



DeZURIK ROTARY DIAPHRAGM ACTUATORS



Design & Construction

DeZURIK rotary diaphragm actuators are available for use on rotary control valves including:

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

The common ISO-5211/1 bolt pattern allows the actuators to be easily interchanged on these rotary control valves. The actuators feature all steel, cast iron and stainless steel construction for corrosion resistance in caustic environments. The housing and diaphragm casing (both interior and exterior) are epoxy coated, and the cover bolts are stainless steel as standard on sizes 40A, 55 and 85, and as an option on sizes 145A and 250A.

The actuators are designed for on-off or modulating service in either a fail-open or fail-closed mode. Action can easily be changed in the field with no additional parts required. Five models are available in 40, 55, 85, 145 and 250 square inch sizes (255, 350, 550, 950, 1600 cm²) with a choice of 20, 35 or 60 psi (150, 250 and 400 kPa) springs.

Pre-Caged Spring

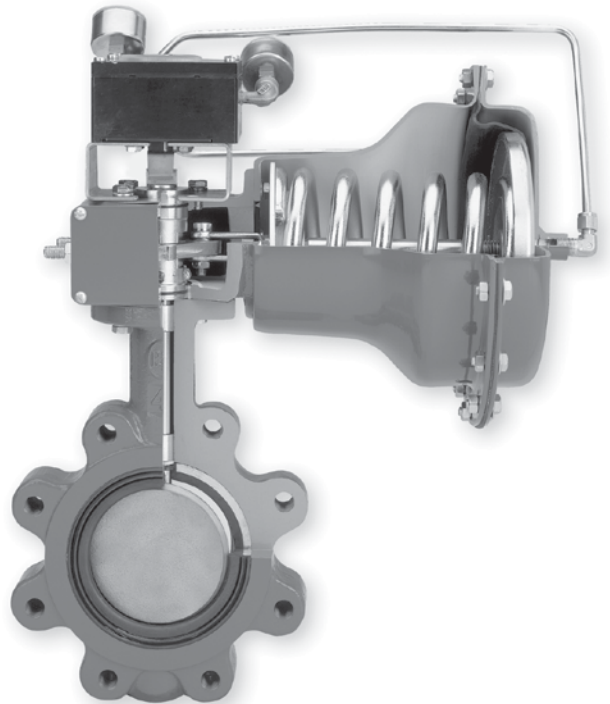
The spring cartridge is caged at the factory for increased safety.

Weatherproof Construction

The actuator cover, adaptor and shaft bearings are seated and gasketed to provide a weatherproof enclosure.

Smooth Throttling Control

The output shaft is supported at the top and bottom with bronze bearings that absorb side thrust and insure smooth, efficient throttling control.



OSHA Standard Actuator Lockout

Rotary diaphragm actuators can be specified with a lockout device that meets OSHA requirements. A number of options are available that allow the actuator to be locked in the following positions:

- Lockout (open or closed) at pressure end of stroke
- Lockout (open or closed) at failure end of stroke
- Lockout (open or closed) at either pressure or failure end of stroke

Adjustable Stops

The externally positioned stops are easily adjustable for ease of maintenance and less downtime.

External Position Indicator

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

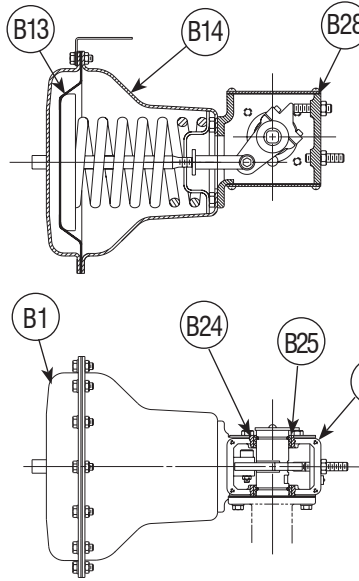
Materials of Construction

DR-40A/55/85

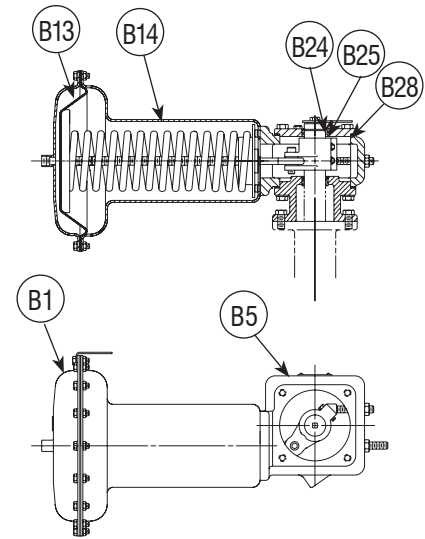
Item	Description	Material
B1	Diaphragm Cover	Steel
B5	Housing	Cast Iron
B13*	Diaphragm	Buna N with Nylon
B14	Spring Case	Steel
B24*	O-Ring	Nitrile
B25*	Bearing	Sintered Bronze
B28*	Gasket	Black Neoprene

*Recommended spare parts.

