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# User's Manual

## Model ISC40G(S) Sensors and Fittings for Inductive Conductivity Measurement

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## 1. INTRODUCTION

### 1-1. General

The sensor and fitting program for inductive conductivity measurement (model ISC40) is designed to meet the most common installation requirements in terms of material compatibility, process connections and flow dynamics. The various installation possibilities are described and illustrated in this manual.

The following categories of installation can be recognised:

1. Direct mounting of sensors in tank wall or customer supplied flanges
2. Cost effective installation of sensors using process adapters
3. Maintenance friendly installation of sensors using in-line subassemblies
4. Installation in flow chambers for measurements in sample streams or bypass loops
5. Installation in immersion fittings for measurement in open tanks or channels

### 1-3. Sensors

### 1-2. Features

Within the wide range of process adapters, subassemblies, flow fittings and immersion fittings it is easy to find the appropriate installation that fits the application (a wide choice of materials), the plant installation practice (a wide choice of process connections) and the maintenance procedures.

### 1-3. CE declaration ISC40S

The model ISC40S (the S indicates safety) is intended for use in potentially explosive atmospheres. A number of restrictions apply on the use of this sensor.

#### Special conditions for safe use

The sensor must be installed and used so, that dangers of ignition due to hazardous electrostatic charges cannot occur, especially in the case the process medium is non-conductive.

#### Connection

The sensor may only be connected to the transmitter models IC200S and ISC202S.

#### Operation

The sensor may only be used within its specified window of operation (chapter 4).

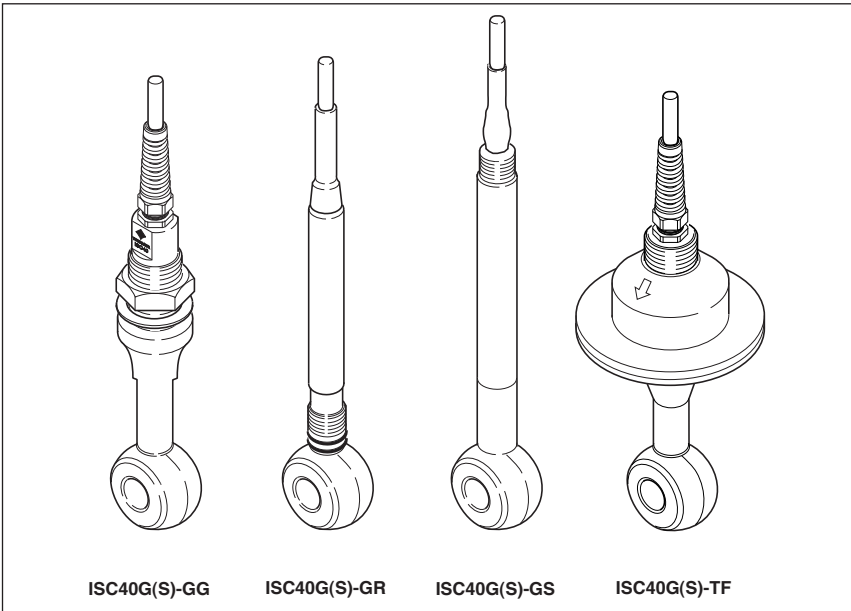


Fig. 1-1.

**2. UNPACKING AND CHECKING**

Upon receipt of the goods, carefully inspect the shipping package for any evidence of damage. If the carton is damaged, notify the shipping agent and the sales organisation immediately.

If the shipping package is not damaged, remove the products and parts. Confirm that all items shown on the packing list are available and that the package does not contain any parts or accessories hidden between the shock absorbing fillers. Notify the sales organisation if items are missing.

