

## SMI983 Electrical Position Transmitter 4-20 mA



The electrical position transmitter SMI983 converts the linear or rotary movement of valve actuators into a 4 to 20 mA standard electrical signal.

### FEATURES

- Non-reactive conversion of stroke position into a load-independent 4 to 20 mA DC signal
- Two-wire circuit
- Easy adjustment of zero and span with two Push Buttons and two LEDs
- Wear free, highly linear scanning with conductive plastic precision potentiometer
- Mounting according to IEC 534, part 6 (NAMUR)
- Simple matching to strokes of 5 to 100 mm and, by means of rotary adaptor, to angular displacements of 30° to 120°
- Explosion protection: II 2 G EEx ia IIB/IIC T4/T6 according to ATEX
- EMC in accordance with the international standards and laws (CE)

## TECHNICAL DATA

### Input

Stroke . . . . .	5 to 100 mm with attachment kit for diaphragm actuators
Rotary angle . . . . .	30 to 120° with attachment kit for rotary actuators

### Output

Signal range . . . . .	4 to 20 mA / 20 to 4 mA or free configuration 3.3 to 23.5 mA
Permitted load . . . . .	$R_{bmax} = (U_s - 12 \text{ V}) / 0.02 \text{ A } [\Omega]$ ( $U_s$ = supply voltage)

### Power supply

Reverse polarity protection . .	standard feature
Supply voltage . . . . .	$U_s = \text{DC } 12 \text{ to } 36 \text{ V}$
Permitted ripple . . . . .	< 10 % p.p.
Supply voltage dependency .	negligible

### Response characteristic

Non-linearity (terminal based adjustment) . . . . .	< 1% F.S. <sup>1)</sup>
Hysteresis . . . . .	< 0.5% F.S. <sup>1)</sup>
Load dependency . . . . .	negligible
Temperature effect. . . . .	< 0.1 % / 10 K

### Ambient conditions

Operating conditions . . . . .	acc. to IEC 654-1
The device can be operated at a class Dx location.	
Ambient temperature	
Operation <sup>2)</sup> . . . . .	-40 ... 80 °C (-40 ... 176 °F)
Transport and storage . . .	-40 ... 80 °C (-40 ... 176 °F)
Storage conditions	
acc. to IEC 60721-3-1: . . .	1K5; 1B1; 1C2; 1S3; 1M2
Relative humidity . . . . .	up to 100 %
Protection class	
acc. to IEC 529. . . . .	IP 65

### Mounting

For attaching to diaphragm actuators acc. to DIN IEC 534-6 (NAMUR) and to rotary actuators acc. to VDI/VDE 3845. Further attachment kits are available, see TI EVE 0011. Mounting orientation. . . . . any

### Electric connection

Line entry . . . . .	1 or 2 cable glands M20x1.5 (others with Adapter AD-...)
Cable diameter . . . . .	6 to 12 mm (0.24 to 0.47 in)
Screw terminals . . . . .	Screw terminals for wires up to 2.5 mm <sup>2</sup> (AWG 14)

### Materials

Housing . . . . .	Aluminum (Alloy No. 230) finished with DD varnish
All moving parts of feedback system . . . . .	1.4305 / 1.4571
Mounting bracket . . . . .	1.4301

### Weight

SMI 983 . . . . .	approx. 0.7 kg (1.5 lbs)
Attachment kit for diaphragm actuators . . . . .	approx. 0.3 kg (0.6 lbs)
for rotary actuators . . . . .	approx. 0.5 kg (1.1 lbs)

### Configuration and status

local. . . . .	with local keys (two push buttons) and two LEDs
Status . . . . .	with the two LEDs

1) For feedback lever effective length 117.5 mm (4.63 in), stroke 30 mm (1.28 in)

2) Note the section "Explosion protection" on page 3 with respect to explosion protected equipment.

## SAFETY REGULATIONS

### Safety requirements

Safety . . . . . 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.

