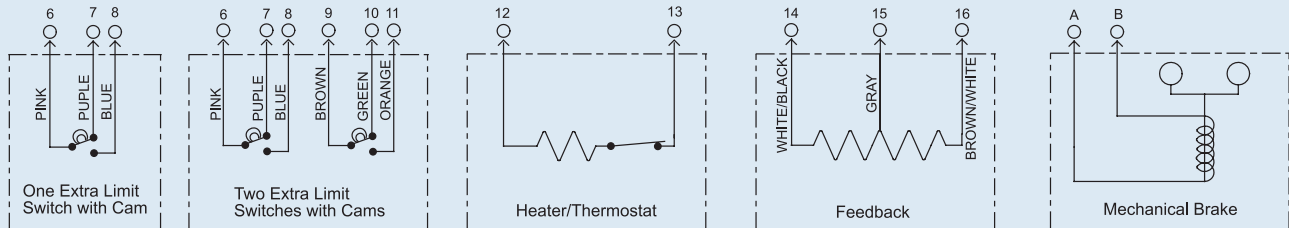
DC WIRING DIAGRAM



NOTES:

1. ACTUATOR SHOWN IN COUNTER CLOCKWISE EXTREME OF TRAVEL OR "OPEN" POSITION.
2. MOTOR LEADS REVERSED FOR 1100 & 2200 IN-LBS
3. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
4. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
5. 75°C COPPER SUPPLY WIRES ONLY.
6. UL UNITS REQUIRE LITTLEFUSE L60030C1C FUSE HOLDER WITH LITTLEFUSE CCMR004.TXP 4A FUSE FOR 24VDC POWER SUPPLY, OR LITTLEFUSE CCMR002.TXP 2A FUSE FOR 12VDC POWER SUPPLY

