

DeZURIK ROTARY DIAPHRAGM ACTUATORS



DR-40B



DR-145/250



DR-125



DR-85B

DeZURIK DR-40B/85B STAINLESS STEEL ROTARY DIAPHRAGM ACTUATORS

316 Stainless Steel Diaphragm Actuator

DeZURIK'S DR-40B and DR-85B rotary diaphragm actuators set the industry standard for accurate performance, rugged construction and long, economical service life. The 316 stainless steel materials in the DR-40B and DR-85B actuators provide corrosion resistance for a wide range of demanding industrial environments.

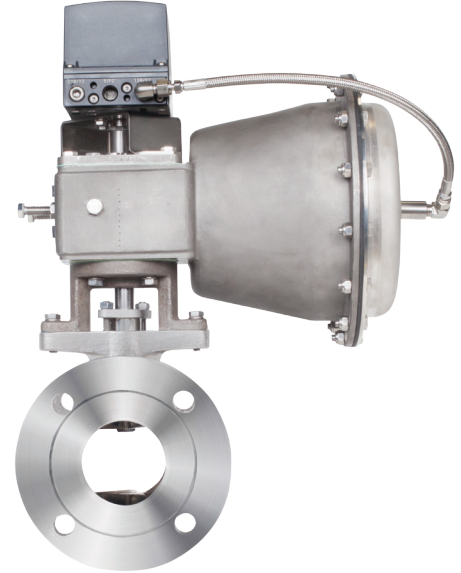
Stainless steel construction includes:

- All external components are 316 stainless steel.
- The actuator-to-valve adapter is 316 stainless steel on stainless steel or higher alloy body BHP, RCV, VPB valves.
- Positioner mounting hardware is 316 stainless steel.
- Accessories can be piped with either 316 stainless steel flexible braided hose or rigid tubing.
- All cover mounting bolts are 316 stainless steel with an anti-galling coating.

Common ISO-5211/1 Bolt Pattern

The common ISO-5211/1 bolt pattern allows the DR-40B and 85B Rotary Diaphragm Actuators to be easily interchanged on DeZURIK rotary control valves including:

- VPB V-Port Ball Valves
- RCV Rotary Control Valves
- BHP High Performance Butterfly Valves
- 1/2-3" PEC Eccentric Plug Valves

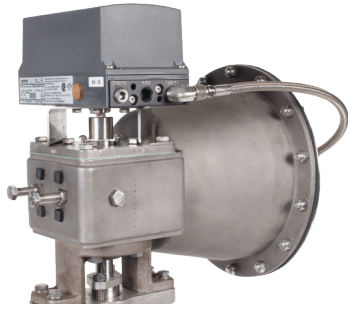


Enclosed Construction

The actuator is sealed and gasketed to protect internal parts from grit, moisture and corrosive contaminants. The spring is pre-caged at the factory for increased safety.

Smooth Throttling Control & Accuracy

The rigid connections between the valve and actuator, and between the actuator and positioner, assure accurate valve positioning with no backlash. The actuator coupling is supported at the top and bottom



Fail Safe Operation is Easily Field Reversible

The DR-40B and DR-85B are designed for on-off or modulating service in either a Reverse (spring-to-close) or Direct (spring-to-open) mode. Action can be easily changed in the field by flipping the actuator over with no additional parts required.

(spring-to-open) mode. Action can be easily changed in the field by flipping the actuator over with no additional parts required.

Externally Adjustable Stops

Stops are pre-set at the factory to ensure proper valve seating. If the valve or actuator ever require maintenance, the externally positioned stop bolts are easily adjustable.

External Position Indicator

A position indicator is externally mounted and provides a visible indication of valve position.



