
Instruction Manual

Model ISC40PR
Retractable fitting for
Inductive Conductivity sensor

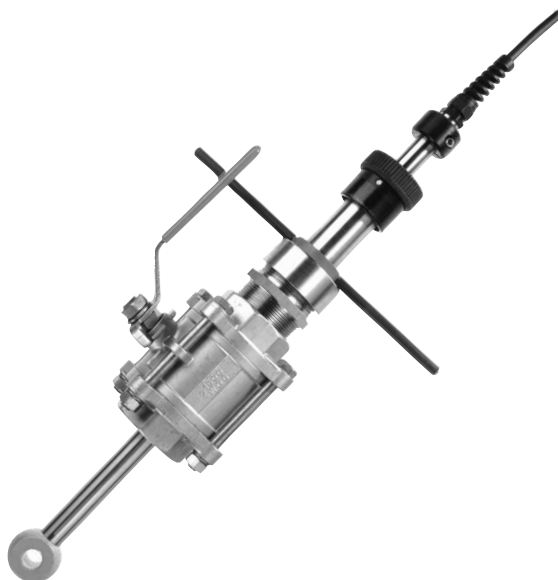


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1. INTRODUCTION

1-1. Description

The retractable fitting with ball valve allows a safe insertion and retraction of a sensor while the process is under pressure. It can be mounted in a variety of positions. The insertion depth can be chosen on site. An insertion stop is provided to set the position of the sensor in the process. The mechanism for releasing the probe is designed to operate only when the ball valve is closed, thus ensuring an effective safety precaution. The sensor can be replaced or calibrated easily.

1-2. Features

- A safe “through the valve” insertion and retraction design.
- Additional safety through a special designed T-bar locking mechanism.
- Maintenance, replacement and calibration of the sensor without interruption of the process.
- Adjustable insertion depth for optimal measuring position in the process.
- Replacement of the sensor.
- Improved sealing and damping by additional o-rings.
- Simplified installation by optional ball valves with flanged or tapered connections.
- Available in 0.5 and 1 metre probe length in two different materials.

1-3. Warranty

Yokogawa Europe B.V. warrants that the goods delivered are made from new materials to the best workmanship available. Malfunction of any of the delivered goods or parts of it, can only lead to replacement of the damaged parts. No claims can be made to damages or accidents resulting from the use of the goods.

No claims can be made to the expected or promised performance of the goods under any circumstances.

Damaged goods or parts should be sent to the local service organisation for warranty claim purposes.

Yokogawa has the right to deny warranty claims after investigation of the data and materials.

2. SPECIFICATIONS

2-1. General

Materials

Wetted parts

	Model ISC40PR-S (Stainless steel)	Model ISC40PR-T (Titanium)
- Probe	Stainless steel AISI 316	Titanium (Grade 2 or 3)
- O-ring seals	Viton 70° shore	Viton 70° shore

Non-wetted parts

- Stainless steel (AISI 316) and polyphenylene sulphide (PPS)

Insertion length

: The probe length can be adjusted to a maximum of either 0.5 or 1 metre. The actual probe insertion length depends on the use of optional adapters and/or ball valves. The dimensional drawing indicates the maximum insertion length for both specified probe lengths.

Pressure/temperature ratings

- Static conditions : 2 MPa at 20 °C
: 500 kPa at 130 °C
- Operating conditions maintenance : max. 500 kPa
: max. 130 °C
- Flange ratings : - DIN flange DN50 PN16
- ANSI flange 2" 150 lbs
- JIS flange 16K - 50

Weight

: Approx 2.5 kg. (stainless steel version without ball-valve and adapters)