### 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 89/336/EWG  
 Low voltage regulations . . . . w/o Ex: 73/23/EWG fulfilled  
 (with Ex: not applicable)

### Explosion protection <sup>1) 2)</sup>

see Certificate or Conformity Ex EVE0102 C  
 Type of protection ATEX "Intrinsically safe"  
 Type AI633 . . . . . II 2 G EEx ib/ia IIB/IIC T4/T6  
 Temperature classes T4 / T6  
 EU Approval document No. PTB 02 ATEX 2153

For connections in hazardous areas with "intrinsically safe"  
 certified circuits, with the maximum values:

For temperature class T4 and a maximum ambient  
 temperature + 80 °C:

For  $U_i=30$  V,  $I_i=130$  mA,  $P_i=0.9$  W

Internal inductance and capacitance:

$L_i=9$   $\mu$ H,  $C_i$  to earth 10 nF or differential 6 nF

For temperature class T6 and a maximum ambient  
 temperature + 60 °C:

For  $U_i=22$  V,  $I_i=66$  mA,  $P_i=0.5$  W

Internal inductance and capacitance:

$L_i=9$   $\mu$ H,  $C_i$  to earth 10 nF or differential 6 nF

1) With appropriate order only

2) National installation regulations must be observed.

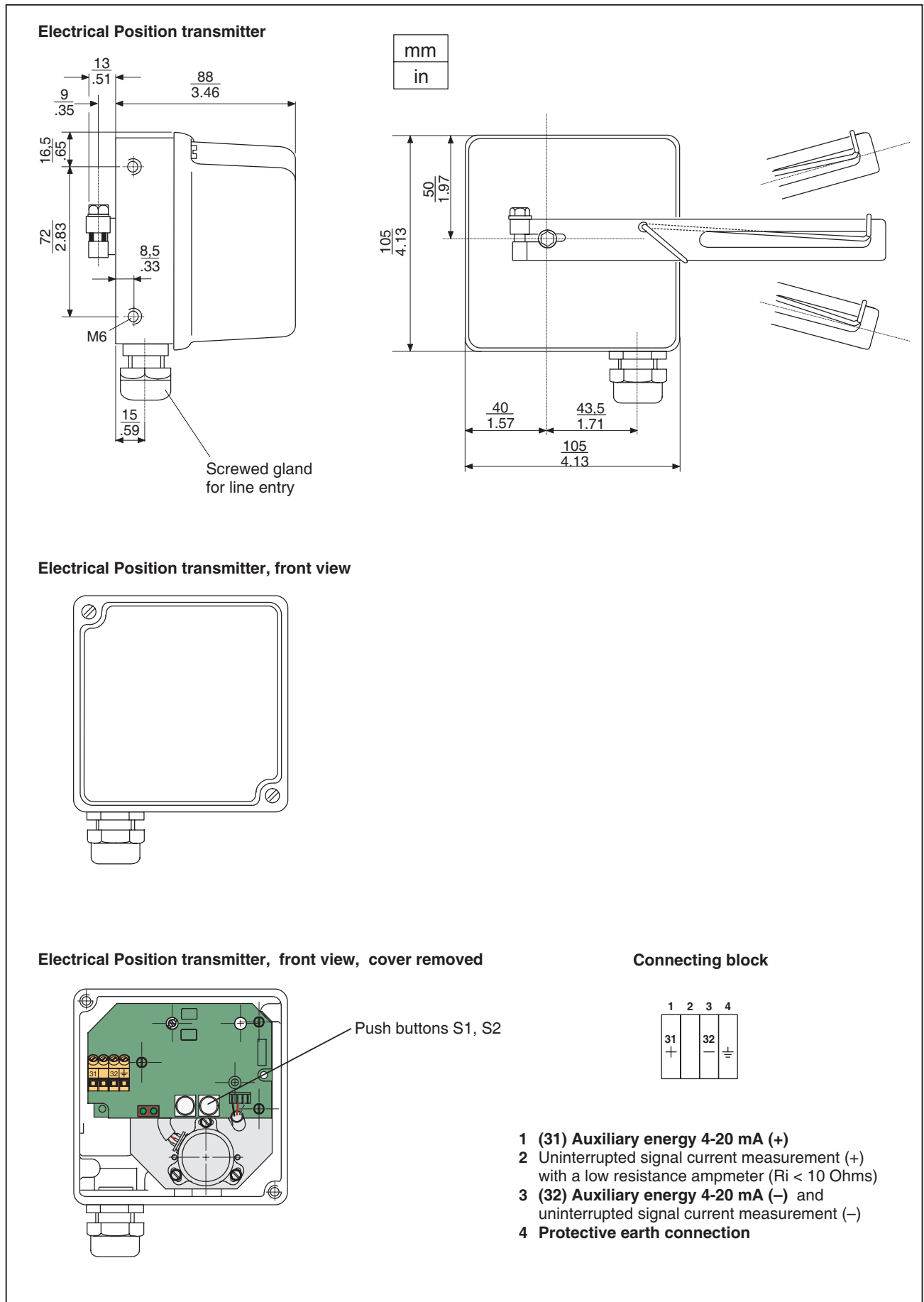
## MODEL CODES SMI983

<b>Electrical Position transmitter</b>	<b>SMI983</b>					011005
<b>Output</b>						
signal range 4 to 20 mA . . . . .		-I				
<b>Cable Entry</b>						
M20x1.5 plastic cable gland . . . . .			7			
<b>Explosion protection</b>						
II 2 G EEx ia IIC T6 according to ATEX . . . . .				EAA		
without . . . . .				ZZZ		
<b>Attachment kit</b>						
order as auxiliary . . . . .					N	
<b>Options</b>						
<b>Tag.No. Labeling</b>						
Stamped with weather resistant color . . . . .						-G
