

Pneumatic rotary drive



- Modular program for mounting of quarter turn valves such as ball valves and butterfly valves
- NAMUR and ISO 5211 interfaces
- Position feedback (including Ex-Versions)
- SideControl Positioner ready

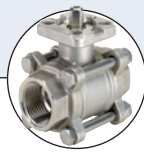
Type 2051 can be combined with...



Type 6518/6519
Solenoid valve



Type 8792/8793
Positioner SideControl



Type 2654
Stainless steel ball valve



Position feedback

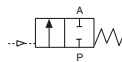


Metal butterfly valve

The 2051 pneumatic rotary drives are low maintenance single or double-acting pneumatic linear piston actuators where linear movement of the piston due to the pilot air causes a 90° rotation of the connected valve. Actuator-valve coupling is made via a universal ISO 5211 mechanical interface and the status of ball or butterfly valve can be monitored at a control system through a range of rugged feedback switches. The drives can also be used as modulating control actuators by the addition of Burkert's range of SideControl positioners.

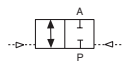
Control function A

Single-acting actuator return by spring, operating e.g. with pilot valve



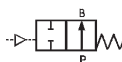
Control function I

Double-acting actuator, operating e.g. with pilot valve



Control function B

Single-acting actuator return by spring



See page 4 for function principles

Technical data

Materials	
Actuator	aluminium alloy
Piston	aluminium
Seal	buna-N
Control medium	filtered compressed air with or without oil
Control pressure	43.5-116 PSI (3-8 bar) max allowable working pressure 145 PSI (10 bar) max operating pressure 116 PSI (8 bar)
T_{umg}	-40°F up to 200°F (-40°C up to +93°C)
Rotation	90°, adjustable ±5° of valve travel
Adjustable angle	every 20°
Interface	
Pilot air ports	NAMUR Flange interface VDE/VDI 3845 G 1/4"
Feedback signal	NAMUR VDE/VDI 3845
Fittings	ISO 5211

Ordering chart Torque ratings (in-lbs)

Note: When selecting an actuator we suggest a 20% to 40% above the break torque of the valve (subject to the valve and operating conditions).

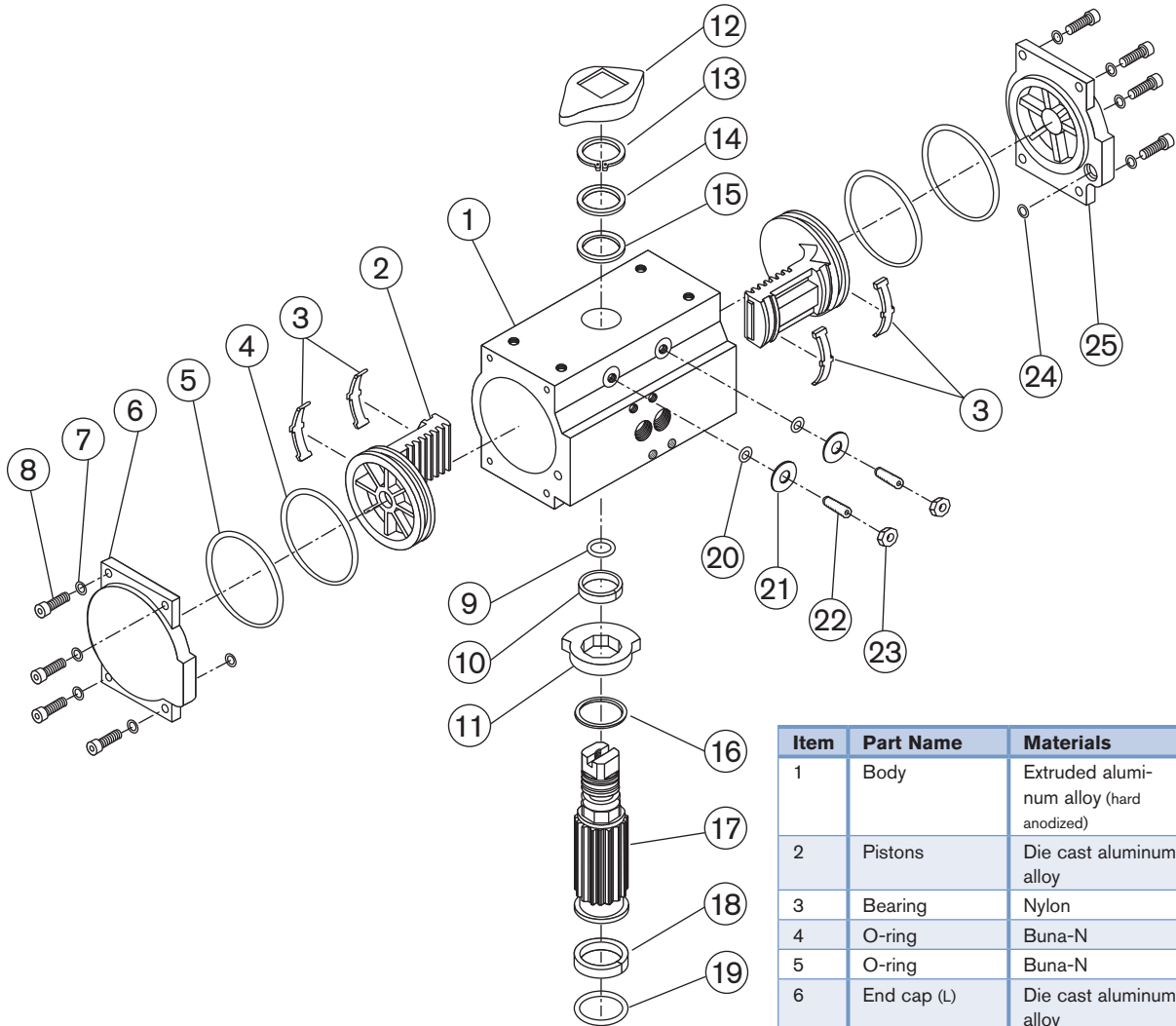
Double-acting actuator (Control function I)

