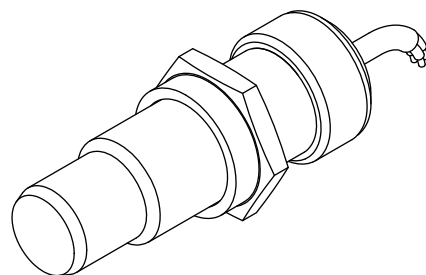
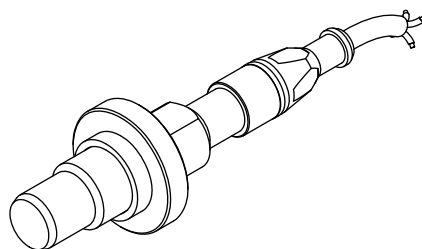
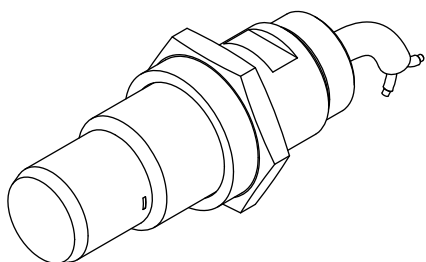
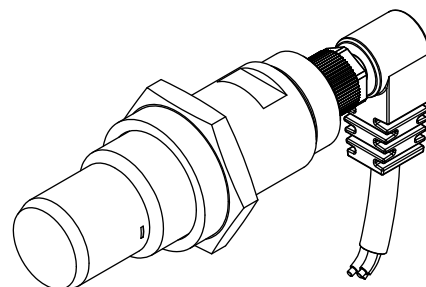
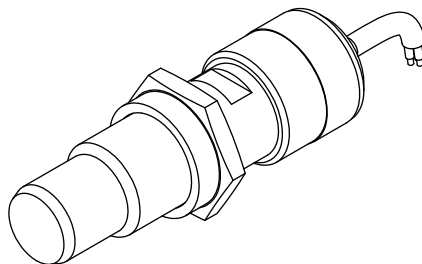
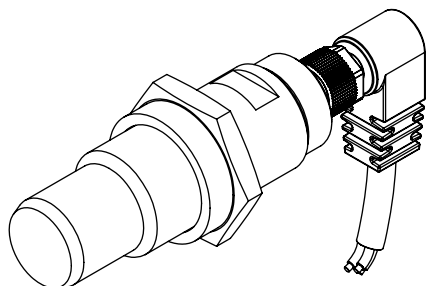


■■■■■■■■ Operating Instructions

KRAL



KRAL Pick ups.

Oil 02en
Edition 02/2019
Original instructions

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Target groups

The operating instructions form part of the product and must be kept for future reference. Furthermore please observe the associated documents.

Target groups

Target group	Tasks
Operator-owner	☐ Keep these instructions available at the system site for future reference. ☐ Ensure that employees read and observe these instructions and the associated documents, in particular the safety instructions and warnings. ☐ Observe additional system-specific directives and regulations.
Specialist personnel, fitters	☐ Read, observe and follow these instructions and the associated documents, in particular the safety instructions and warnings.

Symbols

Symbol	Meaning
	Warning personal injury
	Notice
	Procedures mechanical installation
	Procedures electrical installation
	Check or fault table
	Request for action

Danger levels

	Warning	Danger level	Consequences of non-observances
	Danger	Immediate threat of danger	Serious personal injury, death
	Warning	Possible threat of danger	Serious personal injury, invalidity
	Caution	Potentially dangerous situation	Slight personal injury
	Caution	Potentially dangerous situation	Material damage

Associated documents

Associated documents

Declaration of conformity according to EU Directive 2014/30/EU
Declaration of conformity according to EU Directive 2014/34/EU for pick ups in ATEX version
ATEX supplementary instructions for operation in potentially explosive areas
Corresponding operating instructions of the flowmeter
Corresponding operating instructions of the electronics

Proper use

Proper use

- ☐ Use KRAL pick ups solely with flowmeters of the series provided to this purpose, see "Specifications", page 9.
- ☐ Use the KRAL pick up solely within the operating limits that are specified in the chapter "Technical data". Deviating operating data can result in damage. In case of any doubt, please contact the manufacturer.

Safety information



The following safety instructions must be observed:

- ☐ No liability is accepted for damage arising through non-observance of the operating instructions.
 - Read the operating instructions carefully and observe them.
 - The operator-owner is responsible for the observance of the operating instructions.
 - Installation, removal and installation work may only be carried out by specialist personnel.
- ☐ In order for the warranty to remain valid, corrective maintenance carried out during the warranty period requires the express permission of the manufacturer.
- ☐ Observe the general regulations for the prevention of accidents as well as the local safety and operating instructions.
- ☐ Observe the valid national and international standards and specifications of the installation location.
- ☐ Implement all the supply lines without faults.
- ☐ The pick up system (pick up, transducer and lines) may not be located in the area of strong, high-frequency electromagnetic fields, such as those emitted e.g. from power lines, electric motors, frequency converters, etc. This can result in erroneous measurements of the pick up system.
- ☐ In case of systems with an increased potential of danger to humans and/or machines the failure of a pick up may not lead to injuries or damage to property.
 - Always equip systems with an increased potential of danger with alarm equipment.
 - Maintain and check the protective/alarm equipment regularly.
- ☐ The pumped liquids can be dangerous (e.g. hot, dangerous to health, poisonous, combustible). Observe the safety conditions for handling dangerous materials.
- ☐ Pumped liquids can be subject to pressure and can cause damage and/or personal injury should leaks occur.
- ☐ Depending on operating conditions, the service life of the pick ups is limited due to vibrations, temperature influences or deterioration. The operator-owner is responsible for regular inspection.
 - All parts which jeopardize safe operation must be replaced regularly.
 - Abnormal operating mode or visible damage prohibits further use.

Functional principle

Functional principle

KRAL pick ups are optimized for use together with KRAL flowmeters, see "Specifications", page 9.

Series	Functional principle
☐ BEG 06/BEG 06A BEG 43D/BEG 44/BEG 45/BEG 46D BEG 47D/BEG 47E/BEG 47G/ BEG 53A/BEG 54A	The pole wheel of the flowmeter rotates at an exactly defined distance from the pick up. The pick up scans the poles of the pole wheel.
☐ BEG 56A/BEG 47C/BEG 64	The pick up scans the flanks of the measuring screw.
☐ BEG 60A/BEG 61A/BEG 62A	Two pick ups are integrated in a compact connection box. The pick ups scans the flanks of the measuring screw.

The pick up generates a specific number of pulses per flow volume unit – depending on the size and working point. This device-specific characteristic is called the K-factor (unit: Pulse/Liter) and is specified on the flowmeter's rating plate as well as on the enclosed calibration certificate.

Structure of pick up

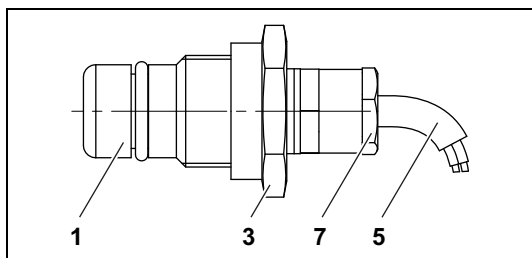


Fig. 1 Structure BEG 06

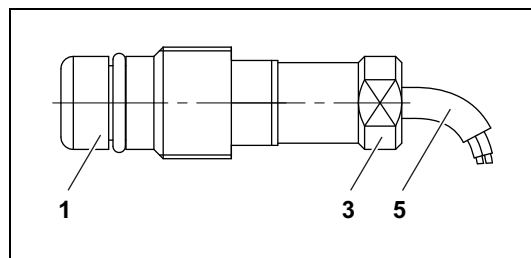


Fig. 2 Structure BEG 06A

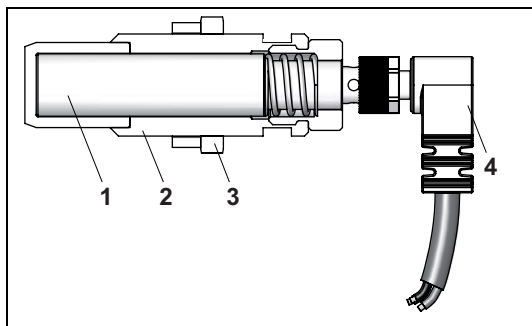


Fig. 3 Structure BEG 43D/BEG 46D

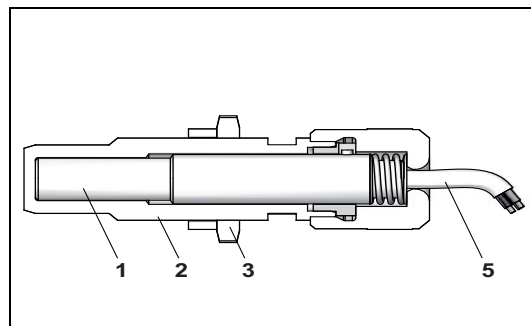


Fig. 4 Structure BEG 44

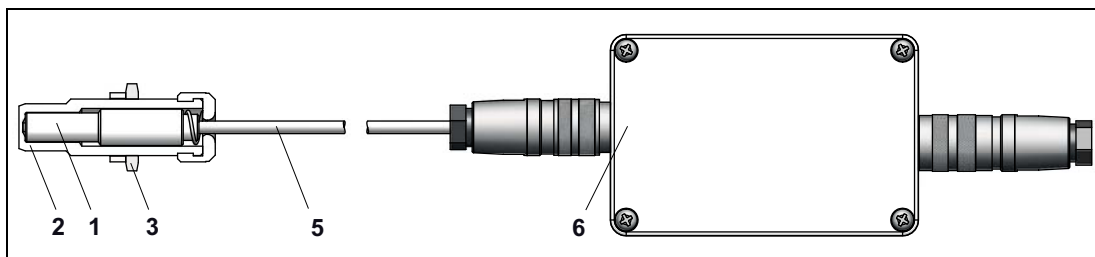


Fig. 5 Structure BEG 45 + BEV 13

Description of the pick up

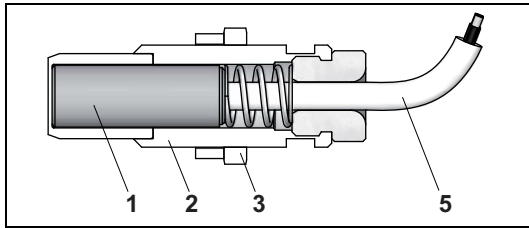


Fig. 6 Structure BEG 47D/BEG 47E/BEG 47G

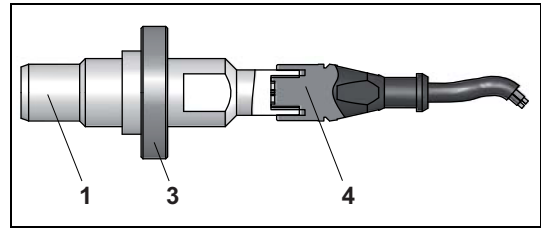


Fig. 7 Structure BEG 53A/BEG 54A

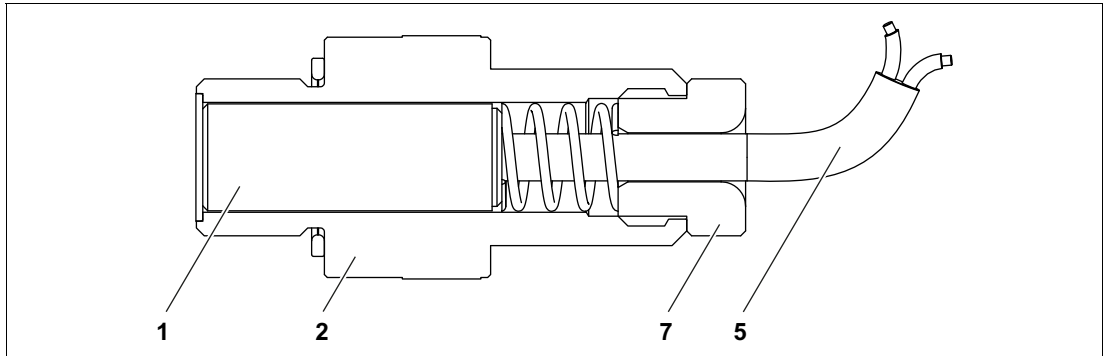


Fig. 8 Structure BEG 47C

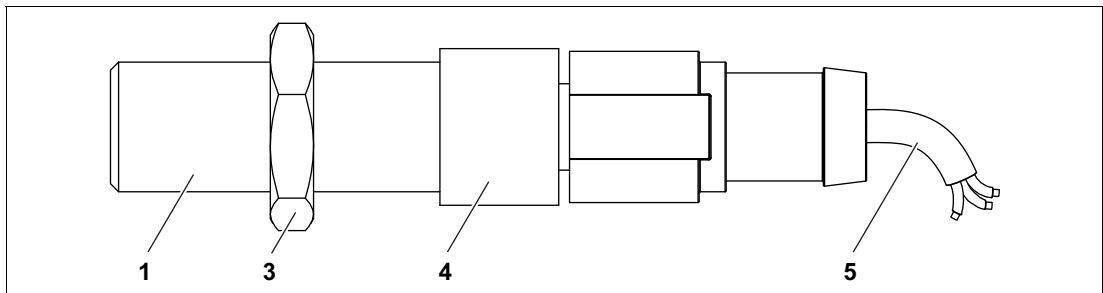


Fig. 9 Structure BEG 56A

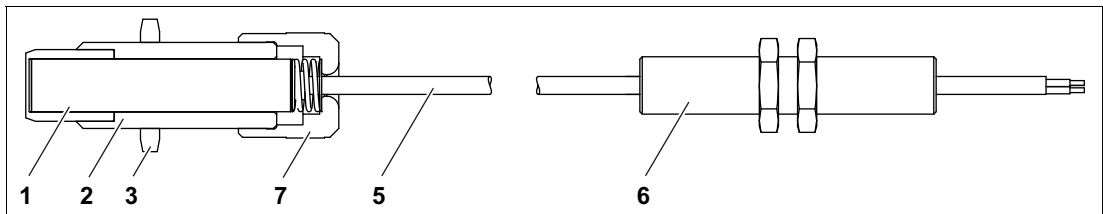


Fig. 10 Structure BEG 64

- | | |
|------------------|------------------|
| 1 Pick up insert | 5 Pick up cable |
| 2 Dry sleeve | 6 Amplifier |
| 3 Fastening nut | 7 Tensioning nut |
| 4 Pick up plug | |

Description of the pick up

Some pick ups are equipped with two LEDs. The LEDs are located at the pick up plug **4** (at BEG 43D/ BEG 46D/BEG 56A) or at the amplifier **6** (at BEG 45). The supply voltage can be checked with the green LED. Upon rotation of the measuring screws, the red or yellow LED begins to flash in the rhythm of the pulse signal and thus facilitates a control of the signal output.

