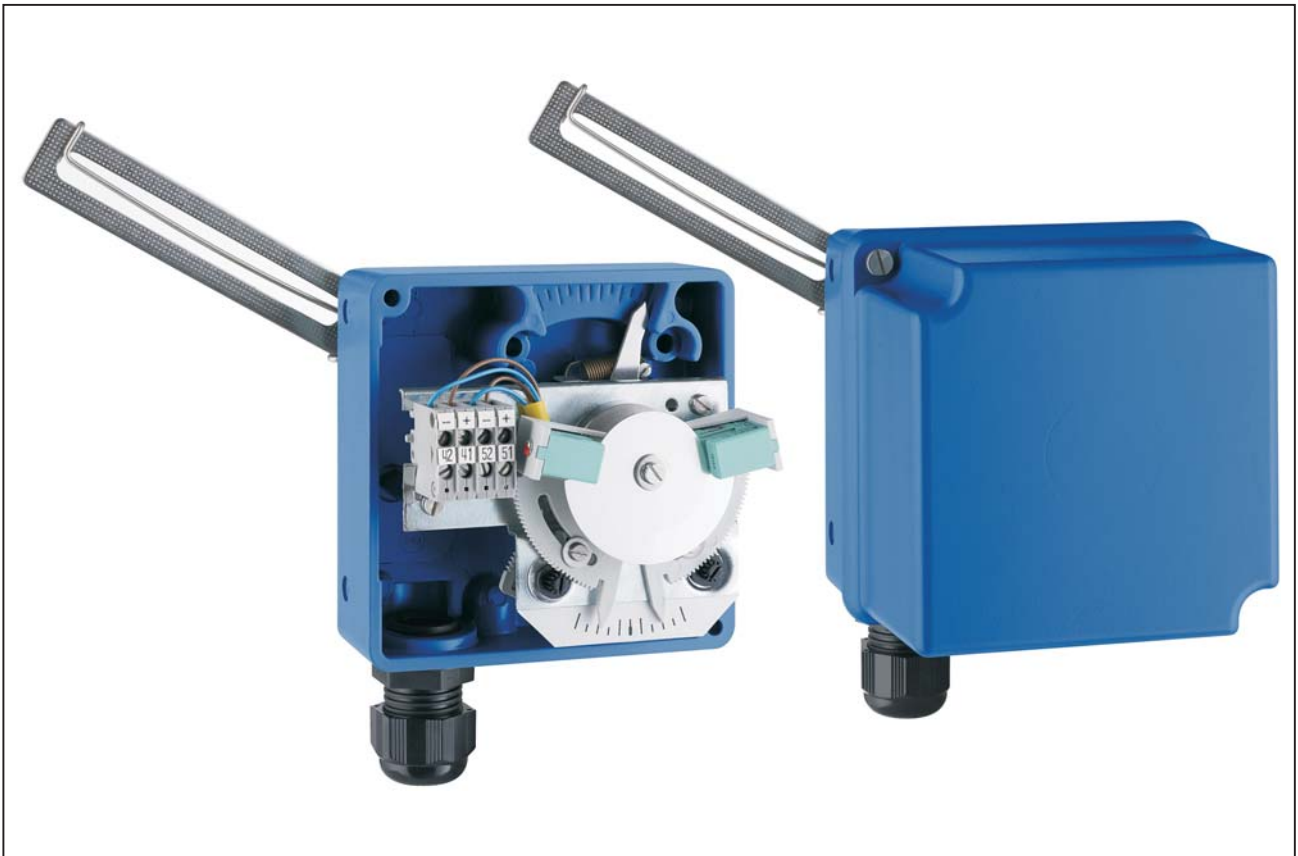


SGE985 Limit switch



Limit switch SGE985 serves as end position signaling of actuators and can be mounted to stroke actuators as well as to rotary actuators. It is constructed with inductive sensors or micro switches and signals exceeding or declining of two adjustable positions.

