

FoxACT Pneumatic Actuator

Application

For installation on control valves, direct or reverse action, for controlled or on/off operation.

Product features

- Multi-spring compact design
- Radial spring arrangement permits a low mounting height
- Low volume between diaphragm and case gives fast response times
- Strong operating force by permissible pressure supply of 6 bar
- Permissible ambient temperature -40 up to 80°C
- Stable guided stem
- Fabric-reinforced roll-type diaphragm with minimum area variation due to stem position on loss in operating force for various stroke positions - linearity is retained
- Stem bushing requires no maintenance
- Stable yoke in spheroidal cast-iron
- Central mounting on the control valve
- Yoke and stem coupling with mounting surfaces according to NAMUR (DIN IEC 65 B CO)
- Top resp. lateral mounted hand wheel

Operation

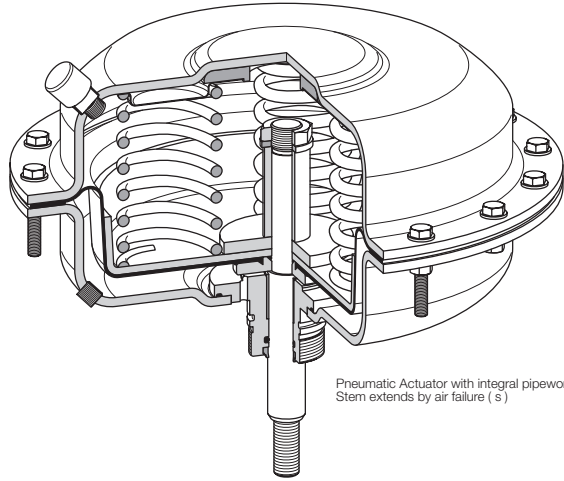
The diaphragm is actuated by the control signal. The actuator stem moves as soon as the diaphragm force exceeds the counterforces of the springs. There are two operational modes depending on the arrangement of the spring package:

1. Stem extends by air failure
2. Stem retracts by air failure

The control valve can be opened or closed with a rising signal. On air failure, the actuator is set back to the zero position by spring force (fail-safe position).



Actuator

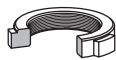


Pneumatic Actuator with integral pipework -
Stem extends by air failure (s)

O-rings

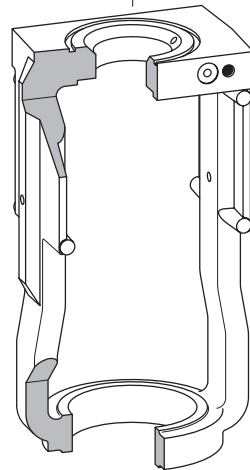


Lock nut



Yoke

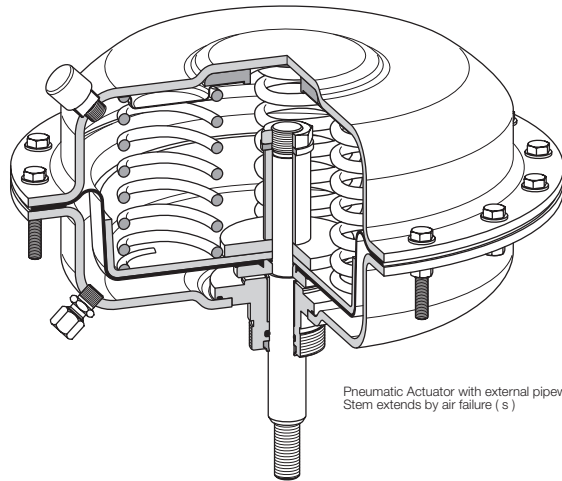
without yoke for valve type:
FoxPAK
FoxPAK ANSI



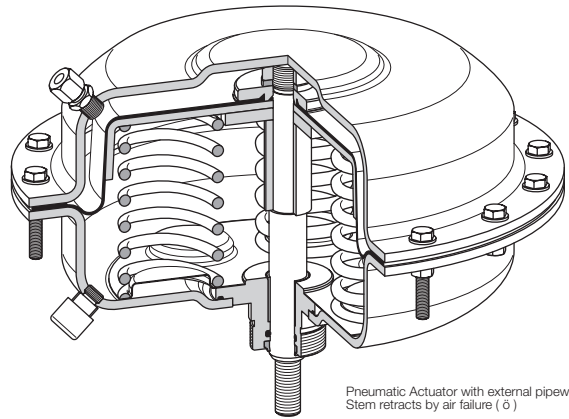
direct mounting-yoke
for valve type:
FoxTOP
FoxTOP ANSI