Actuator size	Air Torque Output at Operating Pressure - Psig					Item no.
	40	60	80	100	120	
125	63	94	125	156	188	98124996
250	125	187	250	312	375	98124997
450	225	337	450	562	675	98124998
1000	500	750	1000	1250	1500	98124999
2250	1125	1687	2250	2812	3375	98125000
3650	1825	2738	3650	4563	5475	98125001
5000	2500	3750	5000	6250	7500	98125002
11000	5500	8250	11000	13750	16500	98125003

Spring return actuator (Control function A, B)

Actuator size	Spring set	Spring torque		Air Torque Output at Operating Pressure - Psig								Item no.
				60		80		100		120		
		Start	End	Start	End	Start	End	Start	End	Start	End	
125	R3	104	67	113	70	176	133	229	195	301	258	98124976
	R4	140	90	88	31	151	93	213	156	276	218	98124977
450	R3	190	121	203	125	316	238	428	350	541	463	98124978
	R4	254	162	158	54	271	167	383	279	496	392	98124979
1000	R3	418	270	449	278	698	526	947	775	1196	1025	98124980
	R4	559	360	350	120	599	371	848	618	1097	867	98124981
2250	R3	990	590	1034	591	1596	1154	2159	1717	2722	2280	98124984
	R4	1320	787	816	226	1379	788	2029	1351	2505	1914	98124986
3650	R3	1573	912	1726	996	2637	1907	3549	2819	4460	3730	98124988
	R4	2091	1217	1388	423	2300	1335	3211	2246	4123	3157	98124989
5000	R3	2340	1180	2380	1200	3570	2400	4760	3590	5960	4780	98124990
	R4	3130	1570	1980	414	3180	1600	4370	2800	5560	3990	98124991
11000	R3	5100	2570	5200	2650	7790	5240	10400	7840	13000	10400	98124992
	R4	6790	3430	4330	932	6930	3530	9520	6130	12100	8730	98124993

Exploded view

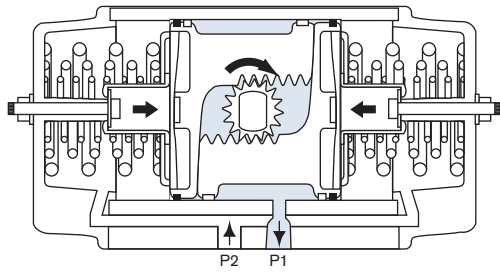


Item	Part Name	Materials
1	Body	Extruded aluminum alloy (hard anodized)
2	Pistons	Die cast aluminum alloy
3	Bearing	Nylon
4	O-ring	Buna-N
5	O-ring	Buna-N
6	End cap (L)	Die cast aluminum alloy
7	Washer	Stainless steel
8	Cap screw	Stainless steel
9	O-ring	Buna-N
10	Bearing	Nylon
11	Stop cam	Sinteral steel
12	Piston indicator	Polyethylene
13	Retaining ring	Stainless steel
14	Washer	Stainless steel
15	Bearing	Nylon
16	Retaining ring	Stainless steel
17	Pinion	Carbon steel (Electroless nickel plated)
18	Bearing	Nylon
19	O-ring	Buna-N
20	O-ring	Buna-N
21	Washer	Stainless steel
22	Stop screw	Stainless steel
23	Nut	Stainless steel
24	O-ring	Buna-N
25	End cap (R)	Die cast aluminum alloy

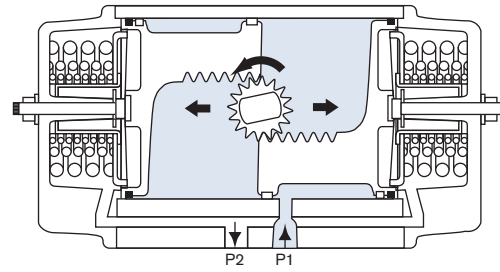
Functional principle

Control function A

Air supplied to port P1 forces the pistons toward the actuator end caps, compressing the springs. A counter-clockwise rotation is achieved. Exhaust air exits from port P2.

