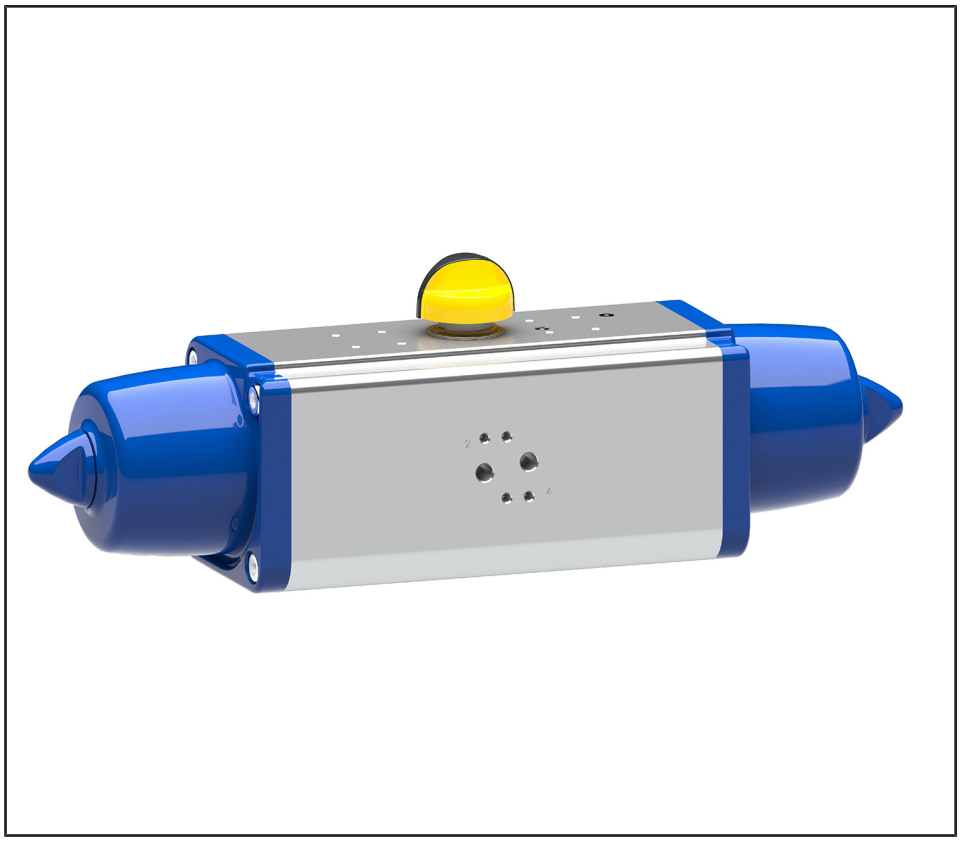
Pneumatic Actuator

DYNACTAIR EVO

Type Series Booklet



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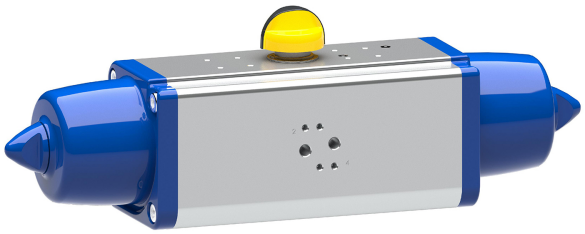
Type Series Booklet DYNACTAIR EVO

Contents

Pneumatic Actuators

Single-acting Pneumatic Quarter-turn Actuators

DYNACTAIR EVO



Main applications

- Water
- Waste water
- Energy
- Industry
- Shipbuilding
- Oil and gas

Operating data

Table 1: Operating properties

Characteristic	Value
Min. permissible pressure [bar]	3
Max. permissible pressure [bar]	8
Min. permissible temperature [°C]	≥ -50
Max. permissible temperature [°C]	≤ +150
Output torque [Nm]	≤ 4000
Enclosure	IP68 30 metres of water 169 hours

Design details

Design

- Single-acting pneumatic actuators of the DYNACTAIR EVO type series are designed for actuating all types of quarter-turn valves (butterfly valves, ball valves). In conjunction with a control unit of the AMTROBOX, AMTRONIC U or SMARTRONIC U type series, they offer all the control and monitoring functions required by modern process control systems.
- This pneumatic actuator with scotch yoke mechanism delivers a variable torque, with peak torque at valve closure.
- The translatory movement of the pistons caused by the control air pressure or springs results in a clockwise quarter turn of the pinion and, consequently, of the valve shaft, causing the valve to close.
- Operated using compressed air to ISO 8573-1. Other gases on request.
- Pneumatic interface to NAMUR
- VDI/VDE 3845 interface for connecting control units
- Actuator/valve interface to ISO 5211 with bi-square
- Mounts directly on the top flange of quarter-turn valves (or via adapter, depending on the configuration).
- Standard actuator features include:
  - – Position indicator
  - – Adjustable mechanical travel stops:

    - Closed position: -1° to +9° for DYNACTAIR EVO 1 to 80

    - Closed and open position: -5° to + 5° for DYNACTAIR EVO 120 to 350
- The actuators are lubricated with silicone-free grease at the factory.
- Gear housing made of light metal alloy, anodised, thickness: 20 µm
- End caps made of light metal alloy with polyurethane coating, thickness: 150 µm, colour: blue RAL 5002 for all DYNACTAIR EVO and EVOE sizes
- The valves meet the requirements of the REACH 1907/2006 regulation. None of the substances listed in the candidate list and in Annex XIV of the regulation is present in a concentration above 0.1 % (w/w) (Article 33/REACH).
- Versions available:
  - Standard: -20 °C to +80 °C
  - Low-temperature version (-50 °C to +60 °C), optional
  - High-temperature version (-20 °C to +150 °C), optional

Variants

- Open / closed position signalling by AMTROBOX and all limit switch boxes with a VDI/VDE interface
- Position indication and compressed air control by AMTRONIC U
- Positioning by SMARTRONIC U
- Integral manual override – DYNACTAIR EVOE type series:
  - Max. torque: 4000 Nm
  - Scotch yoke mechanism
- Declutchable emergency manual override:
  - IP66 and IP68 rated enclosures (1 metre, 72 hours)
  - Epoxy coating, thickness: 90 µm + polyurethane coating, thickness: 60 µm, colour: blue RAL 5002
  - Temperature range: -20 °C to +120 °C
- ATEX-compliant model: ATEX-compliant design for installation in zones 1 and 21

Product benefits

- Actuator for all types of quarter-turn valves (butterfly valves, ball/plug valves)
- Position indicator and one or several adjustable travel stops

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- Unlike rack-and-pinion kinematics, the actuator's scotch yoke mechanism delivers peak torque at both valve opening and closure.
  - Reduced dimensions and actuating times
  - Reduced weight
  - Reduced control air consumption
  - Higher durability of piston seal rings
  - Versions with integral manual override
  - Actuator designed to require no lubricants, for long service life

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see https://www.ksb.com/en-global/company/corporate-responsibility/reach.

