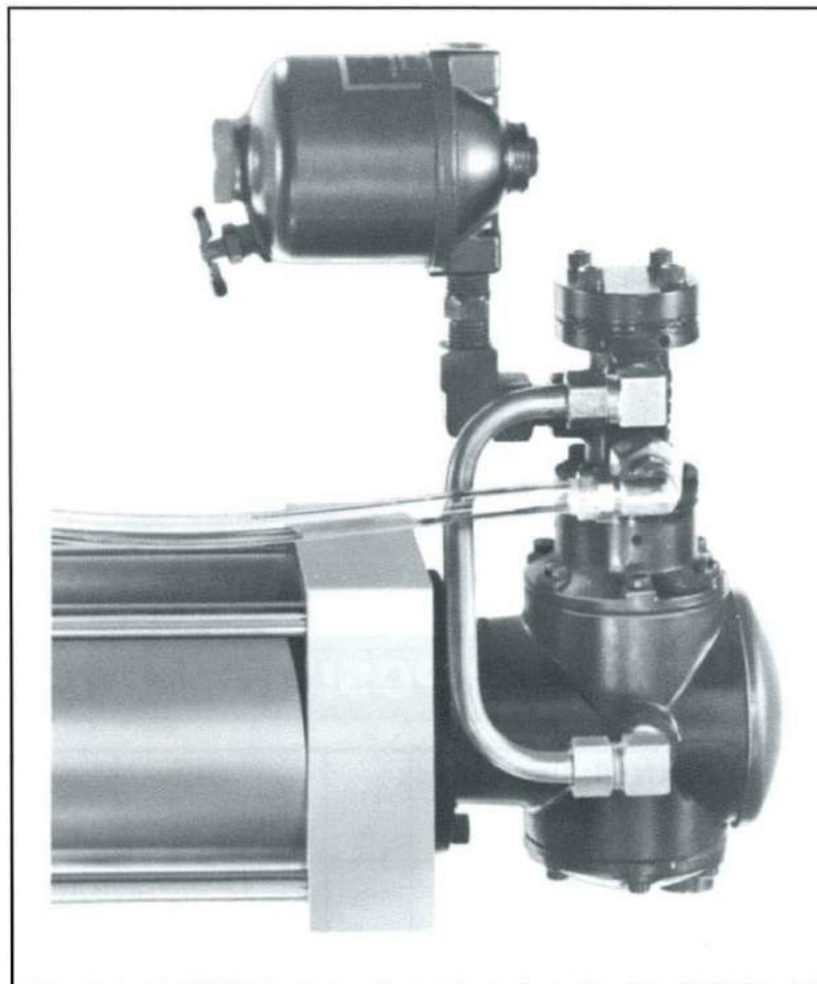
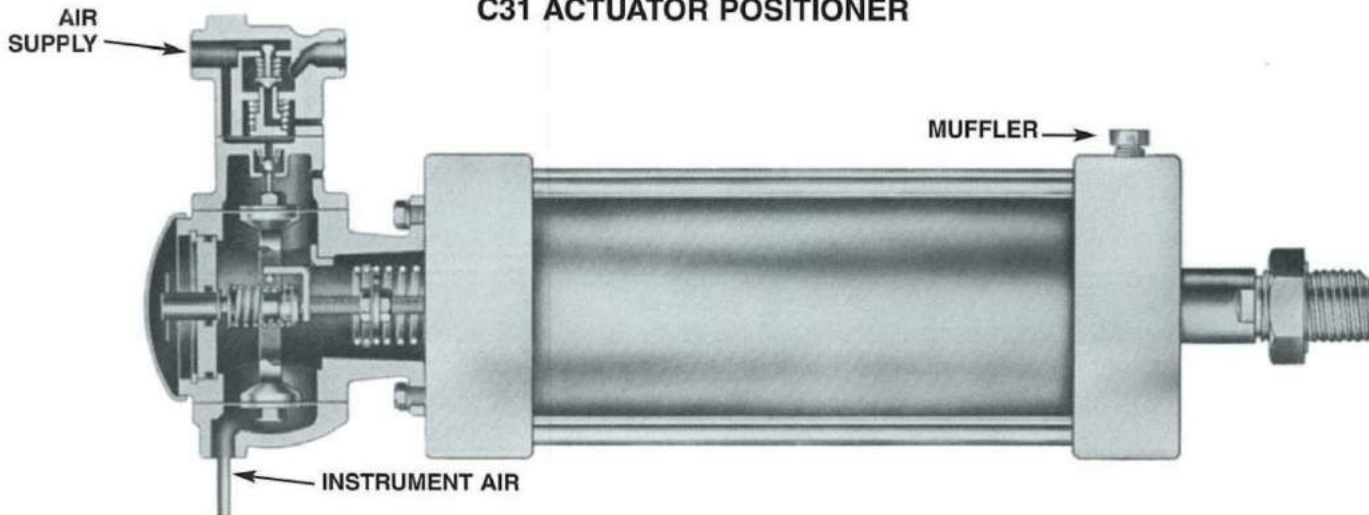


● SERIES AP



●
**Process Control Device
Utilized with Series B & J Cylinders
2 1/2" - 8" Bores
250 PSI Pneumatic**

C31 ACTUATOR POSITIONER



ACTUATOR POSITIONER FOR AIR CYLINDERS

Ideal for the positioning of:

1. Butterfly Valves
2. Dampers
3. Louvers
4. Gas and Oil Burner Valves
5. Blast Gates
6. Variable Pitch Fans
7. Metering Pumps
8. Speed Change

Positioner cylinder operating pressure: 20 to 100 PSI air only.

Standard: Instrument span 12 PSI
 Range3 PSI to 15 PSI
 Consult factory for other options.

Repeatability: 1/8" to 1/4" on all positioners.

DO NOT ROTATE PISTON ROD. This will affect factory setting.

Mounting Options: Flush mount (except Model B490)
 Front face mount
 Front flange mount (from Series B & J)
 Front, rear or center trunnion (from Series B & J)
 Accessories (from Series B & J)

SERIES AP ACTUATOR POSITIONER DIMENSIONS

MODEL	BORE	ROD DIA.	EXTEND POWER MULTIPLE	RETRACT POWER MULTIPLE	A	B	C	D	* E	* F	* G
B490	2½	¾	4.91	4.47	5 ⁵ / ₁₆	2¼	¾-10 x 1½	2.203	2 ⁷ / ₈	2 ⁷ / ₈	5/16-24 x 9/16
B700	3	¾	7.07	6.62	5 ⁵ / ₁₆	2¼	¾-10 x 1½	2.625	3 ³ / ₈	3 ³ / ₈	5/16-24 x 9/16
B960	3½	1	9.62	8.84	6 ³⁵ / ₆₄	2 ⁵ / ₈	1-8 x 1 ⁵ / ₈	3.219	4	4 ¹ / ₈	3/8-24 x 1 ¹ / ₁₆
B1600	4½	1	15.90	15.12	6 ³⁵ / ₆₄	2 ⁵ / ₈	1-8 x 1 ⁵ / ₈	4.031	5	5 ¹ / ₈	½-20 x 1 ¹ / ₁₆
B1960	5	1	19.63	18.85	6 ⁵ / ₁₆	2 ⁵ / ₈	1-8 x 1 ⁵ / ₈	4.100	5½	5½	½-20 x 1 ¹ / ₁₆
J2800	6	1½	28.27	26.50	7¾	2½	1¼-12x1 ⁵ / ₈	4.875	6½	6½	½-20 x 5/8
J5000	8	1½	50.26	48.50	7¾	2½	1¼-12x1 ⁵ / ₈	6.440	8½	8½	5/8-18 x ¾

*Dimensions shown for model B490 are for front head only. Back cap is 3¾" diameter.