Within the series the following combinations of yoke and valve types are possible:

The System

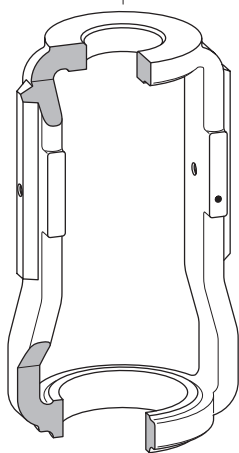
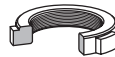


Pneumatic Actuator with external pipework -
Stem extends by air failure (s)

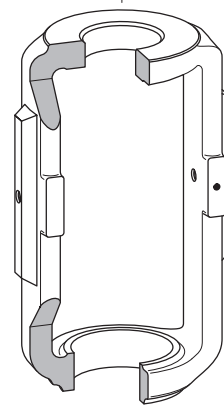


Pneumatic Actuator with external pipework -
Stem retracts by air failure (o)

Lock nut



NAMUR-yoke for
valve type:
FoxTop
FoxTop ANSI
FoxPLUS
VARI-COOL



NAMUR-yoke for
valve type:
Series 141
Series 161
Series 191

Technical data

Actuator size	Effective area (cm²)	Stroke (mm)	Spring ranges (bar)	Stem extends by air failure		max. air supply (bar)	max. force (N)	1,6	1,8				
				nec. air supply (bar)	max. force (N)								
127	125	20	0,2 - 1,0	1,2	250	6,0	6 250	750	1 000				
			0,5 - 1,9	2,1	625								
			1,0 - 2,4	2,6	1 250								
			1,5 - 2,7	2,9	1 875								
			2,0 - 4,8	5,0	2 500								
252	250	20	0,2 - 1,0	1,2	500	6,0	12 500	1 500	2 000				
			0,5 - 1,9	2,1	1 250								
			1,0 - 2,4	2,6	2 500								
			1,5 - 2,7	2,9	3 750								
			2,0 - 4,8	5,0	5 000								
350	350	20	0,2 - 1,0	1,2	700	6,0	17 500	2 100	2 800				
			0,5 - 1,9	2,1	1 750								
			1,0 - 2,4	2,6	3 500								
			1,5 - 2,7	2,9	5 250								
			2,0 - 4,8	5,0	7 000								
502	500	20	0,2 - 1,0	1,2	1 000	6,0	25 000	3 000	4 000				
			0,5 - 1,9	2,1	2 500								
			1,0 - 2,4	2,6	5 000								
			1,5 - 2,7	2,9	7 500								
			2,0 - 4,8	5,0	10 000								
		40	0,2 - 1,0	1,2	1 000					6,0	25 000	3 000	4 000
			0,5 - 1,9	2,1	2 500								
			1,0 - 2,4	2,6	5 000								
			1,5 - 2,7	2,9	7 500								
			2,0 - 4,8	5,0	10 000								
700	700	40	0,2 - 1,0	1,2	1 400	6,0	35 000	4 200	5 600				
			0,5 - 1,9	2,1	3 500								
			1,0 - 2,4	2,6	7 000								
			1,5 - 2,7	2,9	10 500								
			2,0 - 4,8	5,0	14 000								
		60	0,2 - 1,0	1,2	1 400					6,0	35 000	4 200	5 600
			0,5 - 1,9	2,1	3 500								
			1,0 - 2,4	2,6	7 000								
			1,5 - 2,7	2,9	10 500								
			2,0 - 4,8	5,0	14 000								
1500	1500	40	0,2 - 1,0	1,2	3 000	3,5	38 000	9 000	12 000				
			0,4 - 1,2	1,4	6 000								
			0,8 - 1,6	1,8	12 000								
			1,2 - 2,0	2,2	18 000								
		60	0,2 - 1,2	1,4	3 000					3,7	38 000	6 000	9 000
			0,4 - 1,4	1,6	6 000								
			0,8 - 1,8	2,0	12 000								
			1,2 - 2,2	2,4	18 000								
		80	0,2 - 1,5	1,7	3 000					4,0	38 000	1 500	4 500
			0,4 - 1,7	1,9	6 000								
			0,8 - 2,1	2,3	12 000								
			1,2 - 2,5	2,7	18 000								
		100	0,2 - 1,8	2,0	3 000					4,3	38 000		
			0,4 - 2,0	2,2	6 000								
			0,8 - 2,4	2,6	12 000								
			1,2 - 2,8	3,0	18 000								
3000	3000	60	0,2 - 1,2	1,4	6 000	2,5	38 000	12 000	18 000				
			0,4 - 1,4	1,6	12 000								
			0,8 - 1,8	2,0	24 000								
			1,2 - 2,2	2,4	36 000								
		80	0,2 - 1,5	1,7	6 000					2,8	38 000	3 000	9 000
			0,4 - 1,7	1,9	12 000								
			0,8 - 2,1	2,3	24 000								
			1,2 - 2,5	2,7	36 000								
		100	0,2 - 1,8	2,0	6 000					3,1	38 000		
			0,4 - 2,0	2,2	12 000								
			0,8 - 2,4	2,6	24 000								
			1,2 - 2,8	3,0	36 000								