**3. WARRANTY AND SERVICE**

Products and parts are warranted to be free from defects in workmanship and material under normal use and service for a period of typically twelve months from the date of shipment by manufacturer. The sales organisation has the possibility to deviate from this typical warranty period and the actual terms and conditions as specified in the sales order must be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion and attack by chemical processes are excluded from this warranty coverage. All defective goods need to be sent to the service of the sales organisation for repair or replacement and the returned material should be accompanied by a letter of transmittal, which should include the following information:

1. Part number, model code and serial number
2. Date and number of sales order
3. Length of time of service and type of service
4. Description of the faulty operation of the device and the circumstances of the failure
5. Pressure, temperature, process composition and all other process conditions or environmental circumstances which are related to the installation and possibly failure of the device
6. Statement as to whether warranty or non-warranty service is requested
7. Complete shipping and billing instructions for return of material and name, phone number of contact person that can be approached for further information.

The returned goods that have been in contact with process fluids must be detoxified and disinfected prior to shipment for the health and safety of our employees. Material Safety Data sheets must be included for all components of the processes in which the sensors/fittings have been used.

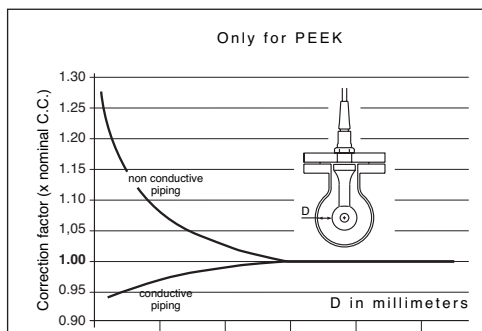
The shipping address where to the goods have to be returned is specified on the original sales order or on the back page of this manual.

2002	P	January	1
2003	R	February	2
2004	S	March	3
2005	T	April	4
2006	U	May	5
2007	V	June	6
2008	W	July	7
2009	X	August	8
2010	A	September	9
2011	B	Oktober	O
2012	C	November	N
2013	D	December	D

## 4. GENERAL SPECIFICATIONS

### 4-1. Model ISC40 Inductive conductivity sensor

- A. Compatibility** : ISC40G is suitable for use with both ISC402G and ISC202G inductive conductivity transmitter.
- B. Hazardous area** : ISC40S is suitable for use with the I(S)C202S conform to ATEX, FM and CSA intrinsic safety standards.
- **ATEX intrinsic safety** : <Ex> II 1 G EEx ia IIC T6 for ambient temp. -10 to 40°C  
<Ex> II 1 G EEx ia IIC T4 for ambient temp. -10 to 55°C
  - ATEX certificate no. : KEMA 00 ATEX 1067 X
  - **FM intrinsic safety** : IS CL1, DIV1, GP ABCD T3B for ambient temp. (ta)  
-10°C to 55°C and T4 for ambient temp. (ta)-10°C to 40°C.
  - FM Approval report : J.I. 1Y1A7.AX
  - **CSA intrinsic safety** : Ex ia Class I, Division 1, Groups C and D, T4a
  - CSA Approval file : LR 102851-1
- C. Measuring range** : 0- 2000 mS/cm at actual process temperatures. The sensor has an error of 0.5 uS/cm (PEEK sensors) or 1 uS/cm (PFA sensor) that must be considered when application range is chosen.
- D. Installation factor** : Cell constant: The nominal cell constant of the sensor is 1.88/cm<sup>-1</sup> for the PEEK sensor types and 3.00/cm<sup>-1</sup> for the PFA sensor. The calibrated values are indicated on the cable markers and the actual installation can change this factor. If there is less than 25 mm spacing between sensor and holder, in-situ calibration is necessary to meet the specified accuracies.



**FIG. 2.** Actual installed cell-constant as function of spacing around the sensor.

### E. Process temperature range

- Peek : -20 to 130°C (-4 to 266°F) for  
Response time 5 min. (90%)
- PFA : -20 to 100°C (-4 to 212°F)  
Response time 10 min. (90%)

**F. Process pressure**

Peek : Maximum 20 bar (300 psi) dependant on installation.