Product information as per Directive 2014/34/EU (ATEX)

As per Directive 2014/34/EU (ATEX):
- II 2G Ex h IIC T6...T3 Gb X
- II 2D Ex h IIIC T 85 °C...T 175 °C Gb X

Related documents

Table 2: Information/documents

Document	Reference number
ACTAIR EVO type series booklet	8515.51
EMO type series booklet	5360.1
AMTROBOX type series booklet	8525.1
AMTRONIC U type series booklet	8514.839
SMARTRONIC U AS-i type series booklet	8520.809
SMARTRONIC U MA type series booklet	8520.807
SMARTRONIC U PC type series booklet	8520.808
ACTAIR EVO / DYNACTAIR EVO operating manual	8513.84
ACTAIR EVO / DYNACTAIR EVO operating manual	8513.85
ACTAIR EVOE / DYNACTAIR EVOE operating manual	8513.86

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Technical data

Function

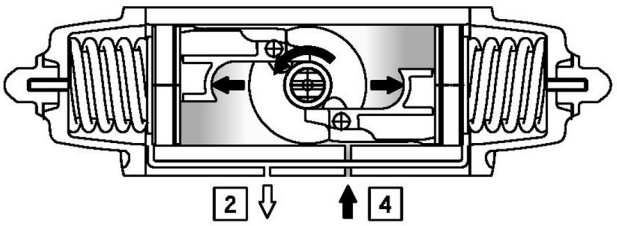
The scotch yoke mechanism develops a variable torque that is ideally suited for actuating quarter-turn valves.

Open position

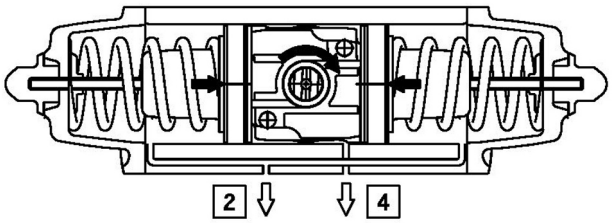
Port 4 communicates with both the left-hand and the right-hand cylinder chamber. When control air is supplied to port 4, the shaft of the single-acting pneumatic actuator rotates in anti-clockwise direction, causing the valve to open. During this process, the springs are compressed.

Closed position

Ports 2 and 4 communicate with the intermediate chamber. When no control pressure is supplied, the shaft of the single-acting pneumatic actuator rotates in clockwise direction, causing the valve to close. This movement is generated by the springs relaxing.

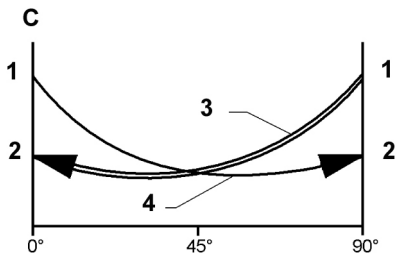


Top view

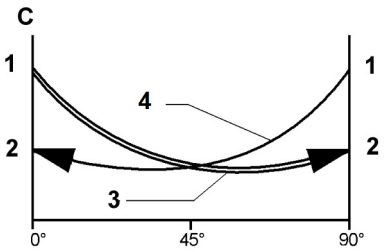


Top view

Curve of scotch yoke mechanism



Fail-close



Fail-open

C:	Output torque	1:	Start
0° to 90°:	Angle of rotation	2:	End
0°:	Closed	3:	Springs
90°:	Open	4:	Air

The scotch yoke mechanism develops a variable torque that is ideally suited for actuating quarter-turn valves.

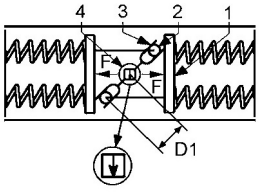


Fig. 1 – Closed

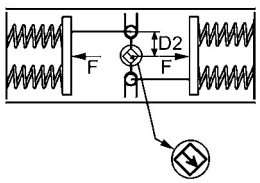


Fig. 2 – 45°

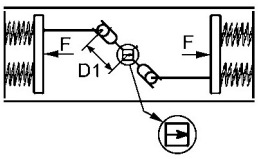


Fig. 3 – Open

The movement is transmitted via the system of pistons **1** , the rollers **2** , the yoke **3** and the shaft **4** .

The translatory movement of the pistons **1,** caused by the control pressure results in a sliding movement of the rollers **2** in the grooves of the yoke **3** .

The yoke **3** then rotates the shaft **4** together with the valve shaft.

The control pressure both actuates the valve and compresses the energy storage mechanism (spring assemblies).

On loss of control pressure, the valve is moved to fail-safe position by the spring-return action.

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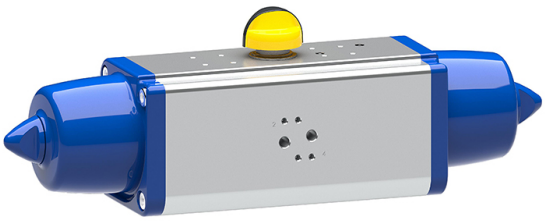
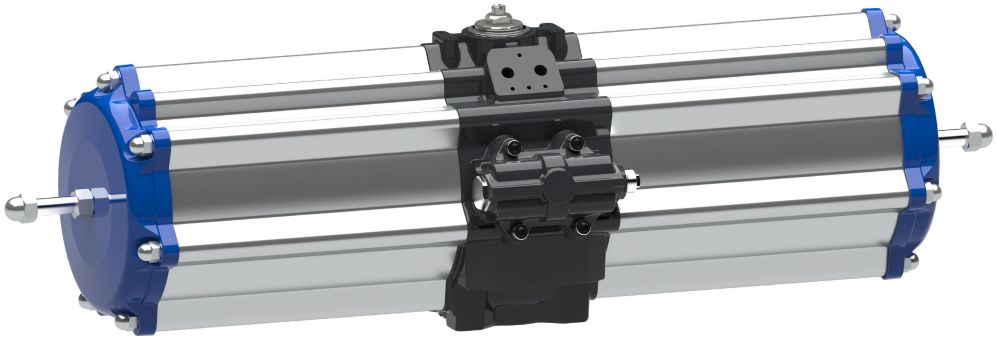
Type series



1 - 80



120- 350

Fig. 1: 3D representation of DYNACTAIR EVO types 1 - 80 and 120 - 350

Table 3: Dimensions [mm]

Type	Actuator/valve interface to ISO 5211	Shaft end dimensions [mm]	
		Depth	Bi-square
1	F04	13,2	T11
	F03/F05	13,2	T11
2	F05/F07	16,5	T14
4	F05/F07	19,3	T17
6	F07/F10	24,8	T22
8	F07/F10	24,8	T22
12	F07/F10	24,3	T22
16	F10/F12	29,5	T27
25	F10/F12	29,5	T27
35	F10/F12	38,5	T36
	F14	38,5	T36
50	F12	38,5	T36
	F14	38,5	T36
80	F12/F16	48,5	T46
	F14	48,5	T46
120	F16	48,5	T46
160	F16	48,5	T46
240	F16	48,5	T46
350	F25	58	T55

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Output torques (in Nm)

The output torque generated by the actuator depends on the control fluid pressure.

The following tables specify the achievable torques as a function of the control pressure applied (8 bar on request).

