

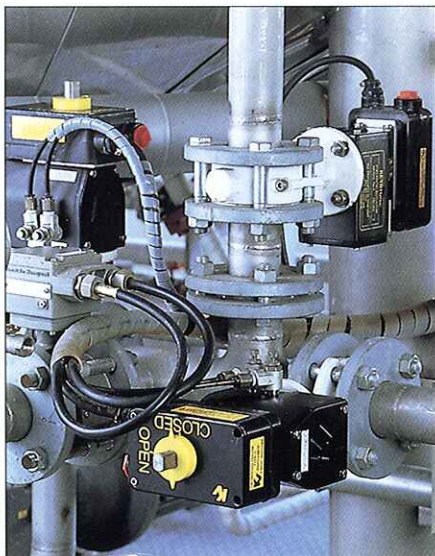


**KEYSTONE**  
C O N T R O L S

## Double Acting Pneumatic Quarter-Turn Actuator For Output Torques to 32,000 lb.in.

### Features and Benefits

- Compact rack and pinion design utilizes total piston area to develop output torque. Design provides stroke of constant output torque, ideally suited for modulating control applications.
- Simple piston with integral rack drive reduces number of dynamic seals and minimizes possibility of air leakage.
- Scotch yoke design (in larger sizes) provides higher torque output capability.
- Integral porting eliminates external tubing.
- Hard anodized epoxy coated aluminum body protects against corrosive environments.
- Female output drive provides direct mounting of most Keystone valves without special adaptation and guarantees correct alignment.



### Options and Accessories

Spring return models are available for failsafe applications.

An extensive range of standard accessories are available direct-mounted to Keystone actuators:

- Solenoid valves
- Limit switch boxes
- Positioners
- Travel stops
- Declutchable manual override gear units
- High visibility indicator

### General Application

Designed for on-off or modulating control of quarter-turn Ball, Butterfly, Plug or Damper style valves.

### Technical Data

Supply pressure: 40 to 125 psig  
Output torque: To 32,000 lb.in.  
Ambient temperature:  
Standard range: -20°F to 210°F  
(-30°C to 100°C)  
Optional ranges: -15°F to 300°F  
(-26°C to 150°C)

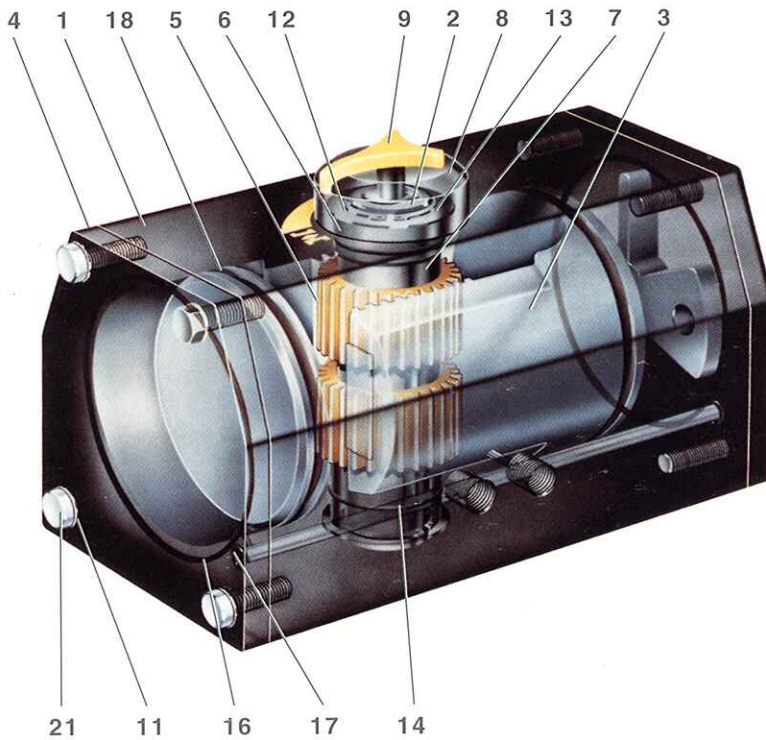
**The Flow Control Company**

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# Figure 790 Double Acting Pneumatic Actuator Rack and Pinion or Scotch Yoke