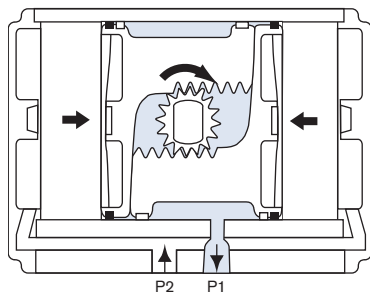


The loss of air pressure (air or electric failure) at port P1 allows the springs to force the pistons inward. A clockwise rotation is achieved. Exhaust air exits from port P2.

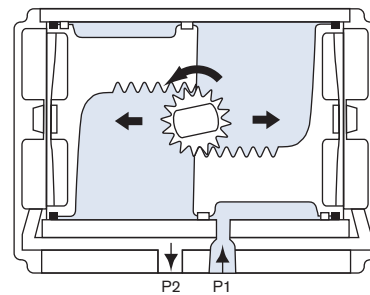


Control function I

Air supplied to port P1 forces the pistons towards the actuator end caps. A counterclockwise rotation is achieved. Exhaust air exits from port P2.



Air supplied to port P1 forces the pistons inward. A clockwise rotation is achieved. Exhaust air exits from port P2.

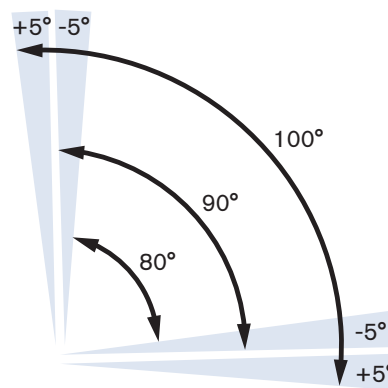


Actuators feature bidirectional pinion travel stops. Side located stops allow a full +5° of valve travel adjustment, giving a guaranteed range of adjustment between 80° and 100° of actuator travel. These travel stops are designed to absorb the maximum rated torque of the actuator and the maximum impact loads associated with recommended stroke speed.

