

## SRI983 Electro-Pneumatic Positioner – Explosion Proof / Intrinsically Safe



The SRI983 Positioner is for operation of pneumatic valve actuators from control systems and electrical controllers with electric control signals. It is used to reduce the adverse effects of valve friction, for higher thrust and shorter positioning time.

### FEATURES

- Independent adjustment of stroke range and zero
- Adjustable amplification and damping
- Split range up to 3-fold possible
- One version for 4-20 mA input
- Supply pressure up to 6 bar (90 psig)
- Low vibration effect in all directions
- Mounting according to IEC 534, part 6 (NAMUR)
- Rotation adapter for angles up to 120°
- Explosion protection:  
II 2 G Ex d and II 1 G Ex ia according to ATEX, or  
explosion proof, intrinsic safety acc. to FM / CSA
- EMC in accordance with the international  
standards and laws (CE)

## TECHNICAL DATA

### Input

Signal range . . . . . 4 ... 20 mA  
 Input resistance . . . . . < 260 Ω  
 Stroke range . . . . . 8 ... 100 mm (0.3 ... 4 in)  
 Angular range linear . . . . . 30 ° ... 120 °  
 equal percentage . . . . . 90 °; from 70 ° linear

### Output

Output to actuator . . . . . 0 ... 100 %  
 supply air pressure

### Supply

Supply air pressure . . . . . 1.4 ... 6 bar (20 ... 90 psig)  
 Air supply . . . . . according to ISO 8573-1  
 - Solid particle size and density class 2  
 - Oil rate class 3  
 - Pressure dew point 10 K under ambient temperature

The use of filter regulator for air supply of positioner is strongly recommended. It reduces the air pressure to actuator's maximum pressure and keeps it constant.

### Ambient conditions

Ambient temperature . . . . . -40 °C (-40 °F) to ...  
 (see page 3)  
 Relative humidity . . . . . up to 100 %  
 Operating conditions  
 as per IEC 654-1 . . . . . The device can be operated  
 at a class Dx location  
 Transport and storage  
 temperature . . . . . -40 ... 80 °C (-40 ... 176 °F)  
 Protection class  
 pneumatic part . . . . . IP 54  
 electrical part  
 ATEX . . . . . IP 65  
 FM + CSA . . . . . NEMA 4X

### Electromagnetic compatibility EMC

Operating conditions . . . . . industrial environment  
 Immunity according to  
 - NAMUR recommendation NE21 fulfilled  
 - EN 61 326 . . . . . fulfilled  
 - EN 61 000-6-2 . . . . . fulfilled  
 Emission according to  
 - EN 55 011,  
 Group 1, Class A . . . . . fulfilled  
 - EN 61 000-6-2 . . . . . fulfilled

### CE marking

Electromagnetic  
 compatibility . . . . . 2004/108/EC  
 Low-voltage regulation . . . . . not applicable

### Response characteristic<sup>1)</sup>

Amplification . . . . . adjustable  
 Sensitivity . . . . . < 0.1 % F.S.  
 Non-linearity (terminal  
 based adjustment) . . . . . < 1.0 % F.S.  
 Hysteresis . . . . . < 0.5 % F.S.  
 Supply air dependency . . . . . < 0.3 % / 0.1 bar (1.5 psi)  
 Temperature effect . . . . . < 0.5 % / 10 K

### Air consumption

supply air pressure	air consumption
single acting	
1.4 bar (20 psig) . . . . .	200 l <sub>n</sub> /h ( 7.1 scfh)
3.0 bar (45 psig) . . . . .	350 l <sub>n</sub> /h (12.4 scfh)
6.0 bar (90 psig) . . . . .	600 l <sub>n</sub> /h (21.2 scfh)
double acting	
1.4 bar (20 psig) . . . . .	300 l <sub>n</sub> /h (10.6 scfh)
3.0 bar (45 psig) . . . . .	500 l <sub>n</sub> /h (17.7 scfh)
6.0 bar (90 psig) . . . . .	950 l <sub>n</sub> /h (33.5 scfh)