Some pick up inserts are mounted in a dry sleeve **2**. The dry sleeve allows the pick up insert to be mounted without contact with the liquid to be measured, see "Specifications", page 9.

The pick up BEG 46 can be used without an amplifier for operation with the battery-powered electronic device BEM 20.

Structure of connection box

Structure of connection box

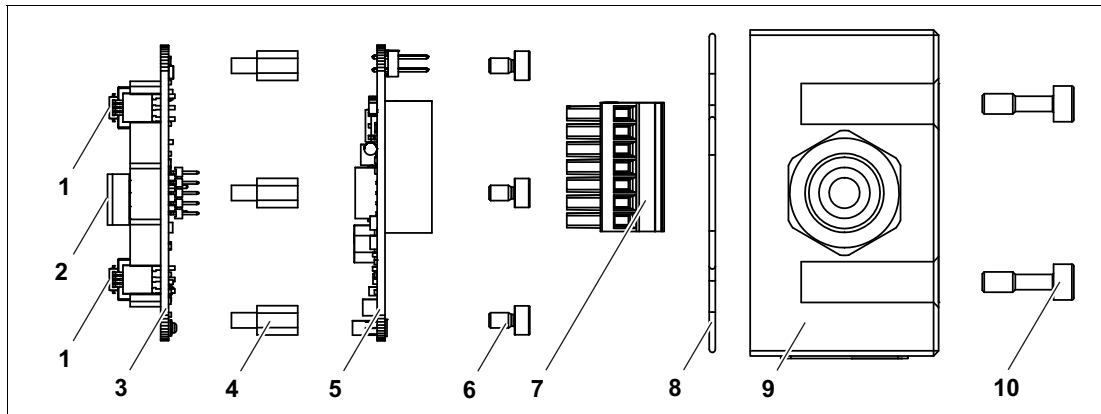


Fig. 11 Structure BEG 60A/BEG 61A/BEG 62A

1	Pick up	6	Screw
2	Temperature sensor	7	PCB connector
3	Bottom circuit board	8	O-ring
4	Hexagonal spacer	9	Connection box (cover)
5	Top circuit board	10	Socket screw

Description of the connection box

The signals of the pick ups **1** are converted into square wave impulses in the robust connection box. The phase-offset signal and the incremental encoding inputs available in the KRAL electronic unit can determine the direction of flow and take it into consideration when calculating the total values. The connection box is equipped additionally with a temperature sensor **2**. The current density of the flowing liquid can be calculated by means of the density table stored in the electronic unit. A normalized volume measurement is then possible at which the displayed values are converted to a reference temperature that can be selected freely. This ensures that measuring errors caused by changes in the density due to temperature variations are avoided.

Specifications

	BEG 06 BEG 06A	BEG 43D	BEG 44	BEG 45 + BEV 13	BEG 46D
Use with flowmeter	OMG OMH	OMG	OMG OMH	OMG* OMH*	OMK
Application	Chemically resistant, potentially explosive area	Standard	High pressure, high temperature	High pressure, high temperature	Chemically resistant
K-factor	K1	K1	K2	K3	K1
Signal	Namur	PNP	PNP	PNP	PNP
Principle of operation	Inductive	Inductive	Hall difference	Magnetic	Inductive
Vibration sensitivity	—	—	—	At standstill	—
Connection thread	M18x1	M18x1	M18x1	M18x1	M18x1
Installation	Without dry sleeve	With dry sleeve	With dry sleeve	With dry sleeve	With dry sleeve
Housing material Pick up	Stainless steel	Brass nickel-plated	Stainless steel	Stainless steel	Brass nickel-plated
Housing material Dry sleeve	—	Arcap/ Ceramic	Arcap	Arcap	Stainless steel/ Ceramic

Tab. 1 Specifications (1)

* Observe the flow range: Underpass of Q_{min} see "Data sheet BEG 45 + BEV 13", page 16

Specifications

	BEG 47C	BEG 47D BEG 47E	BEG 47G	BEG 53A	BEG 54A
Use with flowmeter	OME	OMG OMK	OMP	OMG OMH	OMG OMH
Application	Chemically resistant, potentially explosive area	Chemically resistant, potentially explosive area	Chemically resistant, potentially explosive area	Direction detection	Direction detection
K-factor	K1	K1	K1	K4	K4
Signal	Namur	Namur	Namur	Push-pull	Push-pull
Principle of operation	Inductive	Inductive	Inductive	Hall effect two-channel	Hall effect two-channel
Vibration sensitivity	—	—	—	—	—
Connection thread	M16x1	M18x1	M18x1	M18x1	M27x1.5
Installation	With dry sleeve	With dry sleeve	With dry sleeve	Without dry sleeve	Without dry sleeve
Housing material Pick up	PVDF	PVDF	PVDF	Stainless steel	Stainless steel
Housing material Dry sleeve	Stainless steel/ Ceramic	Stainless steel/ Ceramic	Stainless steel/ Ceramic	—	—

Tab. 2 Specifications (2)

	BEG 56A	BEG 60A BEG 61A BEG 62A	BEG 64		
Use with flowmeter	OME OMP	OME	OMP		
Application	Standard	Connection box (double pick up + temperature sensor)	High temperature		
K-factor	K1	K1	K1		
Signal	PNP	Push-pull	PNP		
Principle of operation	Hall effect	Magneto-resistive	Inductive		
Vibration sensitivity	—	—	—		
Connection thread	M12x1	M20x1.5	M18x1		
Installation	☐ Without dry sleeve (OME) ☐ With dry sleeve (OMP)	Without dry sleeve	With dry sleeve		
Housing material Pick up	Stainless steel	—	Stainless steel		
Housing material Dry sleeve	— / Arcap (OMP)	—	Stainless steel/ Ceramic		

Tab. 3 Specifications (3)

Operating limits

Operating limits

The following tables show the operating limits of the pick ups, which may not be exceeded.

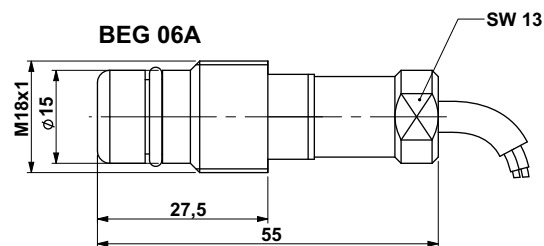
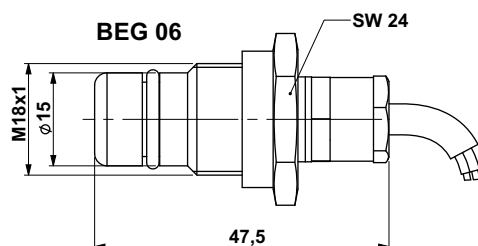
	Unit	BEG 06 BEG 06A	BEG 43D	BEG 44	BEG 45 + BEV 13	BEG 46D	BEG 47C
☐ Max. pressure	[bar]	350	250	420	420	40	40
☐ Temperature min. – max.	[°C]	-25...+85	-20...+100	-40...+150	-40...+250	-20...+100	-25...+100
☐ Supply voltage ▪ non potentially explosive area	[V DC]	5 – 25	10 – 30	10 – 30	10 – 30	10 – 30	5 – 25
	[V DC]	8.2	—	—	—	—	8.2

Tab. 4 Operating limits (1)

	Unit	BEG 47D BEG 47G	BEG 47E	BEG 53A BEG 54A	BEG 56A	BEG 60A BEG 61A BEG 62A	BEG 64
☐ Max. pressure	[bar]	40	40	650	40	40	40
☐ Temperature min. – max.	[°C]	-25...+100	-40...+100	-40...+125	-40...+125	-40...+125	-40...+200
☐ Supply voltage ▪ non potentially explosive area	[V DC]	5 – 25	5 – 25	8 – 32	10 – 30	10 – 30	10 – 40
	[V DC]	8.2	8.2	—	—	—	—

Tab. 5 Operating limits (2)

Data sheet BEG 06/BEG 06A



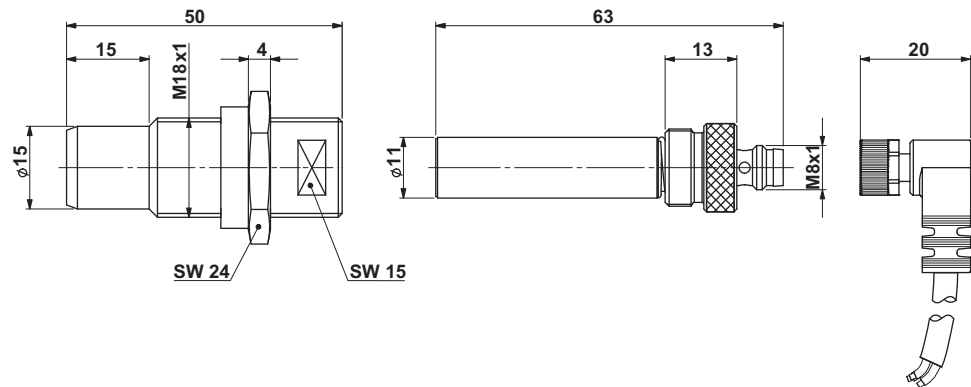
Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		Namur opener EN 60947-5-6
☐ Potentially explosive area		
▪ Internal resistance Ri	[kΩ]	1
▪ Nominal voltage	[V DC]	8.2
▪ Measuring plate power consumption recorded	[mA]	≤ 1
▪ Measuring plate power consumption not recorded	[mA]	≥ 3
☐ Non potentially explosive area		
▪ Operating voltage	[V DC]	5 – 25
☐ Frequency range	[Hz]	0 – 400
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Max. pressure on the face	[bar]	350
▪ Liquid temperature	[°C] ([K])	-25...+85 (248 – 358)
☐ Operating switching distance	[mm]	approx. 0.5
☐ Housing material, pick up		Stainless steel
☐ Material, face		Ceramic
☐ Cable jacket		PVC, blue
☐ Wire cross-section	[mm ²]	0.34
☐ Cable diameter	[mm]	4.8
☐ Cable length	[m]	2
☐ Degree of protection		IP 68
General information		
Use in potentially explosive areas		EN 50014:1997, EN 50020:1994
☐ Ex marking		Ex II 2G EEX ia IIC T6 II 3D IP68 T 94°C X

Terminal diagram



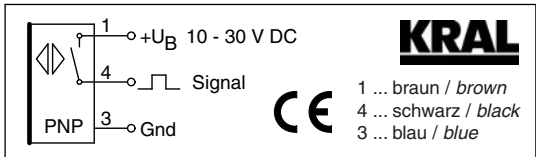
Size	Sensor
OMG 13 – OMG100	BEG 06
OMG140	BEG 06A
OMH	BEG 06A

Data sheet BEG 43D

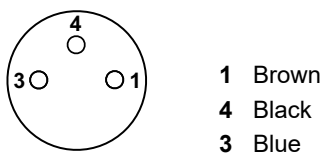


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		PNP
▪ Signal		
▪ Load current max.	[mA]	200
☐ Frequency range	[kHz]	0 – 1
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	≤ 10
☐ Voltage drop	[V]	≤ 3
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	250
▪ Liquid temperature	[°C]	-20...+100
▪ Ambient temperature	[°C]	-25...+90
☐ Housing material, pick up		Brass nickel-plated
☐ Housing material, dry sleeve		Arcap/Ceramic
☐ Operating switching distance	[mm]	0.5
☐ Cable jacket		PUR
☐ Wire cross-section	[mm ²]	0.25
☐ Cable diameter	[mm]	4.2
☐ Cable length	[m]	3
☐ Degree of protection		IP 65

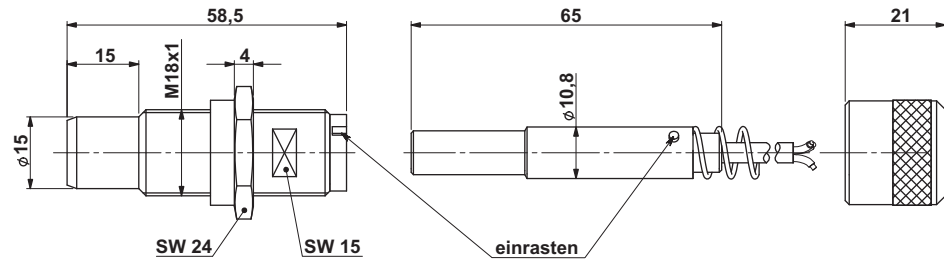
Terminal diagram



Plug assignment

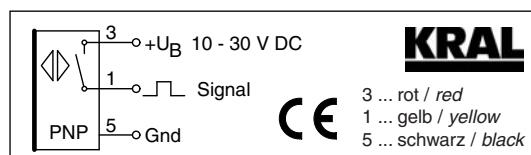


Data sheet BEG 44

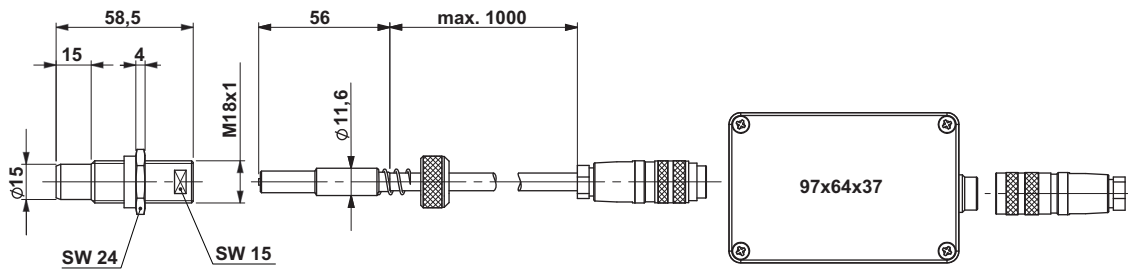


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Hall difference
☐ Output		PNP
▪ Signal		10
▪ Load current max.	[mA]	
☐ Frequency range	[kHz]	0 – 5
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	≤ 18
☐ Voltage drop	[V]	< 4.5
☐ Short-circuit and reverse voltage protection		Yes, up to 50°C
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	420
▪ Liquid temperature	[°C]	-40...+150
☐ Housing material, pick up		Stainless steel
☐ Housing material, dry sleeve		Arcap
☐ Operating switching distance	[mm]	0.25
☐ Cable jacket		FEP (Teflon)
☐ Wire cross-section	[mm ²]	0.24
☐ Cable diameter	[mm]	4.5
☐ Cable length	[m]	3
☐ Degree of protection		IP 67