Table 4: Scotch yoke mechanism

Type	Spring size [Nm]	Output torque generated by energy storage mechanism (spring assembly) [Nm]			Output torque in compression phase of energy-storage mechanism as a function of control fluid pressure								
					Control pressure [bar]								
					4 bar			5 bar			6 bar		
		0°	50°	90°	0°	50°	90°	0°	50°	90°	0°	50°	90°
1	4,2	7,5	5,6	11,3	11,3	5,6	7,5	14,9	7,7	11,1	19,4	10,4	15,6
	5,6	10,0	7,5	15,0	-	-	-	12,3	5,9	7,3	16,8	8,6	11,8
2	4,2	15,0	11,3	22,5	22,5	11,3	15,0	29,6	15,6	22,1	38,6	21,0	31,1
	5,6	20,0	15,0	30,0	-	-	-	24,6	11,8	14,6	33,6	17,1	23,6
4	4,2	26,0	19,5	40,0	40,0	19,5	26,0	52,6	26,9	38,6	68,3	36,2	54,3
	5,6	35,0	26,0	53,0	-	-	-	43,6	20,4	25,6	59,3	29,7	41,3
6	4,2	45,0	33,9	67,5	67,5	33,9	45,0	88,9	46,8	66,4	115,7	63,0	93,2
	5,6	60,0	45,0	90,0	-	-	-	73,9	35,4	43,9	100,7	51,4	70,7
8	4,2	60,0	45,0	90,0	90,0	45,0	60,0	118,6	62,1	88,6	154,3	83,6	124,3
	5,6	80,0	60,0	120,0	-	-	-	98,6	47,1	58,6	134,3	68,6	94,3
12	4,2	90,0	67,5	135,0	135,0	67,5	90,0	177,9	93,2	132,9	231,4	125,4	186,4
	5,6	120,0	90,0	180,0	-	-	-	147,9	70,7	87,9	201,4	102,9	141,4
16	4,2	120,0	90,0	180,0	180,0	90,0	120,0	237,1	124,3	177,1	308,6	167,1	248,6
	5,6	160,0	120,0	240,0	-	-	-	197,1	94,3	117,1	268,6	137,1	188,6
25	4,2	180,0	135,0	270,0	270,0	135,0	180,0	355,7	186,4	265,7	462,9	250,7	372,9
	5,6	240,0	180,0	360,0	-	-	-	295,7	141,4	175,7	402,9	205,7	282,9
35	4,2	240,0	180,0	360,0	360,0	180,0	240,0	474,3	248,6	354,3	617,1	334,3	497,1
	5,6	320,0	240,0	480,0	-	-	-	394,3	188,6	234,3	537,1	274,3	377,1
50	4,2	360,0	270,0	540,0	540,0	270,0	360,0	711,4	372,9	531,4	925,7	501,4	745,7
	5,6	480,0	360,0	720,0	-	-	-	591,4	282,9	351,4	805,7	411,4	565,7
80	4,2	480,0	360,0	720,0	720,0	360,0	480,0	948,6	497,1	708,6	1234,3	668,6	994,3
	5,6	640,0	480,0	960,0	-	-	-	788,6	377,1	468,6	1074,3	548,6	754,3
120	4,2	810,0	450,0	1080,0	1080,0	540,0	810,0	1440,0	745,7	1170,0	1890,0	1002,9	1620,0
	5,6	1080,0	720,0	1440,0	-	-	-	1170,0	565,7	810,0	1620,0	822,9	1260,0
160	4,2	960,0	720,0	1440,0	1440,0	720,0	960,0	1897,1	994,3	1417,1	2468,6	1337,1	1988,6
	5,6	1280,0	960,0	1920,0	-	-	-	1577,1	754,3	937,1	2148,6	1097,1	1508,6
240	4,2	1440,0	1080,0	2160,0	2160,0	1080,0	1440,0	2845,7	1491,4	2125,7	3702,9	2005,7	2982,9
	5,6	1920,0	1440,0	2880,0	-	-	-	2365,7	1131,4	1405,7	3222,9	1645,7	2262,9
350	4,2	On request											
	5,6	On request											

Control medium

Operating pressure	3 to 6 bar (44 to 87 psi)
Filtration	ISO 8573-1 Class 5 (< 40 µm)
Dew point	ISO 8573-1 Class 3 (< -20°C, and if temperature is 10 °C below ambient temperature)
Lubrication	ISO 8573-1 Class 5 (< 25 mg/m³)

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Actuating time in seconds at 5.6 bar: without valve

Table 5: Actuating times

Type	Actuating time [+/-0.5 s]					
	5/2 directional control valve to NAMUR		AMTRONIC U A1300 / A1301		SMARTRONIC U A1310 / A1312 / A1313	
	0° to 90°	90° to 0°	0° to 90°	90° to 0°	0° to 90°	90° to 0°
1	0,13	0,09	0,9	1,0	0,9	1,0
2	0,13	0,1	1,0	1,0	1,0	1,0
4	0,2	0,17	1,0	1,0	1,0	1,0
6	0,31	0,33	2,8	2,8	1,3	2,4
8	0,4	0,33	3,2	3,2	2,0	2,8
12	0,58	0,44	4,0	4,0	2,5	3,5
16	0,65	0,53	5,5	5,2	3,0	3,8
25	0,96	0,72	7,5	7,0	4,0	5,0
35	1,16	0,9	10,6	9,7	5,5	7,0
50	1,65	1,49	16,0	13,0	7,5	8,0
80	2,6	2,14	22,5	18,3	10,5	11,3
120	1,37	1,4	14,0	23,5	17,5	24,5
160	1,62	2,03	16,0	27,0	20,0	28,0
240	2,17	2,42	27,0	45,0	33,5	47,0
350	3,83	3,97	37,0	62,5	46,0	65,0

Control air volume

Table 6: Control air volume

Type	Control air volume [dm^3/cycle]
1	0,09
2	0,16
4	0,29
6	0,51
8	0,68
12	1,01
16	1,32
25	2,04
35	2,62
50	4,25
80	5,57
120	16,79
160	12,73
240	20,06
350	27,73

A cycle corresponds to one opening/closing process of the valve.