### Air output

Load effect<sup>2)</sup> . . . . . -3 % for delivery flow  
 2 350 l<sub>n</sub>/h (83 scfh)  
 . . . . . +3 % for exhausted flow  
 1 900 l<sub>n</sub>/h (67 scfh)

supply air pressure	air output capacity
1.4 bar (20 psig) . . . . .	2 700 l <sub>n</sub> /h ( 95 scfh)
2.0 bar (30 psig) . . . . .	3 500 l <sub>n</sub> /h (124 scfh)
4.0 bar (60 psig) . . . . .	5 500 l <sub>n</sub> /h (194 scfh)
6.0 bar (90 psig) . . . . .	7 500 l <sub>n</sub> /h (265 scfh)

### Materials

Base plate, manifold, I/P-housing,  
 rotation adapter . . . . . Aluminum (Alloy No. 230)  
 finished with DD-varnish  
 Color gray or blue  
 Cover . . . . . impact resistant polyester  
 Color blue

All moving parts of  
 feedback system . . . . . 1.4305 / 1.4571  
 Mounting bracket . . . . . 1.4301

### Weight

single acting  
 without gauges . . . . . approx. 1.5 kg (3.3 lbs)  
 with gauges . . . . . approx. 1.7 kg (3.7 lbs)  
 double acting . . . . . approx. 1.7 kg (3.7 lbs)  
 attachment kit  
 for diaphragm actuators . . . . . approx. 0.3 kg (0.6 lbs)  
 for rotary actuators . . . . . approx. 0.5 kg (1.1 lbs)

Data measured according to VDI/VDE 2177

1) Data based on following parameters:  
 stroke 30 mm (1.28 in), range spring FES 628/1, feedback lever  
 effective length 117.5 mm (4.63 in), max. amplification,  
 supply air pressure 3 bar (45 psig)

2) measured at air supply 1.4 bar (20 psig) and 50 % of signal range

**Connection**

Pneumatic . . . . .	Female threads Q 1/4-18 NPT acc. to DIN 45 141
Electric	
Line entry	
Explosion protection	
acc. to ATEX EEx d . . .	Female thread M 20 x 1.5
acc. to FM and CSA . . .	Female thread Q 1/2-14 NPT
	Note the section "Safety requirements"
Terminals . . . . .	Screw terminals

**Mounting**

Type of mounting . . . . .	for attaching to diaphragm actuators acc. IEC 534-6 (NAMUR) . . . . . for attaching to rotary actuators
Mounting orientation . . . . .	any

**Gauges**

Indicating range	
Internal I/P-output . . . . .	0 ... 1.6 bar (0 ... 23 psig)
Output . . . . .	0 ... 10 bar (0 ... 150 psig)
Error limit . . . . .	class 1.6

**SAFETY REQUIREMENTS**

<b>Safety</b> . . . . .	safety class III
as per DIN EN 61010-1 (DIN IEC 61010-1) (VDE 0411 part 1)	
overvoltage category . . . . .	1
internal fuses . . . . .	none
external fuses . . . . .	Limitation of power supplies for fire protection has to be observed due to EN 61010-1 9.3. ff.

**Electrical Classification <sup>1) 2)</sup>****Type of protection "flameproof", ATEX**

Type of protection . . . . .	II 2 G Ex d IIB+H2 T6
Certificate of conformity . . . .	FM 14 ATEX 0022X
Ta=-40°C to +75°C	

**Type of protection "Intrinsically Safe", ATEX**

Type of protection . . . . .	II 1 G Ex ia IIC T4
Certificate of conformity . . . .	FM 14 ATEX 0022X
Ta=-55°C to +85°C	

**Type of protection "dust", ATEX**

Type of protection . . . . .	II 2 D Ex tD A21 IP65 T85°C
Certificate of conformity . . . .	FM 14 ATEX 0022X
Ta=-40°C to +75°C	

**Type of protection "non incensive", ATEX**

Type of protection . . . . .	II 3 G Ex nA nL IIC T6
Certificate of conformity . . . .	FM 14 ATEX 0023X
Ta=-55°C to +85°C	
Type of protection . . . . .	II 3 G Ex nL IIC T4
Certificate of conformity . . . .	FM 14 ATEX 0023X
Ta=-55°C to +85°C	

In the case of operation of the positioner in explosion hazardous areas with an ambient temperature of more than 60 °C, it must be ensured that the connecting cable and cable entry meet the increased thermal demands (max. ambient temperature plus 10 K).

