

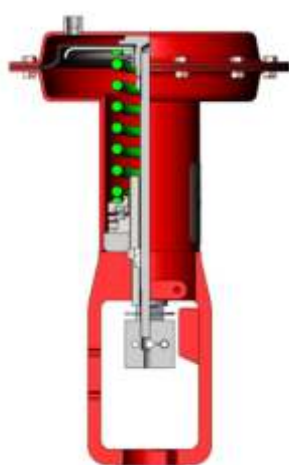


# **Uniflow**<sup>®</sup>

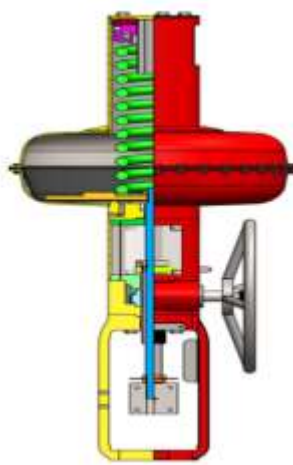
TRUST OF PERFORMANCE



Single Spring Diaphragm  
Reverse Actuator



Single Spring Diaphragm  
Direct Actuator



Side Mounting Hand Wheel



Top Mounting Hand Wheel

## **REVERSE / DIRECT PNEUMATIC DIAPHRAGM ACTUATOR**

## Introduction

The UNIFLOW CONTROLS range of diaphragm actuators are designed to suit the majority of control valve applications. The actuator offers an economical solution to valve control. Actuators are suitable for modulating applications when used with a suitable control device such as a valve positioner. Alternatively they can be used for ON/OFF applications.

## Actuator Model

**DC** : Single spring diaphragm actuator, direct acting (DC-20 / DC-21 / DC-022 / DC-23 / DC-24)

**RC** : Single spring diaphragm actuator, reverse acting (RC-20 / RC-21 / RC-022 / RC-23 / RC-24)

The RC series of actuators represent a significant design advance in the diaphragm actuator range. The actuators have been developed to be field reversible which means that the fail position of the actuator can be changed in the field rather than having to completely replace the actuator. All actuators in the RA series actuator designs have been developed to maximize the number of interchangeable parts ultimately resulting in an overall inventory reduction for the end user. The actuators can also be fitted with a number of additional design features which can be specified at the time of order. These features include manual handwheels, limit stops or combinations of both. The simplicity of the actuator design means that actuators can be maintained in the field without the need for removal from the valve.

All actuators in the UNIFLOW CONTROLS range are produced in the same range of travels and bonnet mount diameters and are interchangeable size-for-size on any UNIFLOW CONTROLS control valve

## Features

- Fail reversible
- Single spring
- Cast carbon steel yoke
- Easily maintained
- No welded components
- High stability
- Mechanical travel indicator

## Pressure/Temperature Ratings

- \* Pressures 4.5 - 7 bar (65 - 102 PSI)
- \* Temp. -40° C – +80° C (-400° F – +1400° F)

## Option

- Fail reversible
- Side mounted handwheel
- Top mounted handwheel
- Limit stop to limit both opening & closing

## Stroke

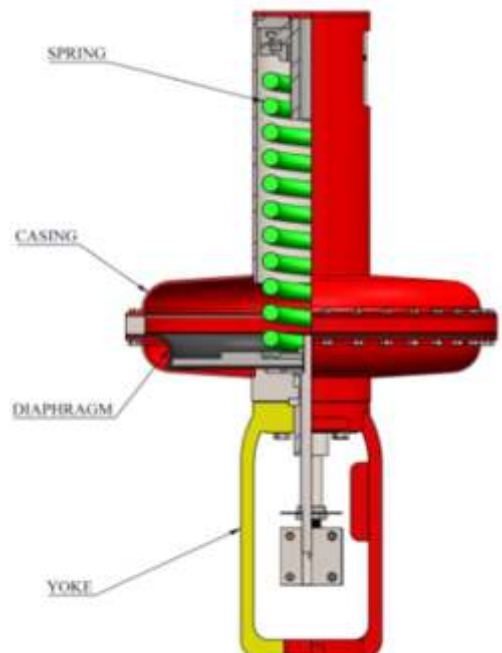
- \* 14 mm To 110 mm

## Sizes

- 30 Inch<sup>2</sup> (192 CM<sup>2</sup>)
- 55 Inch<sup>2</sup> (354 CM<sup>2</sup>)
- 95 Inch<sup>2</sup> (612 CM<sup>2</sup>)
- 140 Inch<sup>2</sup> (903 CM<sup>2</sup>)
- 300 Inch<sup>2</sup> (1935 CM<sup>2</sup>)