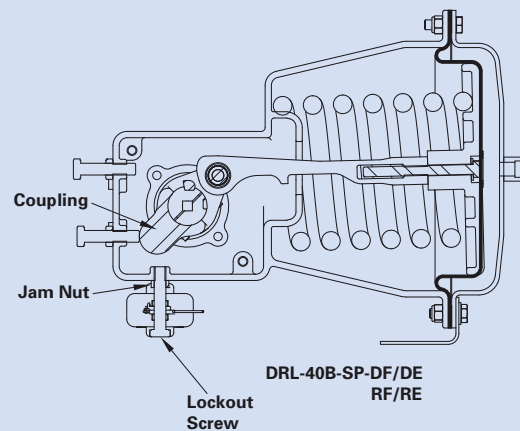
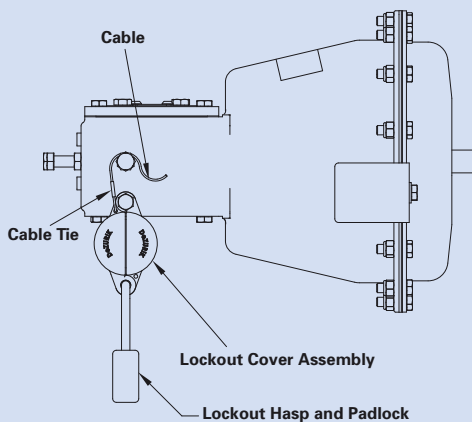
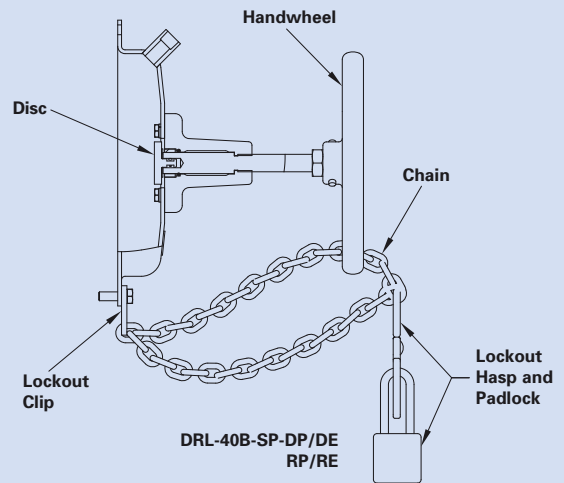
OSHA Field Lockout Available

All DeZURIK rotary diaphragm actuators can be specified with a lockout device that meets OSHA requirements. Depending on lockout option selected, valves can be locked in the open position, closed position, or at both ends of the stroke.

Lockouts for the pressure end of the stroke include a throttling manual override that is equipped with a chain and padlock to prevent operation. The throttling manual override also allows operation of the valve in case of air supply failure.

Lockouts for the failure end of the stroke include a lock screw that can be tightened against the coupling and secured with a lockout cover assembly to prevent unintended operation.

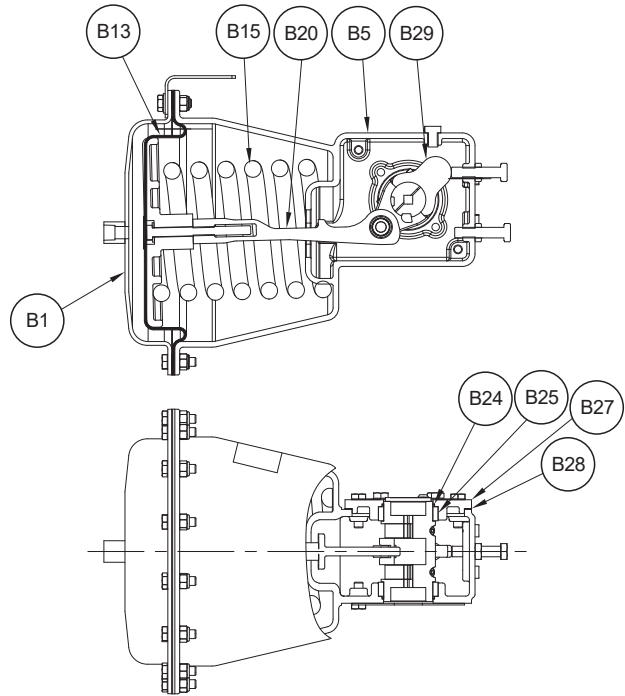
Both options can be provided when lockout at both ends of the stroke is required.



