

DelTorq[®] SERIES 21

Pneumatic Rack and Pinion Actuators
Double Acting and Spring Return



delvalflow.com

1-833-DELVAL1



STANDARD FEATURES

Quality & Performance

DelVal Flow Controls provides a wide range of quality products with the reliability you can count on. All Series 21 actuators are manufactured in ISO 9001 certified facilities with a robust quality management system.

Design Construction and Features

1. Extruded Aluminum Body

Hard anodized extruded aluminum body with honed internal surface for strength, high cycle life and low frictional resistance.

1a. Wide Base Design

Wide actuator base design option can be adapted to mount valve designs requiring wider than EN ISO 5211 drilling.

2. Alloy Steel Pinion

High strength alloy steel pinion with electroless nickel plating protection for maximum wear and corrosion resistance.

2a. Blow-Out Proof Pinion

Guide bar in pistons provides an inherent blow-out proof pinion design.

3. End Caps

Standard end caps are rounded with no crevices to accumulate contamination. Optional end caps are available to provide 100% stroke adjustment in one direction.

3a. Compact Modular Design

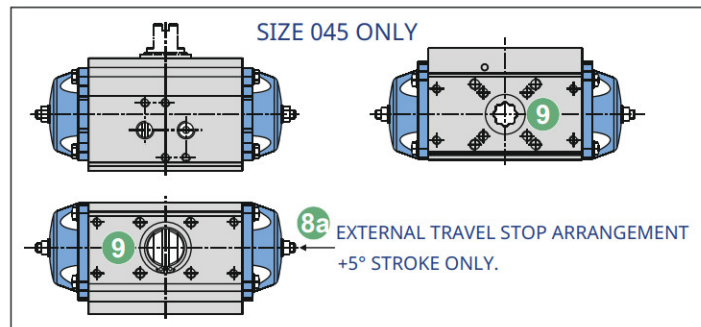
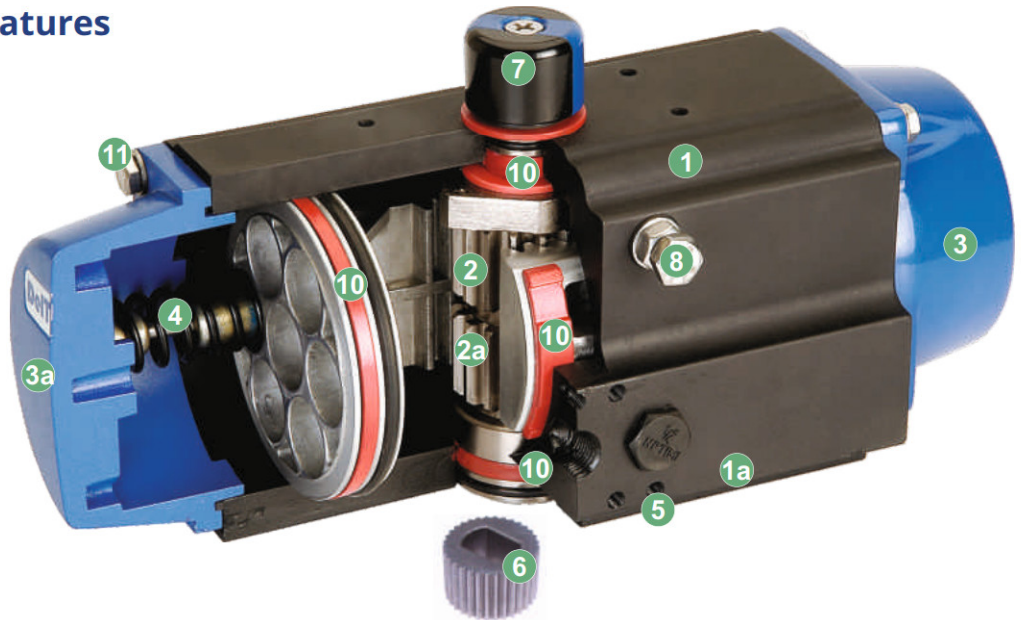
Compact modular design with same body and end caps for double acting and spring return designs combined with a shaft insert design to offer the most efficient use of inventory.

4. Spring Cartridges

Modular pre-loaded spring cartridges with metal spring guides for use in both high and low temperature applications.