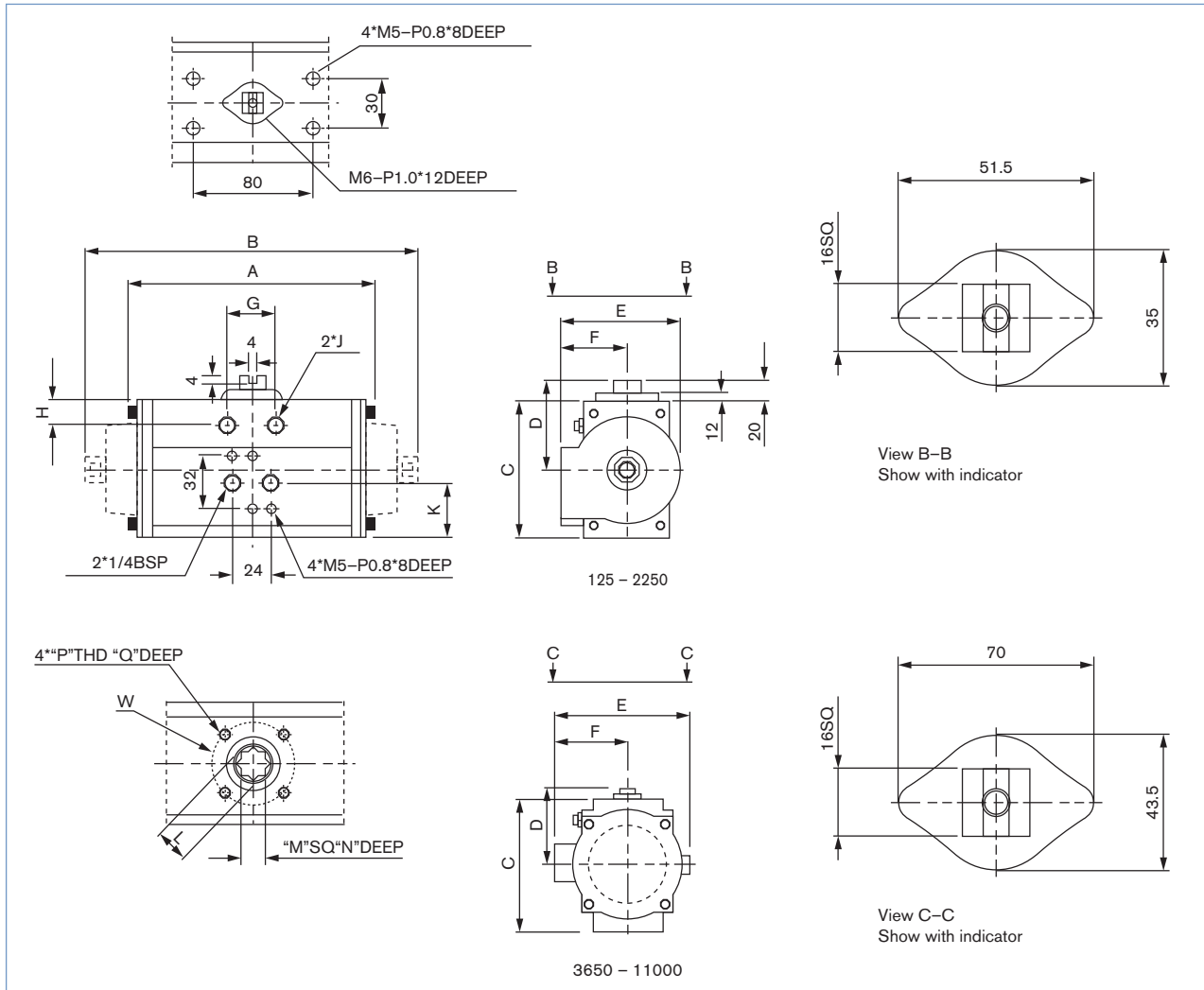
Standard Assembly

Adjustment of the counterclockwise and clockwise rotation limits are accomplished by turning the respective left and right stop adjustment screws to reduce or increase output rotation.

Travel Adjustment Range



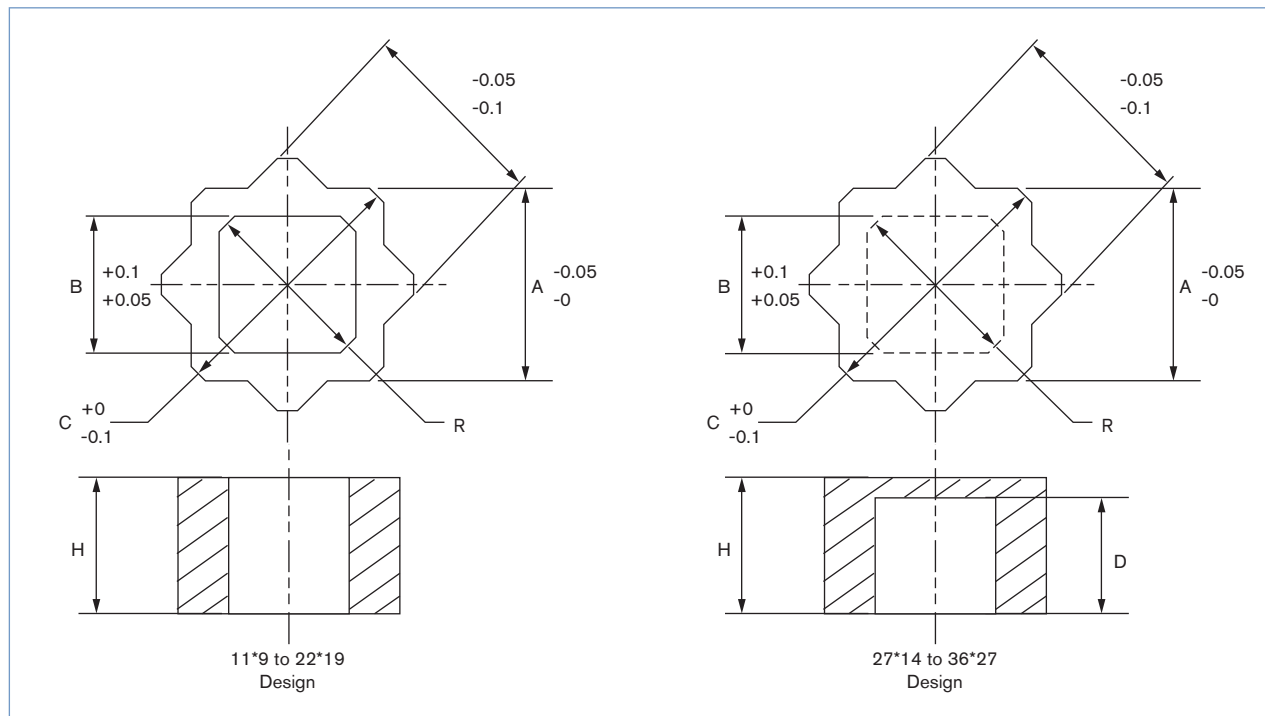
Dimensions [mm]