ATTENTION: The max. air supply has picked out for a long operating life (38 000 N max. positioning force for the valve stem) !
Max. design pressure for the actuators 6 bar !

Positioning force

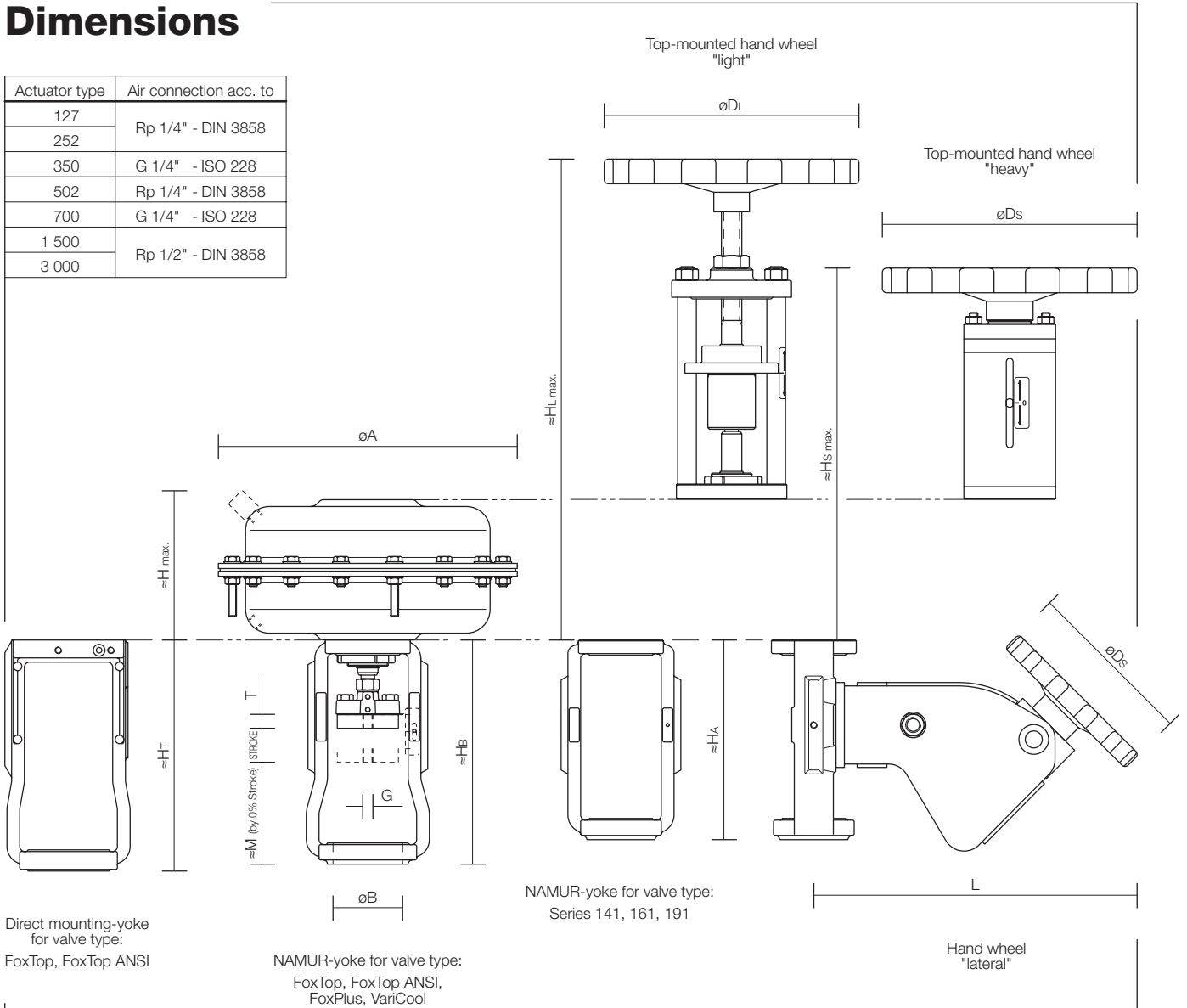
Stem retracts by air failure								
actual air supply (bar) / produced force (N)								
2,0	2,2	2,5	2,8	3,2	3,6	4,0	4,5	5,0
1 250	1 500	1 875	2 250	2 750	3 250	3 750	4 375	5 000
	375	750	1 125	1 625	2 125	2 625	3 250	3 875
2 500	3 000	3 750	4 500	5 500	6 500	7 500	8 750	10 000
250	750	1 500	2 250	3 250	4 250	5 250	6 500	7 750
3 500	4 200	5 250	6 300	7 700	9 100	10 500	12 250	14 000
350	1 050	2 100	3 150	4 550	5 950	7 350	9 100	10 850
5 000	6 000	7 500	9 000	11 000	13 000	15 000	17 500	20 000
500	1 500	3 000	4 500	6 500	8 500	10 500	13 000	15 500
5 000	6 000	7 500	9 000	11 000	13 000	15 000	17 500	20 000
500	1 500	3 000	4 500	6 500	8 500	10 500	13 000	15 500
7 000	8 400	10 500	12 600	15 400	18 200	21 000	24 500	28 000
700	2 100	4 200	6 300	9 100	11 900	14 700	18 200	21 700
7 000	8 400	10 500	12 600	15 400	18 200	21 000	24 500	28 000
700	2 100	4 200	6 300	9 100	11 900	14 700	18 200	21 700
15 000	18 000	22 500	27 000	33 000				
12 000	15 000	19 500	24 000	30 000	36 000			
12 000	15 000	19 500	24 000	30 000	36 000			
9 000	12 000	16 500	21 000	27 000	33 000			
7 500	10 500	15 000	19 500	25 500	31 500	37 500		
4 500	7 500	12 000	16 500	22 500	28 500	34 500		
3 000	6 000	10 500	15 000	21 000	27 000	33 000		
	3 000	7 500	12 000	18 000	24 000	30 000	37 500	
24 000	30 000							
18 000	24 000	33 000						
15 000	21 000	30 000						
9 000	15 000	24 000	33 000					
6 000	12 000	21 000	30 000					
	6 000	15 000	24 000	36 000				