5. Actuator Mounting

Manufactured in full compliance with the latest requirements of ISO 5211, with provisions for mounting solenoid valves and accessories, comply with NAMUR VDI/VDE 3845.



6. Insert

Unique output shaft insert can be selected from a variety of standard sizes, including double D, ISO square, and round and keyed, or can be custom designed to fit any output shaft configuration.

7. Position Indicator

Unique position indicator can be indexed to show alternate positions. Top of actuator has a NAMUR slot to engage with all popular sensors and positioners.

8. Stroke Adjustment Bolt

Two external stroke adjustment bolt permit adjustments of +/-5 degrees.

8a. External Travel Stops

External travel stops are located on end caps on size 045, permit adjustment of +5 degrees.

9. Size 045 Actuator

Size 045 actuator pinion design permits pinion to be inserted from top or bottom of the actuator to use all three bolt circles (F03, F04, F05) for mounting. The female drive of the pinion is available in the 9mm square.

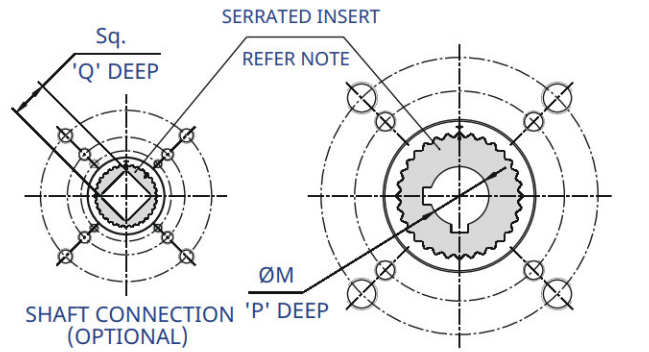
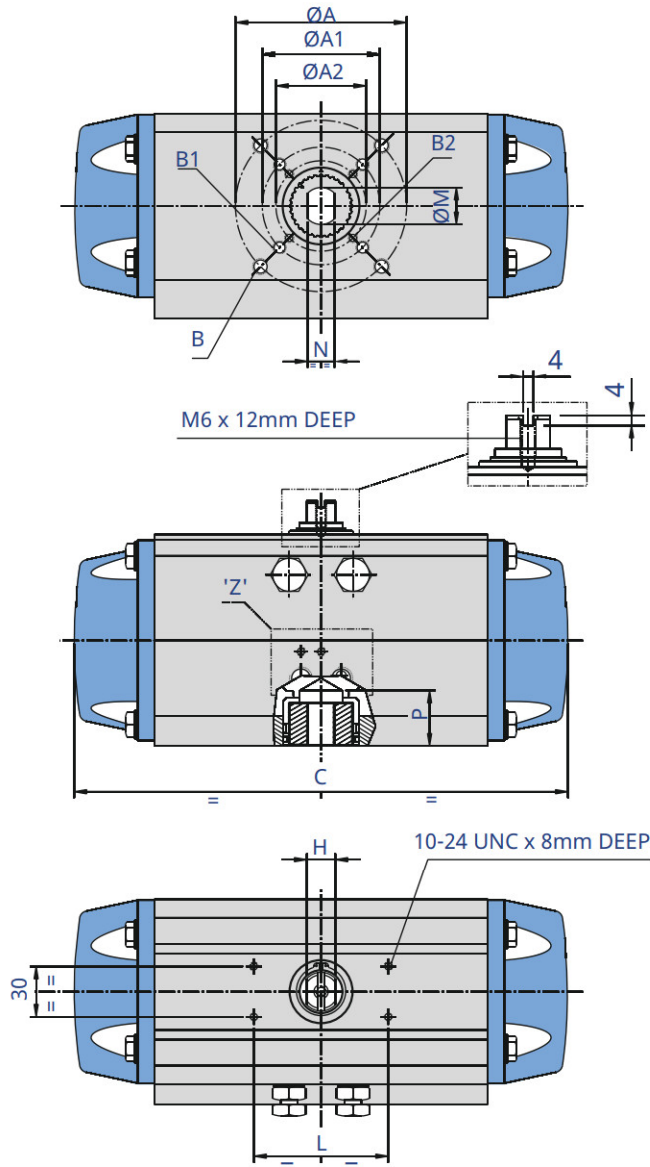
10. Bearings

Top quality bearings and seals for low friction and high cycle life to ensure trouble free operation. Same bearings are used for both high and low temperature operations.