Materials

Materials DYNACTAIR EVO 1 - 80

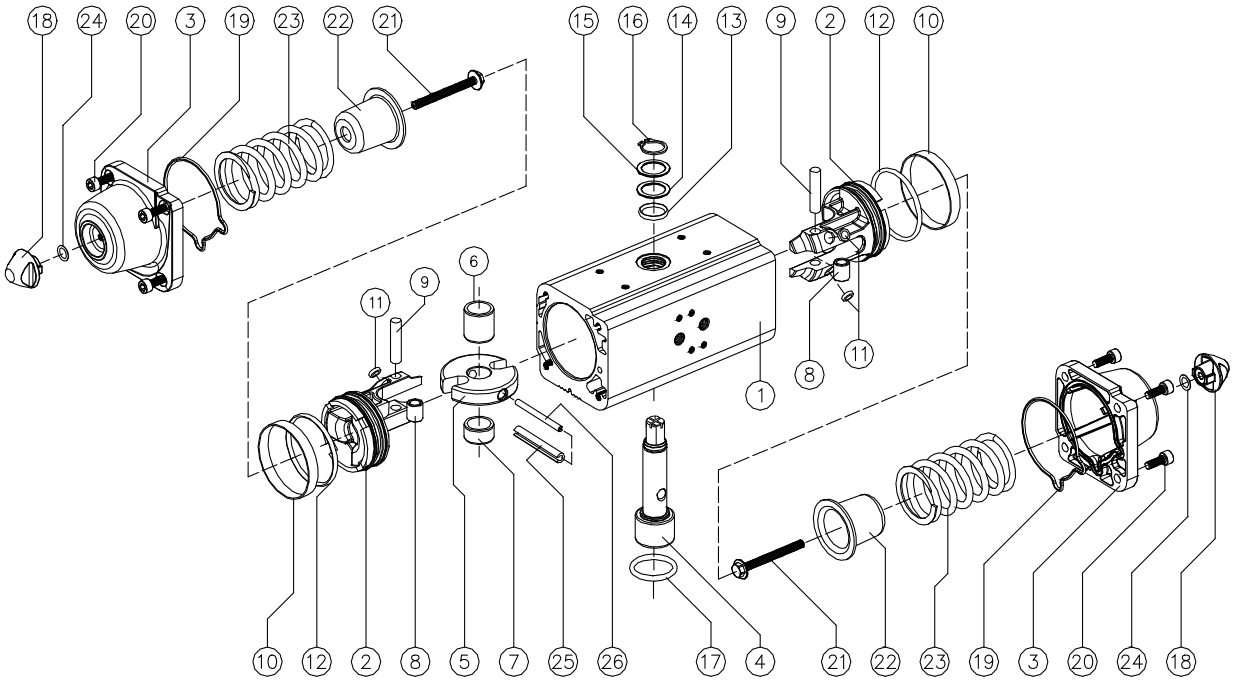

Fig. 2: Exploded view of type 1 - 80

Table 7: List of components DYNACTAIR EVO 1 - 80

Part No.		Description	Materials	Quantity
1		Cylinder	Light metal alloy, anodised	1
2		Piston	Light metal alloy	2
3		End cap	Light metal alloy	2
4		Actuating shaft	Stainless steel AISI 303	1
5		Yoke	Steel	1
6		Bush	Acetal	1
7		Guiding element	Acetal	1
8		Roller	Steel	2
9		Roller hinge pin	Steel	2
10	[1]	Dynamic piston seal ring	Polyurethane	2
11	[1]	Sliding pad	Reinforced PTFE	4
12	[1][2][3]	Piston seal ring	Nitrile	2
13	[2][3]	O-ring	FKM	1
14		Seal retainer	Acetal	1
15		Washer	Stainless steel	1
16		Segment	Stainless steel	1
17	[2][3]	O-ring	FKM	1
18		Nut	Light metal alloy	2
19	[1]	End cap seal	Nitrile	2
20		Screw	Stainless steel	8
21		Spring fastening screw	Steel	2
22		Spring cover	Steel	2
23		Spring	Steel	2
24	[1][2][3]	O-ring	Nitrile	2
25		Outer yoke pin	Steel	1
26		Inner yoke pin	Steel	1

1 Parts are included in the spare parts kit.
2 Low-temperature version (-50 °C to +120 °C): O-ring = fluorosilicone (FVMQ)
3 High-temperature version: O-ring = FKM

Materials DYNACTAIR EVO 120

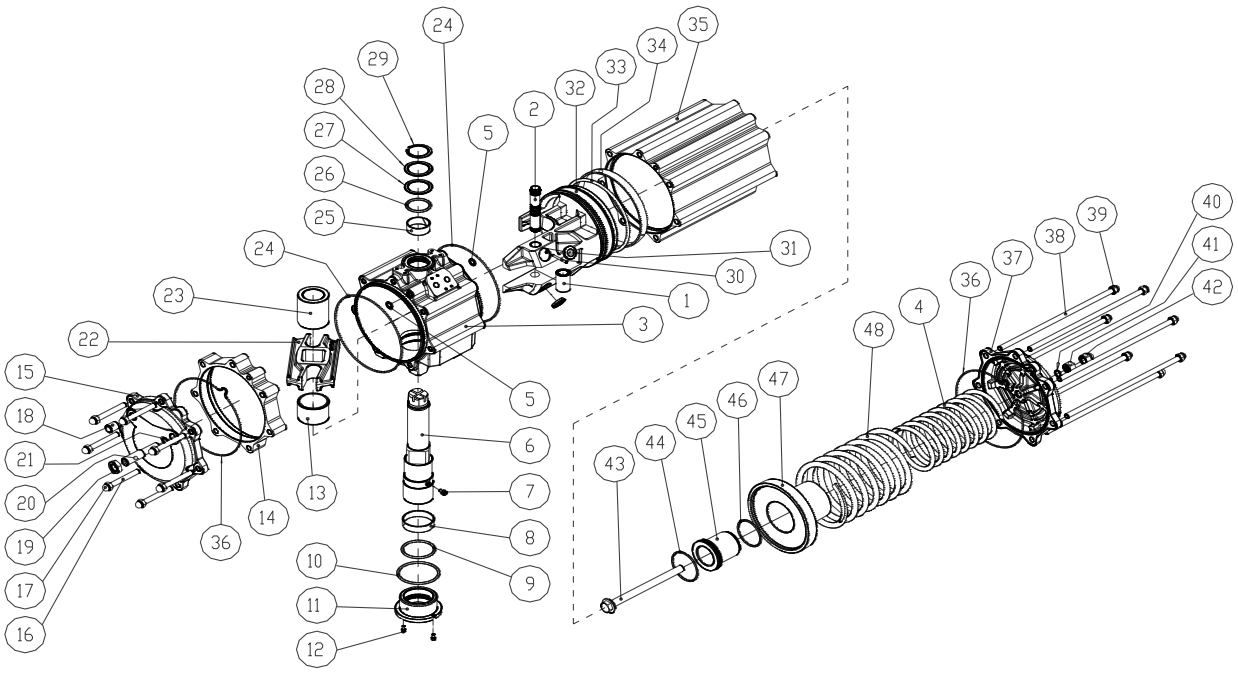

Fig. 3: Exploded view of type 120

Table 8: List of components DYNACTAIR EVO 120

Part No.		Description	Materials	Quantity
1		Ring	Steel	1
2		Pin	Steel	1
3		Housing	Light metal alloy, anodised	1
4		Inner spring	Steel	1
5	4)5)6)	O-ring	Nitrile	2
6		Shaft	Steel	1
7		Screw	Steel	1
8	4)	Lower bearing	Light metal alloy, anodised	1
9	4)5)6)	O-ring	FKM	1
10	4)5)6)	O-ring	FKM	1
11		Lower bearing bush	Light metal alloy, anodised	1
12		Screw	Steel	2
13		Shaft bearing	Acetal	1
14		Spacer ring	Light metal alloy, anodised	1
15		End cap	Light metal alloy, anodised	1
16		Tie bolt	Steel	7
17		End cap nut	Stainless steel	7
18		Grub screw	Stainless steel	1
19		Nut	Stainless steel	1
20		Grub screw	Stainless steel	1
21	4)5)6)	O-ring	Nitrile	1
22		Yoke	Steel	1
23		Shaft bearing	Acetal	1
24	4)5)6)	O-ring	Nitrile	2
25	4)	Upper bearing	Acetal	1
26	4)5)6)	O-ring	FKM	1
27	4)	Fixed bearing	Acetal	1
28		Washer	Steel	1
29		Circlip	Steel	1
30		Spring-type straight pin	Steel	1
31	4)	Lower piston bearing	Acetal	2
32		Piston	Light metal alloy	1
33	4)5)6)	O-ring	Nitrile	1
34	4)	Upper piston bearing	Acetal	1
35		Cylinder	Light metal alloy	1
36	4)5)6)	O-ring	Nitrile	2
37		End cap	Light metal alloy	1
38		Tie bolt	Steel	7
39		End cap nut	Stainless steel	7
40	4)5)6)	O-ring	Nitrile	1
41		Nut	Stainless steel	1
42		Nut	Stainless steel	1
43		Screw	Stainless steel	1
44		O-ring	FKM	1
45		Spring cover	Light metal alloy, anodised	1
46	5)6)	O-ring	FKM	1
47		Spring cover	Light metal alloy, anodised	1
48		Outer spring	Steel	1

4 Parts are included in the spare parts kit.
5 Low-temperature version (-50 °C to +120 °C): O-ring = fluorosilicone (FVMQ)
6 High-temperature version: O-ring = FKM

