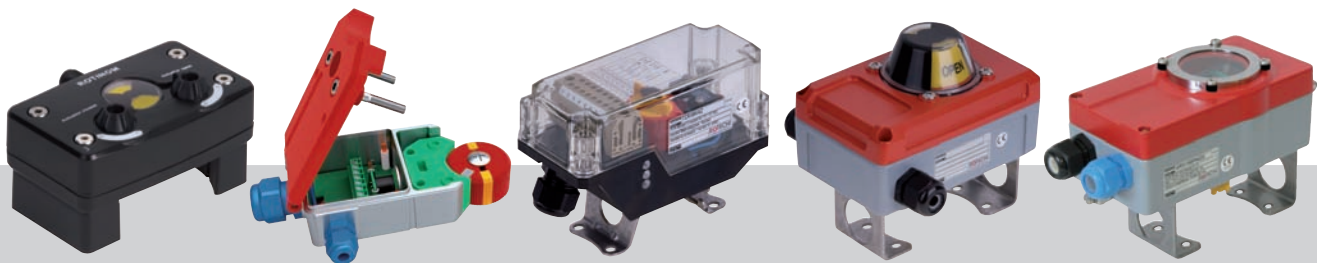


ROTECH

SYSTEMKOMPONENTEN



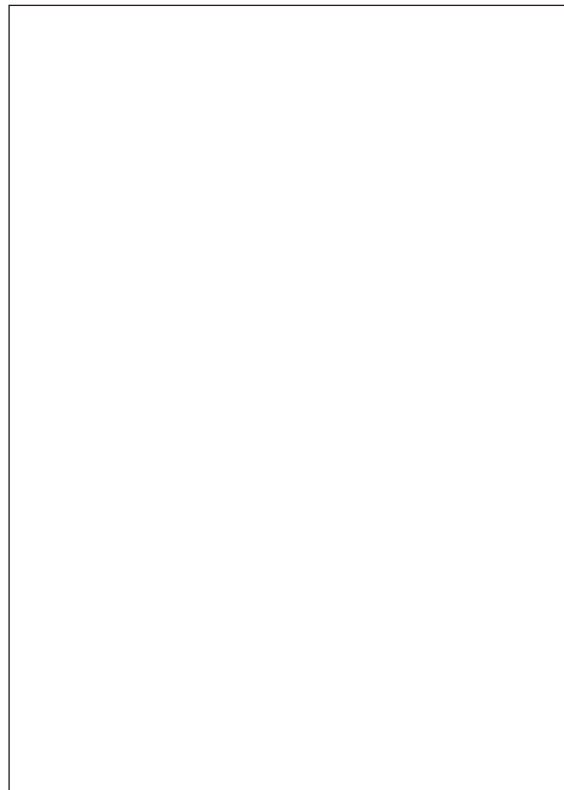
MANUAL

6.10 E

This manual is intended for use as a catalogue and reference for users of ROTECH products. We have tried to give a short overview of a diversity of products, regardless of manufacturer.

The different solutions are displayed in the most convenient way, sorted by branch.

This manual is changed often to always reflect the latest developments. Therefore we encourage all readers to submit any kind of suggestions or comments.



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Claims for conformity with the applications shown in this manual are only provided in accordance with the usual general guarantee. Further claims are excluded, notably ROTECH does not guarantee for the accuracy of the manual.

Technical data, dimensions and availability are subject to change.

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General Overview and Guide

... for your first choice

Chapter A - Signal Devices in Housing



Chapter B - Signal Devices Open Design



Chapter C - Brackets, Couplings, Adaptors



Chapter D - Solenoid Valves



Chapter E - Positioners



Chapter F - Accessories



Chapter G - Gear Box



Chapter H - Customized Solutions



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Overview

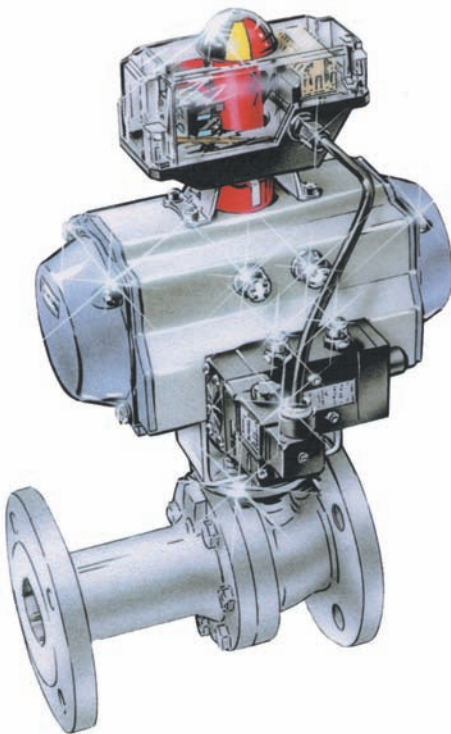
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Introduction

ROTECH is YOUR specialized partner for all components and solutions in the field of pneumatic valves automation.

With today's automated process plants shifting towards modern technologies also position sensing, flexible valve control and integration of fieldbus networking are more important than ever. ROTECH offers you the widest range of solutions for position sensing from microswitches to analog position control in different housing designs. We offer solutions not only for part-turn valve actuators but also for direct installation on valves.

Solenoid valves with standard coils and explosion-proof coils for the control of pneumatic valves and a wide range of positioners will meet your needs in almost all valve automation requirements.



For the installation on valves ROTECH offers the complete range of mounting equipment. Standard brackets, couplings or customized complete mounting kits are also available.

Flexibility is our strength. Beside an extensive range of standard products we offer you special solutions and customized solutions even in small quantities. Our own production guarantees an uncompromising high standard for special solutions and for all standard products as well.

Our complete mounting service has become a special pool of know how. Almost everything is possible. General purpose, for example installation of supplement air tanks on actuator or realization of complex process control solutions, multi-position control units, damped end position and customized solutions for special requirements. We equip actuators of all manufacturer ready for installation in automated process plants. Whatever your requirement is - ROTECH has surely the suitable solution for you. Please contact us.

Selection of ROTECH Products

signal devices

► page 9

brackets

► page 82

actuators

(available on inquiry)

solenoid valves

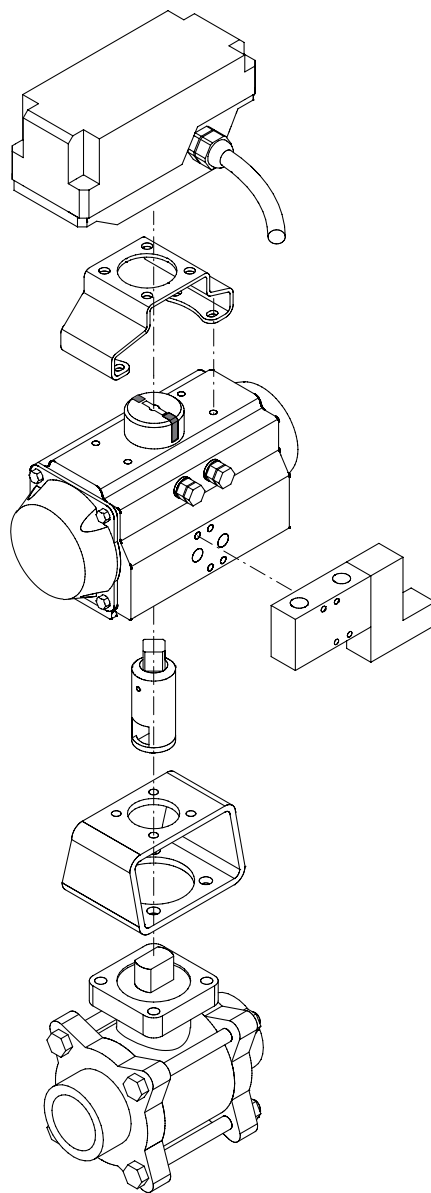
► page 127

couplings and
brackets

► page 107

fittings

(available on inquiry)

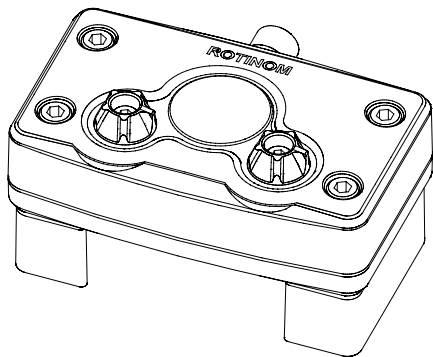


Overview of Limit Switch Boxes

Signal devices (limit switches, position control, position sensing) are used to report and control the position of valves. Switches and sensors of different technical specifications can be installed into boxes and mounted on pneumatic part-turn valves or directly on valves.

Depending on the design, switches and sensors are also suitable for application in hazardous environments. ROTECH offers different housing design and material which are perfectly adaptable to the application required.

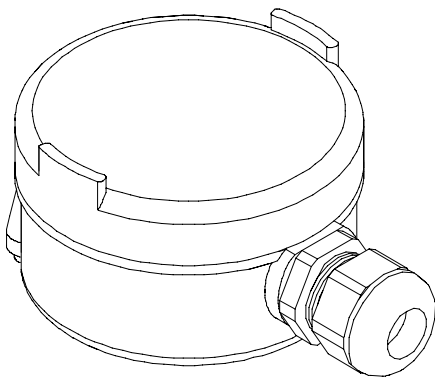
Signal device ROTINOM



ROTINOM represents a compact and low cost solution for monitoring the positions of part-turn valves. For plenty of applications a compact design is most important. Especially for the automation of small units for indoor solutions the installation height is of decisive importance. ROTINOM is the answer to this requirement. Ready for the most compact direct mounting on the actuator. Equipped with M12 cable gland, a quick replacement and service is guaranteed. It is possible to adjust the end position very easily over a range from 0° to 180° without opening the box.

▶ page 12

Signal device PB - Series

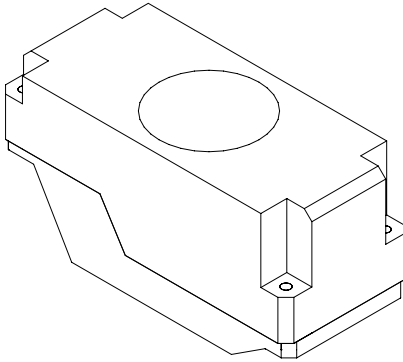


The advantages of the Proxi-Box are obvious: very compact, robust round design, optionally available with high vision beacon, a position indicator which allows visual control of the valve position from a great distance. Combination of colours for indicator can be specified by customer. Apart from these visible features, the high qualities inside are also notable: a wide range of double sensors and microswitches installed in our PB-housing offers a cost-efficient and flexible solution for many applications.

▶ page 14

Overview of Limit Switch Boxes

Signal device TCR - Series

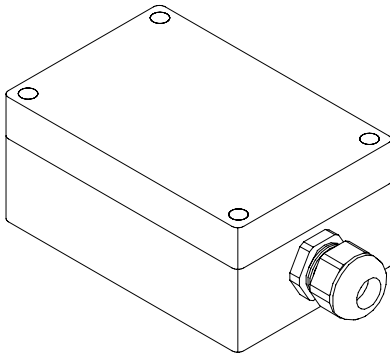


The universal box has a lot of advantages. The housing design with height offset protects the connection of the sensor against mechanical wear. It is possible to mount all standard sensor designs and models in this housing. The connections inside the box are readily accessible and offer ease of use and ease of inspection.

LED status indicator, optional high vision beacon and the connection of up to 2 solenoid valves are additional features of this flexible box design. Although the housing design is compact it is possible to install up to 4 microswitches or 4 slotted proximity sensors. Thanks to the flexible design of this housing we are able to realize customized solutions very fast and at affordable cost.

▶ page 26

Signal device ET - Series

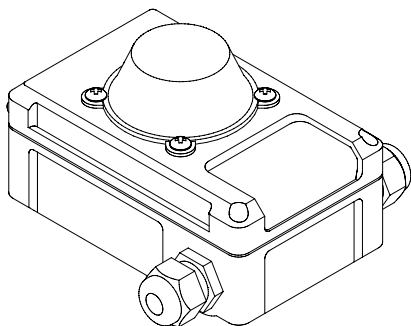


Rectangular, practical, good. Housing in standard design, symmetrically assembled offers enough space for ease of mounting for a great variety of switch models. Easy to mount also on actuators and valves. For all connections we offer a wide range of mounting brackets. Also technical details are striking: mounted with spring loaded feather connecting shaft for the height compensation, individually adjustable position indicator at the shaft. Suitable for traverse and in line to the flow direction of the installed actuators. The adjusted end positions are secured against any unintentional release. Optionally solenoid valves can be connected directly into the housing.

▶ page 52

Overview of Limit Switch Boxes

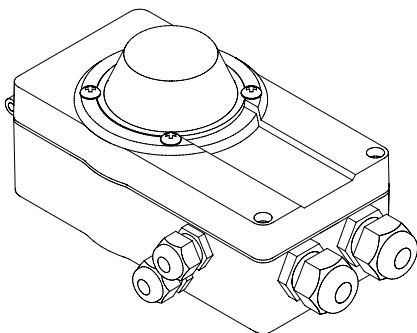
Signal device COM - Series



The innovative design of the very robust aluminium COM-Box is convincing. With the comfortable solution of the hinge for the cover new dimensions are achieved in ease of service and ease of use. Optimized sealings guarantee durable tightness. A newly developed two way breathable membrane avoids condensed water inside the box. The external position indicator of the cover is available in pure glass and various other materials. The COM-Box is robust, innovative, technically leading, durable.

▶ page 66

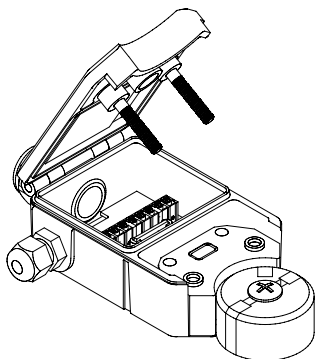
Signal device ALB - Series



The ALB-Box is the direct result of further development of our COM-Box with all features and benefits. The ex-proof (Ex e) box fits perfectly in the most demanding plant conditions and offers numerous technical benefits. The interior design allows installation of 2 separate switching networks. A convenient solution, which was only possible with 2 housings in the time before ALB-Box was created. Available with sensors of different designs and connections for solenoid valves, this new creation fits perfectly in different applications and diverse process plants.

▶ page 74

Signal device FMV - Series



FMV is the abbreviation for F25 (= form F25) and MV (= Magnetventil) which means solenoid valve. An excellent solution, which offers the most convincing advantages for MSR-service support. The FMV serie allows fast and most reliable maintenance. The fastening of the box is used to open/close and to change the sensor. Very easy to maintain, and thanks to the large cable terminal compartment and the plug-in connection of the sensor wiring it is very comfortable. Thanks to the diversity of design and feature it is suitable for explosion proof or non explosion proof locations.

▶ page 78

ROTINOM

The very compact design suits perfectly in plants where space is small. The low profile box with 35 mm height only is perfect for direct mounting on the actuator. Especially for small actuators the space benefit is significant. Directly mounted on standard connection 80 x 30 mm, the amount of installation time and cost is greatly minimized. Very efficient is the M12-plug-in connection, which offers ease of service and ease of mounting and allows a faster change. The box is exactly pre-adjusted. Without opening the box, it is possible to adjust the end positions within the range of 0° - 180° very easily.



Benefits

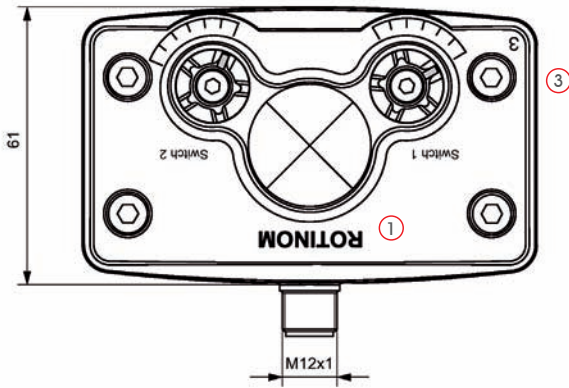
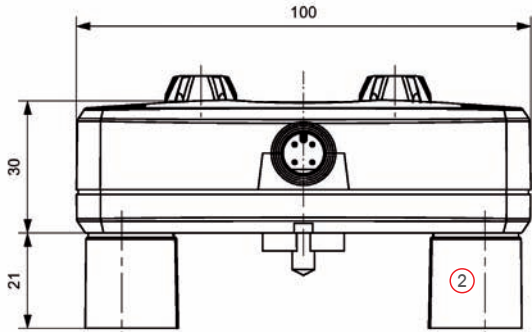
- Very compact design, fast and easy direct installation
- Fast and easy adjustment of end position with external turning knobs
- Ease of service electrical M12-plug-in connection



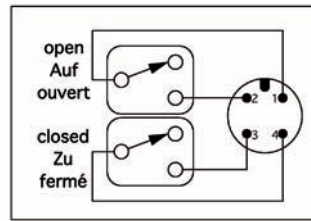
technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching capacity	2 A, max. 230 V ~	0,1 A, max. 230 V ~
Contacts	nickel-silver	gold alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP65	IP65
Housing material	ABS	ABS
Connection	M12-plug connection	M12-plug connection

dimensions

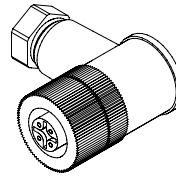


wiring diagram



accessories

KDM12W4PG7



basic schedule

Pos.	Pcs.	Description	Material
1	1	ROTINOM	ABS
2	2	Spacer *	ABS
3	4	Screw DIN 7984 M5x30	A2

product key ROTINOM

R	Design	ROTINOM
CR	Make	Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
AZ	Display	AZ = Open + Closed
B	Version	230 V

product key attaching parts

ROTINOM	Design	ROTINOM
A0	Accessories	A0 = attaching parts actuator size 0 A2 = attaching parts actuator size 2

* attaching parts for actuator size 1 included in delivery of ROTINOM package.

Proxi-Boxes - General Information

The PB-box (Proxi-box) with ease of service screwable cover and very compact design is available in numerous different specifications. For the sensing of end positions or intermediate positions of pneumatic actuators or valves, double sensors of different designs, e.g. square proximity switch or microswitch can be utilized. Each end position is adjustable in the range from 0° - 360°. The preset position is secured by serrated cams against unintentional releases caused by vibrations. Specified sensors can be implemented with damped or undamped end position thanks to the design of the cam. The shock-resistant Vestamid housing protects the installed signal devices against dirt and mechanical wear. The housing cover of the PB-box is available in transparent Macrolon or black Vestamid.

We have created a high vision beacon cover, a position indicator, optionally available with different combination of colors which is highly visible from a great distance.



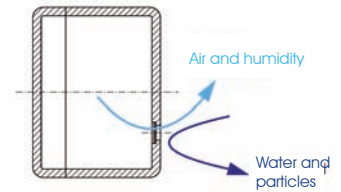
Benefits

- Very compact design
- Very competitive price and ease of service thanks to the persuasive technical construction
- Switching points individually adjustable in the range from 0° to 360°
- Highly visible position indicator

The better the sealing of a box is the bigger the problem with condensed water when the temperature fluctuation is extreme. By integrating a waterproof, but air permeable membrane, the air inside is able to interchange with the air outside. As a result, condensed water can be avoided. The two way breathable membrane is standard in all our Proxi-boxes.

Benefits

- No condensed water by integrating a steam permeable membrane, which ensures a durable and reliable „breathing“ of the housing.
- High protection class, because the microporous structure of the membrane prevents the ingress of microparticles and salt crystals. It also mechanically protects thanks to the lattice structure.
- Cost saving, because a dry cable terminal compartment does not cause corrosion, as a result, there is no maintenance service required.



two way breathable membrane

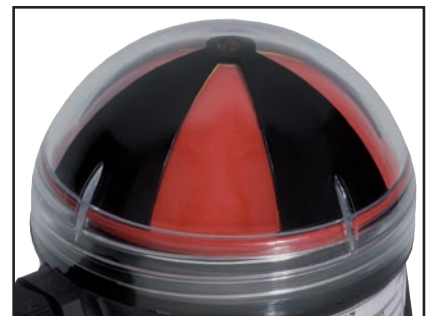
options

Model with transparent
Macrolon cover.



Model with solid Vestamid cover.

Instead of flat Macrolon or Vestamid cover the Proxi-boxes are also available with a high vision beacon cover.



Microswitches

The PB-box with microswitches is a very cost-saving choice to detect end- or intermediate-positions of pneumatic positioning-actuator and valves. The microswitch is preferred in cases when the operating voltage is not specified by special requirements. When used as a potential free contact, there are no limits of controlling possibilities.

Though the construction is simple, the microswitch box allows a separate adjustment of the switching points. The adjusted setting of the end position is secured against unintentional releases caused by vibrations thanks to the serrated cams.



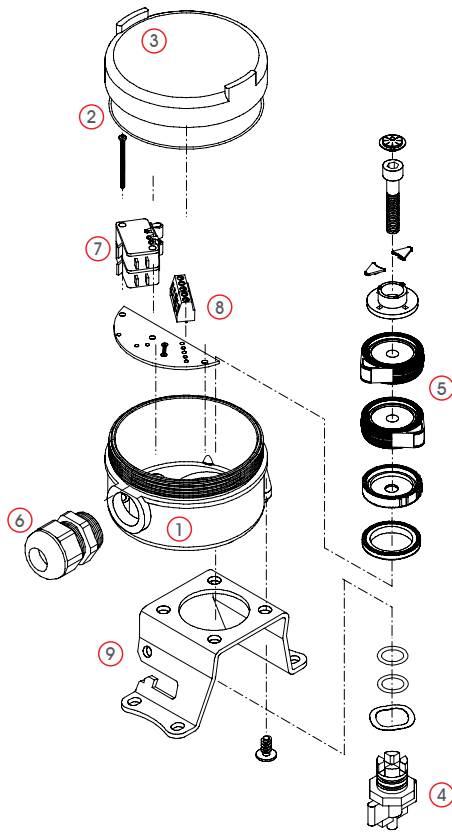
Benefits

- Very compact design
- As a potential-free change-over contact universally applicable
- Switching points individually adjustable in the range from 0° - 360°

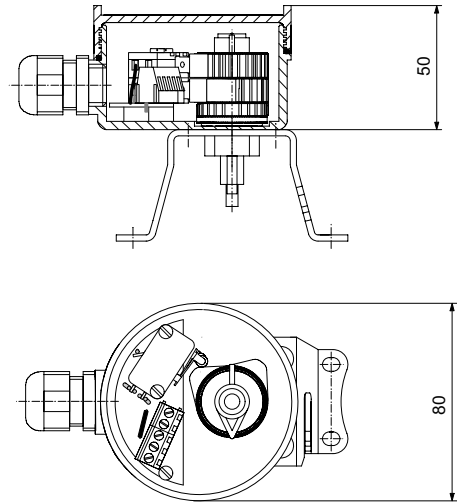


technical data

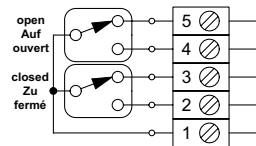
Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	silver-nickel	gold-alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65	IP 65
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black), position indicator	Makrolon (transparent), Vestamid (black), position indicator
Sealing	NBR	NBR
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams adjustable	POM, A2
6	1	Cable gland	-
7	2	Microswitch	-
8	1	Terminal block, 5-pole	-
9	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
M	Housing cover	M = Makrolon V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

3-Wire Double Sensor

To use double sensors with integrated cable clamp in the PB-box is the best way to couple compact design with the greatest ease of use. The covers of this model are flexible to combine: flat Makrolon or Vestamid cover or high vision beacon with position indicator. As in the other boxes, the adjusted position of the PB-box is secured by the serrated switching cams against unintentional releases caused by vibrations.



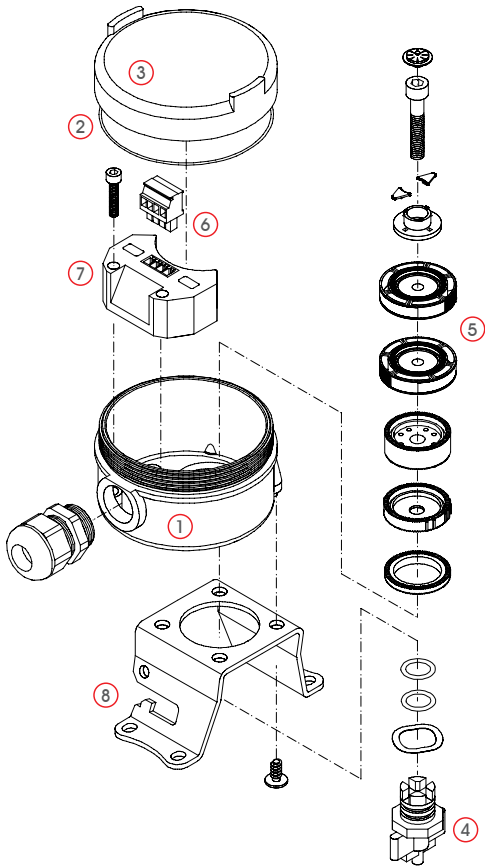
Benefits

- Very compact design
- Very cost-saving and ease of use thanks to the simple mechanical construction
- Available with highly visible position indicator

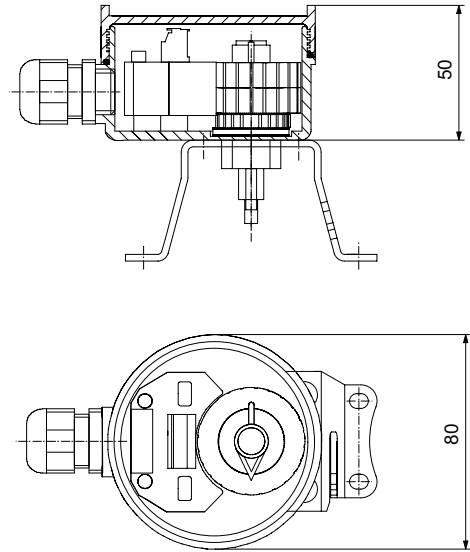


technical data

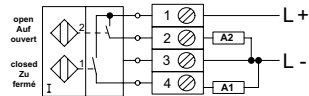
Manufacturer	Pepperl + Fuchs
Type	NBN3-F25F-E8-P
Operation switching element	3-wire, PNP Dual NOC
Operating distance	3 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 200 mA
Residual current	0 ... 0,5 mA
No load current	≤ 25 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (housing) IP 60 (sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black), position indicator
Sealing	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams adjustable	POM, A2
6	1	Terminal block, 4-pole	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8-P
P	Connection	Cable clamp (pluggable)
M	Housing cover	M = Makrolon V = Vestamid S = High vision beacon
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

Ex ia -Double Sensor with Cable Clamp

In this PB-box a 2-wire double sensor is installed. This technology is commonly used in the chemical industry and in general Ex-proof areas. The double sensor is intrinsically safe because of the low potential and therefore require no additional explosion protection measures. A plug-in cable clam is integrated in the sensors. This cable clam offers very comfortable and fast wiring when installing the box.



Benefits

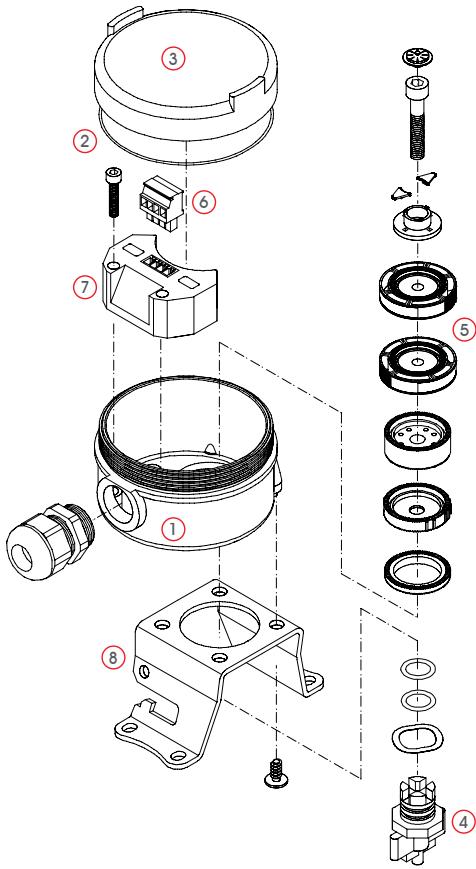
- Very compact design
- Ease of service thanks to the simple mechanical construction at affordable cost
- Available with highly visible position indicator



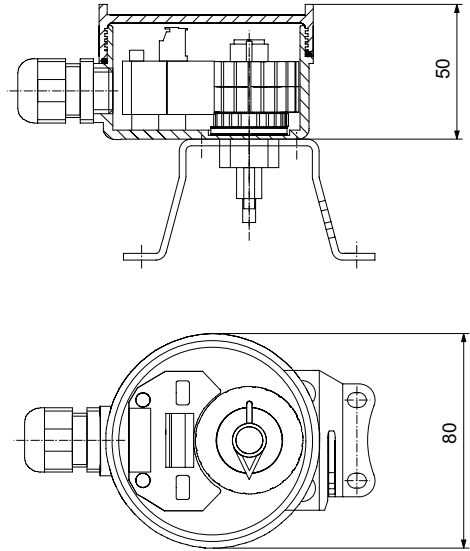
II 2G Ex ia IIC T6
other protection classes available

technical data

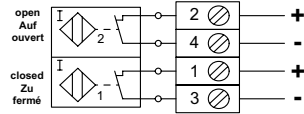
Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4-P
Operation switching element	Dual NCC NAMUR
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Operating distance	3 mm
Rated voltage	8 V DC
current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
No load current	≤ 3 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 60 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid (black)
Housing cover	Vestamid (black)
Sealing	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	Vestamid
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	Terminal block, 4-pole	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 oder PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25N	Type	F25N = NCN3-F25F-N4-P
P	Connection	Cable clamp (pluggable)
V	Housing cover	V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

3-Wire Double Sensor

The PB-box with double proximity sensor and M12-plug-connector or cable is greatly easy to install and to maintain. It is not even necessary to open the box for the connection to a control system. But it is simply to connect by a plug-in connector or by cables into a terminal compartment. The shock-resistant Vestamid housing protects the sensor against dirt and mechanical wear. The cover of the housing is available in black Vestamid with flat design or transparent Makrolon, flat design or with high vision beacon position indicator. The adjusted end position is secured by the serrated switching cams against unintentional releases caused by vibrations.

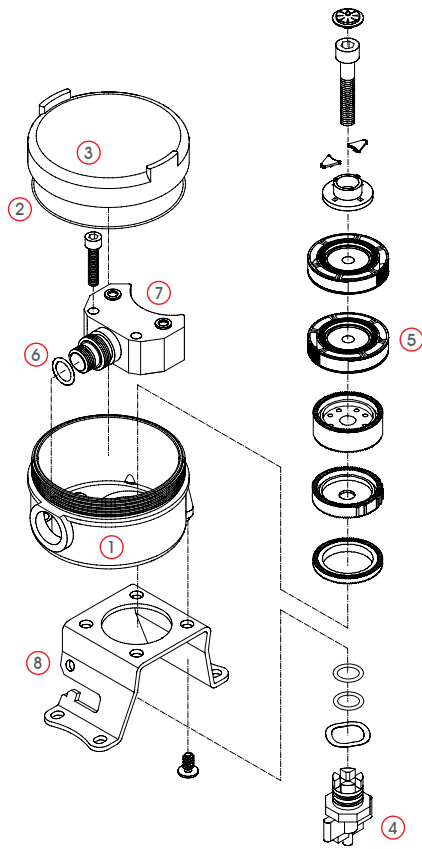


Benefits

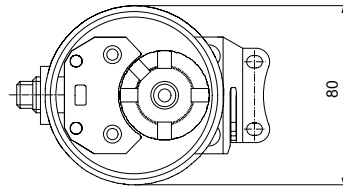
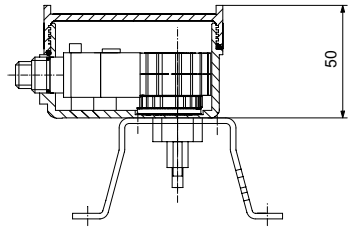
- Very compact design
- Available with different connection possibilities
- Available with highly visible position indicator

technical data

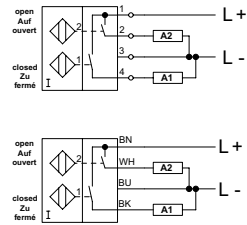
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NBN3-F25F-E8	NBN3-F25F-E8-V1
Operation switching element	3-Wire, PNP Dual NOC	3-Wire, PNP Dual NOC
Connection	Cable 5m	M12-plug-connection
Operating distance	3 mm	3 mm
Operating voltage	10 .. 30 V DC	10 .. 30 V DC
Operating current	0 ... 200 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	0 ... 0,5 mA
No load current	≤ 25 mA	≤ 25 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤0,5°	≤0,5°
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black)	Makrolon (transparent), Vestamid (black)
Sealing	NBR	NBR
Connection	Cable gland M20x1,5 with pluggable cable clamp	Cable gland M20x1,5 with pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	page 15
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	O-ring seal	-
7	1	Double sensor inductive	-
8	1	bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8
S	Connection	K = Cable 5m S = M12-plug-connector
M	Housing cover	M = Makrolon V = Vestamid S = high vision beacon
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

Ex ia - Double Sensor

The PB-box offers intrinsic safety, in addition, highest grade of protection against environmental influences and mechanical wear. The electrical connection is possible without opening the box thanks to the M12-plug-in connector or integrated cable. There is no better protection against environmental influences. 2-wire technology sensors are commonly used in the chemical industry and in hazardous areas. The double sensor is intrinsically safe thanks to its low potential and requires therefore no additional explosion protection measures. The pre-adjusted position of the end positions is secured by the serrated cams against uncontrolled releases caused by vibrations.



Benefits

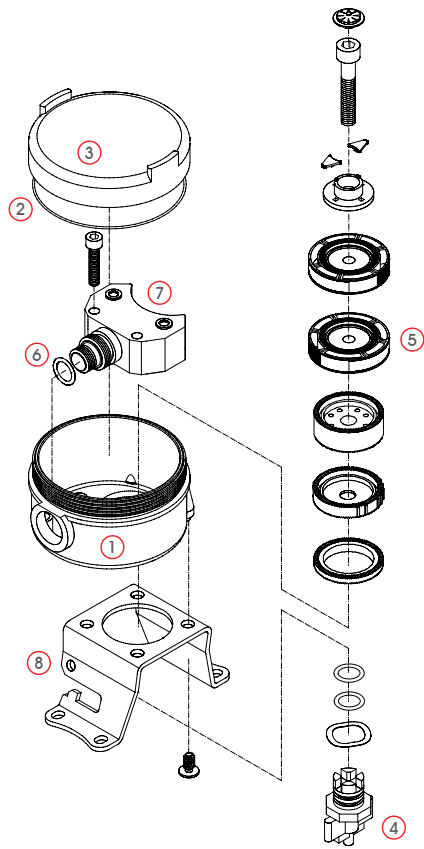
- Very compact design
- Available with different connection possibilities
- Fully adjustable switching points in the range from 0° - 360°



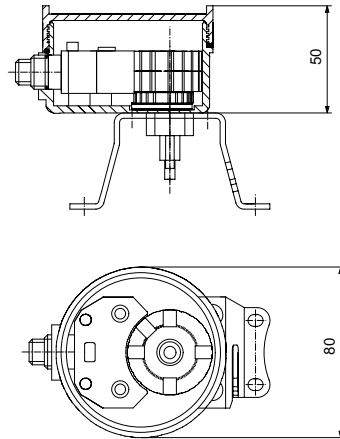
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

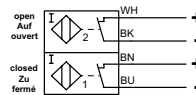
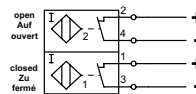
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NCN3-F25F-N4	NCN3-F25F-N4-V1
Operation switching element	Dual NC NAMUR	Dual NC NAMUR
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Connection	Cable 5m	M12-plug
Switching distance	3 mm	3 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Off-load voltage	≤ 3 mA	≤ 3 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 65 (Sensor)	IP 65 (Housing) IP 65 (Sensor)
Switching precision	≤0,5°	≤0,5°
Housing base	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black)	Vestamid (black)
Sealing	NBR	NBR
Connection	Cable gland M20x1,5, pluggable cable clamp	Cable gland M20x1,5, pluggable cable clamp



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	NBR
3	1	Housing cover	Vestamid
4	1	TCR-shaft	POM
5	1	Switching cams	POM, A2
6	1	O-ring seal	-
7	1	Double sensor inductive	-
8	1	Bracket, size 1-4	A2 or PA

product key

P	Design	P = Proxi-Box
PF	Make	PF = Pepperl + Fuchs
F25N	Type	F25N = NCN3-F25F-N4
S	Connection	K = Cable 5m S = M12-plug
V	Housing cover	V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed

TCR-Box - General Information

The TCR-housing is a „large capacity“ box with compact design. Although with small dimensions it is possible to implement up to 4 microswitches, 4 slotted proximity sensors or 2 cylindrical proximity sensors (even up to size M18 x 60 mm incl. cable outlet).

The following matrix shows the possibility of combinations for signal devices and covers.

Housing cover	Makrolon	Makrolon (with high vision beacon)	Vestamid	Vestamid (vision panel)	Vestamid (with high vision beacon)	Aluminium
Signal device						
Microswitch	•	•	•	•	•	•
Microswitch Ex d			•			•
proximity switch	•	•	•	•	•	•
proximity switch Ex ia			•	•	•	•

Benefits

- Very compact design
- Ease of service thanks to the simple mechanical construction at affordable cost
- Switching points individually adjustable in the range from 0° - 360°
- Highly visible position indicator

The revolutionary design with NAMUR interface (according to VDI/VDE 3845) inside offers a safe installation of all switching components, which is created for direct mounting on pneumatic actuator. A compensating element with similar effectiveness like the approved two way breathable membrane avoids condensed water forming inside the housing even at extreme variation of temperature. Actuators and mounted accessories, e.g. limit switch boxes are often misused as steps in plants. Therefore we have found the way to protect the cable connection in a height offset of the housing. This constructive solution protects the cable connection also against heavy rain, because installed in the standard position the cable gland is covered by the housing or by the actuator. Once the cover is open the terminal block is absolutely freely accessible. As a result, wiring and installation is most comfortable and very fast. In addition, the possibility for a direct connection of a solenoid valve is integrated as standard in the base of the housing. As a result, the installation time is optimized and offers the user the control of the part-turn valve actuator and the detection of the end positions with one cable only.

The cover, used as a protection for the implemented switching components, has to withstand the most demanding and extreme plant conditions. To satisfactorily meet the requirements of each applications, the TCR-cover is available in several designs.

For the indoor application we especially recommend the transparent Makrolon cover. It allows the operators to see the status of the position sensor and the illuminating diode of the sensors without opening the box. For the outdoor application, in areas with high static charge and in hazardous areas, the black Vestamid cover suits your needs perfectly. Endurance tested for resistance to light exposure, high and low temperatures and extreme low surface resistance are the most important features for these applications. The cover, made of die casting aluminium is extremely robust. It can be used as „heavy-duty-cover“ suitable for all harsh conditions.



Position indicator

Each limit switch box of the TCR-series, including the design with Vestamid or aluminium cover, is available with a high vision beacon. This highly visible position indicator allows visual control of the valves position from a great distance. Combination of colours for the high vision beacon can be specified by customer.