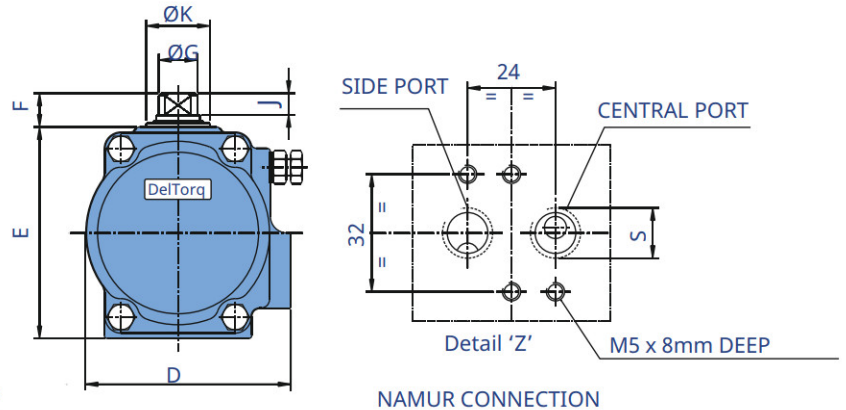
11. Fasteners

Internal and external stainless steel fasteners and specially coated springs provide corrosion resistance in a variety of environments.

DIMENSIONS AND WEIGHTS



NOTE: INSERTS AVAILABLE IN DOUBLE-D, ISO SQUARE AND ROUND AND KEYED OPTIONS



Volume (cm³) at 1 bar pressure

Size	045	055	065	075	085	100	115	125	150	175	200
Opening	75	145	260	360	535	840	1350	1700	2900	4350	6900
Closing	120	145	320	560	840	1220	1955	2700	4465	6800	11000

Spring return actuator refer opening volume and double acting both opening and closing.
Air Consumption = Volume (cm³) x Air Supply Pressure (Bar).

i.e. 075 actuator at 4 bar pressure

- SR075 = 360 x 4 = 1440 cm³.
- DA075 = (360 + 560) x 4 = 3680 cm³

Operating time in Second

at 5.5 bar pressure and orifice diameter 4mm

Size	045	055	065	075	085	100	115	125	150	175	200
Open Stroke/ Close Stroke	0.2	0.3	0.35	0.45	0.6	0.8	1.0	1.3	1.5	2.0	3.5

App Weight (Kg)											
Size	045	055	065	075	085	100	115	125	150	175	200
Double Acting	0.9	1.6	2.4	3.0	4.4	5.8	9.6	12	20.4	27.5	46
Spring Return	1.0	1.8	2.7	3.3	5.4	7.6	14.8	15	23.8	34.4	56

Dimensions (mm)

SIZE	ØA	ØA1	ØA2	ØB	ØB1	ØB2	C	D	E	F	ØG	H	J	ØK	L	ØM	N	P	Sq.	Q	S (BSP)
*045	-	50	36	-	1/4"-20x9	10-24UNCx8	151.0	62.5	66.0	20	22	12	14	30.0	80	-	-	-	11	12	1/8
055	70	50	36	5/16"-18x12	1/4"-20x9	10-24UNCx8	168.0	73.0	75.5	20	15	12	14	23.5	80	14	10	32.5	11	12	1/8
065	70	50	-	5/16"-18x12	1/4"-20x9	-	212.5	84.5	87.8	20	18	14	14	30.0	80	14	10	32.5	11	16	1/4
075	70	50	-	5/16"-18x12	1/4"-20x9	-	235.0	93.5	98.1	20	18	14	14	30.0	80	19	13	32.5	17	19	1/4
085	70	50	-	5/16"-18x12	1/4"-20x9	-	273.7	105.5	108.7	20	21	17	14	34.0	80	19	13	32.5	17	19	1/4
100	102	70	-	3/8"-16x15	5/16"-18x12	-	294.2	122.0	125.7	20	23	17	14	38.0	80	22	16	32.5	22	24	1/4
115	125	102	70	1/2"-13x18	3/8"-16x15	5/16"-18x12	349.8	139.5	140.6	30	30	20	20	47.0	130	22	16	32.5	22	24	1/4
125	125	102	-	1/2"-13x18	3/8"-16x15	-	405.2	149.0	152.3	30	30	20	20	47.0	130	30	22	54.0	22	24	1/4
150	125	102	-	1/2"-13x18	3/8"-16x15	-	477.4	182.5	186.5	30	38	30	20	55.0	130	35	24	54.0	27	29	1/4
175	125	102	-	1/2"-13x18	3/8"-16x15	-	529.2	210.0	215.0	30	43	32	18	62.0	130	35	24	54.0	27	29	1/4
200	165	125	-	3/4"-10x30	1/2"-13x18	-	642.0	233.5	248.0	30	50	36	18	72.0	130	50	-	64.0	36	38	1/4