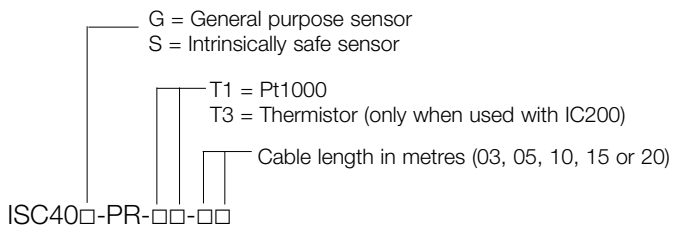
2-2. Model- and suffix codes

Model Code	Suffix	Option	Description
ISC40PR			Retractable Fitting, 2" BSP-female
Material	-S		Stainless steel AISI 316
	-T		Titanium Grade 2 or 3
Probe length	-05		0.5 m
	-10		1.0 m
		/A	Adapter R2-G2 Stainless steel
		/B	Adapter 2" NPT-G2 Stainless steel
		/C	Flange adapter Stainless steel
		/D	Flange adapter for drain Stainless steel
		/E	Adapter R2-G2 Titanium Grade 2 or 3
		/F	Adapter 2" NPT-G2 Titanium Grade 2 or 3
		/G	Flange adapter Titanium Grade 2 or 3
		/H	Flange adapter for drain Titanium Grade 2 or 3
		/M	Material certificate 3.1.B according to EN 10 204 (DIN 50 049) (on wetted parts)
		/T	Test certificate for hydrostatic pressure test (2 MPa at ambient temperature)
		/J	Ball valve R2 Stainless steel
		/K	Ball valve 2" NPT Stainless steel
		/L	Ball valve 2" ANSI Flanged Stainless steel
		/N	Ball valve DN 50 PN16 Flanged Stainless steel

Titanium ball valves are available as separate item

Model	Option code	Description
BV40.....	Titanium Ball Valve 2"
	/P.....	Rc2 threaded
	/Q.....	2" NPT threaded
	/R.....	2" ANSI flanged
	/S.....	NW 50 flanged

2-4. Sensor codes



3. INSTALLATION

3-1. Unpacking and checking

When you receive the ISC40PR retractable fitting it is packed in a cardboard box. Open the box and check that the model code on the fitting is the same as the one on the packing list. See §2-2 for the model code. Also check that it is supplied with the options you ordered.

The options can be delivered in separate boxes. If you have any problems or questions, contact your nearest Yokogawa service centre or sales organisation for support.

The ISC40PR retractable fitting has an identification plate on the protection ring with the full model code and a serial number.

3-2. Installation site

The ISC40PR fitting is intended to be used for in-line conductivity measurement. When it is delivered with an optional ball valve or when it is used in combination with a locally purchased ball valve, the process need not be interrupted for maintenance of the sensor.

The location can be in a large diameter pipeline or a vessel.

3-3. Safety precautions

The ISC40PR fitting has been designed to give maximum safety in operation. For optimum safety a flanged ball-valve is recommended.

Yokogawa does not accept any claims or penalties on possible damages or accidents which occurred by operation of the ISC40PR fitting.

The installation of the probe is to be implemented under the local safety regulations for pressurised vessels or pipe lines for retraction or insertion.

The instructions given in this manual must be followed exactly.

3-4. Installation method

It is important to have the point of measurement in a location that is truly representing the process composition. Check whether the specifications of the sensor fulfil the maximum occurring process conditions. The fitting has several optional connection possibilities. Check that you received the correct size and type. Install the fitting in a convenient location for maintenance and calibration. For maintenance or calibration the probe will need a space of about 2 metre for total retraction (depending on probe length and optional adapters and/or ball valves). Installation in a bend of a pipe line is a good measurement position. When inserting the ISC40PR retractable fitting in a perpendicular position to the process flow, the flow velocity will put a mechanical force on the probe. Take care that this force is not too large.

Note:

Do not insert the fitting into the process without the sensor mounted! The sensor is delivered separately in a box.

Start with the assembly of the sensor into the probe and follow the instructions for the preparation of a new sensor. See §3-8.