J21 OR J22 ACTUATOR POSITIONER

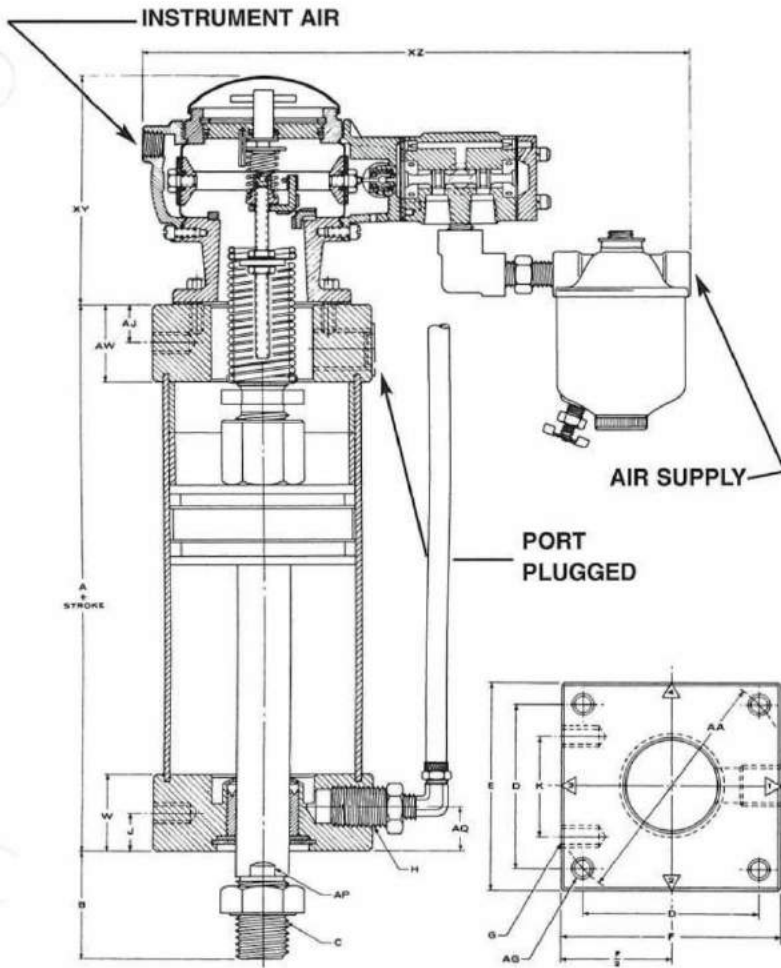
POSITIONER SPECIFICATIONS

The C31 Positioner is a single acting, spring return. The piston rod extends on instrument air increase. A spring on the piston rod end causes the piston rod to retract as instrument air is decreased or lost. If air supply is lost, piston rod will retract. The extending force is diminished by the spring force; therefore, it is impossible to get 100% force in either direction.

MODEL	SPRING FORCES	AVAILABLE STROKES
B490	Consult Factory	2" - 10"
B700	Not Available	
B960	Consult Factory	2" - 10"
B1600	Consult Factory	2" - 10"
B1960	Not Available	
J2800	Consult Factory	2" - 10"
J5000	Consult Factory	6" - 14"

The J21 or J22 Positioners are double acting. The J21 starts out with the piston rod fully retracted and extends on instrument air increase. The J22 starts out with the piston rod fully extended and retracts on instrument air increase. 100% force in both directions is possible with the J21 or J22.

Standard stroke lengths are 2" through 14" in 1" increments.



NOTE: All dimensions apply to J21 or J22. All but A & XZ dimensions apply to the C31. Consult factory for C31 dimensions.

	*H NPT	J	* K	W	AA	AG	AJ	AP	AQ	AR	AW	XY	XZ
	3/8	19/32	1 1/4	1 3/16	3.115	5/16-24 x 1/2	—	5/8	1 1/16	—	1 3/16	4 9/16	10 1/8
	3/8	19/32	1 1/4	1 3/16	3.712	5/16-24 x 1/2	19/32	5/8	1 1/16	1 1/16	1 3/16	4 9/16	10 1/8
	1/2	23/32	1 27/32	1 1/2	4.552	3/8-24 x 1 1/16	23/32	7/8	2 7/32	2 7/32	1 1/2	4 9/16	10 1/8
	1/2	23/32	2 1/2	1 1/2	5.701	1/2-20 x 1 1/16	23/32	7/8	2 7/32	2 7/32	1 1/2	4 9/16	10 1/8
	1/2	3/4	2 1 1/16	1 1/2	5.798	1/2-20 x 1 1/16	3/4	7/8	2 7/32	2 7/32	1 1/2	4 9/16	10 1/8
	3/4	1 1/4	3 3/4	2	6.894	1/2-20 x 1/2	3/4	1 1/4	1 1/4	3/4	1 1/2	4 9/16	10 1/8
	3/4	1 1/4	4 1/2	2	9.108	5/8-18 x 1/2	3/4	1 1/4	1 1/4	3/4	1 1/2	4 9/16	10 1/8

C31 SPECIFICATIONS

J21 OR J22 SPECIFICATIONS

Supply Pressure Effect: Less than 0.15% per PSI

Supply Pressure Effect: Less than 0.15% per PSI.

Ambient Temperature Range: -20°F to +150°F

Ambient Temperature Range: -20°F to +150°F

Flow Capacity (Dynamic): Up to 5.0 SCFM in either direction with a 100 PSI supply.

Flow Capacity (Dynamic): Up to 5.0 SCFM in either direction with a 100 PSI supply.

Air Consumption (Static): 0.3 SCFM with 40 PSI supply pressure.

Air Consumption (Static): 1.0 SCFM with 40 PSI supply pressure.

Air Supply: 20 PSI to 100 PSI

Air Supply: 20 PSI to 100 PSI

Adjustment: Zero adjust is external and can be made without tools.

Adjustment: Zero adjust is external and can be made without tools.

STANDARD REPAIR KITS CAN BE USED TO REPAIR J21 OR J22 CYLINDERS. C31 CYLINDERS SHOULD BE REPAIRED AT THE FACTORY BECAUSE OF HIGH COMPRESSION SPRING INSIDE.

REPLACEMENT C31, J21 OR J22 POSITIONERS, RANGE SPRING OR RANGE SPRING ASSEMBLIES CAN BE PURCHASED. CONSULT FACTORY FOR OTHER PARTS.

ORDERING INSTRUCTIONS FOR SERIES AP CYLINDERS

4 B490 X 12 J21 Style #1 - - -

Quantity ———— ↑

Model ———— ↑

Stroke ———— ↑

Type of Positioner ———— ↑

Rod End Style ———— ↑

Style #1 Standard Full Male Thread (B Series)
 Style #2 Standard Small Male Thread (J Series)
 Style #3 Optional Female Thread - This Thread and all Optional Rod Ends,
 Please Specify Thread, Length or Depth, Plus "B" Dimension

Options ———— ↑

416SS Rod
 303SS Rod, Tie Rods, & Nuts
 Magno Piston (Required for Reed Switch Operation)
 Hard Coat (Head, Cap, & Piston)
 Complete Corrosion Resistance (Hard Coat Option, Plus 303SS Rod, Tie Rods, & Nuts)
 Metallic Rod Wiper (Do not use with stainless steel rod.)