Force in both home positions - only for Three way valves -	
nec. air (bar)	max. force (N)
2,4	625
3,4	1 250
4,2	1 875
2,4	1 250
3,4	2 500
4,2	3 750
2,4	1 750
3,4	3 500
4,2	5 250
2,4	2 500
3,4	5 000
4,2	7 500
2,4	2 500
3,4	5 000
4,2	7 500
2,4	3 500
3,4	7 000
4,2	10 500
2,4	3 500
3,4	7 000
1,6	6 000
2,4	12 000
3,2	18 000
1,8	6 000
2,6	12 000
3,4	18 000
2,1	6 000
2,9	12 000
3,7	18 000
2,4	6 000
3,2	12 000
4,0	18 000
1,8	12 000
2,6	24 000
3,4	36 000
2,1	12 000
2,9	24 000
3,7	36 000
2,4	12 000
3,2	24 000
4,0	36 000

Dimensions

Dimensions

Actuator type	Air connection acc. to
127	Rp 1/4" - DIN 3858
252	
350	G 1/4" - ISO 228
502	Rp 1/4" - DIN 3858
700	G 1/4" - ISO 228
1 500	Rp 1/2" - DIN 3858
3 000	



Direct mounting-yoke
for valve type:
FoxTop, FoxTop ANSI

NAMUR-yoke for valve type:
FoxTop, FoxTop ANSI,
FoxPlus, VariCool

Hand wheel
"lateral"