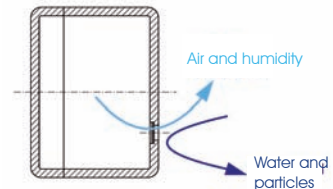
Options



Additional M12 solenoid valve connection available



Additional LED indicator available



two way breathable membrane

TCR-limit switch boxes are standard equipped with two way breathable membrane

Microswitches

Microswitches are very compact, suitable for a lot of applications and low-cost solutions for detecting end positions. The TCR-box with integrated microswitches converts the positions of actuators, which are transmitted through the switching shaft in electrical signals. The microswitches in housing are preferred in cases where the operating voltage is not specified by special requirements. When used as a potential free contact, there are no limits of controlling possibilities for the user. The TCR-box allows a separate adjustment of the switching points for up to 4 microswitches in a very easy way. The adjusted setting of the position is secured against unintentional releases caused by vibrations.



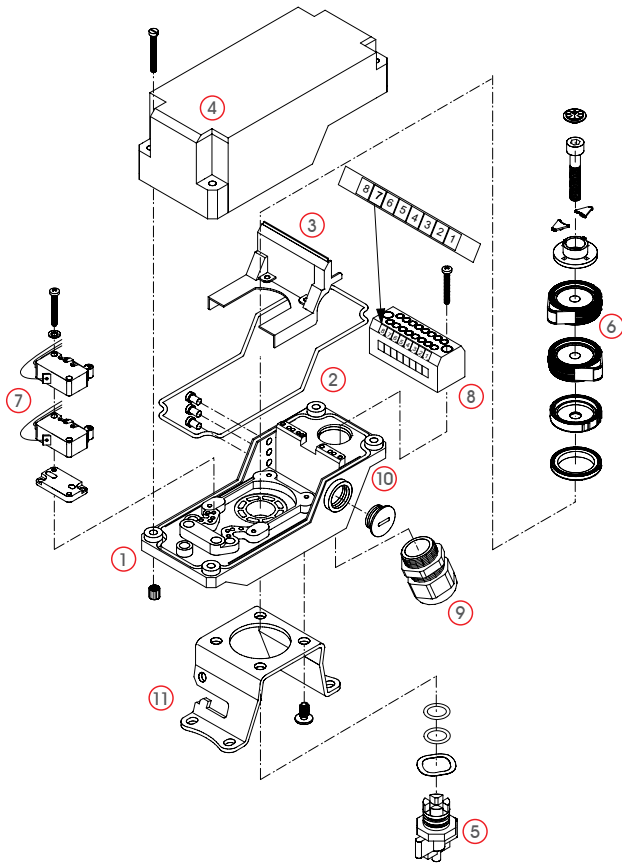
Benefits

- Comfortable, individual adjustment of the switching points using serrated switching cam
- Ease of mounting connection of all components
- Terminal block with possibility for solenoid valve connection
- Optionally with position indicator

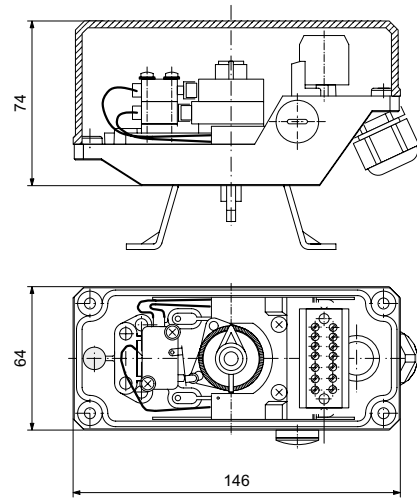


technical data

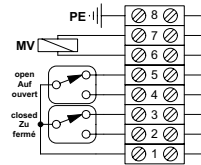
Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Operation switching element	Single Pole Double Throw	Single Pole Double Throw
Switching loads	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	gold-alloy
Mechanical life	2 x 10 ⁷ switching cycle	5 x 10 ⁷ switching cycle
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65	IP 65
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

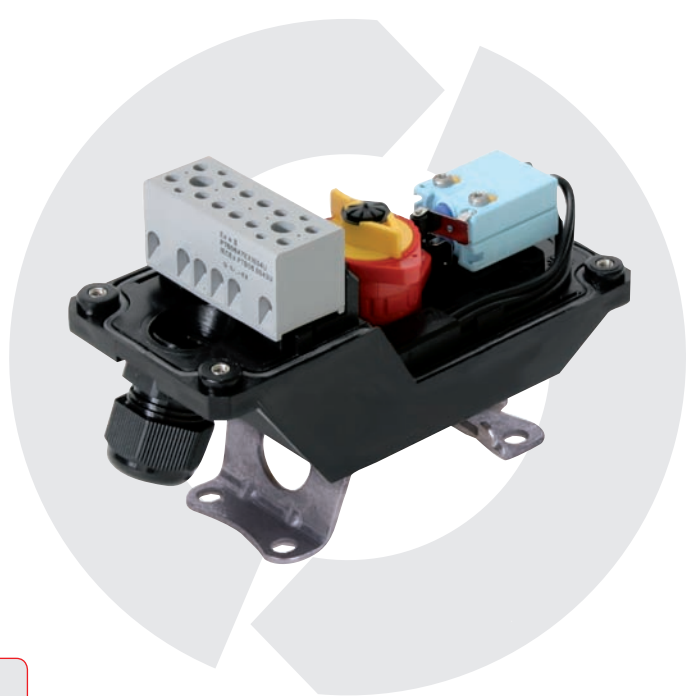
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Microswitch	-
8	1	Terminal block, 8-pole	-
9	1	Cable gland M20x1,5	PA
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

Ex d - Microswitches

The TCR-box, made of shock-resistant Vestamid housing is certified to protection class Ex ed IIC T6 by using components of increased safety. Implementing compact explosion-proof microswitches certified to classification group Ex ed IIC T6, we have created a multi-purpose application, and also competitive limit switch box. When used as a potential free change-over contact, the microswitch offers flexible method of controlling. Like all ROTECH limit switch boxes of the TCR-series, this competitive Ex-box offers also an easy, individual adjustment of the switching points and efficient protection against unintentional releases caused by vibrations.



Benefits

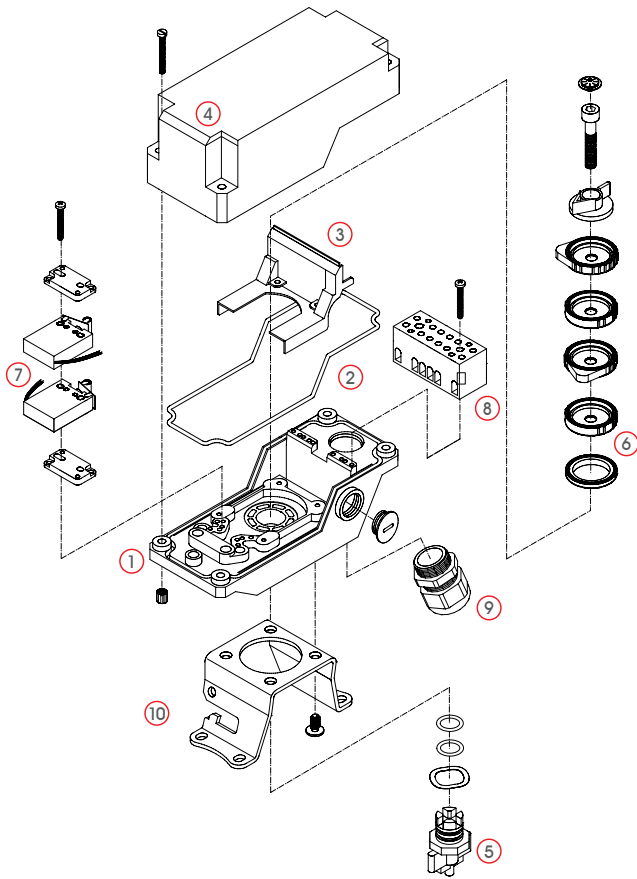
- Indicator „Open“ and „Closed“ individually adjustable by using switching cams
- Very good cost/performance ratio
- Optionally available with aluminium cover



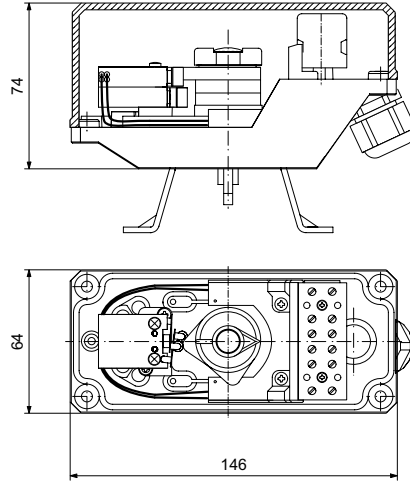
Ex II 2G Ex ed IIC T6
other protection classes available

technical data

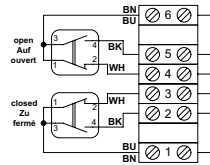
Manufacturer	Crouzet
Type	83.139.1
Operation switching element	Double Pole Double Throw
Type of protection	II 2G Ex d IIC T6 (according to EN 60079) PTB 02 ATEX 1150
Switching loads	4 A, 230 V ~
Contacts	silver-nickel
Mechanical life	5 x 10 ⁶ switching cycle
Temperature range	-20 ... +60 °C
Switching precision	1,5°
Protection class (according to DIN EN 60529)	IP 65 Housing IP 67 Microswitches
Housing base	Vestamid (black) Aluminium
Housing cover	Vestamid (black)
Sealing	EPDM
Connection	Cable gland M20x1,5 (protection class: EEx e II)
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM 60
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid
5	1	TCR-shaft	POM
6	1	Switching cams	POM
7	2	Microswitches (Ex d II C T6)	-
8	1	Terminal block, 6-pole (Ex e II C)	-
9	1	Cable gland M20x1,5 (Ex e II C)	PA
10	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
CR	Make	CR = Crouzet
1	Type	1 = 83.139.1 (Ex d IIC T6)
V	Housing cover	V = Vestamid A = Aluminium
V	Housing base	V = Vestamid
AZ	Display	A = Open M = Middle Z = Closed

3-Wire - Double Sensor

Double sensors are very compact units, which are designed for direct mounting on NAMUR interface. They consist of a one-piece encapsulate component with proximity sensors and a so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. The mechanical positions are converted into electrical position feedback signals. These units can also be integrated very easily into ROTECH TCR-housing, as a result, it is protected from environmental influences and mechanical wear. The application of double sensors allows a very comfortable mechanical construction of the limit switch box. We are able to install sensors of other manufacturers. The adjusted position is secured against unintentional releases caused by vibrations thanks to the serrated cams. The box is available with a high vision beacon position indicator.



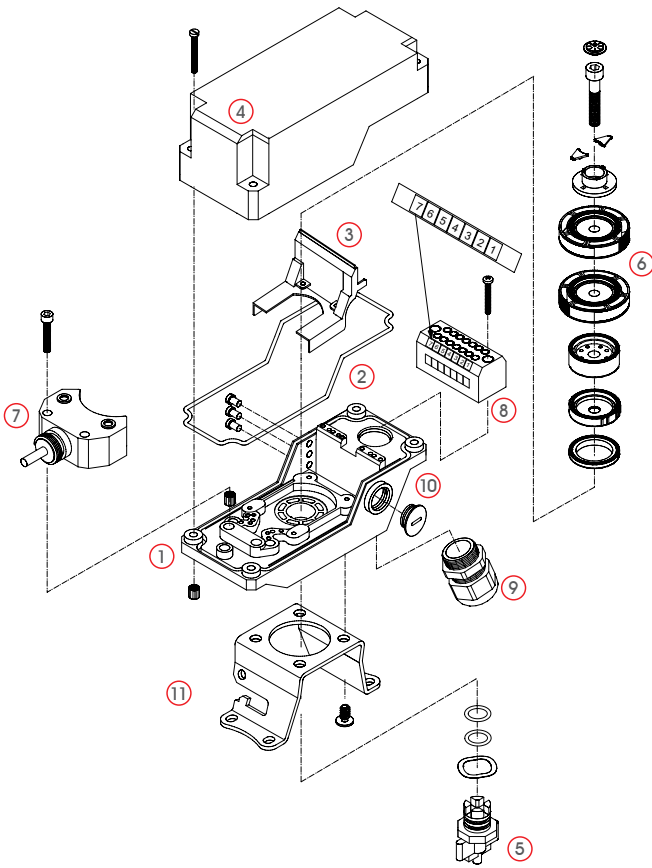
Benefits

- Ease of service thanks to the simple mechanical construction at affordable cost
- Terminal block with possibility of connection for solenoid valves
- Optionally with position indicator

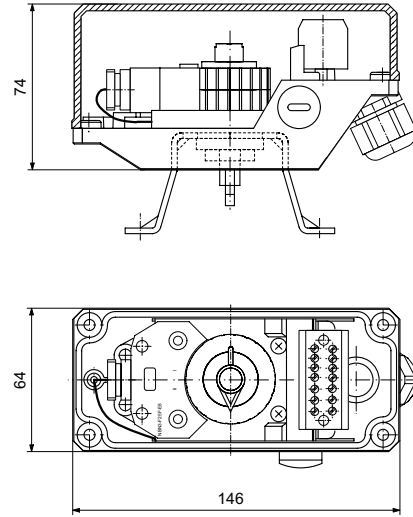


technical data

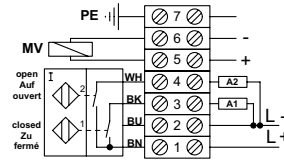
Manufacturer	Pepperl + Fuchs	IFM	Turck
Type	NBN3-F25F-E8	IN5251	Ni4-DS20-2AP6X2
Operation switching element	PNP, Dual NOC	PNP, Dual NOC	PNP, Dual NOC
Switch distance	3 mm	4 mm	4 mm
Nominal voltage	10 ... 30 V DC	10 ... 36 V DC	10 ... 30 V DC
Normal current	0 ... 200 mA	0 ... 250 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	k.A.	0 ... 0,1 mA
Neutral current	≤ 25 mA	k.A.	≤ 15 mA
Output	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C	-25 ... +80 °C	-25 ... +70 °C
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing base	Vestamid (black)	Vestamid (black)	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block, 7-pole	-
9	1	Cable gland M20x1,5	PA
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs IF = IFM TU = Turck
F25E	Type	F25E = NBN3-F25F-E8 5251 = IN 5251 4DSAP = Ni4-DS20-2AP6X2
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Double Sensor

The intrinsically safe double sensor is a very compact unit, which is designed for direct mounting on NAMUR interface of actuators. The whole unit consists of one encapsulate component with the proximity sensors and one so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. The mechanical positions are converted into electrical position feedback signals. These units can also be integrated very easily into ROTECH TCR-housing, as a result, it is protected from environmental influences and mechanical damage. The application of double sensors allows a very comfortable mechanical construction of the limit switch box.



Benefits

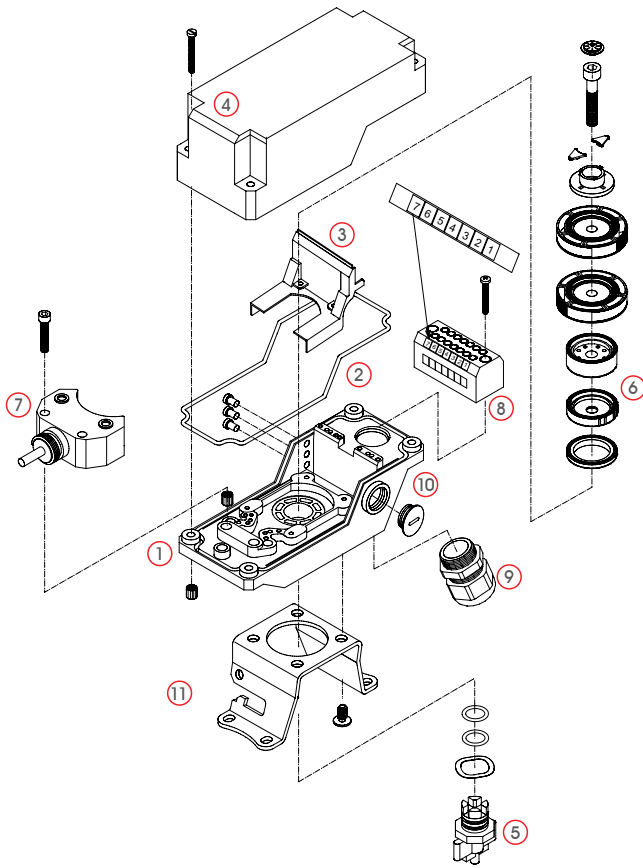
- Very competitive price and ease of service thanks to the simple technical construction
- Switching points adjustable in a range from 0° - 360°
- Optionally with position indicator



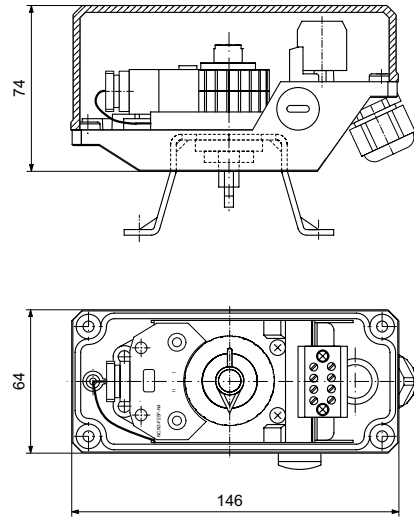
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

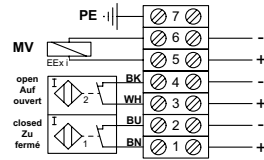
Manufacturer	Pepperl + Fuchs	Turck	IFM
Type	NCN3-F25F-N4	Ni4-DS20-2Y1X2	NN5009
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)	NCC NAMUR	NCC NAMUR
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	3 mm	4 mm	4 mm
Nominal voltage	8 V DC	8,2 V DC	8,2 V DC (1kΩ)
Neutral current	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity		
Temperature range	-25 ... +85 °C	-25 ... +70 °C	-20 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing base	Vestamid (black)	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

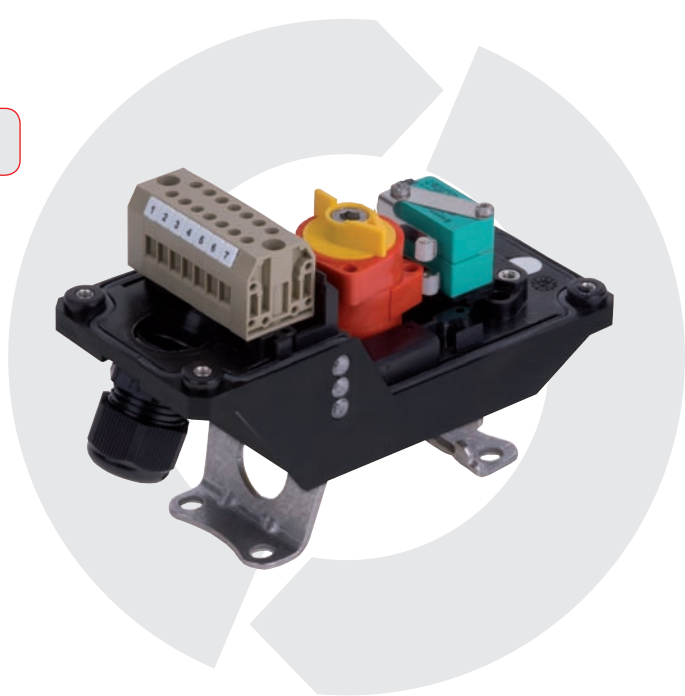
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block 7-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs TU = Turck
F25N	Type	F25N = NCN3-F25F-N4 4DSY1 = Ni4-DS20- 2Y1X2
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

3-Wire-Square Sensors (V3-Version)

The TCR-box with square proximity sensors converts the end positions or intermediate positions of the positioning actuator to electrical signals. The 3-wire sensor is used in several European countries as a contact-free signal device for NON Ex-applications. It is known for its ultimate reliability, because it has an insignificant residual current in locked/closed- and a minimum voltage drop in operating-status. The flexible design of the TCR-housing allows an individual adjustment of both switching points in the full range from 0° - 360°. The yellow, turnable axis is a spring loaded feather connection, which secures a perfect fit into the slotted connection of the actuator. This box model is available with position indicator.

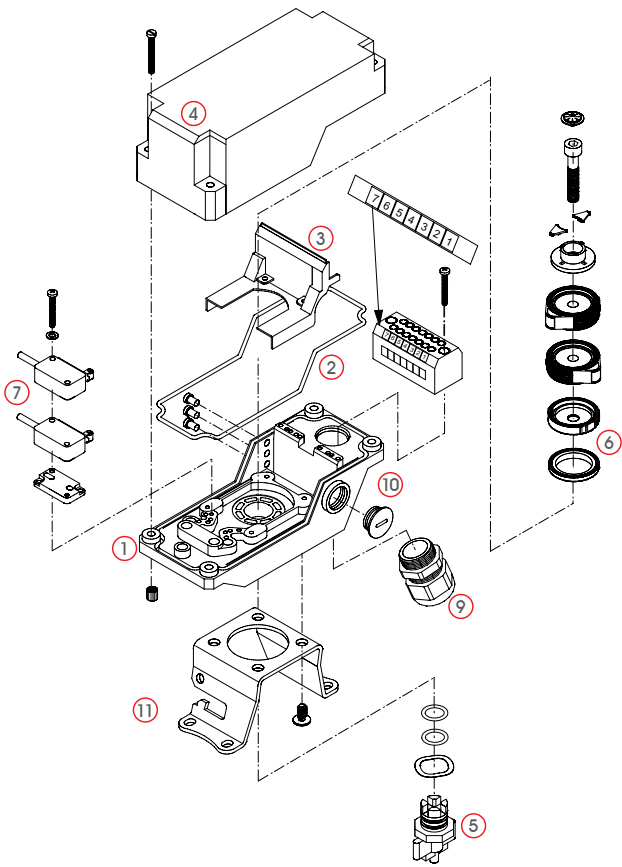


Benefits

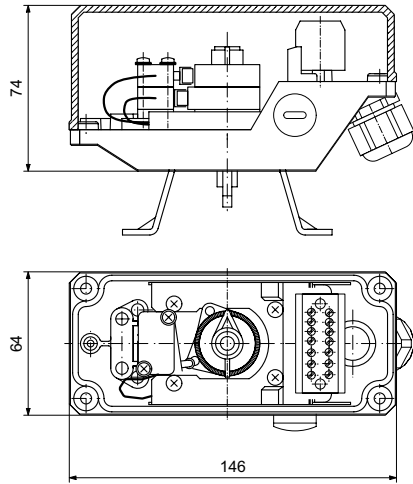
- Easy and precise adjustment of switching points
- Individually adjustable in the range from 0° - 360°

technical data

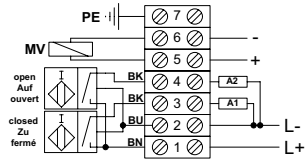
Manufacturer	Pepperl + Fuchs	IFM
Type	NBB2-V3-E2	IS5001
Operation switching element	3-Wire, PNP NOC	3-Wire, PNP NOC
Switch distance	2 mm	2 mm
Operating voltage	10 ... 30 V DC	10 ... 36 V DC
Operating current	0 ... 100 mA	0 ... 200 mA
Residual current	0 ... 0,5 mA	
Load current	≤ 15 mA	
Output	Short-circuit proof, Protected against reverse polarity	-
Temperature range	-25 ... +70 °C	-25 ... +80 °C
Switching precision	≤ 0,5°	≤ 0,5°
Protection class (according to DIN EN 60529)	Housing (IP65) Sensor (IP67)	Housing (IP65) Sensor (IP67)
Housing base	Vestamid, black	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

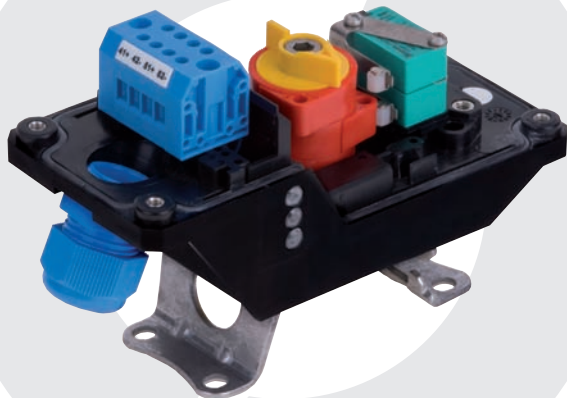
Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Sensor	-
8	1	Terminal block, 7-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs IF = IFM
2V3E	Type	2V3E = NBB2-V3-E2 5001 = IS5001
M	Housing cover	M = Makrolon A = Aluminium
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

Ex ia - Square Sensors (V3-Version)

The intrinsically safe TCR-box with square sensors converts the end positions or intermediate positions of the positioning actuators to electrical signals. The 2-wire sensor is intrinsically safe and suitable for the categories 1G, 2G and 1D. The compact sensor is certified for application in SIL2-areas. It offers a switching distance of up to 2 mm and can be used as a NAMUR opener with its nominal voltage of 8 V. Besides these characteristics of the sensor, also all benefits of the TCR-housing is included, e.g. individual adjustment of both switching points in the full range from 0° - 360°; spring loaded feather axis, the connection to the actuator; once the housing is open, all connections are freely accessible; optionally high vision beacon position indicator and more others.



Benefits

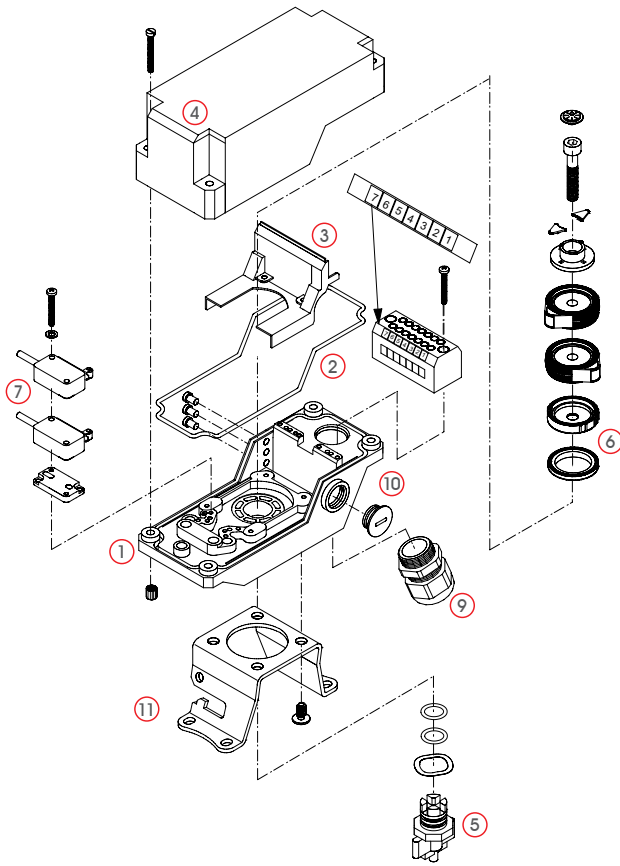
- Easy and precise adjustment of switching points
- Individually adjustable in the range from 0° - 360°



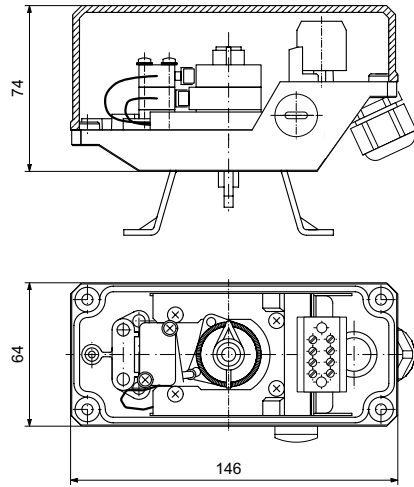
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

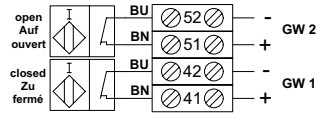
Manufacturer	Pepperl + Fuchs
Type	NJ2-V3-N
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm
Nominal voltage	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
Temperature range	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid, black
Housing cover	Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Sensor	-
8	1	Terminal block, 4-pole	-
9	1	Cable gland M20x1,5	-
10	1	Blind plug for solenoid connection	-
11	1	Bracket, size 1-4	A2 or PA

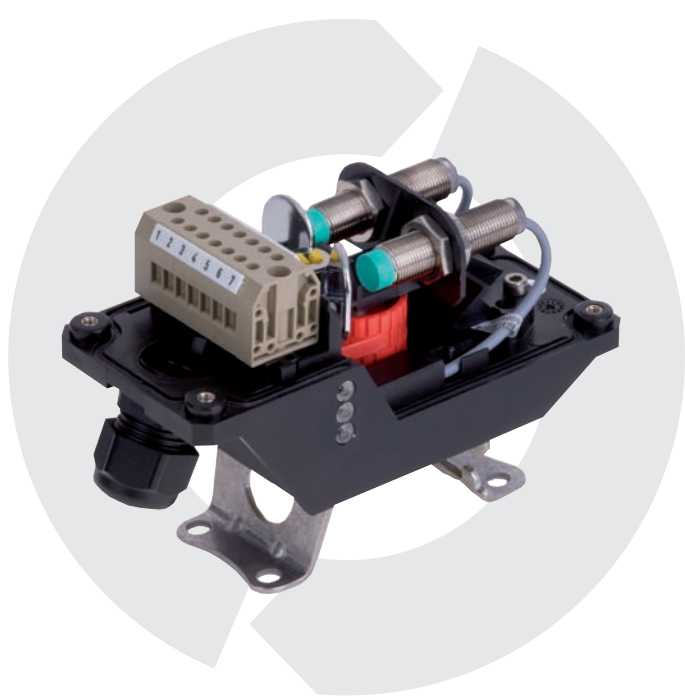
product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
2V3N	Type	2V3N = NJ2-V3-N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

3-Wire Cylindrical Sensor

Cylindrical 3-wire sensors are often used to detect end positions in non-Ex area. They provide the ultimate reliability and safety. In open-mounted application this sensor type is extremely sensitive to mechanical damage and unintentional release of the switching points. Installing the cylindrical 3-wire sensors into ROTECH TCR-housing provides decisive benefits:

The signal devices are protected against mechanical damage and influences of hostile environment. The physical position of the actuators shaft is detected by the TCR-box with high reliability. Each sensor is adjustable in the range from 0° - 360°. The TCR-box offers no limits in the adjustment of switching points. The adjustment of the switching flags is very easy, though it is secured against unintentional releases. It is possible to install cylindrical sensors up to size M18 x 60 mm into the TCR-housing.

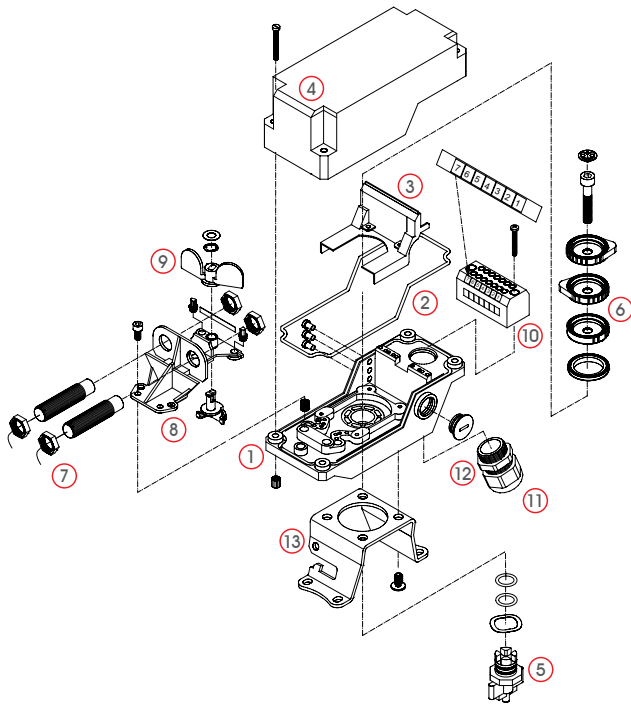


Benefits

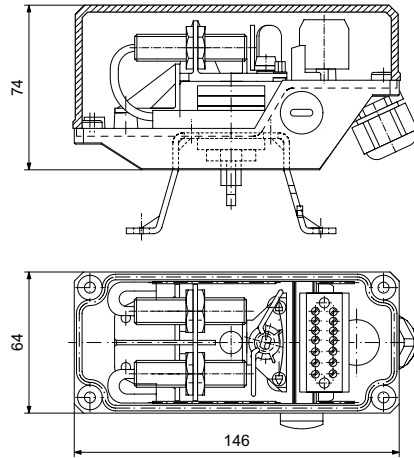
- Easy and precise adjustment of the switching points in the range from 0° - 360°
- Sensors up to size M18 x 60 mm installable

technical data

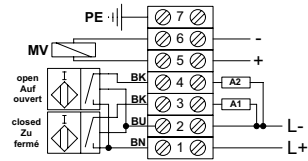
Manufacturer	Pepperl + Fuchs
Type	NBN4-12GM50-E2
Operation switching element	3-Wire, PNP NOC
Switch distance	4 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 100 mA
Residual current	0 ... 0,5 mA
Load current	≤ 15 mA
Current draw	≤ 1 mA (detected) ≥ 3 mA (not detected)
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°
Housing base	Vestamid, black
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Proximity switch	-
8	1	Proximity switch mounting	PA + 30% GF
9	1	Dampening flag	PE chromed
10	1	Terminal block, 7-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
N412E	Type	NBN4-12GM50-E2
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Cylindrical Sensor

The TCR-box with 2-wire proximity sensors transforms the end positions or intermediate positions of actuators to electrical signals. The sensor is used in several European countries as a contact-free signal device for Ex-applications. It is known for its ultimate reliability, because of the insignificant residual current in damped- and a minimum voltage drop in undamped-status. The innovative design of ROTECH TCR-housing allows installation of sensors up to 60 mm long. Unique is the completely flexible adjustment of each individual sensor in the range from 0° - 360°. The adjusted position is secured by a serrated cam against unintentional releases caused by vibrations. The box is available with visual position indicator.



Benefits

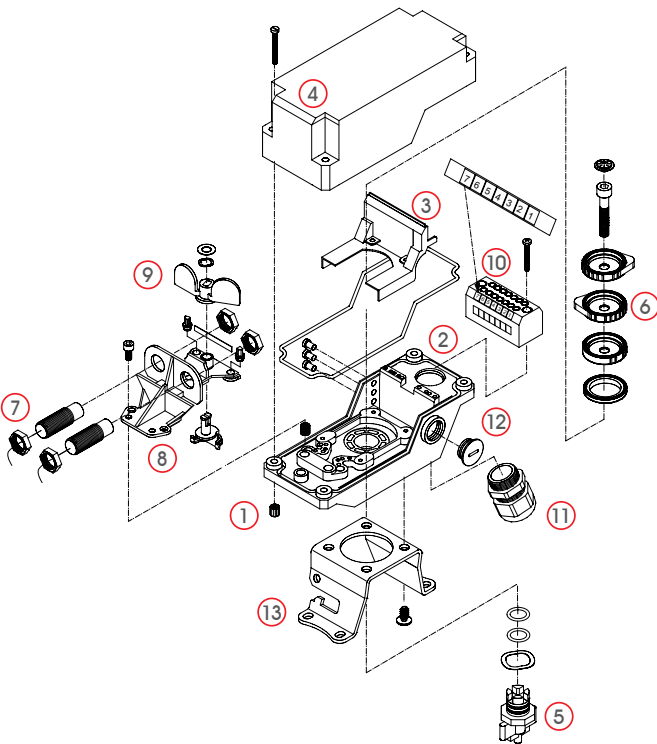
- Easy and precise adjustment of switching points in the range from 0° - 360°
- Sensors up to size M18 x 60 mm installable



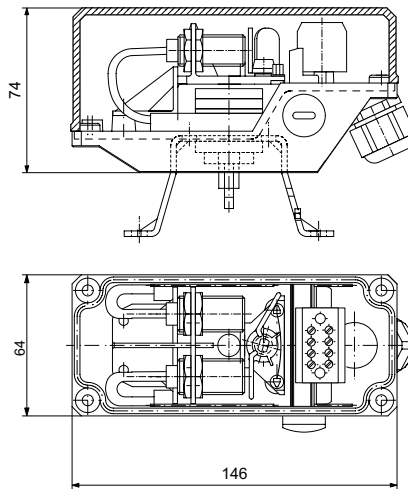
Ex 2G Ex ia IIC T6
other protection classes available

technical data

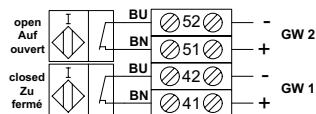
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs
Type	NJ2-11-N-G	Nj2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (not detected) ≤ 1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 68 (Sensor)	IP 65 (Housing) IP 68 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°
Housing base	Vestamid (black)	Vestamid (black)
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (black) or Aluminium anodize
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	2	Proximity switch	-
8	1	Proximity switch mounting	PA + 30% GF
9	1	Dampening flag	PE chromed
10	1	Terminal block, 5-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor in Housing

Sensors in 2-wire technology are preferred in the chemical industry and in hazardous areas. The slotted proximity sensor is intrinsically safe due to its low potential and requires therefore no additional protective measures. It is possible to install up to 4 slotted proximity sensors into ROTECH TCR-box, which allows the detection of end positions or/ and intermediate positions of actuators. The stainless steel switching disc of the switching cam system and thus each single switching point are adjustable individually in the range from 0° - 360°. The adjusted position is secured by a serrated cam system against unintentional releases caused by vibrations.