Mounting Options and Accessories ———— ↑

SERIES T



Air-Oil Tank
2 1/2" - 8" Bores
250 PSI Hydraulic
NFPA Porting

SERIES T AIR-OIL TANKS

Advance Automation Air-Oil Tanks offer a way of using workplace air pressure and converting it into hydraulic pressure. The hydraulic pressure is the same as the air pressure supplied.

Air-Oil Tanks are mainly used in slow speed applications where smooth piston rod travel is required.

Advance Automation Air-Oil Tanks use aluminum head, cap and tube. They feature baffles on the top and bottom, shatterproof sight gauge and flush-type fill and drain plugs. The operating pressure is 250 PSI maximum.

TANK SELECTION

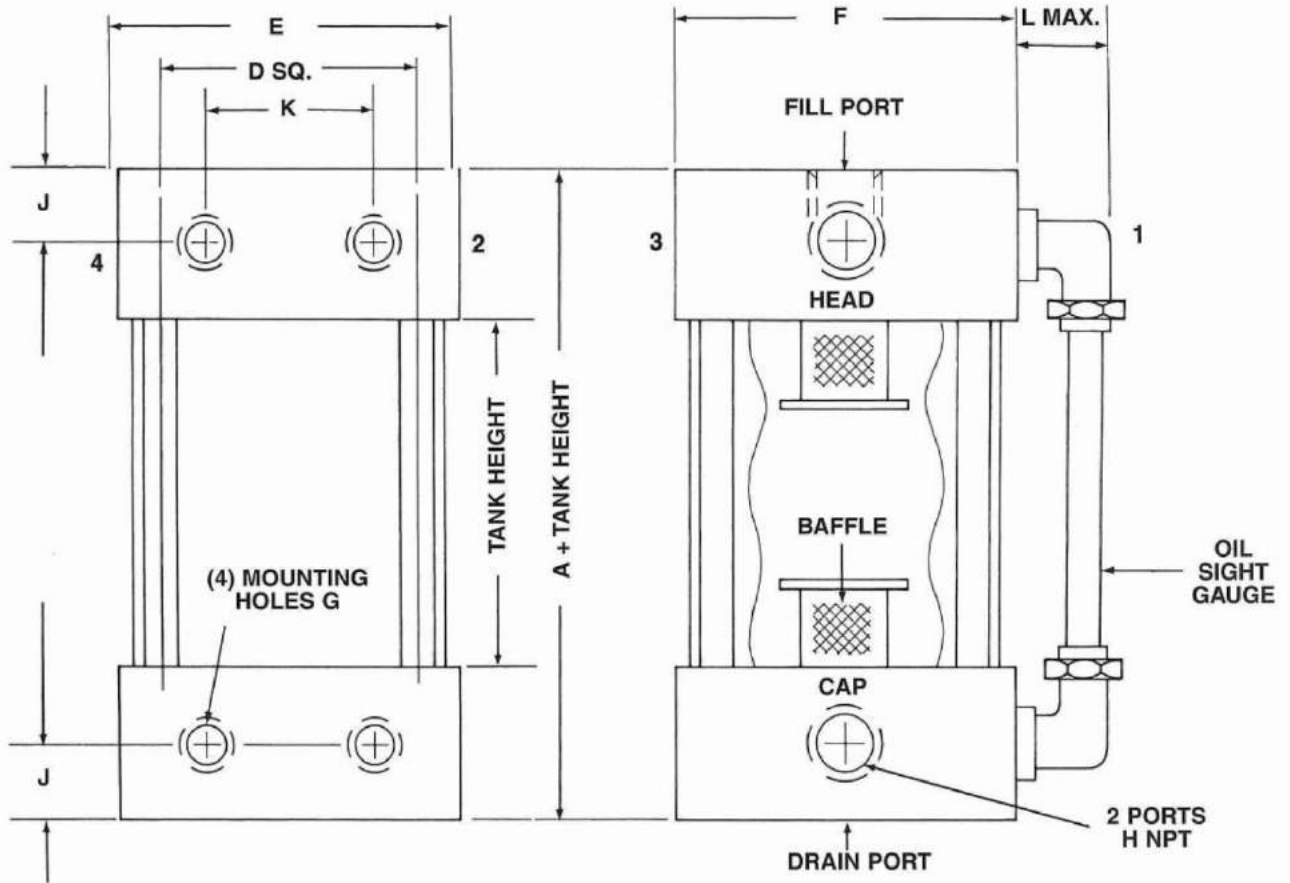
1. Calculate work cylinder volume in cubic inches, Area x Stroke = Volume.
2. Select the proper tank bore and height from the usable oil capacity chart. Since there are usually several combinations, select the one having a capacity closest to but greater than your volume requirements.
3. Base your selection on a combination of economics, space requirements and port size.

EXAMPLE

1. Work cylinder: B1600 X 10
Area of 4½" bore = 15.9 square inches x 10" Stroke = 159 cubic inches Volume
2. Possible combinations:

T960	x	20"	Tank Height =	163 cubic inches
T1600	x	13"	Tank Height =	159 cubic inches
T1960	x	12"	Tank Height =	163 cubic inches
T2800	x	10"	Tank Height =	183 cubic inches
T5000	x	7"	Tank Height =	195 cubic inches

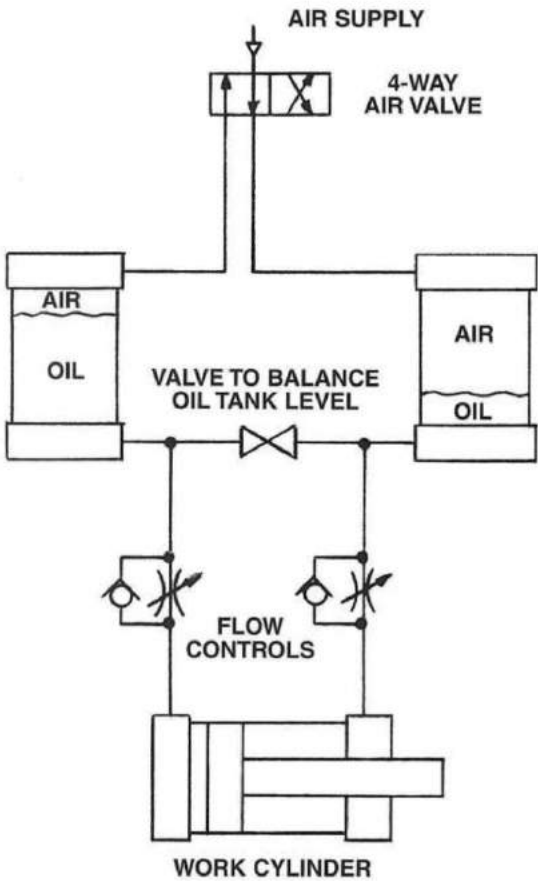
MODEL	TANK BORE IN INCHES	TANK HEIGHT WITH							
		4	5	6	7	8	9	10	
T490	2½	5	10	15	20	25	29	34	
T960	3½	10	19	29	38	48	58	67	
T1600	4½	16	32	48	64	80	95	111	
T1960	5	20	39	57	76	93	110	127	
T2800	6	28	55	82	110	135	158	183	
T5000	8	50	98	146	195	239	280	324	



MODEL	BORE	AIR-OIL TANK DIMENSIONS								
		A	D	E	F	G	H	J	K	L
T490	2½	2⅝	2.203	2⅞	2⅞	⅝ - 24 x ⅞	⅜	19/32	1¼	1⅞
T960	3½	3	3.219	4	4⅞	⅜ - 24 x 1⅞	½	23/32	127/32	1⅞
T1600	4½	3	4.031	5	5⅞	½ - 20 x 1⅞	½	23/32	2½	1⅞
T1960	5	3	4.100	5½	5½	½ - 20 x 1⅞	½	¾	21/16	1⅞
T2800	6	3	4.875	6½	6½	½ - 20 x ⅝	¾	¾	¾	1⅞
T5000	8	3	6.440	8½	8½	⅝ - 18 x ¾	¾	¾	4½	1⅞