FEATURES

- Inductive limit switch according to DIN 19 234 resp. NAMUR or three-wire system
- Variable switching functions
- Precise switching points through adjustable transmission
- The switches can be set precisely, even with very small strokes – independently one of the other
- Designed for stroke valves
- Specially suitable for small strokes by using a movement amplification mechanism
- Robust design; low vibration effect in all directions
- Mounting according to DIN IEC 534 part 6 (NAMUR)
- Rotation adapter for angles up to 120 °
- Explosion protection:
II 2 G EEx ib/ia IIB/IIC T4/T6 according to ATEX, class I, zone 0 or 1, groups IIC, IIB, IIA
class I, division 1, groups A, B, C, D, acc. to CSA;
Explosion protection according to CU TR
- EMC in accordance with international standards and laws (CE)

TECHNICAL DATA

Input

Stroke up to 100 mm with standard attachment kit for diaphragm actuators; for larger stroke please consult us
 Rotary angle up to 120 ° with attachment kit for rotary actuators

Output Inductive Limit Switch, two-wire system Code S, T

Output 2 inductive proximity sensors acc. to DIN 19 234 resp. NAMUR for connection to a switching amplifier with intrinsically safe control circuit ¹⁾²⁾³⁾
 Code S . . Sensors SJ3.5-N from Pepperl+Fuchs
 Code T . . Sensors SJ3.5-SN from Pepperl+Fuchs
 Code T + ECEP EP0094 . . Sensors SJ3.5-S1N from Pepperl+Fuchs

Current consumption

Vane clear > 3 mA
 Vane interposed < 1 mA

for control circuit with the following electrical values

Supply voltage DC 8 V, R_i approx. 1 kΩ
 Residual ripple < 5 %
 Internal inductance 160 μH
 Internal capacitance 20 nF

Perm. line resistance < 100 Ω
 Switching differential ⁶⁾ < 1 %

Explosion protection ⁷⁾ see page 3

Output Inductive limit switch, three-wire system Code U

Output 2 inductive proximity sensors, three-wire system, contact, PNP ²⁾⁴⁾, LED indication
 Code T . . Sensors SB3.5-E2 from Pepperl+Fuchs
 Supply voltage U_s DC 10 to 30 V
 Residual ripple ± 10 %, U_s = 30 V
 Switching frequency 2 kHz
 Constant current 100 mA
 Switching differential < 1 %

Output Limit switch assy. with micro switches Code V

Output 2 micro switches ²⁾⁵⁾
 Code V . . Switch V4NT7UL from Saia Burgess
 Connected load, alternating current
 Switching capacity max. 250 VA
 Switching voltage max. 50 V
 Switching current with
 ohmic resistance max. 5 A
 inductive resistance max. 2 A
 Bulb, metal filament max. 0.5 A
 Connected load, direct current

Switching voltage	Ohmic load	Inductive load
max. 30 V	max. 5 A	max. 3 A
max. 50 V	max. 1 A	max. 1 A

Switching differential < 2.5 %

Response characteristic ⁶⁾

Gain continuously adjustable from 1:1 to approx. 7:1
 Switching point repeatability < 0.2 %

Ambient conditions ⁷⁾

Temperature Code S -25 to 85 °C / -13 to 185 °F
 Code T -40 to 85 °C / -40 to 185 °F
 Code U -25 to 70 °C / -13 to 158 °F
 Code V -40 to 85 °C / -40 to 185 °F
 Relative humidity up to 100 %
 Transport and storage temperature -40 to 85 °C / -40 to 185 °F
 Protection class IP 65

The device can be operated at a class D1 location according to DIN IEC 654, part 1 ⁷⁾.

Mounting

For attaching to diaphragm actuators acc. to DIN IEC 534-6 (NAMUR) and to rotary actuators acc. to VDI/VDE 3845
 Mounting orientation any

Electric connection

Line entry 1 cable gland 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 mm² (AWG 14)

Materials

Housing and cover Aluminum (Alloy No. 230) finished with DD varnish
 Control vanes Aluminium
 Setting mechanism Fibre glass reinforced polyamid
 Transmission shaft 1.4571
 Mounting bracket 1.4301

Weight

SGE985 approx. 0.6 kg (1.3 lbs)

- For the standard version Code S one switching amplifier is required, For the security version Code T a fail-safe amplifier for each inductive proximity sensor is required.
- Operating mode min. (=low) / max. (=high) selectable by adjustment of switch vanes.
- Operating mode normally closed circuit / normally open circuit selectable at switch amplifier output.
- Contact closed within the positive range.
- Contact open within the positive range.
- For feedback lever effective length 117.5 mm (4.63 in), stroke 30 mm (1.28 in) and maximum gain.
- For security version: lower temperature limit -40°, and operating location at a class D2 location. For this version a fail-safe amplifier for each inductive proximity sensor is required, eg Pepperl+Fuchs WE 77/Ex-SH-03