## Air Consumption

- RC/DC-020: 0.0280 Ft<sup>3</sup> Per Stroke
- RC/DC-021: 0.525 Ft<sup>3</sup> Per Stroke
- RC/DC-022: 0.123 Ft<sup>3</sup> Per Stroke
- RC/DC-023: 0.272 Ft<sup>3</sup> Per Stroke
- RC/DC-024: 0.911 Ft<sup>3</sup> Per Stroke



## Main Components

### Valve Mounting (Yoke)

The actuator yoke allows easy access to the gland and stem coupling. The base is secured to the bonnet by a clamp ring (on larger valves yoke mounting bolts) and the complete unit may be removed without disturbing the gland of the valve. The yoke is manufactured from a high strength carbon steel.

### Diaphragm Casing

The diaphragm casing is located above and below the diaphragm. It is manufactured from high strength Pressed steel. The diaphragm casing is also used as clamp for the diaphragm. The casing is produced with smooth rounded corners to prevent cutting and tearing of the diaphragm.

### Diaphragm

The diaphragm, which is the main operator of the actuator, is manufactured from high strength nitrile rubber. The diaphragm is suitable for temperatures between -40°C and +80°C. For intermittent operation the diaphragm can be used up to +121°C.

### Spring

The spring provides the actuator fail safe mechanism. The spring forces are specifically calculated to allow a controlled range of movement according to the air pressure applied to the actuator. Springs are manufactured from high strength spring steel. In the single spring actuators the spring is enclosed in the spring barrel and the actuator spring compression can be achieved by the actuator jacking screw