Electrical connection with cable and wiring entry glands in accordance with special certification to explosion proof classification EN 50 018, using suitable cable and wiring or with conduit in accordance with special certification to explosionproof classification EN 50 018. A spark barrier sealing compound must be applied directly at the point of entry. See Certificate of Conformity EX EVE0103A-(de)(en)

**Explosion protection according to FM**

IS / I, II, III / 1 / ABCDEFG / T4
I / 0 / AEx ia IIC / T4
NI / I / 2 / ABCD / T4
S / II, III / 2 / EFG T4
XP / I / 1 / BCD / T6
DIP / II, III / 1 / EFG / T6
I / 1 / AEx d IIB+H2 / T6
II, III / 1 / AEx tD / 21 / T85°C
Type 4X, IP65

**Explosion protection according to CSA**

IS / I, II, III / 1 / ABCDEFG / T4
I / 0 / Ex ia IIC / T4
NI / I / 2 / ABCD / T4
S / II, III / 2 / EFG T4
XP / I / 1 / BCD / T6
DIP / II, III / 1 / EFG / T6
I / 1 / Ex d IIB+H2 / T6
Type 4X, IP65

1) With appropriate order only

2) National requirements have to be observed

**MODEL CODES SRI983**

<b>Electro-pneumatic Positioner</b>	<b>SRI983</b>							170715
<b>Version</b>								
Single Acting . . . . .		-B						
Double Acting . . . . .		-C						
<b>Input</b>								
Signal Range 4-20 mA . . . . .			-I					
<b>Mode of Action</b>								
Increasing Input Increases Output . . . . .				D				
Increasing Input Decreases Output. . . . .				R				
<b>Gauges</b>								
Without Gauges . . . . .					L			
Two Built-In Gauges (bar/psi) . . . . .	(a)				M			
<b>Electrical Certification</b>								
II 2G Ex d IIB+H2 T6 - II 2D Ex tD A21 IP65 T85°C . . . . .						EDZ		
II 1G Ex ia IIC T4 - II 2D Ex tD A21 IP65 T85°C . . . . .						E1Z		
II 3G Ex nA nL IIC T6 - II 3G Ex nL IIC T4 . . . . .						E3Z		
FM Approved For								
IS / I, II, III / 1 / ABCDEFG / T4; I / 0 / AEx ia IIC / T4; NI / I / 2 / ABCD / T4;								
S / II, III / 2 / EFG T4; XP / I / 1 / BCD / T6; DIP / II, III / 1 / EFG / T6;								
I / 1 / AEx d IIB+H2 / T6; II,III / 1 / AEx tD / 21 / T85°C; Type 4X, IP65. . . . .								
						FDZ		
CSA Approved For								
IS / I, II, III / 1 / ABCDEFG / T4; I / 0 / Ex ia IIC / T4; NI / I / 2 / ABCD / T4;								
S / II, III / 2 / EFG T4; XP / I / 1 / BCD / T6; DIP / II, III / 1 / EFG / T6;								
I / 1 / Ex d IIB+H2 / T6; Type 4X, IP65 . . . . .								
						CDZ		
Intrinsically safe and explosion proof . . . . . (d). . . . .								
						BRZ		
EAC Approved For Explosion Proof and Intrinsically Safe . . . . . (d). . . . .								
						EAC		
<b>Pneumatic Connection</b>								
Rear Facing NPT 1/4, Prepared For Linear Actuators . . . . .							N	
Down Facing NPT 1/4, Prepared For Rotary Actuators. . . . .							Q	
<b>Options</b>								
Certificate EN 10204-2.1 - Certificate of compliance with the order . . . . .								-1
New Generation SRI983 . . . . .	(b)							-N
<b>Tag No. Labeling</b>								
Stamped With Weather Resistant Color . . . . .								-G
Stainless Steel Label Fixed With Wire . . . . .								-L