SAFETY REGULATIONS

ATEX Explosion protection

inductive proximity sensor . . . Type SJ 3,5-N resp.
 Type SJ 3,5-SN
 (security version)
 Type of protection II 2 G EEx ib/ia IIB/IIC T4/T6
 Certificate of conformity PTB 02 ATEX 2153 (Option
 Limit switch)

For operation in certified intrinsically safe circuits with the following maximum values:

- U_{max} 16 V
- I_{max} 25 mA
- P_{max} 64 mW
- Internal inductance 100 µH
- Internal capacitance 30 nF

The certificate of conformity refers to the inductive sensor installed. Mounting conforms to the stipulations of the certificate and the mounting conditions.

CSA Explosion protection

class I, zone 0 or 1, groups IIC, IIB, IIA
 class I, division 1, groups A, B, C, D, acc. to CSA

CE marking

Electromagnetic compatibility 2004/108/EC
 Low voltage regulations w/o Ex: 73/23/EWG fulfilled
 (with Ex: not applicable)

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

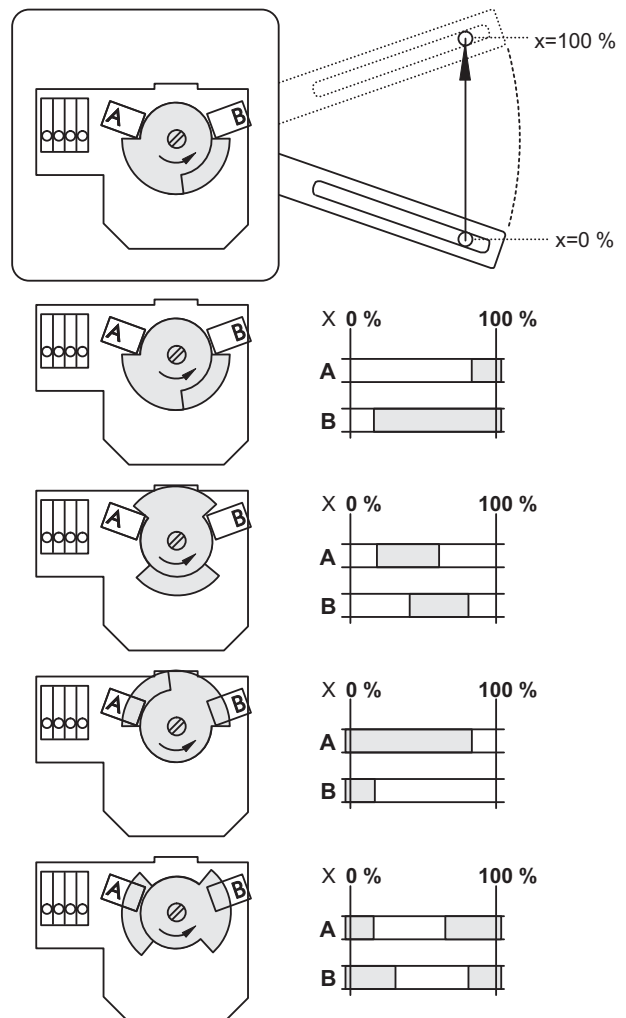
Safety requirements

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.

SWITCHING FUNCTIONS

The switching functions may be freely selected and set. The control vanes may be adjusted as desired in order to reach the wanted switching behavior. The illustration here shows the four basic settings and adjacent the respective switch behavior (gray=immersed vane). The examples are based on the following setting: Mounting left=feedback level right; transmission is selected so that at stroke x from 0 to 100 % the guidance shaft travels through a rotary angle of 180°. Illustrated in resting position x = 0%.

2-wire technique: If control vane is immersed the initiator power circuit becomes high-ohmic.
 3-wire technique: If control vane is immersed the contact is closed against plus.
 Micro switch: Contact opens during passing of the control vanes.



1) National installation regulations must be observed.