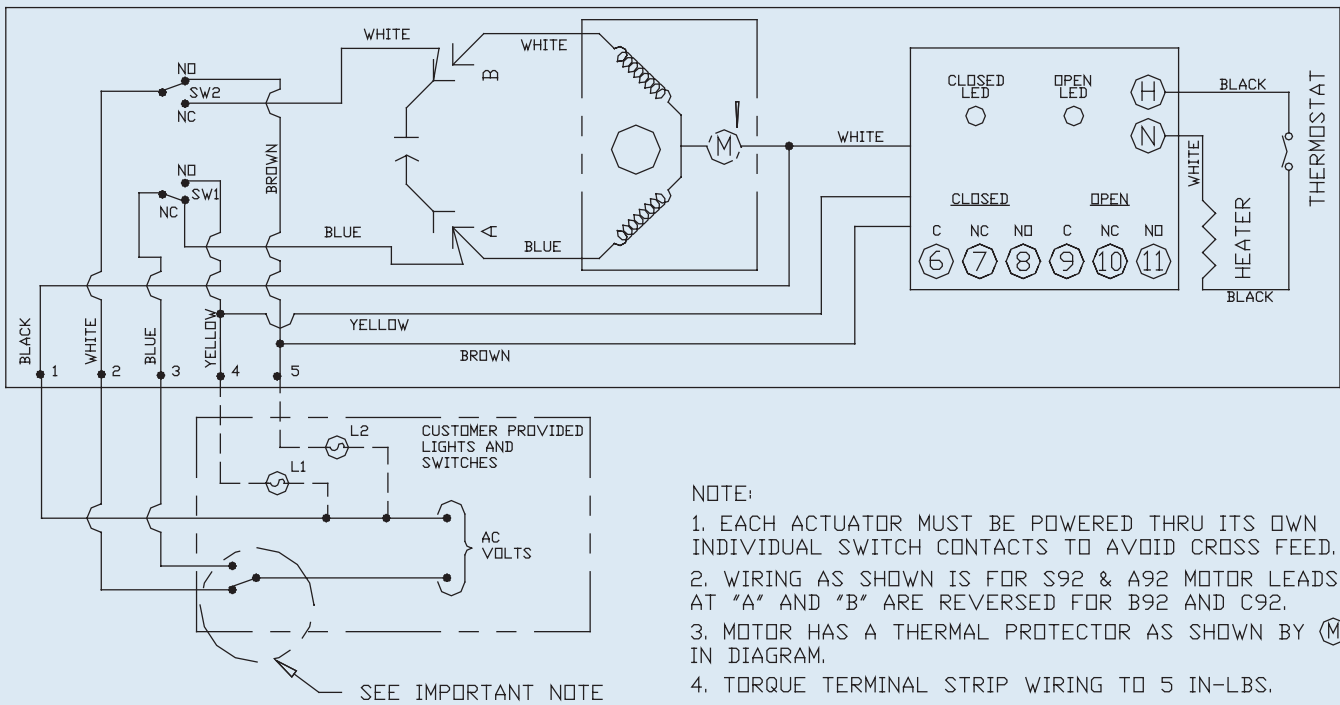
Wiring for Optional Equipment



Series 92 & 94 RHM Wiring Schematics

Wiring Diagram for 120 VAC and 220 VAC only

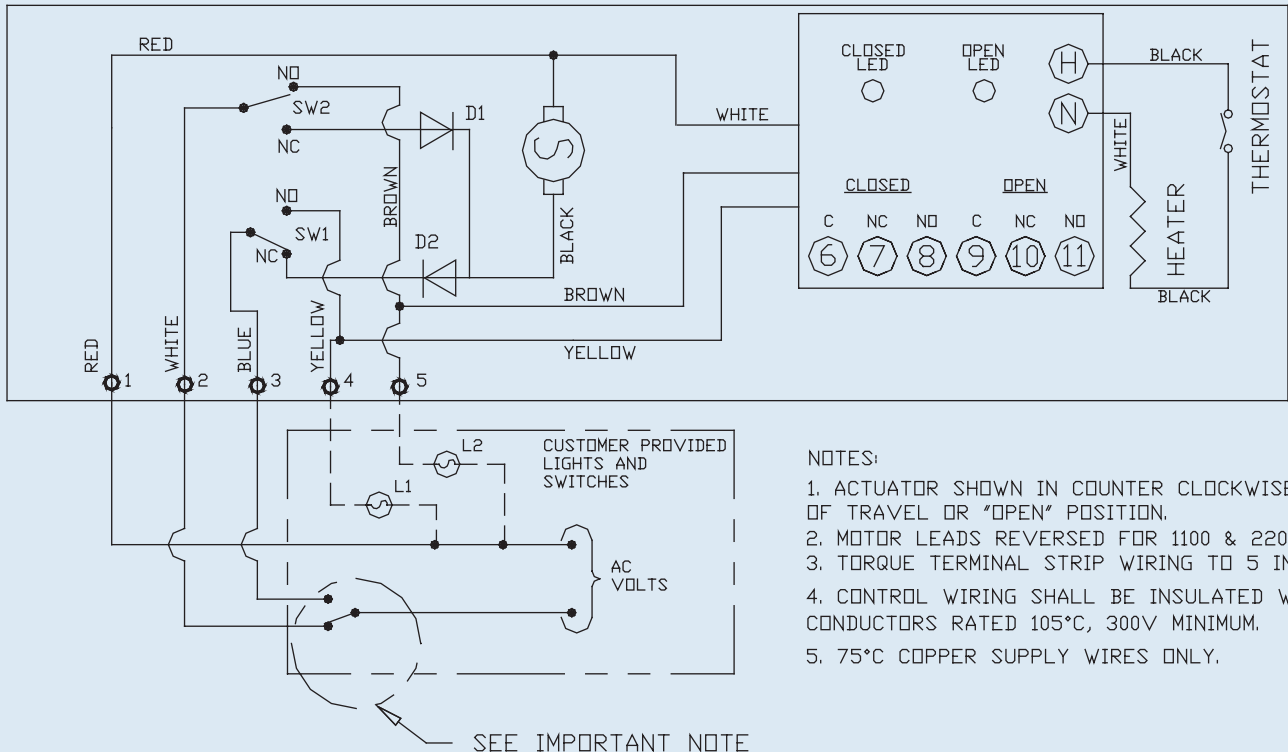
Actuator shown in counter-clockwise extreme of travel, or "Open" position



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 AND C92.
3. MOTOR HAS A THERMAL PROTECTOR AS SHOWN BY (M) IN DIAGRAM.
4. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
5. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
6. 75°C COPPER SUPPLY WIRES ONLY.