Example Model Code: SRI983 -B I D L EDZ N -NL

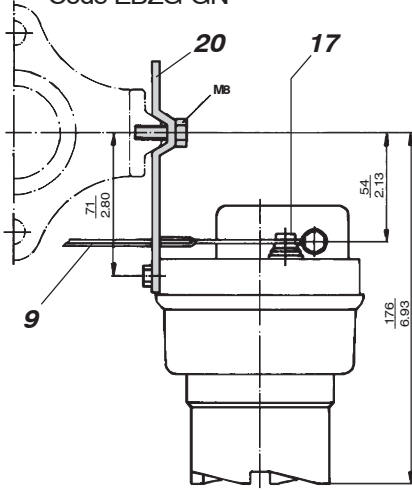
(a) Only available with Version -B  
 (b) ALWAYS (mandatory)  
 (d) Not released

**MODEL CODES Accessories**

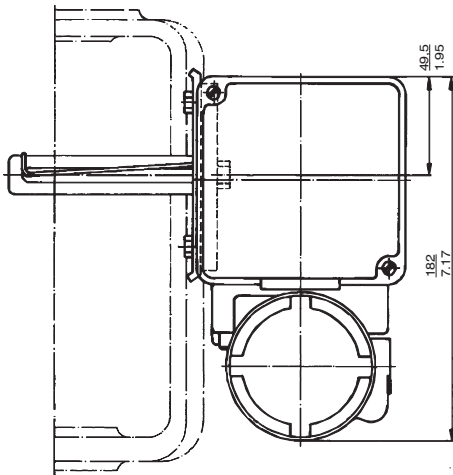
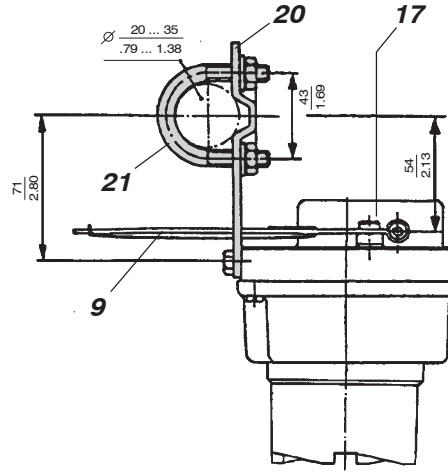
<b>Attachment Kit</b>	<b>EBZG</b>
For diaphragm actuators with casting yoke acc. NAMUR. (incl. standard Couple Lever) (for SRP981, <b>SRI983</b> , ...) . . . .	-GN
For diaphragm actuators with pillar yoke acc. NAMUR. (incl. standard Couple lever) (for SRP981, <b>SRI983</b> , ...) . . . .	-FN
For rotary actuators, without flange, 3 drill holes 6.5 mm (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985) . . . .	-PN
For rotary actuators, without flange, 4 threads M6 (e.g for Petras actuators) (for SRP981, <b>SRI983</b> , SRI986, ...) . . . .	-NN
For rotary actuators, with flange (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985) . . . . .	-JN
For rotary actuators acc. to VDI/VDE 3845, with shaft (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985). . . .	-ZN
For Masoneilan type Camflex II (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985). . . . .	-RN
For Masoneilan type Sigma F (for SRI986, SRP981, <b>SRI983</b> ) . . . . .	-SN
For Honeywell Air-O-Motor Type 05 (for SRI986, SRP981, <b>SRI983</b> ) . . . . .	-SA
For Masoneilan type 37/38, Fisher Elliott type 656, 667 (for SRP981, <b>SRI983</b> , SGE985, SMI983, SMP981) . . . . .	-TN
For Guide type P (for SRP981, <b>SRI983</b> ) . . . . .	-UN
For Masoneilan type 87/88 (for SRP981, <b>SRI983</b> , SMP981, SMI983, SGE985) . . . . .	-EN
For Masoneilan VariPak (for SRP981, <b>SRI983</b> , SGE985, SMI983, SMP981). . . . .	-MN
For IAL actuators (for SRP981, <b>SRI983</b> , SGE985, SMI983, SMP981) . . . . .	-VN
Brackets VDI/VDE 3845 (A = 130 mm/5.12 in; B = 50 mm/1.97 in) (for SRP981, <b>SRI983</b> , SRI986,SGE985,...) . . . . .	-C3
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 30 mm/1.18 in) (for SRP981, <b>SRI983</b> , SRI986, SGE985,...) . . . . .	-C2
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 20 mm/0.79 in) (for SRP981, <b>SRI983</b> , SRI986, SGE985, ...) . . . . .	-C1
<b>Couple Lever / Cam</b>	<b>EBZG</b>
Standard (a = 72 mm) (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985) . . . . .	-AN
Extended (a = 91 mm) (for SRP981, <b>SRI983</b> , SRI986, SMP981, SMI983, SGE985) . . . . .	-BN
Inverse equal percentage cam for rotary actuators (for SRP981, <b>SRI983</b> , SRI986) . . . . .	-CN
<b>Spring Set</b>	<b>FESG</b>
Range-Springs (4 pc.) (for SRP981, <b>SRI983</b> , SRI986) . . . . .	-FN