Stainless steel label fixed with wire . . . . .						-L
Auxiliary       see EVE9902						
Tube fittings   see EOO9001						
<b>Example:</b>		SMI983	-I	7	ZZZ	N -G

## MODEL CODES Accessories

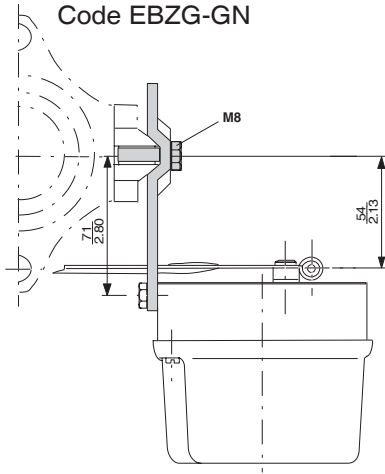
<b>Attachment kit</b>	<b>EBZG</b>	
for diaphragm actuators with casting yoke acc. to NAMUR (incl. standard Couple lever) . . . . .		-GN
(for SRP981, SRI983, SMP981, SMI983, SGE985)		
for diaphragm actuators with pillar yoke acc. to NAMUR (incl. standard Couple lever) . . . . .		-FN
(for SRP981, SRI983, SMP981, SMI983, SGE985)		
for rotary actuators, without flange, 3 drill holes 6.5 mm (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985) . . . . .		-PN
for rotary actuators, without flange, 4 threads M6 (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985) . . . . .		-NN
for rotary actuators, with flange (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985) . . . . .		-JN
for rotary actuators, with shaft (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985) . . . . .		-ZN
for Masoneilan type Camflex II (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985) . . . . .		-RN
<b>Couple lever / cam</b>		
standard (a = 72 mm) . . . . .		-AN
extended (a = 91 mm) . . . . .		-BN
inverse equal percentage cam for rotary actuators . . . . .		-CN
<b>Adapter (Material SS)</b>	<b>AD</b>	
Adapter (stainless steel) M20x1.5 to 1/2"-14NPT (internal thread) . . . . .		-A6
Adapter (stainless steel) M20x1.5 to PG 13.5 (internal thread) . . . . .		-A7
Adapter (stainless steel) M20x1.5 to G 1/2" (internal thread) . . . . .		-A8
Adapter (plastic) M20x1.5 to PG 13.5 (internal thread) . . . . .		-A9