*045 size actuator pinion design permits pinion to be inserted from top or bottom of the actuator to use all three bolt circles for mounting.
Top mounting dimensions PCD - 42 mm, Tapping 10-24 UNC x 8mm DEEP. Bottom mounting dimensions (refer to chart).

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TORQUE DATA (Nm)

Spring Return Actuator Torque Data

Size	*Spring /Piston	Air Supply Pressure (Bar)													
		3		4		5.5		6		7		8		Spring Stroke	
		PB	PE	PB	PE	PB	PE	PB	PE	PB	PE	PB	PE	SB	SE
045	2	5	2	8	5	12	10	13	11	16	14	19	17	6	3
	3					10	6	12	8	15	11	17	14	8	5
	4					8	3	10	5	13	8	16	10	11	7
055	3	10	6	15	11	23	19							8	5
	4			13	8	21	16	23	19	28	24			11	7
	5					19	13	21	16	27	21	32	26	14	8
	6					17	10	20	13	25	18	30	23	16	10
065	3	16	11	25	19	37	32							13	8
	4			22	14	34	27	38	31	47	39			17	11
	5					31	22	35	26	44	35	52	43	21	13
	6					28	17	33	22	41	30	49	38	26	16
075	3	22	13	35	26	54	45							22	15
	4			29	18	48	37	55	43	67	56			30	20
	5					43	28	49	35	62	47	75	60	37	24
	6					37	20	44	26	56	39	69	52	45	29
085	3	33	21	51	39	79	67							31	20
	4			44	27	72	55	81	64	99	83			41	27
	5					64	44	73	53	92	71	110	89	52	33
	6					57	32	66	41	84	60	103	78	62	40
100	3	51	31	79	59	122	402							49	30
	4			68	41	111	84	125	98	153	126			65	40
	5					100	66	114	80	142	108	170	136	81	50
	6					88	48	102	62	131	90	159	118	97	60
115	3	86	55	133	101	203	172							77	49
	4			115	73	185	143	208	166	255	213			103	65
	5					167	115	190	138	237	185	284	231	128	81
	6					149	86	172	109	219	156	266	203	154	97
125	3	113	73	174	134	265	225							98	62
	4			151	98	242	189	272	219	333	280			131	83
	5					219	153	249	183	310	244	370	304	163	104
	6					196	116	226	147	287	207	347	268	196	125
150	3	178	113	283	218	441	375							182	123
	4			238	151	395	308	448	361	553	465			242	164
	5					350	241	402	293	507	398	612	503	303	205
	6					304	173	357	226	462	331	567	436	364	246
175	3	276	181	432	337	666	571							258	172
	4			369	242	602	476	680	554	836	709			343	229
	5					539	380	617	458	772	614	928	770	429	287
	6					475	285	553	363	709	519	865	674	515	344
200	3	420	284	658	522	1014	878							386	263
	4			560	379	917	735	1035	854	1273	1091			514	351
	5					819	592	938	711	1175	949	1413	1186	643	438
	6					722	449	840	568	1078	806	1315	1043	771	526

Double Acting Actuator Torque Data

Size	Air Supply Pressure (Bar)					
	3	4	5.5	6	7	8
045	9	11	16	17	20	23
055	15	20	28	31	36	41
065	25	33	46	50	59	67
075	38	51	70	76	89	102
085	55	74	101	110	129	147
100	85	113	156	170	198	226
115	140	187	257	280	327	374
125	182	243	334	364	425	486
150	315	420	577	630	735	840
175	468	623	857	935	1091	1247
200	713	950	1306	1425	1663	1900

Actual torques are in the range of $\pm 5\%$ of the above values.
In between torque values to be interpolated.