USABLE OIL CAPACITY - CUBIC INCHES

11	12	13	14	15	16	17	18	19	20
39	44	49	54	59	64	69	74	78	83
77	86	96	106	115	125	134	144	154	163
127	143	159	175	191	207	239	254	270	302
143	163	181	198	215	232	250	268	304	337
206	234	260	284	309	334	359	386	411	437
365	414	461	504	547	592	637	684	729	774



DUAL TANK AIR-OIL SYSTEM

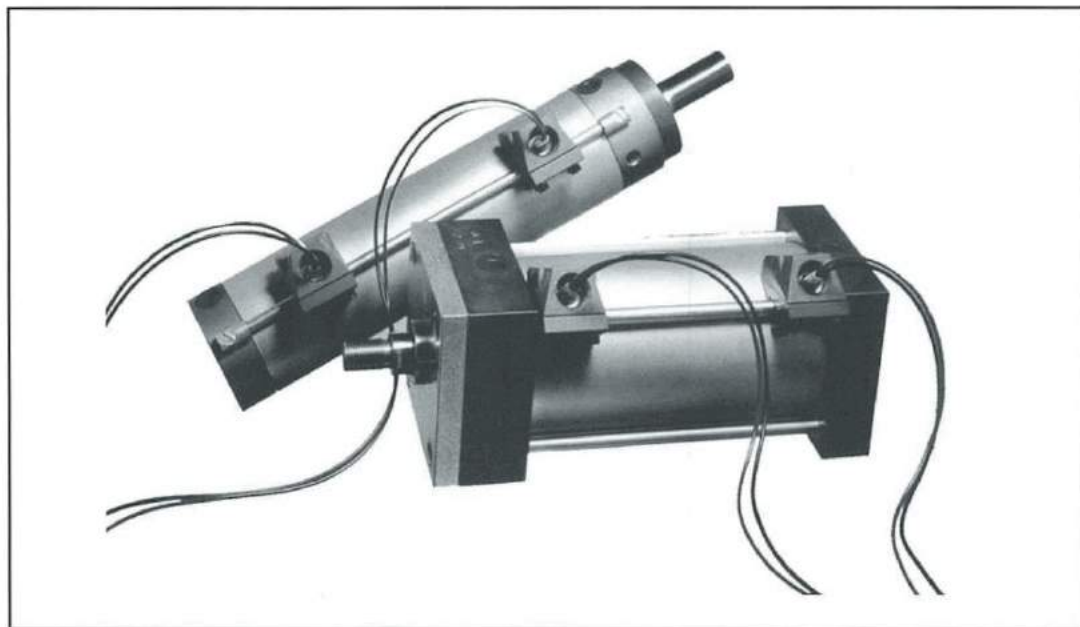
1. Flow controls are recommended to limit the fluid velocity.
2. Mount Air-Oil Tanks vertically at the highest point in the system. This allows self-bleeding of the tank.

ORDERING INSTRUCTIONS FOR SERIES T AIR-OIL TANKS

Quantity	4	T960	X	10	-	-	-
Model							
Tank Height							
Options							
Hard Coat (Head & Cap) 303SS Tie Rods & Nuts							
Mounting Options							
Side Tapped Standard Flange Mount (From Series B & J) End Lug Mount (From Series B & J)							

Sight Gauge at Position #1, Ports at Position #2 and Side Tapped at Position #3 are standard in all Air-Oil Tanks.

● SERIES LS



● **Originators of Magno Reed Limit Switches**
UL Listed Models
Indicator Light Feature

SWITCH MODEL	SWITCH POSITION	MOUNTING
LS10A	NO — Normally Open	L — Left Hand or R — Right Hand

SWITCH MODEL	SWITCH POSITION	MOUNTING
LS10 OR LS20	NO — Normally Open OR NC — Normally Closed	L — Left Hand or R — Right Hand

SWITCH MODEL	SWITCH POSITION	MOUNTING
LS30	NO — Normally Open AND NC — Normally Closed	L — Left Hand or R — Right Hand

SWITCH MODEL	SWITCH POSITION	MOUNTING
LS11 OR LS21	NO — Normally Open	L — Left Hand or R — Right Hand

ORDERING INSTRUCTIONS FOR LS MAGNO REED SWITCHES

Quantity ———— ↑

Model ————— ↑

Switch Position (For LS10 & 20 Only) ———— ↑

Mounting ————— ↑

2

LS10

NO

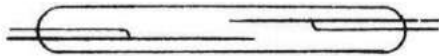
L

When ordering switch only, specify cylinder bore size or model.
 Mounting brackets change: 1¼"-4½" and 5"-8" bore.
 Model B120 cylinders require 303SS rod and tie rods for proper switch actuation.

As an industry pioneer, Advance Automation was the first company to utilize reed switch technology in conjunction with a cylinder. Today, the company offers six different magno reed switch models:

- LS10A - Original model; low-profile; light duty applications
- LS10 - Light duty applications
- LS20 - Triac; A.C. only; heavy duty applications
- LS30 - Utilize as NO and NC; light duty applications
- LS11 - Green L.E.D. indicator light; light duty applications
- LS21 - Triac; A.C. only; orange neon indicator light; heavy duty applications

Light duty applications include programmable logic controllers and computers. Heavy duty applications include devices such as solenoid valves, contactors, and lamp loads exceeding 10 watts. The LS10, LS20, and LS30 are UL listed for hazardous duty locations as detailed in the charts in this section.



REED SWITCH

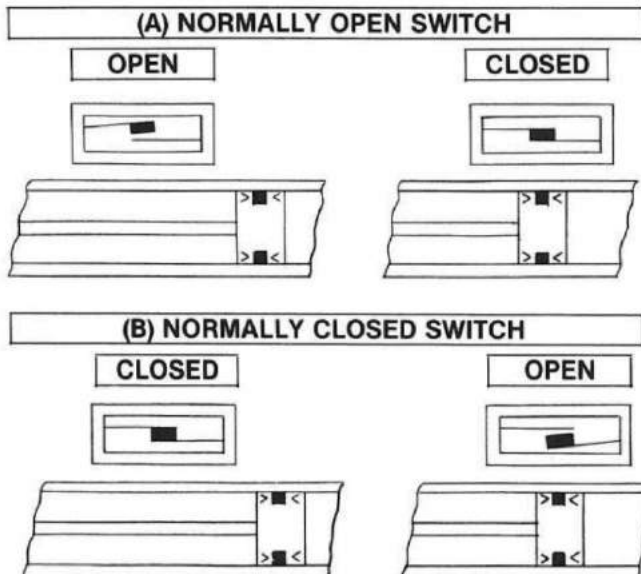
SWITCH DESCRIPTION

The aluminum switch housing contains a reed device, which consists of two overlapping reed blades of a ferromagnetic material. These blades are supported in a hermetically sealed glass tube and encased in epoxy resin in the housing. Each reed blade connects to its own exterior wire lead.