Terminal diagram



Data sheet BEG 45 + BEV 13

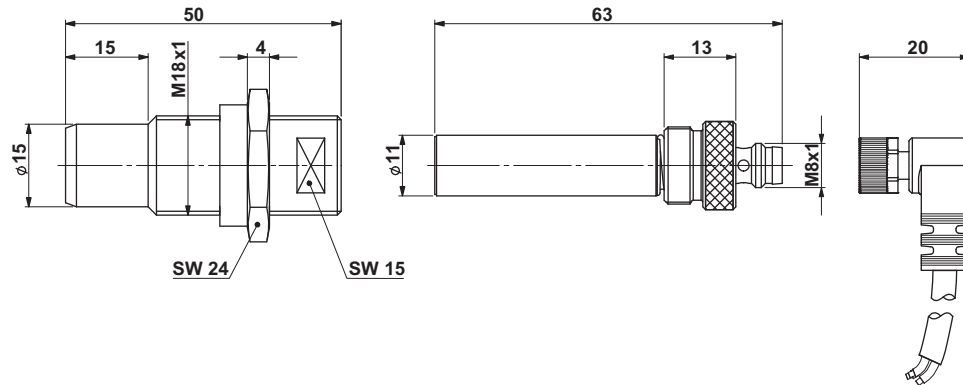


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Magnetic
☐ Output ▪ Signal ▪ Load current max.	[mA]	PNP 50
☐ Frequency range ▪ min. ▪ max.	[Hz] [kHz]	see Tab. 6, page 16 2
☐ Vibration sensitivity		Yes, at standstill
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	≤ 40
☐ Voltage drop	[V]	≤ 3
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application ▪ Pressure on the face max. ▪ Liquid temperature ▪ Ambient temperature	[bar] [°C] [°C]	420 -40...+250 0...+50
☐ Housing material, pick up		Stainless steel
☐ Housing material, dry sleeve		Arcap
☐ Operating switching distance	[mm]	0.25
☐ Cable jacket		PTFE (Teflon)
☐ Wire cross-section	[mm ²]	0.21
☐ Cable diameter (to the amplifier)	[mm]	3.9
☐ Cable length (to the amplifier)	[m]	1
☐ Degree of protection		IP 65

Terminal diagram		Limit values Q_{lim} when Q_{min} not reached			
BEG 45 Sensor sensor BEV 13 Meßumformer measurement transducer KRAL Sensor - Eingang sensor - input Anzeigen - Ausgang display - output Kabellosenbelegung (Lötseite) flit plug assignment (solder side)	Q_{lim} [l/min]	0.05	0.2	0.53	2.0
	f_{lim} [Hz]	6	8	9	10
		OMG 68 OMH 68	OMG100 OMH100	OMG140	
	Q_{lim} [l/min]	5.4	2.1	5.5	
	f_{lim} [Hz]	15	2	2	

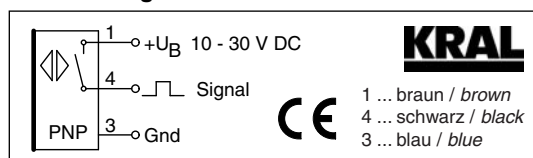
Tab. 6 Terminal diagram and limit values

Data sheet BEG 46D

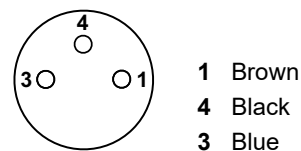


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		PNP
▪ Signal		200
▪ Load current max.	[mA]	
☐ Frequency range	[kHz]	0 – 1
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	≤ 10
☐ Voltage drop	[V]	≤ 3
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	40
▪ Liquid temperature	[°C]	-20...+100
▪ Ambient temperature	[°C]	-25...+90
☐ Housing material, pick up		Brass nickel-plated
☐ Housing material, dry sleeve		Stainless steel/Ceramic
☐ Operating switching distance	[mm]	1.0
☐ Cable jacket		PUR
☐ Wire cross-section	[mm ²]	0.25
☐ Cable diameter	[mm]	4.2
☐ Cable length	[m]	3
☐ Degree of protection		IP 65

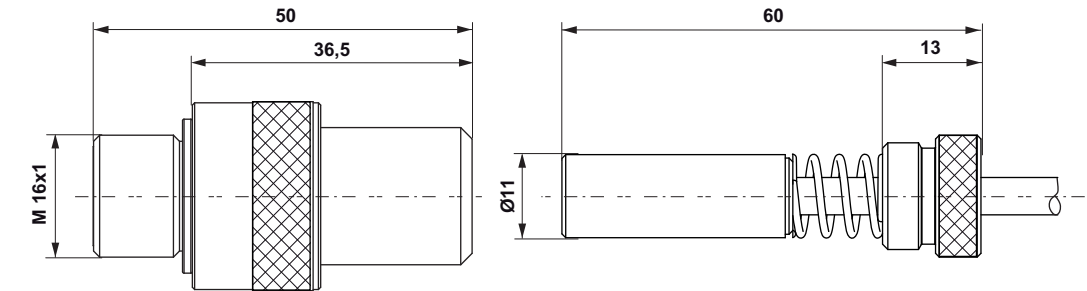
Terminal diagram



Plug assignment

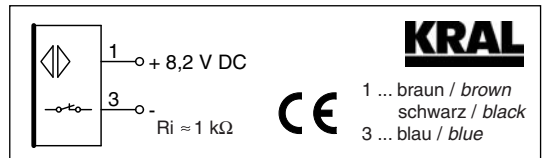


Data sheet BEG 47C

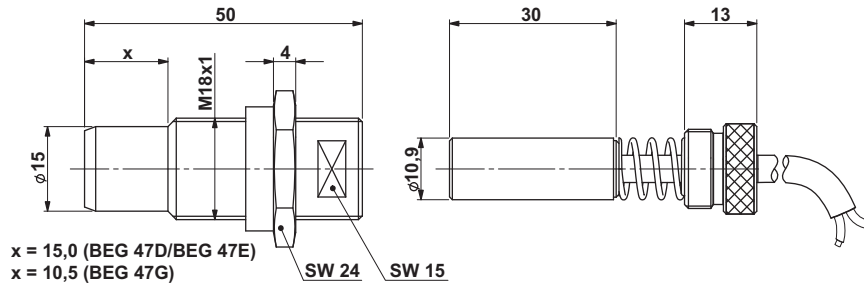


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		Namur opener EN 60947-5-6
☐ Potentially explosive area	▪ Internal resistance Ri	[kΩ] 1
	▪ Nominal voltage	[V DC] 8.2
☐ Non potentially explosive area	▪ Operating voltage	[V DC] 5 – 25
☐ Frequency range	[kHz]	0 – 2
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application	▪ Pressure on the face max.	[bar] 40
	▪ Liquid temperature	[°C] -25...+100
☐ Housing material, pick up		PVDF
☐ Housing material, dry sleeve		Stainless steel/Ceramic
☐ Cable jacket		PVC, blue
☐ Wire cross-section	[mm ²]	0.34
☐ Cable diameter	[mm]	4.8
☐ Cable length	[m]	2
☐ Degree of protection		IP 68
General information		
Use in potentially explosive areas		EN 50014:1997, EN 50020:1994
☐ Ex marking		 II 1G EEx ia IIC T6 II 2G EEx ia IIC T6

Terminal diagram



Data sheet BEG 47D/BEG 47G

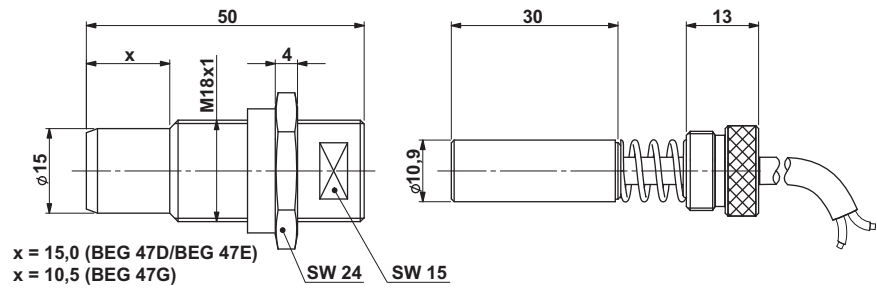


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		Namur opener EN 60947-5-6
☐ Potentially explosive area		
▪ Internal resistance Ri	[kΩ]	1
▪ Nominal voltage	[V DC]	8.2
☐ Non potentially explosive area		
▪ Operating voltage	[V DC]	5 – 25
☐ Frequency range	[kHz]	0 – 2
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	40
▪ Liquid temperature	[°C]	-25...+100
☐ Housing material, pick up		PVDF
☐ Housing material, dry sleeve		Stainless steel/Ceramic
☐ Operating switching distance		
▪ Pole wheel 1.0737 (standard)	[mm]	0.25
▪ Pole wheel 2.4068 (stainless steel design)	[mm]	0.15
☐ Cable jacket		PVC, blue
☐ Wire cross-section	[mm ²]	0.34
☐ Cable diameter	[mm]	4.8
☐ Cable length	[m]	2
☐ Degree of protection		IP 68
General information		
Use in potentially explosive areas		EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007
☐ Ex marking		 II 1G EEx ia IIC T6 II 2G EEx ia IIC T6

Terminal diagram

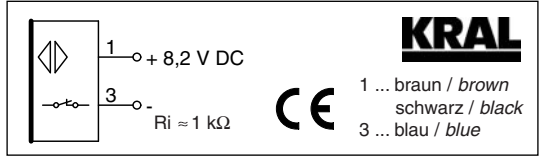


Data sheet BEG 47E

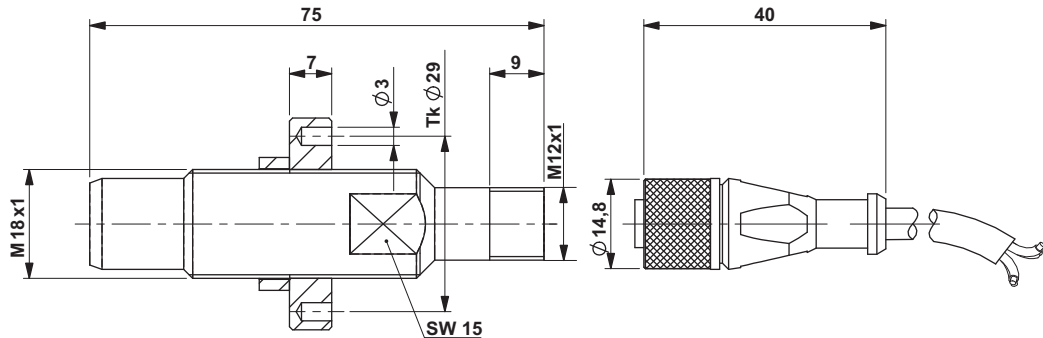


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		Namur opener EN 60947-5-6
▪ Signal		
☐ Potentially explosive area		
▪ Internal resistance Ri	[kΩ]	1
▪ Nominal voltage	[V DC]	8.2
☐ Non potentially explosive area		
▪ Operating voltage	[V DC]	5 – 25
☐ Frequency range	[kHz]	0 – 2
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	40
▪ Liquid temperature	[°C]	-40...+100
☐ Housing material, pick up		PVDF
☐ Housing material, dry sleeve		Stainless steel/Ceramic
☐ Operating switching distance		
▪ Pole wheel 1.0737 (standard)	[mm]	0.25
▪ Pole wheel 2.4068 (stainless steel design)	[mm]	0.15
☐ Cable jacket		PVC, blue
☐ Wire cross-section	[mm ²]	0.34
☐ Cable diameter	[mm]	4.8
☐ Cable length	[m]	2
☐ Degree of protection		IP 68
General information		
Use in potentially explosive areas		EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007
☐ Ex marking		 II 1G EEx ia IIC T6 II 2G EEx ia IIC T6

Terminal diagram

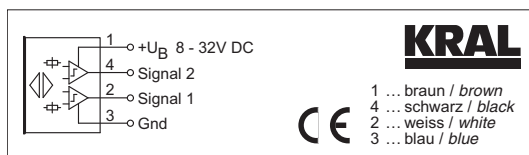


Data sheet BEG 53A

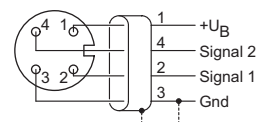


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Hall effect, two-channel
☐ Output		Push-pull
▪ Signal		
▪ Load current max.	[mA]	20
☐ Frequency range	[kHz]	0 – 15
☐ Supply voltage	[V DC]	8 – 32
☐ Supply current max. without load	[mA]	≤ 20
☐ Voltage drop	[V]	≤ 2.5
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	650
▪ Liquid temperature	[°C]	-40...+125
☐ Housing material, pick up		Stainless steel
☐ Operating switching distance	[mm]	0.1 – 0.4
☐ Cable jacket		PUR
☐ Wire cross-section	[mm ²]	0.24
☐ Cable diameter	[mm]	5.2
☐ Cable length	[m]	5
☐ Degree of protection		IP 68