Materials of Construction

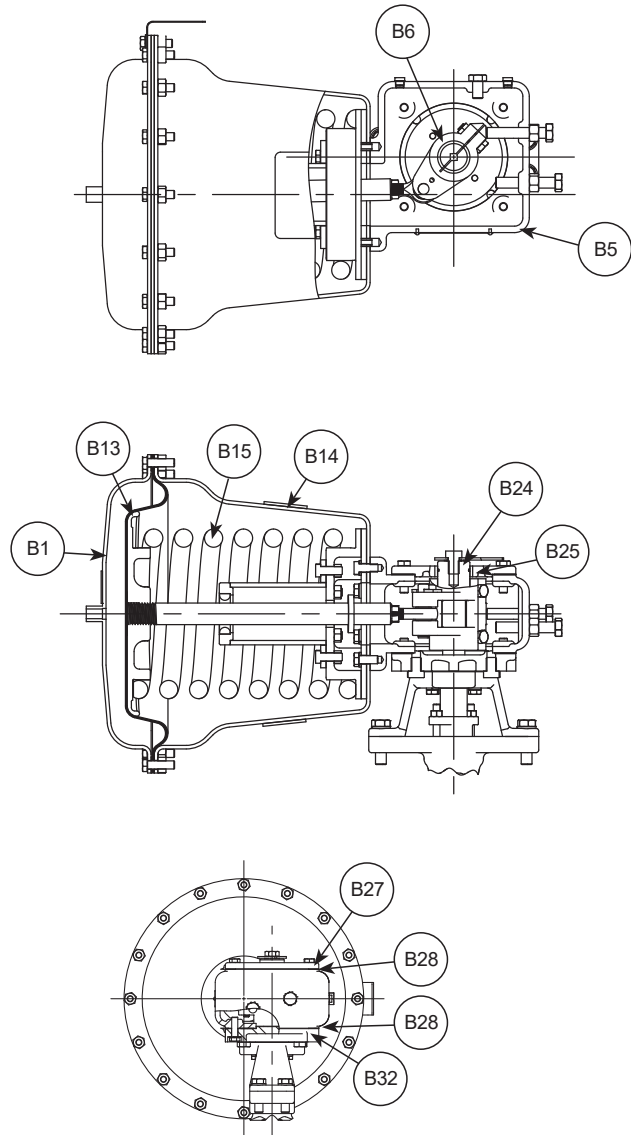
DR-40B

Item	Description	Material
B1	Diaphragm Cover	316 Stainless Steel, ASTM A240/A276
B5	Housing	Stainless Steel, CF-8M, ASTM A351
B13	Diaphragm	Acrylonitrile-Butadiene
B15	Spring	Silicon Manganese Steel
B20	Clevis	Investment Cast Steel, Grade 13Q (IC8620), ASTM A732
B24	O-Ring	Acrylonitrile-Butadiene
B25	Bearing	Bronze, Oil impregnated, ASTM B 438
B27	Top Cover	Stainless Steel, CF-8M, ASTM A351
B28	Gasket	Black Chloroprene
B29	Coupling	Stainless Steel, CF-8M, ASTM A743



DR-85B

Item	Description	Material
B1	Diaphragm Cover	316 Stainless Steel, ASTM A240/A276
B5	Housing	Stainless Steel, CF-8M ASTM A351
B6	Link Arm	Investment Cast Steel, ASTM A732, Grade 1A (1020)
B13	Diaphragm	Acrylonitrile-Butadiene
B14	Spring Case	316 Stainless Steel, ASTM A240/A276
B15	Spring Assembly	
	Spring Base	Cast Ductile Iron, ASTM A536, Grade 80-55-06
	Stem	Grade 2 Steel
	Diaphragm Disc	Cast Ductile Iron, ASTM A536, Grade 80-55-06
	Spring	Silicon Manganese Steel, AISI 5160
B24	O-Ring	Acrylonitrile-Butadiene
B25	Bearing	Bronze, Oil Impregnated ASTM B438
B27	Cover	Stainless Steel, CF-8M ASTM A351
B28	Gasket	Black Chloroprene
B32	Bottom Cover	Stainless Steel, CF-8M ASTM A351



DeZURIK DR-125/145A & 250A ROTARY DIAPHRAGM ACTUATORS

Larger Diaphragm Actuators

For larger rotary control valves, DeZURIK offers three additional models: DR-125, DR-145A and the DR-250A. These actuator sizes feature smooth throttling control, pre-caged springs, weatherproof construction, externally adjustable stops and optional manual override. The DR-125, DR-145A and DR-250A actuators feature all steel, epoxy coated cast iron and stainless steel construction for corrosion resistance.

Common ISO-5211/1 Bolt Pattern

The common ISO-5211/1 bolt pattern allows the DR-125, DR-145A and DR-250A to be easily interchanged on DeZURIK rotary control valves including:

- VPB V-Port Ball Valves
- RCV Rotary Control Valves
- BHP High Performance Butterfly Valves

Enclosed Construction

The large size diaphragm actuators are sealed and gasketed to protect internal parts from grit, moisture and corrosive contaminants. The spring cartridge is pre-caged at the factory for increased safety.

Smooth Throttling Control & Accuracy

The rigid connections between the valve and actuator, and between the positioner and actuator, assure accurate valve positioning with no backlash. The output shaft is supported at the top and bottom.