MODEL CODES SGE985

Limit switch	SGE985				170314
Version					
Inductive Limit Switch (Standard Version)	-S				
Inductive Limit Switch (Security Version)	-T				
Inductive Limit Switch (Three-Wire Version), without Explosion Protection . (b)	-U				
Two Micro Switches, without Explosion Protection. (b)	-V				
Cable Entry					
M20 x 1.5 With One Plastic Cable Gland, Color Gray		7			
Electrical certification					
II 2 G EEx ia IIC T6 acc. to ATEX			EAA		
CSA Approved For Intrinsic Safety Class I, Zone 0 or 1, Groups IIC, IIB, IIA and Class I, Division 1, Groups A, B, C, D, Hazardous Locations Indoors And Outdoors.			CAA		
EAC Approved for Intrinsic Safety.			EAC		
without			ZZZ		
Attachment kit					
Order as auxiliary				N	
Options					
Certificate EN 10204-2.1 - Certificate of compliance with the order					-1
SIL2 for SJ3.5-SN Limit Switch / SIL3 in combination of P+F fail safe interface (for Version -T)					-Q
Tag.No. Labeling: Stamped with weather resistant color					-G
Tag.No. Labeling: Stainless steel label fixed with wire.					-L
Example:	SGE985	-S	7	ZZZ	N -G
(b) Only available with Electrical certification: ZZZ					

MODEL CODES ACCESSORIES

Attachment kit		EBZG
For diaphragm actuators with casting yoke acc. NAMUR. (incl. standard Couple Lever) (for SRP981, SRI983, SMP981, SMI983, SGE985)		-GN
For diaphragm actuators with pillar yoke acc. NAMUR. (incl. standard Couple lever) (for SRP981, SRI983, SMP981, SMI983, SGE985)		-FN
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 (e.g for Petras actuators) (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985).		-NN
For rotary actuators, with flange (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-JN
For rotary actuators acc. to VDI/VDE 3845, with shaft (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985).		-ZN
For Masoneilan type Camflex II (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985).		-RN
For Masoneilan type 37/38, Fisher Elliott type 656, 667 (for SRP981, SRI983, SGE985 , SMI983, SMP981)		-TN
For Masoneilan type 87/88 (for SRP981, SRI983, SMP981, SMI983, SGE985)		-EN
For Masoneilan VariPak (for SRP981, SRI983, SGE985 , SMI983, SMP981).		-MN
For IAL actuators (for SRP981, SRI983, SGE985 , SMI983, SMP981)		-VN
Brackets VDI/VDE 3845 (A = 130 mm/5.12 in; B = 50 mm/1.97 in) (for SRP981, SRI983, SRI986, SGE985 , SMI983, SMP981).		-C3
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 30 mm/1.18 in) (for SRP981, SRI983, SRI986, SGE985 , SMI983, SMP981)		-C2
Brackets VDI/VDE 3845 (A = 80 mm/3.15 in; B = 20 mm/0.79 in) (for SRP981, SRI983, SRI986, SGE985 , SMI983, SMP981)		-C1
Couple Lever / Cam		
Standard (a = 72 mm) (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-AN
Extended (a = 91 mm) (for SRP981, SRI983, SRI986, SMP981, SMI983, SGE985)		-BN
Inverse equal percentage cam for rotary actuators (for SRP981, SRI983, SRI986)		-CN
Adapter		AD
Adapter 1/2" NPT to 3/4" NPT (stainless steel)		-A3
Adapter M20 x 1.5 to G1/2" (internal thread) (stainless steel)		-A8
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (brass with nickel coating)		-A5
Adapter M20 x 1.5 to 1/2" - 14 NPT (internal thread) (stainless steel)		-A6
Adapter (plastic) M20 x 1.5 to PG13.5 (internal thread)		-A9