Terminal diagram

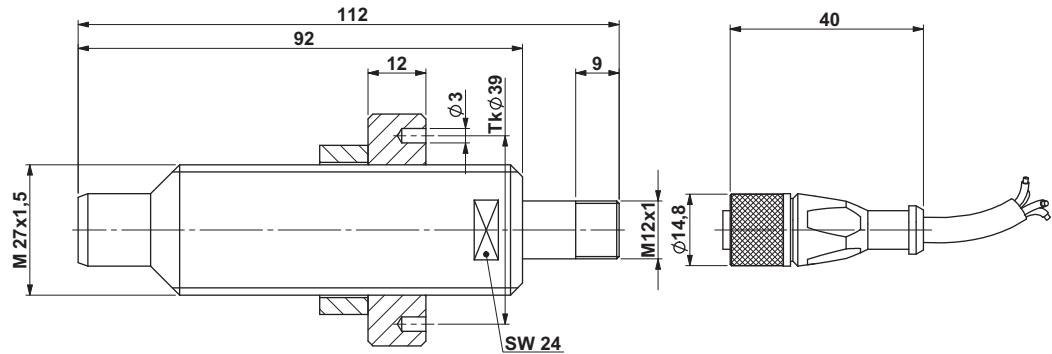


Plug assignment



- 1 Brown
- 4 Black
- 2 White
- 3 Blue

Data sheet BEG 54A

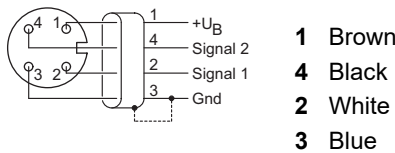


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Hall effect, two-channel
☐ Output		Push-pull
▪ Signal		
▪ Load current max.	[mA]	20
☐ Frequency range	[kHz]	0 – 15
☐ Supply voltage	[V DC]	8 – 32
☐ Supply current max. without load	[mA]	≤ 20
☐ Voltage drop	[V]	≤ 2.5
☐ Short-circuit and reverse voltage protection		Yes
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	650
▪ Liquid temperature	[°C]	-40...+125
☐ Housing material, pick up		Stainless steel
☐ Operating switching distance	[mm]	0.1 – 0.4
☐ Cable jacket		PUR
☐ Wire cross-section	[mm ²]	0.24
☐ Cable diameter	[mm]	5.2
☐ Cable length	[m]	5
☐ Degree of protection		IP 68

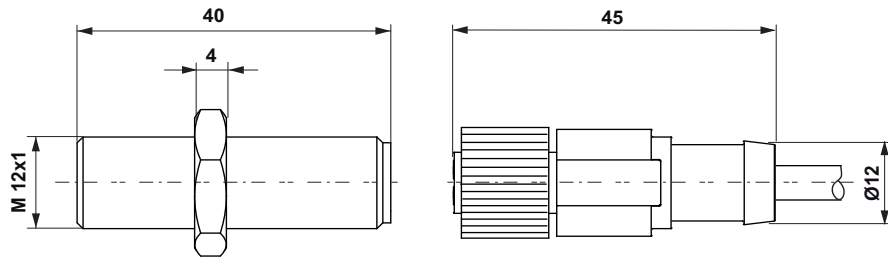
Terminal diagram



Plug assignment

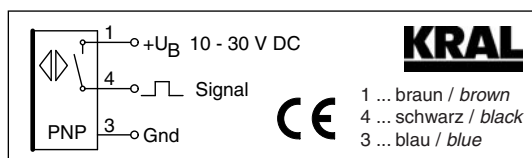


Data sheet BEG 56A

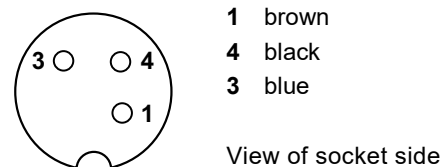


Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Hall effect
☐ Output		PNP
▪ Signal		
▪ Load current max.	[mA]	10
☐ Frequency range	[kHz]	0 – 15
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	≤ 10
☐ Voltage drop	[V]	≤ 6
☐ Short-circuit and reverse voltage protection		Yes, up to 50 °C
Mechanical specification		
☐ Range of application		
▪ Liquid temperature	[°C]	-40...+125
▪ Ambient temperature	[°C]	-25...+90
☐ Housing material, pick up		Stainless steel
☐ Housing material, dry sleeve		— (OME) / Arcap (OMP)
☐ Connection type		Straight plug with LED (three-pole)
☐ Cable jacket		PUR non halogen
☐ Wire cross-section	[mm ²]	0.34
☐ Cable diameter	[mm]	5.2
☐ Cable length	[m]	3
☐ Degree of protection		IP 65
☐ Tightening torque for hexagon nut	[Nm]	7

Terminal diagram

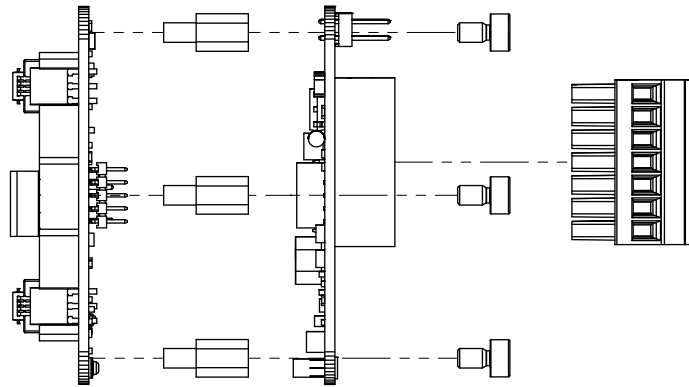


Plug assignment



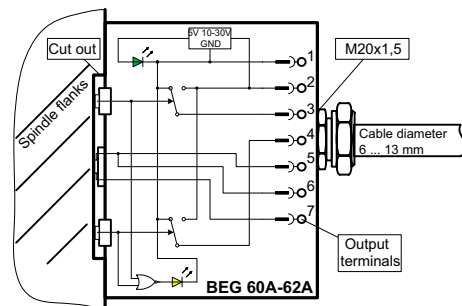
Data sheet BEG 60A/BEG 61A/BEG 62A

Data sheet BEG 60A/BEG 61A/BEG 62A



Specification	Unit	Data
Electrical specification, twin pick up		
☐ Principle of operation		Magneto-resistive
☐ Output		Push-pull
▪ Signal	[mA]	20
▪ Load current max. I_{max} per signal	[V]	≤ 1
▪ Voltage drop at I_{max}		
☐ Frequency range	[kHz]	0 – 25
☐ Short-circuit and reverse voltage protection		Yes
☐ Supply voltage	[V DC]	10 – 30
☐ Supply current max. without load	[mA]	15
☐ Phase offset	[°]	90, ± 20
Electrical specification, temperature sensor		
☐ Sensor type		Pt100, IEC 751
☐ Accuracy class		B
☐ Connection	[V]	3-line
Mechanical specification		
☐ Range of application		
▪ Liquid temperature	[°C]	-40...125
☐ Housing material, pick up		—
☐ Housing material, connection box		Anodized aluminum
☐ Cable		
▪ Cable diameter	[mm]	6 – 13
▪ Wire cross-section	[mm²]	0.1 – 1.5
▪ Temperature resistance min.	[°C]	126
☐ Degree of protection		IP 65

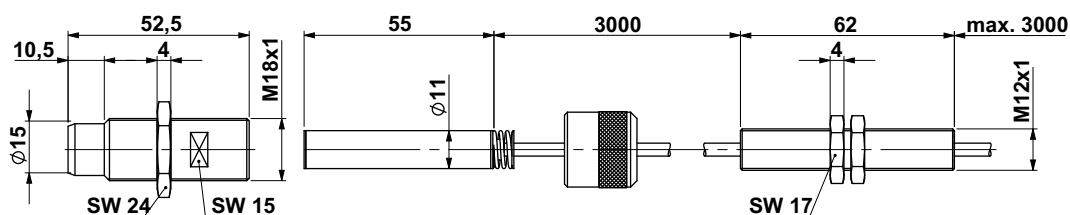
Terminal diagram



Plug assignment

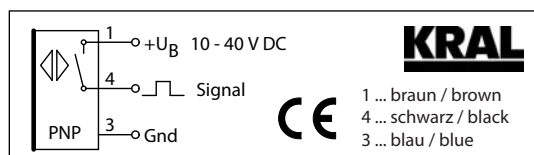
1	0 VDC	Versorgung / supply	Impulsgeber / pickups
2	10-30 VDC		
3	Signal A	Gegentakt / push-pull	Pt 100 temperature sensor
4	Signal B		
5	Gemeinsam / common	Gemeinsam / common	Pt 100 temperature sensor
6	Gemeinsam / common		
7	Signal t		

Data sheet BEG 64



Specification	Unit	Data
Electrical specification		
☐ Principle of operation		Inductive
☐ Output		PNP
▪ Signal		200
▪ Load current max.	[mA]	
☐ Frequency range	[Hz]	0 – 500
☐ Short-circuit and reverse voltage protection		Yes
☐ Supply voltage	[V DC]	10 – 40
☐ Supply current max. without load	[mA]	≤ 10
☐ Voltage drop	[V]	≤ 2
Mechanical specification		
☐ Range of application		
▪ Pressure on the face max.	[bar]	40
▪ Liquid temperature	[°C]	-40...+200
▪ Ambient temperature	[°C]	-25...+70
☐ Housing material, pick up		Stainless steel
☐ Housing material, dry sleeve		Stainless steel/Ceramic
☐ Operating switching distance	[mm]	0.25
☐ Cable to the amplifier		
▪ Cable jacket		PTFE
▪ Cable length	[m]	3
▪ Cable diameter	[mm]	3.8
▪ Wire cross-section	[mm²]	0.34
☐ Cable from amplifier		
▪ Cable jacket		PUR
▪ Cable length	[m]	3
▪ Cable diameter	[mm]	3.5
▪ Wire cross-section	[mm²]	0.14
☐ Degree of protection		IP 67

Terminal diagram



Unpacking and checking the state of delivery



Unpacking and checking the state of delivery

1. Upon delivery unpack the pick up and check for transport damage.
2. Report damage during transportation immediately to the manufacturer.
3. Dispose of packing material in accordance with the locally applicable regulations.

Transport

1. If possible, transport the pick up in the original packaging.
2. Do not kink the pick up cable.

Storage

- If possible, store the pick up in the original packaging in a cool and dry place.

Disposal



Observe the following instruction:

- Observe the local regulations on disposal.
- Dispose of the pick up as electronic waste.

Safety instructions on installation, removal and connection



Observe the following safety instructions:

- ☐ All the work may only be carried out by authorized qualified personnel.
- ☐ The following qualifications are required for the electrical connection:
 - Practical electrotechnical training
 - Knowledge of the safety guidelines at the workplace
 - Knowledge of the electrotechnical safety guidelines
- ☐ The pick up system (pick up, transducer and lines) may not be located in the area of strong, high-frequency electromagnetic fields. This can result in erroneous measurements of the pick up system.
 - ▶ The connecting lines of the pick up connections are to be shielded and laid separately from the supply lines.
 - ▶ Ensure that the supply voltage is correct.
 - ▶ If the pick up is used in potentially explosive areas, it is mandatory that the ATEX regulations be observed.

Installing the pick up

By default flowmeters are supplied with a premounted pick up or premounted dry sleeve respectively.

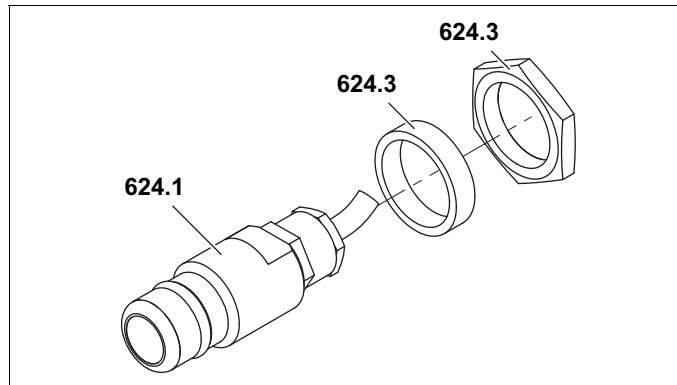


Be sure to observe the following instruction:

When replacing the pick up insert it is not necessary to change the position of the dry sleeve. Damage to the red sealing point shows that the dry sleeve has been repositioned. In this case the guarantee for the flowmeter becomes null and void.

Replacing BEG 06/BEG 06A

Replacing BEG 06/BEG 06A



- 624.1** Pick up insert
624.2 Spacer
624.3 Hexagon nut

Fig. 1 General drawing BEG 06/BEG 06A

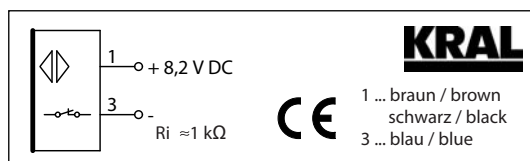
Removing BEG 06/BEG 06A



1. Loosen the hexagon nut **624.3** and spacer **624.2**.
2. Pull out the pick up insert **624.1**.

Installing and connecting BEG 06/BEG 06A

Terminal diagram



Size	Sensor
OMG 13 – OMG100	BEG 06
OMG140	BEG 06A
OMH	BEG 06A



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Insert the pick up insert **624.1** into the pick up hole.
3. Lock with the spacer **624.2** and hexagon nut **624.3**.