## Materials

Part	Material	Material Standards
1 Body	Extruded aluminum	ASTM B-221
2 Output shaft	Steel	B5970 080M40
3 Piston	Die cast aluminum	ASTM B-85
4 End cap	Die cast aluminum	ASTM B-85
5 Output gear	Powder metal	PMPA-FX-2008
6 Shaft bearing	Acetal 510	Commercial grade
7 Spacer	Nylon	Commercial grade
8 Indicator knob*	Plastic	Commercial grade
9 Indicator arrow*	Plastic	Commercial grade
10 Key (not shown)	Steel	Commercial grade
11 Lockwasher	Steel-plated	Commercial grade
12 Retaining ring	Steel-plated	Commercial grade
13 Retaining washer	Steel-plated	Commercial grade
14 O-ring (external, shaft bearing)	Buna-N	Commercial grade
15 O-ring (internal, shaft bearing – not shown)	Buna-N	Commercial grade
16 O-ring (end cap)	Buna-N	Commercial grade
17 Air passage seal	Buna-N	Commercial grade
18 O-ring (piston)	Buna-N	Commercial grade
19 Indicator knob clamp (not shown)*	Steel	Commercial grade
20 Socket head capscrew (indicator knob – not shown)*	Steel-plated	Commercial grade
21 Capscrew (end cap)	Steel-plated	Commercial grade

\* Items 8, 9, 19 & 20 are replaced with one-piece low profile indicator on Models 790-100 thru 790-300.

# Figure 790 Double Acting Pneumatic Actuator Rack and Pinion or Scotch Yoke

## Output torques (lb.in.) Rack and Pinion

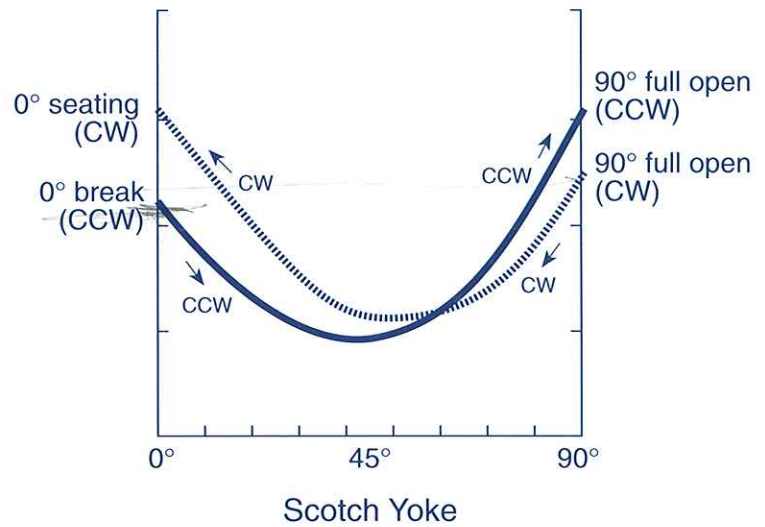
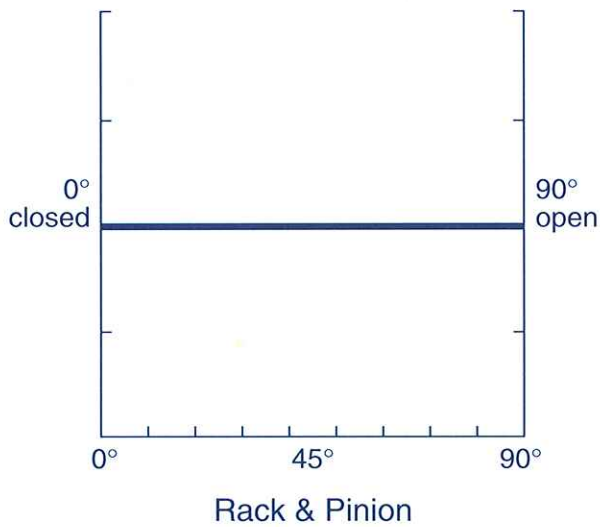
Actuator Model	Supply Pressure (psig)					Air Stroke Volumes (ft. <sup>3</sup> )*	
	40	60	80	100	120	CW	CCW
790-100	135	205	275	345	415	.005	.010
790-200	300	450	600	750	900	.010	.012
790-300	600	900	1200	1500	1800	.019	.025
790-400	870	1310	1750	2180	2600	.027	.032
790-500	1800	2700	3600	4500	5400	.055	.065