PFA :

C (°F)	100 (212)	20 (36)
BAR (PSI)	5 (71)	10 (142)

**G. Materials**

- Sensor wetted parts : ISC40G(S)-G•, Victrex PEEK (Poly-Ether-Ether-Ketone). 30% Glass filled PEEK. **NOTE:** This material is FDA approved.
- Sealing gasket : PFA (high purity Perfluora Alkoxy Allcane)
- Process adapters : Viton
- Process adapters : AISI 316 SS, PVC or PVDF (only for PEEK)

**H. Process connection**

: Process connection are made in combination with a variety of adapters and fittings. See relevant sections in this document. In combination with all our process connections the ISC40 sensor meets IP67. When installed otherwise the sensor meets IP65.

**I. Cables**

- Connection cable : Integral connection cable in a variety of lengths up to 20 meter.
- Extension cable : Extension cable WF10 junction box BA10 can be used to a total of 50 metres (fixed cable and extension cable).

**J. Shipping details**

- Package
- 3-5 meters : WxHxD = 350x270x50 mm
- 10-20 meters : WxHxD = 320x240x110 mm
- Packed weight approx.
  - 03 m : 1.0 kg
  - 05 m : 1.3 kg
  - 10 m : 1.6 kg
  - 15 m : 2.1 kg
  - 20 m : 2.5 kg
  - protection hose 0.8 kg (approx.)

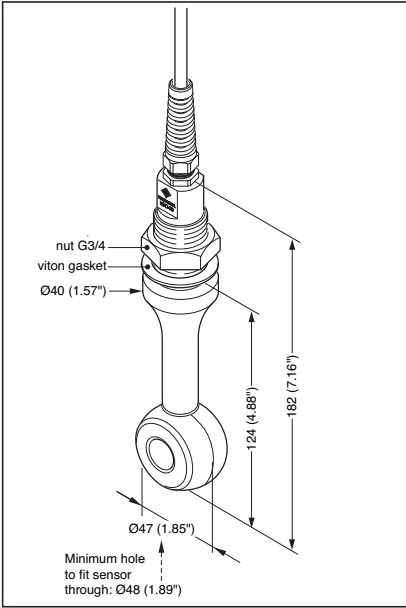
#### 4-2. Model and suffix codes

Model	Suffix	Option	Description	
<b>ISC40S</b>			Intrinsically safe inductive conductivity sensor	
Sensor type	-GG -GR -GS -TF		Glass filled PEEK, general model Glass filled PEEK, retractable model Glass filled PEEK, shaft model PFA, flange model	
Temperature sensor	-T1 -T3		Pt1000 30k thermistor, for IC200 select only T3	
Cable length	-03 -05 -10 -15 -20		03 meter 05 meter 10 meter 15 meter 20 meter	
<b>Option for sensor</b>			<b>Material</b>	<b>Process Connection</b>
Flange adapters -GG	/SFA /SFD /STW /S2W		AISI316 SS AISI316 SS AISI316 SS AISI316 SS	2" ANSI 150 lbs NW50-PN16 3" tri-clamp 2" tri-clamp
Flange adapters -GS	/SFT /STC1 /STC2		AISI316 SS AISI316 SS AISI316 SS	Sanitary Tuchenhagen Sanitary 2" tri-clamp Tri-clamp complete
Protection Hose for -TF		/PH <input type="checkbox"/> <input type="checkbox"/>	03m, 05m, 10m, 15m, 20m the same length as the cable	
Certificates		/M /Q	Material certificate Quality certificate	only for -GG, -GR