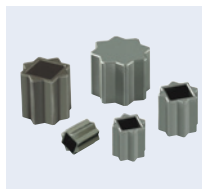
Actuator size	ISO pattern	Output torque at 80 PSI air	A	B	C	D	E	F	G	H	J
125	F04	125 in-lb	120.0	-	64.0	52.5	62.2	33.7	24.0	11.0	MxP0.8
250	F04 or F05	250 in-lb	144.3	194.6	79.0	57.7	81.4	47.8	32.5	12.6	M5xP0.8
450	F05 & F07	450 in-lb	149.2	205.6	98.0	67.4	95.0	51.5	32.5	13.8	M6xP1.0
1000	F05 & F07	1000 in-lb	183.0	250.0	121.0	79.2	119.0	64.5	46.2	16.6	M8xP1.25
2250	F07 & F10	2250 in-lb	259.6	355.0	141.0	89.5	140.5	75.5	54.0	18.6	M10xP1.5
3650	F10 & F12	3650 in-lb	304.3	422.0	176.0	99.1	185.2	105.5	79.7	27.3	M12xP1.75
5000	F10 & F12	5000 in-lb	364.4	487.0	196.0	116.5	204.8	107.8	79.4	28.6	M12xP1.75
11000	F14	11000 in-lb	490.0	642.0	243.7	138.5	238.2	125.0	95.3	35.8	M16xP2.0

Actuator size	ISO pattern	Output torque at 80 PSI air	K	L	M	N	P	Q	W
125	F04	125 in-lb	23.5	12.5	9.0	10.0	MxP0.8	8.0	42.0
250	F04 or F05	250 in-lb	29.7	14.5	11.0	17.0	M5xP0.8/M6xP1.0	8.0/10.0	42.0/50.0
450	F05 & F07	450 in-lb	30.2	18.8	14.0	21.0	M6xP1.0/M8xP1.25	10.0/12.0	50.0/70.0
1000	F05 & F07	1000 in-lb	33.5	23.0	17.0	25.5	M6xP1.0/M8xP1.25	10.0/12.0	50.0/70.0
2250	F07 & F10	2250 in-lb	39.0	29.5	22.0	31.0	M8xP1.25/M10xP1.5	12.0/15.0	70.0/102.0
3650	F10 & F12	3650 in-lb	97.4	35.5	27.0	35.0	M10xP1.5/M12xP1.75	15.0/19.0	102.0/125.0
5000	F10 & F12	5000 in-lb	99.0	35.5	27.0	35.0	M10xP1.5/M12xP1.75	15.0/19.0	102.0/125.0
11000	F14	11000 in-lb	124.7	47.5	36.0	45.0	M16xP2.0	24.0	140.0

Double-square insert dimensions [mm]



Ordering chart shaft adapters [mm]