SWITCH ACTUATION

All the reed switches that Advance Automation offers operate in the same manner. The groove on the piston is machined deeper to accept a magnet strip. The switch actuates when the magnet on the piston passes under the reed device. Because the reeds are ferromagnetic, the opposite ends assume opposite magnetic polarity when brought within the influence of a magnetic field. The reed blades will then do one of two things:

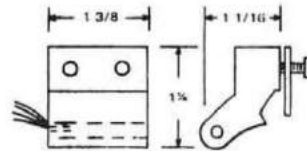
1. Close (NO - normally open switch; see example A)
2. Open (NC - normally closed switch; see example B)



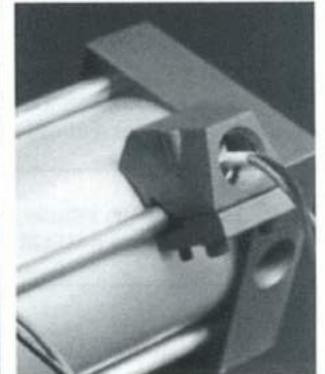
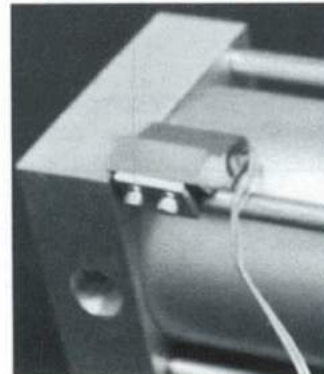
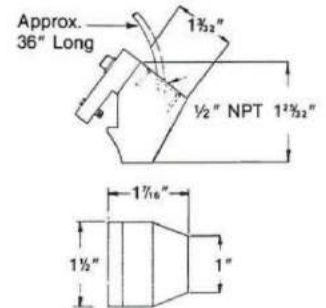
SWITCH SPECIFICATION & DESIGN FEATURES

There are two basic housings in which the reed is encapsulated as shown below:

LS10A Housing
Low Profile



LS10, 11, 20, 21 & 30
Housing



SWITCH APPLICATIONS

Use it for automatic cylinder cycling, light indication, cylinder programming and sequencing, trip timers and counters, multi-position signaling, and many other applications. A switch may be connected to a programmable logic controller, a PC, or a relay. The operation of the switch can be repeated millions of times at extremely high speeds. The mechanical life of a switch is 10 to 100 million cycles. The electrical life of a switch, when used within the recommended guidelines, exceeds 2 million operations.

SWITCH RATINGS

Do Not Exceed Switch Rating.

If you are not sure of your circuitry current ratings, we recommend you use the LS20.

Caution

Limit switches can be destroyed by a very brief direct connection across line voltage, such as brushing a wire against conduit. **DO NOT CONNECT WITH A LIVE CIRCUIT.** Turn on power only after you are certain that the switch is connected in series with a properly rated load.

SWITCH TESTING

All switches have been factory tested. If field testing is desired, the testing device must coincide with all switch data to prevent switch failures due to testing.

FACTS

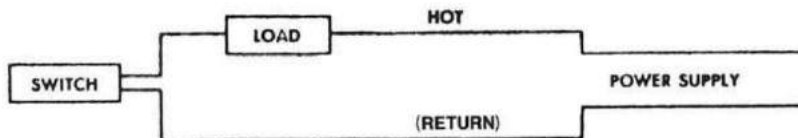
LS10A & 10 — These switches have reeds only. To protect against contact deterioration, a contact protection circuit may be required. Consult ratings on page 54.

LS20 — This switch has the necessary electrical components built in to allow direct wiring into the majority of circuits without the aid of additional resistors and capacitors. Consult ratings on page 54.

LS20 switches include a triac and will not operate on D.C. Switch will appear to malfunction if tested with a D.C. device such as a V.O.M. or continuity tester. For proper switch actuation, .05 AMP minimum current load required.

LS30 — This switch contains a reed only with 3 leads. They are green (NO - Normally Open), red (NC - Normally Closed) and black (common). To protect against contact deterioration, a contact protection circuit may be required. Consult ratings on page 54.

SAMPLE CIRCUIT



Listed

FOR LS10, 20 & 30

Industrial Control Equipment for Hazardous Locations

Class I Groups A, B, C, D Div. 2

Class II Groups F, G Div. 2

Class III Div. 2

(LS10A, 11 & 21 are not UL Listed.)

SWITCH SELECTION FOR LS10A, 10, 20 & 30

LIGHT DUTY LS10A, 10 & 30

VOLTAGE A.C. or D.C.	RATING*
0-24 VDC 0-24 VAC	.50A
0-120 VAC	.085A

*Maximum rating in rush and holding.

- UL Listed (Not LS10A)
- 2 Millisecond Response
- Easily Adjustable
- Hard Coated Aluminum Housing with 1/2" conduit outlet (Not LS10A)
- 36" Standard Leads (48" LS30)
- Vibration and Shock Rating in excess of 50 G's
- Oil and Water Resistant

NOTE: For various loads encountered, consult page 54.

HEAVY DUTY LS20 SWITCHES

VOLTAGE RATING	TEMPERATURE DERATING SCALE	
	TEMPERATURE	CURRENT RATING ANY TYPE LOAD*
24 VAC TO 120 VAC	80°F	1 AMP
	100°F	.83 AMP
	120°F	.66 AMP
	140°F	.49 AMP
	160°F	.32 AMP
	180°F	.16 AMP
	200°F	0

*Ratings shown are holding current ratings. In rush can be equal to 10 times the holding current. Minimum current load, .05 AMP for proper switch actuation.

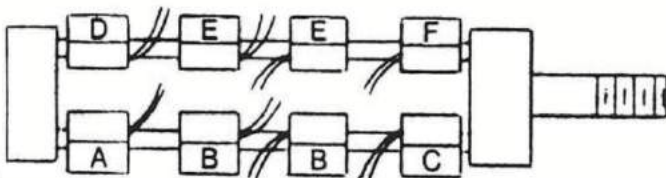
UL Rating 24-120 VAC .50A

INSTALLATION

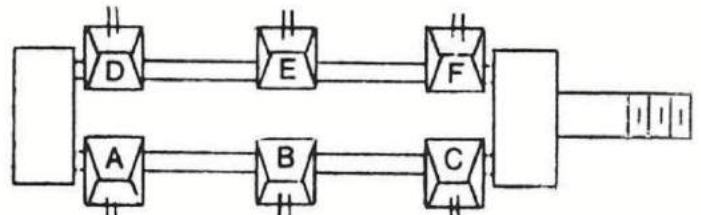
VOLTAGE CONTACT	0-24VDC 0-.50 A	0-24VAC 0-.50 A	0-120VAC 0-.085 A	24-120VAC .05-.50 A	MOUNTING POSITIONS
SPST - Normally Open	LS10AL or LS10NOL			LS20NOL	A, B, E, or F
	LS10AR or LS10NOR			LS20NOR	B, C, D, or E
SPST - Normally Closed	LS10NCL			LS20NCL	A or B
	LS10NCR			LS20NCR	B or C
SPDT	LS30L			N/A	A, B, E, or F
	LS30R			N/A	B, C, D, or E

When sensing end of stroke, switch must be located precisely for magnet to actuate reed contact points.

LS10A MOUNTING POSITIONS



LS10, LS20, LS30 MOUNTING POSITIONS



LS11 & LS21 INDICATOR LIGHT REED SWITCH

In addition to all the industry leading features and benefits of the popular LS10 and LS20 switches, these models incorporate lights to show the on/off status of the switch.

LS11 A two (2) wire device intended for lower level D.C. voltages. The LS11 is excellent for use with solid state logic systems and programmable controllers that require 12 to 30V D.C. inputs. A green L.E.D. provides the illumination (see specifications and wiring).

LS21 A three (3) wire device intended for 110-120 A.C. operation at up to 1.00 AMP. An orange neon bulb provides the illumination (see specifications and wiring).