## Output torques (lb.in.) Scotch Yoke

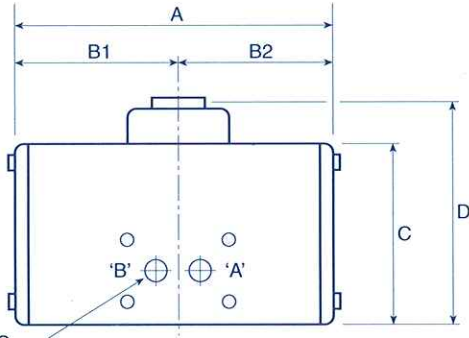
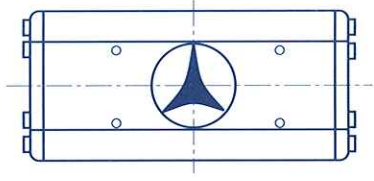
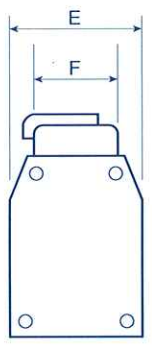
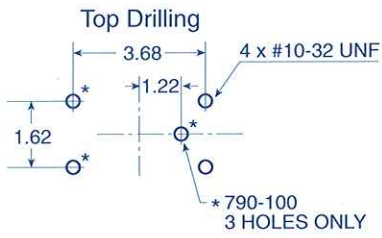
Actuator Model	Angular Position	Supply Pressure (psig)					Air Stroke Volumes (ft. <sup>3</sup> )*	
		40	60	80	100	120	CW	CCW
790-600	0° break (CCW)	4200	6300	8400	10500	12600	.131	.226
	0° seating (CW)	5100	7650	10200	12750	15300	.131	.226
	Run	2900	4350	5800	7250	8700	.131	.226
	90° full open (CCW)	5150	7725	10300	12875	15450	.131	.226
790-700	0° break (CCW)	9600	14400	19200	24000	28800	.263	.313
	0° seating (CW)	10800	16200	21600	27000	32400	.263	.313
	Run	6500	9750	13000	16250	19500	.263	.313
	90° full open (CCW)	10750	16125	21500	26875	32225	.263	.313

\* Air stroke volumes are for standard assembly (CW – close; CCW – open)  
 CCW = Counter clockwise rotation  
 CW = Clockwise rotation

## Typical torque curves

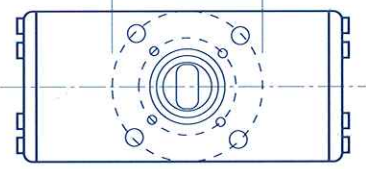


# Figure 790 Double Acting Pneumatic Actuator Rack and Pinion or Scotch Yoke

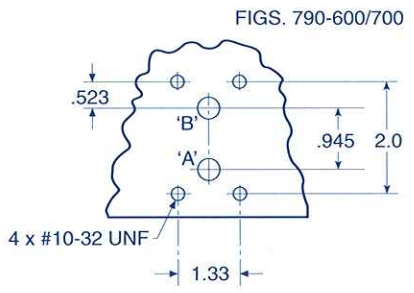
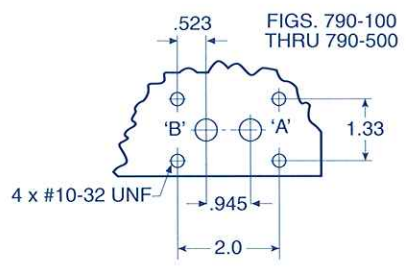


2 PORTS  
1/4 NPT

### Mounting Flange



### Porting Details



Note:  
For standard assembly  
air port 'B' - close (CW)  
air port 'A' - open (CCW)

Mounting flange		
Type	P.C.D.	Bolt Holes
P2	3.25	4 x 3/8"-16 UNC x 1/2" DP
P3	5.0	4 x 1/2"-13 UNC x 1/2" DP
P4	6.5	4 x 5/8"-11 UNC x 1" DP

Overall dimensions										
Actuator Model	A	B1	B2	C	D	E	F	Standard Bore	Mounting Flange	Wt. (lbs.)
790-100	5.3	3.5	1.8	4.1	5.0	3.4	2.1	.750 x .50 A/F	P2	5
790-200	7.0	3.5	3.5	4.1	5.0	3.4	2.1	.750 x .50 A/F	P2	7
790-300	8.6	4.3	4.3	5.0	5.9	4.5	3.4	.750 x .50 A/F	P2	14
790-400	8.3	5.6	2.7	6.9	7.7	6.0	3.5	1.1250 x .25 KEY	P2 & P3	25
790-500	11.2	5.6	5.6	6.9	7.7	6.0	3.5	1.1250 x .25 KEY	P2 & P3	29
790-600	15.9	9.5	6.4	8.5	9.3	8.0	4.5	1.8750 x .50 KEY* 2.2500 x .50 KEY*	P3 & P4	60
790-700	22.4	11.2	11.2	8.5	9.3	8.0	4.5	1.8750 x .50 KEY* 2.2500 x .50 KEY*	P3 & P4	112

All dimensions are in inches.  
\*Key size 1/2 x 3/8  
A/F - Across flats



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