PB = Pneumatic Break, PE = Pneumatic end, SB = Spring Break, SE = Spring End

*e.g. For SR12 spring combination = spring/piston x number of piston = 6 x 2 =12

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Standards and Specifications

Standard working temperature: -20°C to +80°C

Low temperatures: -40°C to +150°C (Optional)

High temperatures: -20°C to +180°C (Optional)

Maximum Working Pressure: 8 bar

Operating Media: Clean dry air, nitrogen, non-corrosive gas or sweet gas

Supply pressure: 3 to 8 bar

Rotation: 0 $\pm$ 5° to 90 $\pm$ 5°

VDI/VDE 3845 (NAMUR) for air connection interface (solenoid valve) and top mounting interface (switch box and positioner)

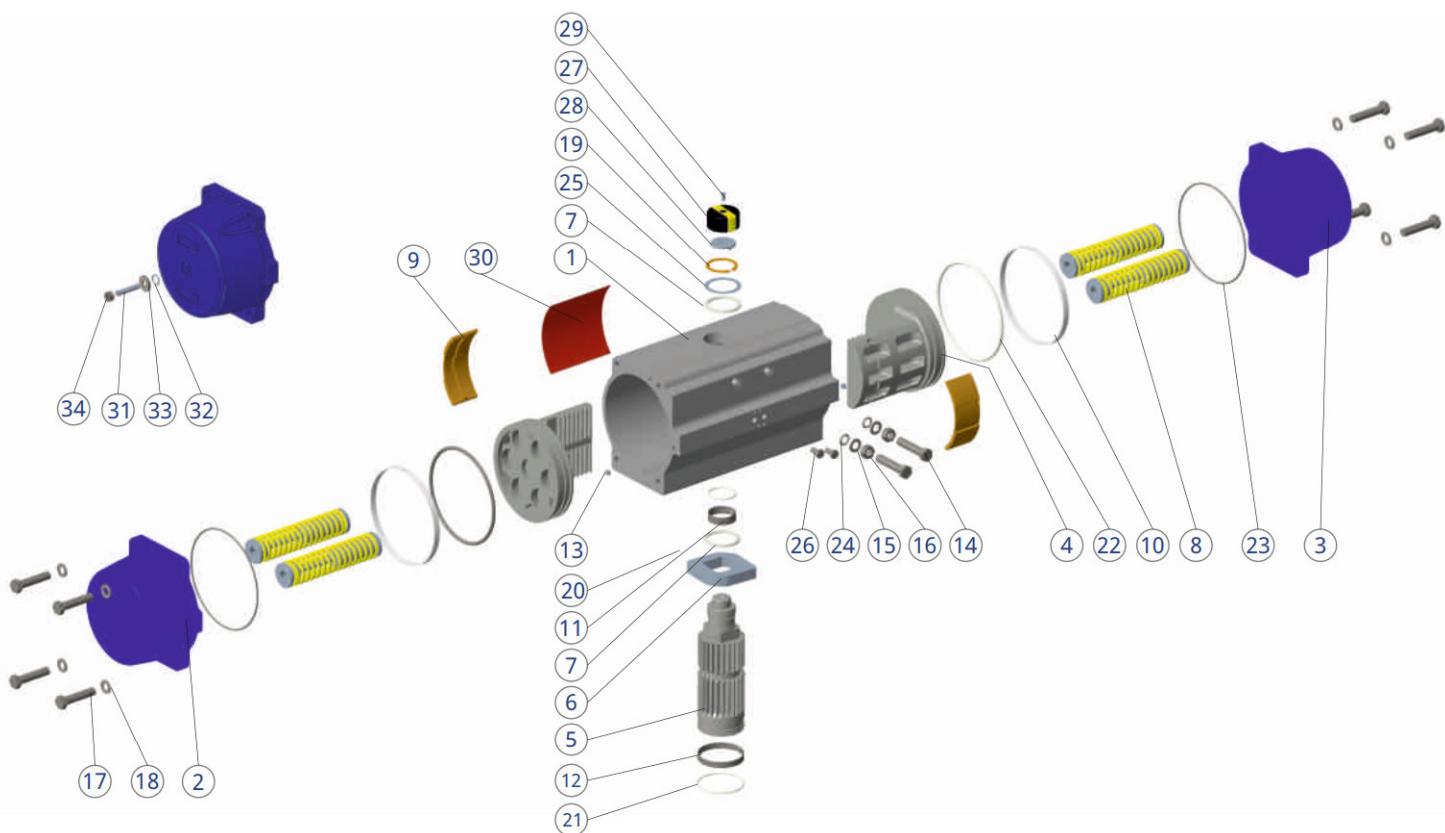
Valve interface dimension: EN ISO 5211

Enclosure Degrees of protection: IEC 60529 IP 68

Coating: Body: black, hard and anodized.

Cap: epoxy powder coated blue (RAL 5010)

STANDARD MATERIALS OF CONSTRUCTION



Part List

Item	Description	*Standard Material
1	Body	ASTM B221 6063-T6
2	Left End Cap	BS1490 LM24
3	Right End Cap	BS1490 LM24
4	Piston	BS1490 LM24
5	Pinion	BS970 EN8(080M40) + ENP
6	Cam	ASTM A747 CB7CU-1 (H1075)
**7	Pinion Top / Bottom Thrust Bush	STANYL® TW 371
#8	Spring Cartridge Assembly	---
**9	Piston Pad	STANYL® TW 371
**10	Piston Band	STANYL® TW 371
**11	Top Bush	STANYL® TW 371
**12	Bottom Bush	STANYL® TW 371
**13	Plug Transfer Port	Nitrile (NBR)
14	Stroke Adjustable Bolt	ISO 3506 A2-70
15	Machined Washer	ASTM A240 SS304
16	Hex Nut	ISO 3506 A2-70