3-5. Assembly of accessories

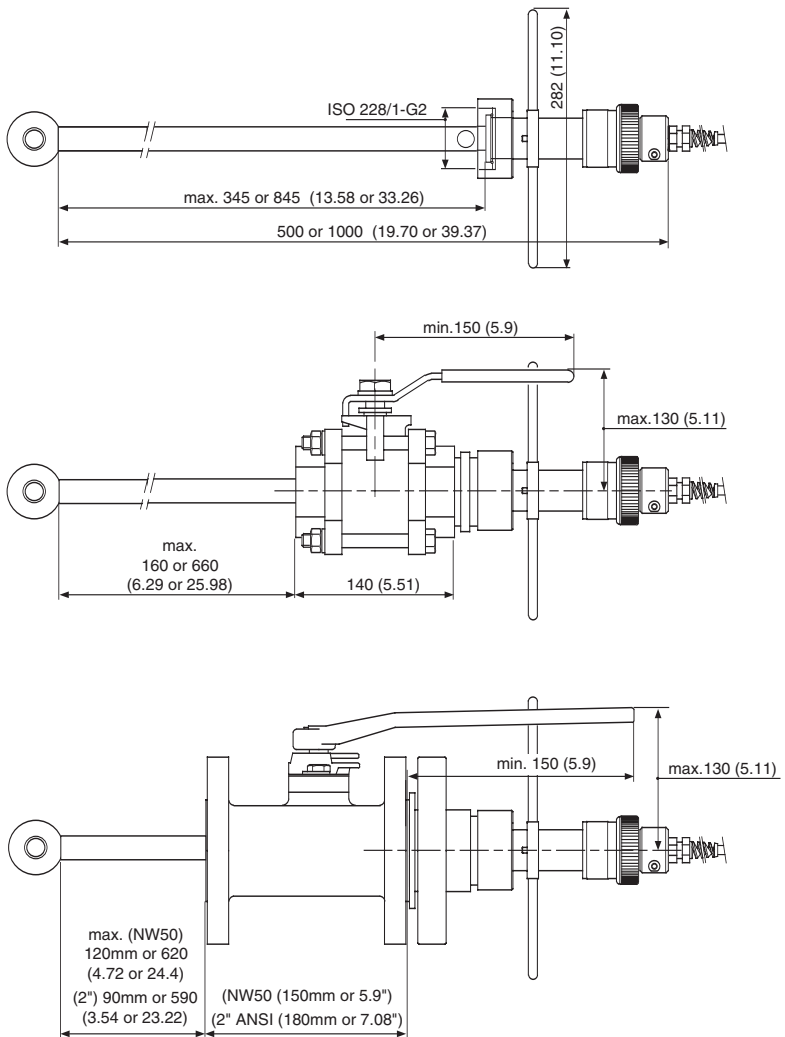
Optional accessories are (mostly) delivered separately in boxes.

When a ball valve is ordered as an option, this should be mounted to the measuring position first. When the ball valve is in place, the process line is secure.

If the ball valve has a tapered connection, it needs to be locked with glue.

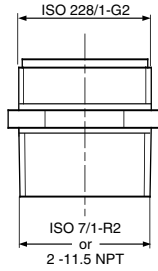
Next the adapter at the other side of the ball valve needs to be mounted. This adapter has ISO 228/1-G2 male thread at one side and a matching connection for the ball valve at the other side. Mount the adapter on the ball valve and lock it with glue.

3-6. Dimensions

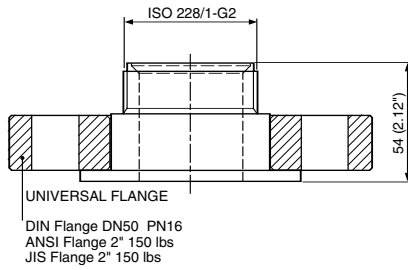


Note: Bolt, nuts and gaskets are not included.