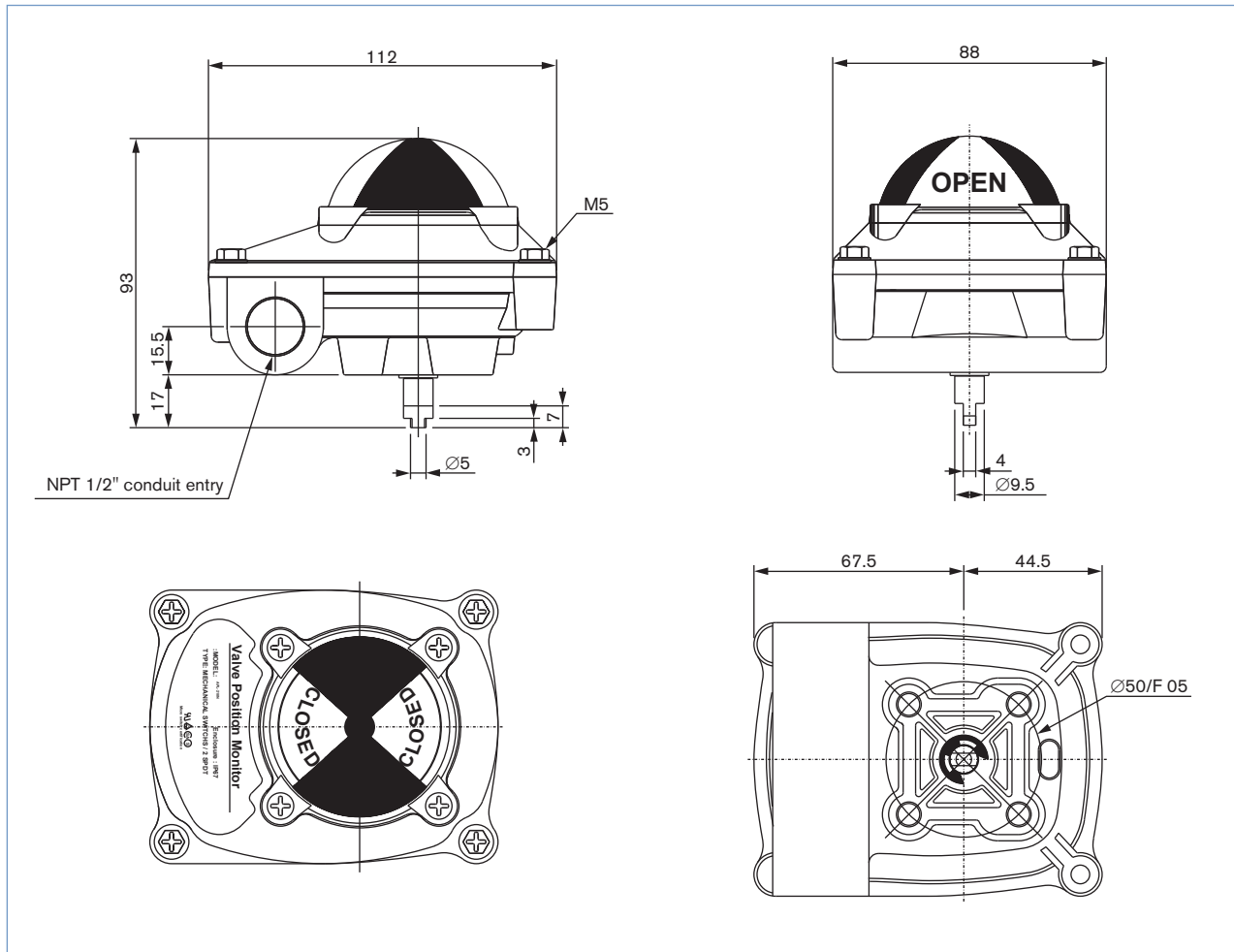


Insert	A	B	C	D	H	R	Item no.
11 * 9	11	9	15.0	-	17.0	12.5	98125211
14 * 9	14	9	19.1	-	20.0	12.5	665 288
14 * 11	14	11	19.1	-	20.0	14.5	665 289
17 * 9	17	9	23.1	-	24.0	12.5	98125212
17 * 11	17	11	23.1	-	24.0	14.5	98125213
17 * 14	17	14	23.1	-	24.0	19.2	665 290
22 * 14	22	14	29.6	-	30.0	19.2	666 684
22 * 17	22	17	29.6	-	30.0	23.3	666 685
27 * 14	27	14	36.0	27.0	29.0	19.2	98125214
27 * 17	27	17	36.0	27.0	29.0	23.3	98125215
27 * 22	27	22	36.0	27.0	29.0	30.0	98125216
36 * 27	36	27	48.0	33.0	35.0	37.0	98125217