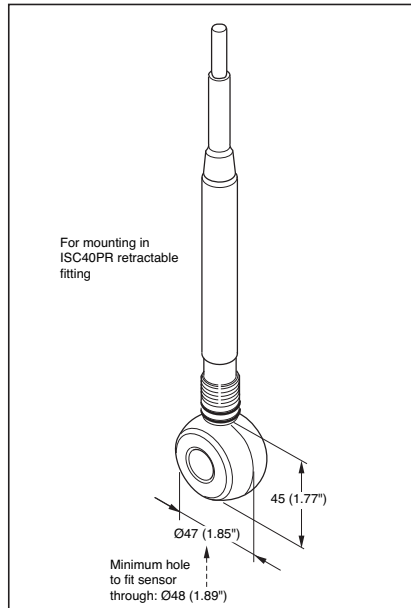
Model	Suffix	Option	Description	
<b>ISC40G</b>			General purpose inductive conductivity sensor	
Sensor type	-GG -GR -GS -TF		Glass filled PEEK, general model Glass filled PEEK, retractable model Glass filled PEEK, shaft model PFA, flange model	
Temperature sensor	-T1 -T3		Pt1000 30k thermistor, for IC200 select only T3	
Cable length	-03 -05 -10 -15 -20		03 meter 05 meter 10 meter 15 meter 20 meter	
<b>Option for Sensor</b>			<b>Material</b>	<b>Process Connection</b>
Flange adapters -GG		/SFA /SFD /STW /S2W	AISI316 SS AISI316 SS AISI316 SS AISI316 SS	2" ANSI 150 lbs NW50-PN16 3" tri-clamp 2" tri-clamp
Flange adapters -GS		/SFT /STC1 /STC2	AISI316 SS AISI316 SS AISI316 SS	Sanitary Tuchenhagen Sanitary 2" tri-clamp Tri-clamp complete
Protection Hose for -TF		/PH <input type="checkbox"/> <input type="checkbox"/>	03m, 05m, 10m, 15m, 20m the same length as the cable	
Certificates		/M /Q	Material certificate Quality certificate	only for -GG, -GR

4-3. Dimensions of sensors

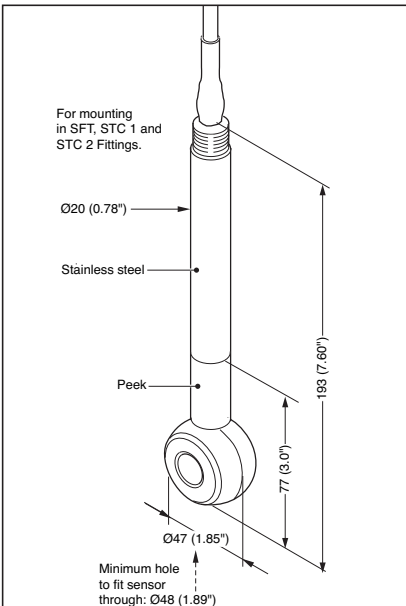
Unit: mm (inches)



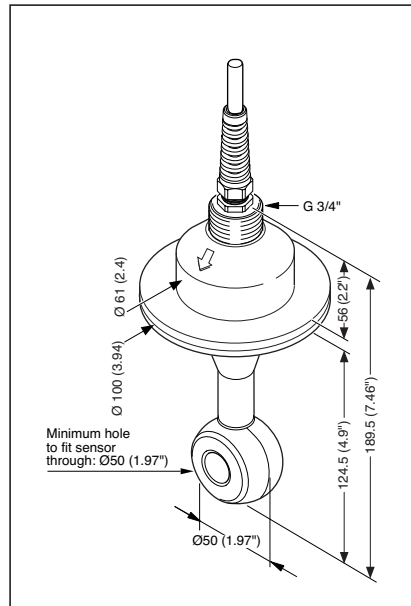
ISC40G-GG



ISC40G-GR



ISC40G-GS



ISC40G(S)-TF

#### 4-4. Subassemblies, Model ISC40FS

##### Process temperature

- Model ISC40FS-SCWN/SCSA : Max. 150°C (302°F).
- Model ISC40FS-PCSA : Max. 100°C (212°F).
- Model ISC40FS-FCSA : Max. 130°C (266°F).