Materials DYNACTAIR EVO 160

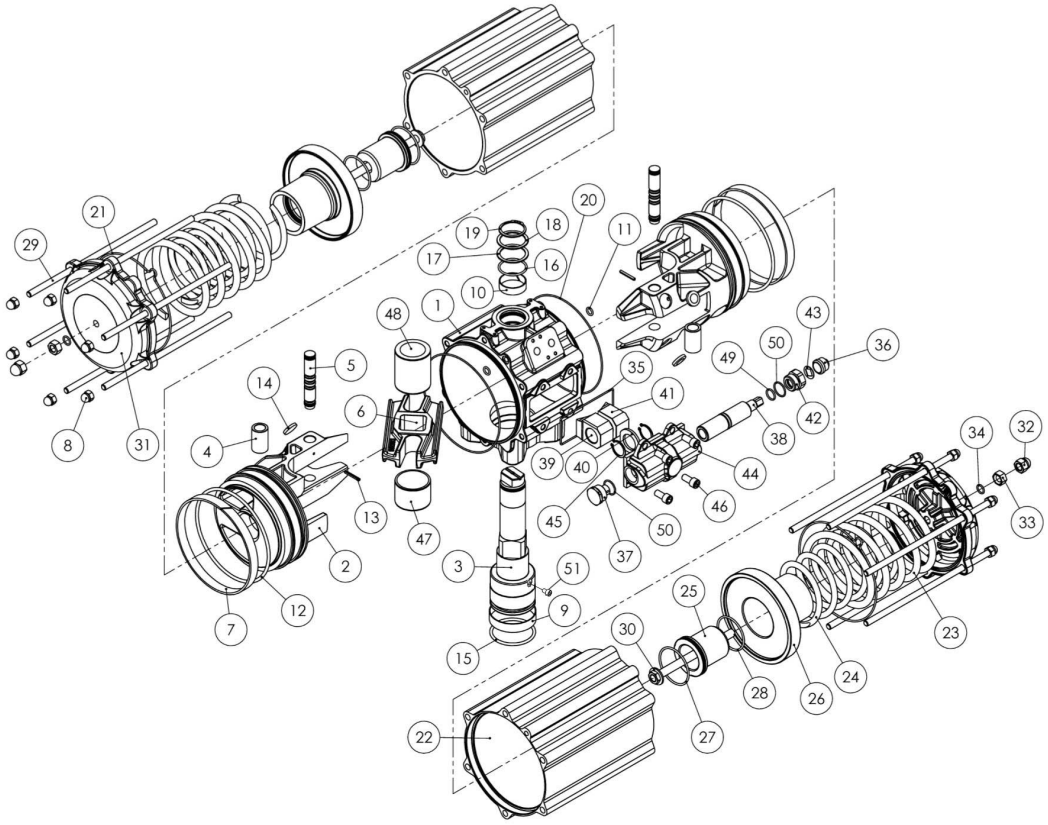

Fig. 4: Exploded view of type 160

Table 9: List of components DYNACTAIR EVO 160

Part No.		Description	Materials	Quantity
1		Cylinder	Light metal alloy, anodised	1
2		Lateral cylinder	Light metal alloy	2
3		Shaft	Stainless steel	1
4		Yoke	Steel	1
5		Shaft sleeve	Acetal	1
6		Bush	Acetal	1
7		Upper support ring	Acetal	1
8		Lower support ring	Acetal	1
9	[7]	Joint ring for end cap	Nitrile	2
10		Safety screw	Stainless steel	1
11	[7]	Outer support ring	Acetal	1
12		Circlip	Stainless steel	1
13		Washer	Stainless steel	1
14		Piston	Light metal alloy	2
15		Bush	Steel	2
16	[7]	Piston damper	Acetal	4
17		Spring-type straight pin	Steel	2
18		Rotation ring	Steel	2
19		End cap	Light metal alloy, anodised	2
20		Inner spring cover	Light metal alloy	2
21		Outer spring cover	Light metal alloy	2
23	[7][8][9]	O-ring	Nitrile	2
24		End cap nut	Stainless steel	2
25	[8][9]	O-ring	Nitrile	2
26	[8][9]	O-ring	Nitrile	2
27		Nut	Stainless steel	2
28		Inner spring	Steel	2
29		Outer spring	Steel	2
30	[7]	Dynamic piston seal ring	Acetal	2
31	[7][8][9]	O-ring for lower shaft	FKM	1
32	[7][8][9]	Piston seal ring	Nitrile	2
33	[7][8][9]	Joint ring for upper shaft	FKM	1
34	[8][9]	O-ring	Nitrile	2
35	[7][8][9]	O-ring of cylinder	Nitrile	2
36		End cap screw	Steel	12
37		End cap nut	Stainless steel	12

7 Parts are included in the spare parts kit.
8 Low-temperature version (-50 °C to +120 °C): O-ring = fluorosilicone (FVMQ)
9 High-temperature version: O-ring = FKM