Series 92/94 with RHM 12-24 VAC AC Wiring Diagram

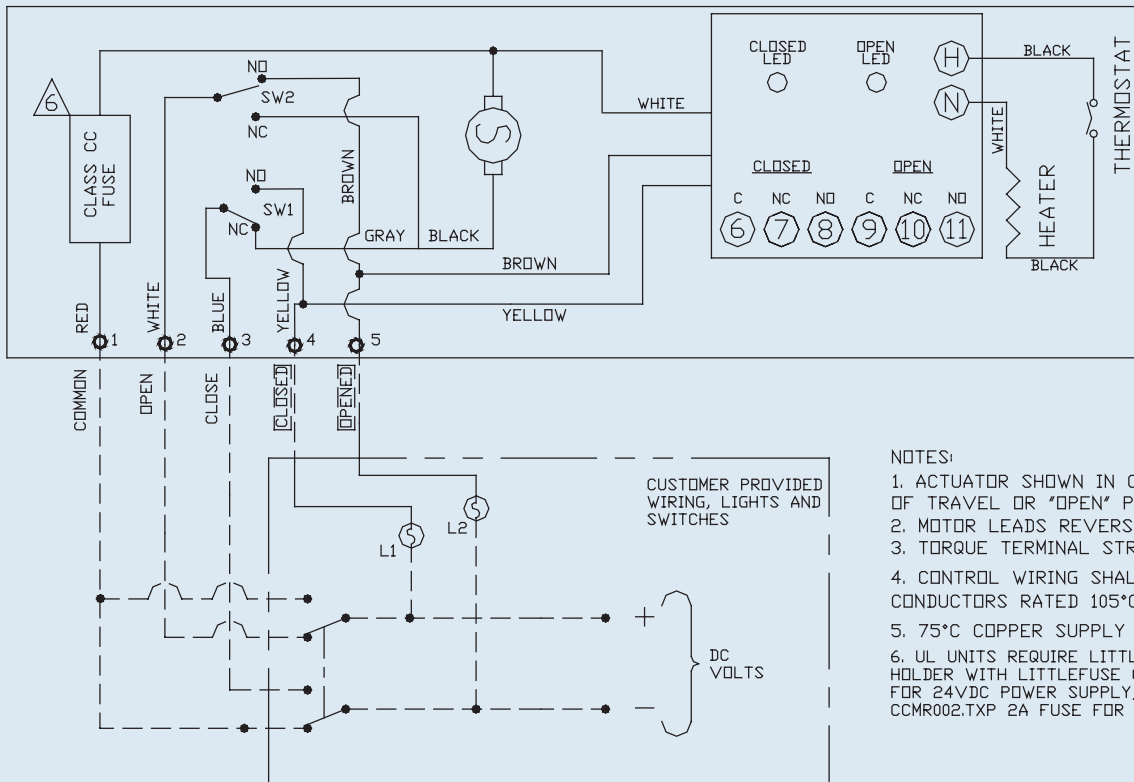


NOTES:

1. ACTUATOR SHOWN IN COUNTER CLOCKWISE EXTREME OF TRAVEL OR "OPEN" POSITION.
2. MOTOR LEADS REVERSED FOR 1100 & 2200 IN*LB'S
3. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
4. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
5. 75°C COPPER SUPPLY WIRES ONLY.