**ATTACHMENT KIT FOR DIAPHRAGM ACTUATORS**

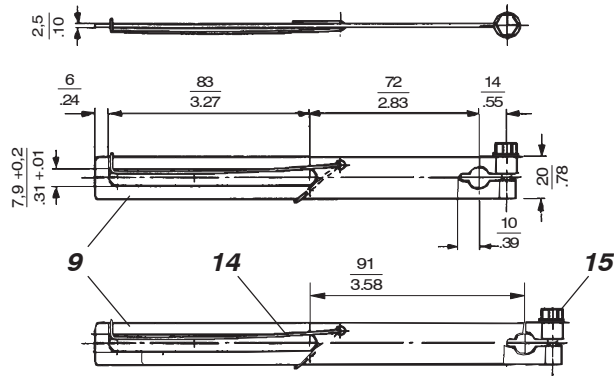
**Attachment to casting yoke**  
according to IEC 534-6 (NAMUR)  
Code EBZG-GN



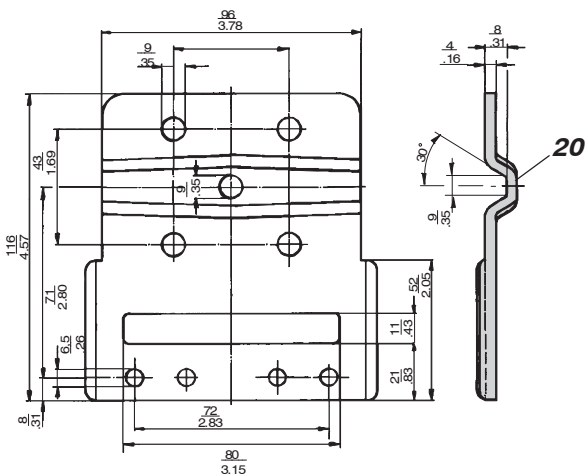
**Attachment to pillar yoke**  
according to IEC 534-6 (NAMUR)  
Code EBZG-FN



**Feedback lever**  
Code EBZG-AN, -FN, -GN  
Code EBZG-BN (extended version)

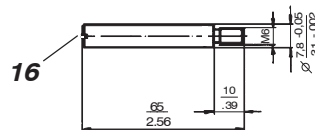


**Mounting bracket**  
according to IEC 534-6 (NAMUR)  
for Code EBZG-GN, FN



mm
in

**Carrier bolt**  
for attachment to valve stem



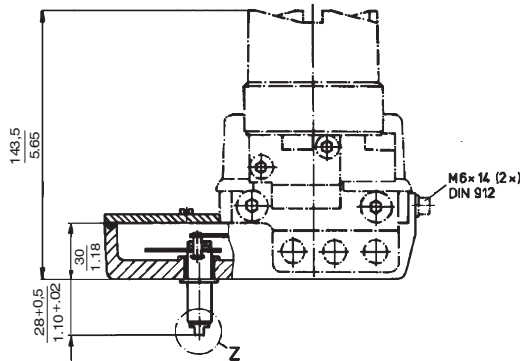
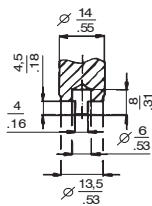
**ATTACHMENT KIT FOR ROTARY ACTUATORS**