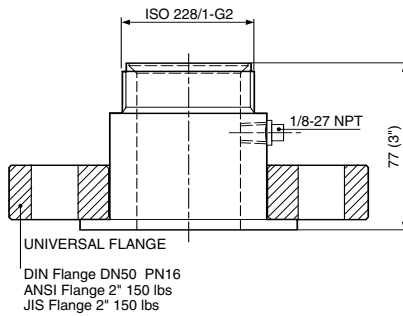
3-7. Dimensions of the options



Options /A, /B, /E, /F

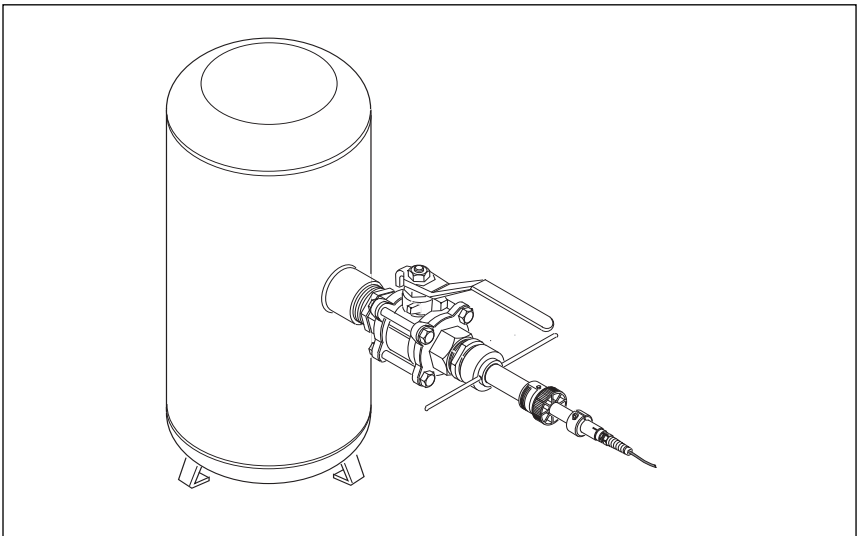
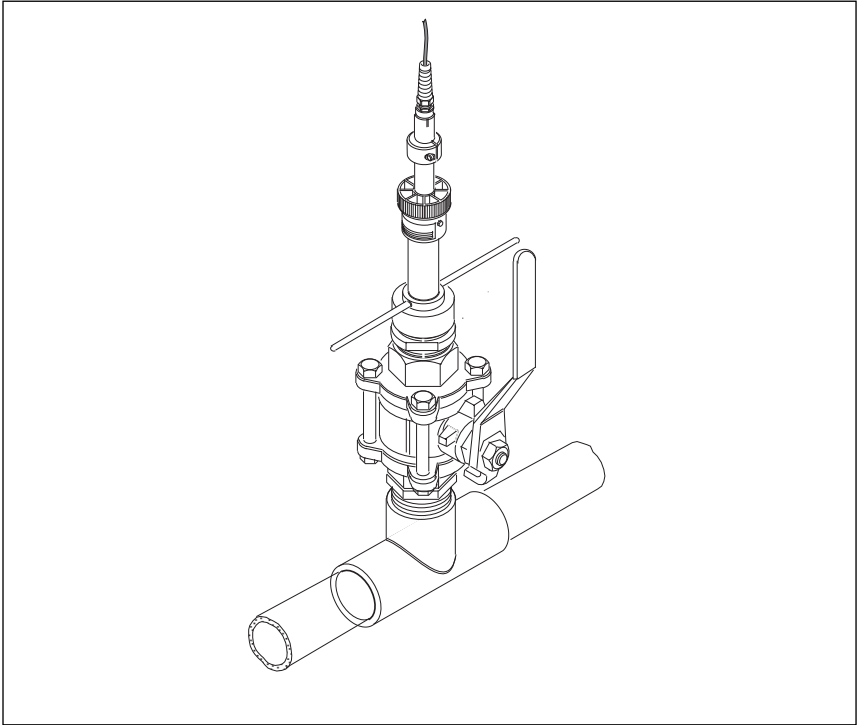