MODELS AVAILABLE: These are not UL Listed.

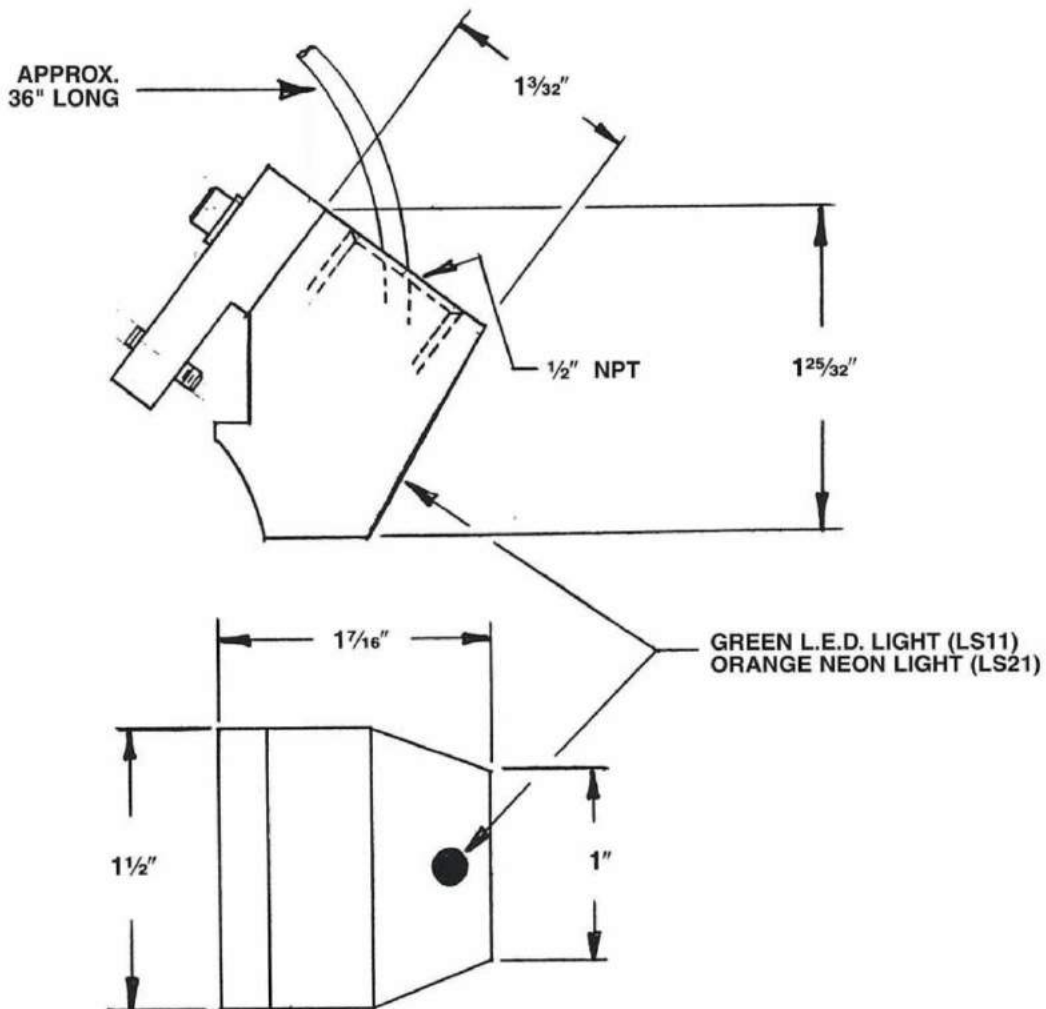
LS11L

LS21L

LS11R

LS21R

LS11, 21 HOUSING



SPECIFICATIONS FOR LS11 & LS21

NOTE: To find power in watts, simply multiply current times voltage (i.e.: Power = Volts x Amps)

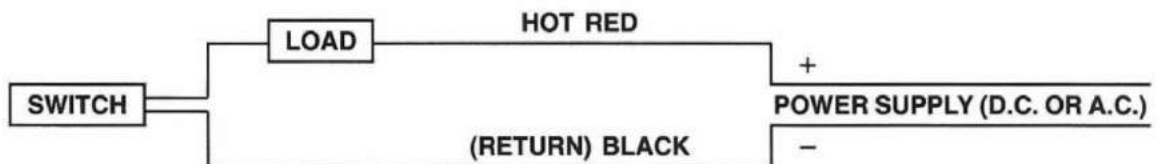
	LS11		LS21
	D.C.	*A.C.	A.C. ONLY
MAXIMUM VOLTAGE	100	120	135
MAXIMUM CURRENT (AMPS)	.300	.200	1.00
MINIMUM VOLTAGE	10	12	90
MINIMUM CURRENT (AMPS)	.005	.050	.050
MAXIMUM POWER (WATTS)	10	10	100

*The LS11 was designed primarily for D.C. applications; however, it can be used on A.C. voltages if a lower light output can be tolerated.

WIRING DIAGRAMS

LS11

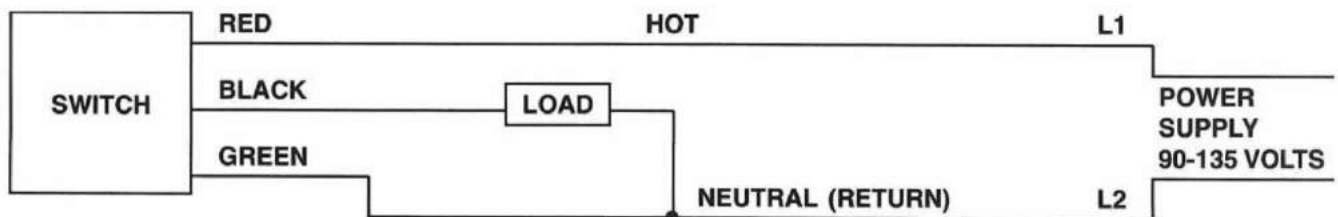
SAMPLE CIRCUIT



- NOTE:**
- 1) On D.C. circuits observe polarity (red is plus [+], black is minus [-]). No damage will occur if reversed, but the light will not operate.
 - 2) On A.C. circuits there are no polarity requirements. The light output will be less on A.C. voltages than on D.C. voltages.

LS21

SAMPLE CIRCUIT



Protection circuits (page 54) and installation instructions (page 51) are identical. Example:

LS11 Same as LS10NO
LS21 Same as LS20NO

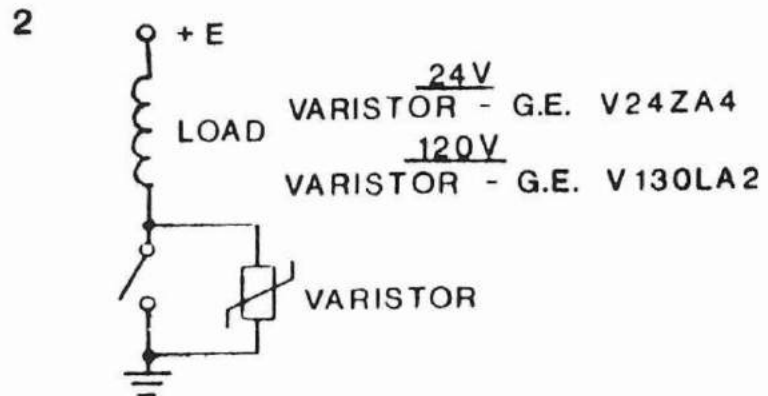
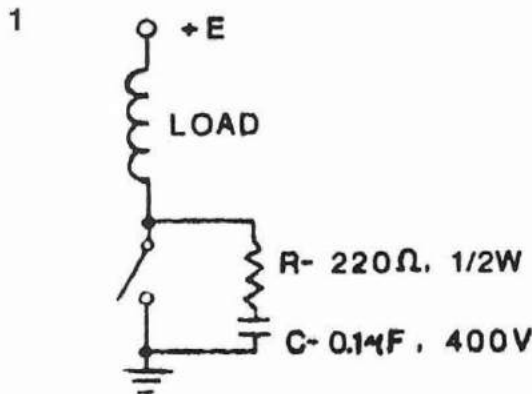
See temperature derating scale on page 51 for LS21 ratings at higher temperature.