##### Process pressure

- Model ISC40FS-SCWN/SCSN : Max. 1.0 MPa (150 psi) at 150°C (302°F).
- Model ISC40FS-PCSA : Max. 0.6 MPa (90 psi) at 20°C (68°F).  
Max. 0.1 MPa (15 psi) at 100°C (212°F).
- Model ISC40FS-FCSA : Max. 1.0 MPa (150 psi) at 20°C (68°F).  
Max. 0.1 MPa (15 psi) at 120°C (248°F).

##### Wetted materials

- Model ISC40FS-SCSA : AISI 316 Stainless steel
- Model ISC40FS-PCSA : Polypropylene
- Model ISC40FS-FCSA : PVDF (KYNAR)
- All models : Viton O-ring.

##### Non-wetted materials

- Nut : AISI 304 Stainless steel.

##### Process connection

- Model ISC40FS-SCSA/PCSA/FCSA : 2" screw-in coupling

##### Shipping details

- Dimensions : Refer to section Drawings and Dimensions.
- Weight : 500 g (1 lbs).

##### Note:

With the sensors, ISC40G-GG ISC40S-GG a gasket is supplied. This gasket maybe used for the older series of fittings. It should be discarded when the sensor is mounted in the following fittings : ISC40FS- FCSA, -PCSA.

##### Model specifications

Model	Suffix code	Option code	Description
<b>ISC40FS</b>			Flow fitting subassembly
Material	-F -P -S		PVDF Polypropylene Stainless Steel
Process connection	CS CW		Coupling screw-in Coupling welded
Thread type	A N		NPT No thread (for weld-in couplings)
Options Material certificate		/M	3.1 acc. EN 10 204

#### 4-5. Flow fitting, Model ISC40FF

##### Process temperature

- Model ISC40FF-S : Maximum 150°C (302°F).
- Model ISC40FF-P : Maximum 100°C (212°F).
- Model ISC40FF-F : Maximum 130°C (266°F).

##### Process pressure

- Model ISC40FF-S : Max. 1.0 MPa (150 psi) at 150°C (302°F).
- Model ISC40FF-P : Max. 0.6 MPa (90 psi) at 20°C (68°F)
- : Max. 0.1 MPa (15 psi) at 100°C (212°F).
- Model ISC40FF-F : Max. 1.0 MPa (150 psi) at 20°C (68°F).
- : Max. 0.1 MPa (15 psi) at 120°C (228°F).

##### Wetted materials

- Model ISC40FF-S : AISI 316 Stainless steel
- Model ISC40FF-P : Polypropylene
- Model ISC40FF-F : PVDF (KYNAR)
- Process sealing : Viton O-ring.

**Non-wetted materials** : AISI 304 stainless steel.

- Process connection** : 1/2" NPT.  
 - Optional adapters : See Model specifications.

**Note:** With the sensors ISC40G-GG, ISC40S-GG a gasket is supplied. This gasket maybe used for the older series of fittings. It should be discarded when the sensor is mounted in the following fittings : ISC40FF-PA, -FA.

#### Model specifications

MODEL	SUFFIX CODE	OPTION CODE	DESCRIPTION
<b>ISC40FF</b>			Flow fitting
Material	-S -P -F		AISI 316 stainless steel Polypropylene (PP) PVDF (KYNAR®)
Process connection	A		NPT
<b>Options</b> 1/2"NPT Flang adapters		/FF1 /FF2 /FF3 /FF4 /FP1 /FP2 /FP3 /FP4 /FS1 /FS2 /FS3 /FS4	PVDF, DN15 PN10 PVDF, DN25 PN10 PVDF, ANSI 1/2"-150lbs PVDF, ANSI 1"-150lbs PP, DN15 PN10 PP, DN25 PN10 PP, ANSI 1/2"-150lbs PP, ANSI 1"-150lbs AISI 316 stainless steel, DN15 PN10 AISI 316 stainless steel, DN25 PN10 AISI 316 stainless steel, ANSI 1/2"- 150lbs AISI 316 stainless steel, ANSI 1"- 150lbs
Mounting set		/MS /MP	Wall/pipe for stainless steel flow fitting Wall/pipe for PP or PVDF flow fitting
Material certificate only for -S-		/M	3.1 acc. EN-10-024 (DIN 50-049-3.1B)