Fail Safe Operation is Easily Field Reversible

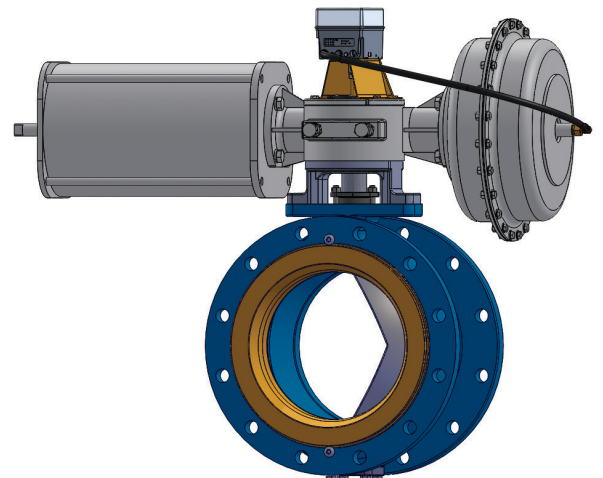
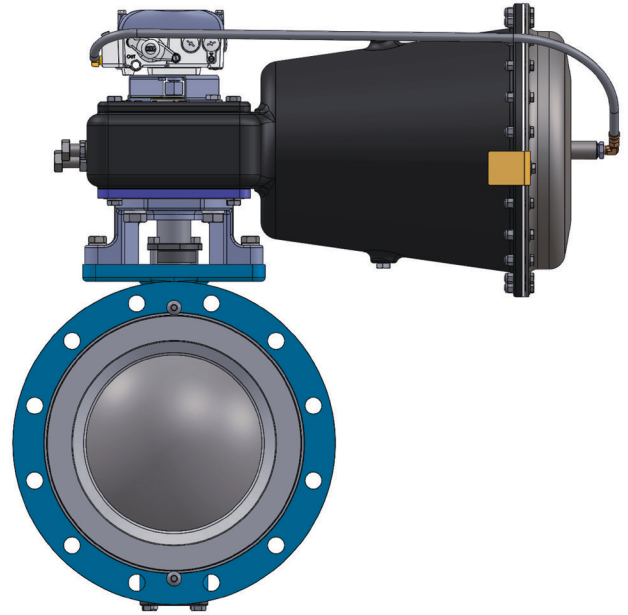
DeZURIK diaphragm actuators are designed for on-off or modulating service in either a Reverse (spring-to-close) or Direct (spring-to-open) mode. Action can be easily changed in the field by flipping the actuator over, with no additional parts required.

Externally Adjustable Stops

Stops are pre-set at the factory to ensure proper valve seating. If the valve or actuator ever requires maintenance, the externally positioned stop bolts are easily adjustable.

External Position Indicator

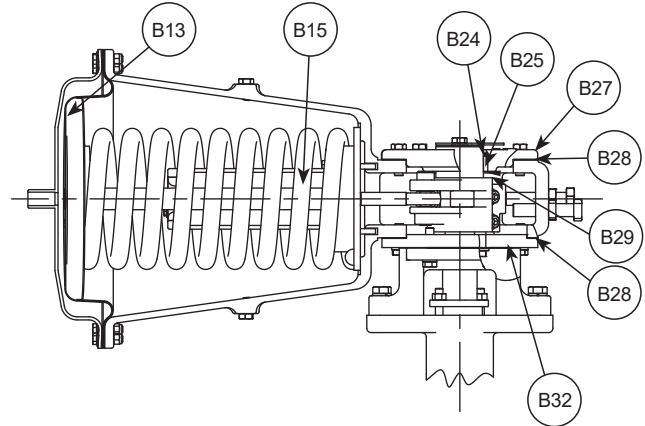
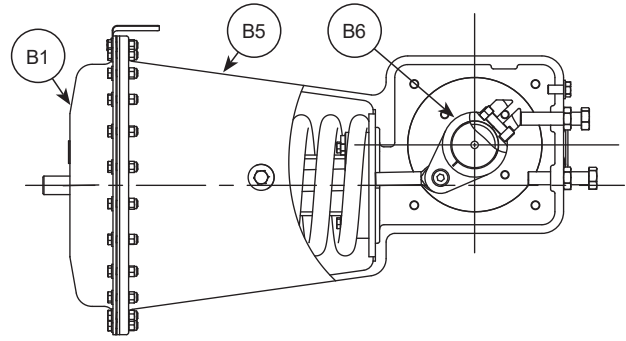
A position indicator is externally mounted and provides a visible indication of valve position.