CONTACT PROTECTION CIRCUITS

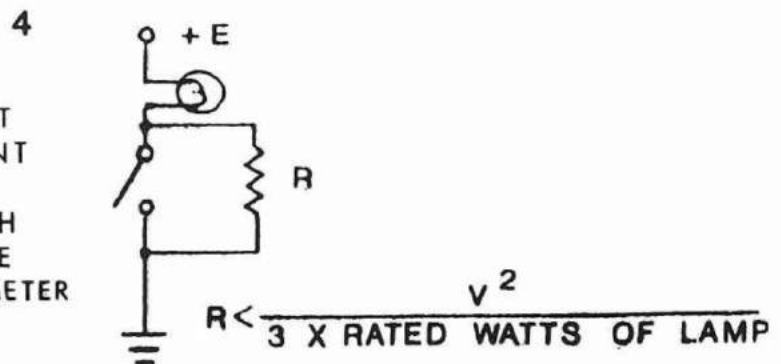
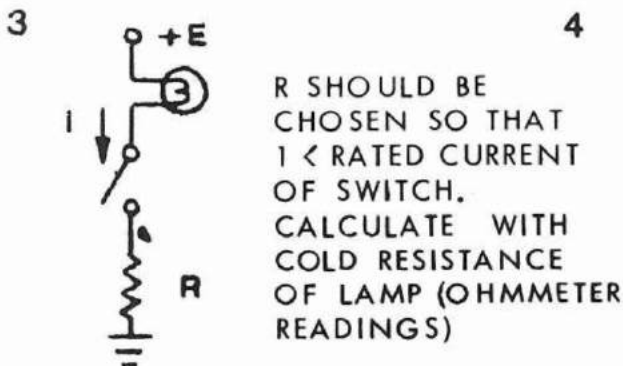
There are four types of loads which could be encountered:

A. **RESISTIVE** — For resistive loads a contact protection circuit is not required.

B. **INDUCTIVE** — An inductive load, such as a relay, solenoid, or counter, will cause an inverse voltage when the contacts are opened and contact deterioration may result. In order to prevent this, contact protection circuits 1 or 2 may be used.

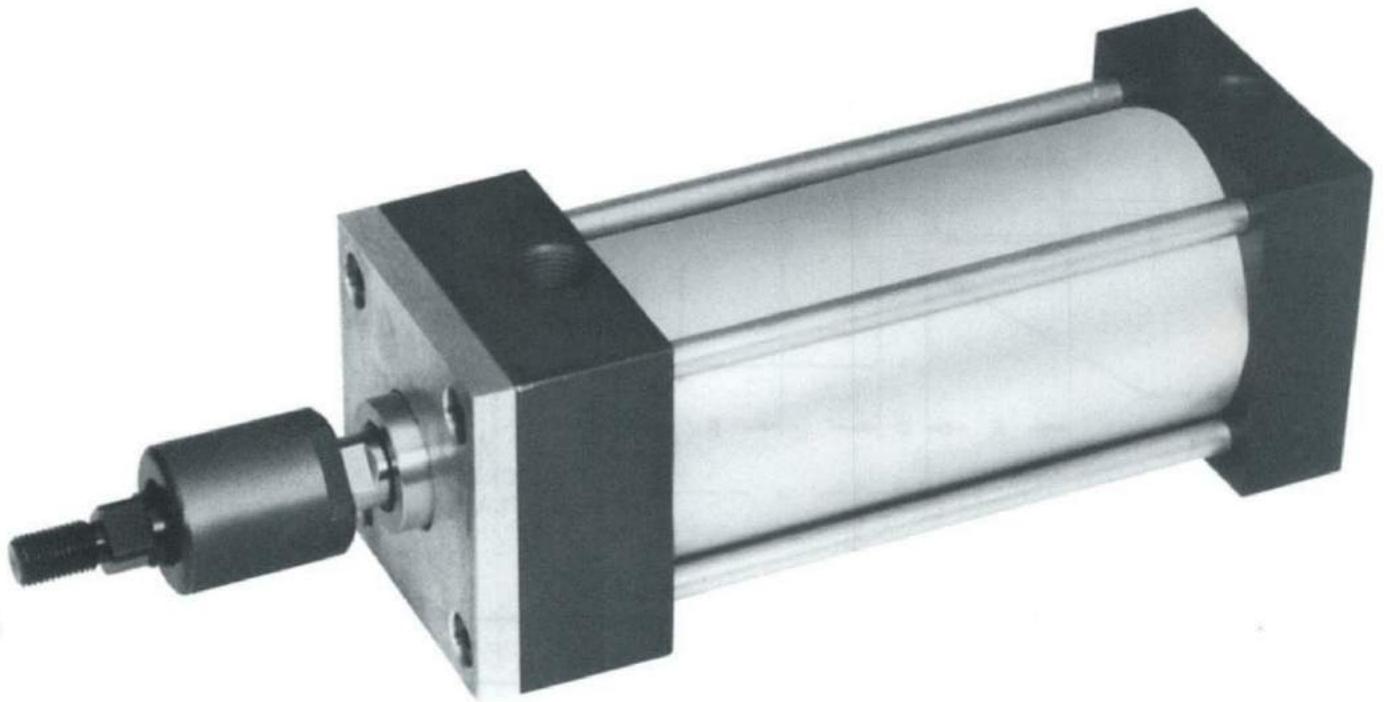


C. **INCANDESCENT** — Incandescent lamp loads cause high inrush current resulting in short contact life. To prevent this, contact protection circuit 3 or 4 may be used.