#### 4-6. Immersion fitting, Model ISC40FD

**Process temperature** : Maximum 80°C (176°F).

**Process pressure** : Maximum 0.2 MPa (30 psi) at 20°C (68°F).

#### Wetted materials

- Probe tube : C-PVC
- Process sealing : Viton O-ring
- Flange : PVC (optional)

#### Non-wetted materials

- Tube cable : Thermo plastic rubber

**Process connection** : See Model specifications

**Note:** With the sensors ISC40G-GG, ISC40S-GG a gasket is supplied. This gasket maybe used for the older series of fittings. It should be discarded when the sensor is mounted in the following fittings : ISC40FD-S, -V.

#### Model specifications

MODEL	SUFFIX CODE	OPTION CODE	DESCRIPTION
<b>ISC40FD</b>			Immersion fitting
Material	-S -V		Stainless Steel AISI 316 (SS) Polyvinylchloride (PVC)
Pipe length	-05 -06 -07 -08 -09 -10 -11 -12 -13 -14 -15 -16 -17 -18 -19 -20		0.5 m 0.6 m 0.7 m 0.8 m 0.9 m 1.0 m 1.1 m 1.2 m 1.3 m 1.4 m 1.5 m 1.6 m 1.7 m 1.8 m 1.9 m 2.0 m
Flange	-SFD -SFA -NFL		AISI316 SS NW50 AISI316 SS 2" No flange
Options Only for ISC40FD-V		/MS1 /FA	pipe mounting set Adjustable, with DN50 PN10 and ANSI 2" 150 lbs hole pattern (only pvc)
Only for ISC40FD-S Protection hose		/M /PH5 /PH10	3.1 acc. EN-10-024 (only SS) For 5 m cable For 10 m cable

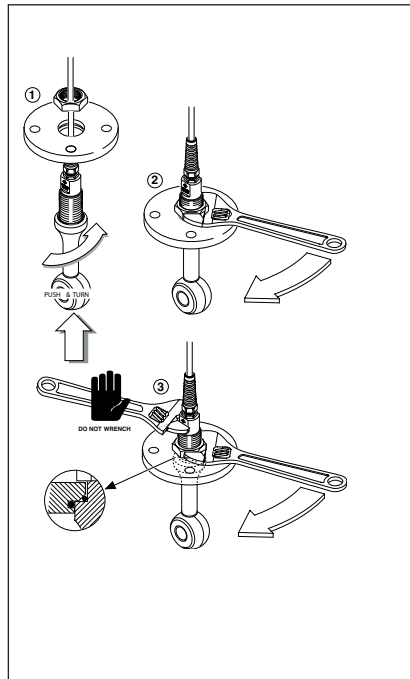
## 5. INSTALLATION

### 5-1. Direct installation of sensor

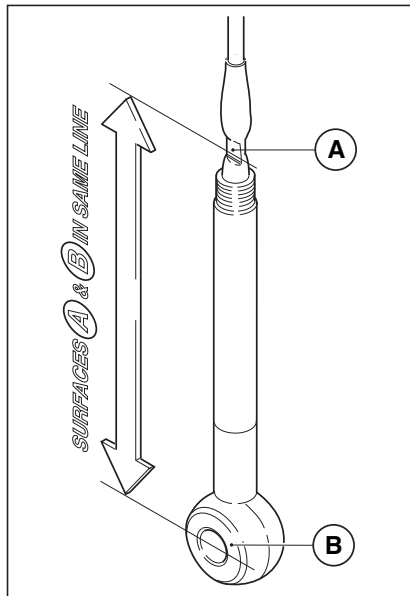
The ISC40 was previously supplied with a flat viton gasket for simple mounting. The fittings have been improved by the addition of “O”- ring seals which replace the flat gasket. We continue to supply the flat gasket with the ISC40G-GG, ISC40S-GG sensors for compatibility with existing installations. When using the sensor in combination with the new fittings, the flat gasket should be discarded. The mounting thread is a long straight G 3/4” thread (BSPP) which allows installation through a flange or bulkhead which may vary in thickness between 10 (3/8”) and 30 (1.2”) mm. The mounting hole in the flange or bulkhead must have a diameter of 27 mm (1.1”) to accommodate the mounting thread. The cable and mounting thread are pulled through this hole and the sensor is sealed from the process by tightening the mounting nut. Turning of the sensor by the torque forces can be avoided by using a wrench on the flats on top of the sensor. The flats are aligned with the flat sides of the donut (see fig.5-2). It is important that the process flow is directed through the hole in the donut.