Materials of Construction

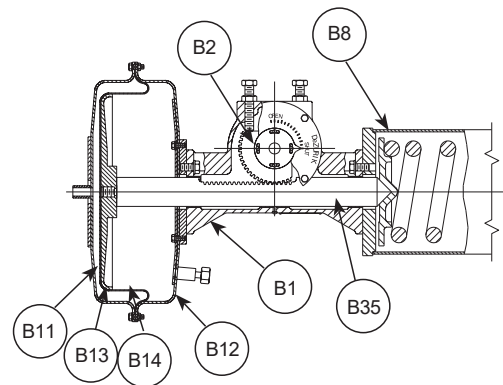
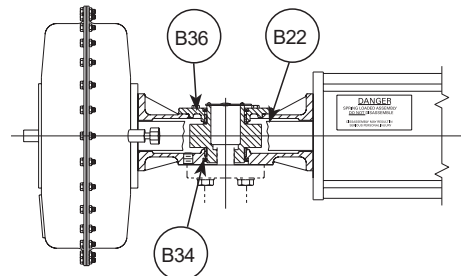
DR-125

Item	Description	Material
B1	Diaphragm Cover	Carbon Steel, ASTM A1011
B5	Housing	Cast Iron, Class B, ASTM A126
B6	Linkarm	Steel, Cast, Grade 1A, ASTM A732
B13	Diaphragm	Acrylonitrile-Butadiene
B15	Spring Assembly	
	Spring Base	Cast Ductile Iron, ASTM A536, Grade 80-55-06
	Stem	Grade 2 Steel
	Diaphragm Disc	Cast Ductile Iron, ASTM A536, Grade 80-55-06
	Spring	Silicon Manganese Steel, AISI 5160
B24	O-Ring	Acrylonitrile-Butadiene
B25	Bearing	Sintered Bronze
B27	Cover	Cast Iron, Class B, ASTM A126
B28	Gasket	ASTM F 104, Type F712121
B29	Stub Shaft	Stainless, Bar, 316, Condition A, ASTM A276
B32	Bottom Cover	Carbon Steel, A36, ASTM A36



DR-145A/250A

Item	Description	Material
B1	Housing Assembly	Cast Iron
B2	Gear Sector	Ductile Iron
B8	Spring Cartridge	Steel
B11	Diaphragm Cover	Steel
B12	Lower Diaphragm Cover	Steel
B13	Diaphragm Disc	Ductile Iron
B14	Diaphragm	Acrylonitrile-Butadiene with Nylon
B22	Gasket	Non-asbestos Gasket Material
B34	Seal	Acrylonitrile-Butadiene
B35	Stem	Steel
B36	Seal	Acrylonitrile-Butadiene



Ordering

To order rotary diaphragm actuators, select the actuator model from the appropriate valve sizing charts. Specify the mounting position as second line information. As reference information, the actuator code is defined in the following charts.

Actuator Type	
Give actuator type code as follows:	
DR	= Rotary Diaphragm Actuator
DRL	= Rotary Diaphragm Actuator with Lockout Available on 40B and 85B only

Diaphragm Size	
Give diaphragm size code as follows:	
40B	= 40 Square inches (255cm ²)
85B	= 85 Square inches (550cm ²)
125	= 125 Square inches (800cm ²)
145A	= 145 Square inches (950cm ²)
250A	= 250 Square inches (1600cm ²)

Input Size	
Give input size code as follows:	
SP20	= 20 psi (150 kPa) spring is not available on DR-40B, DR-85B or 125. DR-145A/250A = Non-adjustable start point. Span is approximately 10-12 psi. A positioner is recommended for precise throttling
SP35	= 35 psi (250 kPa) spring
SP60	= 60 psi (400 kPa) spring

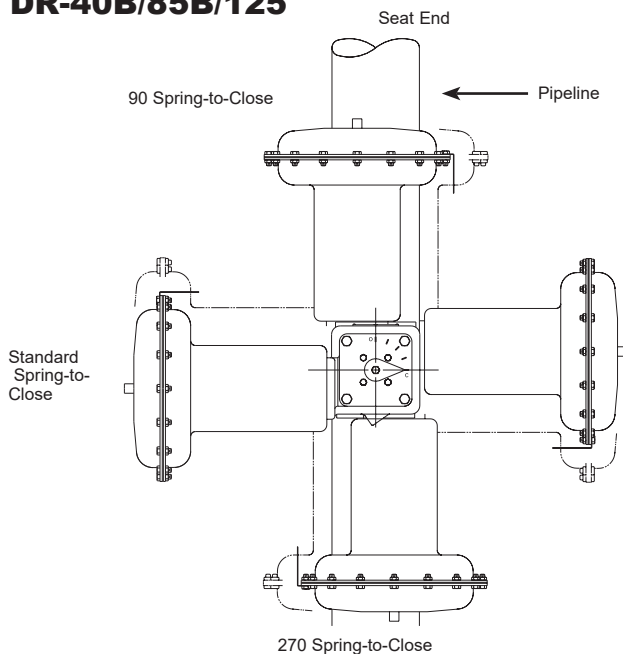
Spring Action	
Give spring action code as follows:	
DR Only	
D	= Direct, Spring-to-Open
R	= Reverse, Spring-to-Close
DRL Only	
DP	= Direct, Spring-to-Open, Valve Locked in Closed Position (Lock at pressure end of stroke. Includes MO plus chain)
RP	= Reverse, Spring-to-Close, Valve Locked in Open Position (Lock at pressure end of stroke. Includes MO plus chain)
DF	= Direct, Spring-to-Open, Valve Locked in Open Position (Lock at failure end of stroke. Includes screw and lockbox)
RF	= Reverse, Spring-to-Close, Valve Locked in Closed Position (Lock at failure end of stroke. Includes screw and lockbox)
DE	= Direct, Spring-to-Open, Valve Locked in Open or Closed Position (Lock at both ends of stroke. Includes MO, chain, screw and lockbox)
RE	= Reverse, Spring-to-Close, Valve Locked in Open or Closed Position (Lock at both ends of stroke. Includes MO, chain, screw and lockbox)