Replacing BEG 43D/BEG 46D

Replacing BEG 43D/BEG 46D

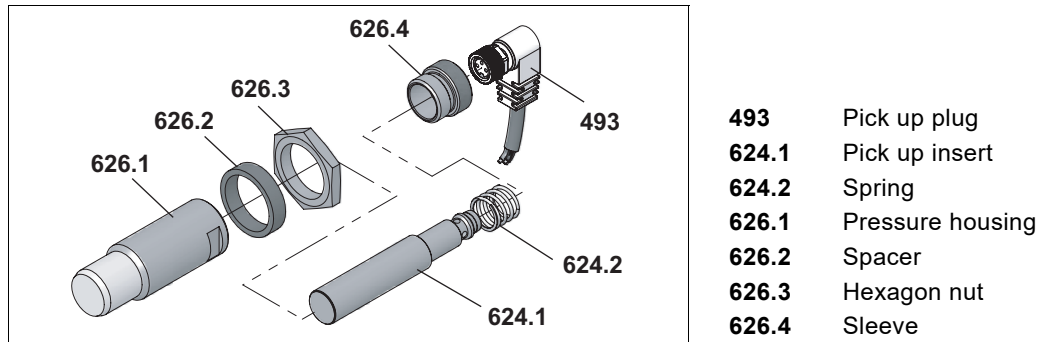


Fig. 2 General drawing BEG 43D/BEG 46D

Removing BEG 43D/BEG 46D



1. Loosen the knurled nut of the pick up plug **493** and pull out the plug.
2. Loosen the hexagon nut **626.3**, spacer **626.2** and sleeve **626.4**.
3. Pull out the pick up insert **624.1** with spring **624.2**.
4. Turn out the pressure housing **626.1**.

Installing and connecting BEG 43D/BEG 46D

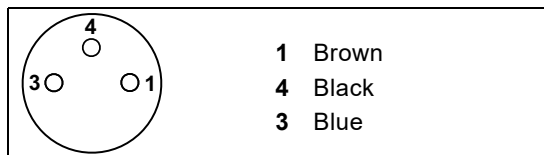


Fig. 3 Plug assignment BEG 43D/BEG 46D

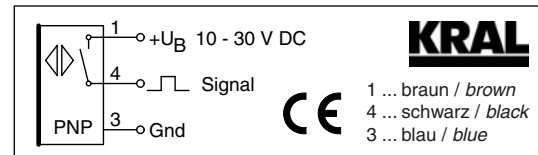


Fig. 4 Terminal diagram BEG 43D/BEG 46D

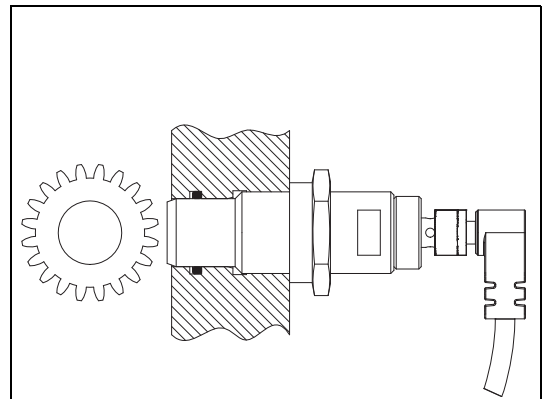


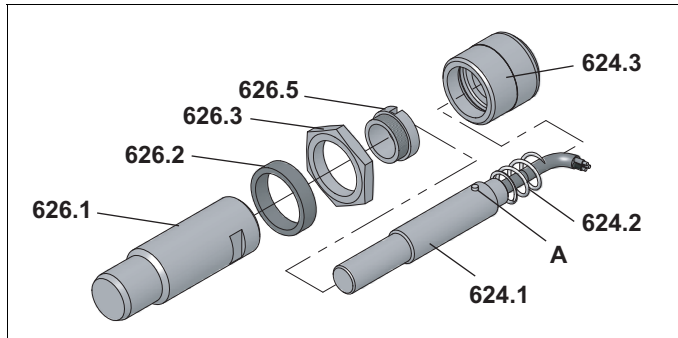
Fig. 5 Installation position BEG 43D/BEG 46D



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Screw the pressure housing **626.1** into the pick up hole up to a distance of 0.5 mm (BEG 43D) respectively 1.0 mm (BEG 46D) from the outer diameter of the pole wheel. (One rotation corresponds to 1 mm.)
3. Lock with the spacer **626.2** and hexagon nut **626.3**.
4. Slide the pick up insert **624.1** and spring **624.2** into the pressure housing **626.1**. Fasten with sleeve **626.4**.
5. Connect the pick up plug **493**. Observe the terminal diagram, see Fig. 4, page 29.

Replacing BEG 44

Replacing BEG 44



624.1	Pick up insert
624.2	Spring
624.3	Threaded cover
626.1	Pressure housing
626.2	Spacer
626.3	Hexagon nut
626.5	Indexing sleeve
A	Positioning pin

Fig. 6 General drawing BEG 44

Removing BEG 44



1. Separate the pick up cable from the supply voltage.
2. Loosen threaded cover **624.3**. Pull the pick up insert **624.1** and spring **624.2** out of the pressure housing **626.1**.
3. Loosen the hexagon nut **626.3** and spacer **626.2**.
4. Turn out the pressure housing **626.1** with indexing sleeve **626.5**.

Installing and connecting BEG 44

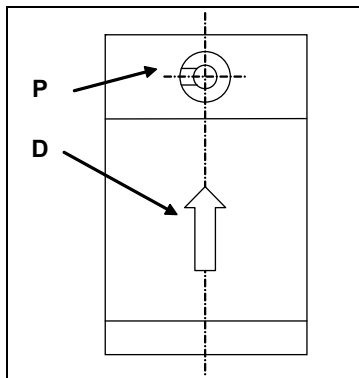


Fig. 7 Position flowmeter at pick up installation

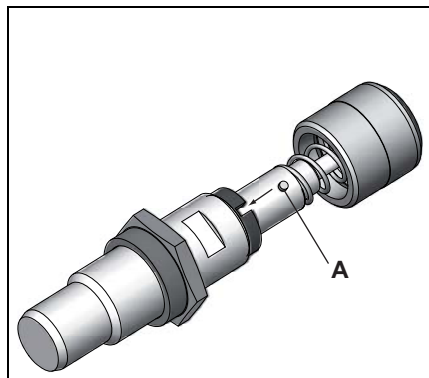


Fig. 8 Positioning pin latching in

A	Positioning pin
D	Flow direction
P	Groove position

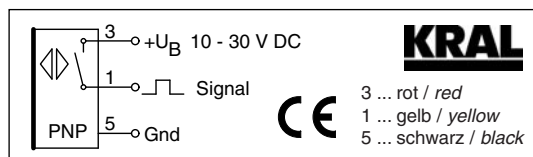


Fig. 9 Terminal diagram BEG 44

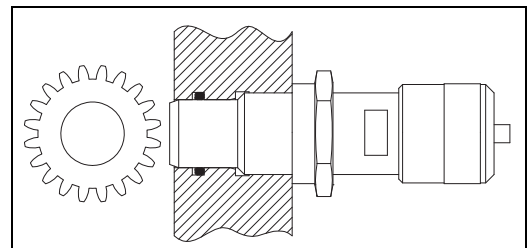


Fig. 10 Installation position BEG 44



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Screw the pressure housing **626.1** into the pick up hole up to a distance of 0.25 mm from the outer diameter of the pole wheel. (One rotation corresponds to 1 mm.)
3. Lock with the spacer **626.2** and hexagon nut **626.3**.
4. Position the flowmeter see Fig. 7, page 30.
5. Press the indexing sleeve **626.5** while making sure that the position is correct, see Fig. 7, page 30. The correct position of the groove is rotated by 90° to the left in the flow direction, max. angle error +/- 10°.
6. Slide in the pick up insert **624.1** and spring **624.2** while ensuring that the sleeve is clean and the position of the positioning pin **A** is correct. This must be latched in the groove of the indexing sleeve **626.5**, see Fig. 8, page 30.
7. Screw tight the threaded cover **624.3**. Connect the pick up. Observe the terminal diagram, see Fig. 9, page 30.

Replacing BEG 45 + BEV 13

Replacing BEG 45 + BEV 13

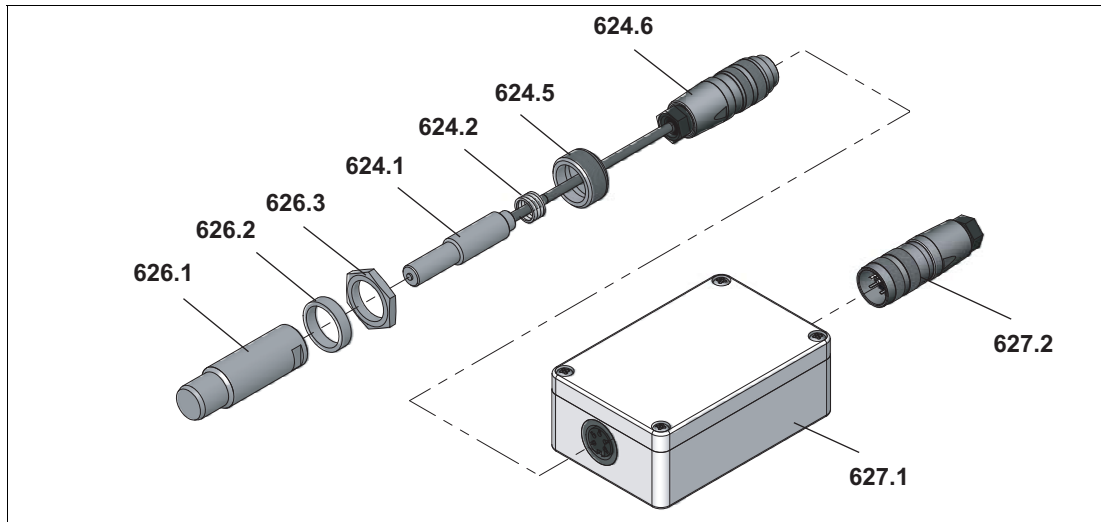


Fig. 11 General drawing BEG 45 + BEV 13

- | | | | |
|--------------|------------------|--------------|-------------|
| 624.1 | Pick up insert | 626.2 | Spacer |
| 624.2 | Spring | 626.3 | Hexagon nut |
| 624.5 | Threaded cover | 627.1 | Amplifier |
| 624.6 | Plug | 627.2 | Box |
| 626.1 | Pressure housing | | |

Removing BEG 45 + BEV 13



1. Loosen the plug **624.6** from the amplifier **627.1**.
2. Loosen the hexagon nut **626.3**, spacer **626.2** and threaded cover **624.5**.
3. Pull out the pick up insert **624.1** with spring **624.2**.
4. Turn out the pressure housing **626.1**.

Installing and connecting BEG 45 + BEV 13

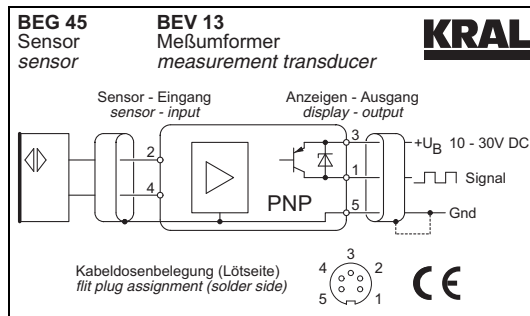


Fig. 12 Terminal diagram BEG 45 + BEV 13

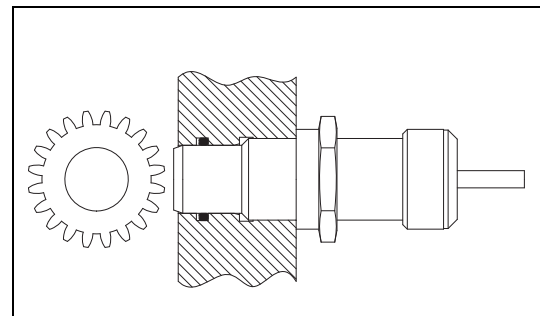


Fig. 13 Installation position BEG 45



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Screw the pressure housing **626.1** into the pick up hole up to a distance of 0.25 mm from the outer diameter of the pole wheel. (One rotation corresponds to 1 mm.)
3. Lock with the spacer **626.2** and hexagon nut **626.3**.
4. Slide the pick up insert **624.1** and spring **624.2** into the pressure housing **626.1**. Fasten with threaded cover **624.5**.
5. Fasten the plug **624.6** to the amplifier **627.1**.
6. Connect the amplifier. Observe the terminal diagram, see Fig. 12, page 32.

Replacing BEG 47C

Replacing BEG 47C

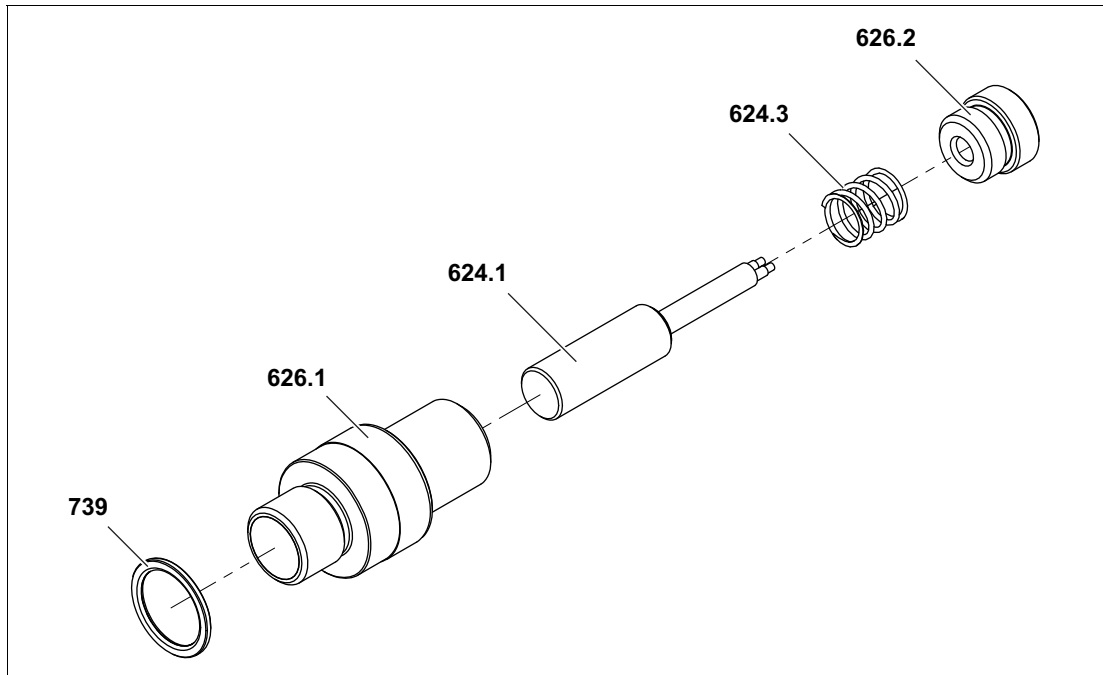


Fig. 14 General drawing BEG 47C

624.1	Pick up insert	626.2	Tensioning nut
624.3	Spring	739	O-ring
626.1	Dry sleeve		

Removing BEG 47C



1. Separate the pick up cable from the supply voltage.
2. Loosen the tensioning nut **626.2**. Pull the pick up insert **624.1** and spring **624.3** out of the dry sleeve **626.1**.
3. Screw the dry sleeve out of the pick up hole.
4. Remove the O-ring **739** from the pick up hole.