Materials DYNACTAIR EVO 260

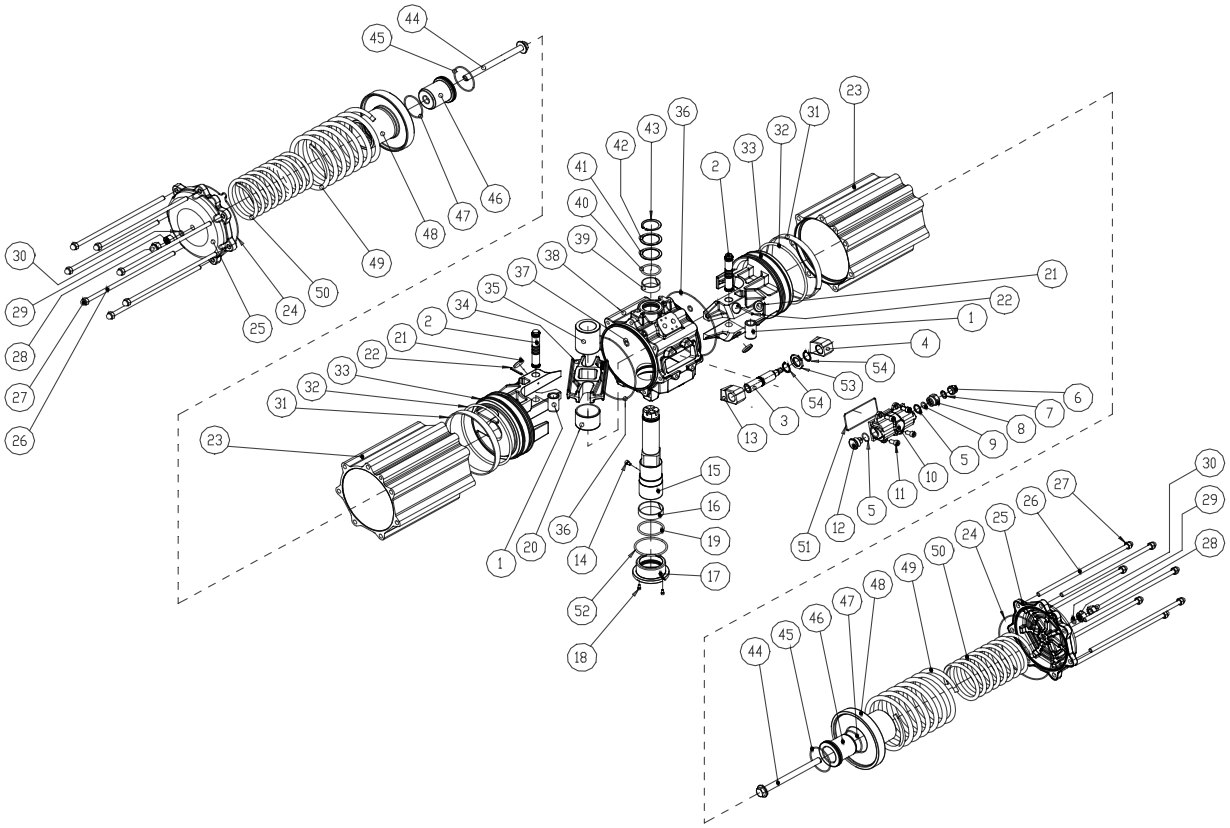

Fig. 5: Exploded view of type 260

Table 10: List of components DYNACTAIR EVO 260

Part No.		Description	Materials	Quantity
1		Ring	Steel	1
2		Pin	Steel	1
3		Adjusting screw	Steel	1
4		Locking device, left	Steel	1
5	10)11)12)	O-ring	Nitrile	2
6		Protective cover	Light metal alloy, anodised	1
7		Lock washer	Steel	1
8		Metal ring	Stainless steel	1
9	10)11)	O-ring	Nitrile	1
10		Gear housing	Light metal alloy, anodised	1
11		Screw	Steel	4
12		Metal ring	Stainless steel	1
13		Lock washer	Steel	1
14		Screw	Steel	1
15		Shaft	Steel	1
16	10)	Lower bearing	Acetal	1
17		Shaft bearing	Light metal alloy, anodised	1
18		Screw	Steel	2
19	10)11)12)	O-ring	FKM	1
20		Shaft bearing	Acetal	1
21	10)	Lower piston bearing	Acetal	4
22		Spring-type straight pin	Steel	2
23		Cylinder	Light metal alloy, anodised	2
24	10)10)12)	O-ring	Nitrile	2
25		End cap	Light metal alloy, anodised	2
26		Tie bolt	Steel	14
27		End cap nut	Stainless steel	14
28		End cap nut	Stainless steel	2
29		Nut	Stainless steel	2
30	10)11)12)	O-ring	Nitrile	2
31	10)	Upper piston bearing	Acetal	2
32	10)11)12)	O-ring	Nitrile	2
33		Piston	Light metal alloy	2
34		Yoke	Steel	1
35		Shaft bearing	Acetal	1
36	10)11)12)	O-ring	Nitrile	2
37	10)11)12)	O-ring	Nitrile	2
38		Housing	Light metal alloy, anodised	1
39	10)	Upper bearing	Acetal	1
40	11)12)	O-ring	FKM	1
41	10)	Fixed bearing	Acetal	1
42		Washer	Steel	1
43		Circlip	Steel	1
44		Screw	Stainless steel	2
45	11)12)	O-ring	Nitrile	2
46		Spring cover	Light metal alloy	2
47	11)12)	O-ring	Nitrile	2
48		Spring cover	Light metal alloy	2
49		Outer spring	Steel	2
50		Inner spring	Steel	2
51	10)11)12)	Joint ring	Nitrile	1

10 Parts are included in the spare parts kit.
11 Low-temperature version (-50 °C to +120 °C): O-ring = fluorosilicone (FVMQ)
12 High-temperature version: O-ring = FKM

Part No.		Description	Materials	Quantity
52	10)11)12)	O-ring	FKM	1
53		Washer	Steel	1
54		Circlip	Steel	2

Materials DYNACTAIR EVO 350

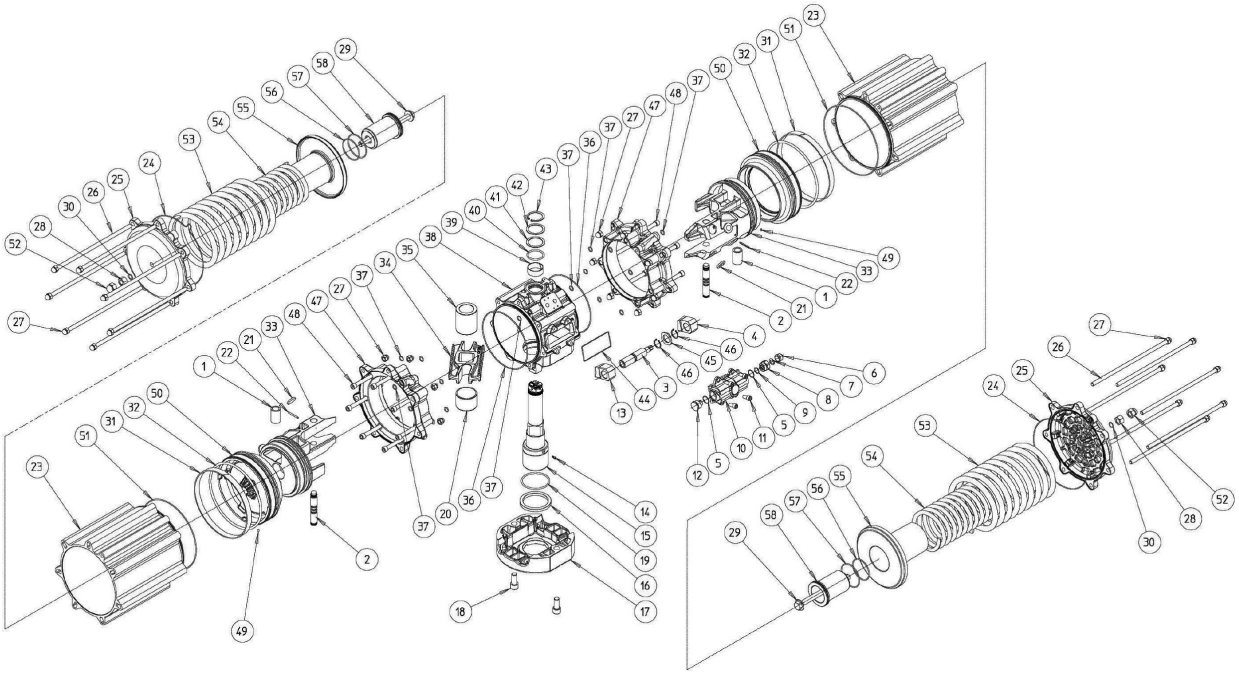

Fig. 6: Exploded view of type 350

Table 11: List of components DYNACTAIR EVO 350

Part No.		Description	Materials	Quantity
1		Ring	Steel	2
2		Pin	Steel	2
3		Adjusting screw	Steel	1
4		Locking device, left	Steel	1
5	13)14)15)	O-ring	Nitrile	2
6		Protective cover	Light metal alloy, anodised	1
7		Lock washer	Steel	1
8		Metal ring	Stainless steel	1
9	13)14)15)	O-ring	Nitrile	1
10		Gear housing	Light metal alloy, anodised	1
11		Screw	Steel	4
12		Metal ring	Stainless steel	1
13		Lock washer	Steel	1
14		Screw	Steel	1
15		Shaft	Steel	1
16	13)	Lower bearing	Acetal	1
17		Connection flange	Light metal alloy, anodised	1
18		Screw	Steel	2
19	13)14)15)	O-ring	FKM	1
20		Shaft bearing	Acetal	1
21	13)	Lower piston bearing	Acetal	4
22		Spring-type straight pin	Steel	2
23		Cylinder	Light metal alloy, anodised	2
24	13)14)15)	O-ring	Nitrile	2
25		End cap	Light metal alloy, anodised	2
26		Tie bolt	Steel	14
27		End cap nut	Stainless steel	28
28		Nut	Stainless steel	2
29		Screw	Stainless steel	2
30	13)14)15)	O-ring	Nitrile	2
31	13)	Upper piston bearing	Acetal	2
32	13)14)15)	O-ring	Nitrile	2
33		Piston	Light metal alloy	2
34		Yoke	Steel	1
35		Shaft bearing	Acetal	1
36	13)14)15)	O-ring	Nitrile	2
37	13)14)15)	O-ring	Nitrile	18
38		Housing	Light metal alloy, anodised	1
39	13)	Upper bearing	Acetal	1
40	13)14)15)	O-ring	FKM	1
41	13)	Fixed bearing	Acetal	1
42		Washer	Steel	1
43		Circlip	Steel	1
44	13)14)15)	Joint ring	Nitrile	1
45		Washer	Steel	1
46		Circlip	Steel	2
47		Flange	Light metal alloy, anodised	2
48		Screw	Steel	14
49		Grub screw	Steel	2
50		Flange	Light metal alloy	2
51	13)14)15)	O-ring	Nitrile	2
52		End cap nut	Stainless steel	2
53		Outer spring	Steel	2