Actuator Mounting
Specify standard, 90, 180 or 270 actuator mounting as second line information. Standard and 180 only available options on 145A and 250A. Refer to the mounting positions available on the appropriate installation drawing to determine suitability for your piping configuration.

Ordering Example:
BHP,2,W1,CS,TC,S2-S10B-FT-TT*DR-40B-SP35-R
180 actuator mounting.

Actuator Mounting

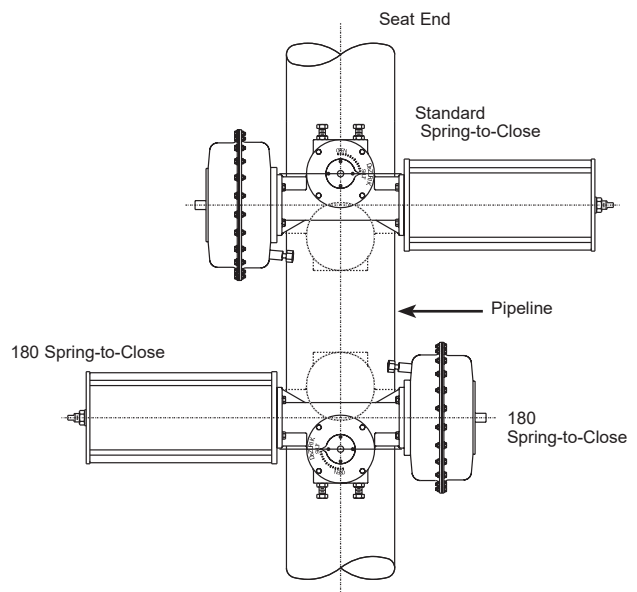
DR-40B/85B/125



The solid line shows spring-to-close actuator in four mounting positions. The phantom line shows the actuator in spring-to-open positions.

All four mounting positions may not be available on all valve/actuator size combinations. Check installation drawings for valid mounting positions.

DR-145A/250A



The solid line shows spring-to-close actuator in two mounting positions. The phantom lines show the orientation of the gear sector for spring-to-open positions.

Actuator Weights

Actuator Size	Weight	Manual Override Weight
DR-40B	37	7
	17	3
DR-85B	110	21
	50	10
DR-125	245	50
	111	23
DR-145A	425	50
	193	23
DR-250A	505	50
	229	23

Pounds
Kilograms

Accessories for Diaphragm Actuators Manual Overrides

Manual overrides are available for valve operation if signal or supply pressure fails. The override on DR-40B and 85B size actuators uses a handwheel to compress the diaphragm spring. On DR-125, 145A and 250A sizes, a manual hydraulic pump and cylinder is used to compress the diaphragm spring. Manual override is included with DRL lockout actuators using the DP, RP, DE or RE spring action options. To order a manual override, enter a hyphen and the code MO after the actuator order code.

Ordering Example:

BHP,2,W1,CS,TC,S2-S10B-FT-TT*DR-40B-SP35-D-MO

Stainless Steel Bolting on Valve & Actuator (SB16)

On DR-40B/85B actuators, 316 stainless steel bolts with anti-galling coating is standard on all covers. When a DR-40B/85B is ordered on 316 stainless steel or higher alloy valves, valve bolting is 316 stainless steel and valve-to-actuator bracket is 316 stainless steel as standard on BHP, RCV or VPB valves. When a DR-40B/85B is ordered on carbon steel or iron valves, the SB16 code upgrades all valve bolting to stainless steel and the valve-to-actuator bracket is epoxy coated iron on BHP, RCV, VPB, or PEC valves.