Benefits

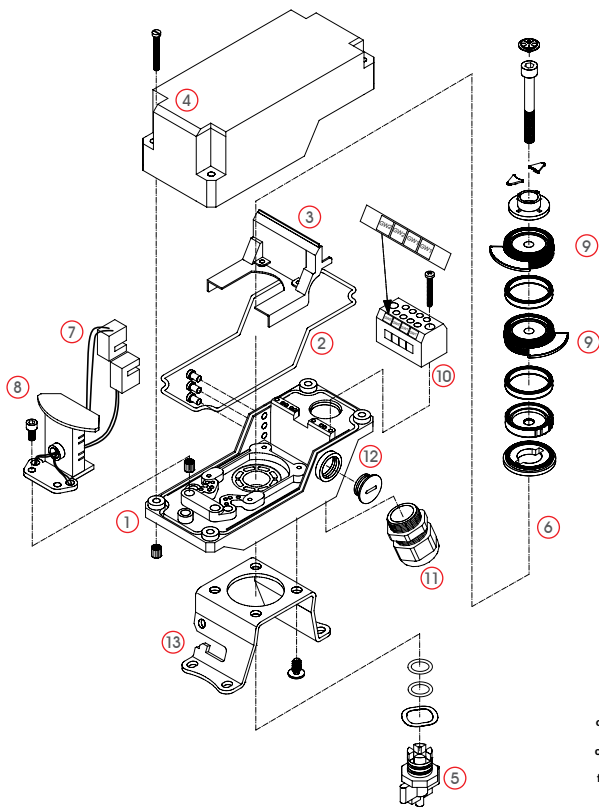
- End position damped or undamped possible
- High precision sensing due to large diameter of switching disc
- With up to 4 slotted proximity sensors
- Optionally available with position indicator



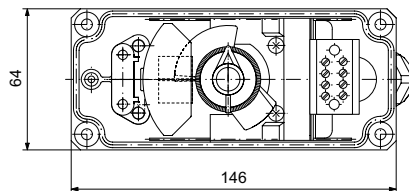
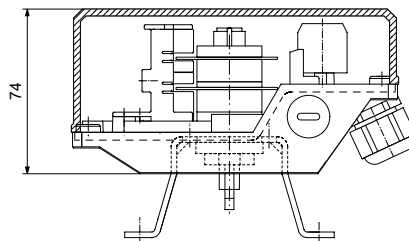
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

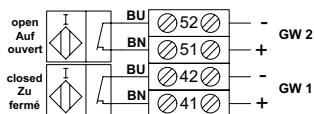
Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs	Pepperl + Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Slot size	3,5 mm	3,5 mm	3,5 mm
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (detected) ≤ 1 mA (not detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing base	Vestamid, black	Vestamid, black	Vestamid, black
Housing cover	Vestamid (black) or Aluminium anodize	Vestamid (schwarz) or Aluminium anodize	Vestamid (schwarz) or Aluminium anodize
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5



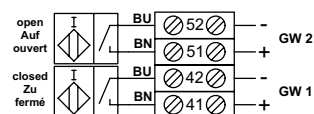
dimensions



wiring diagram



TPF3NVVAZ
 TPF3SVVAZ
 TPF3NOVVAZ



TPF3S1VVAZ

basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	Vestamid/Alu.
5	1	TCR-shaft	POM
6	1	Switching cams	POM
7	2	Proximity switch NAMUR	-
8	1	Proximity switch mounting	PA + 30% GF
9	2	Dampening flag	A2
10	1	Terminal block, 4-pole	-
11	1	Cable gland M20x1,5	-
12	1	Blind plug for Solenoid con.	-
13	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
3	Slot size	3 = 3,5mm
N	Typ	N = ... -N S = ... -SN NO = ... NO S1 = ...-S1N
V	Housing cover	A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed

TCR-box for Analog Signal

This TCR-model is an all-rounder. As well as the digital end position feedback achieved by using reliable double sensors, this box provides an analog angle-potentiometer with 4-20 mA output signal. Thanks to this emerging technology, each position of the whole turning movement of a part-turn valve actuator or armature is detectable in less than 0,5° steps. In addition, it is possible to connect up to 2 solenoid valves with 24 V DC coil on the terminal block inside the box. For an easy-to-install connection - the so called Plug & Play connection - we can supply a ready-to-use plug-in connector, which is already connected with both solenoid valves connections. All these features are integrated as standard in ROTECH TCR-housing. Our deep expertise is unified in this design for your benefits, e.g. protection of electrical connection, the very easily accessible sensor components and terminal block and the flexibility in choosing cover and position indicator is guaranteed for this box.



Benefits

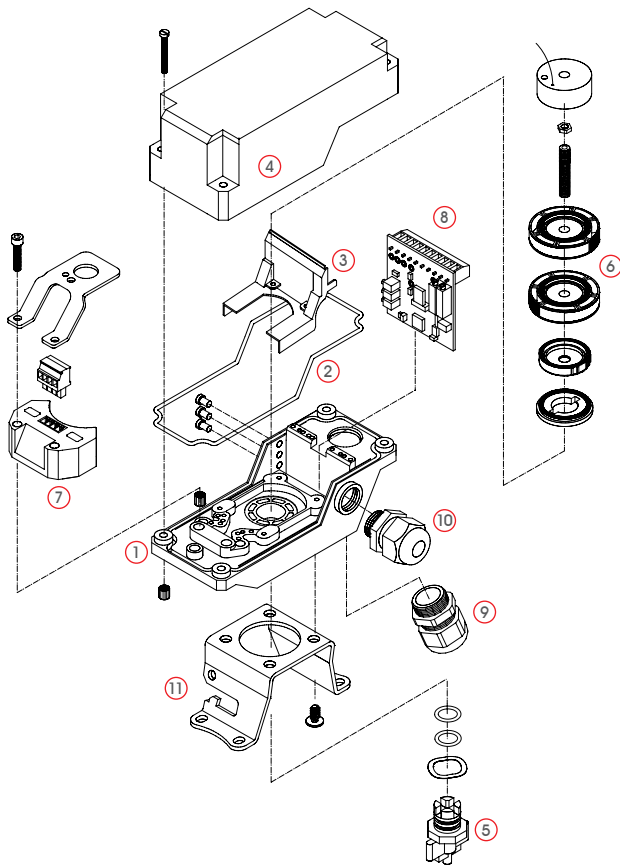
- Detection with 4-20 mA signal
- Connection of up to 2 solenoid valves possible
- Useable also without sensor

technical data - control electronics

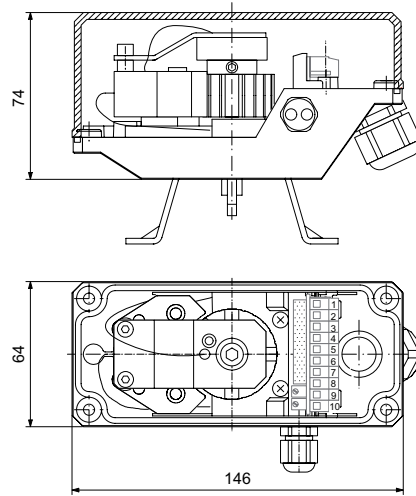
Signal	4 - 20 mA
Voltage	24 V DC \pm 15%
Angle sensor	GL 60-10K M354
Electrical rotation angle	20 ... 354°
Linearity	\pm 0,25%
Protection class	IP63
Characteristic	decreasing if actuator closes

technical data - double sensor

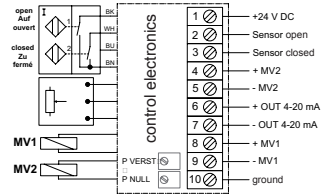
Manufacturer	Pepperl + Fuchs
Type	NBN3-F25F-E8
Operation switching element	PNP, Dual NOC
Switch distance	3 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 200 mA
Residual current	0 ... 0,5 mA
Load current	\leq 25 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Switching precision	\leq 0,5°
Protection class (acc. to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent), Vestamid (black) or Aluminium anodize
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



wiring diagram



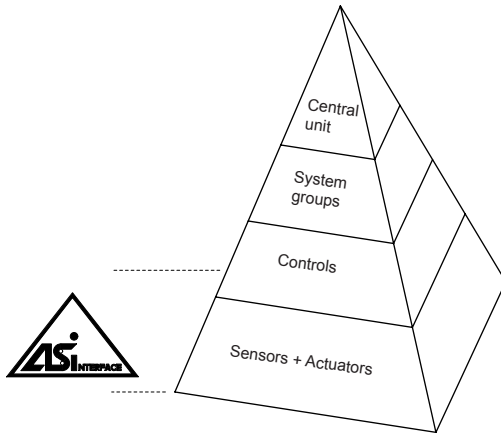
basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	O-ring seal	EPDM
3	1	Cable cover	PA + 30% GF
4	1	Housing cover	page 27
5	1	TCR-shaft	POM
6	1	Switching cams	POM, A2
7	1	Double sensor NAMUR	-
8	1	Terminal block, 10-pole	-
9	1	Cable gland M20x1,5	-
10	1	Cable gland M16x1,5 up to two solenoid connections	-
11	1	Bracket, size 1-4	A2 or PA

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
AZ	Display	A = Open Z = Closed
420	Output signal	420 = 4 -20 mA

Actor - Sensor - Interface



The Actor-Sensor-Interface (AS-Interface) is perfectly suitable for the communication between an industrial control system and the decentral Actor and Sensor. The Actor-Sensor-Interface (AS-Interface) provides, due to the specific yellow ASi flat cable, the possibility for up to 62 participants to transfer data and supply energy to sensors and actors. Compared to conventional wiring technology (wiring loom) the installing time and cost is minimized. Components of different manufacturers are installable without problem with the same cable or in case of similar functionality, replaceable with another participant. AS-Interface provides an intrinsically safe data transfer, it is very resistant against electro-magnetic interferences and offers an integrated diagnostics, e.g. identification of short circuit.

The AS-Interface works according the Master-Slave-Method. With the AS-Interface-Specification 2.1 it is possible to implement up to 62 Slaves to one Master. The amount of transferable inputs has increased to 248, and those of outputs to 186. For the AS-Interface every 2-wire conductor cable is in principle suitable. But we recommend using the yellow, reverse polarity protected AS-Interface cable, on which the components can be connected by perforating the cable. If the data transfer and the current supply together need more than 8 A, then a second additional black AS-Interface profile cable is needed at the same time with the yellow one to ensure the correct data transfer.

Brief Description

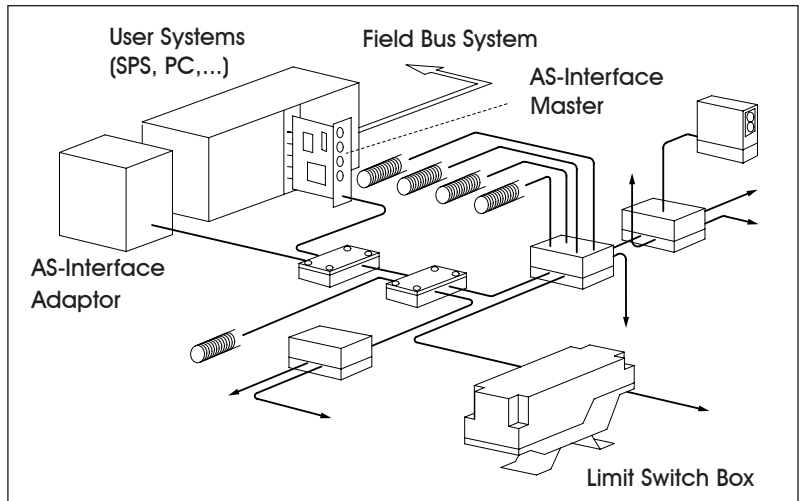
Topology	optional: linear, star, tree, ring
Amount of the participant	62 ASi-Slaves / 1 Master
Addressing	with Master, using programming device or automatically when replacing the components
Transmitting medium	unshielded 2-wire cable for data transfer and energy supply (2 x 1,5 mm ²)
Dimension	100 m total length (without repeater)
Transmission rate	Approx. 167 kBit/s
Access method	cyclic polling Master - Slave
Cycle time	5 ms complete network installation
Data sequence	4 bit bi-directional
Saving data	1 bit parity + Signal quality control

The AS-Interface System Components



AS-Interface Master

The Master or Gateway is the heart of the AS-Interface network. It controls the system and the data exchange between its Slave units and higher level bussystems, e.g. PROFIBUS, INTERBUS-S, MODBUS, etc. The „stand alone master“ design is able to memorize a whole control sequence and to independently execute combinations of inputs and outputs.



AS-Interface Adaptor

Due to the shared use of only one unshielded cable to transfer data and auxiliary power in the AS-Interface Network, the installed power supply has to have special filters for data processing. It is not advisable to use a standard 24 V adaptor to supply each single participant with power.

AS-Interface Module Group

Already installed standard sensors/-actors in 2-wire or 3-wire technology can be integrated into the AS-Interface Network as a Module Group. Each Group is considered as only one participant in the system. As a result, up to 248 binary units can be integrated into the network (by using bidirectional Slaves).

AS-Interface Sensors/Actors

The „intelligent Sensors/Actors“ with integrated chip are bus-compatible and ready-to-connect to the AS-Interface cable.

AS-Interface Limit Switch Boxes

The special E/A Module Group of ROTTECH limit switch boxes records the actuators position „Open/Closed“ and at the same time controls the solenoid valve of the actuator. The complete unit represents a single participant in the AS-Interface net.

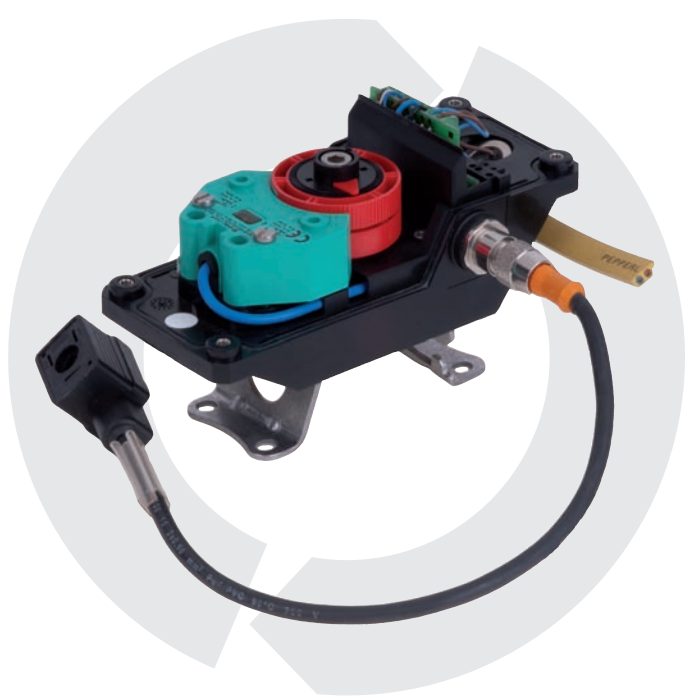
AS-Interface Cable

The special perforation technology allows an easy, fast and reverse polarity protected connection of the participant to the AS-Interface net without complicated cutting to length and skinning the cable.

AS-Interface

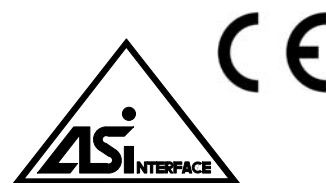
The AS-Interface limit switch box converts the mechanical end position or intermediate positions of pneumatic positioning actuators into electrical signals and provides them to the AS-Interface-Bussystem. For the detection of the end positions, NAMUR-sensors or mechanical microswitches with gold alloy contacts can be utilized. This TCR-box allows an indirect control of a solenoid valve (2,6W/24V) by using the bus cable. Thanks to the perforation technology the connection of the box is possible at any position of the already existing or newly installed AS-Interface cable. No special tools are required.

This box model is also available with position indicator.



Benefits

- Bus interconnection of the complete limit switch box
- Integrated control function of a solenoid valve
- Easy and fast installation and connection



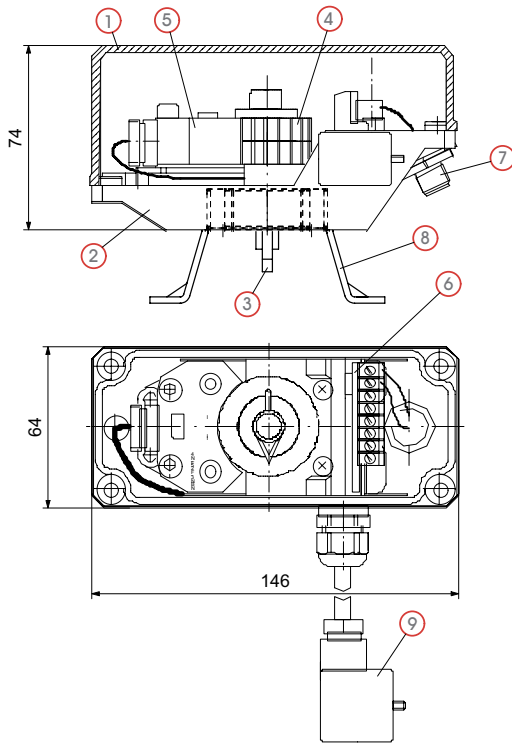
technical data - double sensor

Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4
Operation switching element	NAMUR NCC
Switch distance	3 mm
Data bit	AS-Interface
2x Input/1x Output	D0 : Magnetic valve control D2 : sensor 1 D3 : sensor 2
Nominal voltage	30 V DC
Temperature range	-25 ... +60 °C
Switching precision	≤ 0,5°
Protection class	IP 65 (Housing)
(according to DIN EN 60529)	IP 67 (Sensor)
Housing base	Vestamid (black)
Housing cover	Makrolon (transparent)
Sealing	EPDM
Connection	plug M12x1, 4-pole
Solenoid-valve	2,6 W / 24 V DC
Solenoid-plug	Type industry

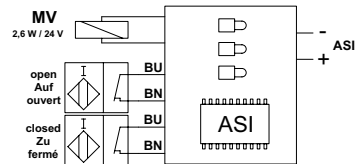
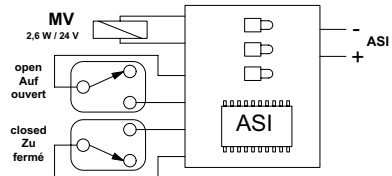
programming details

Profile	S-D.A.E
IO-Code	D
ID-Code	A
ID1-Code	7
ID2-Code	E

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing base	Vestamid
2	1	Housing cover	page 27
3	1	TCR-shaft	POM
4	1	Switching cams	POM
5	1	Double sensor	-
6	1	ASI-plug-in card	-
7	1	ASI-connection	-
8	1	Bracket size 1-4	A2
9	1	Solenoid plug	-
10	1	Solenoid valve connection M12	-

product key

T	Design	T = TCR
PF	Make	PF = Pepperl + Fuchs CR = Crouzet
F25N	Type	F25N = NCN3-F25F-N4 3N = SJ3,5-N 8 = 83.161.801
M	Housing cover	M = Makrolon A = Aluminium V = Vestamid
V	Housing base	V = Vestamid
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open Z = Closed
M12	Solenoid con.	M12 = M12x1,5 RS = circular con.
ASI	Output signal	ASI = ASI



ET-Boxes - General Information

The ET-box is the classical housing shape in ROTECH's program. This housing in standard design has its axis in the middle. Thus a symmetrical assembly of all components is possible and it offers enough space and free access to the terminal block for an easy connection of sensors and valves.

The interior design offers enough space for an integration of a cylindrical proximity sensor up to M18 x 50 mm dimension. To mount the ET-box on to actuators of various sizes we offer a wide range of mounting brackets. The box is available with fixed standard sizes or with our extremely flexible universal bracket.

The ET-box is available in material of construction Macrolon, Vestamid and extremely robust aluminium. The Vestamid-cover is optionally available with a viewing window. The position of the connecting shaft to the actuator is indicated by an oversized, eye-catching yellow position indicator, which is also visible from a great distance. This position indicator is turnable by 90°, thus a correct indication of the valves position is guaranteed even if the actuator is mounted traverse to the flow direction. The ET-box offers more technical advantages. To ensure a reliable connection between ET-box and shaft of the part-turn valve actuator the axis of the ET-box is mounted with spring loaded feather. As a result, tolerances, that may occur while operating can be compensated. Optionally it is possible to connect solenoid valves directly into the housing. There are no tools needed for the adjustment of the switching points in all designs. Very easy to adjust, though the set positions are secured against uncontrolled releases caused by vibrations due to the serrated switching cams.



Benefits

- Flexible electrical connection
- Ease of mounting
- 5 different housing materials: Makrolon, Vestamid, Polyester, Aluminium and Stainless Steel

The following matrix will give you an overview of which signal device can be combined with which housing material:

Signal device \ Material	Makrolon	Vestamid	Aluminium	Stainless steel	Polyester
Microswitches	•	•	•	•	•
Microswitches Ex d					
Proximity switches	•	•	•	•	•
Proximity switches Ex ia		•	•	•	•

Optional

Each NON-Ex ET-box made of aluminium is available with highly visible high vision beacon, which is printed with „OPEN“ and „CLOSED“.



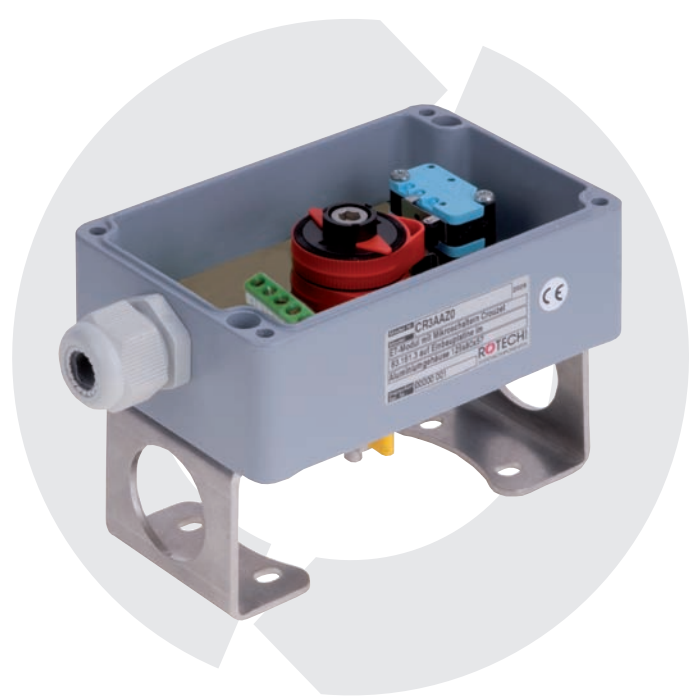
An alternative to the position indicator, which is integrated into the cover, is the panel. It is very easy and fast to mount onto the shaft of the limit switch box.

The standard ET-box is optionally available with 2 solenoid valve connections.



Microswitches

The ET-box with microswitches guarantees most value for price paid. The most convenient way to use a classical switch box. The microswitch is preferred in cases when the operating voltage is not specified and there are no special requirements. Thanks to its compact design it is ideal for installation into a housing. Due to the potential free contact model, there is no restriction in application possibilities for controlling. The ET-box is supplied with a torsion spring coupling, which is the connection between the actuators shaft / the valves shaft and the box. Even height-related tolerances of the mounting brackets can be compensated and a perfect fit into the slotted shaft of the actuator/ the coupling is guaranteed. A supplement yellow, by 90° turnable position indicator at the axis, indicates highly visible the position of the valve. The adjustment of the switching points can be realized easily and without tools thanks to the internal serrated cams. The preset switching points are secured against unintentional releases.



Benefits

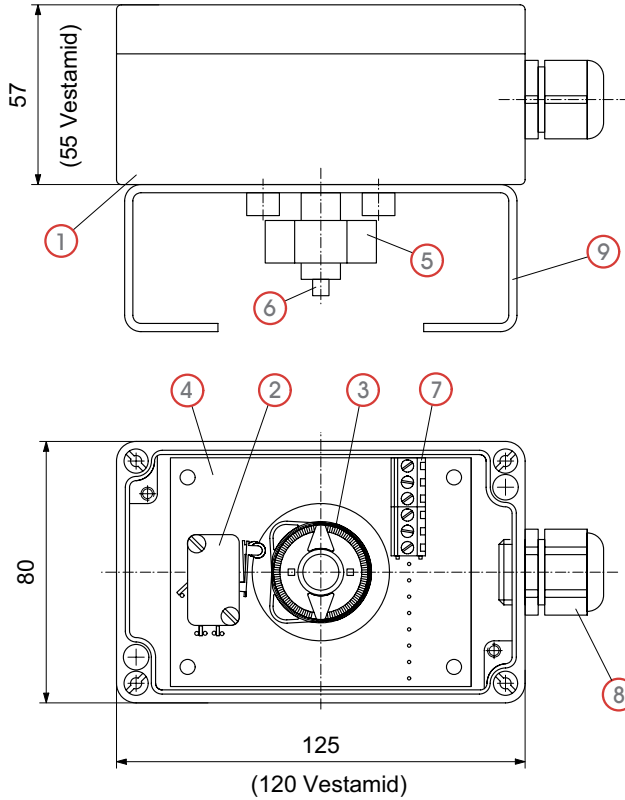
- Flexible electrical connection
- Ease of service
- Self-explanatory mounting
- 5 different housing materials: Makrolon, Vestamid, Polyester, Aluminium and Stainless steel



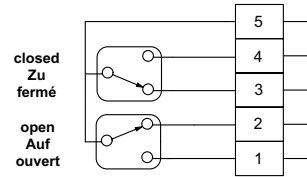
technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	Gold alloy
Mechanical life	2 x 10 ⁷ Switching cycle	5 x 10 ⁷ Switching cycle
Temperature range	-20 ... +85 °C	-25 ... +85 °C
Switching capacity	1,5°	1,5°
Protection class	IP 65 (Housing)	IP 65 (Housing)
(according to DIN EN 60529)	IP 65 (Sensor)	IP 65 (Sensor)
Housing material	Makrolon (transparent), Vestamid (black), Aluminium anodize, stainless steel, polyester	Makrolon (transparent), Vestamid (black), Aluminium anodize, stainless steel, polyester
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

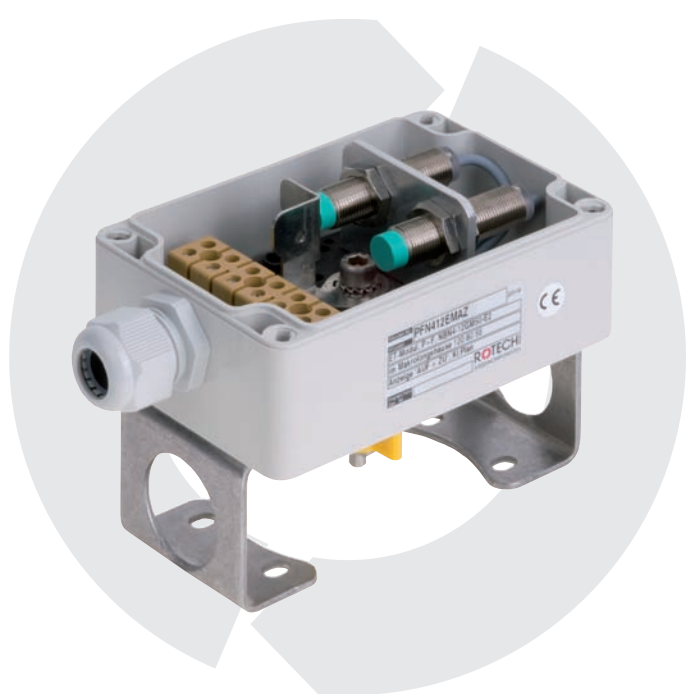
Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	2	Microswitches	-
3	2	Switching cams	POM
4	1	Mounting plate	-
5	1	Position indicator	PE
6	1	Shaft	A2
7	1	Terminal block 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Bracket, Size 1-4	A2

product key

CR	Make	CR = Cruzet
3	Type	3 = 83.161.301
M	Housing Material	M = Makrolon A = Aluminium V = Vestamid E = Edelstahl P = Polyester
S	Visual indication (optional)	S = Vision beacon F = Vision panel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid connection	0 = Without 1 = 1x M12 x 1,5 2 = 2x M12 x 1,5

3-Wire Sensor Cylindrical

The box with 3-wire proximity sensor transforms the mechanical end position or intermediate position of actuators into electrical signals. The 3-wire sensor is used in several European countries as a contact-free signal device for a NON-Ex application. It is known for its ultimate reliability, because it has an insignificant voltage drop in operating-status. The feather coupling of the box compensates possible unevenness of the mounting bracket and guarantees a perfect fit into the slotted axis of the actuator for the transmission. A supplement yellow, turnable position indicator at the axis shows highly visible the position of the armature.



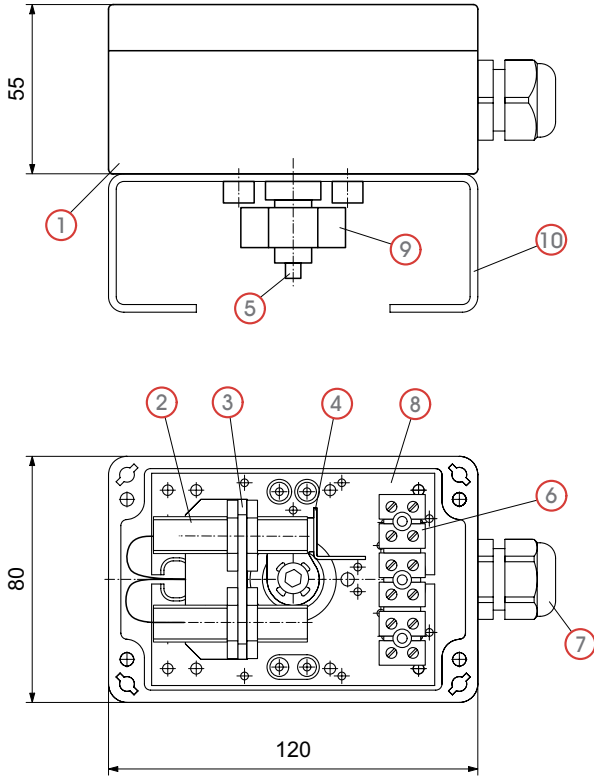
Benefits

- Easy and precise adjusting of the end positions
- Reliable in control operation due to the stainless steel switch flag
- Ease of mounting thanks to the symmetrical design

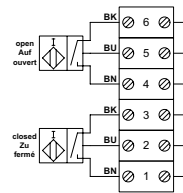
technical data

Manufacturer	Pepperl+Fuchs
Type	NBN4-12GM50-E2
Operation switching element	3-Wire, PNP NOC
Switch distance	4 mm
Operating voltage	10 ... 30 V DC
Operating current	0 ... 100 mA
Residual current	0 ... 0,5 mA
Load current	≤ 15 mA
Output	Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Switching precision	≤ 0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Makrolon, Vestamid (black), Aluminium anodize, Polyester
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

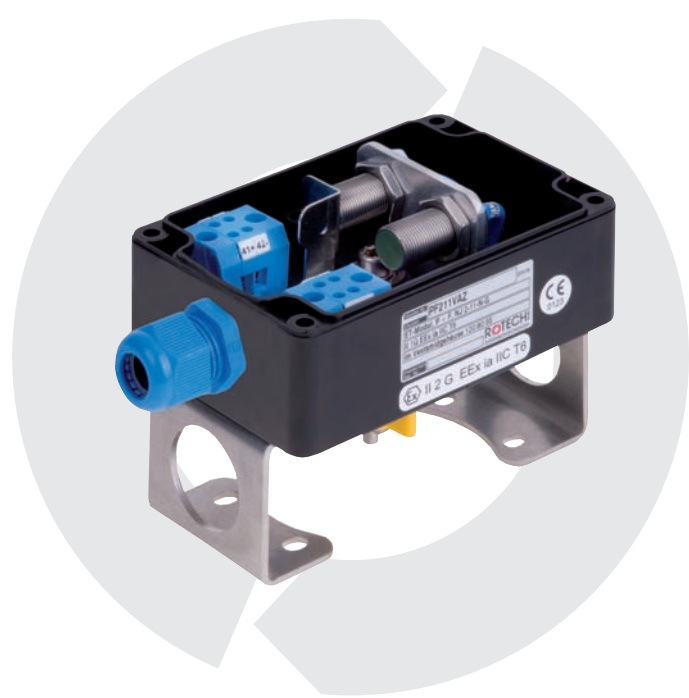
Pos.	Pcs.	Description	Material
1	1	Housing	Makrolon
2	2	Proximity switch	-
3	1	Proximity switch mounting	Aluminium
4	1	Switch flag	A2
5	1	Shaft proximity switch	A2
6	1	Terminal block, 6-pole	-
7	1	Cable gland M20x1,5	PA
8	1	Mounting plate	PA 6
9	1	Position indicator	PE
10	1	Bracket, size 1-4	A2

product key

PF	Make	PF = Pepperl + Fuchs
N412E	Type	NBN4-12GM50-E2
M	Housing Material	M = Makrolon A = Aluminium V = Vestamid VF = Vestamid + vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Proximity Sensor Cylindrical

Cylindrical sensors are extremely susceptible to mechanical damage and dirt when openly mounted onto actuator and valves. It is possible to install sensors up to size M18 x 50 mm into the ET-box. Thanks to the housing design, ease of mounting and connecting is guaranteed. Proximity sensors, designed according to NAMUR standard are preferred for application in hazardous areas, where protective measures concept intrinsic safety is required. The ET-box made of housing materials Vestamid, aluminium or Polyester offers the required explosion-proof security for the housing. Also this box ensures the easy adjustment of the end position, the perfect fit into the axis due to the torsion spring coupling, integrated in the axis of the box, and by the 90° turnable, yellow position indicator.



Benefits

- Easy and precise adjusting of the end positions
- Reliable in control operation due to the stainless steel switch flag
- Ease of mounting thanks to the symmetrical design

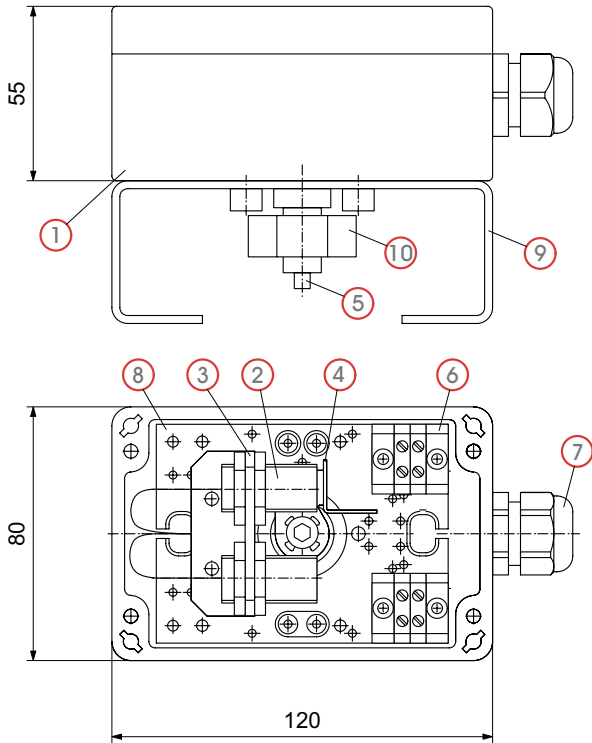


II 2G Ex ia IIC T6
other protection classes available

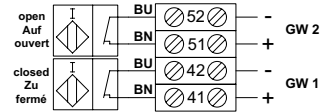
technical data

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs
Typ	NJ2-11-N-G	NJ2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 68 (Sensor)	IP 65 (Housing) IP 68 (Sensor)
Housing material	Vestamid (black) or Aluminium anodize Polyester Stainless steel	Vestamid (black) or Aluminium anodize Polyester Stainless steel
Sealing	EPDM	EPDM
Switching precision	≤ 0,5°	≤ 0,5°
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Makrolon
2	2	Proximity switch	-
3	1	Proximity switch mounting	Aluminium
4	1	Switch flag	A2
5	1	Shaft proximity switch	A2
6	2	Terminal block, 2x2-pole	-
7	1	Cable gland M20x1,5	PA
8	1	Mounting plate	PA 6
9	1	Bracket, size 1-4	A2
10	1	Position indicator	PE

product key

PF	Make	PF = Pepperl + Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
V	Housing material	A = Aluminium E = Stainless steel V = Vestamid VF = Vestamid + vision panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor

Slotted proximity sensors in 2-wire technology are preferred in the chemical industry and in the machine building sector in areas where general explosion protection measures are required. This sensor type is intrinsically safe due to its low potential and therefore usually requires no additional explosion protection measures. Slotted proximity sensors can be implemented with damped or undamped end position and offer high flexibility for the end position feedback transmission to the control system. The adjustment of the switching points is very easy to realize by turning the switching flag. For this intrinsically safe design, housing material Vestamid and aluminium are available.



Benefits

- Usable with damped or undamped end position
- High precision operation due to large diameter of switching disc
- Individually adjustable switching points

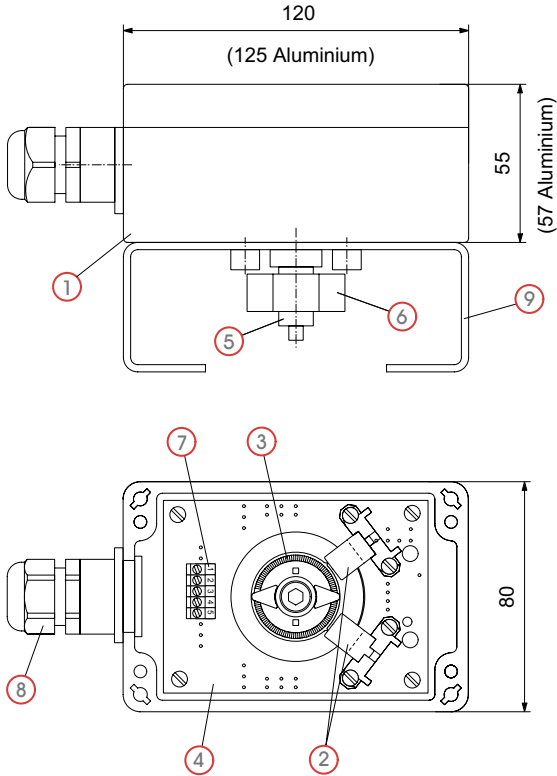


Ex II 2G Ex ia IIC T6
other protection classes available

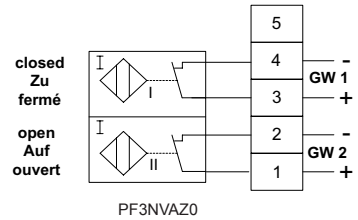
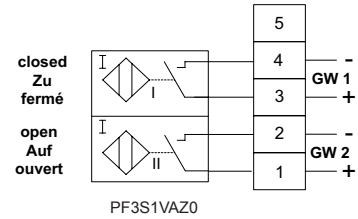
technical data

Manufacturer	Pepperl + Fuchs	Pepperl + Fuchs	Pepperl + Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Switching precision	≤0,5°	≤0,5°	≤0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Vestamid (black) Aluminium (grey) Stainless steel Polyester	Vestamid (black) Aluminium (grey) Stainless steel Polyester	Vestamid (black) Aluminium (grey) Stainless steel Polyester
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

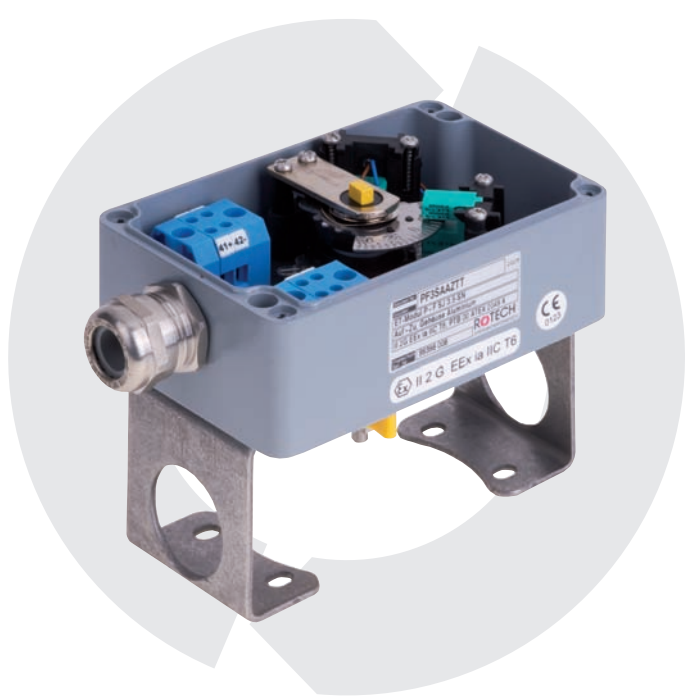
Pos.	Pcs.	Description	Material
1	1	Housing	Vestamid
2	2	Slotted proximity switch	-
3	1	Switching cams	POM
4	1	Mounting plate	-
5	1	Shaft	A2
6	1	Position indicator	PE
7	1	Terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Bracket, size 1-4	A2

product key

PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5mm
N	Type	N = ... - N S = ... - SN NO = ... NO S1 = ... - S1N
A	Housing Material	A = Aluminium P = Polyester E = Stainless steel V = Vestamid VF = Vestamid+Panel
AZ	Display	A = Open Z = Closed

Ex ia - Slotted Proximity Sensor - Low Temperature

This limit switch box can be used in an ambient temperature up to $-50\text{ }^{\circ}\text{C}$. For an application in this ambient temperature the robust aluminium housing is standard. Special sealings guarantee the protection class IP65 of the housing even at such low temperatures. The slotted sensors in 2-wire technology, implemented in housings are suitable for an application in the temperature range up to $-50\text{ }^{\circ}\text{C}$ and for an easy installation into the aluminium housing. Designed as a NC NAMUR-sensor it is intrinsically safe due to its low working voltage and therefore usually requires no additional explosion protection measures. The adjustment of the switching points is very easy to realize by turning the stainless steel switching flag. Of course this design also offers all the benefits of our ET-housing: secured position of the limit switches, switching axis with spring loaded feather for the height compensation and turnable yellow position indicator.