DR-40A



DR-55/85

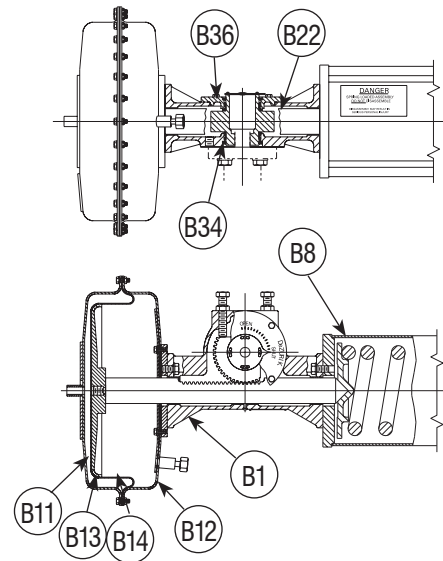


DR-145A/250A

Item	Description	Material
B1	Housing Assembly	Cast Iron
B8	Spring Cartridge	Steel
B11	Diaphragm Cover	Steel
B12	Lower Diaphragm Cover	Steel
B13	Diaphragm Disc	Ductile Iron
B14*	Diaphragm	Buna N with Nylon
B22*	Gasket	Non-asbestos gasket material
B34*	Seal	Nitrile
B36*	Seal	Nitrile

*Recommended spare parts.

DR-145A/250A



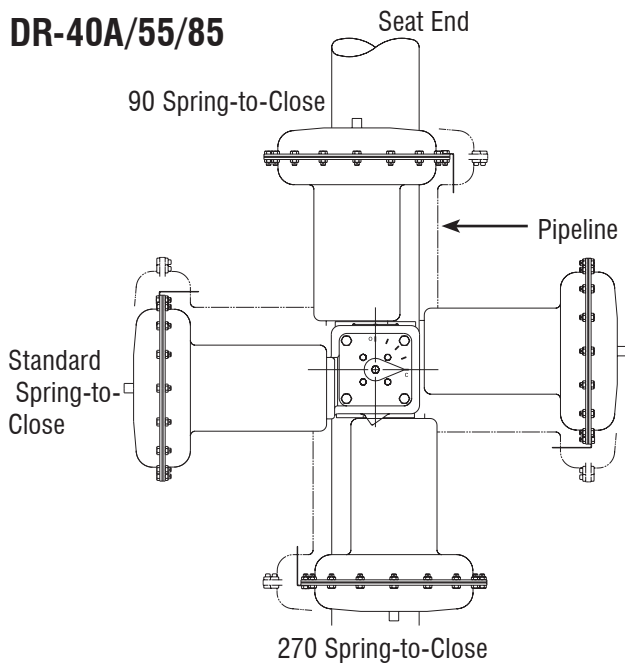
Actuator Weights

Actuator Size	Weight	MO Weight
DR-40A	29 13	7 3
DR-55	80 36	12 6
DR-85	110 50	21 10
DR-145A	425 193	50 23
DR-250A	505 229	50 23

Pounds
Kilograms

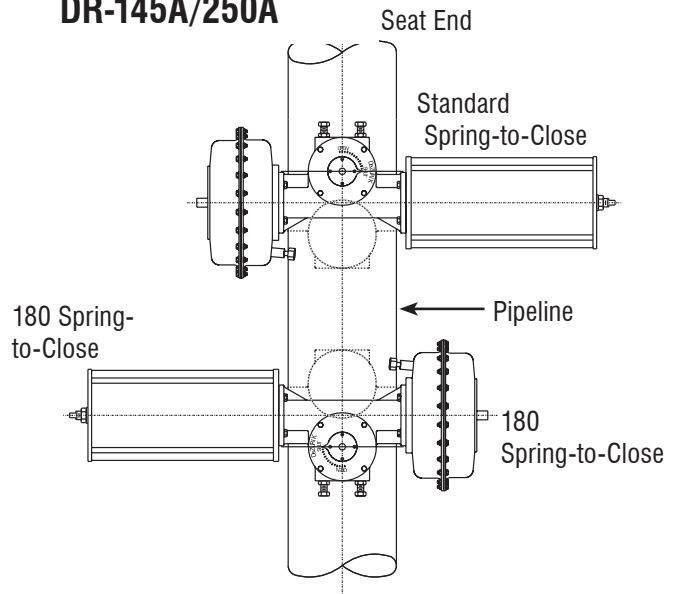
Actuator Mounting

DR-40A/55/85



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

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⁽¹⁾

Diaphragm Size

Give diaphragm size code as follows:

- 40A = 40 Square inches (255cm²)
- 55 = 55 Square inches (350cm²)
- 85 = 85 Square inches (550cm²)
- 145A = 145 Square inches (950cm²)
- 250A = 250 Square inches (1600cm²)

Input Size

Give input size code as follows:

- SP20 = 20 psi (150 kPa) spring
- DR-40A = Start – 5.5 psi (38 kPa), Span – 9 psi (62 kPa)
- DR-55/85 = Start – 8 psi (55 kPa), Span – 4 psi (28 kPa)
(Non-adjustable start point. A positioner is recommended for precise throttling.)
- SP35 = 35 psi (250 kPa) spring
- SP60 = 60 psi (400 kPa) spring

(1) Available on 40A, 55 and 85 only.