It is important that the access port has a diameter of at least 2” or 50 mm to allow insertion of the donut shaped end of the sensor (see fig. 5-3).

The inductive conductivity measurement technique requires a process fluid surrounding the donut shaped sensor. The installation factor that is mentioned on the sensor will assure accurate conductivity measurement under the condition that the donut is surrounded by 25 mm (1”) process fluid. If this condition cannot be met in the actual installation, the analyser can be calibrated easily to assure a high accuracy in this application as well. Consult the paragraphs describing: “INSTALLATION FACTOR” and “CALIBRATION” in the appropriate instruction manuals.



**Fig. 5-1.** Illustrates the mounting procedure.



**Fig. 5-2.**

**5-2. Installation of sensors with process adapters**

The process adapters are standard blind flanges or male threaded blind plugs in which a hole of 27 mm is machined to accommodate the sensor.

The mounting of the sensor in the process adapter is described in section 5-1.

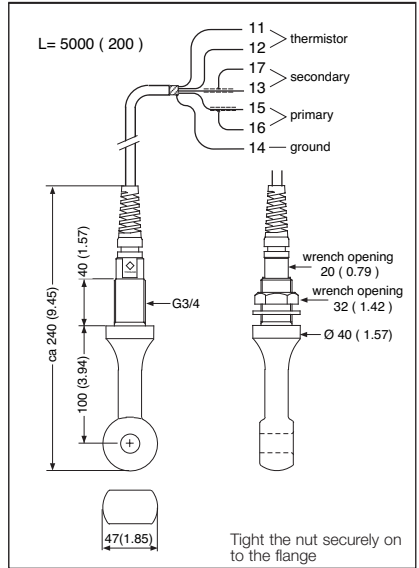
The mounting of the process adapters in end-users installation requires compatibility of materials and process connections (see section 4).

It is important that the flanges and weld-on sockets that have been provided by the enduser permit installation that meets the conditions as indicated in fig. 5-3.

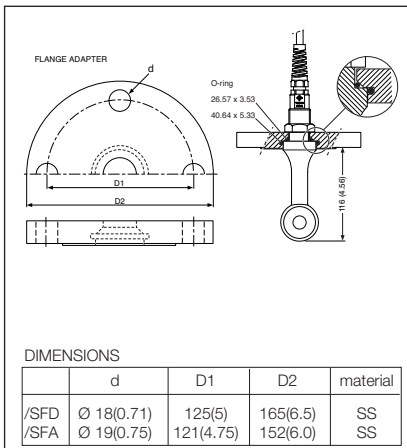
The dimensions that are important for the installation of the sensor adapters are noted in fig. 5-4. for flange adapters and in fig. 5-5. for threaded adapters.

**NOTE:**

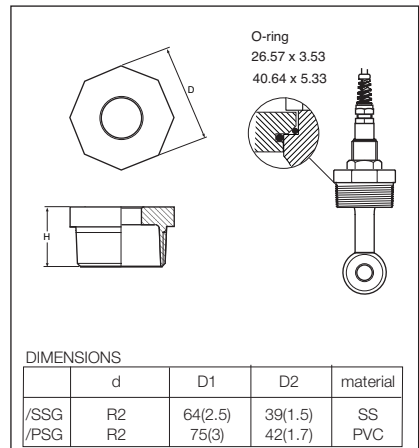
During installation and de-installation of the threaded sensor adapters the mounting nut of the sensor must be loosened. Only in that case it is prevented that the sensor turns with the adapter with possible damage to the cable connection by torquing forces.