Benefits

- Usable in an ambient temperature up to $-50\text{ }^{\circ}\text{C}$
- Ease of service screw connection for all components
- Ease of mounting thanks to the symmetrical design



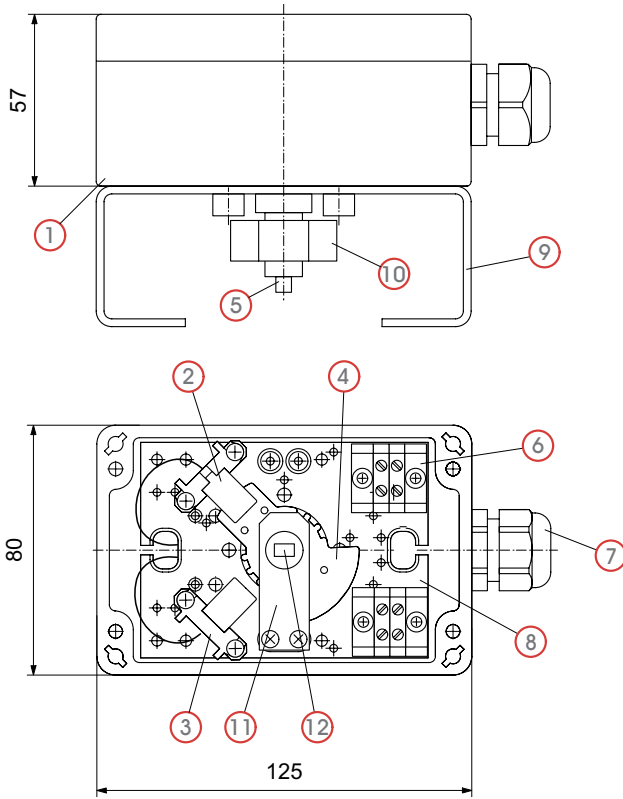
II 2G Ex ia IIC T6

other protection classes available

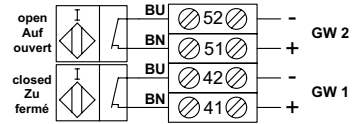
technical data

Manufacturer	Pepperl+Fuchs
Type	SJ3,5-SN
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6 with safety function
Type of protection	Ex ia II 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC
Power input	$\geq 3\text{ mA}$ (not detected) $\leq 1\text{ mA}$ (detected)
Temperature range	$-50\text{ }^{\circ}\text{C}$ bis $+85\text{ }^{\circ}\text{C}$
Switching precision	$\leq 0,5^{\circ}$
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Aluminium (industry grey)
Sealing	Perbunan 70 Shore (NBR)
Connection	Cable gland M20x1,5

dimensions



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	2	Slotted proximity switch	-
3	2	Slotted prox. sensor mounting	PA 6
4	2	Switching cams	A2
5	1	Shaft	A2
6	2	Terminal block, 2-pole	-
7	1	Cable gland M20x1,5	brass nickel-plated
8	1	Mounting plate	-
9	1	Bracket, size 1-4	A2
10	1	Position indicator	PE
11	1	Bearing plate short	Steel nickel-plated
12	1	Shaft long	PE

product key

PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5mm
S	Type	S = ... - SN
A	Housing material	A = Aluminium
AZ	Display	A = Open M = Middle Z = Closed
TT	Temperature range	TT = Low temperature

COM-Box - General Information

The COM-Box is an extremely robust, multi-purpose and innovative housing design - an all-rounder, which fits perfectly in different applications and diverse industry sectors. The newly created box made of coated aluminium offers as a special benefit the comfortable and practical solution of the hinge for the cover. As a result the cover is attached and needs to be fastened and opened with only two captive screws. Compared to conventional housings this solution offers time saving and high ease of service.

Also from the technical point of view the COM-Box offers benefits: The foam-filled sealing and the enlarged diameter sealing guarantee high tightness and provide reliable service for a lifetime. The integrated two way breathable membrane in the base of the box guarantees the compensation of steam pressure and avoids condensed water completely. Due to the optimized housing design it is possible to implement an extensive range of sensors and switches.

The display in the cover is available in pure glass and various other materials. The axis of the box is available in stainless steel or robust plastic with indicator at both sides.

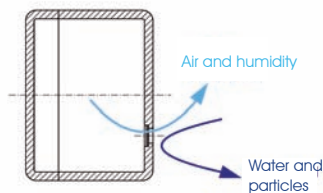


Benefits

- Robust thanks to the new housing design
- Comfortable and captive cover with hinge for the cover
- High tightness with high diameter seal and foam-filled sealing

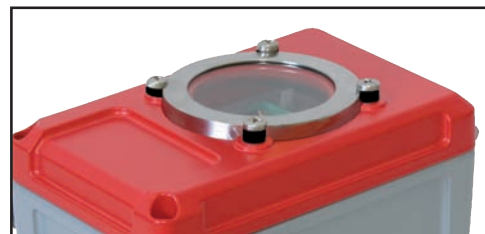
Options

COM limit switch boxes are equipped as standard with two way breathable membrane



two way breathable membrane

Design with oversized control window.





Microswitch

The COM-Box with integrated microswitches is the most cost-saving choice to have all the benefits of this robust box. The microswitch is preferred in cases when there are no special requirements needed and the operating voltage is not specified. It fits perfectly into a housing thanks to its compact design. When used as a potential free change-over contact, there are no limits of controlling possibilities. The aluminium housing of the COM-Box guarantees highest protection against mechanical wear of sensors and all other environmental influences. The interior of the box is readily accessible due to the innovative and captive hinged cover. As a result, ease of inspection has increased a lot compared to conventional boxes.



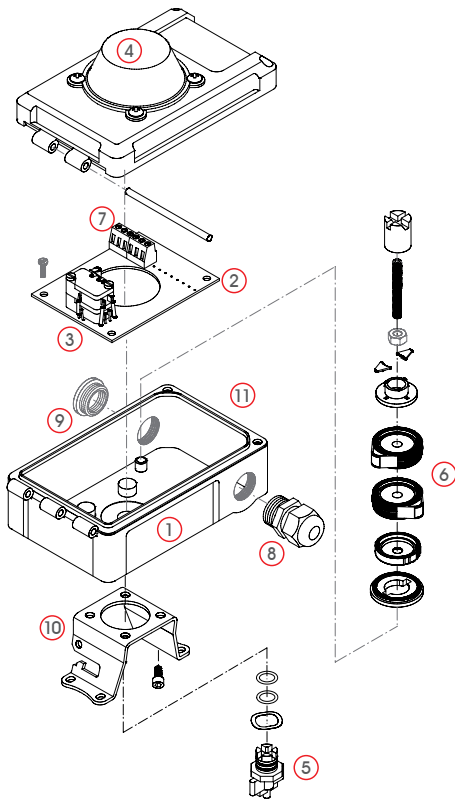
Benefits

- Robust newly created housing design
- Ease of service hinged cover
- Cost-saving design with microswitches

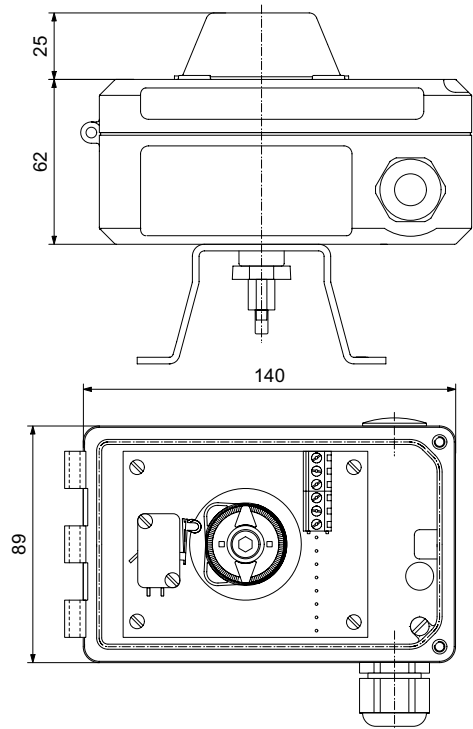


technical data

Manufacturer	Crouzet	Crouzet
Type	83.161.301	83.161.801
Switching capacity	4 A, 230 V ~	0,1 A, 230 V ~
Contacts	Silver-nickel	Gold alloy
Mechanical life	2 x 10 ⁷ Switching cycle	5 x 10 ⁷ Switching cycle
Temperature	-20 ... +85 °C	-25 ... +85 °C
Switching precision	1,5°	1,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 65 (Sensor)	IP 65 (Housing) IP 65 (Sensor)
Housing Material	Aluminium	Aluminium
Sealing	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	2	Microswitches	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket, size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
CR	Make	CR = Crouzet
3	Type	3 = 83.161.301 8 = 83.161.801
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid-Con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

Double Sensor

The intrinsically safe double sensor is a compact unit, which allows direct mounting onto NAMUR interface on actuators. The whole unit consists of an one-piece encapsulated component with proximity sensors and the so called Puck, a cam which transmits the mechanical rotary movement of the switching axis. The mechanical positions are converted into electrical position feedback signals. By using the double sensor it is possible to create a very simple mechanical construction of the box. Inside the robust COM-aluminium housing, the double sensor is perfectly protected. The innovative and captive hinged cover guarantees the greatest ease of service.



Benefits

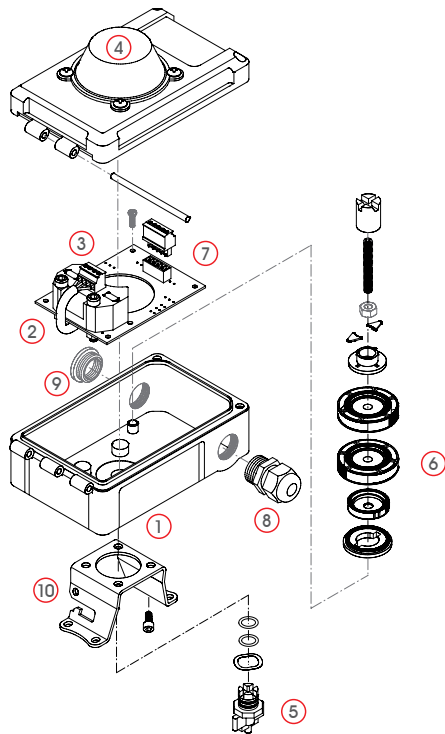
- Intrinsic safety in robust aluminium housing
- Hinged cover for a great ease of service
- Ease of mounting thanks to the big interior



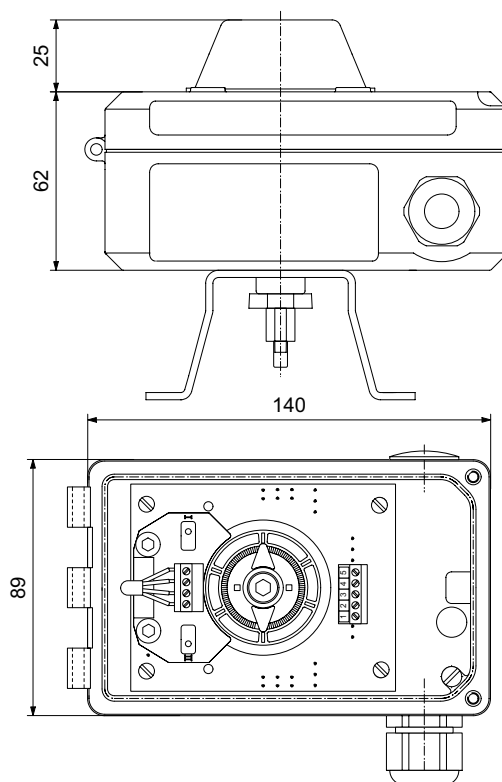
Ex II 2G Ex ia IIC T6
other protection classes available

technical data

Manufacturer	Pepperl + Fuchs	Turck	IFM
Type	NCN3-F25F-N4	Ni4-DS20-2Y1X2	NN5009
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)	NCC NAMUR	NCC NAMUR
Type of protection	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switching distance	3 mm	4 mm	4 mm
Nominal voltage	8 V DC	8,2 V DC	8,2 V DC (1kΩ)
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity		
Load current	≤ 3 mA		
Temperature range	-25 ... +85 °C	-25 ... +70 °C	-20 ... +70 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Switching precision	≤ 0,5°	≤ 0,5°	≤ 0,5°
Housing material	Aluminium	Aluminium	Aluminium
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	1	Double sensor	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Plugable terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket, size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
PF	Make	PF = Pepperl+Fuchs
F25N	Type	F25N = NCN3-F25F-N4
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

Slotted Sensor

Sensors in 2-wire technology are preferred in the chemical industry and in hazardous areas. The slotted sensor is intrinsically safe, due to its low potential and therefore requires no additional explosion protection measures. The switching disc of the cam system and thus each single switching points are adjustable individually in the range from 0° - 360°. Slotted sensors can be used in damped or undamped end position and offers a very flexible application. The aluminium housing guarantees perfect protection against mechanical wear of the sensors and all environmental influences. The readily accessible interior due to the innovative and captive hinged cover greatly increases ease of service in comparison to the conventional box.



Benefits

- Sensors usable in damped or undamped end position
- High precision operation due to the large diameter of the switching disc
- Hinged cover for a great ease of service

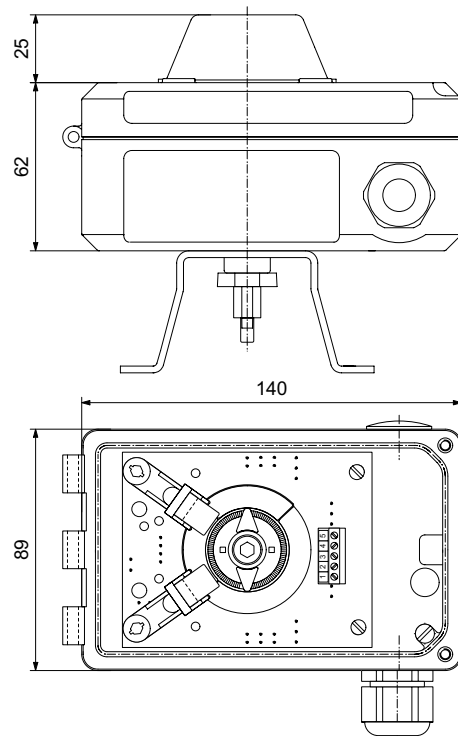
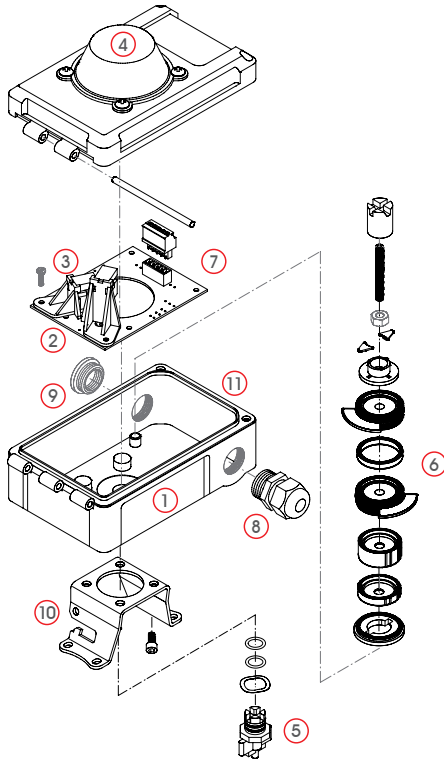


Ex II 2G Ex ia IIC T6
other protection classes available

technical data

Manufacturer	Pepperl + Fuchs	Pepperl+ Fuchs	Pepperl+ Fuchs
Type	SJ3,5-N	SJ3,5-SN	SC3,5-N0
Operation switching element	NCC NAMUR according to DIN EN 60947-5-6	NCC NAMUR according to DIN EN 60947-5-6 with safety function	NCC NAMUR according to DIN EN 60947-5-6
Ex-protection class	Ex ia 2G IIC T6 PTB 02 ATEX 1150	Ex ia 2G IIC T6 PTB 02 ATEX 1150	Ex ia 2G IIC T6 PTB 02 ATEX 1150
Nominal voltage	8 V DC	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C	-25 ... +85 °C
Switching precision	≤0,5°	≤0,5°	≤0,5°
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)	IP 65 (Housing) IP 67 (Sensor)
Housing material	Aluminium	Aluminium	Aluminium
Sealing	EPDM	EPDM	EPDM
Connection	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M20x1,5	Cable gland M20x1,5	Cable gland M20x1,5

dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing	Aluminium
2	1	Mounting plate	-
3	2	Slotted proximity switch	-
4	1	Vision beacon OPEN / CLOSED	-
5	1	Shifter shaft	POM
6	1	Switching cams	POM
7	1	Plugable terminal block, 5-pole	-
8	1	Cable gland M20x1,5	PA
9	1	Blind plug M20x1,5	-
10	1	Bracket size 1-4	A2
11	1	Grounded conductor clamp (optional)	-

product key

C	Design	C = COM
PF	Make	PF = Pepperl+Fuchs
3	Slot size	3 = 3,5 mm
N	Type	N = ... - N S = ... - SN NO = ... NO
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open M = Middle Z = Closed
O	Solenoid con.	0 = Without 1 = 1x M20x1,5 2 = 1x M20x1,5 for 2x cable Ø 6mm

ALB-Box - General Information

The ALB-box is the direct result of further development of our COM-box and it is perfect for application in process plants. The box offers all benefits of the COM-box and, in addition, a greater internal space and extended application possibilities. The Certification for an explosion-proof Ex e box allows the application of, e.g. two switching networks with different voltage potential and it is possible to separate them effectively. A good example for a typical application is the intrinsically safe signal control (Ex ia) and the separated 24 V DC power supply for the control of the solenoid valves, which required until now, two separated housings. Now, it is also possible to use reliable Ex ed (d) solenoid valves with cable. The ample space inside the ALB-box allows the installation of a wide range of sensors and even switches, which were too big to be implemented into a housing before, can now be installed.



Benefits

- Two switching networks in one housing with a new concept
- Comfort thanks to the large interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing



Options

Design with closed cover



Design with control window

Design with big high vision beacon



Ex d - Microswitches

The ALB-box, made of coated aluminium offers as a special feature a comfortable hinged cover. The cover is captive and is available with different position indicator designs. The ample internal space offers numerous possibilities for your applications. The Aluminium housing is certified to protection class Ex ed IIC T6 by using components of increased safety. Implementing compact explosion-proof microswitches certified to classification group Ex ed IIC T6, we have created a multi-purpose application, and also competitive limit switch box. When used as a potential free change-over contact, the microswitch offers flexible method of controlling.



Benefits

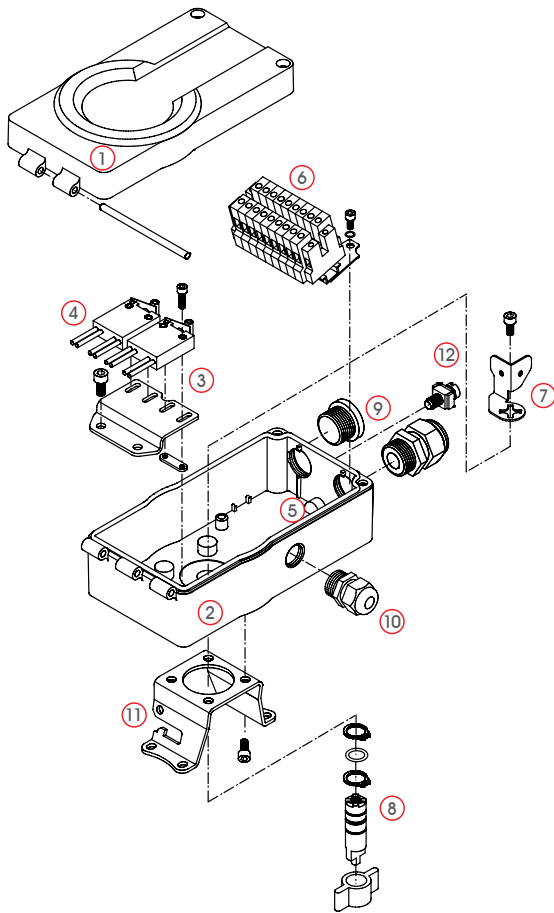
- Two switching networks in one housing with new concept
- Comfort thanks to the very spacious interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing



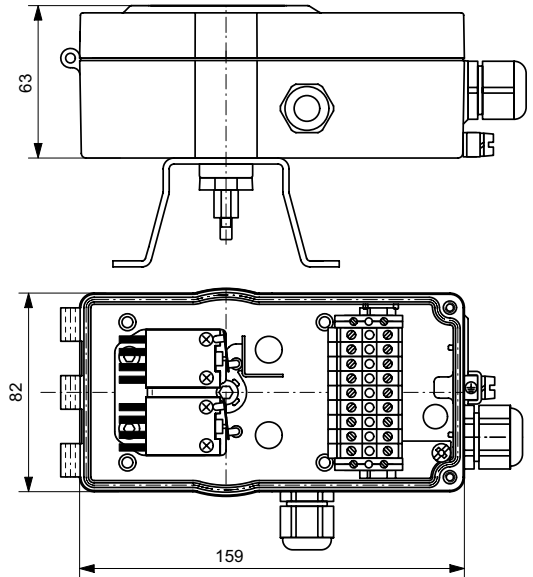
other protection classes available

technical data

Manufacturer	Crouzet
Type	83.139.1
Operation switching element	Double Pole Double Throw
Type of protection	II 2G Ex d IIC T6 (according to EN 60079) PTB 02 ATEX 1150
Switching loads	4 A, 230 V ~
Contacts	silver-nickel
Mechanical life	5 x 10 ⁶ switching cycle
Temperature range	-20 ... +60 °C
Switching precision	1,5°
Protection class (according to DIN EN 60529)	IP 65 Housing IP 67 Microswitches
Housing base	Vestamid (black) Aluminium
Housing cover	Vestamid (black)
Sealing	EPDM
Connection	Cable gland M20x1,5 (protection class: EEx e II)
Solenoid connection (optional)	Cable gland M12x1,5



dimensions



basic schedule

Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	Microswitch plate	Aluminium
4	2	Microswitch sensor	-
5	1	Membran	-
6	1	Terminal block	-
7	1	Switching cams	POM
8	1	Shaft	POM
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA
11	1	Bracket size 1-4	A2
12	1	Grounded conductor clamp (optional)	-

product key

A	Design	A = ALB
CR	Make	CR = Crouzet
1	Type	1 = 83.139.1 (Ex d IIC T6)
A	Housing	A = Aluminium
S	Cover	S = Vision beacon F = Vision panel R = Closed, with Rotech logo
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open Z = Closed

Ex ia - Proximity Sensor Cylindrical

The ALB-box, made of coated aluminium offers as a special feature a comfortable hinged cover. The cover is captive and is available with different position indicator designs. The ample internal space offers numerous possibilities for your applications. The certified Ex e box allows e.g. two switching networks with different voltage potential. For example, Ex ia (intrinsic safety) for the signal control and 24 V DC power supply for the solenoid valves control. As a result, it is possible to use reliable solenoid valves in Ex ed (d = flameproof enclosure) with cable.



Benefits

- Two switching networks in one housing with new concept
- Comfort thanks to the very spacious interior and hinged cover
- High tightness with high diameter seal and foam-filled sealing

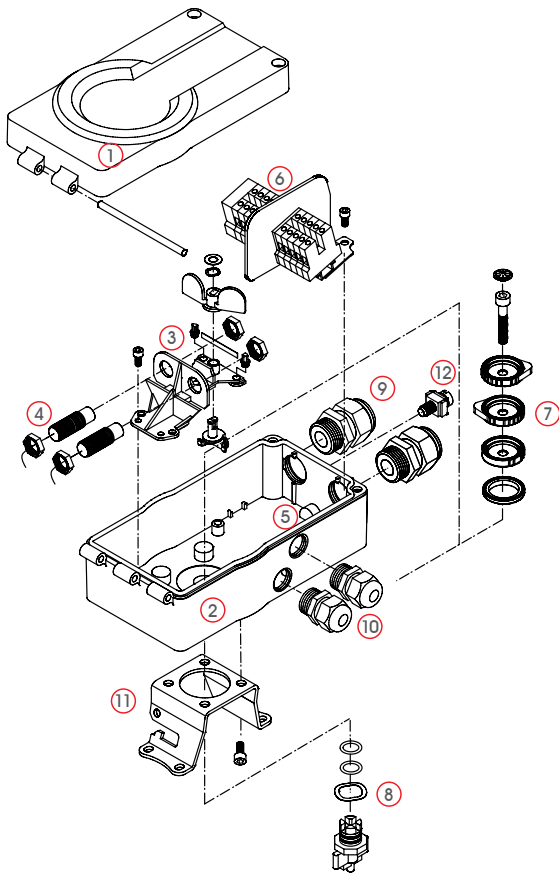


II 2G Ex ia IIC T6

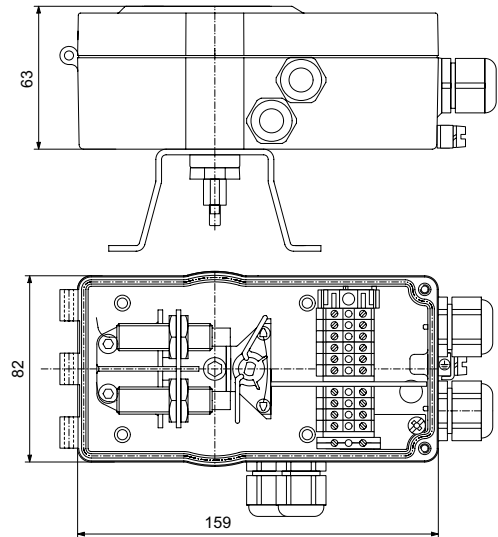
other protection classes available

technical data

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs
Type	NJ2-11-N-G	NJ2-12GK-N
Operation switching element	NAMUR NCC	NAMUR NCC
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	2 mm	2 mm
Nominal voltage	8 V DC	8 V DC
Current draw	≥3 mA (not detected) ≤1 mA (detected)	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-25 ... +85 °C	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 65 (Housing) IP 68 (Sensor)	IP 65 (Housing) IP 66 / IP 68 (Sensor)
Housing material	Aluminium	Aluminium
Sealing	EPDM	EPDM
Switching precision	≤ 0,5°	≤ 0,5°
Connection	Cable gland M20x1,5	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5	Cable gland M12x1,5



dimensions



basic schedule

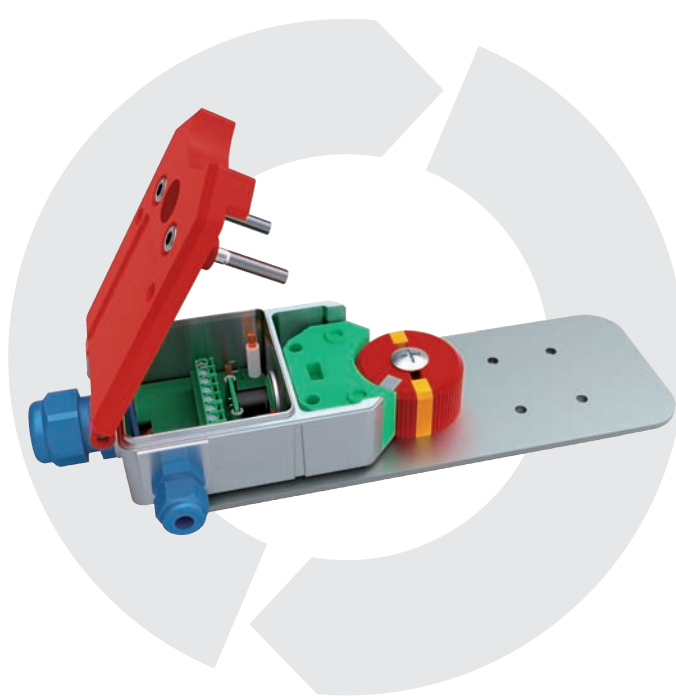
Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	Proximity switch mounting	Aluminium
4	2	Proximity switch	-
5	1	Membran	-
6	1	Terminal block	-
7	1	Switching cams	POM
8	1	Shaft	POM
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA
11	1	Bracket, size 1-4	A2
12	1	Grounded conductor clamp (optional)	-

product key

A	Design	A = ALB
PF	Make	PF = Pepperl+Fuchs
211	Type	211 = NJ2-11-N-G 212KN = NJ2-12GK-N
A	Housing	A = Aluminium
S	Position indicator	S = Vision beacon F = Vision panel R = Closed, with Rotech logo
T	Shifter shaft	T = POM, yellow E = Stainless steel
AZ	Display	A = Open Z = Closed
10	Connections	10 = 1x M20x1,5 11 = 1x M20x1,5 + 1x M16x1,5 12 = 1x M20x1,5 + 2x M16x1,5 20 = 2x M20x1,5 21 = 2x M20x1,5 + 1x M16x1,5 22 = 2x M20x1,5 + 2x M16x1,5

FMV

The FMV-box is a revolution regarding the installation of double sensors. To be correct, we should have called it an „open-covered construction“. All benefits of the double sensor are utilised fully. The connection interface of the double sensor is at the same time the mounting interface for the FMV-box, with these striking advantages: The installation time of the FMV, including the double sensor is the same as the installation of the double sensor it self. The spacious interior of the FMV offers the possibility to connect the sensor directly with a plug-in connector. In addition, it is possible to connect a solenoid valve directly onto the terminal block of the FMV-box. All benefits of a great limit switch box in a compact, fast to install and flexible unit.



Benefits

- Spacious terminal compartment
- Ease of service
- Compact design



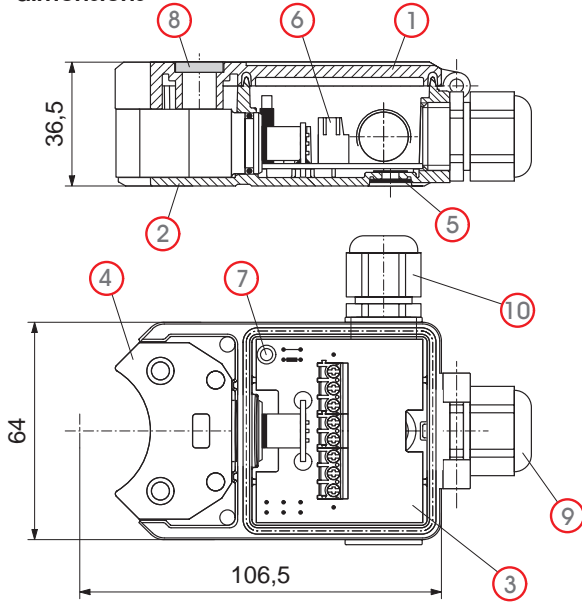
II 2G Ex ia IIC T6

other protection classes available

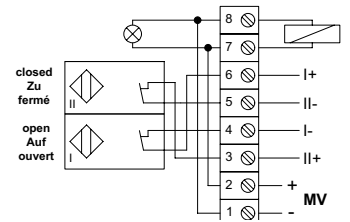
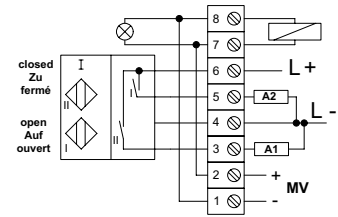
technical data

Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)
Ex-protection class	II 2G Ex ia IIC T6 PTB 02 ATEX 1150
Switch distance	3 mm
Nominal voltage	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity
Load current	≤ 3mA
Temperature range	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP65
Housing material	Aluminium
Sealing	EPDM
Connection	Cable gland M20x1,5
Solenoid connection (optional)	Cable gland M12x1,5

dimensions



wiring diagram



basic schedule

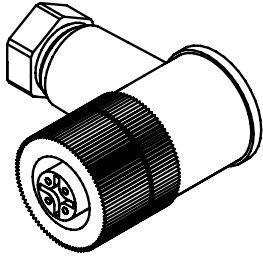
Pos.	Pcs.	Description	Material
1	1	Housing cover	Aluminium
2	1	Housing base	Aluminium
3	1	FMV-Plate	-
4	1	Double sensor	-
5	1	Membran	-
6	1	Terminal block	-
7	1	LED solenoid valve	-
8	1	Vision panel LED sensor	-
9	1	Cable gland M20x1,5	PA
10	1	Cable gland M16x1,5	PA

product key

F	Design	F = FMV
PF	Make	PF = Pepperl+Fuchs
N	Type	N = Double sensor NAMUR E = Double sensor 3-wire
A	Housing	A = Aluminium
AZ	Position indicator	A = Open Z = Closed
0	Solenoid con.	0 = Without Solenoid con. 1 = 1x Solenoid con. 2 = 2x Solenoid con.

Accessories and Options for Limit Switch Boxes

Female plug M12



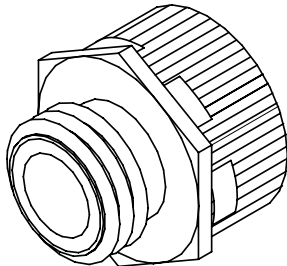
In special application cases, it is necessary to connect the sensors using a plug-in connector with the control center of the plant. For these special cases, we supply some double sensors with a M12-plug connector.

The plug-in connectors are separately available as accessories and are suitable for various applications.

product key

KD	_____ Type _____	KD = Plug-in connection
M12	_____ M12-plug connection _____	M12 = M12-plug connection
G	_____ Version _____	G = Straight through W = Right angled
4	_____ Number of poles _____	4
PG9	_____ Cable outlet _____	PG9

Venting device

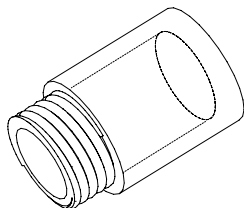


Condensated water caused by extreme fluctuation of temperature, e.g. between day and night is a problem for outdoor applications. The cooling down air is supersaturate and gives off humidity in the vapour pressure ambient. The humidity condenses in the coldest part of the environment. This nondesired and aggressive humidity causes corrosion and short-circuits. By using the compensating element, the air inside the housing is connected with the air of the environment outside and can interchange in the vapour pressure area. As a result, this „breathing“ avoids the dreaded condensate.

product key

BODAE12	_____ Type _____	Venting device
----------------	------------------	----------------

Adaptor M20x1,5 to 1/2" NPT



By using the adaptor M20x1,5 to NPT 1/2", it is possible to equip ROTTECH limit switch boxes with NPT-cable gland. This adaptor is available in brass and stainless steel.

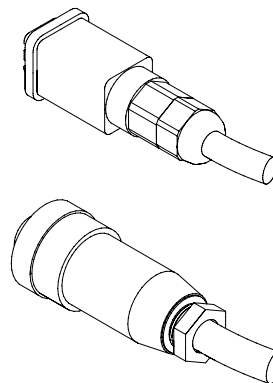
product key

M20/NPT12	_____ Type _____	Adaptor brass
E	_____ Material _____	E = Stainless steel (optional)

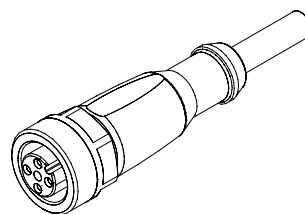
Accessories and Options for Limit Switch Boxes

Optionally, the ROTECH limit switch boxes are available instead of the standard cable gland M20x1,5 also with many other connections, e.g. Harting- or Hirschmann-connection. (Please notice that this option is not possible for TCR- and PB-housing)

Various plug-in Connector



M12 with 5 m cable



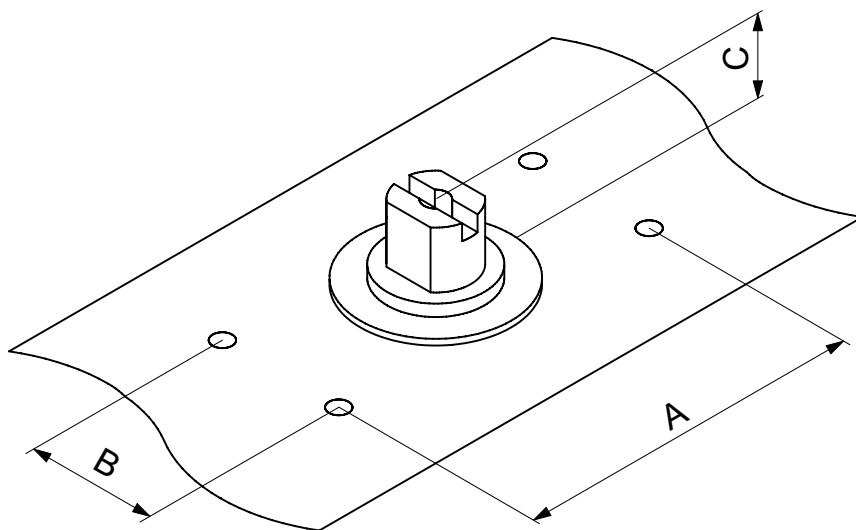
Brackets for Boxes

ROTECH offers a wide range of solutions for the installation of signal devices on actuator units. Our product range is specially harmonized for pneumatic part-turn actuators with connection interfaces according to VDI/VDE 3845. It is completed by brackets for mounting standard boxes, such with hand lever interlock and constructions for the direct mounting of limit switch units onto a manually operated valve.

The different sizes allow an easy and simple installation onto the various sizes of actuators.







Actuator-size according to VDI/VDE 3845

Actuator-size	Connection interfaces		Shaft height
	A	B	C
0	50	20/25	20
1	80	30	20
2	80	30	30
3	130	30	30
4	130	30	50

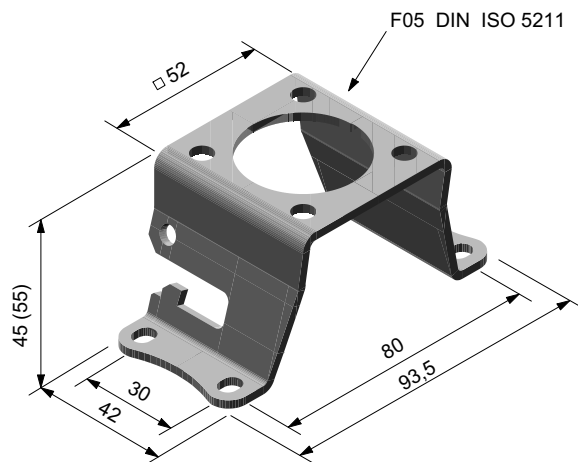


Overview - Brackets for Boxes

The following matrix gives an overview of different bracket types and shows simultaneously the adapted combination possibilities of box design respectively positioner.