Leading dimensions / Yokes									Direct mounting-yoke FoxTop, FoxTop ANSI					NAMUR-yoke FoxTop, FoxTop ANSI, FoxPlus, VariCool					NAMUR-yoke Series 141, 161, 191						
Size	Stroke	øA	≈H	≈HL	øDL	≈Hs	≈L	øDs	≈HT	øB	≈M	G	T	≈Hb	øB	≈M	G	T	≈Ha	øB	≈M	G	T		
127	20	198	115	380	200	305		160																	
252	20	265	120	390		315			206	65	95	M12	23	200	65	95	M12	16		232					
350	20	305	180	450	250																				
502	20	352	175	580	300	450		250						228	65	95	M16	16	235	65	110	M10x1 M16x1,5	18		
	40			590		460																			
700	40	405	277						271	82	120	M16	25	264											
	60														325	82		M16 M20							
1 500	40	550	310																530	65	100	M16x1,5 M20x1,5	29		
	60						380	450							530										
	80																								
3 000	100																								
	60	550	570																						
	80						380	450							530	82	123	M20	29						
100																				530	65	110 100	M20x1,5	29	

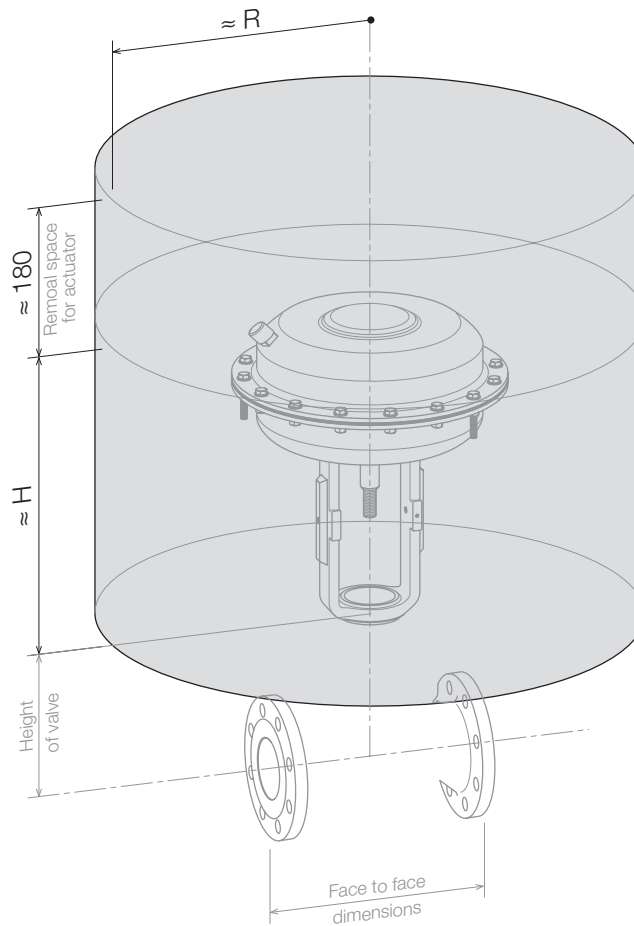
only for valve type FoxPlus !

Weights and Clearance Zone

Weights

Actuator size	approx. weight (kg) for actuator		
	without hand wheel	with top mounted hand wheel	with lateral mounted hand wheel
127	9	14,5	
252	14	20	
350	18	24	
502	29	38	
700	40		
1 500	115		170
3 000	145		200