DIMENSIONS

Limit switch

mm
in

Limit switch, front view

Limit switch, front view, cover removed

Connecting block

2 wire technique

A	B
42	51
41	52

3 wire technique

+	-	A	B
1	2	3	4
+	-		

micro switch

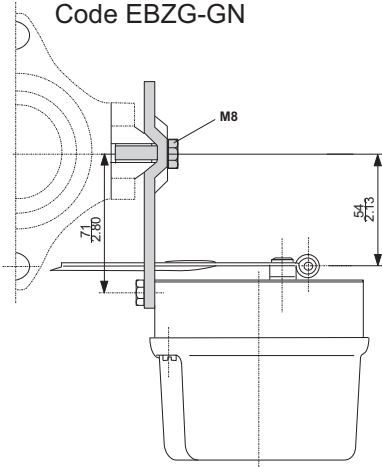
A	B
42	51
41	52

Probe **A**: 1 - / 2 +
 Probe **B**: 3 - / 4 +

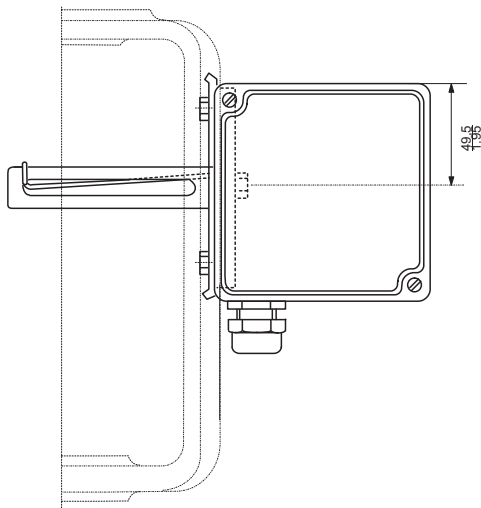
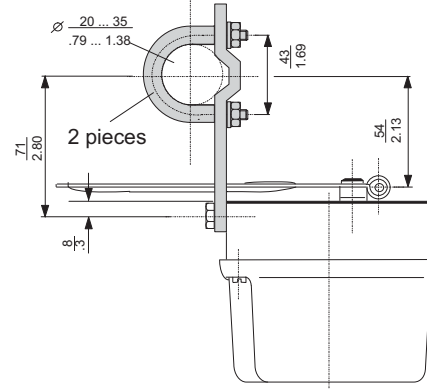
1 Line entry via screwed gland

ATTACHMENT KIT FOR DIAPHRAGM ACTUATORS

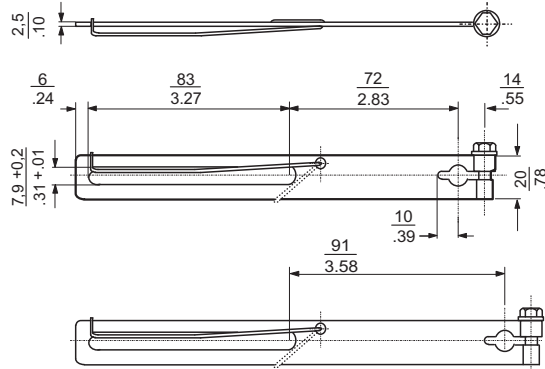
Attachment to casting yoke
according to IEC 534-6 (NAMUR)
Code EBZG-GN



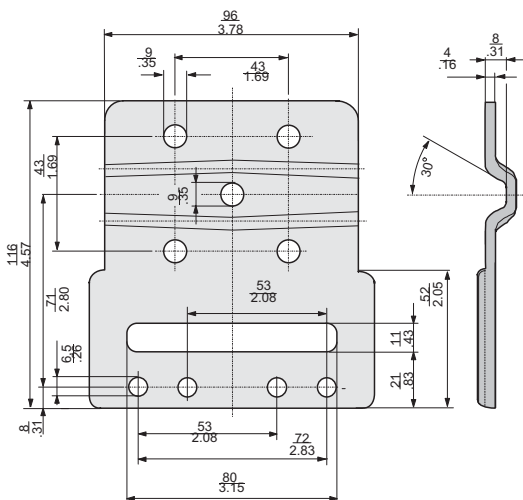
Attachment to pillar yoke
according to IEC 534-6 (NAMUR)
Code EBZG-FN



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

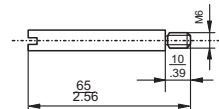


Mounting bracket
according to IEC 534-6 (NAMUR)
for Code EBZG-GN, FN



mm
in

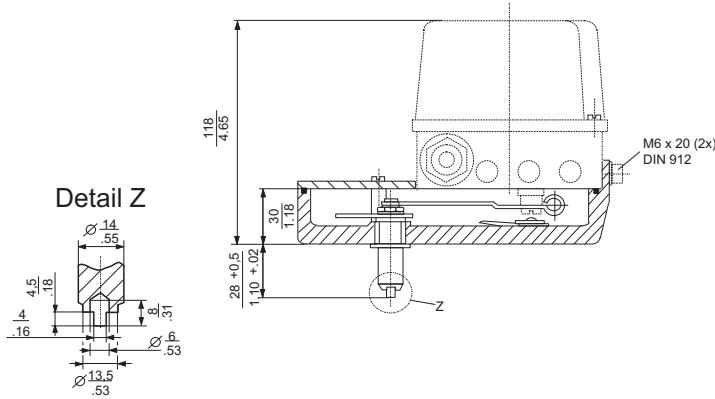
Carrier bolt
for attachment to valve stem