Installing and connecting BEG 47C

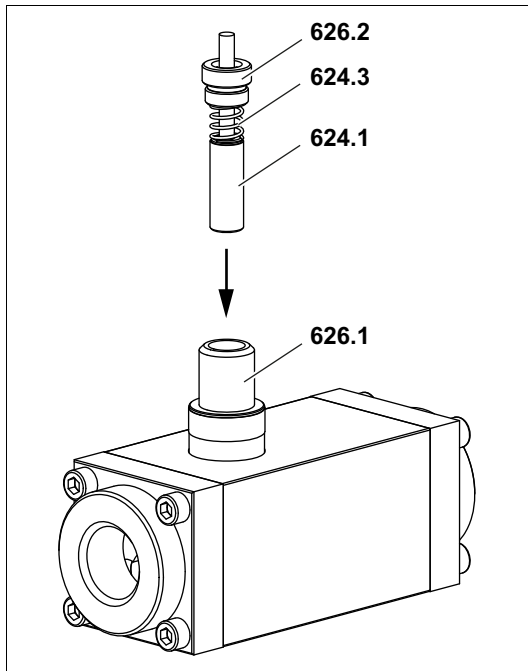


Fig. 15 Mounting BEG 47C



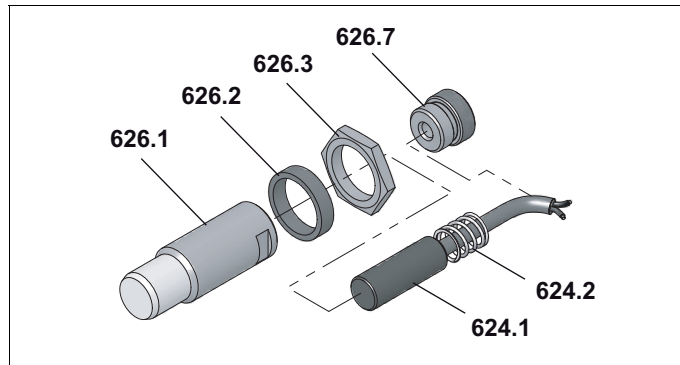
Fig. 16 Terminal diagram BEG 47C



1. Clean the pick up hole.
2. Insert the O-ring **739** into the pick up hole.
3. Screw the dry sleeve **626.1** into the pick up hole by hand until it stops.
4. Push the pick up insert **624.1** and spring **624.3** into the dry sleeve and tighten the tensioning nut **626.2** by hand until it stops.
 - or, for a pre-mounted dry sleeve -
 - Remove protective cap of the dry sleeve **626.1**, push pick up insert **624.1** and spring **624.3** into the dry sleeve, tighten tensioning nut **626.2** by hand until it stops.
5. Connect the pick up cable. Observe the terminal diagram, see Fig. 19, page 36.

Replacing BEG 47D/BEG 47E/BEG 47G

Replacing BEG 47D/BEG 47E/BEG 47G



624.1	Pick up insert
624.2	Spring
626.1	Pressure housing
626.2	Spacer
626.3	Hexagon nut
626.7	Tensioning nut

Fig. 17 General drawing BEG 47D/BEG 47E/BEG 47G

Removing BEG 47D/BEG 47E/BEG 47G



1. Separate the pick up cable from the supply voltage.
2. Loosen the tensioning nut **626.7**. Pull the pick up insert **624.1** and spring **624.2** out of the pressure housing **626.1**.
3. Loosen the hexagon nut **626.3** and spacer **626.2**.
4. Screw out the pressure housing **626.1**.

Installing and connecting BEG 47D/BEG 47E/BEG 47G

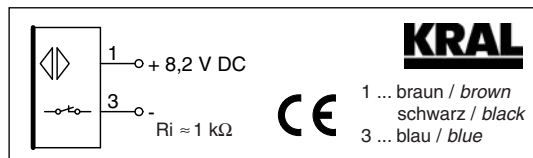


Fig. 18 Terminal diagram
BEG 47D/BEG 47E/BEG 47G

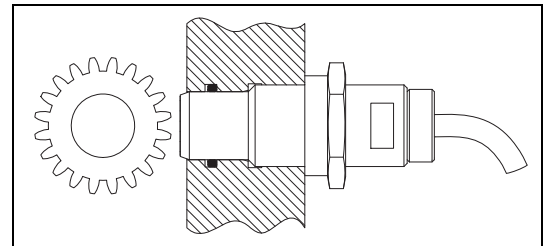
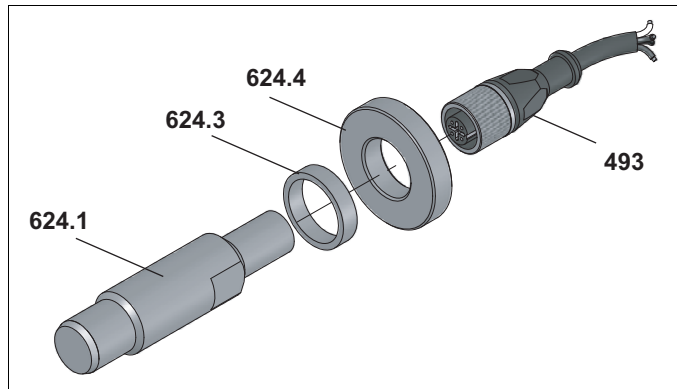


Fig. 19 Installation position
BEG 47D/BEG 47E/BEG 47G



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Screw the pressure housing **626.1** into the pick up hole up to a distance of 0.25 mm (standard) respectively 0.15 mm (stainless steel design) from the outer diameter of the pole wheel. (One rotation corresponds to 1 mm.)
3. Lock with the spacer **626.2** and hexagon nut **626.3**.
4. Slide the pick up insert **624.1** and spring **624.2** into the pressure housing **626.1**. Fasten with tensioning nut **626.7**.

Replacing BEG 53A/BEG 54A



493	Pick up plug
624.1	Pick up insert
624.3	Spacer
624.4	Lock nut

Fig. 20 General drawing BEG 53A/BEG 54A

Removing BEG 53A/BEG 54A



1. Loosen the knurled nut of the pick up plug **493** and pull out the plug.
2. Loosen the lock nut **624.4** and spacer **624.3**.
3. Turn out the pick up insert **624.1**.

Installing and connecting BEG 53A/BEG 54A



Fig. 21 Terminal diagram BEG 53A/BEG 54A

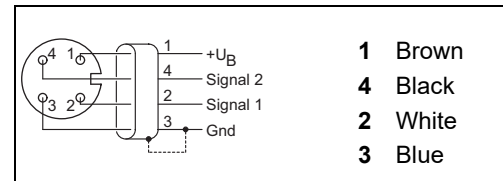


Fig. 22 Plug assignment BEG 53A/BEG 54A



1. Clean the pick up hole. At flowmeters of the OMG and OMH series check the inserted O-ring.
2. Screw the pick up insert **624.1** into the pick up hole up to a distance of 0.25 mm from the outer diameter of the pole wheel. (One rotation corresponds to 1 mm.)
3. Connect the oscilloscope: White wire to Channel 1, Black wire to Channel 2, Blue wire to GND and -, Brown wire to +. Turn out the pick up insert **624.1** until the edges of the two signals have the greatest possible intervals to each other, see Fig. 23, page 37 and see Fig. 24, page 37.
4. Lock with the spacer **624.3** and lock nut **624.4**.
5. Connect the pick up cable. Observe the terminal diagram, see Fig. 21, page 37.

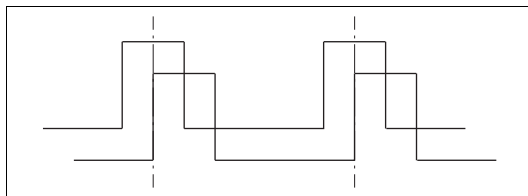


Fig. 23 Positive load < 50%
Positive edge of the 2nd signal lies in the middle of the pulse of the 1st signal.

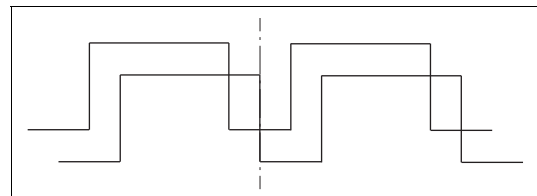


Fig. 24 Positive load > 50%
Negative edge of the 2nd signal lies in the middle of the pause of the 1st signal.

Replacing BEG 56A

Replacing BEG 56A

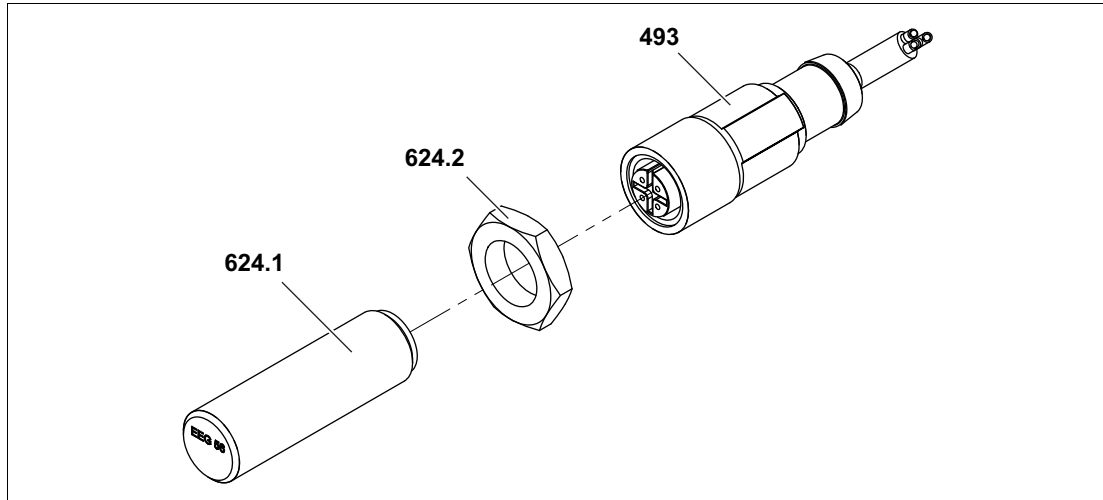


Fig. 25 General drawing BEG 56A

493 Pick up plug

624.2 Hexagon nut

624.1 Pick up insert

Removing BEG 56A



1. Loosen the knurled nut of the pick up plug **493**.
2. Pull out the pick up plug.
3. Loosen hexagon nut **624.2**.
4. Screw out pick up insert **624.1**.

Installing and connecting BEG 56A

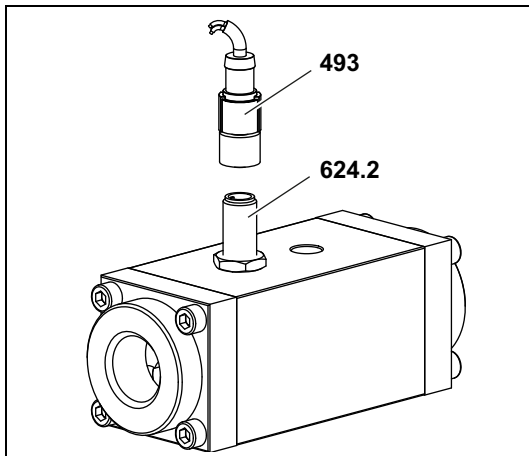


Fig. 27 Mounting BEG 56A

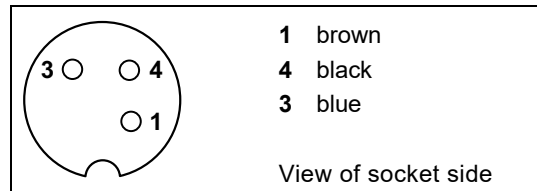


Fig. 26 Pin assignment BEG 56A

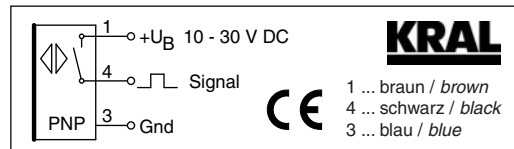


Fig. 28 Terminal diagram BEG 56A



1. Clean the pick up hole.
2. Remove the protective cap of the pick up.
3. Screw the pick up insert **624.1** into the pick up hole until it stops.
4. Tighten the hexagon nut **624.2**, max. tightening torque 7 Nm.
5. Insert the pick up plug **493**, tighten the knurled nut by hand.
- or, for a pre-mounted pick up -
► Remove the protective cap of the pick up,
insert the pick up plug **493**, tighten the knurled nut by hand.
6. Connect the pick up cable. Observe the terminal diagram and the pin assignment, see Fig. 28, page 39 and see Fig. 26, page 39.

Replacing BEG 60A/BEG 61A/BEG 62A

Replacing BEG 60A/BEG 61A/BEG 62A

The pick ups BEG 60A/BEG 61A/BEG 62A are integrated in a compact connection box.