Series 92 & 94 RHM Wiring Schematics

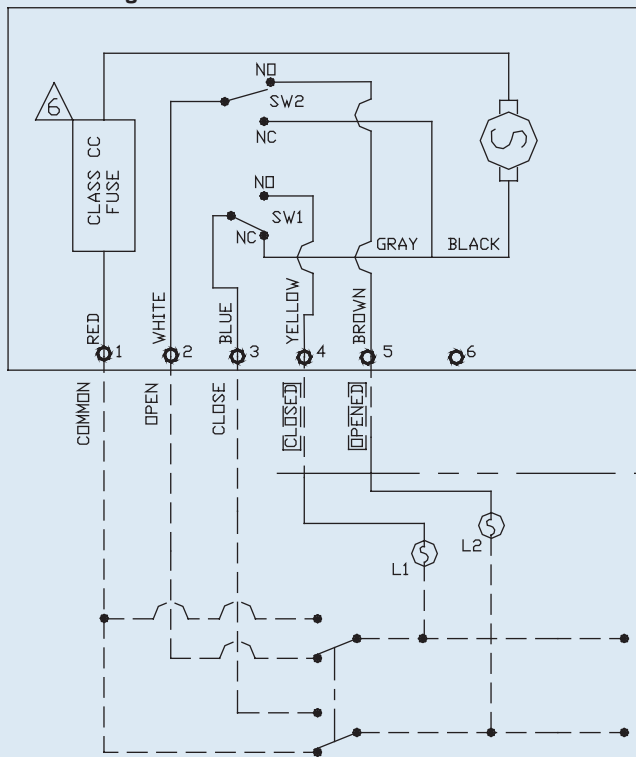
Series 92/94 with RHM 12-24 VDC



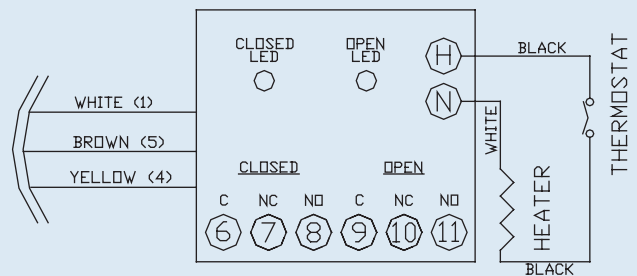
NOTES:

1. ACTUATOR SHOWN IN COUNTER CLOCKWISE EXTREME OF TRAVEL OR 'OPEN' POSITION.
2. MOTOR LEADS REVERSED FOR 1100 & 2200 IN-LBS.
3. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
4. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
5. 75°C COPPER SUPPLY WIRES ONLY.
6. UL UNITS REQUIRE LITTLEFUSE L60030C1C FUSE HOLDER WITH LITTLEFUSE CCMR004.TXP 4A FUSE FOR 24VDC POWER SUPPLY, OR LITTLEFUSE CCMR002.TXP 2A FUSE FOR 12VDC POWER SUPPLY

DC Wiring Series C92G



OPTIONAL RHM CARD



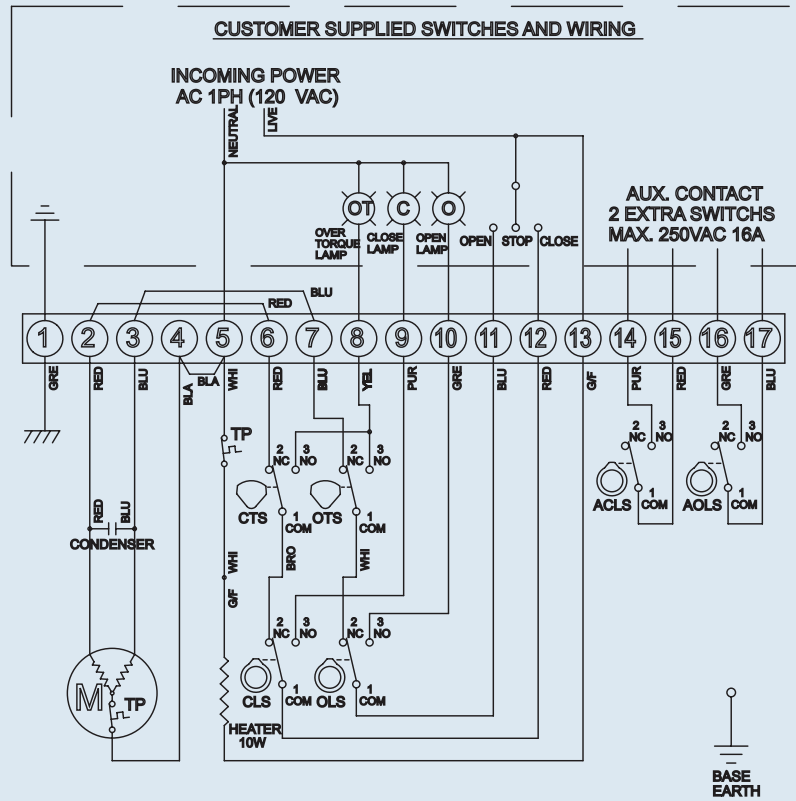
NOTES:

1. ACTUATOR SHOWN IN OPEN POSITION
2. ACTUATOR SHAFT ROTATES CW TO OPEN WHILE FINAL OUTPUT IS CCW TO OPEN
3. TORQUE TERMINAL STRIP WIRING TO 5 IN-LBS.
4. CONTROL WIRING SHALL BE INSULATED WITH CONDUCTORS RATED 105°C, 300V MINIMUM.
5. 75°C COPPER SUPPLY WIRES ONLY.
6. UL UNITS REQUIRE LITTLEFUSE L60030C1C FUSE HOLDER WITH LITTLEFUSE CCMR004.TXP 4A FUSE FOR 24VDC POWER SUPPLY, OR LITTLEFUSE CCMR002.TXP 2A FUSE FOR 12VDC POWER SUPPLY

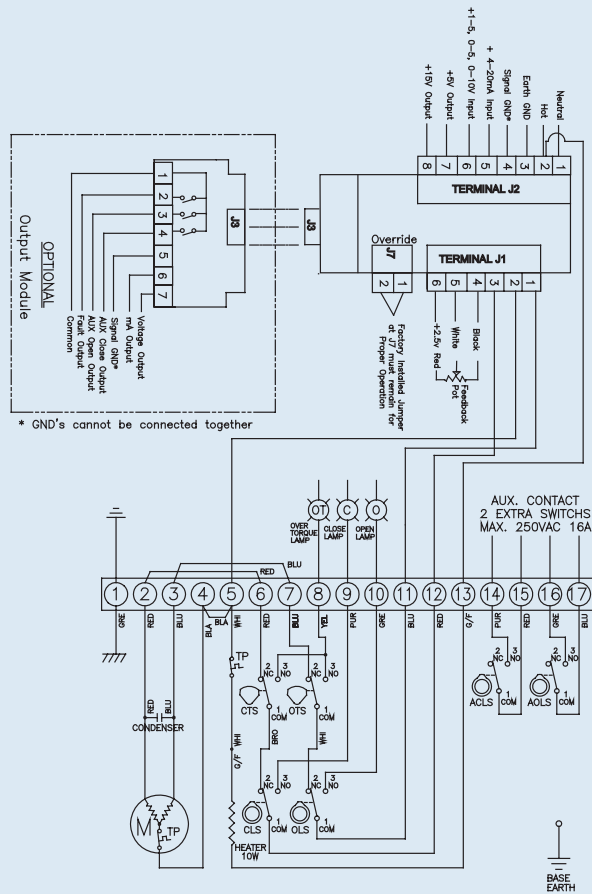
- 1 +2 = CW ROTATION OF CAM SHAFT = OPEN
 +1 -3 = CCW ROTATION OF CAM SHAFT = CLOSE

10P Wiring Schematics

Series 10P 110\1\60



Series 10P Modulating



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	P				NEMA 4 Dbl Limit Switch	M2
C	316 SS	S				3-15 psi Positioner	C2
C5						4-20 mA Positioner	C1
D							
D5							
E							

Examples:
BP79PSN:
 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

PA-Series

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
A79PAN	2441001	A79PASN	2442001
B79PAN	2441000	B79PASN	2442000
B579PAN	2441005	B579PASN	2442005
C79PAN	2441010	C79PASN	2442010
C579PAN	2441015	C579PASN	2442015
D79PAN	2441020	D79PASN	2442020
D579PAN	2441025	D579PASN	2442025
E79PAN	2441030	E79PASN	2442030