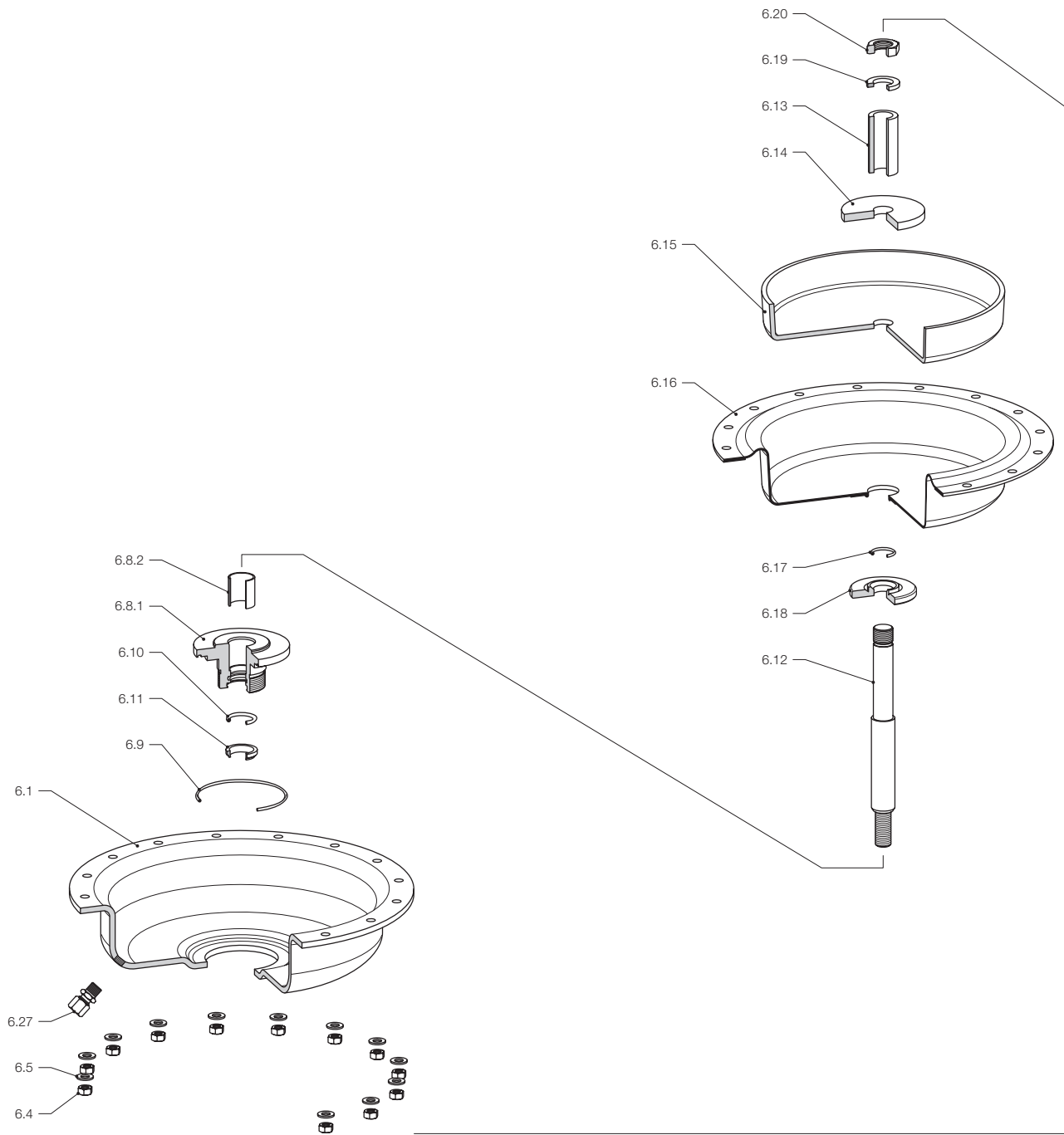
Minimum Clearance Zone

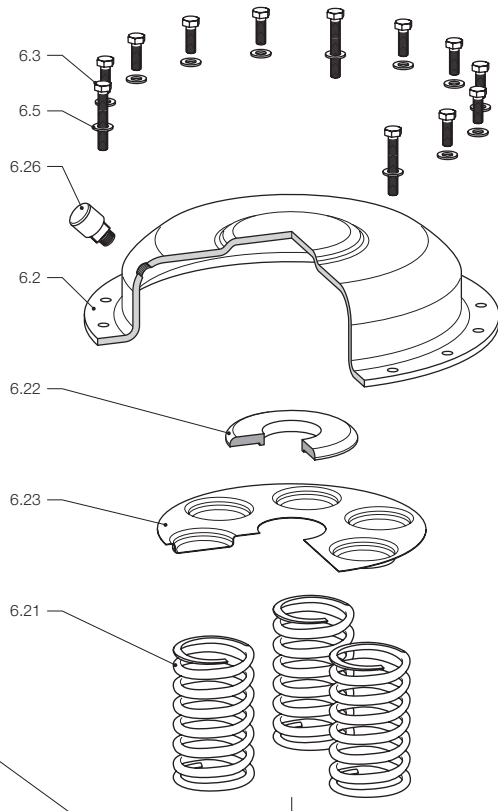


Actuator size	≈ R				≈ H	
	without accessories	accessories direct mounted	accessories NAMUR-mounted	with lateral mounted hand wheel	without hand wheel	with top mounted hand wheel
127	100	195	260		310	610
252	135	195	290		310	610
350	155	195	295		360	670
502	180	195	330		440	870
700	205	205	345		600	
1 500	275		415	450	840	
3 000	275		415	450	1100	

For face to face dimensions and height of valve see PSS-valve.