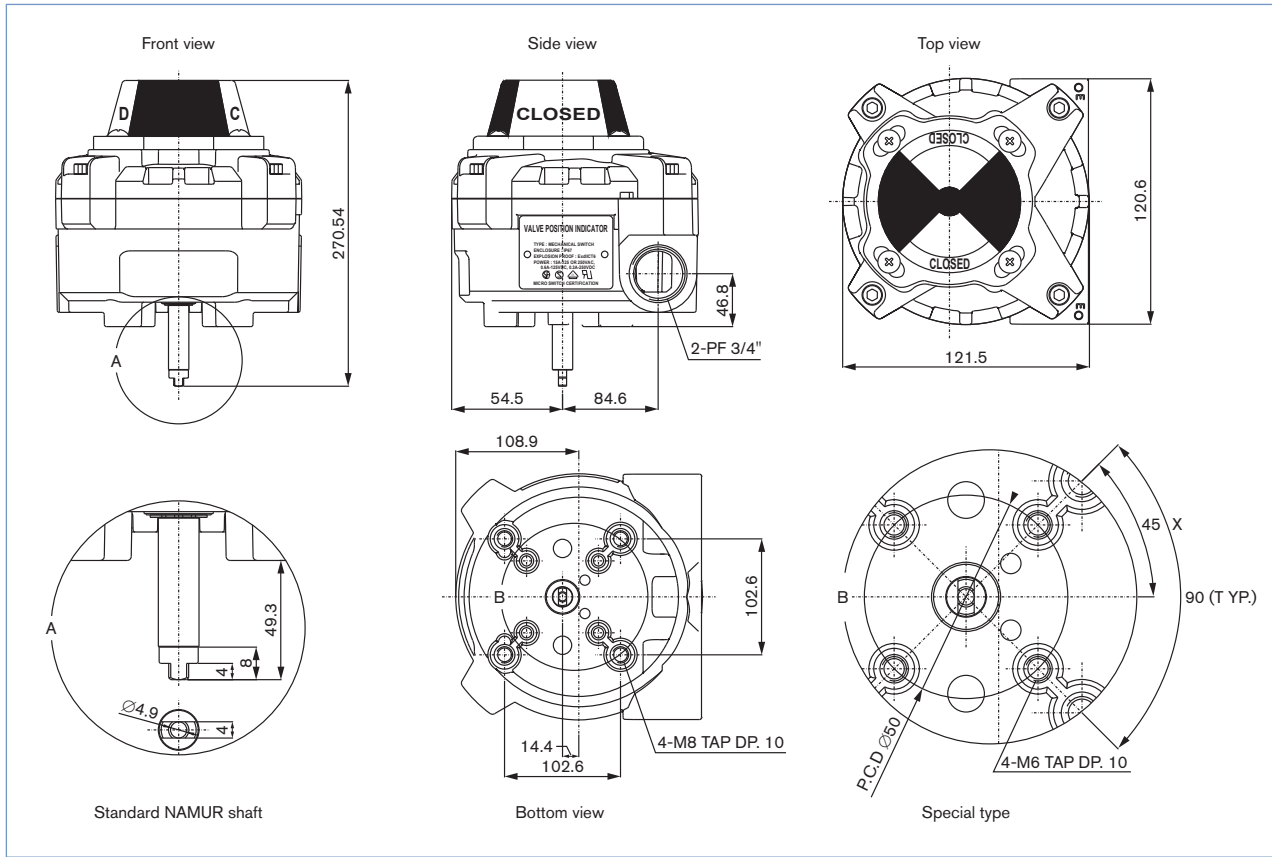
Ordering chart limit switch box

Type	Ambient temperature	Protection class	Position feedback	Position indicator	Cable Entry	Item no.
APL-210N	-20°C to +80°C	IP67/NEMA 4 & 4X	2 SPDT Mechanical	Closed(red), Open(Yellow)	2 x 1/2" NPT	98125280
E-07	-20°C to +85°C	Exd II CT6	2 SPDT Mechanical	Closed(red), Open(Yellow)	2 x 3/4" NPT	98125281
APL-510N	-20°C to +60°C	IP67/NEMA4,4X,7,9 E Ex d IIC T6	2 SPDT Mechanical	Closed(red), Open(Yellow)	2 x 3/4" NPT	98125282

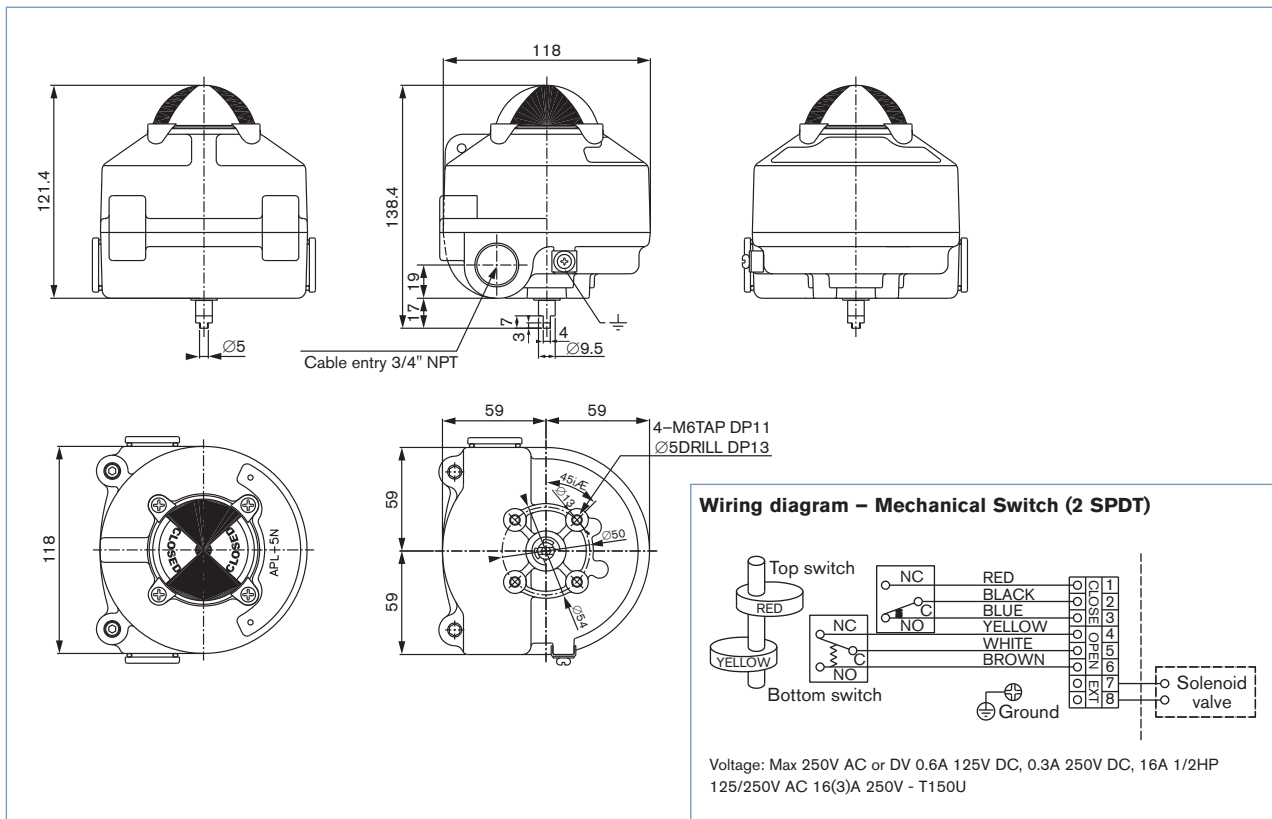
Dimensions – APL-210N [mm]