On DR-125, diaphragm cover bolts are 316 stainless steel with anti-galling coating as standard. When the SB16 order code is specified on the actuator, all remaining external bolting will be stainless steel (top cover, pointer, adapter and accessory bolting) and epoxy paint on actuator is included.

On DR-145A/250A actuators, the SB16 must be ordered for diaphragm cover bolts, plus all other external bolting, to be of stainless steel.

Ordering Example:

BHP,4,L1,CS,TC,S2-S10B,FT-TT*DR-40B-SP60-R,SB16

303 Stainless Steel Braided Hose & 316 Stainless Steel Fittings (SFB)

Accessories are provided with rubber hose and brass fittings as standard. To order 316 stainless steel flexible braided hose and fittings, add the order code SFB after the actuator code. If ordered with positioner, gauge cases will also be stainless steel. Includes stainless steel accessory bracket.

Ordering Example:

BHP,4,L1,CS,TC,S2-S10B,FT-TT*DR-40B-SP60-R,P36C-SFB

316 Stainless Steel Rigid Tubing & Two-Ferrule Fittings (SF2)

Accessories are provided with rubber hose and brass fittings as standard. To order 316 stainless steel rigid tubing and 316 stainless steel two-ferrule fittings, add the order code SF2 after the actuator code. If ordered with positioner, gauge cases will also be stainless steel. Includes stainless steel accessory bracket.

Ordering Example:

BHP,4,L1,CS,TC,S2-S10B,FT-TT*DR-40B-SP60-R,P36C-AFR2-SF2

Positioners

DeZURIK rotary diaphragm actuators are available with pneumatic, electro-pneumatic or digital smart positioners.

Air Filter Regulator

The DeZURIK air filter regulator is designed to provide clean, accurate air pressure to actuators and positioners.

Solenoid Valves

Solenoid valves may be ordered mounted and piped as part of a complete valve/actuator assembly or they can be ordered as a separate item.

Position Indicating Switches and Position Transmitters

Mechanical or proximity switches are available SPST, SPDT or DPDT. They can be ordered separately or combined with a position transmitter in one enclosure. They can be mounted directly to DeZURIK actuators or positioners.

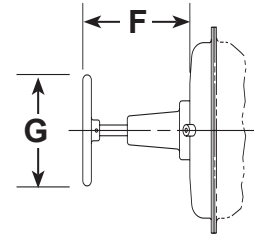
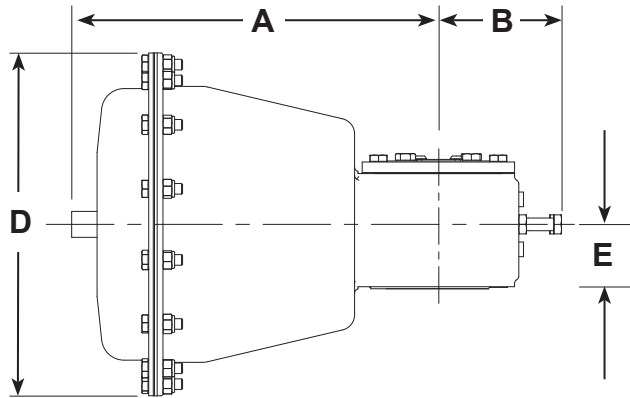
Speed Control Valves

Speed control valves are available to control valve opening or closing speed on pneumatic actuators.

Dimensions

DR-40B

Manual Override

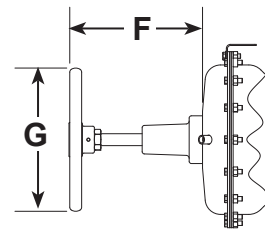
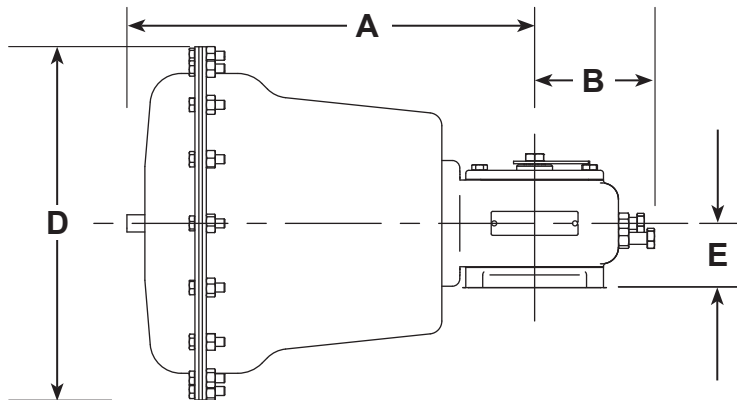