**DIMENSIONS**

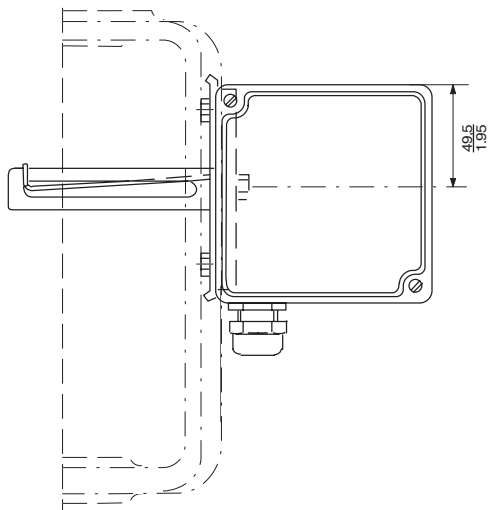
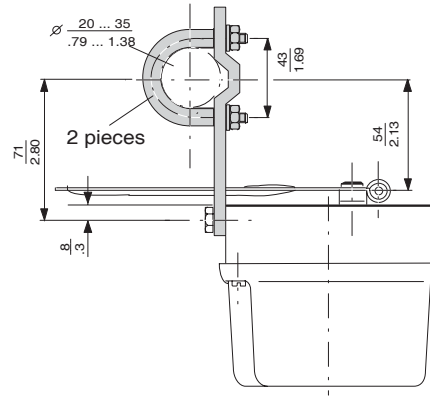


**ATTACHMENT KIT FOR DIAPHRAGM ACTUATORS**

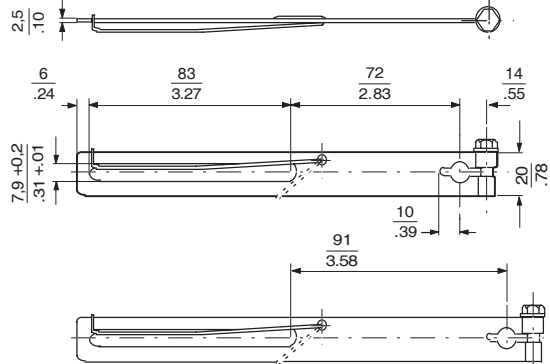
**Attachment to casting yoke**  
according to IEC 534-6 (NAMUR)  
Code EBZG-GN



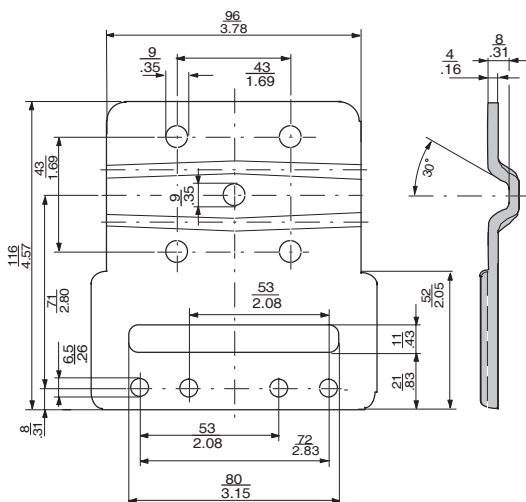
**Attachment to pillar yoke**  
according to IEC 534-6 (NAMUR)  
Code EBZG-FN