Removing BEG 60A/BEG 61A/BEG 62A

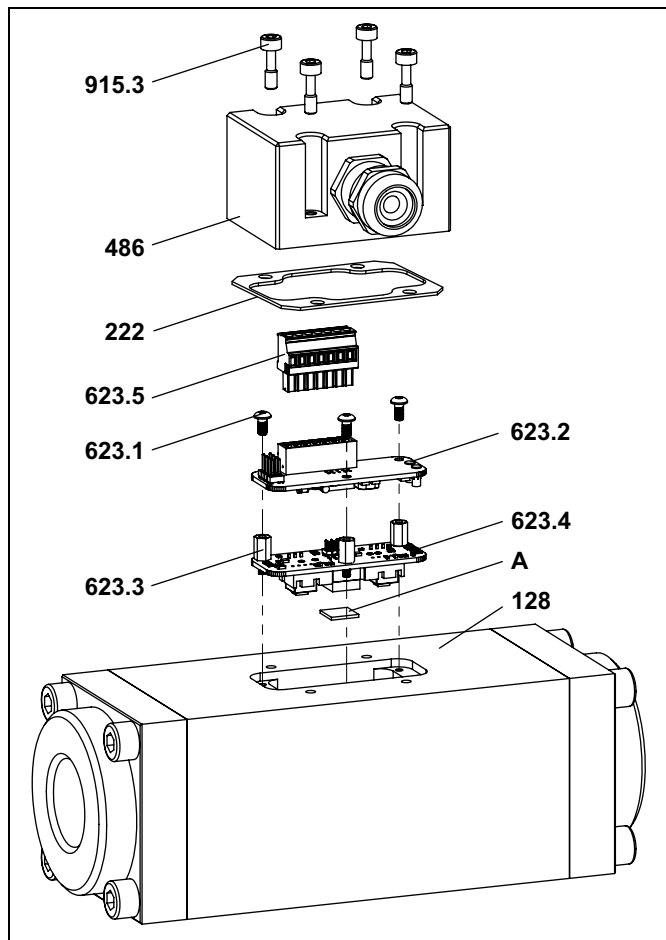


Fig. 30

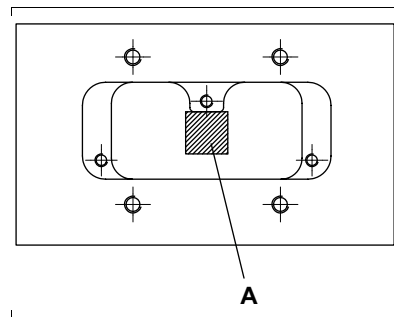


Fig. 29 Position of thermal conducting foil

- 128 Measuring housing
- 222 Flat gasket
- 486 Connection box (cover)
- 623 Sensor insert
- 623.1 Screws
- 623.2 Top circuit board
- 623.3 Hexagonal spacer
- 623.4 Bottom circuit board
- 623.5 PCB connector
- 915.3 Socket screw
- A Thermal conducting foil



1. Loosen the cable gland at the cover of the connection box **486**.
2. Loosen the socket screws **915.3**, remove cover of the connection box and flat gasket **222**.
3. Pull the PCB connector **623.5** from top circuit board **623.2**.
4. Loosen the screws **623.1** and remove the top circuit board.
5. Loosen the hexagon spacer **623.3** and remove the lower circuit board **623.4** from the sensor hole.
6. Remove the thermal conducting foil **A** from the sensor hole in the measuring housing **128**.

Installing BEG 60A/BEG 61A/BEG 62A



1. Clean the sensor hole in the measuring housing.
2. Remove the protective film from the new thermal conducting foil **A** and bond the thermal conducting foil to the bottom of the sensor hole, position see Fig. 29, page 40.
3. Insert the lower circuit board into the sensor hole and screw tight with hexagon spacers **623.3**.
4. Put on the top circuit board **623.2** and fasten with screws **623.1**.
5. Put the PCB connector **623.5** on top circuit board **623.2**. Connection table see Tab. 1, page 41.
6. Insert the flat gasket **222** into the cover of the connection box **486**.
7. Place on the cover of the connection box and tighten with socket screws **915.3**.
8. Fasten the cable gland at the cover of the connection box.

Terminal strip	Designation	Terminal strip	Designation
1	0 V	5	Com. t
2	10 – 30 V	6	Com. t
3	Sig. 1 Q	7	Sig. t
4	Sig. 2 Q		

Tab. 1 Connection box connection table

Checking the function of the connection box



- Pick up:
Simulate a low flow rate and measure the signal voltages between terminal strip 1 and 3, as well as between 1 and 4.
The signal voltages should switch between about 1 and 21 V DC.
The green LED for the voltage supply should light up permanently, the yellow LED for the signal should flash as follows: 1 pulse lighting, 3 pulses pause, etc.
- Temperature sensor:
Loosen the connections at terminal strip 5, 6 and 7 and measure the following resistances at the three-wire Pt 100.
The resistance between terminal strip 5 and 6 should amount to less than 1 Ω at 20 °C.
The resistance between terminal strip 6 and 7 should amount to about 108 Ω at 20 °C.

Replacing BEG 64

Replacing BEG 64

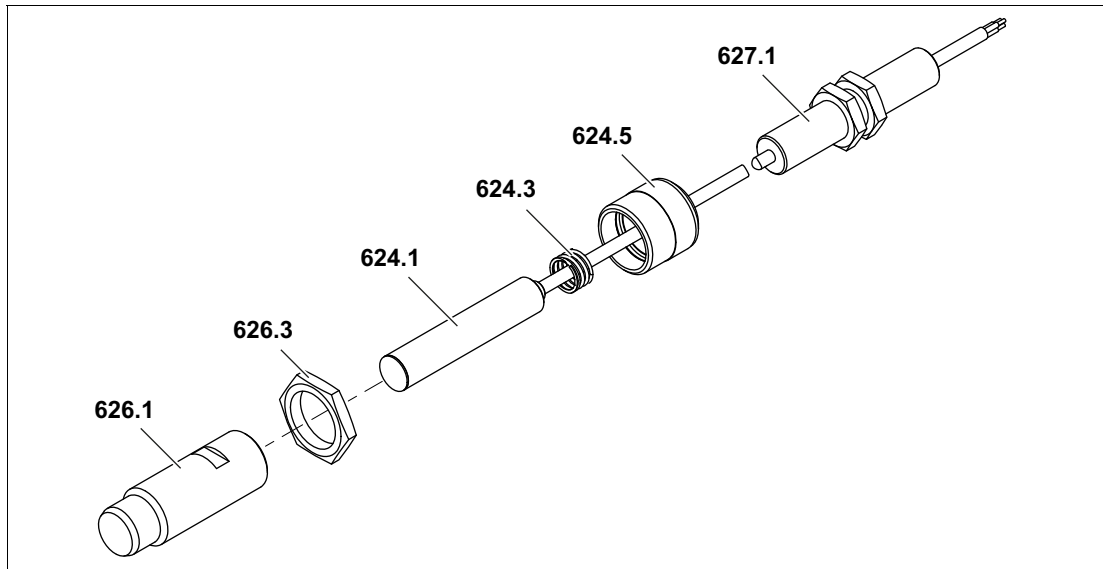


Fig. 31 General drawing BEG 64

624.1	Pick up insert	626.1	Dry sleeve
624.3	Spring	626.3	Hexagon nut
624.5	Threaded cover	627.1	Amplifier

Removing BEG 64



1. Loosen threaded cover **624.5**.
2. Pull out the pick up insert **624.1** and spring **624.3**.

Installing and connecting BEG 64

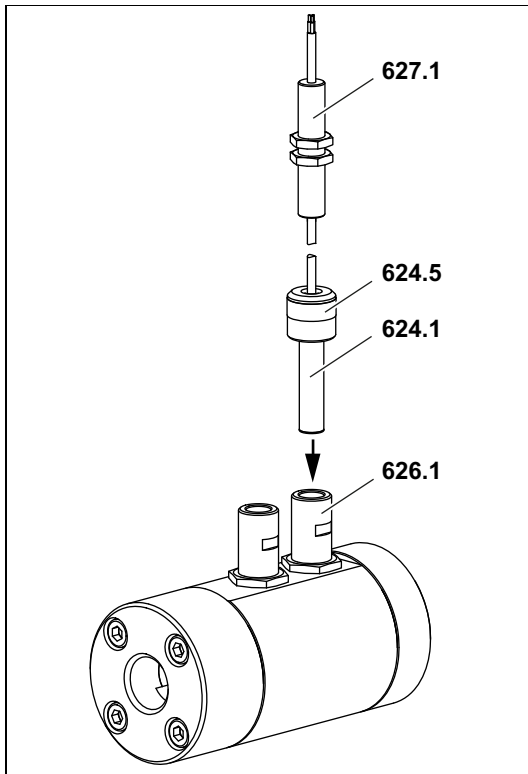


Fig. 32 Mounting BEG 64

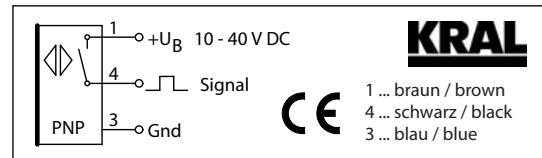


Fig. 33 Terminal diagram BEG 64



1. Clean the pick up hole.
2. Remove the protective cap of the pick up.
3. Slide the pick up insert **624.1** and spring **624.3** into the dry sleeve **626.1**. Fasten with threaded cover **624.5**.
4. Fasten and connect the amplifier **627.1**. Observe the terminal diagram, see Fig. 33, page 43.

Possible faults

Possible faults

Faults can have different causes. The following tables list the symptoms of a fault, the possible causes and measures for troubleshooting.



Fault	Cause/Remedy
☐ No signal	1, 2, 3, 4, 5, 6, 8
☐ Incorrect signal	1, 2, 6, 7

Troubleshooting



No.	Cause	Remedy
1	Pick up/pick up insert defective	► Screw out the pick up/pick up insert and check: A functioning pick up/pick up insert sends a pulse when approaching a ferromagnetic part. If it exists, this can be checked with LED, see "Function description", page 6. ► BEG 44: The pick up insert must be brought close to a magnet to test it. ► BEG 56A: Check the functional capability of the pick up by means of the LEDs in the pick up plug, see "Functional principle", page 6. ► Replace the pick up insert.
2	Pick up mounted incorrectly	► Check the pick up insert mounting, see "Installation, removal and connection", page 27.
3	Incorrect connection	► Check connections.
4	Flowmeter does not work	► Check and actuate the flowmeter, see the corresponding operating instructions of the flowmeter.
5	Incorrect power supply	► Adjust electronic device, see the corresponding operating instructions of the electronic equipment.
6	Corroded contacts	► Check and clean contacts.
7	Interference from outside	► Lay cables accordingly, see "Safety instructions on installation, removal and connection", page 27.
8	No flow	► Check the pipe system.