P-Series Cataphoresis and Rilsan Coated Aluminum Body

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
F79PAN	2355000	F79PASN	2364000
G79PAN	2358000	G79PASN	2368000
L79PAN	2358001	L79PASN	2368001
M79PAN	2358002	M79PASN	2368002

316 Stainless Steel Body

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
BS79PN	2444014	BS79PSN	2445014
CS79PN	2444017	CS79PSN	2445017
DS79PN	2444022	DS79PSN	2445022
ES79PN	2444030	ES79PSN	2445030
FS79PN	2444040	ES79PSN	2445040

Glass-filled Polyamide

Air to Air		Air to Spring	
Model No.	Item No.	Model	Item No.
AP79PN	2343011	AP79PSN	2344011
BP79PN	2343014	BP79PSN	2344014
CP79PN	2343017	CP79PSN	2344017
DP79PN	2343022	DP79PSN	2344022

Option Series 79

Options	79 Item #
Positioners	
PST-202 SMART 4-20mA	
Air-to-Air (Standard with Transmitter)	2415420
Air-to-Spring (Standard with Transmitter)	2415420
Positioner & Transmitter with HART Protocol	2415425
PST-101 3-15 PSI	
Air-to-Air	2414315
Air-to-Spring	2414315
PST-101 3-15 PSI Positioner Options	
2 X SPDT Mechanical Switches	2414320
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
I Switch	
NEMA 4 Double (2-SPDT)	2403785
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 VAC	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-RD315	2219000
B5-C579PA Declutch Man O/R-RD315	2219010
D79PA Declutch Man O/R-RD320	2219020
D579PA Declutch Man O/R-RD330	2219030
E79PA Declutch Man O/R-RD330	2219030
F79P Declutch Man O/R-RD345	2219040
G79P Declutch Man O/R-RD350	2219050
L79P Declutch Man O/R-RD360	2219060
M79P Declutch Man O/R-RD370	2219070

Electric Actuation Ordering Information

Size	Series
S	92
A	92
B	92
C	92
A	94
B	94

Options	
1 Extra Limit Switch	M1
2 Extra Limit Switches	M2
Heater & Thermostat	HT
Feedback Pot	P
Center Off	CO
2 Wire Control	2WC
Failsafe Battery Pack	FS
Positioner	C1
RHM Module	RHM
Transmitter	C3
Hazardous Locations	XW

Enclosure	Code
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W

Output Torque
400 in./lbs.
700 in./lbs.
1100 in./lbs.
2000 in./lbs.
150 in./lbs.
300 in./lbs.

Size	Series
10-15P	10
10-20P	10
10-30P	10
10-50P	10
10-60P	10
10-80P	10
10-120P	10
10-200P	10
10-300P	10

General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W
General Locations	W

1320 in./lbs.
1740 in./lbs.
2580 in./lbs.
4320 in./lbs.
5220 in./lbs.
6960 in./lbs.
10440 in./lbs.
17400 in./lbs.
26040 in./lbs.

Examples:

A92RHM_{XW}:

A Size, Series 92 with RHM module hazardous locations

B94C1_W:

B Size, Series 94, positioner, general location

10-15PM2HT_W

10-15P Size, Series 10P, two extra limit switches, heater and thermostat, general locations

Series 92 Actuators

General Locations (120 VAC)		
Model	Output Torque	Part Number
S92W	400 in./lbs.	2172000
A92W	700 in./lbs	2173000
B92BRW	1100 in./lbs	2174000
C92BRW	2000 in./lbs	2175000
General Locations (12 VDC)		
Model	Output Torque	Part Number
S92W	400 in./lbs	2172001
A92W	700 in./lbs	2173001
B92W	1100 in./lbs	2174001
C92W	2000 in./lbs	2175001
C92GW	5000 in./lbs	2175071
General Locations (24 VDC)		
Model	Output Torque	Part Number
S92W	400 in./lbs	2172002
A92W	700 in./lbs	2173002
B92W	1100 in./lbs	2174002
C92W	2000 in./lbs	2175002
C92GW	5000 in./lbs	2175072
General Locations (12 VAC)		
Model	Output Torque	Part Number
S92W	400 in./lbs	2172003
A92W	700 in./lbs	2173003
B92W	1100 in./lbs	2174003
C92W	2000 in./lbs	2175003
General Locations (24 VAC)		
Model	Output Torque	Part Number
S92W	400 in./lbs	2172004
A92W	700 in./lbs	2173004
B92W	1100 in./lbs	2174004
C92W	2000 in./lbs	2175004
General Locations (220 VAC)		
Model	Output Torque	Part Number
S92W	400 in./lbs	2172005
A92W	700 in./lbs	2173005
B92BRW	1100 in./lbs	2174005
C92BRW	2000 in./lbs	2175005