Options /C, /G



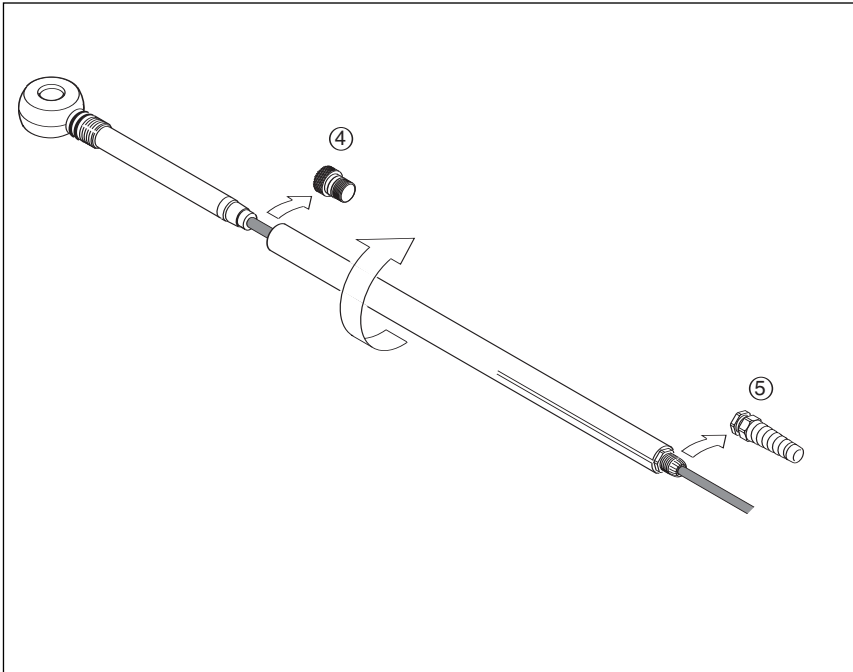
Options /D, /H

3-8. Installation examples



3-9. Mounting the sensor into the fitting

1. Take the sensor out of the box and remove the cable tie carefully.
2. Bind the separate wires of the cable together with a piece of tape.
3. Take the fitting out of the box and remove the option(s), if necessary.
4. Screw the knurled knob out off the fitting
5. Release the pigtail (cable gland) completely. Do not undo the part in the metal tube!
6. Lead the sensor cable through the tube of the fitting, from the side where the knurled knob has been removed.
6. Hold the sensor still and turn the metal tube onto the sensor.
Don't rotate the cell, but rotate the tube of the fitting, because the cable can be disconnected from the cell, when rotating it.
7. Lead the loose part of the pigtail onto the cable and screw it onto the fixed part.
8. Remove the tape.
9. Retain the knurled knob for future use or discard.
It is not necessary while the fitting is installed.