**With shaft**

(according to VDI/VDE 3845)

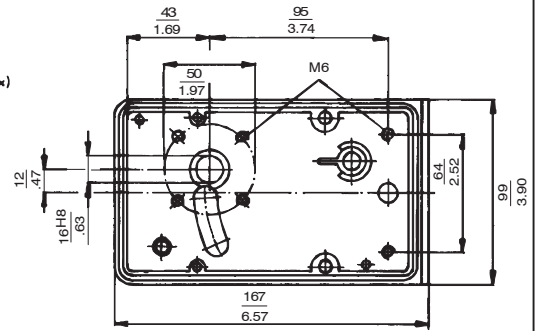
Code EBZG-ZN

**Detail Z**



**Housing dimensions**

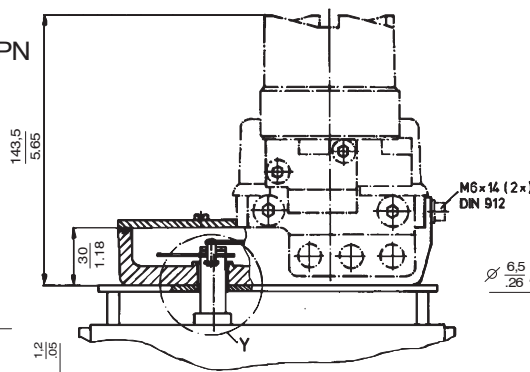
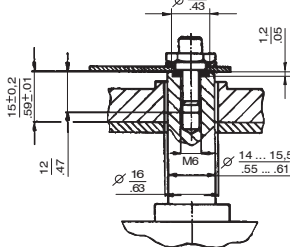
Attachment kit with shaft Code EBZG-ZN  
resp. without flange Code EBZG-NN



**Without flange**

Code EBZG-NN, -PN

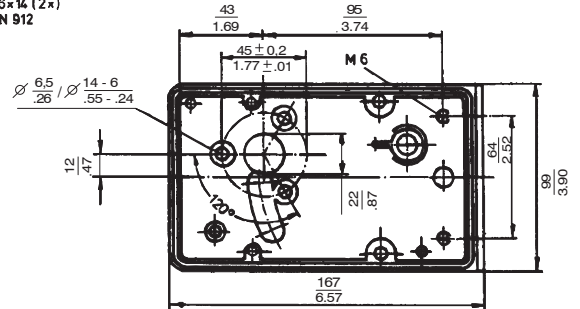
**Detail Y**



Adaption of the actuator drive shaft end and correct axial location by client !

**Housing dimensions**

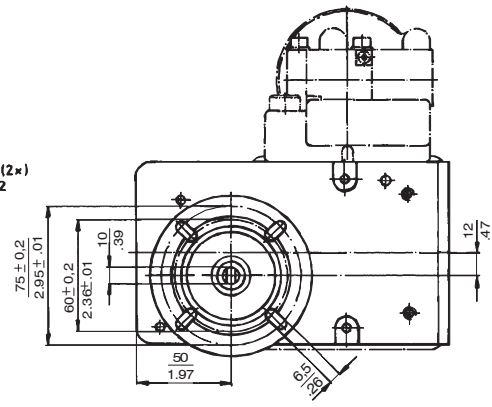
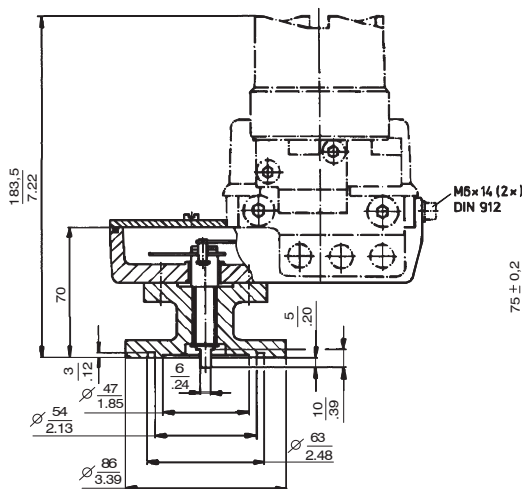
Attachment kit without flange  
Code EBZG-PN