D. **CAPACITIVE** — Capacitive loads are seldom encountered. Consult the factory for contact protection circuit.

ARC LINEAR ALIGNMENT COUPLER

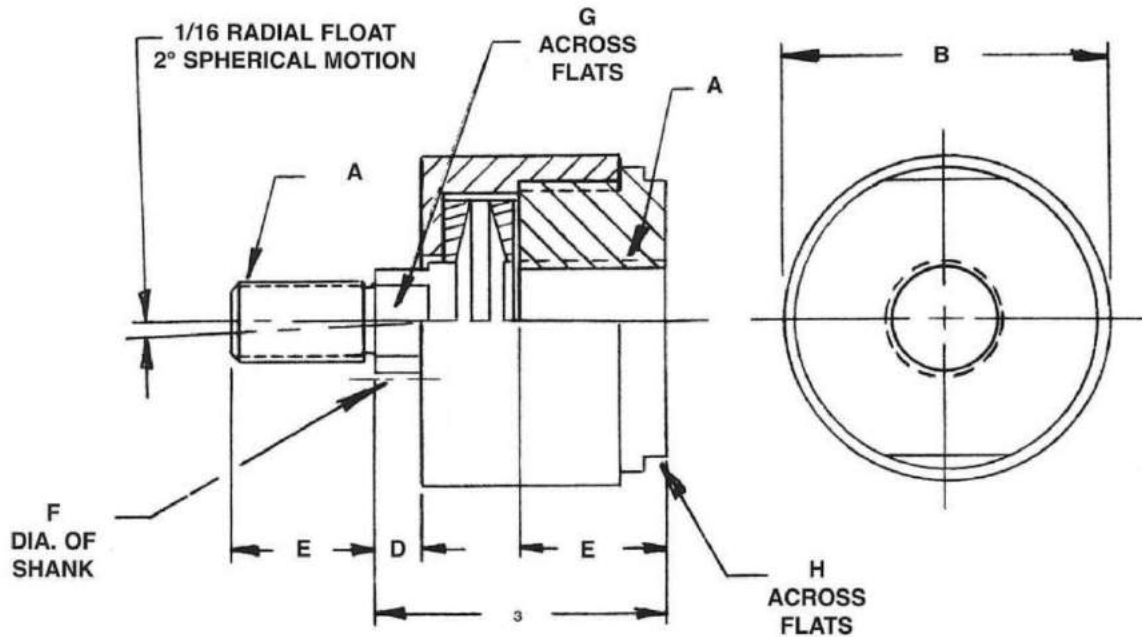


Extend the service life of Advance Automation cylinders by installing an ARC LINEAR ALIGNMENT COUPLER to compensate for misalignment.

An alignment coupler can reduce cylinder and component wear to save you money.

Sixteen thread sizes, both fine and coarse, are available.

SPECIFICATIONS



MODEL NUMBER	A TH'D	B	C	D	E	F	G	H	MAX. PULL AT YIELD
ARC-3125F	5/16-24	7/8	1 1/4	1/4	5/8	5/16	1/4	3/4	8,300
ARC-375F	3/8-24	7/8	1 1/4	1/4	5/8	5/16	5/16	3/4	8,300
ARC-375C	3/8-16	7/8	1 1/4	1/4	5/8	5/16	5/16	3/4	5,000
ARC-437F	7/16-20	1 1/4	2	1/2	3/4	5/8	1/2	1	10,000
ARC-500F	1/2-20	1 1/4	2	1/2	3/4	5/8	1/2	1	14,000
ARC-500C	1/2-13	1 1/4	2	1/2	3/4	5/8	1/2	1	14,000
ARC-625F	5/8-18	1 1/4	2	1/2	3/4	5/8	1/2	1	19,000
ARC-750F	3/4-16	1 3/4	2 5/16	1/2	1 1/8	31/32	13/16	1 1/2	34,000
ARC-750C	3/4-10	1 3/4	2 5/16	1/2	1 1/8	31/32	13/16	1 1/2	34,000
ARC-875F	7/8-14	1 3/4	2 5/16	1/2	1 1/8	31/32	13/16	1 1/2	39,000
ARC-1000F	1-14	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	64,000
ARC-1000C	1-8	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	64,000
ARC-1250F	1 1/4-12	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	78,000
ARC-1375F	1 3/8-12	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	78,000
ARC-1500F	1 1/2-12	3 1/4	4 3/8	13/16	2 1/4	1 3/4	1 1/2	3	134,000
ARC-1750F	1 3/4-12	3 1/4	4 3/8	13/16	2 1/4	1 3/4	1 1/2	3	134,000

NOTE: Use jam nut when piston rod has full threads.

Consult factory for other sizes or materials.



Installation For Series I, B & J, and R Cylinders

INSTALLATION: Cylinder life is directly dependent on proper installation. Utilize an air line filter to free lines of dirt, chips, scale, pipe dope, and other contamination. Additionally, the air supply should not contain water.

Align the piston rod with the mating machine part, both in the extended and retracted position, while placing minimum side load on the cylinder. Not following this instruction will reduce service life and increase maintenance required on cylinder.

If the cylinder includes cushions, adjust the cushion screw (27) to the desired setting. High inertia and high velocity applications may require external flow controls to help increase back pressure.

Maintenance for Series I

MAINTENANCE: Standard repair kits are available for convenient replacement of wearable parts (See Page 15). To replace rod bushing (14) and rod seal (18), remove retaining plate (20). Next, remove bushing and seal by pulling out piston rod (4), or if necessary, applying air pressure to front head port. When installing new parts, use care in passing them over threaded portion of piston rod. It may be necessary to seat rod seal (18) with a blunt instrument.

To replace piston seals (16), remove front head (2) by backing off flush tie rod nuts (13) with drag link socket. Then, remove piston rod and piston assembly from cylinder tube (3). Carefully stretch off elastic piston seals (16) for easy replacement. Hold bearing strip (15) in place (dull side out) and "rock" piston rod and piston assembly back into the cylinder tube. Replace both tube seal "O" rings (19). Reassemble in a vertical position, with blind end facing down. Apply equal torque when retightening tie rod nuts.

Avoid introducing any dirt or chips into the cylinder during repair operations, as well as damaging piston, piston rod, cylinder tube, and seals.

Maintenance for Series B & J

MAINTENANCE: Standard repair kits are available for convenient replacement of wearable parts (See Page 32). To replace rod bushing (14) and rod seal (18), remove retaining ring (20) with needle nose pliers. Next, remove bushing and seal by pulling out piston rod (4), or if necessary, applying air pressure to front head port. When installing new parts, use care in passing them over threaded portion of piston rod. It may be necessary to seat rod seal (18) with a blunt instrument.

To replace piston seals (16), remove front head (2) by backing off flush tie rod nuts (13) with drag link socket. Then, remove piston rod and piston assembly from cylinder tube (3). Carefully stretch off elastic piston seals (16) for easy replacement. Hold bearing strip (15) in place (dull side out) and "rock" piston rod and piston assembly back into the cylinder tube. Replace both tube seals (21). Reassemble in a vertical position, with blind end facing down. Apply equal torque when retightening tie rod nuts.

Avoid introducing any dirt or chips into the cylinder during repair operations, as well as damaging piston, piston rod, cylinder tube, and seals.

Maintenance for Series R

MAINTENANCE: Standard repair kits are available for convenient replacement of wearable parts (See Page 38). To replace rod bushing (14) and rod seal (18), remove retaining ring (20) with needle nose pliers. Next, remove bushing and seal by pulling out piston rod (4), or if necessary, applying air pressure to front head port. When installing new parts, use care in passing them over threaded portion of piston rod. It may be necessary to seat rod seal (18) with a blunt instrument.

To replace piston seals (16), remove front head (F-1 or F-2) using a spanner wrench on the hole supplied and turn the threaded head of the cylinder tube (3). Then, remove piston rod and piston assembly from cylinder tube (3). Carefully stretch off elastic piston seals (16) for easy replacement. Hold bearing strip (15) in place (dull side out) and "rock" piston rod and piston assembly back into the cylinder tube. Use care when passing piston through threaded barrel end. Replace tube seal "O" ring (F-9). Reassemble in vertical position, with blind end facing down. Replace head in the cylinder tube. When head is in place, replace rod seal, bushing, and snap ring.

Avoid introducing any dirt or chips into the cylinder during repair operations, as well as damaging piston, piston rod, cylinder tube, seals, and head.

WARRANTY Advance Automation Company guarantees products of its manufacture against defective workmanship and/or material for a period of one year from the date of shipment. The guarantee is limited to repair or exchange at seller's option. No obligation is assumed for the repair or exchange of any product rendered defective or damaged through normal wear, or improper application, handling, or use. The guarantee is subject to Advance Automation Company being notified immediately upon discovery of any defective workmanship and/or material within said one year guarantee period, and the holding of the item for Advance Automation Company's inspection and disposition. No other liability, expressed or implied, is assumed by Advance Automation Company.

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