Tab. 1 Fault table

General drawings

General drawings

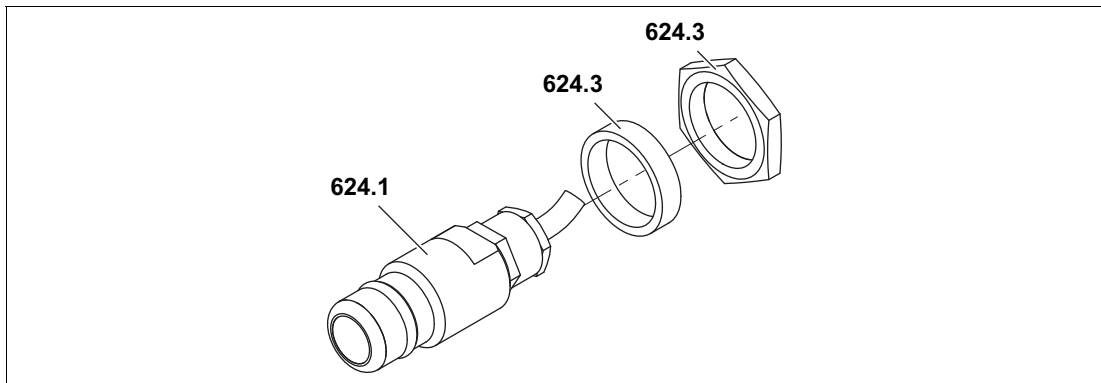


Fig. 1 Exploded view BEG 06/BEG 06A

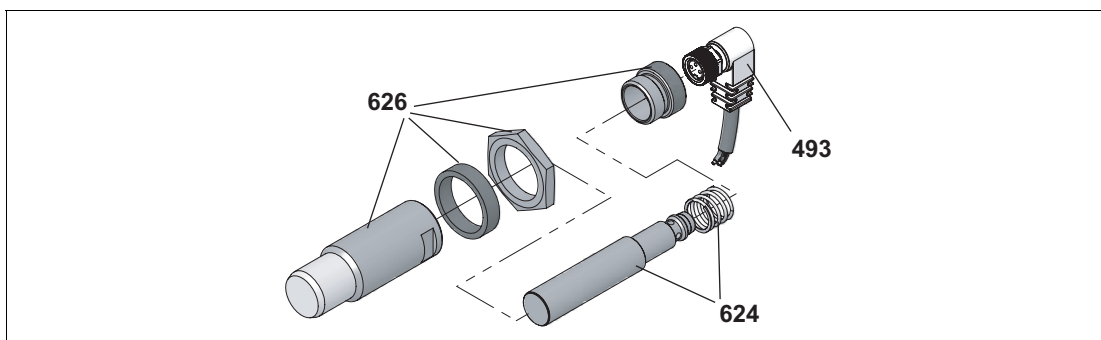


Fig. 2 Exploded view BEG 43D/BEG 46D

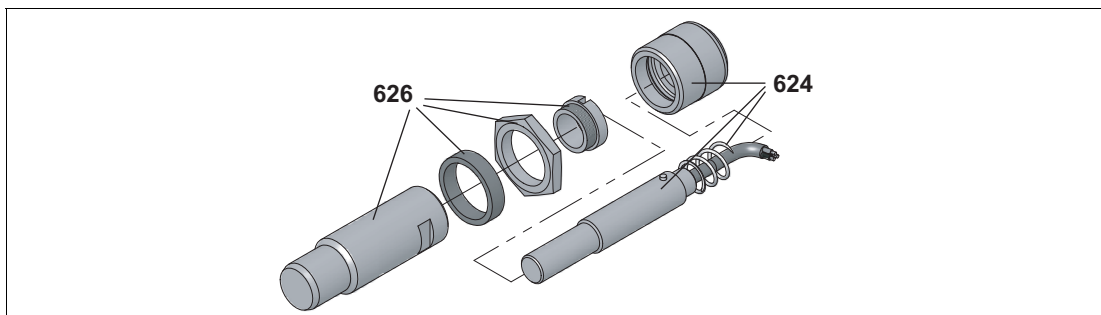


Fig. 3 Exploded view BEG 44

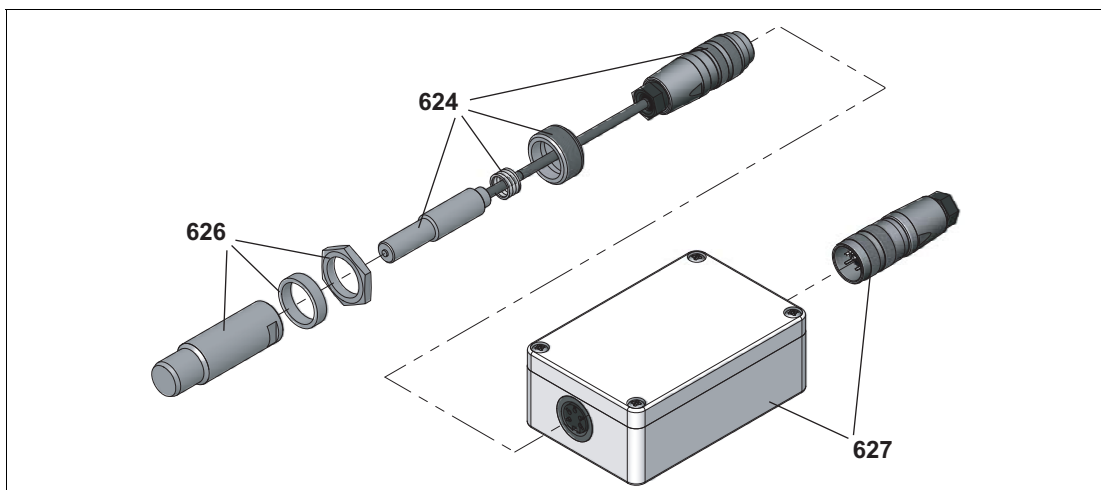


Fig. 4 Exploded view BEG 45 + BEV 13

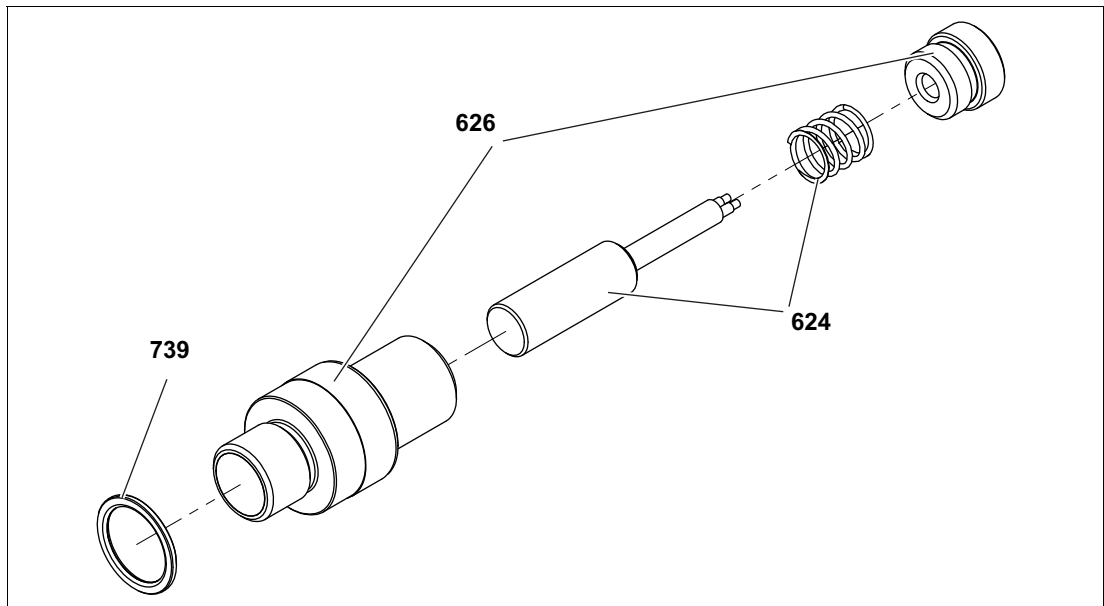


Fig. 5 General drawing BEG 47C

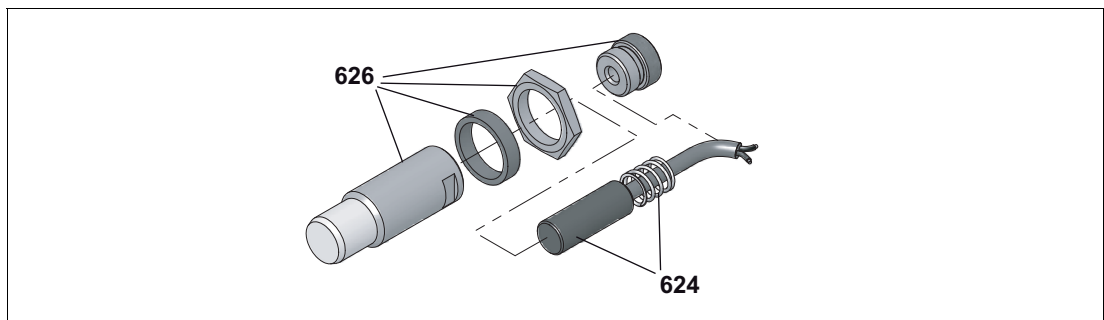


Fig. 6 Exploded view BEG 47D/BEG 47E/BEG 47G

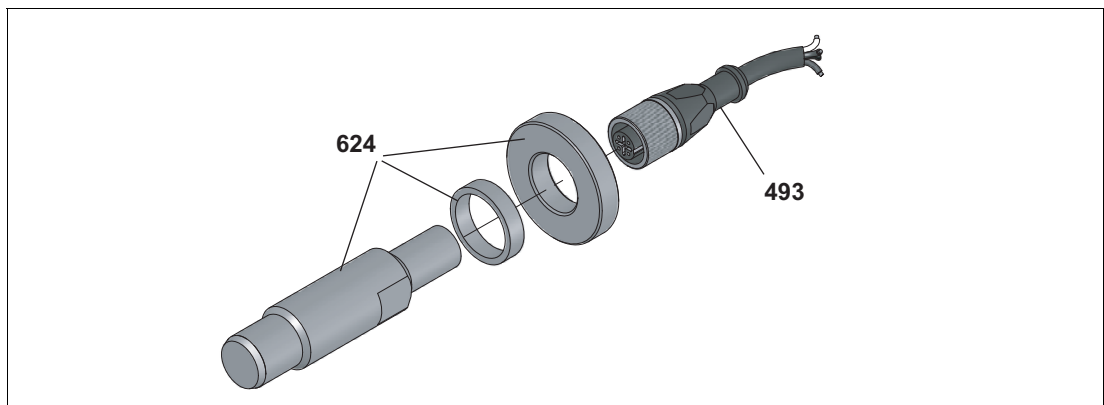


Fig. 7 Exploded view BEG 53A/BEG 54A

General drawings

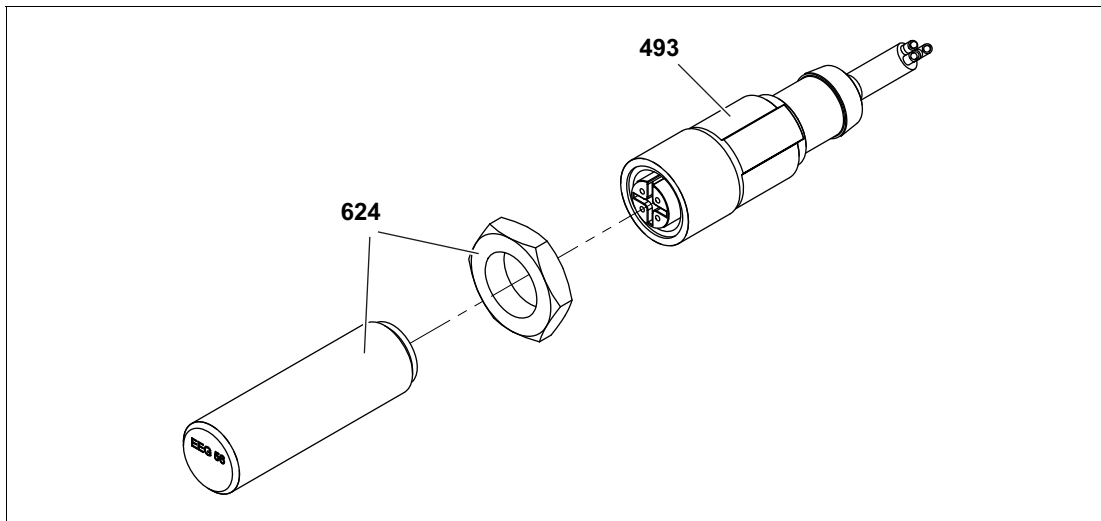


Fig. 8 General drawing BEG 56A

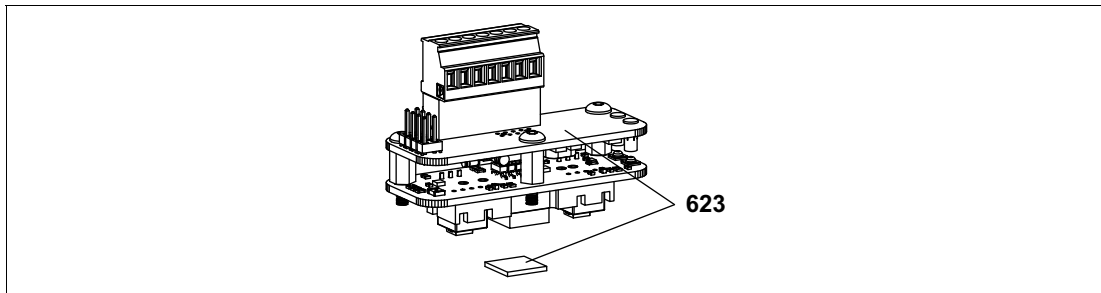


Fig. 9 General drawing BEG 60A/BEG 61A/BEG 62A

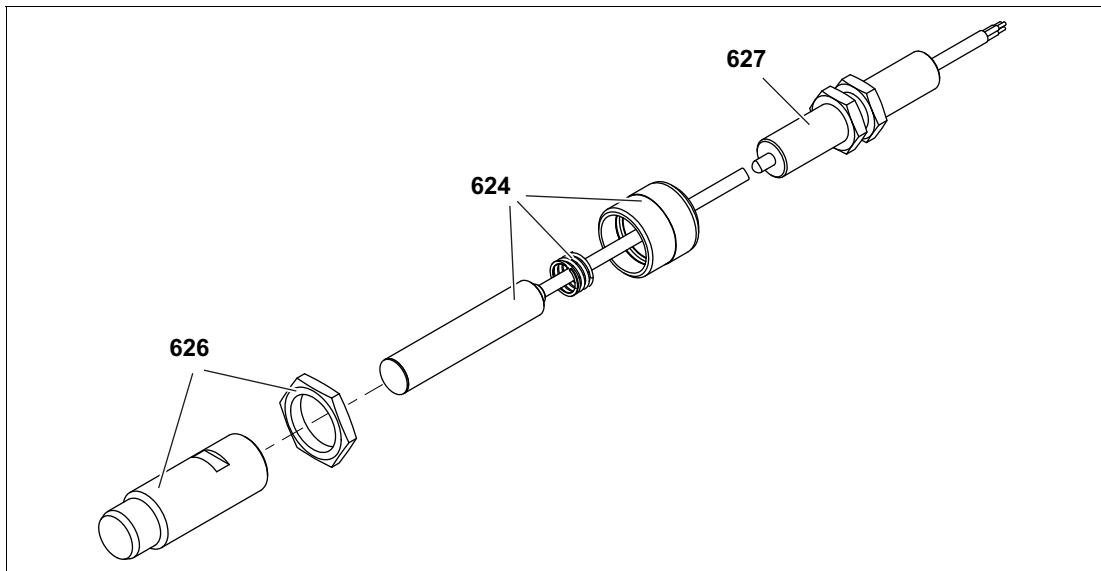


Fig. 10 General drawing BEG 64

Spare parts

Spare parts

Spare part number	Part	Spare part number	Part
493	Pick up plug	626	Dry sleeve
623	Sensor insert (for connection box)	627	Amplifier
624	Pick up/pick up insert	739	O-ring

Tab. 1 Overview of spare parts

Accessories

Extension cable



The following safety instruction must be observed:

- If the pick up is used in potentially explosive areas, the ATEX regulations must be observed.

Normally the line length does not influence the functional efficiency of the pick up. However, the manufacturer recommends not extending the connection cable of the pick up beyond a maximum length of 100 m. Extension cable as well as cable plug and cable box are available as accessories from the manufacturer.



Pay attention to the following when connecting the extension cable:

- Use only a shielded cable.
- Lay the cable separately from the supply lines, see "Safety instructions on installation, removal and connection", page 27.

	Unit	BEG 06/ BEG 06A	BEG 43D	BEG 44	BEG 45 + BEV 13	BEG 46D	BEG 47C/ BEG 47D/ BEG 47E/ BEG 47G
☐ Max. length	[m]	100					
☐ Wire cross-section min.	[mm ²]	2 x 0.34	3 x 0.25	3 x 0.25	3 x 0.25	3 x 0.25	2 x 0.34

	Unit	BEG 53A/ BEG 54A	BEG 56A	BEG 64			
☐ Max. length	[m]	100					
☐ Wire cross-section min.	[mm ²]	4 x 0.25	3 x 0.34	3 x 0.14			



1. Solder the cable plug to the sensor cable and the cable plug to the extension cable.
2. Connect sensor cable and extension cable.
3. Connect extension cable in accordance with the terminal diagram.