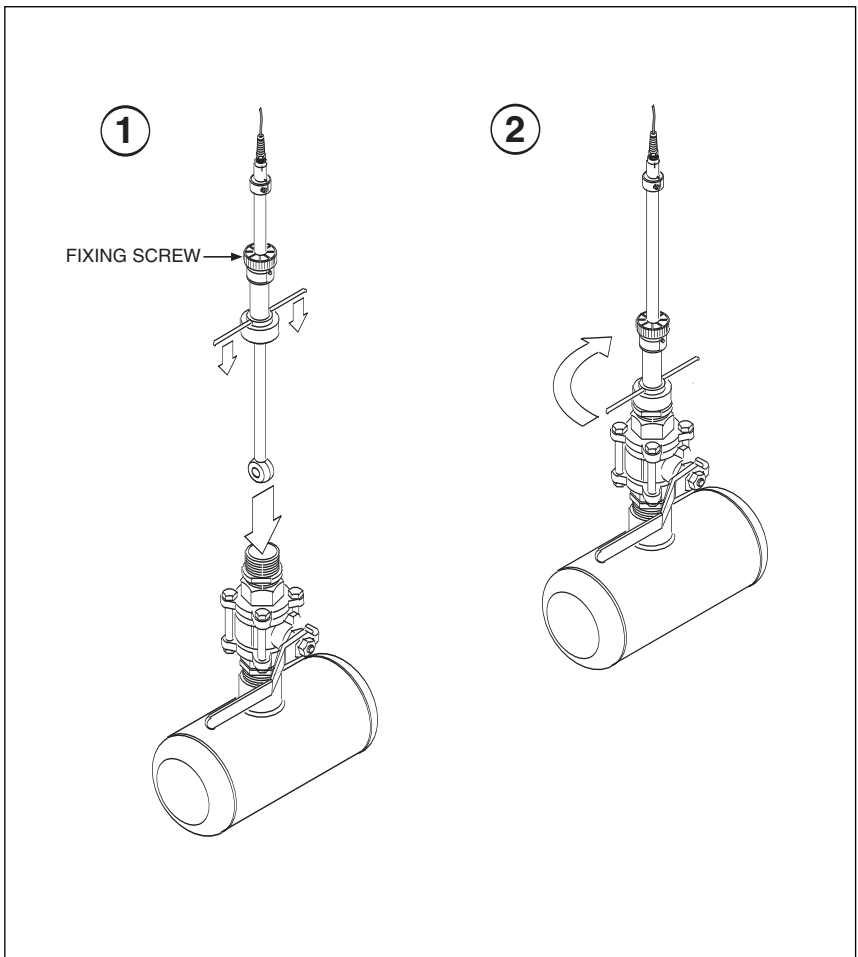
3-10 Probe insertion

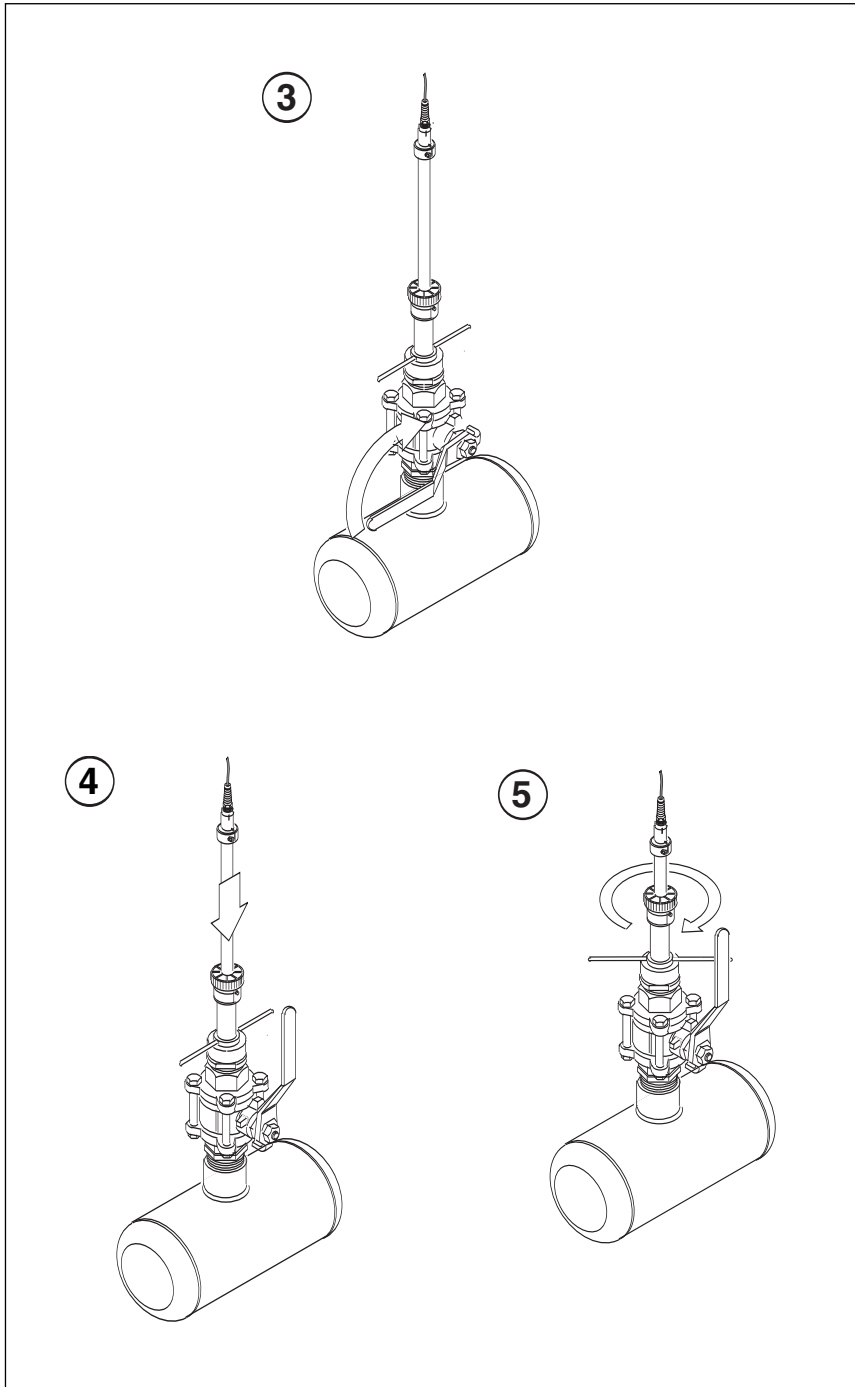
1. Position the probe for insertion.
2. Turn the T-bar key clockwise.
3. Open the ball valve.
4. Push the probe into the process.
5. Fix the probe by turning the fixing screw clockwise.

Remarks:

- Turning the T-bar key can only be done when the valve is closed.

- Pushing the probe into the process needs a force to overcome the pressure of the system and the friction of the dampening rings in the fitting.
- The locking mechanism can be tightened until the probe is firmly fixed at the measuring position.
- The insertion stop can be fixed at the actual insertion position. See §3-10 on adjusting the insertion depth.