	Proxi-Box	TCR-Design	ET-Design	COM-Design	ALB-Design	Positioner
T-Brackets 	●	●	●	●	●	
TK-Brackets 	●	●	●	●	●	
ET-Brackets 			●	●	●	●
UBT-Brackets 		●				
UBE-Brackets 	●		●			
ETU-Brackets 			●	●	●	●

Brackets for Limit Switch Boxes

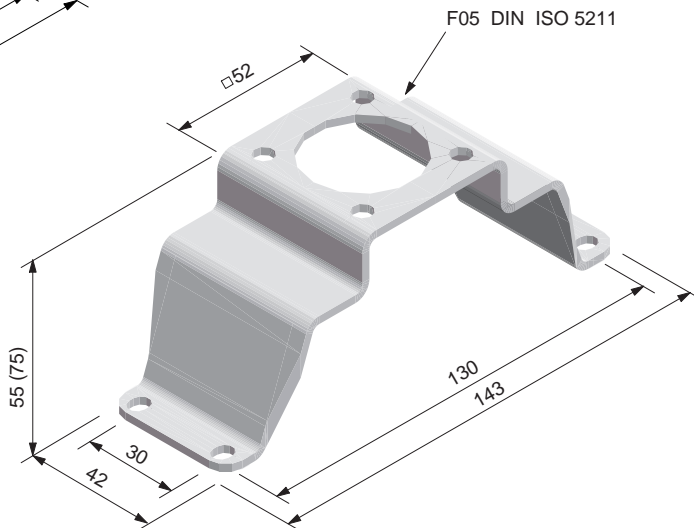


TCR-bracket TK1 (TK2)

Bracket with hand lever interlock suitable for actuators size 1 (size 2) according to VDI/VDE 3845

TCR-bracket TL3 (TL4)

Bracket for actuators size 3 (size 4) according to VDI/VDE 3845

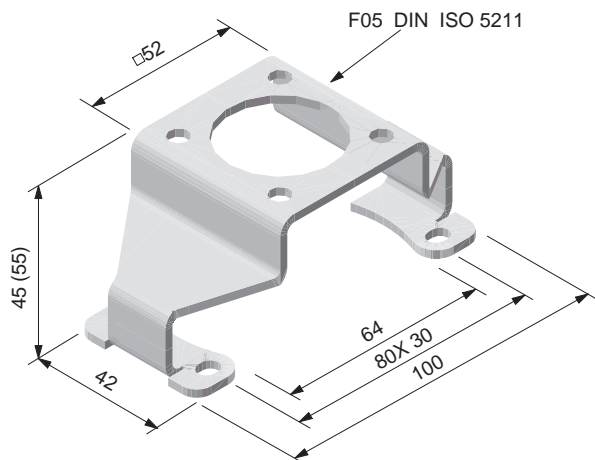


product key

T	Type	T = TCR-Bracket
K	Design	K = short design for size 1 and 2 L = long design for size 1 and 2
1	Size	Connection Interface Shaft height 1 = Size 1: 80x30 20 mm 2 = Size 2: 80x30 30 mm 3 = Size 3: 130x30 30 mm 4 = Size 4: 130x30 50 mm
A1	Mounting kit	A1-4 = Mounting kit bracket size 1-4 4x according to DIN 933 M5x8

Brackets for Limit Switch Boxes

Thanks to their extremely wide shape, the brackets T1..T4 offers maximum mounting space.

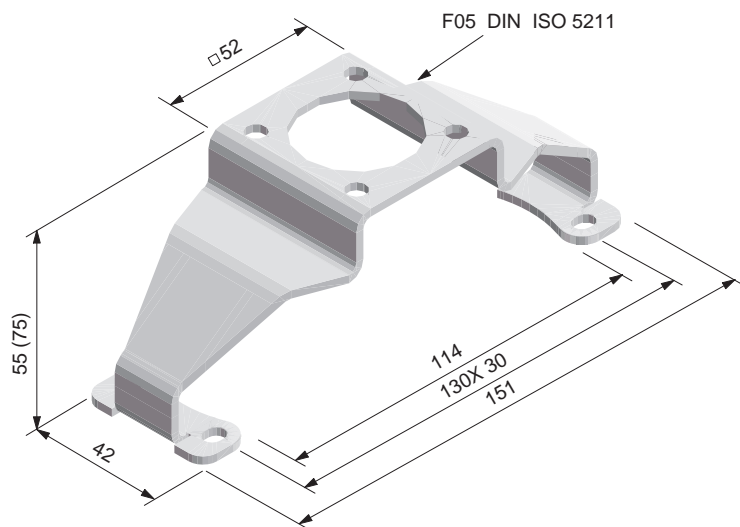


TCR-bracket T1 (T2)

Bracket for actuators
size 1 (size 2)
according to VDI/VDE 3845

TCR-bracket T3 (T4)

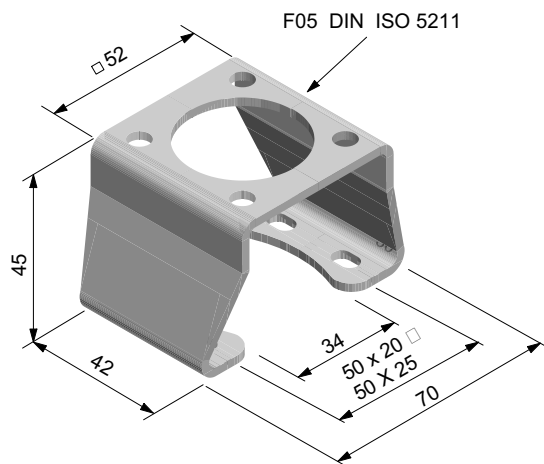
Bracket for actuators
size 3 (size 4)
according to VDI/VDE 3845



product key

T	Type	T = TCR-Bracket										
I	Size	<table border="1"> <thead> <tr> <th>Connection Interface</th> <th>Shaft height</th> </tr> </thead> <tbody> <tr> <td>1 = Size 1: 80x30</td> <td>20mm</td> </tr> <tr> <td>2 = Size 2: 80x30</td> <td>30mm</td> </tr> <tr> <td>3 = Size 3: 130x30</td> <td>30mm</td> </tr> <tr> <td>4 = Size 4: 130x30</td> <td>50mm</td> </tr> </tbody> </table>	Connection Interface	Shaft height	1 = Size 1: 80x30	20mm	2 = Size 2: 80x30	30mm	3 = Size 3: 130x30	30mm	4 = Size 4: 130x30	50mm
Connection Interface	Shaft height											
1 = Size 1: 80x30	20mm											
2 = Size 2: 80x30	30mm											
3 = Size 3: 130x30	30mm											
4 = Size 4: 130x30	50mm											
A1	Mounting kit	A1-4 = Mounting kit bracket size 1-4 4x according to DIN 933 M5x8										

Brackets for Limit Switch Boxes



The bracket size T0 is very compact, specially made for small actuators (size 0)

product key

T	Type	T = TCR-Bracket
O	Size	Connection Interface Shaft height O = Size 0: 50 x 25/30 20mm
A0	Mounting kit	A0 = Mounting kit size 0 4x according to DIN 933 M5x8

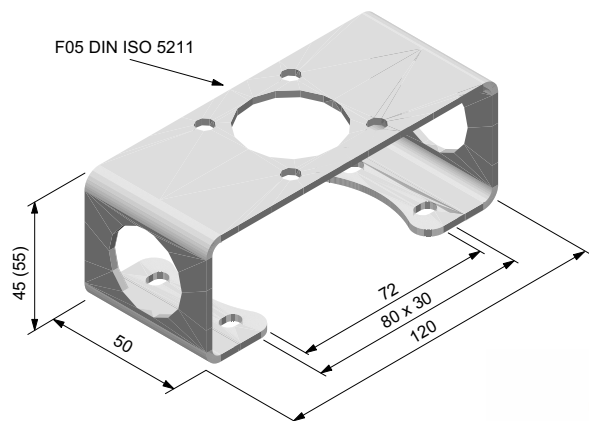
The bracket TL5 allows the adaption of boxes to the biggest part-turn actuators size 5 (e.g. Air Torque SC/DR 10000)

product key

T	Type	T = TCR-Bracket
L	Design	L = Long design
5	Size	Connection Interface Shaft height 5 = Size 5: 200x50 80mm
A5	Mounting kit	A5 = Mounting kit size 5 4x according to DIN 933 M5x8

Brackets for Limit Switch Boxes

The ET-brackets are specially made for boxes of ET-housing series.

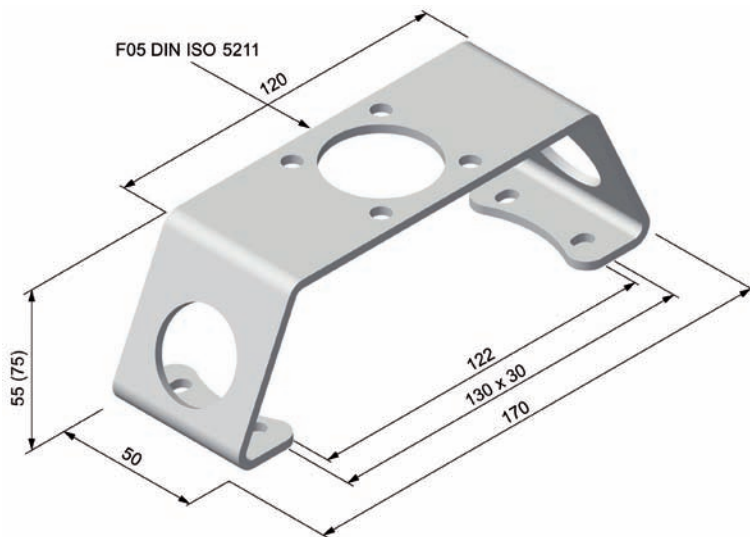


ET-bracket size 1 (size 2)

Brackets for actuators size 1 (size 2)
according to VDI/VDE 3845

ET-bracket size 3 (size 4)

Bracket for actuators size 3 (size 4)
according to VDI/VDE 3845



product key

ET	Type	ET = ET-Bracket												
1	Size	<table border="1"> <thead> <tr> <th>Connection Interface</th> <th>Shaft height</th> </tr> </thead> <tbody> <tr> <td>1 = Size 1: 80x30</td> <td>20 mm</td> </tr> <tr> <td>2 = Size 2: 80x30</td> <td>30 mm</td> </tr> <tr> <td>3 = Size 3: 130x30</td> <td>30 mm</td> </tr> <tr> <td>4 = Size 4: 130x30</td> <td>50 mm</td> </tr> <tr> <td>5 = Size 5: 200x50</td> <td>80 mm</td> </tr> </tbody> </table>	Connection Interface	Shaft height	1 = Size 1: 80x30	20 mm	2 = Size 2: 80x30	30 mm	3 = Size 3: 130x30	30 mm	4 = Size 4: 130x30	50 mm	5 = Size 5: 200x50	80 mm
Connection Interface	Shaft height													
1 = Size 1: 80x30	20 mm													
2 = Size 2: 80x30	30 mm													
3 = Size 3: 130x30	30 mm													
4 = Size 4: 130x30	50 mm													
5 = Size 5: 200x50	80 mm													
OGSA1	Mounting kit	OGSA1-5 = Mounting kit size 1-5 4x according to DIN 933 M5x8												

Brackets for Limit Switch Boxes

These stainless steel universal brackets for mounting limit switch boxes are adjustable in height and width. They are suitable for most common connection interfaces on pneumatic actuators. They allow a reduced stock keeping and flexible application of boxes on various actuator sizes. The bases of the bracket are fastened and secured by form-closed pins and one fixing screw. Thus they can withstand great loads of up to 100 kg without showing deformation and play. Optionally, we offer an additional base-component, which is suitable for shaft height 50mm.



product key

ETU — Type — ETU = ET-Universal-Bracket
1-3 — Size — 1-3 = for actuators size 1,2,3

Optional



product key

ETVF — Type — ETVF = ETU - base-component
4 — Size — 4 = for actuators size 4

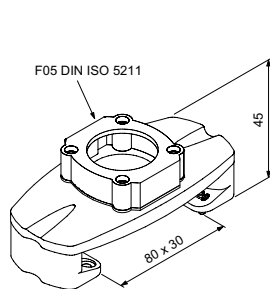
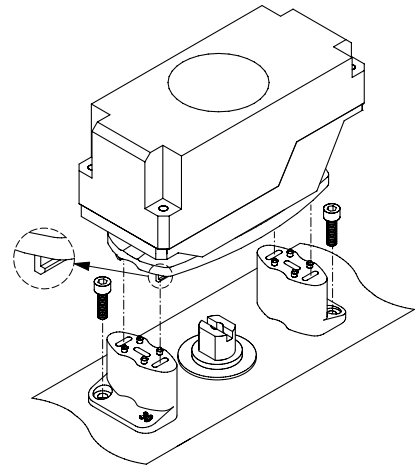


Polyamid Brackets for TCR-Series

The polyamid brackets types UBT and UBE are extremely fast and easy to mount on part-turn actuators. After the bases are fastened with the included screws, you just need to plug-in the box with a click.

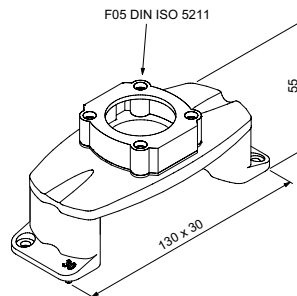
Benefits

- Quick mounting
- Universal fit due to the turnable bases
- Optimized design for TCR- and PB/ET-series
- Preferred for standard mounting (boxes vertically on actuator)



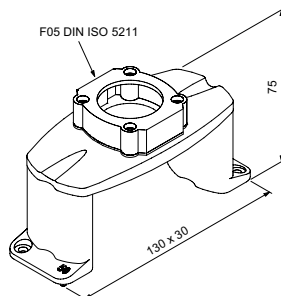
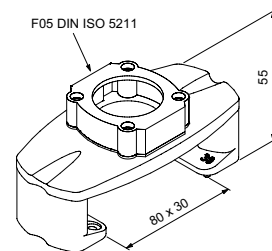
Universal-bracket UBT1

for actuators size 1 according to VDI/VDE 3845



Universal-bracket UBT23

for actuators size 2 and 3 according to VDI/VDE 3845



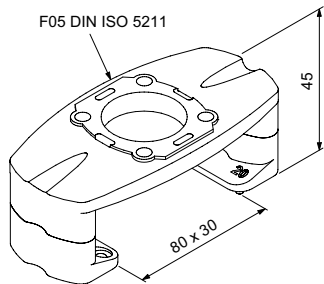
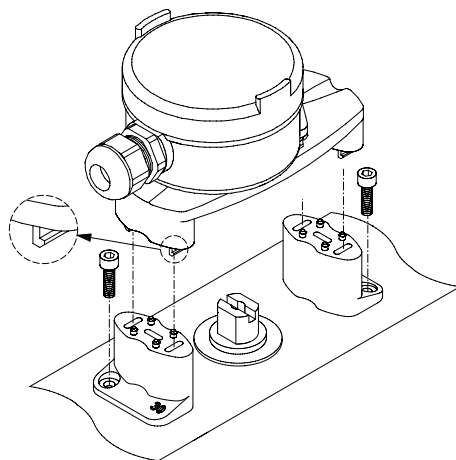
Universal-bracket UBT4

for actuators size 4 according to VDI/VDE 3845

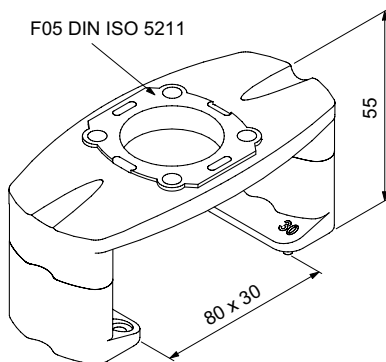
product key

UB	Type	UB = Universal-bracket	
T	Design	T = for TCR-Design	
1	Size	Size	Conn. Interface
		1 = Size 1:	80x30
		23 = Size 2:	80/130x30
		4 = Size 4:	130x30
			Shaft height
			20mm
			30mm
			50mm

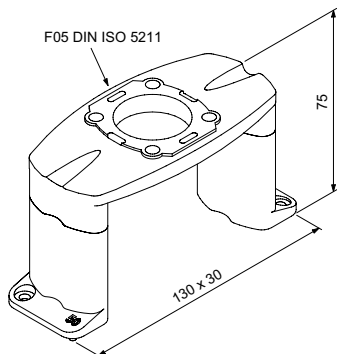
Polyamid Brackets for PB- and ET-Series



Universal-bracket UBT1
for actuators size 1 according to VDI/VDE 3845



Universal-bracket UBT23
for actuators size 2 and 3 according to VDI/VDE 3845



Universal-bracket UBT4
for actuators size 4 according to VDI/VDE 3845

product key

UB	Type	UB = Universal-bracket
E	Design	E = for ET-Design
1	Size	1 = Size 1: 80x30 23 = Size 2: 80/130x30 4 = Size 4: 130x30
	Conn. Interface	20mm 30mm 50mm
	Shaft height	

Signal Devices open mounted

Signal devices are made for sensing and controlling the positions of valves. Switches and sensors of different designs and electrical features and connections are mounted open onto part-turn actuators.

The ET-kit with proximity sensors for detecting and transmitting the end positions or intermediate positions is perfect for the installation of compact, inductive double sensors from different manufacturers.

Depending on design, these signal devices are available with cable, M12-plug-in connector or integrated terminal compartment.



Benefits

- Individually adjustable switching points in the range from 0° - 360°
- The modular conception of the UNI-sandwichplate allows the adaption of the sensors to all shaft heights according to VDI/VDE standard.
- Universal fit to all standard connecting interfaces

Mechanically operated Signal Devices

Mechanically operated sensors manufactured by Bernstein are extremely robust, reliable sensors. They suits perfectly the flexible components of ET-kits. The mechanical signal is given by an operating plunger. For this part different switching components are available, e.g. switching flag, roller follower, straight positioned roller and more others.

Although these limit switches are very robust, some parts of the switching components could be mechanically damaged. For this reason we recommend installing the special protection cage, which was designed for ET-kit.



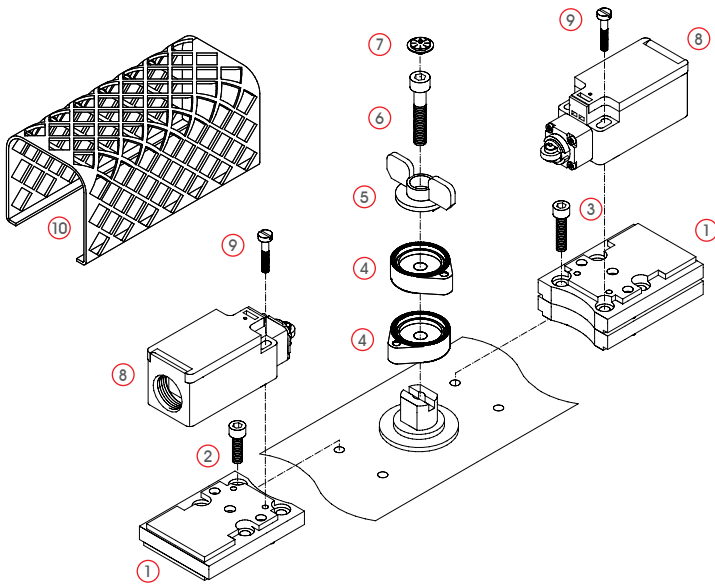
Benefits

- Individually adjustable switching points in the range from 0° - 360°
- The modular conception of the UNI-sandwichplate allows the adaption of the sensors to all shaft heights according to VDI/VDE standard.
- Universal fit to all standard connecting interfaces



technical data

Manufacturer	Bernstein	Schmersal
Type	I88-SU1Z RIWK	ZR 236-11z
Operation switching element	Change over	Change over
Housing	reinforced fibreglass, thermoplastic self extinguishing	reinforced fibreglass, thermoplastic self extinguishing
Nominal isolation voltage	500 V AC	500 V AC
Nominated current	4 A / 230 VAC; 10 A / 24 VDC	4 A / 230 VAC; 10 A / 24 VDC
Temperature range	-30 ... +80 °C	-30 ... +80 °C
Protection class (according to DIN EN 60529)	IP 65	IP 67
Switching precision	3°	3°
Connection	PG 11	PG 13,5



optional

protection cage



basic schedule

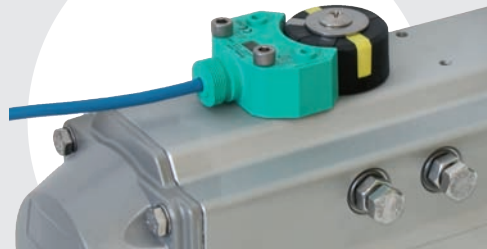
Pos.	Pcs.	Description	Material
1	3	Univ.-mounting plate kpl.	PPO
2	2	M5 x 12 - DIN 912	A2
3	1	M5 x 22 - DIN 913	A2
4	2	Switching cams SNO101R	POM, A2
5	1	Position indicator	PE
6	1	M6 x 30 - DIN 912	A2
7	1	Cover cap M6	PA
8	2	Position sensor	-
9	4	M4 x 24 - DIN 84	A2
10	1	Protection cage	A2

product key

BE	Design	BE = Bernstein SC = Schmersal
88SU	Type	88SU = I88-SU 1Z RIWK 236 = ZR 236-11 z
O4G	Mounting	Open mounting
AZ	Position indicator	A = Open Z = Closed
1	Size	1 = Size 1 2 = Size 2 3 = Size 3 4 = Size 4

Double Sensor NAMUR

The intrinsically safe double sensor is a compact unit, which allows direct mounting onto the NAMUR interface of actuators. The complete unit consists of one encapsulate component with proximity sensors and a so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. By fastening 2 screws, the double sensor is easily and quickly ready mounted on the ET-kit. For the adaption to the different shaft heights, special universal plates are available. The double sensor can be provided with cable or, for ease of service and inspection, with M12-plug. For supplement protection against mechanical wear, we recommend installing the protection cage also for this sensor.



Benefits

- Individually adjustable in the range from 0° - 360°
- The modular conception of the UNI-sandwichplate allows the adaption of the sensors to all shaft heights acc. to VDI/VDE standard
- Universal fit to all standard connecting interfaces



Ex II 2G Ex ia IIC T6
other protection classes available

technical data

Manufacturer	Pepperl + Fuchs
Type	NCN3-F25F-N4 (-V1)
Operation switching element	NCC NAMUR (DIN EN 60947-5-6 NAMUR)
Ex-protection class	II 2G Ex ia IIC T6
Switching precision	3 mm
Nominal voltage	8 V DC
Current draw	≥ 3 mA (not detected) ≤ 1 mA (detected)
Output	Short-circuit proof, Protected against reverse polarity
Load current	≤ 3mA
Temperature range	-25 ... +85 °C
Protection class (according to DIN EN 60529)	IP 67
Connection	5m cable or M12-plug-in connector

basic schedule

Pos.	Pcs.	Description	Material
1	1	Flat washer DIN 125	A2
2	1	P+F NCN3-F25F-N4	-
3	2	M5 x 25 - DIN 912	A2
4	1	EISAMET01	A2

product key

PF	Make	PF = Pepperl + Fuchs
F25N	Type	F25N = NCN3-F25F-N4 (cable) F25NV = NCN3-F25F-N4-V1 (M12 plug)
GO	Mounting	O = Open mounting
AZ	Position indicator	A = Open Z = Closed
1	Size	1 = Size 1 2 = Size 2 3 = Size 3 4 = Size 4

3-Wire Double Sensor

The 3-wire sensor is a compact unit, which was designed for mounting onto the NAMUR interface. It consists of one encapsulate component with proximity sensors and a so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. By fastening 2 screws, the double sensor is easily and quickly ready mounted on the ET-kit. For the adaption to the different shaft heights, special universal plates are available.

The double sensor can be provided with cable or, for ease of service and inspection, with M12-plug. For supplement protection against mechanical wear, we recommend installing the protection cage also for this sensor.



Benefits

- Individually adjustable in the range from 0° - 360°
- The modular conception of the UNI-sandwichplate allows the adaption of the sensors to all shaft heights according to VDI/VDE standard.
- Universal fit to all standard connecting interfaces



technical data

Manufacturer	Pepperl + Fuchs
Type	NBN3-F25F-E8 (-V1)
Operation switching element	Inductiv, 3-Draht, NOC DC PNP
Operating voltage	10 .. 30 V DC
Operating current	max. 200 mA
Load current	≤ 17 mA
Switch distance	3 mm
Output	≥ 3 mA (not detected) ≤ 1 mA (detected) Short-circuit proof, Protected against reverse polarity
Temperature range	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP 67
Connection	5m cable or M12-plug connector

basic schedule

Pos.	Pcs.	Description	Material
1	1	Flat washer DIN 125	A2
2	1	P+F NCN3-F25-N4	-
3	2	M5 x 25 - DIN 912	A2
4	1	EISAMET01	A2

product key

PF	Make	PF = Pepperl + Fuchs
F25E	Type	F25E = NBN3-F25F-E8 (cable) F25EV = NBN3-F25F-E8-V1 (M12 plug)
GO	Mounting	Open mounting
AZ	Position indicator	A = Open Z = Closed
1	Size	1 = Size 1 2 = Size 2 3 = Size 3 4 = Size 4

Double Sensor F31 and F31K

The double sensor F31 is a compact unit, which was designed for mounting onto the NAMUR interface. It consists of one encapsulate component with proximity sensors and a so called Puck, a cam that transmits the mechanical rotary movement of the switching shaft. By fastening 2 screws, the double sensor is easily and quickly ready mounted on the ET-kit.

For the adaption to the different shaft heights, special universal plates are available.

The double sensor can be provided with cable or, for ease of service and inspection, with M12-plug.



Benefits

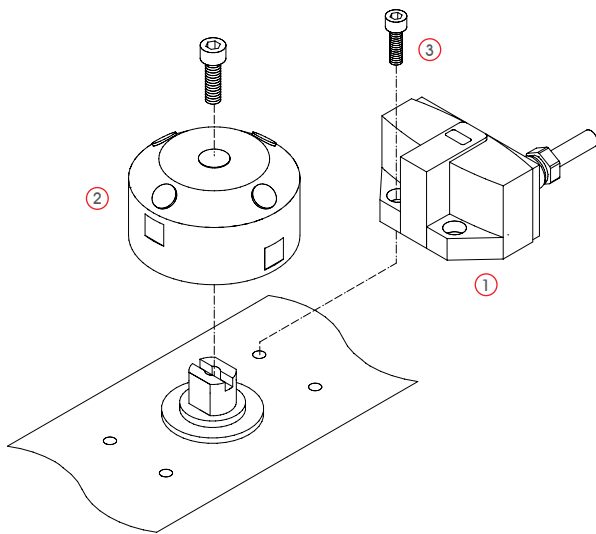
- Individually adjustable in the range from 0° - 360°
- The modular conception of the UNI-sandwichplate allows the adaption of the sensors to all shaft heights according to VDI/VDE standard.
- Universal fit to all standard connecting interfaces



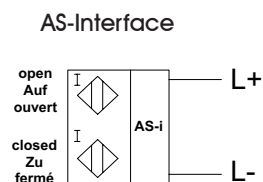
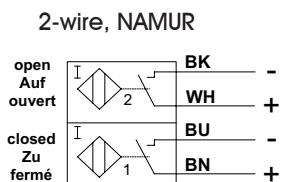
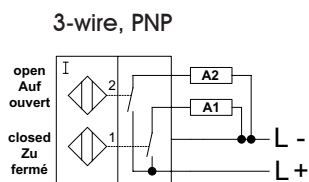
technical data

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs	Pepperl+Fuchs
Type	NBN3-F31-KE8	NCN3-F31-KN4	NCN3-F31-B3-V1-K
Operation switching element	NOC	NCC, NAMUR (DIN EN 60947-5-6 NAMUR)	programmable
Ex-protection class	-	Ex ia 2G IIC T6	-
Nominal voltage	10..30 V DC	8 V DC	24 V DC
Output	≥ 3 mA (not detected) ≤ 1 mA (detected)	≥ 3 mA (not detected) ≤ 1 mA (detected)	AS-I
Temperature range	-25 ... +100 °C	-25 ... +100 °C	-25 ... +100 °C
Protection class (according to DIN EN 60529)	IP 67 (Sensor)	IP 67 (Sensor)	IP 67 (Sensor)
Switching precision	<0,5°	<0,5°	<0,5°
Connection	5m cable	5m cable	5m cable
Solenoid connection	0,5 cable	0,5 cable	0,5 cable
Product key	NBN3F31KE8	NCN3F31KN4	PFNCN3F31B3V1K

Other types on request



wiring diagram



basic schedule

Pos.	Pcs.	Description	Material
1	1	P+F, NCN3-F31...	-
2	1	Actuator	-
3	2	M5 x 10 - DIN 912	A2

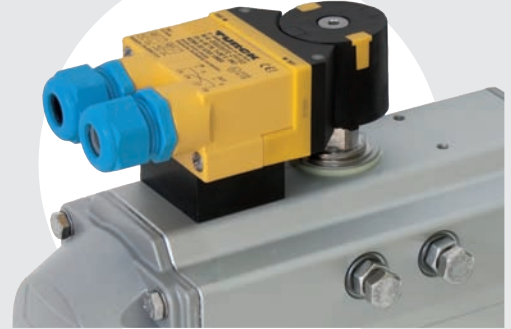
actuator

Manufacturer	Pepperl+Fuchs	Pepperl+Fuchs	Pepperl+Fuchs	Pepperl+Fuchs
Type	BT65A	BT65B	BT115A	BT115B
Design	F31 and F31K	F31 and F31K	F31 and F31K	F31 and F31K
Conn. interface	30 x 80 mm	30 x 80 mm	30 x 130 mm	30 x 130 mm
Shaft height	20 mm und 30 mm	20 mm und 30 mm*	30 mm und 50 mm	30 mm und 50 mm
Shaft width	< 58 mm	< 53 mm	< 90 mm	< 90 mm
Dampening	Four fixed, 90° offset installed switching flags	Upper and lower dampening level continuously adjustable	Four fixed, 90° offset installed switching flags	Upper and lower dampening level continuously adjustable
Product key	PFBT65A	PFBT65B	PFBT115A	PFBT115B

*Please note: For shaft height 30 mm, the adapter plate PFMHBT65B is required.

Turck - Double Sensor model Ni4-DSU

The Turck proximity sensor model NI4DSU35TC is an inductive double sensor suitable for direct mounting onto pneumatic part-turn actuators. The sensor is certified according to ATEX II 2 GD Ex-Zone 1 respectively II 1 D Ex-Zone 20 and it is applicable for SIL-2. Both end positions „OPEN“ and „CLOSED“ are transmitted by outputs according NAMUR standard to the control system. Two LEDs indicate on-site, which of the two end positions is damped. The double sensor is designed for non-flush mounting, switching distance 4 mm. The rectangular design of the plastic housing offers spacious terminal compartment for a comfortable wiring of the unit with cable strand diameter up to 2,5 mm².



Benefits

- Compact, absolutely tight, robust and non-crushable
- Large variety in electrical designs and connection possibilities
- Resistant to chemical, SIL-2 certificated, explosion protected

technical data

Manufacturer	Turck	Turck	Turck
Type	Ni4-DSU35TC-2Y1X2	Ni4-DSU35TC-2Y1X2/S97	Ni4-DSU35TC-2Y1X2/S933
Operation switching element	NCC, NAMUR	NCC, NAMUR	NCC, NAMUR
Ex-protection class	Ex ia 2G IIC T6; II 1 D Ex ia D 20 T95 °C	Ex ia 2G IIC T6; II 1 D Ex ia D 20 T95 °C	Ex ia 2G IIC T6; II 1 D Ex ia D 20 T95 °C
Nominal voltage	8,2 V DC	8,2 V DC	8,2 V DC
Output	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)	≥ 2,1 mA (not detected) ≤ 1,2 mA (detected)
Temperature range	-25 ... +70 °C	-40 ... +70 °C	-25 ... +70 °C
Protection class (according to DIN EN 60529)	IP67	IP67	IP67
Model	Standard design	Extended temperature range	Approved by BASF

actuator

Manufacturer	Turck	Turck	Turck
Type	BTS-DSU35-EU1	BTS-DSU35-EU2	BTS-DSU35-EB1
Design	DSU35	DSU35	DSU35
Conn. interface	80x30 and 130x30	80x30 and 130x30	80x30 and 130x30
Shaft height	20 (30)	20 (30)	20 (30)
Shaft width	max.ø 30	max.ø 30	max.ø 30
Dampening	End position undamped, not adjustable	End position undamped, 2 push buttons	End position undamped, not adjustable
Product key	TUBTSDSU35EU1	TUBTSDSU35EU2	TUBTSDSU35EB1

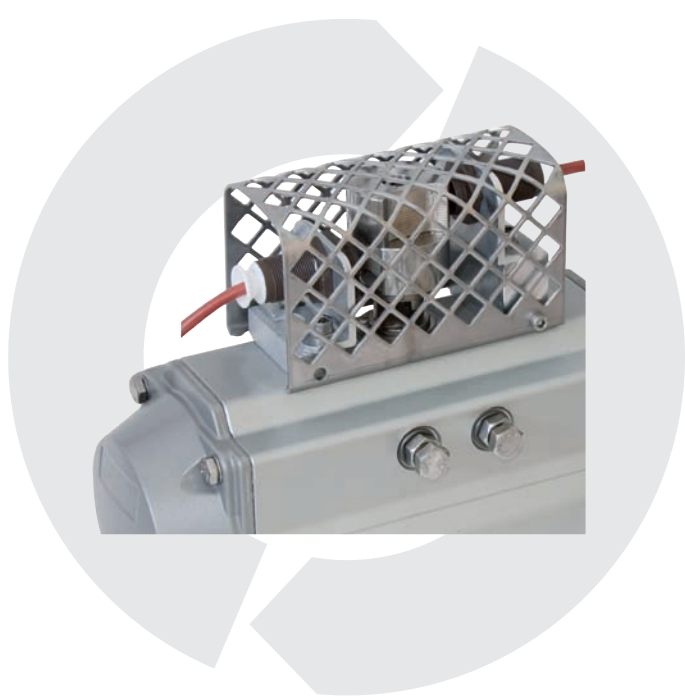
Please note: Depending on actuator design, supplement mounting sets are required.
We will be happy to assist you, please send us your inquiry.

product key

TU	—————	Make	—————	TU = Turck
4DSU35TC2Y1X2	—————	Design	—————	Ni4DSU35TC2Y1X2
H1140	—————	Special Version (optional)	—————	H1140

High Temperature Kit for up to +150 °C

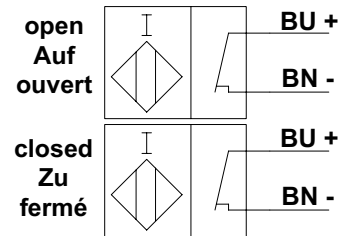
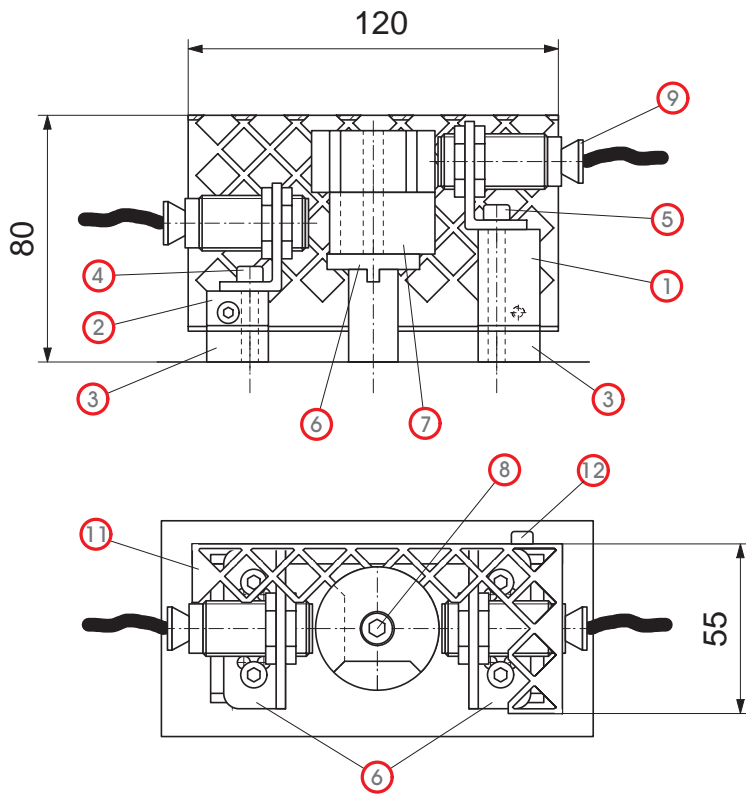
This ET-kit is a real all-rounder. Combined with the special cylindrical proximity sensor it withstands a temperature range from -40 °C to +150 °C. As an intrinsically safe sensor unit it is, in addition, suitable for an application in a hazardous area. Please note in this case, that an electrostatic charge can possibly be caused by the cable, which has to be considered from a certain length, depending on the respective explosion group. At temperatures under -20 °C the unit has to be absolutely protected against environmental influences. This can be effectively achieved by using the easy mountable protection cage.



technical data

Manufacturer	Pepperl + Fuchs
Type	NJ5-18GK-N-150
Operation switching element	NCC, NAMUR
Ex-protection class	Ex ia 2G IIC T6
Nominal voltage	8 V DC
Output	≥3 mA (not detected) ≤1 mA (detected)
Temperature range	-40 ... +150 °C
Protection class (according to DIN EN 60529)	IP65
Switching precision	<0,5°
Connection	15 m SIHF-Cable*
Wire diameter	0,34 mm ²

* Also available with 2 m SIHF-cable



basic schedule

Pos.	Pcs.	Description	Material
1	1	Mounting, height 33mm	Aluminium
2	1	Mounting, height 10mm	Aluminium
3	2	Universal plates 10mm	Aluminium
4	2	Hexagon socket. M5x35	A2
5	2	Hexagon socket. M5x35	A2
6	1	Distance ring 5mm	Stainless steel
7	1	Switching cams	Stainless steel
8	1	Hexagon socket. M6x50	A2
9	2	P+F NJ5-18-GK-N-150	-
10	2	Aluminium angle	Aluminium
11	1	Protection cage	Stainless steel
12	2	Hexagon socket. M4x10	A2

product key

PF	Make	Pepperl + Fuchs
518K	Design	518K = NJ5-18GK-N-150
O	Type	Open mounted
AZ	Position indicator	A = „Open“ Z = „Closed“
1	Size	1 = for actuator size 1 2 = for actuator size 2 3 = for actuator size 3 4 = for actuator size 4
150	Temperature	150 = fill + 150 °C

Brackets

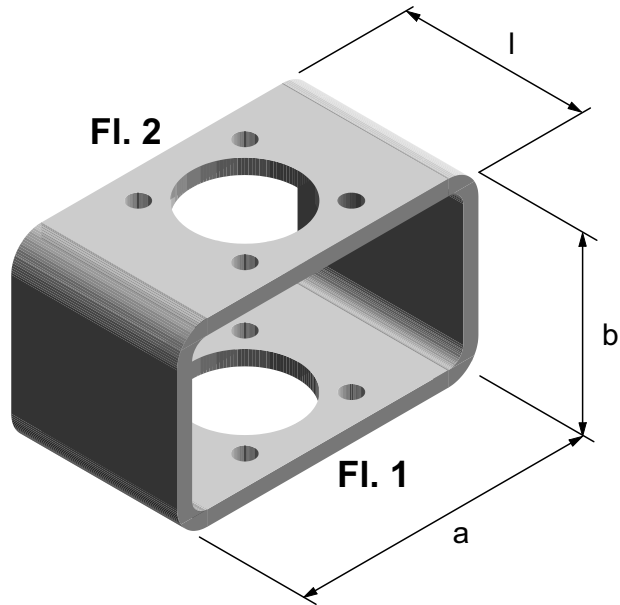
The bracket, also called a mounting bridge, is the connection between actuator and valve. It is needed when an actuator cannot or should not be mounted directly onto the valve. Combined with the corresponding coupling it ensures an in-line and loss-free power transmission.