ATTACHMENT KIT FOR ROTARY ACTUATORS

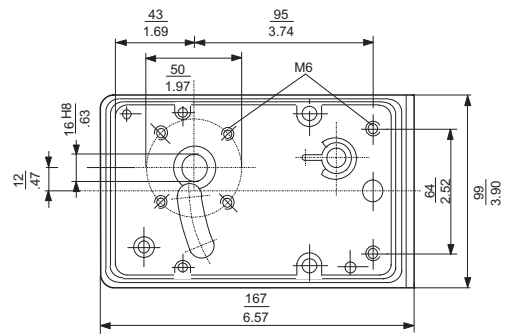
With shaft

(according to VDI/VE 3845)
Code EBZG-ZN



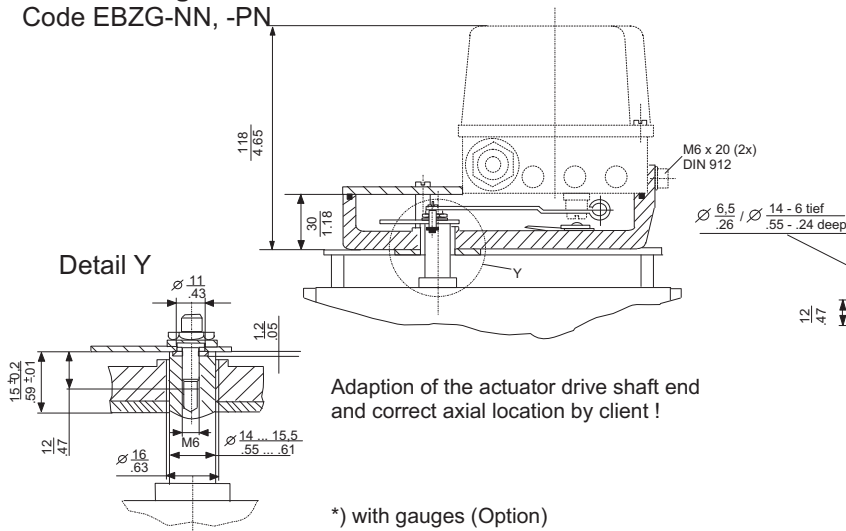
Housing dimensions

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



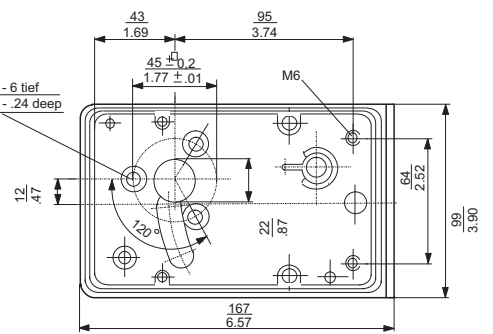
Without flange

Code EBZG-NN, -PN



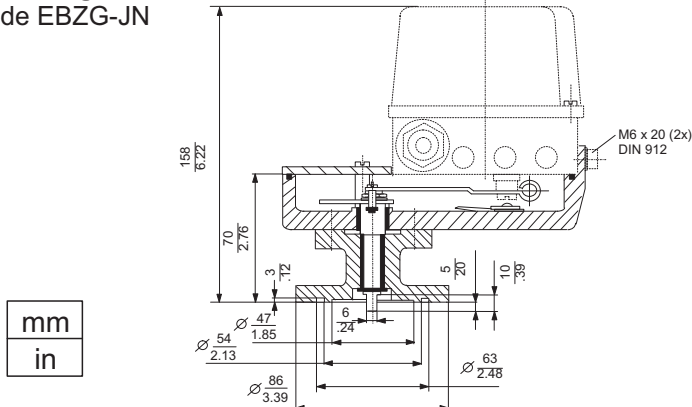
Housing dimensions

Attachment kit without flange
Code EBZG-PN

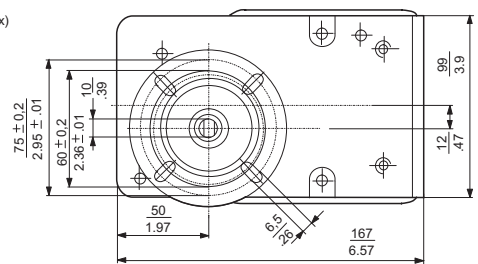