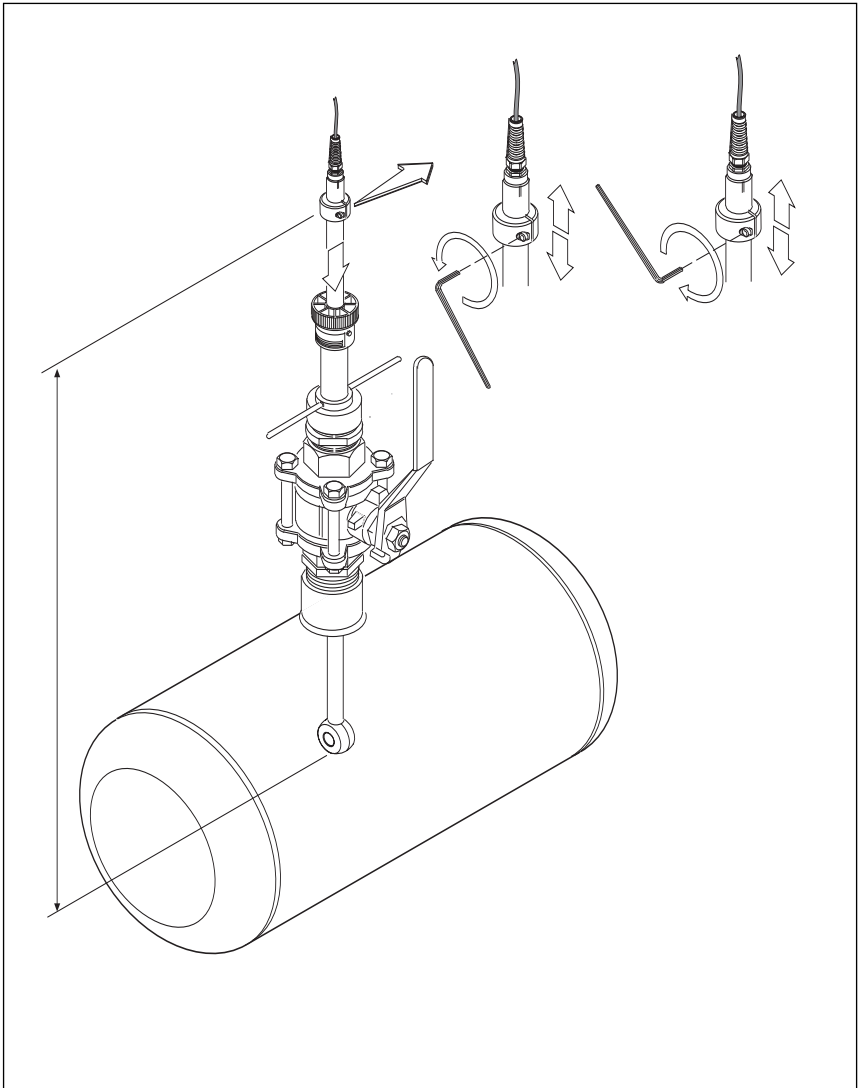


3-11. Adjusting the insertion depth

The insertion depth of the sensor can be adjusted to your preference.

The insertion stop can be set for at the actual insertion position of the probe. The "Allan" key, supplied with the fitting, is used to fix the insertion stop at the desired position.

The maximum insertion depth is related to the probe length mentioned in the model code of the fitting.



4. MAINTENANCE

4-1. General

Before the sensor can be serviced, the probe with the sensor inside should be physically separated from the process. The ISC40PR retractable fitting can be retracted from its measuring position in the maintenance position by following the five step procedure mentioned in §3-9 in reverse order.

4-2. Taking out the sensor

Retract the probe from the process according to the following procedure:

1. Release the fixing screw.
2. Pull out the probe.
3. Close the ball valve (*).
4. Turn the T-bar counter clockwise
5. Take out the probe.

* : If the option drain port is available, the process pressure can be relieved before removing the sensor.

Remarks:

- Stand clear when releasing the fixing screw! Due to the process pressure the probe can be pressed out.
- The T-bar key can only be operated when the ball valve is closed. Make sure it is closed completely.
- The friction of the o-rings will slow down the probe when it is retracted.

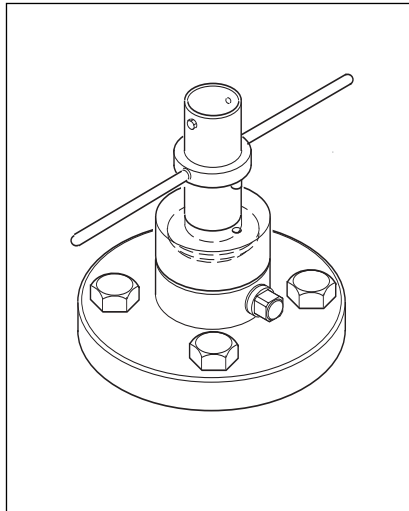
4-3. Replacing the sensor

Refer to §3-8.