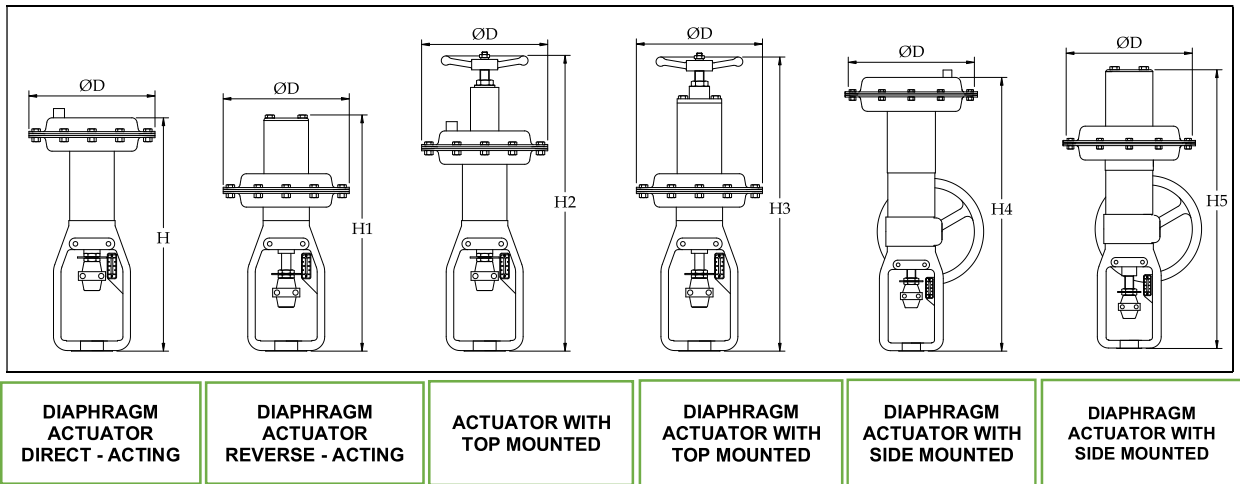
## Actuator Selection Guide

Valve Size	Inches	1				1½ & 2				3		4				6 & 8				10 & 12					
	mm	25				40 & 50				80		100				150 & 200				250 & 300					
Trim Size	Inches	3/16	¼	⅜&½	¾&1	1	1¼	1½	2	2	2½	3	2½	3	4	4	5	6	8	6	8	10	12		
	mm	4.5	6	10&15	20&25	25	32	40	50	50	65	80	65	80	100	100	125	150	200	150	200	250	300		
Act. Size	Load	SHUT-OFF PRESSURE IN ( Kg / cm <sup>2</sup> )																							
	Kg/cm <sup>2</sup>																								
020	0.2	UB	80	49	15	7.8																			
		B	N/A	N/A	N/A	N/A																			
	0.4	UB	180	115	36	20																			
		B	N/A	N/A	N/A	N/A	1.1/8"/28mm Travel																		
	0.6	UB	280	182	57	30																			
		B	N/A	N/A	N/A	N/A																			
0.8	UB	380	249	79	42																				
	B	N/A	N/A	N/A	N/A																				
021	0.2	UB					12	7.5	4.5	2.5	1.2	0.5	0.4												
		B					N/A	21	21	19	3.5	1.4	0.1												
	0.4	UB					34	20	12	7.5	6	3.5	2.75												
		B					N/A	78	78	75	39	37	36												
	0.6	UB					55	32	21	12	11	6.5	5	1½" / 38 mm Travel											
		B					N/A	134	134	131	75	73	71												
0.8	UB					76	45	29	17	16	9	7	2½" / 57 mm Travel												
	B					N/A	190	190	187	111	109	107													
022	0.2	UB								4.8	2.75	2	2	1.5	0.6										
		B								29	27	26	13	12	9	N/A	N/A	N/A	N/A						
	0.4	UB								13	7.8	6	7	5.5	2.5										
		B								91	89	88	56	55	52	22	21	19	17						
	0.6	UB								22	12.5	10	12	9	4.4										
		B								153	151	150	99	98	85	47	46	44	41						
0.8	UB								30	18	13.5	17	13	6.3											
	B								215	213	212	142	141	138	71	70	68	65	3½" / 90 mm Travel						
023	0.2	UB								9	5	4	4	3	1.5	1	0.75	0.3	0.1						
		B								59	56	55	33	32	29	10	9	7	4	N/A	N/A	N/A	N/A		
	0.4	UB								21	12.5	10	11	9	4.3	3.5	2.9	1.5	0.8						
		B								150	148	147	96	95	92	45	45	43	40	23	21	18	17		
	0.6	UB								34	20	15	19	14.5	7	6.5	5	2.9	1.5						
		B								241	239	238	160	159	156	81	80	78	74	45	44	41	40		
0.8	UB								46	27.5	21	26	20	9.5	9	7	4	2.2							
	B								333	330	329	223	222	219	117	116	114	111	68	66	64	63			
024	0.2	UB														4	3	1.8	0.9	1.5	0.8	0.4	0.25		
		B														50	50	48	45	26.5	24	22	20		
	0.4	UB														10	7.5	4.5	2.4	4.3	2	1.2	0.9		
		B														127	126	124	121	75	73	71	69		
	0.6	UB														16	12	7	3.8	7	3.5	2	1.5		
		B														204	203	201	198	124	122	120	118		
0.8	UB														22	17	10	5.3	9.7	5	2.8	2.1			
	B														280	280	278	275	173	171	169	167			

UB: ΔP Shut-off Values for Contoured / V-ported Unbalance Trim

B: ΔP Shut-off Values for Low Noise / V-Ported Balance trim

## Actuator Dimension



Act. Model	EFFECTIVE Inch <sup>2</sup>	BONNET MOUNT DIA.	TRAVEL	ΦD	H	H1	H2	H3	H4	H5
RC - 020	30	54	28	218	--	375	--	505	--	650
DC - 020	30	54	28	218	400	--	575	--	650	--
RC - 021	55	54	28	286	--	510	--	600	--	700
DC - 021	55	54	28	286	510	--	750	--	700	--
RC - 021	55	71.5	38	286	--	560	--	650	--	750
DC - 021	55	71.5	38	286	560	--	800	--	750	--
RC - 022	95	54	28	371	--	550	--	650	--	750
DC - 022	95	54	28	371	550	--	800	--	750	--
RC - 022	95	71.5	38	371	--	600	--	700	--	800
DC - 022	95	71.5	38	371	600	--	850	--	800	--
RC - 023	140	71.5	38	443	--	650	--	750	--	900
DC - 023	140	71.5	38	443	650	--	950	--	900	--
RC - 023	140	90.5	57	443	--	780	--	900	--	1030
DC - 023	140	90.5	57	443	780	--	1100	--	1030	--
RC - 023	300	71.5	38	616	--	850	--	--	--	1200
DC - 024	300	71.5	38	616	850	--	--	--	1200	--
RC - 024	300	90.5	57	616	--	900	--	--	--	1250
DC - 024	300	90.5	57	616	900	--	--	--	1250	--
RC - 024	300	90.5	90	616	--	1050	--	--	--	1400
DC - 024	300	90.5	90	616	1050	--	--	--	1400	--
RC - 024	300	90.5	102	616	--	1200	--	--	--	1550
DC - 024	300	90.5	102	616	1200	--	--	--	1550	--

- DC - Direct Acting Actuator ( used on supply failure Valve – Opens )
- RC – Reverse Acting Actuator ( used on supply failure Valve – Closes )
- All dimensions in mm.
- The Company’s policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.

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