Parts List





Designation	Part	Materials	Spare Parts
Diaphragm Casing	6.1	1.0322 ²⁾	
Diaphragm Casing	6.2	1.0322 ²⁾	
Hexagon Bolt	6.3	A2-70	
Hexagon Nut	6.4	A2-70	
Plain Washer	6.5	A2	
Guide Bush	6.8.1	1.0736 ¹⁾	
Plain Bearing	6.8.2	-	
O-Ring	6.9	NBR 70	E
O-Ring	6.10	NBR 70	E
Scraper Ring	6.11	NBR 90	E
Actuator Stem	6.12	1.4571	
Spacer Bush	6.13	1.0308 ¹⁾	
Disk	6.14	1.0736 ¹⁾	
Diaphragm Plate	6.15	1.0332 ¹⁾	
Diaphragm	6.16	NBR 60	M
O-Ring	6.17	NBR 70	M
Thrust Washer	6.18	1.0736 ¹⁾	
Lock Washer	6.19	Federstahl	
Hexagon Nut	6.20	17H ¹⁾	
Actuator Spring	6.21	1.7102	
Distance Plate ³⁾	6.22	1.0736 ¹⁾	
Spring Adjusting Plate	6.23	1.0330.03 ¹⁾	
Vent Plug	6.26	Polyamid	
Fitting	6.27	-	

¹⁾ chromatised acc. to DIN 50 961 Fe/Zn 12C

²⁾ powder coating

³⁾ only for " stem extends by air failure "

M Diaphragm

E Gasket Set

Model-Code

Description	Model
IPS = Actuator for FoxPAK	IPS
Actuator Size:	
-127 = 125 cm ²	-127
-252 = 250 cm ²	-252
-350 = 350 cm ²	-350
-502 = 500 cm ²	-502
-700 = 700 cm ²	-700
Stroke:	
A = 20 mm	A
B = 40 mm	B
Spring Range:	
A = 0,2 - 1,0 bar	A
B = 0,5 - 1,9 bar	B
V = 1,5 - 2,7 bar	V
F = 2,0 - 4,8 bar	F
Operating on air failure:	
A = Stem retracts	A
Z = Stem extends	Z
Option:	
-N = Actuator without Accessories	-N
-P = with Positioner SRP 981	-P
-E = with Positioner SRD 992	-E
-I = with Positioner SRD 991	-I
-K = with Airset FRS 72	-K
-O = with Hand Wheel (not for 700)	-O

Description	Model
ITS = Actuator for FoxTOP DIN u. ANSI	ITS
Actuator Size:	
-127 = 125 cm ²	-127
-252 = 250 cm ²	-252
-350 = 350 cm ²	-350
-502 = 500 cm ²	-502
-700 = 700 cm ²	-700
Stroke:	
A = 20 mm	A
B = 40 mm	B
Spring Range:	
A = 0,2 - 1,0 bar	A
B = 0,5 - 1,9 bar	B
D = 1,0 - 2,4 bar	D
V = 1,5 - 2,7 bar	V
F = 2,0 - 4,8 bar	F
Operating on air failure:	
A = Stem retracts	A
Z = Stem extends	Z
Option:	
-N = Actuator without Accessories	-N
-P = with Positioner SRP 981	-P
-E = with Positioner SRD 992	-E
-I = with Positioner SRD 991	-I
-K = with Airset FRS 72	-K
-O = with Hand Wheel "light" (not for 700)	-O
-H = with Hand Wheel "heavy" (not for 700)	-H

Description	Model
PBS = Actuator for FoxTOP DIN u. ANSI	PBS
Actuator Size:	
-700 = 700 cm ²	-700
-1500 = 1500 cm ²	-1500
-3000 = 3000 cm ²	-3000
Stroke:	
B = 40 mm (not for 700)	B
C = 60 mm	C
D = 80 mm	D
Spring Range:	
A = 0,2 - 1,0 resp. x bar (also 1500 and 3000)	A
G = 0,4 - x bar (only 1500 and 3000)	G
B = 0,5 - 1,9 bar	B
M = 0,8 - x bar (only 1500 and 3000)	M
D = 1,0 - 2,4 bar	D
N = 1,2 - x bar (only 1500 and 3000)	N
V = 1,5 - 2,7 bar (not for 700 and Stroke 60)	V
F = 2,0 - 4,8 bar	F
Operating on air failure:	
A = Stem retracts	A
Z = Stem extends	Z
Option:	
-N = Actuator without Accessories	-N
-P = with Positioner SRP 981	-P
-E = with Positioner SRD 992	-E
-I = with Positioner SRD 991	-I
-K = with Airset FRS 72	-K
-O = with Hand Wheel "light" (not for 700)	-O
-H = with Hand Wheel "heavy" (not for 700)	-H
-S = with lateral mounted Hand Wheel (only 1500 and 3000)	-S