17	Hex Head Bolt	ISO 3506 A2-70

Item	Description	*Standard Material
18	Washer	ASTM A479 SS304
**19	Circlip	IS 2507 70C6 SP. STEEL
**20	O-Ring (Pinion Top)	Nitrile (NBR)
**21	O-Ring (Pinion Bottom)	Nitrile (NBR)
**22	O-Ring (Piston)	Nitrile (NBR)
**23	O-Ring (End Cap)	Nitrile (NBR)
**24	O-Ring (Stroke Bolt)	Nitrile (NBR)
**25	Shim	ASTM A240 SS304
26	Plug	Plastic
27	Local Position Indicator	ABS Plastic
28	Disc	ABS Plastic
29	Soc Hd, Csk	ISO 3506 A2-70
30	Name Plate Sticker	NT Chrome Polyester
✱31	Stud (Optional)	ISO 3506 A2-70
✱32	O-ring (Optional)	Nitrile (NBR)
✱33	Washer (Optional)	ASTM A240 SS304
✱34	Nut (Optional)	ISO 3506 A2-70

*Other materials may be available upon request.

#Applicable for Spring Return Actuator only.

**Recommended spares.

✱Applicable for 100% travel stop arrangement only.

100% TESTING 100% SERIALIZATION



CERTIFICATES



Manufacturing & Sales - International DelVal Flow Controls Pvt. Ltd.

Gat No: 25, Kavathe
Post-Javale, Tal. Khandala
Dist. Satara Pin-412801 | India
salesindia@delvalflow.com

Manufacturing & Sales - Americas DelVal Flow Controls USA

6068 Highway 73
Geismar, Louisiana 70734 | USA
T: +1 833-DELVAL1
F: +1 225-744-4328
sales@delvalflow.com

DelVal Arizona DelVal Flow Controls USA

1120 W Alameda Dr., Suite 3
Tempe, Arizona 85282 | USA
T: +1 623-215-7146
F: +1 623-215-7187
sales@delvalflow.com

International Projects DelVal Flow Controls USA

77 Sugar Creek Center Blvd.,
Suite 600
Sugar Land, Texas 77478 | USA
T: +1 833-DELVAL1
projects@delvalflow.com