Actuator Model	A	B	D	E	F	G
DR-40B	$\frac{10.83}{275}$	$\frac{3.64}{92}$	$\frac{10.12}{257}$	$\frac{1.90}{48}$	$\frac{7.04}{179}$	$\frac{8.00}{203}$

Inches
Millimeters

DR-85B

Manual Override

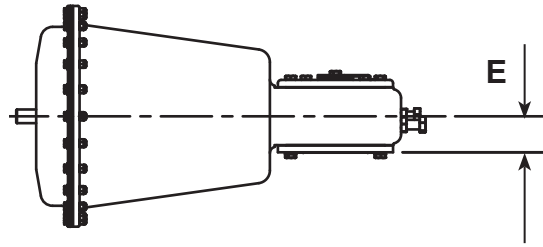
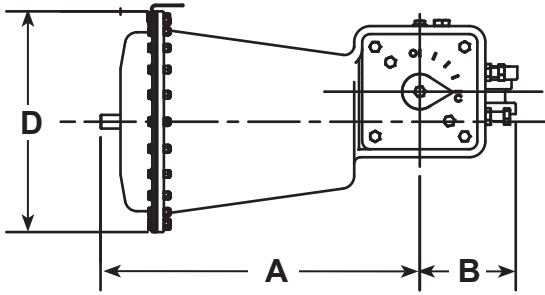


Actuator Model	A	B	D	E	F	G
DR-85B	$\frac{17.03}{432}$	$\frac{5.01}{127}$	$\frac{14.75}{375}$	$\frac{2.65}{67}$	$\frac{11.12}{283}$	$\frac{12.00}{305}$

Inches
Millimeters

Dimensions

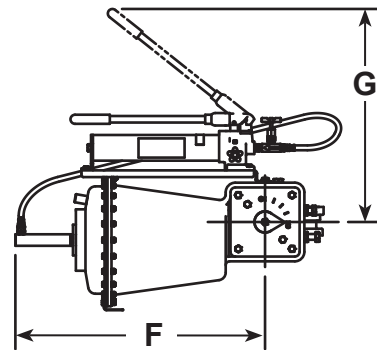
DR-125



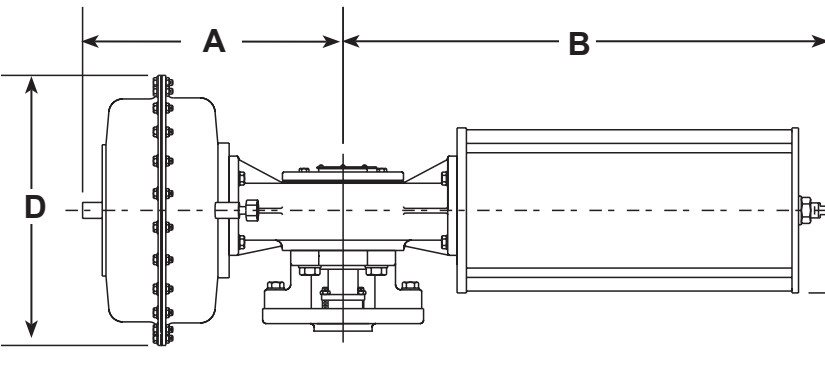
Manual Override

Actuator Model	A	B	D	E	F	G
DR-125	24.95 634	7.50 191	17.25 438	2.81 71	32.52 826	27.75 705

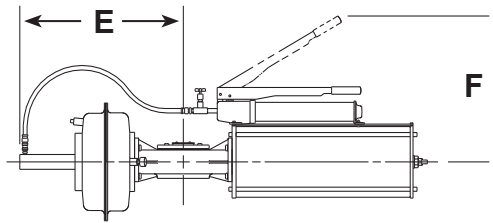
Inches
Millimeters



DR-145A/DR-250A



Manual Override



Actuator Model	A	B			D	E	F	G
		Spring Size						
		20	35	60				
DR-145A	17.44 443	30.06 764	33.12 841	31.31 795	18.00 457	25.91 658	26.75 679	5.50 140
DR-250A	17.81 452	40.19 1021	37.12 943	36.81 935	22.38 569	25.91 658	26.75 679	5.50 140

Inches
Millimeters

Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

Web Site: DeZURIK.com **E-Mail:** info@DeZURIK.com



250 Riverside Ave. N. Sartell, Minnesota 56377 • Phone: 320-259-2000 • Fax: 320-259-2227

DeZURIK, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.