The ROTECH brackets offer standardized connection interfaces according to DIN EN 15081 and an easy and fast connection between units of different manufactures.

- The corresponding position of the axis of both flanges ensures an in-line power transmission
- The use of high quality materials guarantee consistent plane surfaces
- Additional mechanical finishes are available for special applications
- Economic manufacturing thanks to production in large batches



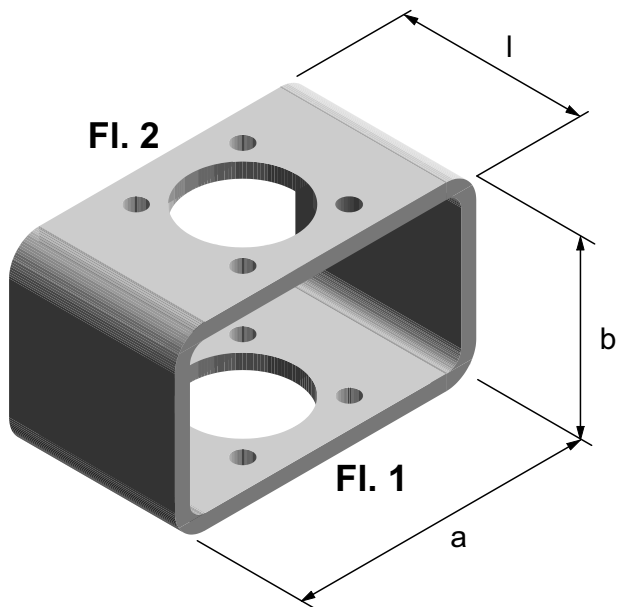
Brackets for Actuators with Double-sided Equal Flanges - acc. DIN EN 15081



Fl.1	Fl.2	l	b*	Dim. a x b* x s	Flanges
F 03	F 03	40	50	80 x 50 x 4	parallel
F 04	F 04	45	50	80 x 50 x 4	parallel
F 05	F 05	50	60	100 x 60 x 5	parallel
F 07	F 07	70	60	100 x 60 x 5	parallel
F 10	F 10	95	80	120 x 80 x 5	parallel
F 12	F 12	115	80	160 x 80 x 6	parallel
F 14	F 14	135	80	160 x 80 x 6	parallel
F 16	F 16	160	100	200 x 100 x 6	parallel
F 25	F 25	270	200	400 x 200 x 10	parallel
F 30	F 30	320	200	400 x 200 x 10	parallel

Material: steel, zinc-plated

Brackets for Actuators with Double-sided Equal Flanges - acc. DIN EN 15081

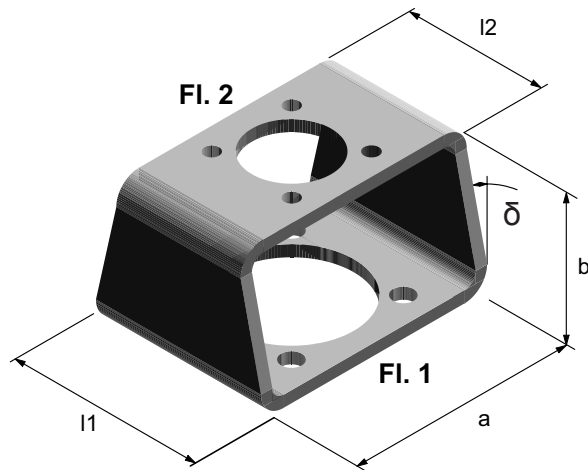


Fl.1	Fl.2	l	b*	Dim. a x b* x s	Flanges
F 03	F 03	40	50	80 x 50 x 4	parallel
F 04	F 04	45	50	80 x 50 x 4	parallel
F 05	F 05	50	60	100 x 60 x 5	parallel
F 07	F 07	70	60	100 x 60 x 5	parallel
F 10	F 10	95	80	120 x 80 x 5	parallel
F 12	F 12	115	80	160 x 80 x 6	parallel
F 14	F 14	135	80	160 x 80 x 6	parallel
F 16	F 16	160	100	200 x 100 x 6	parallel

Material: stainless steel (Material number: 1.4301)

Brackets for Actuators with different Flanges - acc. DIN EN 15081

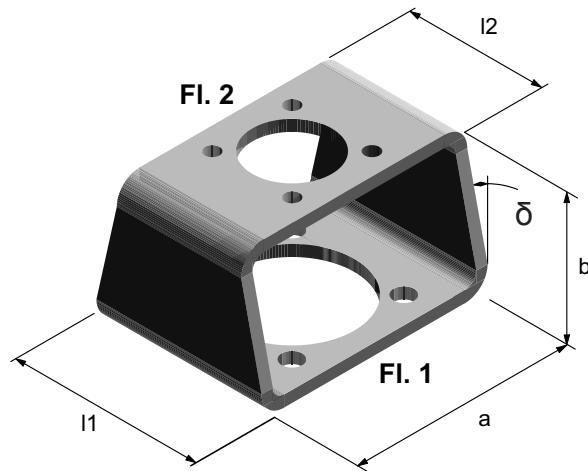
Material: steel, zinc-plated



Fl.1	Fl.2	l1	l2	b*	Dim. a x b* x s	Flanges
F 04	F 03	45	40	50	80 x 50 x 4	parallel
F 05	F 04	50	45	60	100 x 60 x 5	parallel
F 05	F 03	50	40	60	100 x 60 x 5	parallel
F 07	F 05	70	50	60	100 x 60 x 5	parallel
F 07	F 04	70	45	60	100 x 60 x 5	parallel
F 07	F 03	70	40	60	100 x 60 x 5	parallel
F 10	F 07	95	70	80	120 x 80 x 5	parallel
F 10	F 05	95	50	80	120 x 80 x 5	parallel
F 10	F 04	95	45	80	120 x 80 x 5	parallel
F 12	F 10	115	95	80	160 x 80 x 6	parallel
F 12	F 07	115	70	80	160 x 80 x 6	parallel
F 12	F 05	115	50	80	160 x 80 x 6	parallel
F 14	F 12	135	115	80	160 x 80 x 6	parallel
F 14	F 10	135	95	80	160 x 80 x 6	parallel
F 14	F 07	135	70	80	160 x 80 x 6	parallel
F 14	F 05	135	50	80	160 x 80 x 6	parallel
F 16	F 14	160	135	100	200 x 100 x 6	parallel
F 16	F 12	160	115	100	200 x 100 x 6	parallel
F 16	F 10	160	95	100	200 x 100 x 6	parallel
F 25	F 16	270	160	200	400 x 200 x 10	parallel
F 25	F 14	270	135	200	400 x 200 x 10	parallel
F 25	F 12	270	115	200	400 x 200 x 10	parallel
F 30	F 25	320	270	200	400 x 200 x 10	parallel
F 30	F 16	320	160	200	400 x 200 x 10	parallel
F 30	F 14	320	135	200	400 x 200 x 10	parallel

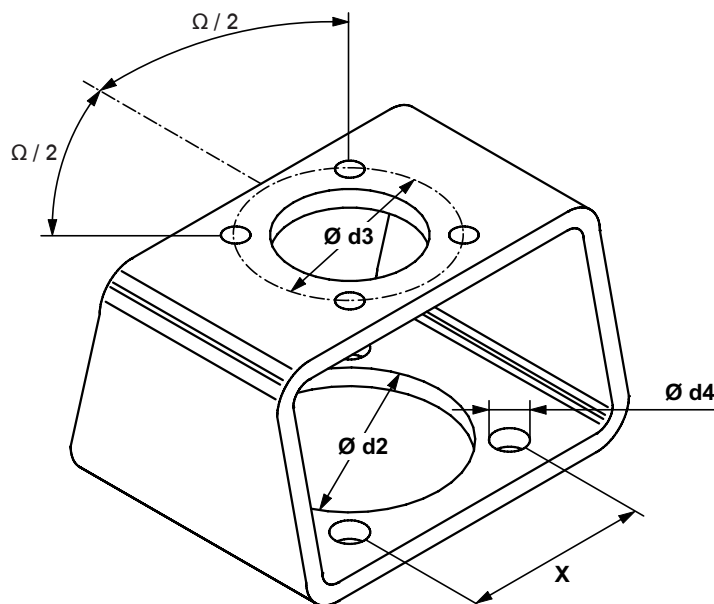
Brackets for Actuators with different Flanges - acc. DIN EN 15081

Material: stainless steel
(Material number: 1.4301)



Fl.1	Fl.2	l1	l2	b*	Dim. a x b* x s	Flanges
F 03	F 03	40	40	50	80 x 50 x 4	parallel
F 04	F 03	45	40	50	80 x 50 x 4	parallel
F 04	F 04	45	45	50	80 x 50 x 4	parallel
F 05	F 03	50	40	60	100 x 60 x 4	parallel
F 05	F 04	50	45	60	100 x 60 x 4	parallel
F 05	F 05	50	50	60	100 x 60 x 4	parallel
F 07	F 03	70	40	60	100 x 60 x 4	parallel
F 07	F 04	70	45	60	100 x 60 x 4	parallel
F 07	F 05	70	50	60	100 x 60 x 4	parallel
F 07	F 07	70	70	60	100 x 60 x 4	parallel
F 10	F 04	95	45	80	120 x 80 x 5	parallel
F 10	F 05	95	50	80	120 x 80 x 5	parallel
F 10	F 07	95	70	80	120 x 80 x 5	parallel
F 10	F 10	95	95	80	120 x 80 x 5	parallel
F 12	F 05	115	50	80	160 x 80 x 5	parallel
F 12	F 07	115	70	80	160 x 80 x 5	parallel
F 12	F 10	115	95	80	160 x 80 x 5	parallel
F 12	F 12	115	115	80	160 x 80 x 5	parallel
F 14	F 07	135	70	80	160 x 80 x 5	parallel
F 14	F 10	135	95	80	160 x 80 x 5	parallel
F 14	F 12	135	115	80	160 x 80 x 5	parallel
F 14	F 14	135	135	80	160 x 80 x 5	parallel
F 16	F 10	160	95	100	200 x 100 x 6	parallel
F 16	F 12	160	115	100	200 x 100 x 6	parallel
F 16	F 14	160	135	100	200 x 100 x 6	parallel
F 16	F 16	160	160	100	200 x 100 x 6	parallel

Dimensions of Flanges acc. DIN ISO 5211



Flange	$\text{Ø } d_2$	$\text{Ø } d_3$	X	$\text{Ø } d_4$	$\Omega / 2$
F 03	25	36	25,5	5,5	45°
F 04	30	42	29,7	5,5	45°
F 05	35	50	35,4	6,5	45°
F 07	55	70	49,5	9	45°
F 10	70	102	72,1	11	45°
F 12	85	125	88,4	13	45°
F 14	100	140	99	17	45°
F 16	130	165	116,7	21	45°
F 25	200	254	179,6	17	22,5°
F 30	230	298	210,7	21	22,5°

Couplings

The coupling or adapter is needed when a bracket is mounted between valve and actuator. It transmits the torque of the actuator to the valve. Thanks to the standardization of the double-D dimensions according to DIN ISO 5211 (resp. DIN 3337), the coupling blanks can be pre-manufactured.

The couplings are available in two series:
Standard-Serie

Multiple diameters are available for every square size.
This allows for optimum adaption to the valve.

Eco-Serie

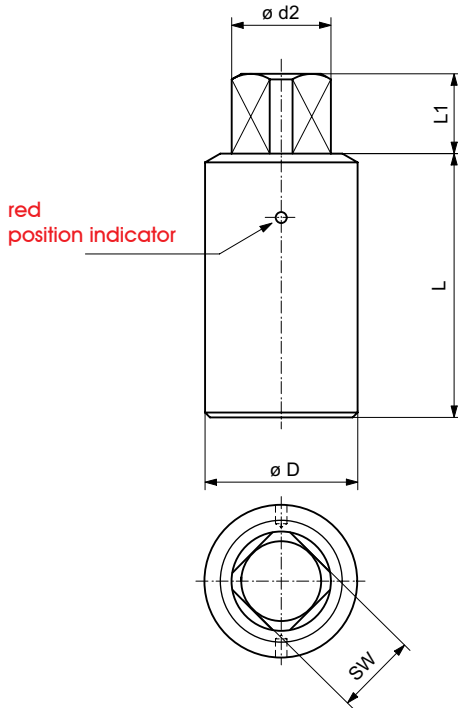
The diameter of the coupling equals the corner dimension of the square. The easy machining allows for very attractive pricing.

Benefits

- Cost-saving production through large batch runs
- High quality stainless steel 1.4305 / 1.4104
- Connection to the valve according to clients specifications, flat connection or square connection



Couplings Standard-Series



Square	O.-Nr.	$\varnothing d2$	L1	L	for bracket
9	A	12	10	49	H=50 (-1)
11	B	14	12	59	H=60 (-1)
14	C	18	15	59	H=60 (-1)
17	D	22	18	59	H=60 (-1)
19	E	25	20	79	H=80 (-1)
22	F	28	23	79	H=80 (-1)
27	G	36	28	79	H=80 (-1)
36	H	48	37	89	H=90 (-1)
46	J	60	48	118	H=120 (-2)
55	K	72	58	178	H=180 (-2)
75	L	98	78	198	H=200 (-2)

$\varnothing D$	O.-Nr.	Z max*
12	A	5
14	B	5
16	C	6
18	D	6
20	E	8
22	F	10
24	G	12
25	H	13
28	J	15
30	K	16
32	L	17
36	M	19
40	N	22
45	O	25
48	P	26
52	Q	28
55	R	30
60	S	32
65	T	34
72	U	36
80	V	40
90	W	45
98	X	48
120	Y	60
150	Z	72

product key

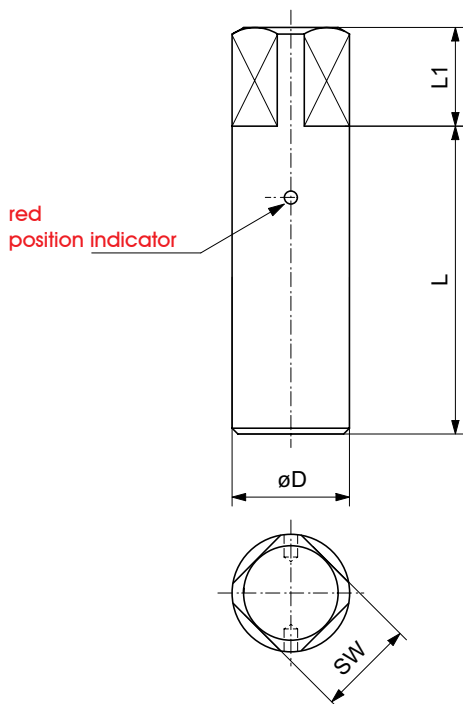
K	— Type —	Coupling
B	— Order-Nr.: —	SW: A...L
59	— Length in mm —	(without square)
D	— Order-Nr.: —	\varnothing : A...X

Couplings ECO-Series

SW	O.-Nr. SW	$\varnothing d2$	B.-Nr. $\varnothing D$	L	L1	Z max*	for bracket
9	A	12	A	10	49	5	H=50 (-1)
11	B	14	B	12	59	5	H=60 (-1)
14	C	18	D	15	59	6	H=60 (-1)
17	D	22	F	18	59	10	H=60 (-1)
19	E	25	H	20	79	13	H=80 (-1)
22	F	28	J	23	79	15	H=80 (-1)
27	G	36	M	28	79	19	H=80 (-1)
36	H	48	P	37	89	25	H=90 (-1)
46	J	60	S	48	118	30	H=120 (-2)
55	K	72	U	58	178	36	H=180 (-2)
75	L	98	X	78	198	72	H=200 (-2)

O.-Nr.: Product key

* max. dimension for machining the valve connection



product key

K	— Type —	Coupling
C	— Order-Nr. (square) —	SW: A...L
59	— Length in mm —	(without square)
D	— Order-Nr.: —	\varnothing : A...X

Valve Connection by Double-D Drive

The dimensions of the valve connection for double-D connectors with locating ring can be calculated by the given dimensions of the valves shaft:

Length double-D

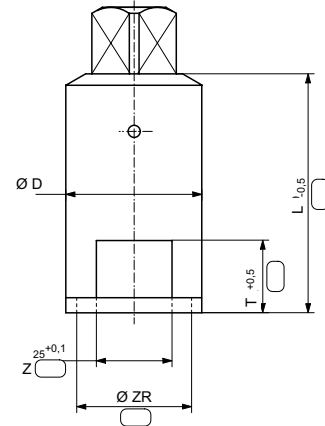
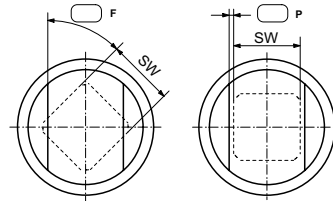
$$T = H2 - 1$$

Locating ring

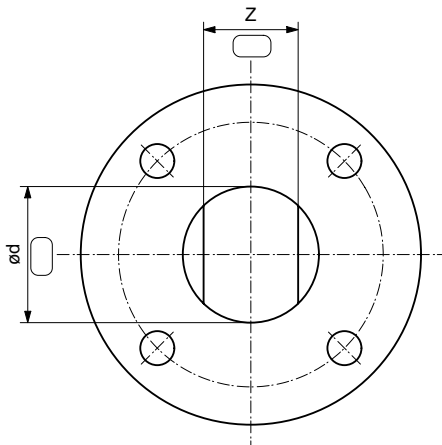
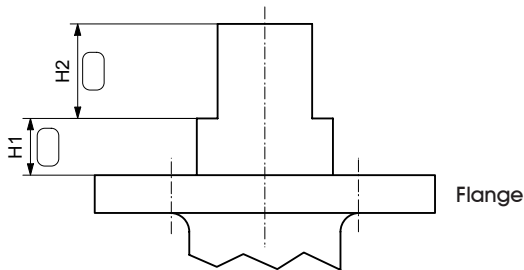
$$\varnothing ZR = \varnothing d + 0,5$$

Total Length of Coupling

$$L = L \text{ (coupling blanks) } - H1$$



Drive dimensions



product key

K	— Type —	Coupling
F	— Order-Nr.: —	SW: A...L
59	— Length in mm —	(Without square)
N	— Order-Nr.: —	\varnothing : A...Z (see page C2-3)
18	— Double-D width —	(in mm)
18	— Double-D length —	(in mm)
F	— Axis position —	Valve/actuator F = 45° P = parallel
25	— \varnothing Location ring —	(in mm)

Valve Connection by Square Drive

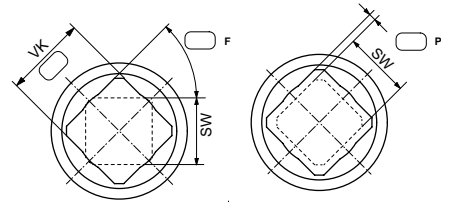
The dimensions of the valve connection for square connectors can be calculated by the given dimensions of the valves shaft:

Height of Square Drive

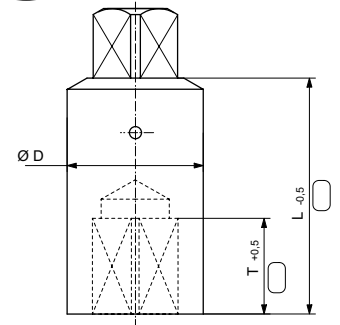
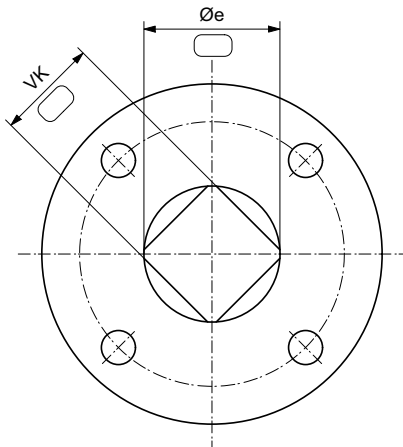
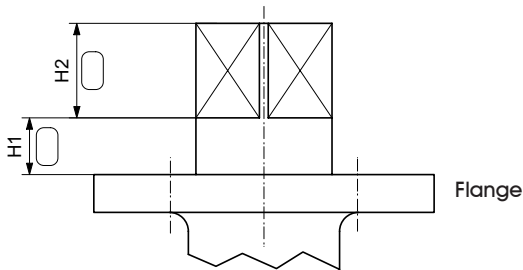
$$T = H2 - 1$$

Total Length of Coupling

$$L = L \text{ (coupling blanks) } - H1$$



Drive dimensions



product key

K	— Type —	Coupling
F	— Order-Nr.: —	SW: A...L
59	— Length in mm —	(Without square)
N	— Order-Nr.: —	Ø: A...Z (see page C2-3)
17	— Double-D width —	(in mm)
18	— Double-D length —	(in mm)
F	— Axis position —	Valve/actuator F = 45° P = parallel
V	— Ø square —	V = Internal square

Adapter or Reduction Sleeves

Adapter or reduction sleeves are used to adapt the internal square of the actuator to the external square of the coupling or the valve. By using adapter sleeves, an adaption of the squares is achieved. A form-locking connection between actuator and valve is guaranteed.

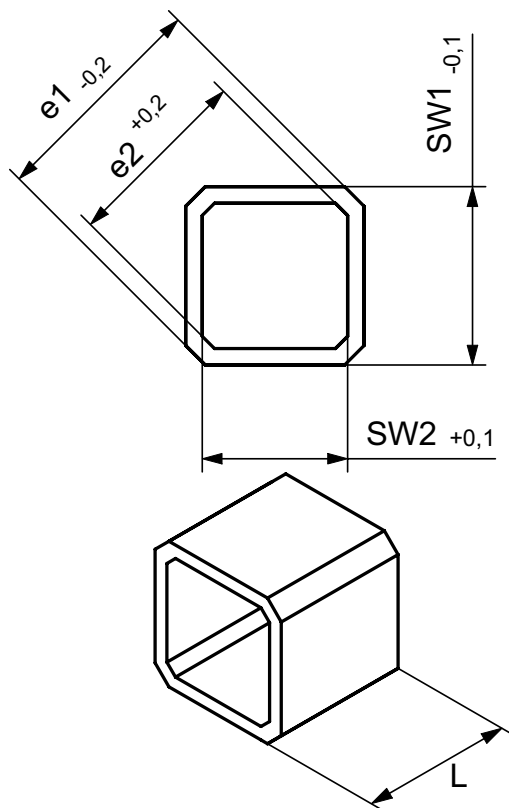
Benefits

- Flexibility in choice of the actuator by using one actuator for different couplings
- Single- and double-acting actuators are used with the same adaptations

Material: steel, zinc-plated or stainless steel

SW1	SW2	e1	e2	Length L
11	8	14	10,3	11
11	9	14	12,3	11
14	8	18	10,3	14
14	9	18	12,3	14
14	10	18	13,3	14
14	11	18	14,3	14
14	12	18	16,3	14
17	10	22	13,3	17
17	11	22	14,3	17
17	12	22	16,3	17
17	14	22	18,3	17
22	16	28	21,4	22
22	17	28	22,4	22
27	22	36	28,4	27
36	27	48	36,4	36
36	30	48	40,4	36

Adapter or Reduction Sleeves



product key

ADH	Type	ADH = Adapter sleeves
11	Outside	Outside: 11 = 11 mm to max. 55 = 55 mm
09	Inside	Inside: 08 = 8 mm to max. 36 = 36 mm
S	Material	S = Steel sintered E = Stainless Steel

Adapter Sleeves

High-precision adapter sleeves with double-square external contour.
With close tolerance made of stainless steel.

Benefits

- Due to the external contour of this sleeves the full torque according ISO 5211 can be transmitted, because it is transmitted by 8 teeth.
- The position of the square, „Parallel“ or „Octagon“ is simply realizable by turning the insert.
- Due to the multiple serration of the external contour, a minimum play is guaranteed.

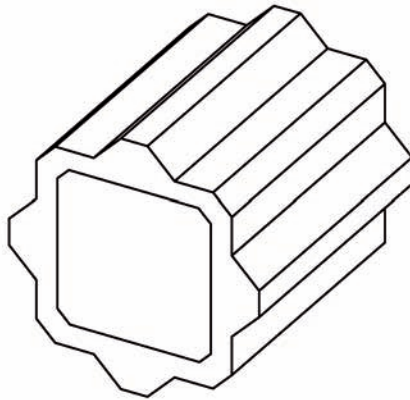
Material: steel, zinc-plated or stainless steel

SW1	SW2	e1	e2	Length L
11	8	14	10,3	13
11	9	14	12,3	13
14	8	18	10,3	16
14	10	18	13,3	16
14	11	18	14,3	16
14	12	18	16,3	16
17	11	22	14,3	19,5
17	12	22	16,3	19,5
17	14	22	18,3	19,5
22	16	28	21,4	31
22	17	28	22,4	31
22	19	28	25,4	31
27	22	36	28,4	39
27	24	36	32,4	39

For an overview of all adapter sleeve sizes available,
please see on our homepage: www.rotech.de

Other dimensions on inquiry.

Adapter Sleeves



product key

AH	Type	AH = Adapter sleeve
11	Outside	Outside: 11 = 11 mm
S	Design	S = Square
09	Inside	Inside: 09 = 9 mm
E	Material	E = Stainless steel S = Steel sintered
19	Length	19 = 19 mm

Adapter Sleeves

High-precision adapter sleeves with double-square external contour.
With close tolerance made of stainless steel.

Benefits

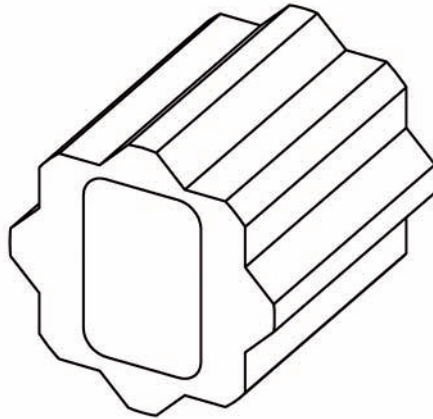
- It is possible to give the internal contour any shape, as a result a standard connection can be changed into a direct mounting.
- Due to the numerous double-D inserts, storage cost is greatly minimized.

Material: Stainless steel

For an overview of all adapter sleeve sizes available,
please see on our homepage: www.rotech.de

Other dimensions on inquiry.

Adapter Sleeves

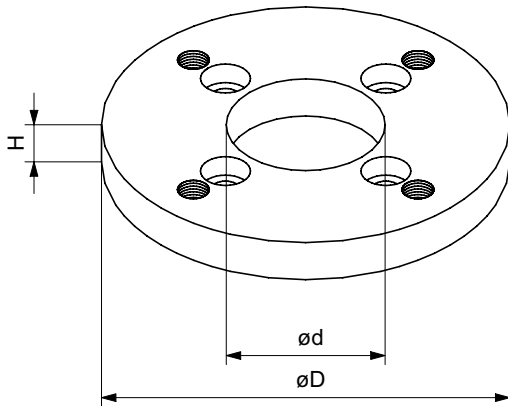


product key

AH	Type	AH = Adapter sleeve
11	Outside	Outside: 11 = 11 mm
Z	Design	Z = Double-D drive
09	Inside	Inside: 09 = 9 mm
E	Material	E = Stainless steel S = Steel sintered
19	Length	19 = 19 mm

Adapter Plates - for different Flanges

Adapter plates for different flanges are required when valve and actuator have different flanges. The drive shafts of valve and actuator have to be compatible. Also the shaft of the valve has to be high enough to ensure a reliable connection. You can mount the adapter plates via hexagon socket screws acc. DIN 7984 onto the actuator and via inside thread onto the valve.



Flange Valve	Flange Actuator	Height H	$\varnothing D$	$\varnothing d$	Werkstoff	Order-Nr.
F07	F04	10	90	25	Aluminum	APF07F0410
		11				APF07F0411
		25				APF07F0425
F07	F05	10	90	35	Aluminum	APF07F0510
		11				APF07F0511
		20				APF07F0520
F12	F07	18	153	55	Aluminum	APF12F0718
F05	F07	31,5	90	35	Aluminum	APF05F0731A
F07	F10	8	130	55	Aluminum	APF07F1008
		10				APF07F1010
		12				APF07F1012
		15				APF07F1015
F10	F14	11	180	80	Aluminum	APF07F1411
		20				APF07F1420

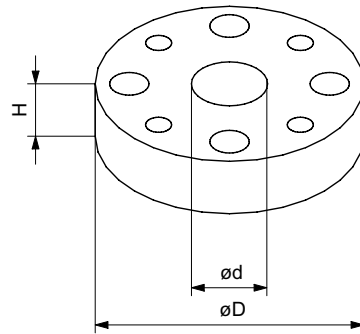
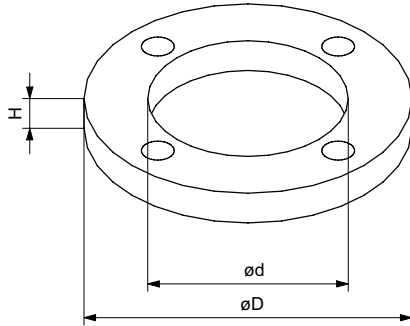
product key

AP	— Type —	AP = Adapter plates
F07	— Flange —	Valve
F05	— Flange —	Actuator
10	— Height —	Height

Other dimensions on inquiry.

Connection Flange Plates - for equal Flanges

Connection flange plates are used if the shaft of the valve is higher than the retainer on the actuator. Both flanges have to be identical.



Flange Valve	Height H	$\varnothing D$	$\varnothing d$	Material	Order-Nr.
F05	4	65	35	Aluminum	ZPF0504
	10				ZPF0510
	12	67	19	Aluminum	ZPF0512
	16				ZPF0516
F07	4	90	55	Aluminum	ZPF0704
	10				ZPF0710
	12				ZPF0712
F10	4	130	70	Aluminum	ZPF1004
	10				ZPF1010
F12	4	160	85	Aluminum	ZPF1204
	5				ZPF1205
	10				ZPF1210
	12				ZPF1212
F14	12	180	100	Aluminum	ZPF1412
	16				ZPF1416

product key

ZPF — Type ————— ZPF = Connection flange plates

F07 — Flange ————— Valve

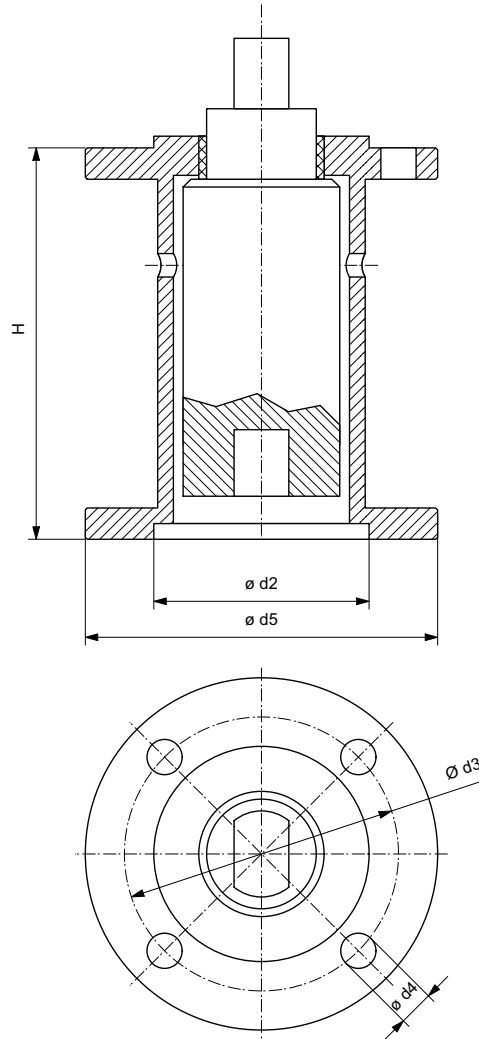
F05 — Flange ————— Actuator

10 — Height ————— Height

Other dimensions on inquiry.

Spindl Extension

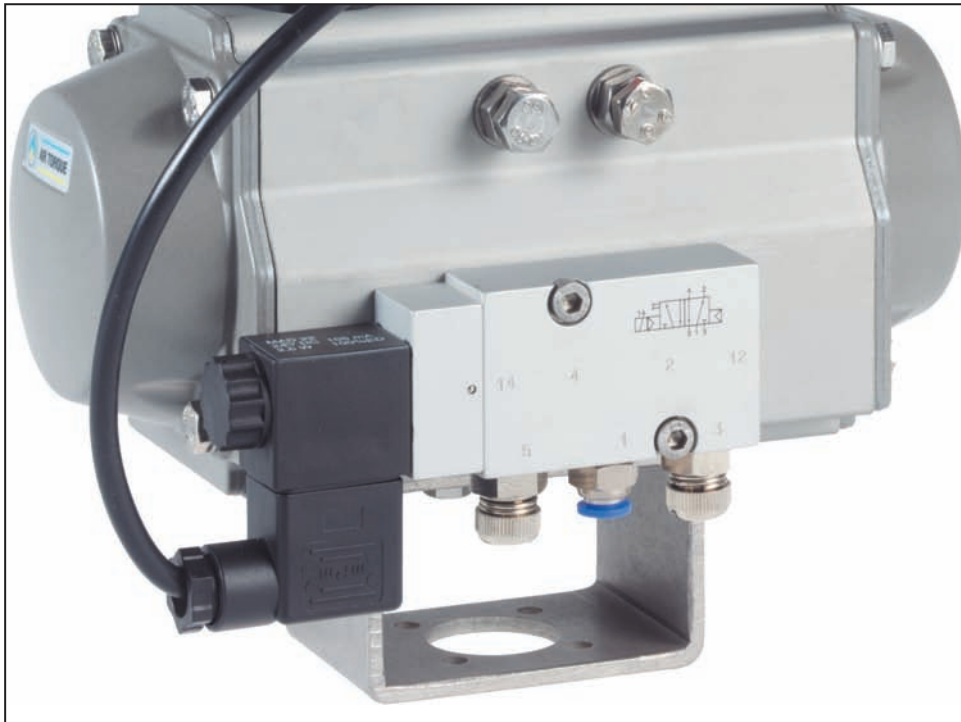
In cases where valves have to be protected against high ambient temperature, spindle extensions are often required. ROTECH offers not only spindle extensions for actuators but also for manually operated units. And even lockable models are available.



Solenoid Valves

Solenoid valves designed according NAMUR are used to control pneumatic actuators and are mounted directly onto the respective interface according to VDI/VDE 3845 of the actuator. Monostable operated valves are usually preferred, so that in case of a failure in the electrical or pneumatic system the control valve and hence, the complete actuator-valve-unit will return to a pre-defined position.

Single acting actuators are controlled by 3/2-way solenoid valves and 4/2-way respectively 5/2-way solenoid valves are used for double acting actuators. NAMUR solenoid valves are often supplied with a reversible feature, which allows the change, by using reversing plates, between 3/2-way operation and 5/2-way operation.



ROTECH

This solenoid valve offers an extremely compact design and is available in a neutral version or with your own logo for large quantities.

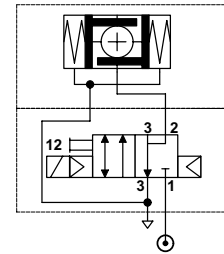
Benefits

- Available with your own logo
- Adjustment of speed by regulating exhaust air connections
- Extremely compact



technical data

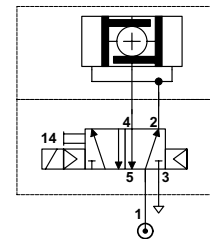
Manufacturer	Rotech	Rotech
Type	MV3	MV5
Valve function	3/2-Way, monostable	5/2-Way, monostable / bistable
Pneum. connection	G 1/4" (1,3,) NAMUR-interface (2)	G 1/4" (1,3,5) NAMUR-interface (2,4)
Working pressure	2 ... 10 bar	2 ... 10 bar
Material housing	Aluminium anodized	Aluminium anodized
Protection class (acc. IEC 529 / DIN 40 050)	IP 65	IP 65
Flow rate	1250 l/min	1250 l/min
Manual override	locked	locked



product key

MV	Type	Solenoid valve
3	Function	3 = 3/2-way 5 = 5/2-way
DC24	Voltage	DC24 = 24 V DC AC230 = 230 V DC
Ex	Protection class	Ex m II T4

Other voltages on inquiry.



Coils for NON-Ex-Applications

technical data

Manufacturer	Rotech	Rotech
Connection	Form industry acc. EN 1753301-803	Form industry acc. EN 1753301-803
Nom. power	4,2 W	7,0 / 4,2 VA
Voltage	24 V DC	230 V AC
Protection class (acc. to DIN 40050)	IP65	IP65

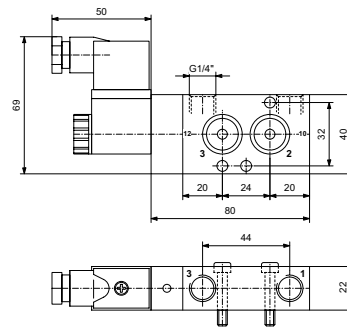
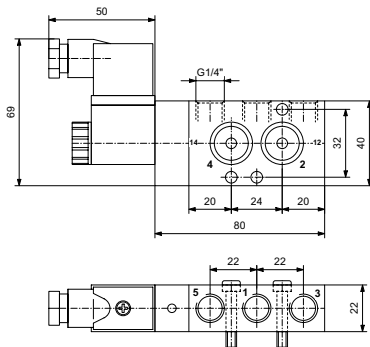
Other voltages on inquiry.

Coils for Ex-Applications

technical data

Manufacturer	Rotech	Rotech
Connection	Cable 3 m	Form A acc. DIN 43650-A
ATEX-marking	II 2G/D EEx m II T4	II 2G EEx ia IIC T6
Nom. power	5 W / 5,1 VA	-
Voltage	24 V DC; 230 V AC	24 V DC
Protection class (acc. DIN 40050)	IP65	IP65
Temperature range	-15 ... +50 °C	-
Power on-time	100%	-

Other voltages on inquiry.



Airtec - Model KN05

The Airtec solenoid valve has a very compact design. It is used for general industrial applications and by industrial plant manufacturer for first equipment.