Dimensions – E-07 [mm]



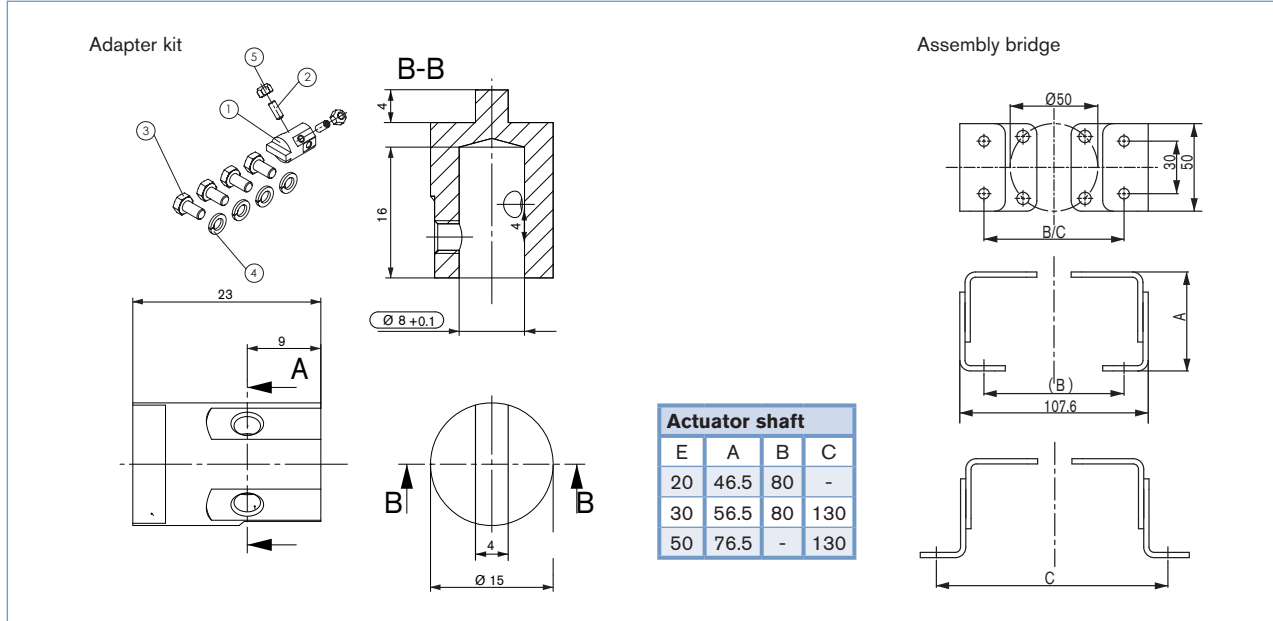
Dimensions – APL-510N [mm]



Ordering chart – Accessories

Type	Item no.
Universal adapter for shaft	787 338
Universal assembly bridge	770 294

Dimensions [mm]



Ordering chart for ISO Pattern screw sets [mm]

ISO Pattern	4 x Socket Set Screw DIN 916 A2 S/S 18-8	Includes 4 x Flat Washer Din 125 A4 S/S 18-8	4 x Metric Hex Nut DIN 934 A2 S/S 18-8	Item no.
F04	M5 - 0.8 x 25	M5 - 5.3 x 10	M5 - 0.8 x 8 x 4	98125298
F05	M6 - 1 x 25	M6 - 6.4 x 12	M6 - 1 x 10 x 5	98125299
F07	M8 - 1.25 x 25	M8 - 8.4 x 16	M8 - 1.25 x 13 x 6.5	98125300
F10	M10 - 1.5 x 35	M10 - 10.5 x 20	M10 - 1.5 x 17 x 8	98125301
F12	M12 - 1.75 x 40	M12 - 13 x 24	M12 - 1.75 x 19 x 10	98125302
F14	M16 - 2 x 40	M16 - 17 x 28	M16 - 2 x 24 x 13	98125303

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