13 Parts are included in the spare parts kit.
14 Low-temperature version (-50 °C to +120 °C): O-ring = fluorosilicone (FVMQ)
15 High-temperature version: O-ring = FKM

Part No.		Description	Materials	Quantity
54		Inner spring	Steel	2
55		Spring cover	Light metal alloy	2
56	13)14)15)	O-ring	Nitrile	2
57	13)14)15)	O-ring	Nitrile	2
58		Spring cover	Light metal alloy	2

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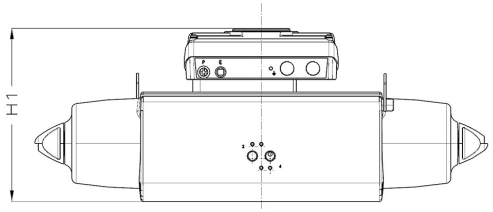
Variants

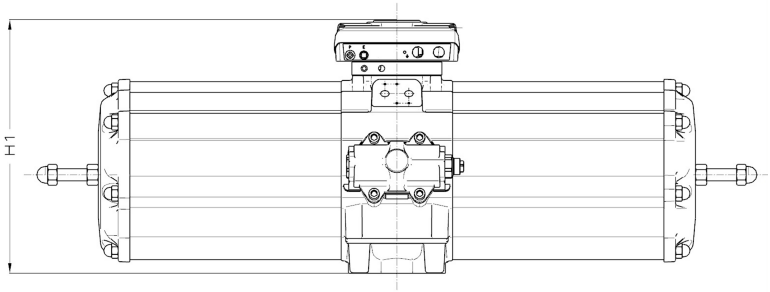
Open/closed position signalling function

AMTROBOX type series

This limit switch box provides open/closed position signalling via electrical microswitches or inductive proximity sensors (1 for Open and 1 for Closed, 1 for one intermediate position on request).



Type 1 - 80



Type 120 - 350

Table 12: Dimensions [mm] and weights [kg]

Type	H1	Weight
1	145,2	3,3
2	156,4	4,1
4	169,3	5,1
6	193,5	8
8	197,1	8,9
12	204	11
16	220,9	13,9
25	234	18,6
35	254	24,8
50	272	35,1
80	293,7	44,1
120	422	76,8
160	377	72,8
240	422	119,8
350	437	185,8

Control function

Control by AMTRONIC U control unit
Control unit functions:

- Control air supply via a monostable or bistable 4/2 or 4/3 directional control valve, power supply: alternating or direct current
- Setting of actuating times
- Open/closed position signalling (2 microswitches or inductive proximity sensors)

Options

- Proportional position signalling via 4-20 mA signal
- Field bus AS-i, Profibus DP

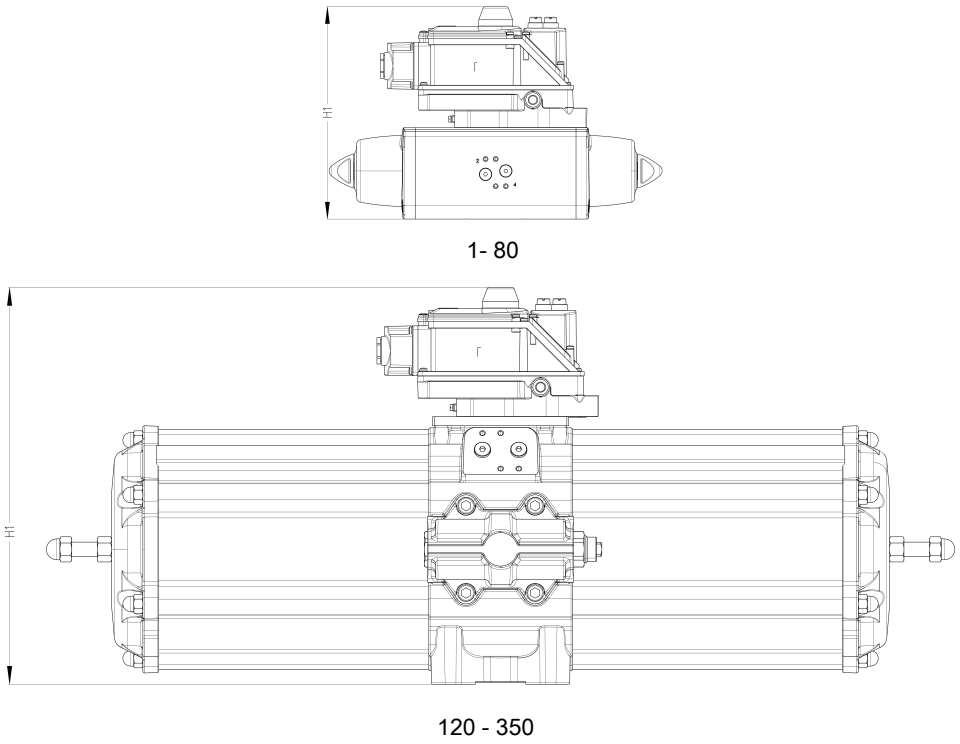


Fig. 7: DYNACTAIR EVO 1 - 80 and 120 - 350

Table 13: Dimensions [mm] and weights [kg]

Type	H2	Weight
1	198,2	3,7
2	209,4	4,5
4	222,3	5,5
6	246,5	8,4
8	250,1	17,7
12	257	11,4
16	273,9	14,3
25	287	19
35	307	25,2
50	325	35,5
80	346,7	44,5
120	475	77,2
160	430	73,2
240	475	120,2
350	490	186,2

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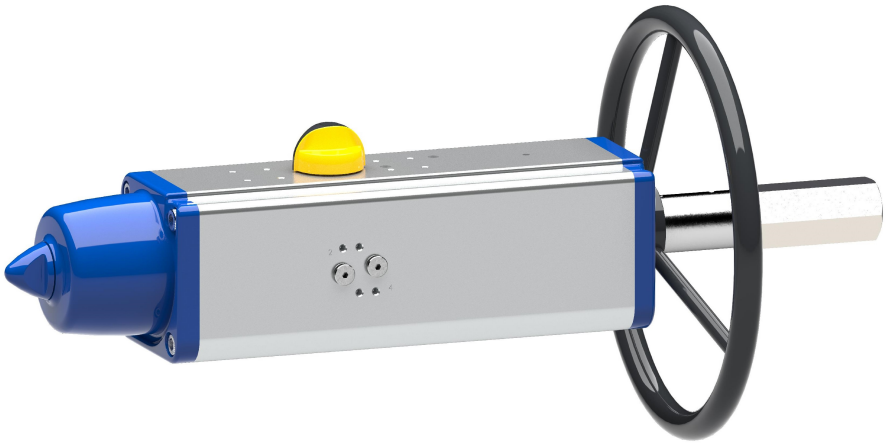
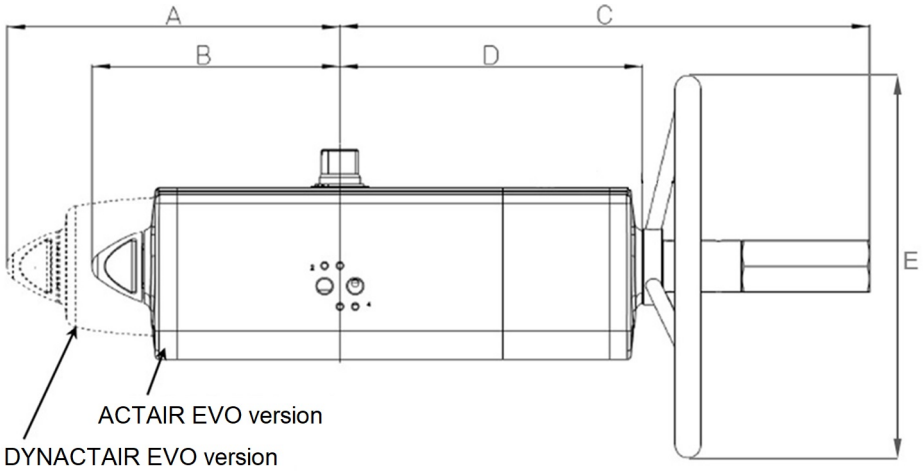
Integral manual override – DYNACTAIR EVOE type series



The design of this manual override is based on the DYNACTAIR EVO pneumatic actuator.
The integral manual override comprises a steel handwheel for manual actuation in emergencies.
No separate manual override is required, reducing both dimensions and weight.
The actuator can be locked in open or closed position.
Like EMO manual overrides, this manual override must not be operated unless the control air has been completely evacuated from the actuator.