Spring Action

Give spring action code as follows:

- D = Direct, Spring-to-Open
- R = Reverse, Spring-to-Close
- 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-S2-FT-TT*DR-40A-SP35-R
180 actuator mounting.**

Accessories for Diaphragm Actuators

Manual Overrides

Manual overrides are available for valve operation if signal or supply pressure fails. The override on DR-40A, 55 and 85 size actuators uses a handwheel to compress the diaphragm spring. On DR-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 comma and the code MO after the actuator order code.

Ordering Example:

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

Stainless Steel External Bolting on Actuator

On DR-40A/55/85 actuator sizes, the diaphragm cover bolts are stainless steel as standard. When the SB code is specified on the actuator, all remaining external bolting will be stainless steel (top cover, pointer, adapter and accessory bolting). On DR-145A/250A actuators, the SB code must be specified for diaphragm cover bolts, plus all other external bolting, to be of stainless steel.

Ordering Example:

BHP,2,W1,CS,TC,S2-S2-FT-TT*DR-40A-SP35-D,SB

Stainless Steel Fittings and Tubing

Piped accessories are provided with rubber hose and brass fittings as standard. To order 316 stainless steel fittings and tubing, add the order code SF to the valve and actuator identification. If ordered with positioner, gauge cases will also be stainless steel.

Ordering Example:

BHP,2,W1,CS,TC,S2-S2-FT-TT*DR-40A-SP35-D,SF

Stainless Steel Bolting, Tubing, and Fittings

To order 316 stainless steel fittings, tubing, bolting and 304 stainless steel accessory bracket, enter code SS after the actuator order code.

Ordering Example:

BHP,2,W1,CS,TC,S2-S2-FT-TT*DR-40A-SP35-D,SS

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. Refer to Air Filter Regulator bulletin for technical specifications and ordering information.

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. Refer to the Solenoid Valve bulletin for technical specifications and ordering information.

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.

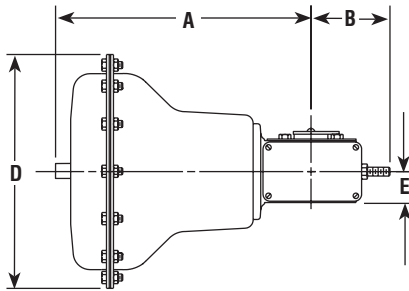
Speed Control Valves

To control valve opening or closing speed on pneumatic actuators, enter code per below after the actuator order code.

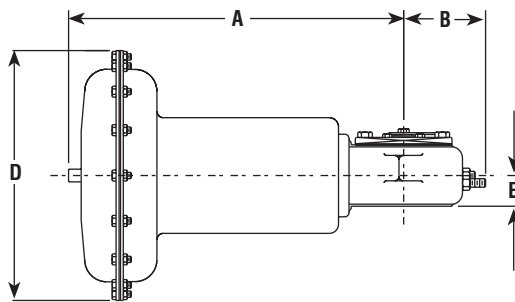
Speed Control Valves	Ordering Code
2 speed controls	SP
1 speed control to control closing	SPC
1 speed control to control opening	SPO

Dimensions

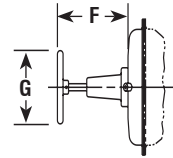
DR-40A



DR-55/DR-85



Manual Override

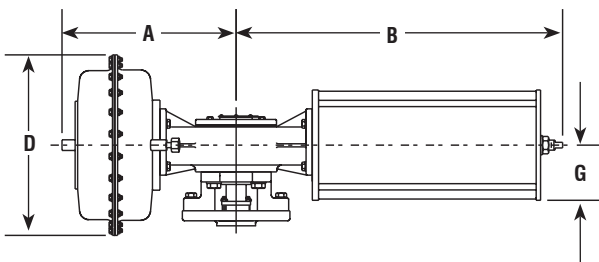


DR-40A/DR-55/DR-85

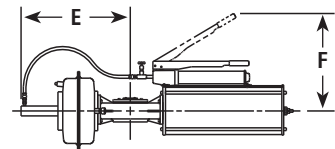
Actuator Model	A	B	D	E	F	G
DR-40A	11.25 286	3.5 89	10.12 257	1.44 37	6.69 170	8.00 203
DR-55	18.5 470	5.25 133	12.00 305	2.75 70	10.19 259	12.00 305
DR-85	19.88 505	5.25 133	14.75 375	2.75 70	10.19 259	12.00 305

Inches
Millimeters

DR-145A/DR-250A



Manual Override



DR-145A/DR-250A

Actuator Mode	Dimensions							
	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	18 457	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:

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