Benefits

- Very slim design made of drawn aluminium profile
- Due to the simple construction, extremely cost-saving model



technical data

Manufacturer	Airtec	Airtec	Airtec
Type	KN-05-310-HN	KN-05-510-HN	KN-05-530-HN
Valve function	3/2-Way solenoid valve monostable	5/2-Way solenoid valve, monostable	5/3-Way solenoid valve, center position closed, bistable
Returned by	Air spring	Air spring	
Pneum. connection	G 1/4" (1,3) NAMUR-interface (2)	G 1/4" (1,3,5) NAMUR-interface (2,4)	G 1/4" (1,3,5) NAMUR-interface (2,4)
Working pressure	3 ... 10 bar	3 ... 10 bar	3 ... 10 bar
Material housing	Aluminium, anodized	Aluminium, anodized	Aluminium, anodized
Protection class (acc. EN 60529)	IP 65	IP 65	IP 65
Temperature range	-10 ... +70 °C	-10 ... +70 °C	-10 ... +70 °C
Flow rate	780 NI/min	900 NI/min	680 NI/min

product key

AI	Make	Airtec
5310	Type	5310 = KN 05310-HN 3/2-way valve 5510 = KN 05510-HN 5/2-way valve
24DC	Voltage	230AC = 230 V AC 24DC = 24 V DC
EXi	Protection	EXi: Intrinsic safety coil Exm: Encapsulation coil

Other Airtec solenoids on inquiry.

Coils for NON-Ex-Applications

technical data

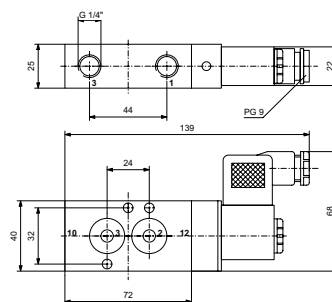
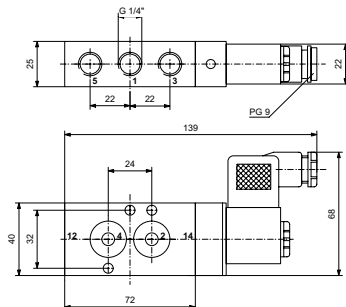
Manufacturer	Airtec	Airtec	Airtec
Type	SP-011-412	SP-011-422	SP-011-427
Capacity	4,2 W	7/4 VA	7/4 VA
Operating voltage	24 V DC	24 V AC	230 V AC
Protection class (acc. to DIN 40050)	IP65	IP65	IP65
Temperature range	-20 ... +50 °C	-20 ... +50 °C	-20 ... +50 °C
Duty cycle	100%	100%	100%

Other voltages on inquiry.

Coils for Ex-Applications

technical data

Manufacturer	Airtec	Airtec
Type	Ex037	Ex038
Connection	Cable (3m)	-
ATEX-protection class	II 2G Ex m IIC T5	II 2G Ex ia IIC T6
Capacity	3,3 W / 3,1 VA	$I \leq 115 \text{ mA}$ $P \leq 1,6 \text{ W}$
Operating voltage	24 V DC / 230 V AC	$u \leq 28 \text{ V}$
Protection class acc. to DIN 40050	IP65	IP65
Temperature range	-10 ... +50 °C	-10 ... +50 °C



FESTO - VSNB

The Festo solenoid valve, model VSNB is a modular NAMUR valve with CNOMO-interface for the connection of pilot valves. The connection of the coils is realized by a CNOMO-sandwich plate.

The valve is reversible from 5/2-way to 3/2-way (possible for monostable model only) and offers recirculation of return air back to the flush of the spring chamber in the 3/2-way valve. Optionally, this valve is available in 5/2-way design with mono- and bistable function.

FESTO



technical data

Manufacturer	Festo
Type	VSNB
Valve function	3/2-5/2 - Way monostable or bistable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4 (1,3,5) NAMUR-interface (2,4)
Working pressure	2,5 ... 8 bar
Material housing	Aluminium black anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	950 l/min
Manual override	Screw, locked

product key

FE	Make	FE = Festo
VSNB	Type	VSNB1 = VSNB-FC-M52-MH-G14-1A1 (5/2-3/2 monostable) VSNB2 = VSNB-F-M52-M-G14-1A1 (5/2 monostable) VSNB3 = VSNB-F-B52-H-G14-1A1 (5/2 bistable)
240	Voltage	240 = 240 V AC 24 = 24 V DC

Other Festo solenoids on inquiry.

Coils for NON-Ex-Applications

technical data

Manufacturer	Festo	Festo
Type	MDH-3/2-24VDC-PI	MDH-3/2-230VDC-PI
Connection	Plug Form A acc. to DIN EN 175 301-803	Plug Form A acc. to DIN EN 175 301-803
Nominal power	2,1 W	switching power 6,6 VA, holding capacity 4 VA
Operating voltage	24 V DC	230 V AC
Protection class (acc. to DIN 40050)	IP 65	IP 65
Temperature range	-10 ... +60 °C	-10 ... +60 °C
Duty cycle	100%	100%

Other voltages on inquiry: 110 V AC on inquiry

Coils for Ex-Applications

Not available for this type

product key

FE ————	Make	—————	FE = Festo
MDH24 ————	Type	—————	MDH24 = MDH-3/2-24VDC-PI MDH230 = MDH-3/2-230VDC-PI

Accessories: plug MAST FA or MAST FA L ** design A

Festo – Solenoid valve NVF3

Festo - Solenoid Valve NVF3

The Festo solenoid valve, model NVF3 is a weight reduced NAMUR valve.

Benefits

- High-quality material, weight reduced construction made of eloxated aluminium
- Reversible from 5/2 to 3/2-way function by using reversing plates, 3/2-way function with integrated recirculation of return air back to the flush of the spring chamber of the valve
- Standard with manual override



technical data

Manufacturer	Festo
Type	NVF3
Valve function	3/2-5/2-Way monostable
Type of actuation	Piloted
Returned by	Mech. spring
Air supply connection	G 1/4 (1,3,5) NAMUR-interface (2,4)
Working pressure	2 ... 10 bar
Housing material	Aluminium black anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	900 l/min
Manual override	Screw, locked

Product key

FEMVF3MOH52K14 = Standard without coil

FEMVF3MOH52K14EXI = Intrinsic safety Ex ia version incl. coil

Other Festo solenoids on inquiry.

Coils for NON-Ex-Applications

technical data

Manufacturer	Festo	Festo
Type	MSFG-24DC/42-50/60-OD	MSFW-230-50/60-OD
Connection	Plug Form A acc. to DIN EN 175 301-803	Plug Form A acc. to DIN EN 175 301-803
Nominal power	4,5 W	Switching power 9 VA, Holding capacity 7 VA
Operating voltage	24 V DC	240 V AC
Protection class (acc. to DIN 40050)	IP 65	IP 65
Temperature range	-10 ... +60 °C	-10 ... +60 °C
Duty cycle	100%	100%

Other voltages on inquiry

Coils for Ex-Applications

technical data

Manufacturer	Festo	Festo	Festo
Type	MSFG-24DC-M-EX	MSFG-230AC-M-EX	MSFG-24-EX
Protection class	II 2 GD Ex m II T5 T95°C	II 2 GD Ex m II T5 T95°C	II 3 GD Ex na II T130°C X
Connection	Encapsulation, 1m cable	Encapsulation, 1m cable	Plug Form A acc. to DIN EN 175 301-803
Nominal power	4,3 W	Switching power 7 VA, Holding capacity 6 VA	4,5 W
Operating voltage	24 V DC	230 V AC	24 V DC
Protection class (acc. to DIN 40050)	IP 65	IP 65	IP 65
Temperature range	-5 ... +40 °C	-5 ... +40 °C	-10 °C ... +50 °C
Duty cycle	100%	100%	100%

Other voltages and coils on inquiry

Other cable length for encapsulation coils on inquiry

product key

FE _____ Make _____	FE = Festo
MSFG24DC _____ Type _____	MSFG24DC = MSFG-24DC MSFG24DCEX = MSFG-24DC-M-EX MSFG230ACEX = MSFG-230AC-M-EX

RGS – Reflex R2518PKS0***Benefits**

- Robust and durable - eloxated valve made of metal with integrated high-quality sealing system
- Reversible from 5/2 to 3/2-way function by using reversing plates, 3/2-way function with integrated recirculation of return air back to the flush of the spring chamber of the valve
- Standard with manual override

**technical data**

Manufacturer	RGS
Type	R2518PKS0*
Valve function	3/2-5/2-Way, monostable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4 (1,3,5) NAMUR-interface (2,4)
Working pressure	2 ... 8 bar
Housing material	Aluminium black anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	675 l/ min
Manual override	Screw, locked

product key

RG	Make	RG = RGS
R2518PKS0	Design	R2518PKS0= R2518PKS0*
U	Voltages	U = 240 V AC B = 24 V DC



Coils for NON-Ex-Applications

technical data

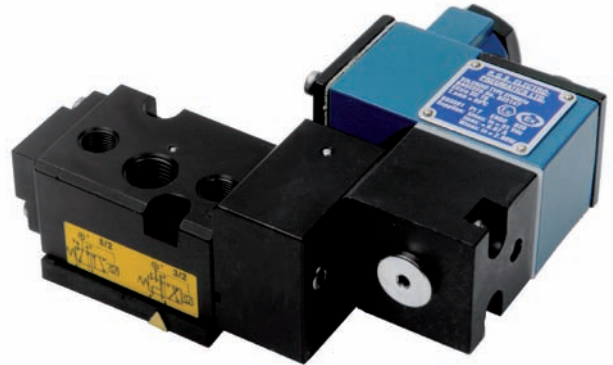
Manufacturer	RGS	RGS
Type	AV6360K00B	AV6360K00U
Connection	Plug Form A acc. to DIN EN 175 301-803	Plug Form A acc. to DIN EN 175 301-803
Nominal power	2,0 W	Switching power 9 VA, Holding capacity 5 VA
Operating voltage	24 V DC	240 V AC
Protection class (acc. to DIN 40050)	IP 65	IP 65
Temperature range	-20 ... +60 °C	-20 ... +60 °C
Duty cycle	100%	100%

Other coils on inquiry

Coils for Ex-Applications

Not available for this type

RGS - NAMUR Solenoid Valve C15



Benefits

- Robust, universal applicable NAMUR valve with CNOMO interface
- Reversible from 5/2 to 3/2-way function by using reversing plates, 3/2-way function with integrated recirculation of return air back to the flush of the spring chamber of the valve
- Monostable and bistable available

product key

RG	Make	RG = RGS
C15	Design	C15 = C15
18P	Voltages	18P = monostable 19P = bistable
A	Coil	A = EExia (BASEEFA) D = EExd 9 = EExm P = Plug without socket B = Terminal box 0 = without coil
O	Manual override	0 = Without S = Manual override with screwdriver locked D = Manual override with push-button C = Manual override with arm
OU	Voltages	OU = 240 V AC OB = 24 V DC
A	Ex-class	A = ATEX Other on inquiry

technical data

Manufacturer	RGS
Type	C15
Valve function	3/2-5/2 Way monostable or bistable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G ¼ (1), G 1/8 (3,5) NAMUR-interface (2,4)
Working pressure	3 ... 8 bar
Housing material	Aluminium black anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	675 l / min
Manual override	optional: without, screw locked, arm, push-button

RGS - Coils



Coils for NON-Ex-Applications

see product key
technical data on inquiry

Other Voltages on inquiry

Coils for Ex-Applications

see product key
Technical data on inquiry

RGS - NAMUR Solenoid Valve T23 with integrated Air Regulator



Benefits

- Robust, universal applicable 3/2-way NAMUR valve with CNOMO interface
- 3/2-way function with integrated recirculation of return air back to the flush of the spring chamber of the valve
- Monostable and bistable available



product key

RG	Make	RG = RGS
T23	Design	T23 = T23
18F	Series	18F = monostable integrated restrict
A	Coil	A = EExia (BASEEFA) D = EExd 9 = EExm P = Plug and socket B = Terminal housing 0 = Without coil
O	Manual override	0 = Without coil S = Manual override with screwdriver locked D = Manual override with push-button C = Manual override with arm
OU	Voltages	OU = 240 V AC OB = 24 V DC
A	Ex-class	A = ATEX Other on inquiry

technical data

Manufacturer	RGS
Type	T23
Valve function	3/2-Way monostable with integrated needle valve
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4 (1,3,5) G 1/8 () NAMUR-interface (2,4)
Working pressure	3 ... 8 bar
Housing material	Aluminium black anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	- l/ min
Manual override	Optional: without, screw locked, arm, push-button

- Optional valve materials available:
stainless steel, AISI 316 and brass.

RGS - Coils



Coils for NON-Ex-Applications

See product key
technical data on inquiry

Other voltages on inquiry

Coils for Ex-Applications

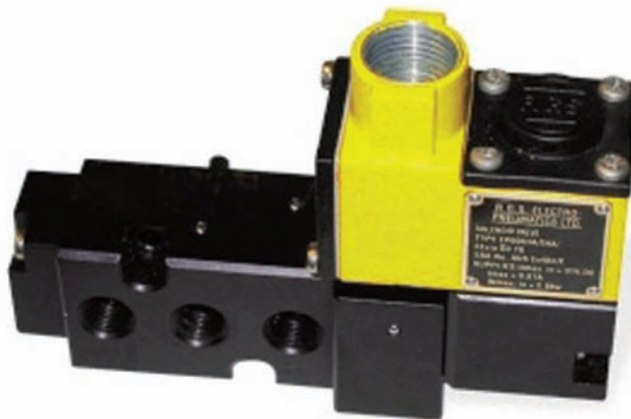
See product key
Technical data on inquiry

RGS - NAMUR Solenoid Valve T25



Benefits

- Robust, universal applicable 3/2-5/2-way NAMUR solenoid valve with CNOMO interface
- 3/2-way function with integrated recirculation of return air back to the flush of the spring chamber of the valve
- High flow rate, monostable and bistable design available



product key

RG	Make	RG = RGS
T25	Design	T25 = T25
18P	Model	18 = monostable 19 = bistable
A	Coil	A = EExia (BASEEFA) D = EExd 9 = EExm P = Plug and socket B = Terminal housing O = Without coil
O	Manual override	O = Without S = with screwdriver locked D = with push-button C = with arm
OU	Voltages	U = 240 V AC B = 24 V DC H = 24 V DC low power
A	Ex-class	A = ATEX P = ATEX Piezo H = EExm ATEX

technical data

Manufacturer	RGS
Type	T25
Valve function	3/2-5/2-Way monostable or bistable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4 NAMUR-interface (2,4)
Working pressure	3 ... 10 bar
Housing material	Aluminium anodized
Protection class (n. IEC 529 / DIN 40 050)	IP 65
Flow rate	1.050 l/min (air in case of decrease of pressure 1 bar)
Manual override	Optional: without, screw locked, arm, push-button

RGS - Coils



Coils for NON-Ex-Applications

See product key
Technical data on inquiry

Other voltages on inquiry

Coils for Ex-Applications

See product key
Technical data on inquiry

Norgren - Type Series 26230



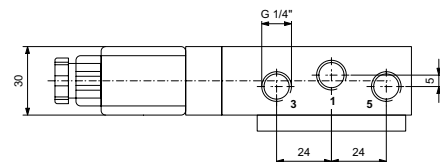
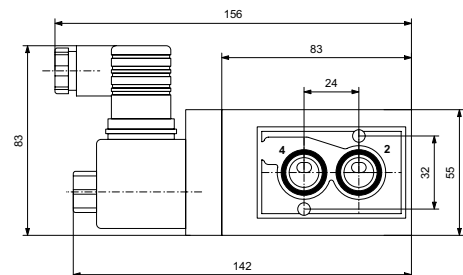
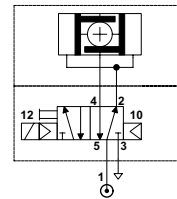
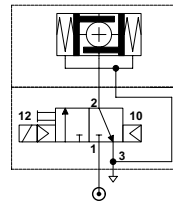
Benefits

- Thanks to reversing plates easy reversible from 3/2-way function to 5/2-way function
- Particularly resistant valve body made of eloxated aluminium
- Valve construction also suitable for Ex-proofed applications



technical data

Manufacturer	Norgren
Type	26230
Valve function	3/2-5/2-Way, monostable / bistable
Type of actuation	Piloted
Returned by	Air spring / without (bistable)
Air supply connection	G 1/4 (1,3,5) NAMUR-interface (2,4)
Working pressure	2 ... 8 bar
Housing material	Aluminium
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	(1,2 Kv)
Manual override	With locking device



product key

HE	Make	HE = Norgren (Herion)
2623	Design	2623 = 26230
079	Type	079 = monostable 179 = bistable

Norgren - Series 26230



Coils for NON-Ex-Applications

technical data

Manufacturer	Norgren (Herion)	Norgren (Herion)
Type	3036	3050
Connection	Plug Form A acc. to DIN EN 175 301-803	Plug Form B acc. to DIN EN 175 301-803
Nominal voltage	1,6 W / 3,5 VA	1,7 W / 5,6 VA
Operating voltage	24 V DC / 230 V AC	24 V DC / 230 V AC
Protection class (acc. to DIN 40050)	IP 65	IP 65
Temperature range	-40 ... +50 °C	-40 ... +50 °C

Other voltages on inquiry



Coils for Ex-Applications

technical data

Manufacturer	Norgren (Herion)	Norgren (Herion)
Type	3062	3063
Connection	Cable (3m)	Cable (3m)
ATEX-protection class	II 2G EEx m II T5	II 2G EEx m II T5
Nominal voltage	2,7 W	2,1 VA
Operating voltage	24 V DC	230 V AC
Protection class acc. to DIN 40050	IP 65	IP 65
Temperature range	-20 ... +50 °C	-20 ... +50 °C

Other voltages on inquiry

► suitable solenoid-plugs see page 164

product key

HE	Make	HE = Norgren (Herion)
3062	Type	3036 3062 3063
24DC	Voltages	24DC = 24 V DC 230AC = 230 V AC
Exm	Protection class	EEx m IIC T5 (for 3062 and 3063)

Norgren - Type Series 97100



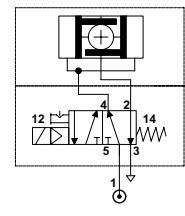
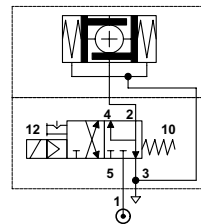
Benefits

- Thanks to reversing plates easy reversible from 3/2-way function to 5/2-way function
- Particularly resistant valve body made of eloxated aluminium
- Valve construction also suitable for Ex-proofed applications



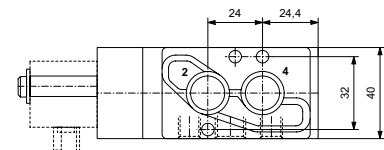
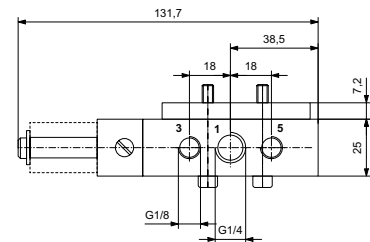
technical data

Manufacturer	Norgren (Herion)
Type	97100
Valve function	3/2-5/2-Way, monostable
Type of actuation	Piloted
Returned by	Air spring
Pneum. connection	G 1/4" (1) G 1/8" (3,5) NAMUR-interface (2,4)
Working pressure	2 ... 8 bar
Housing material	Aluminium anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	750 l/min
Manual override	With locking device



product key

HE	Make	HE = Norgren (Herion)
97 100	Type	3/2- and 5/2- Way
00	Option model	00 = Standard 02 = EEx ia



Coils for NON-Ex-Applications

technical data

Manufacturer	Norgren (Herion)	Norgren (Herion)
Type	3036	3036
Connection	Plug Form A acc to. DIN EN 175 301-803	Plug Form A acc to. DIN EN 175 301-803
Nominal voltage	1,6 W	3,5 VA
Operating voltage	24 V DC	230 V AC
Protection class (acc. to DIN 40050)	IP65	IP65
Temperature range	-40 ... +50 °C	-40 ... +50 °C

Other coils and voltages on inquiry

Coils for Ex-Applications

technical data

Manufacturer	Norgren (Herion)	Norgren (Herion)	Norgren (Herion)
Type	3062	3063	3039
Connection	Cable (3m)	Cable (3m)	
ATEX-Protection class	II 2G EEx m II T5	II 2G EEx m II T5	EEx ia IIC T6/T4
Nominal voltage	2,7 W	2,1 VA	
Operating voltage	24 V DC	230 V AC	24 V DC
Protection class (acc. to DIN 40050)	IP65	IP65	IP65
Temperature range	-20 ... +50 °C	-20 ... +50 °C	-40 ... +50 °C (T6) -40 ... +85 °C (T4)

Other coils and voltages on inquiry

► suitable plugs see page 164

product key

HE	Make	Norgren (Herion)
3062	Type	3036 3062 3063 3039
24DC	Voltages	24DC = 24 V DC 230AC = 230 V AC
Exm	Protection class	Without (0253) EEx m (3062 and 3063) EEx ia (3039)

Norgren - Type Series 97 105



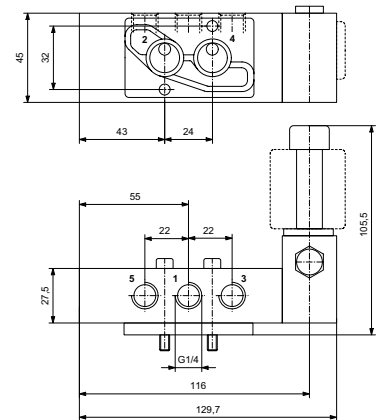
Benefits

- Thanks to reversing plates easy reversible from 3/2-way function to 5/2-way function
- Safety position in case of power failure thanks to the mechanical operated return spring
- Valve construction suitable for application in zone 1 and zone 2 with substances of explosion groups IIC



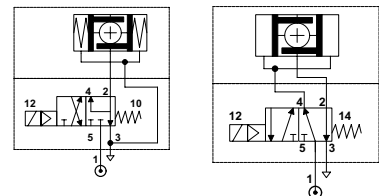
technical data

Manufacturer	Norgren (Herion)
Type	97105
Valve function	3/2-5/2-Way, monostable / bistable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4" (1,3,5) NAMUR-interface (2,4)
Working pressure	2,5 ... 8 bar
Housing material	Aluminium / brass / stainless steel
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	1300 l/min
Manual override	can be retrofitted



product key

HE	Make	He = Norgren (Herion)
97 10	Design	9710 = 97105
505	Valve body material	505 = Aluminium, treated 605 = Brass 705 = Stainless steel (1.4305)



Coils for NON-Ex-Applications

technical data

Manufacturer	Norgren (Herion)
Type	0763
Connection	Plug acc. to DIN EN 175 301-803 Form A
Nominal power	1,9 W
Operating voltage	24 V DC
Protection class (acc. to DIN 40050)	IP65
Temperature range	-25 ... +60 °C

Other voltages on inquiry

Coils for Ex-Applications

technical data

Manufacturer	Norgren (Herion)	Norgren (Herion)	Norgren (Herion)
Type	4200	4201	2050/51/52/53
Connection	screw thread M20x1,5	screw thread M20x1,5	-
ATEX-marking	EEx me II T5/T6	EEx me II T5/T6	EEx ia IIC T6
Nominal power	0,8 W	1,3 VA	-
Operating voltage	24 V DC	230 V AC	24 V DC
Protection class acc. to DIN 40050	IP66	IP66	-
Temperature range	-40 ... +80 °C (T5) -40 ... +70 °C (T6)	-40 ... +80 °C (T5) -40 ... +70 °C (T6)	-40 ... +60 °C

Other coils on inquiry

► suitable plugs see page 164

product key

HE	Make	HE = Norgren (Herion)
4200	Type	0253 4200 4201 2300
24DC	Voltages	24DC = 24 V DC 230AC = 230 V AC
Exme	Protection classes	Without (0253) Ex me (4200 und 4201) Ex ia (2050 ... 2053)

ASCO - 551

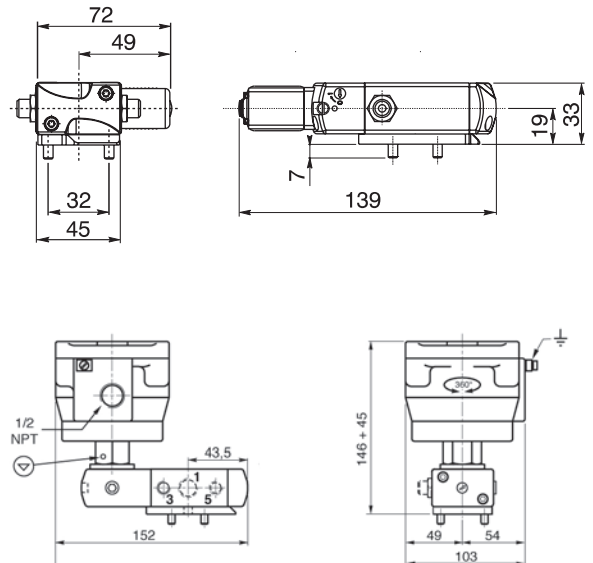
Benefits

- Optionally available in 3/8" and 1/2"
- All coil types and Ex-designs available
- Particularly resistant valve body made of eloxated aluminium



technical data

Manufacturer	ASCO
Type	551
Valve function	3/2-5/2-Way, monostable / bistable
Type of actuation	Piloted
Returned by	Mech. spring
Pneum. connection	G 1/4" (1,3,5) NAMUR-interface (2,4)
Working pressure	2 ... 10 bar
Housing material	Aluminium black, anodized
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	1/4" 700 l/min 3/8" - 1/2" 3000 l/min
Manual override	With locking device



Coils for NON-Ex-Applications

technical data

Manufacturer	ASCO
Type	SC
Connection	Plug Form A acc. to DIN EN 175 301-803
Nominal power	2,5 W
Operating voltage	230 V AC; 24 V DC
Protection class (acc. to DIN 40050)	IP65
Temperature range	-25 ... +60 °C

Other voltages on inquiry

Coils for Ex-Applications

Technical data on inquiry

ASCO - 327



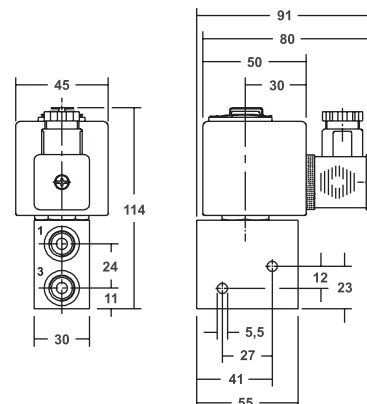
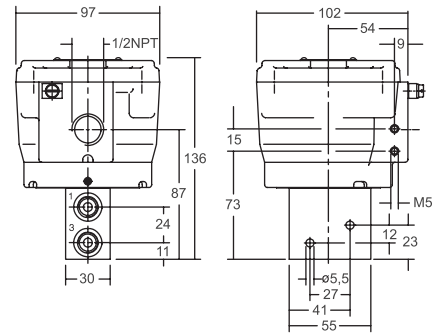
Benefits

- Directly controlled 3/2-way NAMUR valve
- Optionally available in stainless steel
- Extensive range of Ex-design, even for SIL-4 application



technical data

Manufacturer	ASCO
Type	327
Valve function	3/2-5/2-Way, monostable
Type of actuation	Direct acting
Returned by	Mech. spring
Pneum. connection	G 1/4" (1,3,5) NAMUR-interface (2,4)
Working pressure	0 ... 10 bar
Housing material	brass
Protection class (acc. to IEC 529 / DIN 40 050)	IP 65
Flow rate	570 l/min
Manual override	With locking device



Coils for NON-Ex-Applications

technical data

Manufacturer	ASCO
Type	SC
Connection	Plug Form A acc. to DIN EN 175 301-803
Nominal power	10 W
Operating voltage	230 V AC; 24 V DC
Protection class (acc. to DIN 40050)	IP65
Temperature range	-40 ... + 55 °C

Other voltages on inquiry

Coils for Ex-Applications

Technical data on inquiry

SAMSON - Series 3963



The solenoid valves manufactured by Samsomatic are used to control single- or double-acting pneumatic actuators, by using intrinsically safe signals or electrical control systems without additional signal amplification.



Benefits

- High operational reliability
- Optimal adjustment due to the 100% adjustable deaeration connections
- Available with or without manual override

technical data

Manufacturer	Samsomatic	Samsomatic	Samsomatic
Type	3963-13...	3963-03...	3963-21...
Operating	24 V DC EEx i	24 V DC	230 V AC
Design	3/2-Way or 5/2-Way	3/2-Way or 5/2-Way	3/2-Way or 5/2-Way
k_{VS} -VALUE	0,16	0,16	0,16
Flange design	NAMUR-interface	NAMUR-interface	NAMUR-interface
Working pressure	1,5...8 bar	1,5...8 bar	1,5...8 bar
Housing material	Trogamid	Trogamid	Trogamid
Protection class acc. to DIN 40050	IP54 or IP65 (with filter-return valve)	IP54 or IP65 (with filter-return valve)	IP54 or IP65 (with filter-return valve)
Temperature range	-25 ... +80 °C	-25 ... +80 °C	-25 ... +80 °C
Electr. Connection	Cable gland M20x1,5 blue	Cable gland M20x1,5 black	Cable gland M20x1,5 black
Pneum. connection	G 1/4"	G 1/4"	G 1/4"
Manual override	push-button	push-button	push-button

product key

SA	Make	Fabrikat Samsomatic
3963	Type	3963 Solenoid
0	Protection class	0 = Without Ex-protection 1 = II 2G EEx ia IIC T6 3 = Ex ia IIC (CSA) and AEx ia IIC (FM)
3	Nominal signal	3 = 24 V DC 5 = 230 V AC
0	Manual overried	0 = Without manual override 1 = Push button under housing cover
0	Switching function	0 = 3/2-Way 1 = 5/2-Way
0	Throttle	0 = Without throttle 1 = 1x throttle 2 = 2x throttles
0	Connection	0 = NAMUR-interface 1 = Screw thread
1	K _{vs} Value	1 = 0,16 3 = 1,4 4 = 4,3 7 = 2,0
0	Pneum. connection	0 = G 1/4" 1 = 1/4" NPT 2 = G 1/2" 3 = 1/2" NPT

Other types on inquiry

Siemens - SIPART PS2 6DR5

The SIPART PS2 is an electropneumatically positioner with integrated solenoid valves. Compared to flapper-nozzle systems, this positioner consumes no air in standby mode. The setting is possible on field by using control buttons and display or by additional support communication program SIMATIC PDM via HART-interface respectively via PROFIBUS PA-report.

The PS2 with SIL2 Certificate offers an automatic initialisation function, numerous diagnostic functions and a partial stroke test to reduce maintenance cost of positioner and valve.



Benefits

- Digital positioner
- Minimum constant bleed
- Automatic initialisation function with automatic calibration of zero and voltage
- Manual operation possible without additional tools

technical data

Manufacturer	Siemens
Type	2-Wire connection
Nominal Voltage	4 - 20 mA
Angle of tilt	30 ... 100°
Protection class acc. to DIN 40050	IP65
Mounting position	Optional
Housing material	Plastic Aluminium (only single-acting)
Air supply pressure	1,4 ... 7 bar
Connection	Cable gland M20x1,5
Air supply connection	G 1/4"
Max. ambient temperature	T4: -30 ... +80°C T5: -30 ... +80°C T6: -30 ... +80°C

product key

SI	Make	Siemens
6DR5	Type	SIPART PS2 6DR5
0 1	Actuator	1 = Single-acting 2 = Double-acting
0-0	Housing	0-0 = Plastic 1-0 = Aluminium
N	Ex-protection	N = Without E = EEx ia/ib IIC T6
G00-0AA0		

Other types on inquiry

Accessories - SIPART PS2

Adapter kit for part-turn actuator

6DR4004-8D for actuator with connection interface acc. VDI/VDE 3845. Please indicate actuators size acc. VDI/VDE 3845 or add required bracket size (see Chapter C – Bracket) to your order.

Order number:

Adapter kit: SI 6DR448D
and
Brackets: see Chapter C–Brackets

SIA-Modul

6DR4004-8G (without Ex-protection) and
6DR4004-6G (Ex ia/ic IIC T4/T5/T6)
with two slotted sensors SJ2-SN, 2-wire acc.
DIN 19 234 (NAMUR)

Order number::

without Ex-protection: SI 6DR448D
Ex ia/ic IIC: SI 6DR446G

Alarm module

6DR4004-8A (without Ex-protection) and
6DR4004-6A (Ex ia/ic IIC T4/T5/T6)
with two limit monitors, one failure detector
and one binary input

Order number:

without Ex-protection SI 6DR448A
EEx ia/ic IIC: SI 6DR446A

Manometer block

6DR4004-1M for single acting positioner
with two pressure gauges and
6DR4004-2M for double acting positioner
with three pressure gauges

Order number:

single acting: SI 6DR441M
double acting: SI 6DR442M

Samson - 3730



The Samson positioner model 3730 is an electropneumatically positioner with flapper-nozzle system. This system is extremely robust and resistant to dirty supply air. The constant air supply flushes the apparatus permanently. As a result, the atmosphere inside is always dry and non-corrosive.

The air regulator allows the adaptation of the positioner to different actuator sizes. The initiation by pressing one button and the automatic initiation mode make the starting up much easier. Thanks to the turnable display with the control button, the positioner offers ease of control independent from mounting position. The optional software TROVIS VIEW offers even more comfortable starting up and handling.



Benefits

- Minimal emergency current consumption
- Minimal vibration effect
- Compact, low-maintenance design

technical data

Manufacturer	Samson
Type	2-Wire connection, Short-circuit proof,
Nominal voltage	4 - 20 mA
Minimum current	3,6 mA for display, 3,8 mA for operations
Angle of tilt	24 till 100°
Protection class acc. to DIN 40050	IP66
Mounting position	Optional
Pneum. pressure	-
Electr. Connection	Cable gland M20x1,5
Pneum. connection	G 1/4"
Max. ambient temperature	-20 ... +80 °C
	-45 ... +80 °C (Cable gland metal)
Housing material	Aluminium die casting

product key

SA	Make	Samson
3730	Type	3730
1	Series	0 = With DIP-switcher 1 = With LCD and Autotune two Software limit contacts 2 = + 1 fault indicator contact 3 = + HART-communication
1	Ex-protection	0 = Without 1 = II 2G EEx ia II T6
0	induct. sensor	0 = Without 1 = Typ SJ2-SN
0	Solenoid valve	0 = Without 4 = With
0	Position indicator	0 = Without 1 = With
1	ext. position sensor	0 = Without 1 = With
0	Binary input	0 = Without 2 = With
4	diagnostics	4 = Expert Plus
0	Housing material	0 = Aluminium 1 = Stainless steel

Other Samson-positioner on inquiry

Accessories - Samson 3730

Adapter Kit for Part-turn Actuator

Order number: SAABT3845

Adapter Kit for Part-turn Actuator
(heavy design)

Order number: SAABT9244

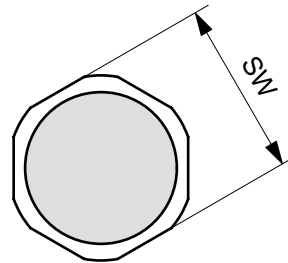
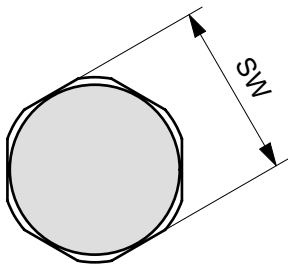
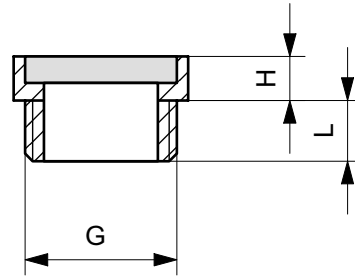
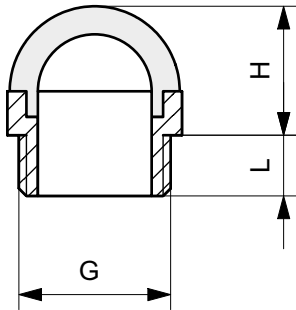
Reversal Amplifier for Double Acting Actuators
For double acting actuators without spring an additional pneumatic reversal amplifier is needed to create second counterrotating pressure.

product key

SAUKV371010 — Connection — | 1 = G1/4"
2 = NPT 1/4"

Silencer Nicked Brass

Silencers are used to avoid noise caused by the exhaust air. They are sintered, the material being nicked brass. Two types are available: round design and flat design for minimum dimensions.



G	SW	H	L
1/8"	12	8	4,5
1/4"	15	11	6
3/8"	19	15	7
1/2"	23	17	8

G	SW	H	L
1/8"	12	4	4,5
1/4"	15	4,5	6
3/8"	19	5,5	7
1/2"	23	6	8

product key

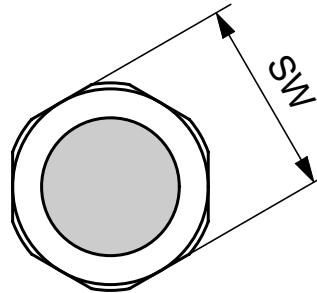
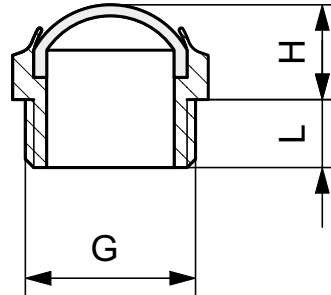
SCHD — Silencer ————— SCHD = Silencer

14 — Connection —————
 18 = G 1/8"
 14 = G 1/4"
 38 = G 3/8"
 12 = G 1/2"

KBR — Design —————
 KBR = short, round
 KBF = short, flat

Air Regulating Silencers Stainless Steel

Silencers are used to avoid noise caused by the exhaust air. They are made of stainless steel.



G	SW	H	L
1/4"	16	10,5	7,5
3/8"	19	11	7,5
1/2"	24	13,5	9,5
3/4"	30	14	10
1"	36	17	11,5

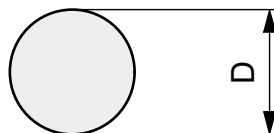
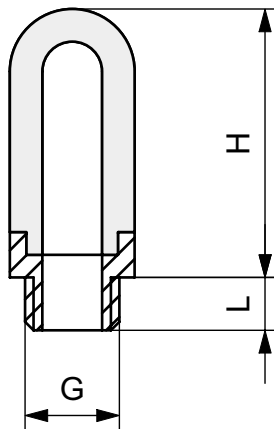
product key

SCHD	— Silencer	—————	SCHD = Silencer
14	— Connection	—————	18 = G 1/8" 14 = G 1/4" 38 = G 3/8" 12 = G 1/2" 34 = G 3/4" 1 = G 1"
E	— Material	—————	E = Stainless steel

Silencer Polyethylene

Silencers are used to avoid noise caused by the exhaust air. They are made of polyethylene.

G	SW	H	L
1/8"	12,5	22	7
1/4"	16,5	35,5	7
3/8"	24	57	10
1/2"	24	67,5	10,5
3/4"	37	123	16
1"	48	140	20

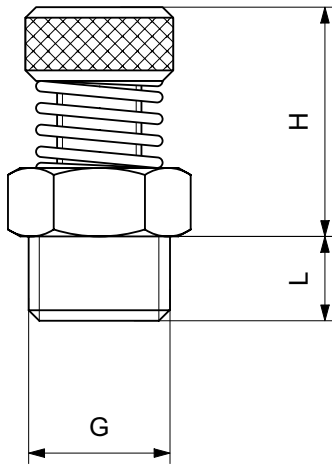


product key

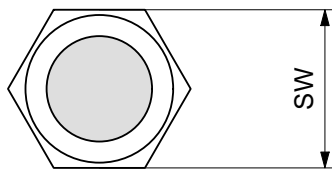
SCHD	— Silencer	—	SCHD = Silencer
			18 = G 1/8"
			14 = G 1/4"
			38 = G 3/8"
			12 = G 1/2"
			34 = G 3/4"
			1 = G 1"
14	— Connection	—	
PE	— Material	—	PE = Polyethylene

Air Regulating Silencers

Air regulating silencers combine noise reduction of the exhaust air with adjustable reduction of the profile. The control of speed is achieved by reducing exhaust air.