Hazardous Locations (120 VAC)		
Model	Output Torque	Part Number
S92XW	400 in./lbs	2172500
A92XW	700 in./lbs	2173500
B92BRXW	1100 in./lbs	2174500
C92BRXW	2000 in./lbs	2175500
Hazardous Locations (12 VDC)		
Model	Output Torque	Part Number
S92XW	400 in./lbs	2172501
A92XW	700 in./lbs	2173501
B92XW	1100 in./lbs	2174501
C92XW	2000 in./lbs	2175501
C92GXW	5000 in./lbs	2175571
Hazardous Locations (24 VDC)		
Model	Output Torque	Part Number
S92XW	400 in./lbs	2172502
A92XW	700 in./lbs	2173502
B92XW	1100 in./lbs	2174502
C92XW	2000 in./lbs	2175502
C92GXW	5000 in./lbs	2175572
Hazardous Locations (220 VAC)		
Model	Output Torque	Part Number
S92XW	400 in./lbs	2172505
A92XW	700 in./lbs	2173505
B92BRXW	1100 in./lbs	2174505
C92BRXW	2000 in./lbs	2175505

Series 94 Actuators

General Locations (120 VAC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070800
B94W	300 in./lbs	2070900
General Locations (12 VDC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070801
B94W	300 in./lbs	2070901
General Locations (24 VDC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070802
B94W	300 in./lbs	2070902
General Locations (12 VAC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070803
B94W	300 in./lbs	2070903
General Locations (24 VAC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070804
B94W	300 in./lbs	2070904
General Locations (220 VAC)		
Model	Output Torque	Part Number
A94W	150 in./lbs	2070805
B94W	300 in./lbs	2070905

Series 92 and 94 Options

	92 Item #	94 Item #
Double Extra Limit Switch	2126002	2126004
Heater & Thermostat	2127001	2127001
RHM	2133001	2132002
UL1203 Explosion-Proof Enclosure	2130900	N/A
Feedback Potentiometer	2129001	2129003
4-20 mA Positioner	2130810	2130812
4-20 mA Transmitter	2130813	2130813
ModBus Card	2130821	2130821
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
LL-200C Local/Remote Station (1)	2190000	2190000
PK-100 Local/Remote Station (2)	2190001	2190001
Voltages:		
12 VDC	2135749	2135749
24 VDC	2135750	2135750
12 VAC	2135751	2135751
24 VAC	2135752	2135752
220VAC	2135753	2135753

(1) For open/close 120vac units only

(2) For 120/230vac modulating units with DHC Positioner

Series 10P Actuators

General Locations (120 VAC)		
Model	Output Torque	Part Number
10-15P	1320	204902
10-20P	1740	204909
10-30P	2580	204903
10-50P	4320	204904
10-60P	5220	204910
10-80P	6960	204905
10-120P	10440	204906
10-200P	17400	204907
10-300P	26040	204908
General Locations (230 VAC)		
Model	Output Torque	Part Number
10-15P	1320	2049992
10-20P	1740	2049999
10-30P	2580	2049993
10-50P	4320	2049994
10-60P	5220	2049990
10-80P	6960	2049995
10-120P	10440	2049996
10-200P	17400	2049997
10-300P	26040	2049998

Series 10P Actuators Options

Feedback Potentiometer	2129001
4-20 mA Positioner	2130822
4-20 mA Transmitter	2130813
ModBus Card	2130821
Cycle Length Control	2131001
2-Wire Control	2102001
LL-200C Local/Remote Station (1)	2190000
PK-100 Local/Remote Station (2)	2190001