Description	Model
PDS = Actuator for FoxPLUS, VARI-COOL	PDS
Actuator Size:	
-252 = 250 cm ²	-252
-502 = 500 cm ²	-502
-700 = 700 cm ²	-700
-1500 = 1500 cm ²	-1500
-3000 = 3000 cm ²	-3000
Stroke:	
A = 20 mm	A
B = 40 mm	B
D = 80 mm	D
Spring Range:	
A = 0,2 - 1,0 (x) bar (also 1500 and 3000)	A
G = 0,4 - x bar (only 1500 and 3000)	G
B = 0,5 - 1,9 bar	B
M = 0,8 - x bar (only 1500 and 3000)	M
D = 1,0 - 2,4 bar	D
N = 1,2 - x bar (only 1500 and 3000)	N
V = 1,5 - 2,7 bar	V
F = 2,0 - 4,8 bar	F
Operating on air failure:	
A = Stem retracts	A
Z = Stem extends	Z
Option:	
-N = Actuator without Accessories	-N
-P = with Positioner SRP 981	-P
-E = with Positioner SRD 992	-E
-I = with Positioner SRD 991	-I
-K = with Airset FRS 72	-K
-O = with Hand Wheel "light" (not for 700)	-O
-H = with Hand Wheel "heavy" (not for 700)	-H
-S = with lateral mounted Hand Wheel (only 1500 and 3000)	-S

Description	Model
PAS = Actuator for Series 141, 161, 191	PAS
Actuator Size:	
-127 = 125 cm ²	-127
-252 = 250 cm ²	-252
-350 = 350 cm ²	-350
-502 = 500 cm ²	-502
-700 = 700 cm ²	-700
-1500 = 1500 cm ²	-1500
-3000 = 3000 cm ²	-3000
Stroke:	
A = 20 mm	A
B = 40 mm	B
D = 80 mm	D
E = 100 mm	E
Spring Range:	
A = 0,2 - 1,0 (x) bar (also 1500 and 3000)	A
G = 0,4 - x bar (only 1500 and 3000)	G
B = 0,5 - 1,9 bar	B
M = 0,8 - x bar (only 1500 and 3000)	M
D = 1,0 - 2,4 bar	D
N = 1,2 - x bar (only 1500 and 3000)	N
V = 1,5 - 2,7 bar	V
F = 2,0 - 4,8 bar	F
Operating on air failure:	
A = Stem retracts	A
Z = Stem extends	Z
Option:	
-N = Actuator without Accessories	-N
-P = with Positioner SRP 981	-P
-E = with Positioner SRD 992	-E
-I = with Positioner SRD 991	-I
-K = with Airset FRS 72	-K
-O = with Hand Wheel "light" (not for 700)	-O
-H = with Hand Wheel "heavy" (not for 700)	-H
-S = with lateral mounted Hand Wheel (only 1500 and 3000)	-S

SPM - Code

Type	DN	PN	Body/Cert.	Plug	Seat	kvs	Trim	Actuator	S
								PB 252 VOZ	

Model-code of the valve

Actuator size

Direct mounting-yoke I .

for FoxPak .P
for FoxTop DIN und ANSI .T

NAMUR-yoke P.

for FoxTop DIN und ANSI .B
for FoxPlus, VariCool .D
for Serie 141, 161, 191 .A

125 cm² . . 127
250 cm² . . 252
350 cm² . . 350
500 cm² . . 502
700 cm² . . 700
1500 cm² . . 1500
3000 cm² . . 3000

Spring Ranges
(not adjustable)

0,2 - 1,0 resp. X A
0,4 - x G
0,5 - 1,9 B
0,8 - x M
1,0 - 2,4 D
1,2 - x N
1,5 - 2,7 V
2,0 - 4,8 F

x = final spring value in bar, see page 4

without Hand Wheel O
with top mounted Hand Wheel "light" L
with top mounted Hand Wheel "heavy" H
with lateral Hand Wheel S

Operation*) on air failure

Stem retracted A
Stem extended Z

* Definition according to VDI/VDE 3844 - Draft is only possible in conjunction with the control valve.

The codes listed below must be noted when ordering spare parts.

Actuator (complete)	A
Diaphragm	M
Seals	E

When ordering an actuator without the valve, details of stroke, connection thread and required yoke are needed together with the code lettering information.