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

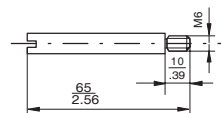


**Mounting bracket**  
according to IEC 534-6 (NAMUR)  
for Code EBZG-GN, FN



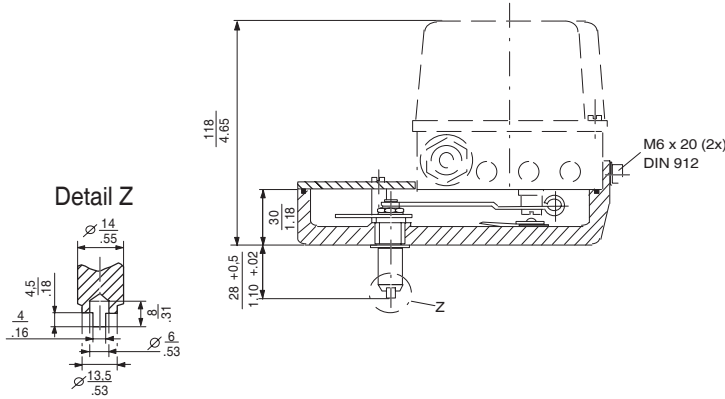
mm
in

**Carrier bolt**  
for attachment to valve stem

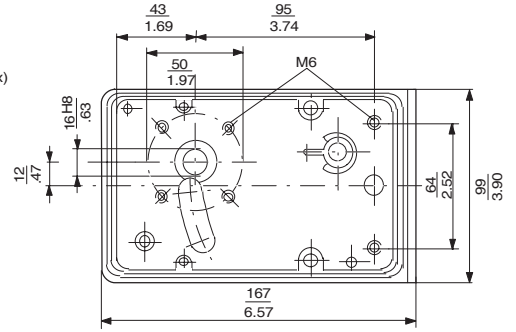


**ATTACHMENT KIT FOR ROTARY ACTUATORS**

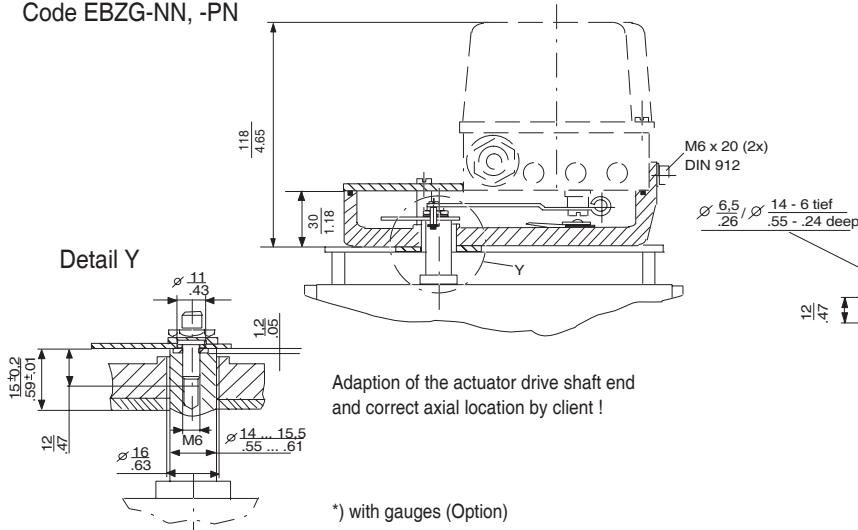
**With shaft**  
(according to VDI/VDE 3845)  
Code EBZG-ZN



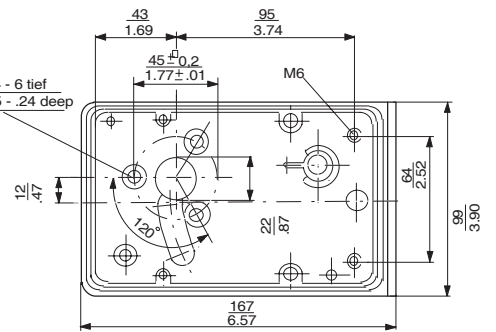
**Housing dimensions**  
Attachment kit with shaft  
resp. without flange  
Code EBZG-NN



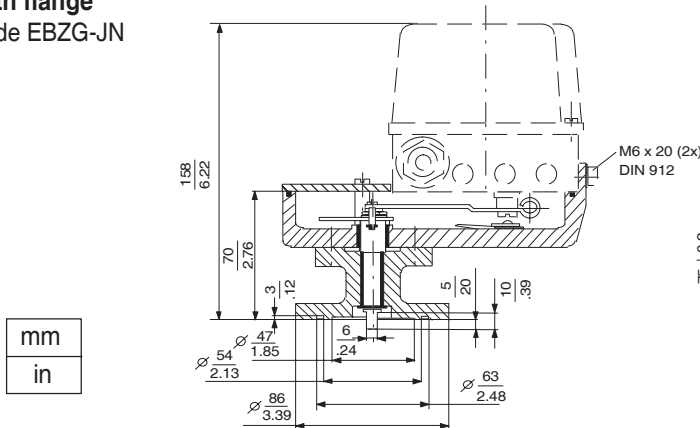
**Without flange**  
Code EBZG-NN, -PN



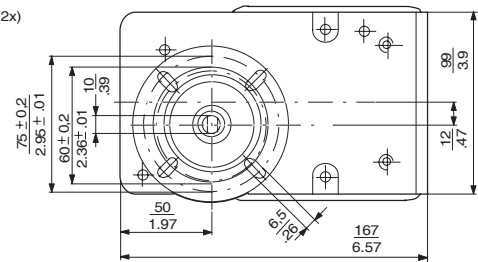
**Housing dimensions**  
Attachment kit without flange  
Code EBZG-PN



**With flange**  
Code EBZG-JN



mm
in



Rotation angle max 120°; torque requirement 14 Nm

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