G	SW	H	L
1/8"	12	14 - 19	6
1/4"	15	17 - 22	8
3/8"	20	18 - 24	9
1/2"	2	18 - 24	10,50



product key

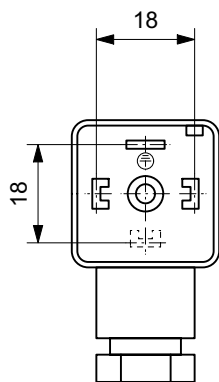
DRSCHD	Type	Air Regulating Silencers
14	Connection	18 = G1/8 14 = G1/4 38 = G3/8 12 = G1/2

Solenoid Plugs

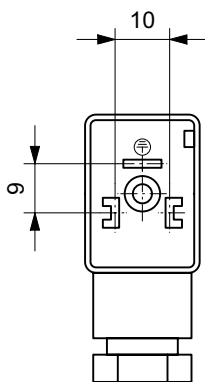
The solenoid plugs according DIN 43 650 are removable connection between the electrical cable, the coil and the solenoid valves, protection class IP65.

Corresponding to the dimensions of the coils there are three different designs.

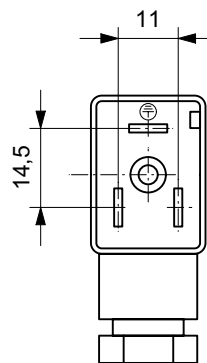
To display the position of the switching status of the coil, all designs are also available with LED.



Form A



Form B



Form I

Product key

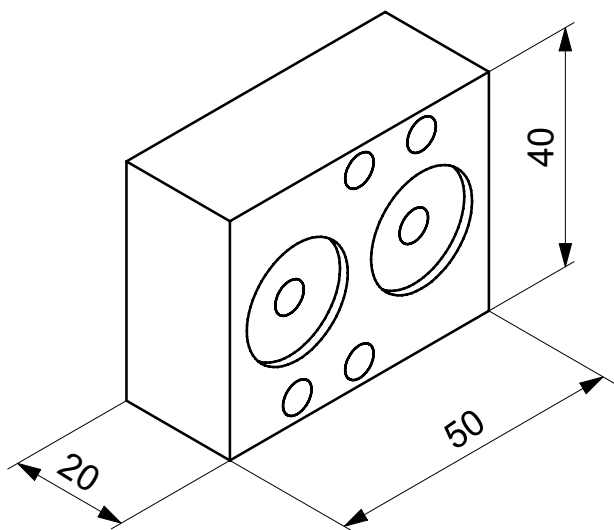
MAST	Type	Solenoid plug
FA	Connection	FA = Form A FB = Form B FI = I

Product key

MAST	Type	Solenoid plug
FA	Design	FA = Form A FB = Form B FI = I
L	Optional	L = LED (on inquiry)
24DC	Voltages	24DC = 24 V DC 230AC = 230 V AC

Adapter Plate

A adapter plate is needed if the solenoid valve or the coil requires a great distance from the part-turn actuator.

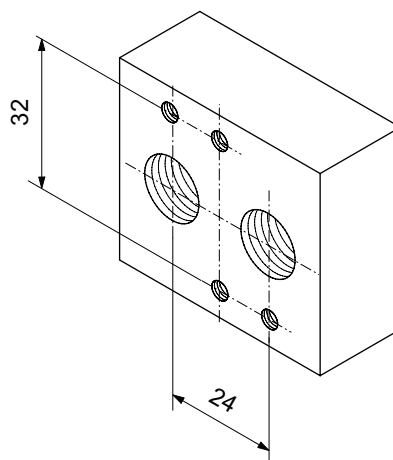
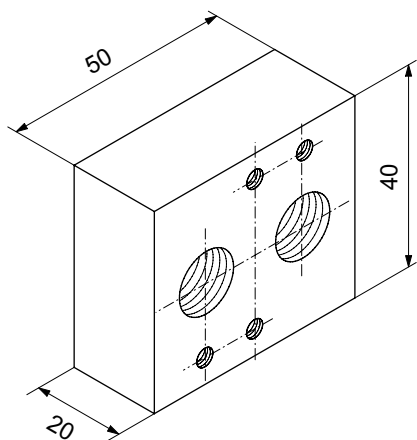


Product key

APM	Type	Adapter plate
N	Interface	NAMUR
20	Distance	20 = 20mm xx = (Other on inquiry)
A	Surface	A = Aluminium EL = Aluminium anodized

Adapter Plate 2 x G1/4"

By using the adaptor plates it is possible to transform a NAMUR valve into piped valves. A required inline-valve is not necessary any more and thus saves costs.



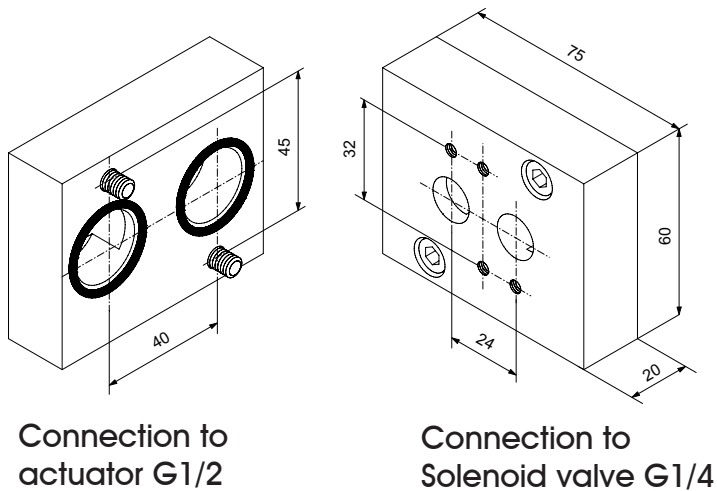
product key

APM214N20 — Type — Adapter plate

Adapter plates 1/4" to 1/2"

This adapter plate is needed for the installation of solenoid valve with NAMUR-interface G1/4 on pneumatic part-turn valve actuator with interface G1/2. This connection interface is very common especially for big size actuators. The adapter plate is supplied with two O-rings and two fixing screws.

The installation of this plate primarily makes sense, when no actuating time is specified for big size actuators or automation units and you want to use a much cheaper 1/4"-solenoid valve.

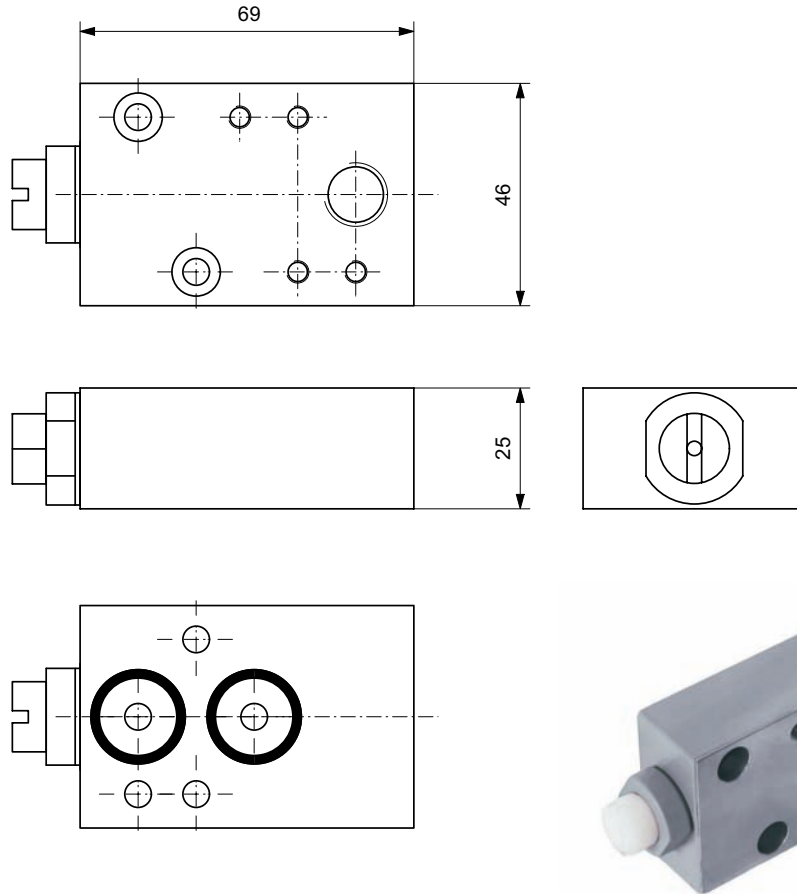


product key

APM1214NAEL — Type — Adapter plate

Breather-Block

In a lot of plants the environment is corrosive. To protect the spring chambers and the internal mechanism of pneumatic actuators, it must be absolutely avoided that external air enters inside during the closing action via springs. The breather-block redirects the internal air, that is supplied for the spring chamber of the actuator during the closing action via springs. The breather-block is equipped with a filter, that prevents the ingress of dirt particles and is available optionally with air regulating function.



technical data

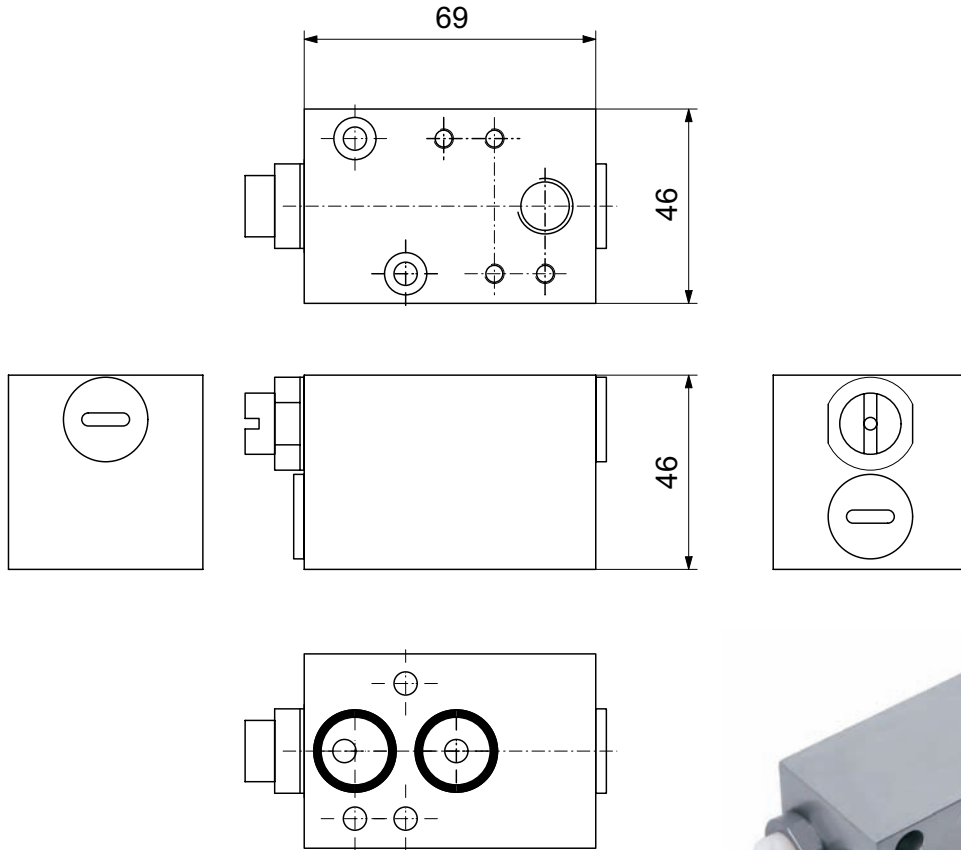
Interface	NAMUR
Air supply connection	G 1/4"
Working pressure	to 10 bar
Sealing	NBR
Temperature range	-20° to +85° C
Housing	Aluminium anodized

product key

HABB14 — Type — Breather-Block
G — Connection — G = G 1/4"

Impact-Block

The impact-block amplifies the spring torque of single acting actuators. This is achieved by redirecting the compressed air of the inner chamber into the spring chamber. In combination with the spring power a faster closing time is achieved at the end. The result of the spring tension moment is amplified by 50% and more.



technical data

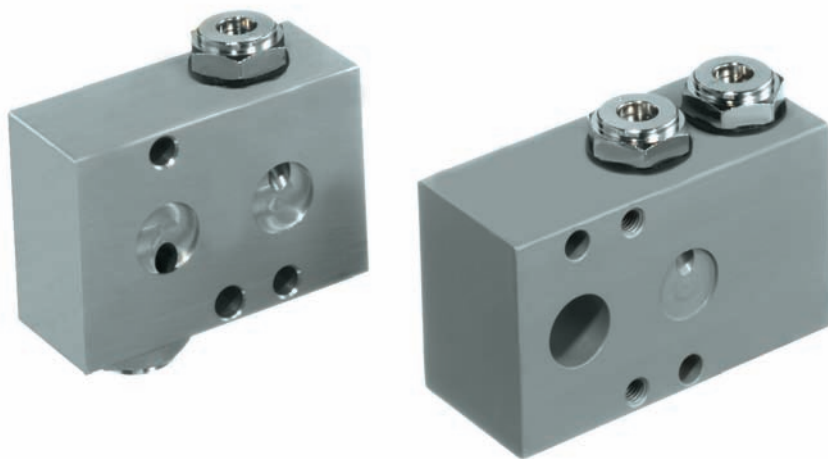
Interface	NAMUR
Air supply connection	G 1/4"
Working pressure	3 to 8 bar
Sealing	NBR
Temperature range	-20° to +80° C
Housing	Aluminium anodized

product key

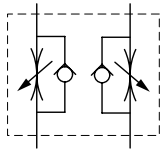
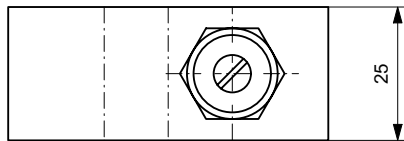
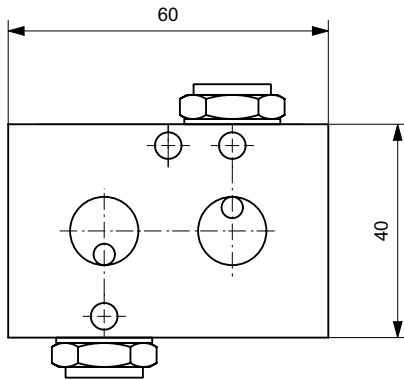
HAIB14 — Type — Impact-Block
G — Connection — G = G 1/4"

Flow Reducer Plates

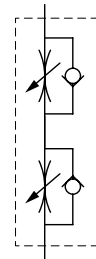
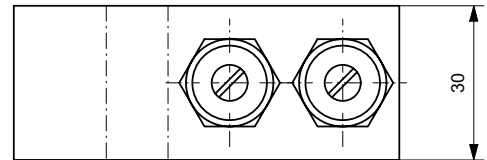
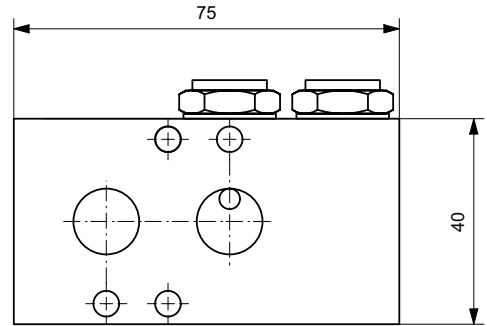
With flow reducer plates actuating times of pneumatic actuators can be adjusted individually and continuously in both directions "OPEN" and "CLOSE". For double acting actuators, which are controlled by a 5/2-way solenoid valve, the flow reducer plate DRPLD is required and for single acting actuators, which are controlled by a 3/2-way solenoid valve, the flow reducer plate DRPLE is needed.



Flow Reducer Plate double-acting



Flow Reducer Plate single-acting

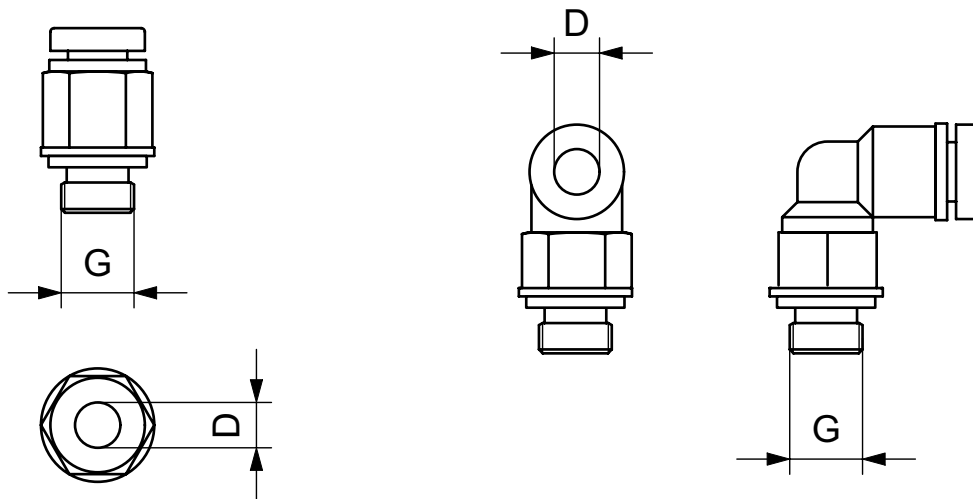


product key

DRPL	_____ Type _____	Flow reducer plate
E	_____ Design _____	E = Single-acting D = Double-acting

Tube Connections

Tube connections mark the connection between compressed air hoses and the inside threads of the attachment parts. The tube connections are equipped with a sealing ring and are easily tightened with an open-ended spanner. The compressed air hose is simply plugged in, to release the tube just press the sealing ring down.



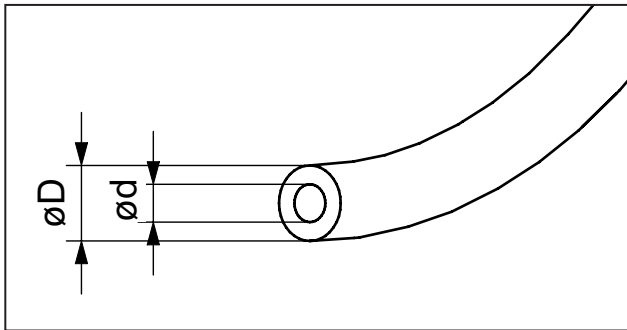
product key

SV	Type	Hose coupling
K	Material	K = Plastic M = Brass, nickel-plated
G	Design	G = Straight W = Angled
14	Voltages	18 = G 1/8 14 = G 1/4 38 = G 3/8 12 = G 1/2
1	Hose external diameter	4 = 4 mm 6 = 6 mm 8 = 8 mm 12 = 12 mm

Other materials and dimensions on inquiry.

Compressed Air Hoses

Flexible compressed air hoses made of Polyurethan are abrasion-resistant, compression proof, wear resistant and have high damping capacity. They are ideal to connect pneumatic actuator with positioners or solenoid valves.



Order.-Nr.	$\varnothing d$	$\varnothing D$
DLSPU3	3	4
DLSPU4	4	6
DLSPU6	6	8
DLSPU8	8	12

working pressure:
 -35 ... +30 °C: 10 bar
 +35... +60 °C: 7 bar

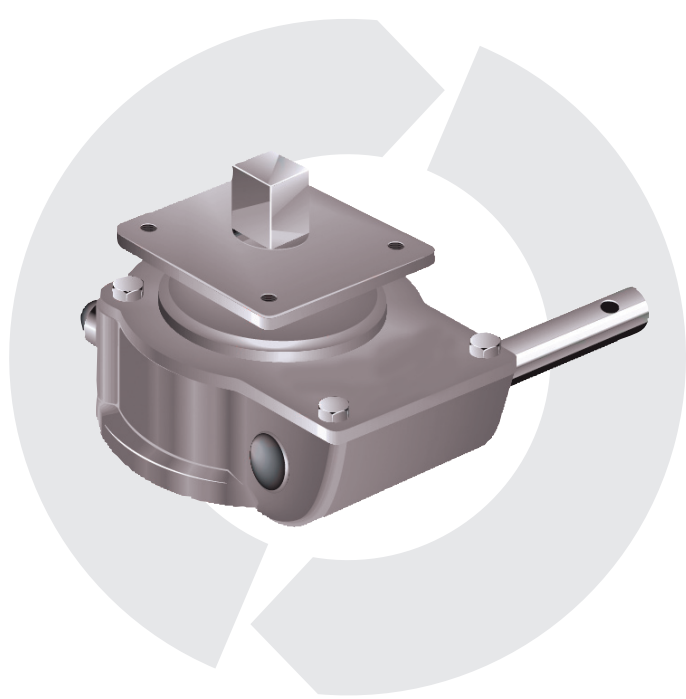
product key

DLS	_____ Type _____	Air hose
PU	_____ Material _____	Polyurethan
		3 = 3 mm
		4 = 4 mm
6	_____ Inner diameter _____	6 = 6 mm
		8 = 8 mm
BL	_____ Surface _____	BL = Blue
		SW = Black

Other materials and dimensions on inquiry.

Manual Emergency Gears

Manual emergency gears are used as a security measure between valves and part-turn actuator. They also allow in case of failure of the operating medium of the part-turn actuator to manually control the valve. The gear has two connecting flanges, which are suitable for the standardized interfaces of valve and actuator. With the connected hand wheel, you can now control the gear and by turning the central coupling contemporaneously move the actuator and valve. The gear has to override the torque of the actuator and the valve. This fact has to be taken carefully in consideration during the construction process of the gear model ILGS for single acting actuator, because in this case the spring torques of the part-turn actuator and moment of the valve will be added together.



Benefits

- Safe manual operation in case of air or power failure
- Self-hemming function secures the set position
- No increasing of torque when disengaged

Product Options

- Low temperature up to $-40\text{ }^{\circ}\text{C}$
- Special coatings, e.g. with RAL colors
- Including deaeration valve

product key gears

HG	Make	HG
R	Type	R
210	Size	210 to 250/SP9
F12	Flange actuator	F12 *
27	Shaft actuator	SW27 *
F12	Flange valve	F12 *
27	Shaft valve	SW27 *

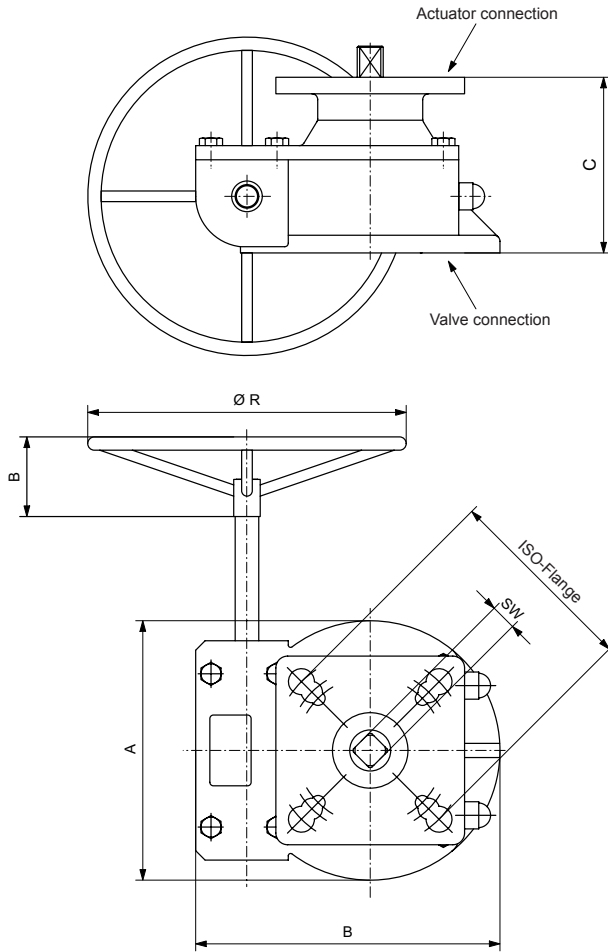
product key handwheel

HR	Make	HR
200	Size	200 to 1000

* Which flange sizes and max. drillings are suitable for gear sizes is to be taken from the schedule on the right side.

* The gears are available with shaft or shaft adaptor for square, double-D, octagon or fit-in form.

dimensions



Hand wheel



Type	R	S
HR150	∅150	52
HR200	∅200	80
HR250	∅250	110
HR300	∅300	115
HR400	∅400	130
HR500	∅500	150
HR600	∅600	150
HR700	∅700	150
HR800	∅800	150
HR900	∅900	160
HR1000	∅1000	160

Type	Torque	Actuator connection		Valve connection		Dimensions Gears		
		Flange	max. drill hole	Flange	max. drill hole	A	B	C
R03	330 Nm	F05/F07	□ 19 / ∅24	F05/F07/F10	□ 17 / ∅20	102	128	85
R10	1000 Nm	F07/F10/F12	□ 27 / ∅36	F07/F10/F12/F14	□ 27 / ∅32	138	174	119
R20	2000 Nm	F10/F12/F14	□ 36 / ∅50	F10/F12/F14/F16	□ 32 / ∅40	200	226	131
R32	3250 Nm	F12/F14/F16	□ 46 / ∅60	F10/F12/F14/F16	□ 36 / ∅45	220	258	149
R55	5500 Nm	F16/F25	□ 55 / ∅78	F12/F14/F16/F25	□ 46 / ∅58	285	402	175
R68	6800 Nm	F16/F25	□ 55 / ∅78	F12/F14/F16/F25	□ 46 / ∅58	285	402	175
R84	8400 Nm	F25/F30	□ 75 / ∅100	F16/F25/F30	□ 50 / ∅65	370	482	223
R125	12500 Nm	F25/F30	□ 75 / ∅100	F16/F25/F30	□ 50 / ∅65	370	482	223
R170	17000 Nm	F25/F30	□ 75 / ∅100	F16/F25/F30	□ 50 / ∅65	370	482	223
R320	32000 Nm	F25/F30	□ 100 / ∅100	F16/F25/F30	□ 90 / ∅130	510	725	250

Disengageable Manual Emergency Gears

Manual emergency gears are used as a security measure between valves and part-turn actuator. They also allow in case of failure of the operating medium of the part-turn actuator to manually control the valve. The gear has two connecting flanges, which are suitable for the standardized interfaces of valve and actuator. During normal operation the manual emergency gear is disengaged. As a result, there is no increasing of torque due to the breaker of the gear and an effective coupling connection between actuator and valve is guaranteed.

If the actuator can not be actuated because of failure of compressed air or of electrical power, the worm gear shaft is moved manually by a lever into the serration and gets fixed in that position.

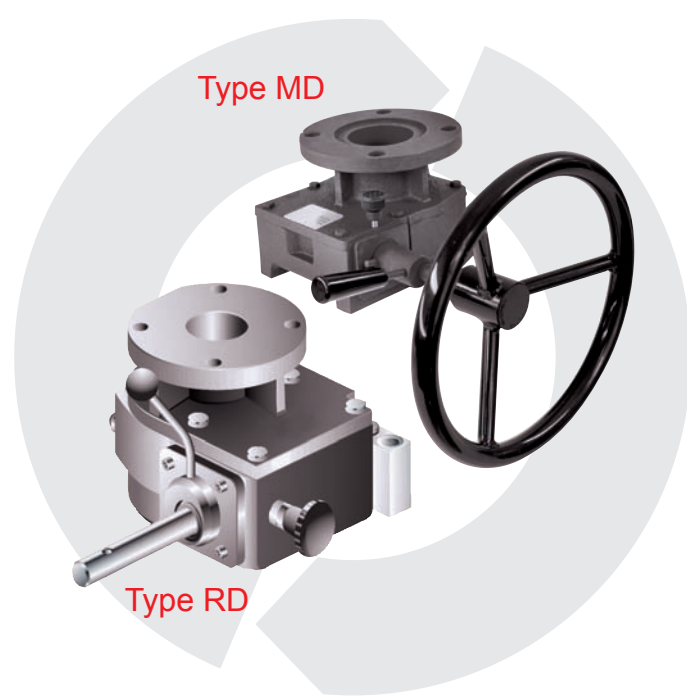
With the connected hand wheel, you can now control the gear and by turning the central coupling contemporaneously move the actuator and valve. The gear has to override the torque of the actuator and the valve. During the construction process of the gear model ILGD for double acting actuator, mainly the torque of the valve has to be considered, because the part-turn actuator can cause a marginal increasing of the total torque, that is already compensated during the construction process by a safety factor, which is always considered. The gears are self-hemming, thus each set position is secured.

Benefits

- Safe manual operation in case of air or power failure
- Self-hemming function secures the set position
- No increasing of torque when disengaged

product key gears

HG	Make	HG
RD	Type	RD = Type RD MD = Type MD
210	Size	210 to 250/SP9
F12	Flange actuator	F12 *
27	Shaft actuator	SW27 *
F12	Flange valve	F12 *
27	Shaft valve	SW27 *



Product Options

- Low temperature up to -40 °C
- Special coatings, e.g. with RAL colors
- Including deaeration valve

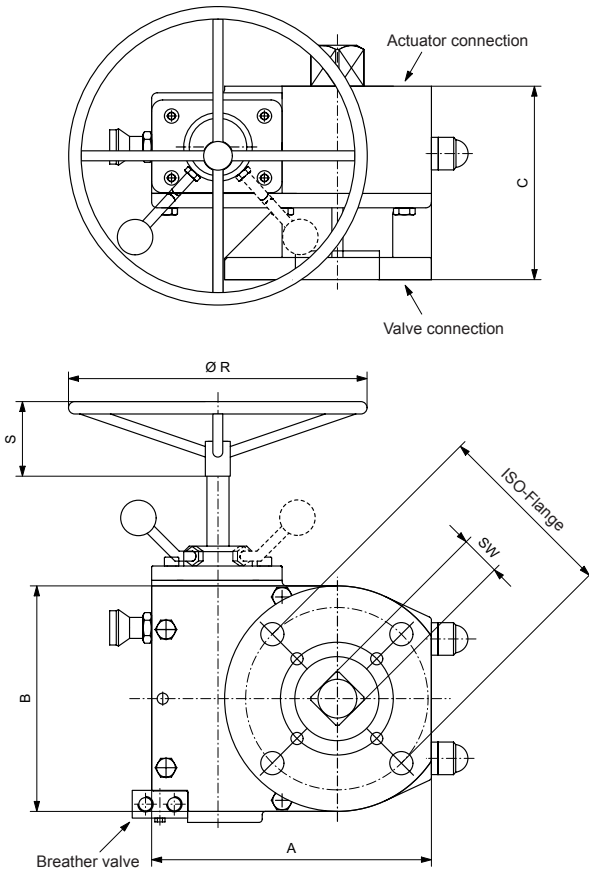
product key handwheel

HR	Make	HR
200	Size	200 to 1000

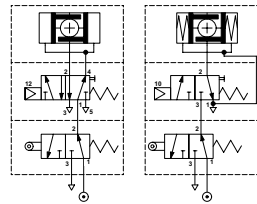
* Which flange sizes and max. drillings are suitable for gear sizes is to be taken from the schedule on the right side.

* The gears are available with shaft or shaft adaptor for square, double-D, octagon or fit-in form.

dimensions



To ensure that the actuator is totally deaerated during manual operation, and to avoid that the actuator will be filled with air, it is possible to mount a stop-valve to gear. This stop-valve (3/2-way valve) is activated automatically, as soon as the lever for connecting the worm gear shaft is moved. If the valve is activated, it deaerates the actuator and stops contemporaneously the compressed air supply. This position is held until the worm gear shaft is disconnected again. The forced deaeration for manual emergency gears is suitable for single acting and also for double acting actuators.



Type	R	S
HR150	Ø150	52
HR200	Ø200	80
HR250	Ø250	110
HR300	Ø300	115
HR400	Ø400	130
HR500	Ø500	150
HR600	Ø600	150
HR700	Ø700	150
HR800	Ø800	150
HR900	Ø900	160
HR1000	Ø1000	160

Type	Torque	Actuator connection		Valve connection		Dimensions Gears		
		Flange	max. drill hole	Flange	max. drill hole	A	B	C
RD02	250 Nm	F05/F07	□ 30 / Ø42	F05/F07	□ 17 / Ø20	155	165	122
MD03	330 Nm	F05/F07	Ø24	F05/F07	Ø25	107	90	90
MD06	670 Nm	F07/F10/F12	Ø39	F07/F10/F12	Ø32	159	140	101
RD07	750 Nm	F07/F10/F12	□ 34 / Ø49	F07/F10/F12	□ 27 / Ø32	194	210	145
MD13	1360 Nm	F10/F12/F14	Ø54	F10/F12/F14	Ø45	193	180	126
RD14	1450 Nm	F10/F12/F14	□ 48 / Ø68	F10/F12/F14	□ 34 / Ø40	223	236	160
MD21	2190 Nm	F12/F14/F16	Ø80	F12/F14/F16	Ø65	230	220	135
RD24	2490 Nm	F12/F14/F16	□ 52 / Ø74	F10/F12/F14/F16	□ 36 / Ø44	250	286	175
RD33	3390 Nm	F14/F16	□ 62 / Ø88	F12/F14/F16	□ 46 / Ø55	280	327	194
MD40	4080 Nm	F14/F16	Ø82	F14/F16	Ø86	283	260	152
RD74	7450 Nm	F16/F25	□ 65 / Ø92	F16/F25	□ 55 / Ø70	345	386	209
MD80	8000 Nm	F16/F25	□ 55	F16/F25	□ 55 / Ø86	-	-	-
MD130	13000 Nm	F25/F30	□ 70	F25/F30	□ 70 / Ø100	-	-	-

Manual Operation Mounting-Kits



Safety in plants requires also the control of non-automated shut-off devices. These shut-off devices are activated normally at the start-up of the plant or in case of revision. ROTECH offers a wide range of limit switch mounting for manually operated valves.

Customized Brackets/Customized Couplings

Besides the normalized standard brackets according to EN 15081 we offer a wide range of customized brackets and couplings, which is made to order. ROTECH has already realized thousands of different mounting sets.

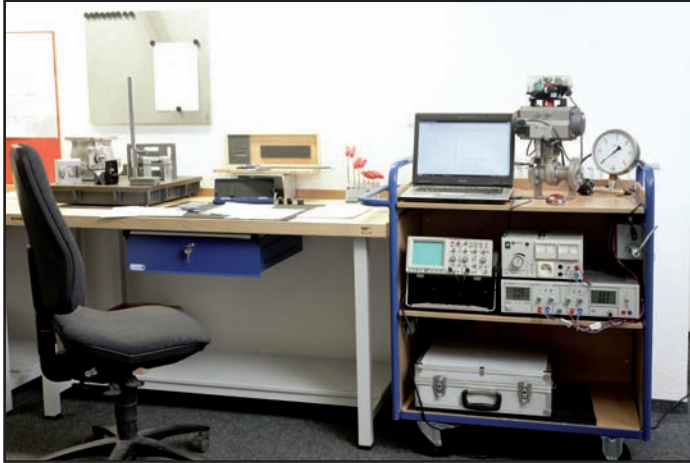
Please send us your inquiry.

Control Cabinets



To protect solenoid valves and air conditioning, control cabinets are used in some specified plants. The distance to the pneumatic actuators should be max. 20 m. It depends on the diameter of the conduit and the switching times. For use in extremely low ambient temperature (up to $-60\text{ }^{\circ}\text{C}$), it is possible to heat the control cabinet.

Timing



The timing of the switching time is the timing of an actuator including the time of pressure application (switching time of the solenoid valve) and the movement of the actuator. These timings are measured accurate to 1 ms. For Z-Set-ups, e.g. with Technical Safety Inspection (TÜV-Inspection) or for fingerprint documentation, the inspection results with curve progression are recorded.

Sealing Inspection

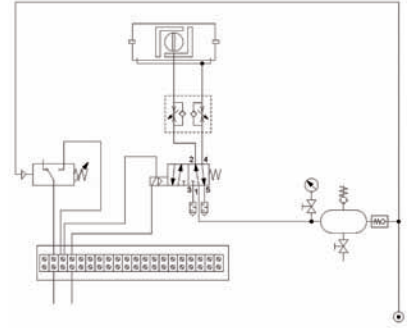
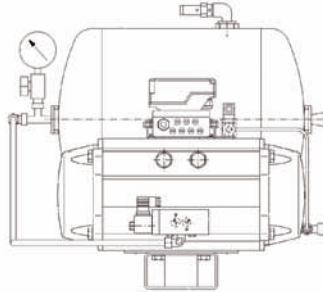
For the end-inspection of the completely mounted unit, a sealing inspection, e.g. acc. to IEC 60534-4 is often required for the valve. There are different clamping devices available for the inspection.

Air Tanks

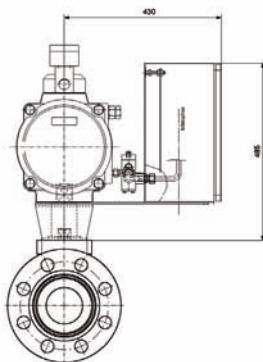
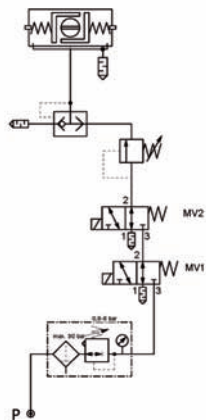
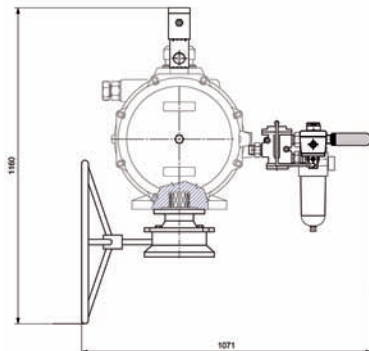


Air tanks are used for energy storage. They are needed in case of energy failure to minimum ensure one automatical or one manual gear shift. For specified applications, additional safety measures have to be taken, because a spring fracture is not possible.

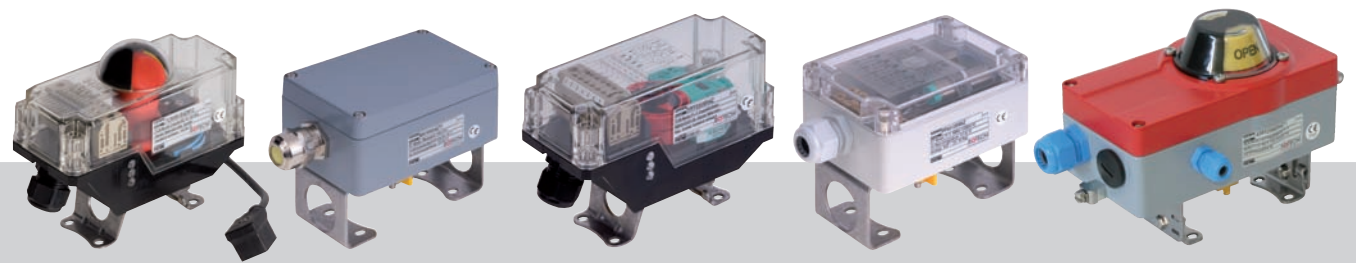
Different Control Systems



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