With flange

Code EBZG-JN

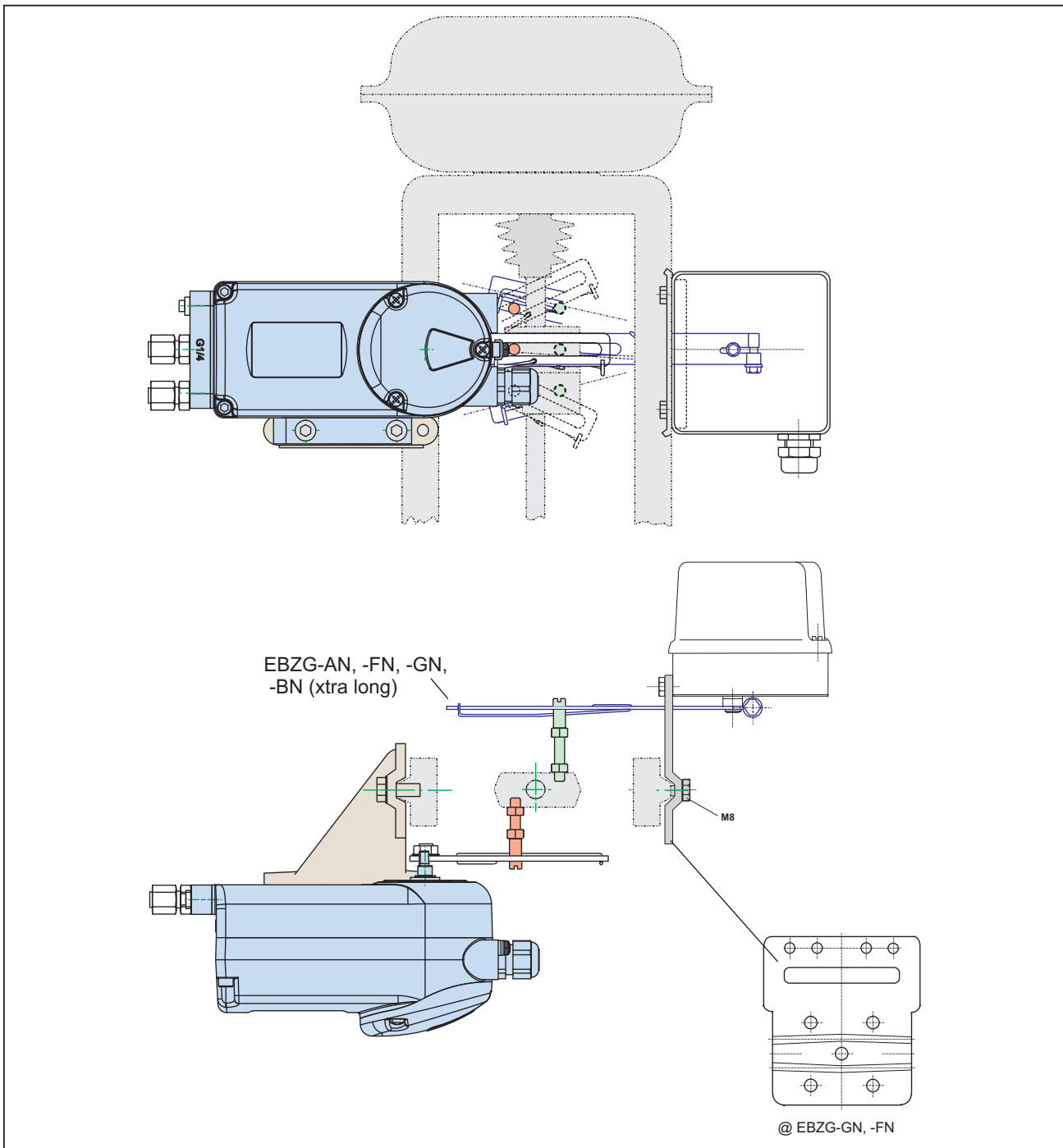


mm
in



Rotation angle max 120°; torque requirement 14 Nm

TYPICAL APPLICATION



Invensys Systems, Inc.
 38 Neponset Street
 Foxboro, MA 02035
 United States of America

schneider-electric.com

Global Customer Support
 Toll free: 1-866-746-6477
 Global: 1-508-549-2424
 Website: <http://support.ips.invensys.com>

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