4-4. Drain port connection

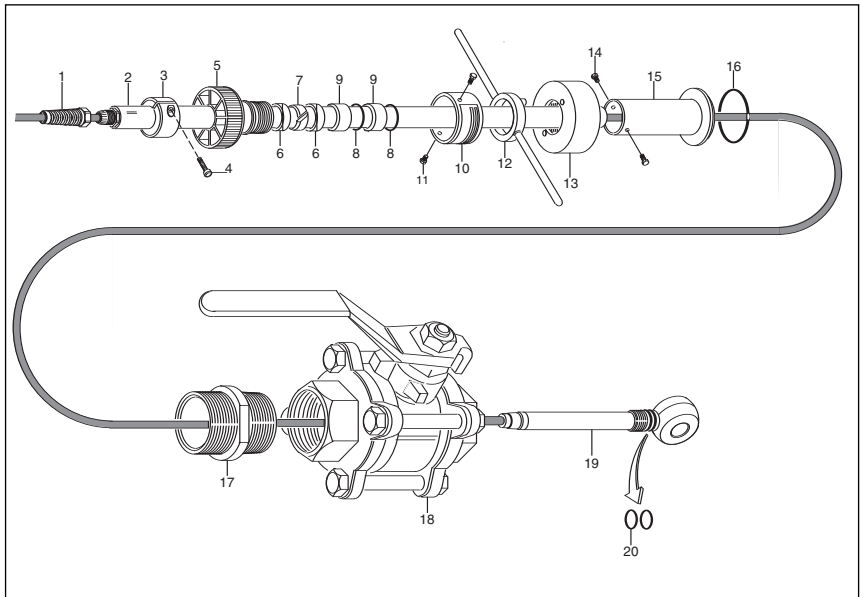
The ISC40PR retractable fitting can be equipped with optional drain port on the flanged adapter.

The drain port are tapered 1/8" NPT female for small diameter connectors.



Drain port connection

5. EXPLODED VIEW



No.	Description	Part No.	Description	Part No.
1	Cable gland	K1500BH	O-ring Kalrez 29,74x3,53	K1500AH
2	Outer tube 0,5 m SS	K1520TN	O-ring set EPDM, ISC40 PR	K1500EA
2	Outer tube 1 m SS	K1520UH	Sensor holder SS (ISC40PR)	K1500EN
2	Outer tube 0,5 m Ti	K1520UF	Sensor holder Ti (ISC40PR)	K1500EP
2	Outer tube 1 m Ti	K1520UJ	Outer tube 0,5m SS, ISC40PR	K1520UK
3	Insertion stop	K1520KF	Outer tube 1,0m SS, ISC40PR	K1520UL
4	"Allan" screw	K1520KC	Outer tube 0,5m Ti, ISC40PR	K1520UM
5	Main fixing screw	K1520KC	Outer tube 1,0m Ti, ISC40PR	K1520UN
6	Squeezing ring (2 pcs.) SS	K1520TA	Ball valve R2 (ISC40PR/J)	K1541DQ
6	Squeezing ring (2 pcs.) Ti	K1520UB	Flange adapter SS (ISC40PR/C)	K1541DR
7	Clamping ring SS	K1520TA	Flange adapter SS-drain ISC40PR/D	K1541DS
7	Clamping rin Ti	K1520UB	Flange adapter Ti (ISC40PR/G)	K1541DT
8	O-rings (2 pcs.) 20,2x3,5 Viton	K1500BG	Flange adapter Ti-drain (ISC40PR/H)	K1541DU
8	O-rings (2 pcs.) 20,2x3,5 EPDM	K1500EA	Ball valve 2" NPT (ISC40PR/K)	K1541DW
8	O-rings (2 pcs.) 20,2x3,5 Kalrez	K1500EB	Ball valve 2" ANSI (ISC40PR/L)	K1541DX
9	Bushing (2 pcs.) SS	K1520TA	Ball valve DN50 PN16 (ISC40PR/N)	K1541DY
9	Bushing (2 pcs.) Ti	K1520UB	Adapter R2-G2-SS (ISC40PR/A)	K1541EJ
10	Protection ring		Adapter 2" NPT-SS (ISC40PR/B)	K1541EM
11	Fixing screws (2 pcs.)		Adapter R2-G2-Ti (ISC40PR/E)	K1541EN
12	T-bar with key	K1520TK	Adapter 2" NPT-G2-Ti (ISC40PR/F)	K1541EP
13	Nut	K1520DD		
14	Fixing screws (2 pcs.)			
15	Chamber			
16	1x Kalrez 70° shore 47,2x3,5	K1500EC		
17	Adapter (optional)			
18	Ball valve (optional)			
19	Sensor			
20	2 pcs. Kalrez 70° shore 15,6x1,78	K1500ED		
20	10 pcs. Viton 70° shore 15,6x1,78	K1500BE		

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