Dimensions and weights



Type EVOE

Table 14: Dimensions [mm] and weights [kg]

Type NGV	A	C	D	E	Weight
2	129,4	263,3	137,6	180	3,2
4	152,1	279,6	154,8	180	4,5
6	196,8	338,7	183,5	220	6,8
8	204,8	354,3	199,1	220	9,0
12	237,0	398,4	220,8	300	11,7
16	260,2	414,2	236,4	300	15,2
25	306,6	504,5	282,3	350	19,5
35	324,1	518,8	297,1	350	28,1
50	399,0	637,1	365,6	400	38,8
80	414,0	653,7	382,9	400	50,6
160	509,0	890,2	537,5	575	90,5

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Declutchable manual override

An emergency manual override via declutchable manual gearbox with handwheel can be mounted between the valve and the actuator.

It overrides the pneumatic actuator and can be used in either clutched (engaged) or declutched (disengaged) position.

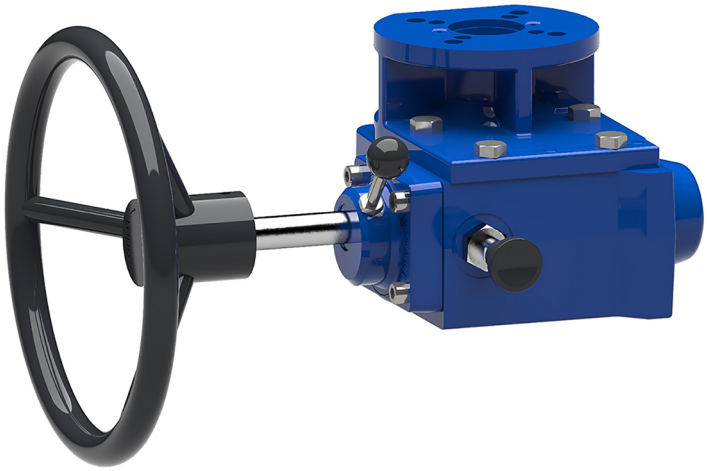
A worm reduction gearbox is used.

Please contact us.

The manual override must not be operated unless

- **the control air has been completely evacuated from the actuator and**
- **all pressure has been released from the actuator's internal chambers**

Do not engage the emergency manual override as long as the actuator is pressurised.

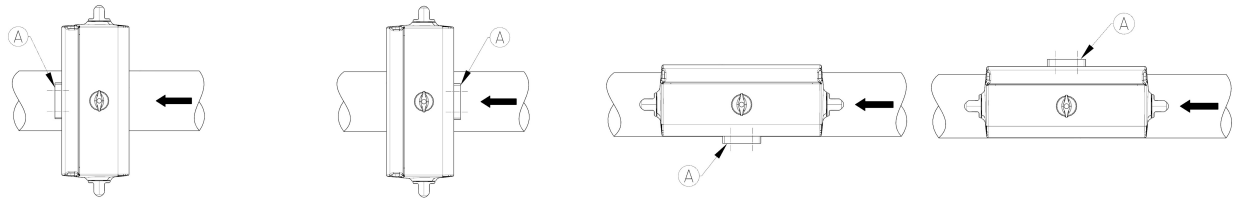


EMO declutchable manual override

Mounting the pneumatic actuator onto the valve

The actuator can be mounted onto the valve in 4 different positions, offset by 90°. Unless otherwise specified, the actuator is mounted onto the valve according to mounting option N, position 1.

Mounting option N | **Mounting option M**



Position 1 | Position 2 | Position 1 | Position 2

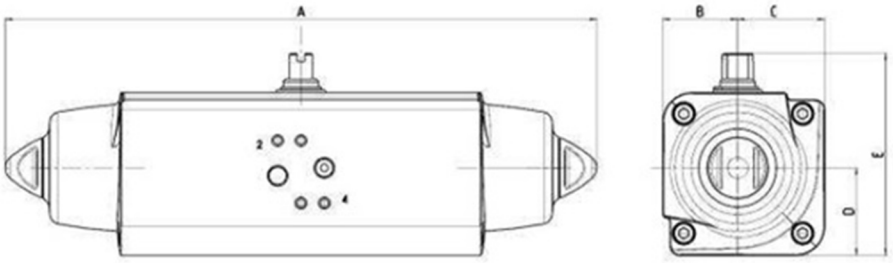
Flow direction of fluid handled The valve is shown in closed position.

Interface A: for direct pneumatic connection / NAMUR or ISO

The required mounting option must be specified in the purchase order. As the actuator's shaft end is designed with a bi-square, the mounting position can be easily changed by the customer at the site.

Dimensions and weights

Dimensions and weights of DYNACTAIR EVO 1 - 80

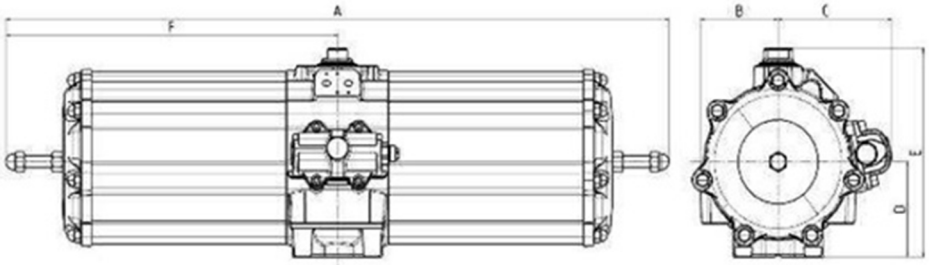


Size 1 - 80

Table 15: Dimensions [mm] and weights [kg]

Size	A	B	C	D	E	Weight
1	233,3	27,7	31,5	31,5	79,2	1,2
2	259	32,7	37,7	37,7	90,4	2,0
4	304,3	38,5	44,8	44,8	103,3	3,0
6	393,7	51	56,5	56,5	127,5	5,9
8	409,6	51	60,1	60,1	131,1	6,8
12	474	56	62	62	148	8,9
16	520,5	62	72,9	72,9	164,9	11,8
25	613	69,5	78,5	78,5	178	16,5
35	648,2	74,5	93,5	93,5	198	22,7
50	798	84,5	101,5	101,5	216	33,0
80	828	93	114,7	114,7	237,7	42,0

Dimensions and weights of DYNACTAIR EVO 120 - 350



Size 120 - 350

Table 16: Dimensions [mm] and weights [kg]

Size	A	B	C	D	E	F	Weight
120	834	155,5	155,5	164	359	234	74
160	1001	120	178	148	314	500,5	70
240	1201	155,5	206	164	359	600,5	117
350	1370	188	206	179	374	685	183

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KSB S.A.S.
4, allée des Barbanniers • 92635 Gennevilliers Cedex (France)
Tél. 09 69 39 29 79
www.ksb.com/fr-fr