(1) For open/close 120vac units only

(2) For 120/230vac modulating units with DHC Positioner



WARRANTY AND LIMITATIONS

1.1 These Limited Representations and Warranties are applicable to all end-customers purchasing Asahi Valve and Actuation products manufactured and distributed by Asahi/America, Inc. and are subject to Asahi's standard Terms and Conditions of sale. Asahi warrants that for the warranty period, the products will be free from defects in materials and workmanship under normal and proper use, and will conform to manufacturer published specifications. This warranty is subject to the proper storage, handling, transportation, installation, use and maintenance of Asahi products by both the installer and final customer. This warranty does not include defects due to normal wear and tear or deterioration.

1.2 Customer shall provide written notice of any non-conformities or visible defects regarding the products within 14 business days of discovery. Failure to provide prompt notice shall void this warranty.

1.3 The sole obligation under the foregoing warranty is, at Asahi's discretion, to repair, to replace or exchange the product or to refund the purchase price. Any repaired, replaced or exchanged products shall be subject to the warranty set forth in 1.1 following the repair, the replacement or the exchange. If the Company has received notification from customer, and no defects of the product could be discovered, customer shall bear the costs that the company incurred as a result of the notice.

1.4 The "warranty period" for Asahi Valves and Asahi Actuators shall be **3 years from the date of invoice** subject to the exclusion of the items detailed in 1.5 below, which shall be covered under our Warranty policy for a period of 1 year from the date of invoice.

1.5 Asahi's warranty with respect to the following items will be covered for a period of 1 year from the date of invoice; Dymatrix valves, Actuated Dymatrix valves, Pressure Relief valves, Frank Regulators, EM Technik valves and Actuated EM Technik valves, Type 342 and 343 Diaphragm valves, Air-Pro Ball valves, PE 100 Ball valves, PP Natural Ball valves, and Globe Control valves. All Actuators manufactured supplied by other manufacturers (Limatorque, Rotork, Century, etc.)

1.6 The Company does not authorize any person or party to assume or create for it any other obligation or liability in connection with the products except as set forth herein.

1.7 All requests and notices under this warranty shall be directed to:

Asahi/America, Inc.
Attn: Customer Service
655 Andover Street,
Lawrence, MA 01843
Tel: 781-321-5409 • Fax: 978-685-3010

Additional Asahi/America Products

Single Wall Piping Systems

Asahi/America offers piping systems in **Chem Proline**[®] (Advanced PE) **Proline**[®] (polypropylene), **UltraProline**[®] (Halar[®]) & **Super Proline**[®] (PVDF) with pipe diameters ranging from 1/2" - 24". Each system has a wide assortment of fittings and joining techniques.

Air-Pro[®] (HDPE) compressed air systems and **Pro-Vent**[®] (IPP) and **PuradVent**[®] (PVDF) ventilation and exhaust systems highlight our gas handling piping lines.

High Purity Piping Systems

Asahi/America and our partner, AGRU, have been providing quality, high purity thermoplastic systems for decades. From state-of-the-art **Purad**[®] (ultra high purity PVDF) to cost-effective **PolyPure**[®] (PPn) and **PP-Pure**[®] (PP) systems as well as our **Purflon**[®] (PFA) system we have the experience and expertise to provide you with the right product for the right application.

Commercial Piping Systems

Asahi/America offers commercial piping systems in **Asahitec**[™] (PP-RCT) and **COOLSAFE**[™] (Insulated PE). Each system has a wide assortment of valves, fittings and joining techniques.

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 many 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.

Chem Prolok[®] is a PE 100 system in sizes 1" x 12".

Poly-Flo[®] 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.



Chem Proline[®]



Purad[®]



Asahitec[™]



Duo-Pro[®]



NVM

MPV

PV

Another Corrosion Problem Solved.™



Tel: (800) 343-3618; (781) 321-5409
Direct Sales: East (800) 232-7244
Central (800) 442-7244
West (800) 282-7244

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