**With flange**

Code EBZG-JN

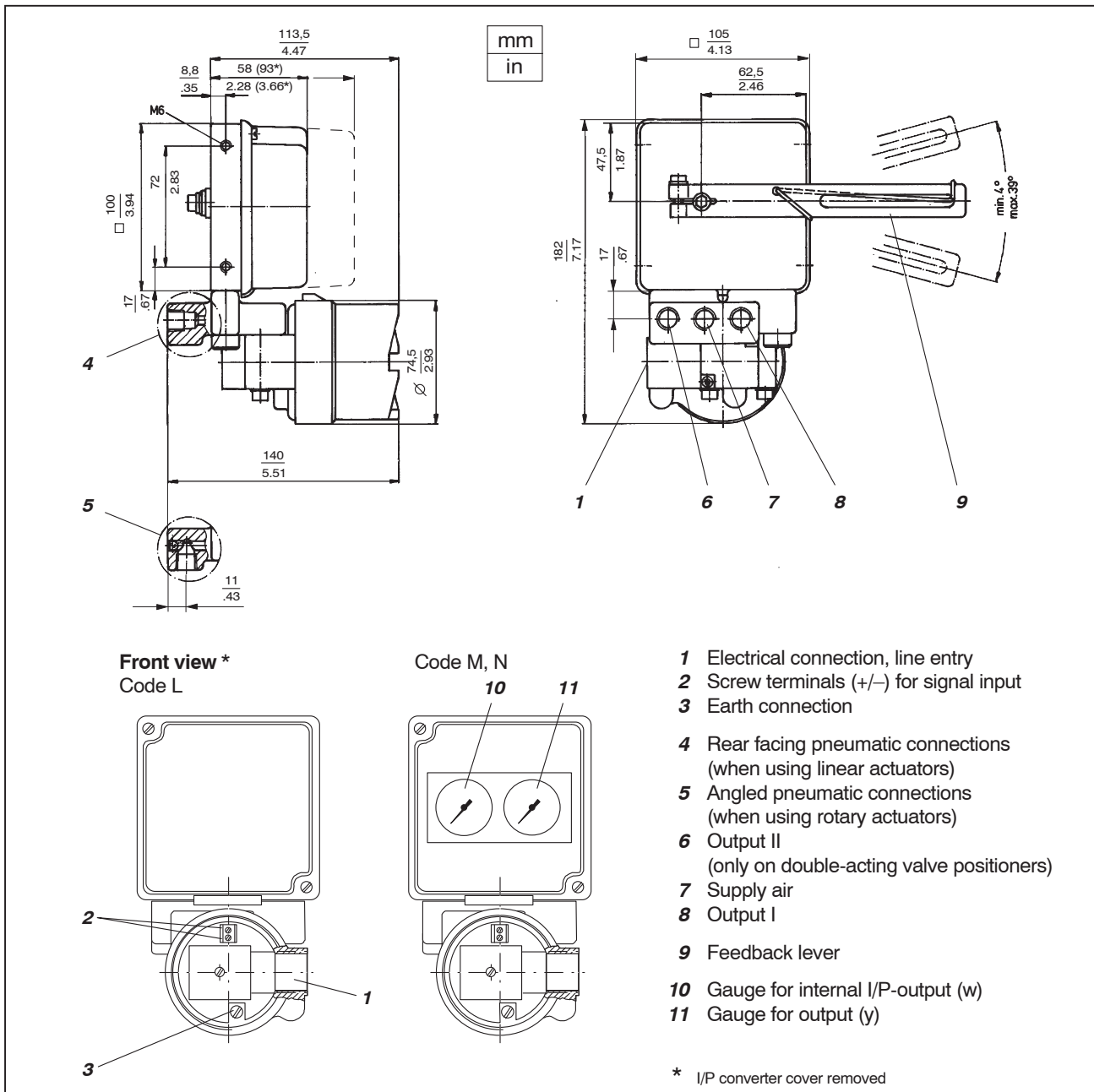
mm  
in



Rotation angle max 120°; torque requirement 14 Nm



## DIMENSIONS, CONNECTIONS



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