**Fig. 5-3. Sensor dimensions and cable numbering**



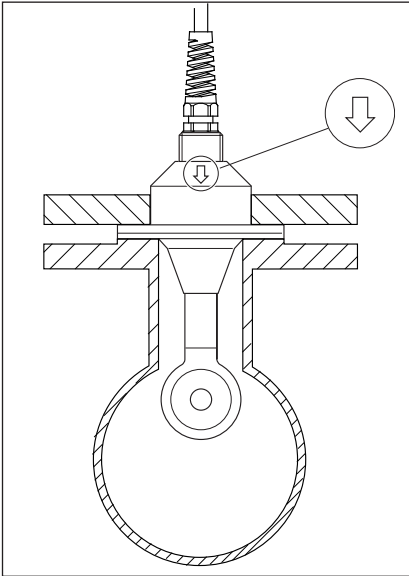
**Fig. 5-4. Flange adapter**



**Fig. 5-5. Thread adapter**

### 5-3. Mounting the TF sensor

The PFA sensor top is marked with an arrow, which indicates the flat (upstream) face of the sensor. This should be aligned with the flow direction of the pipe.

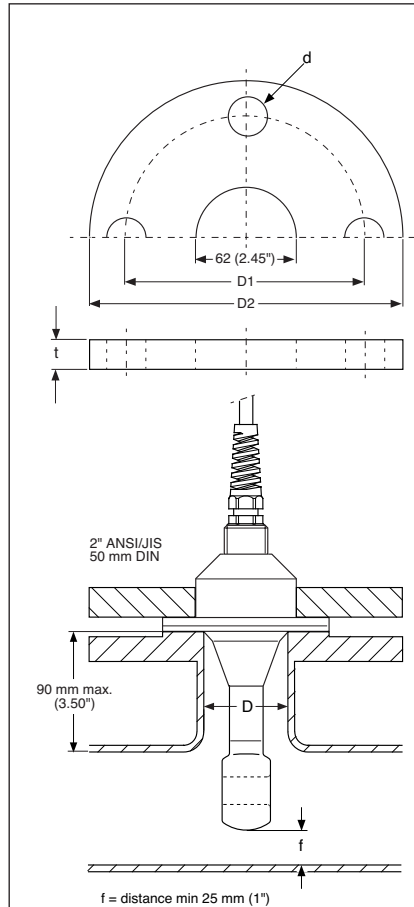


**Fig 5-6.**

The PFA sensor is provided with a lap-joint flange of 100 mm diameter. This fits in standard flanged entry ports in the size range 2-3" or 50-80 mm, with the use of a suitable backing flange. The customer will normally supply this flange to match his local piping specifications. The preferred mounting flange will be made from a blind flange to match the installed pipework, with a clearance hole of 62 mm (2.45"). This flange serves to support the sensor as well as to locate it centrally in the pipe stub.

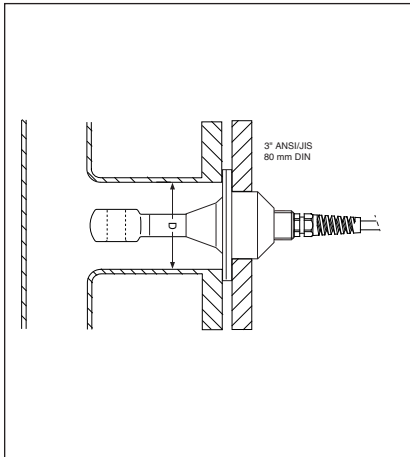
#### Caution:

When considering the use of the sensor with 2" or 50 mm lined pipe stub, take care to check the internal diameter of the lined pipe. The width of the sensor torroid at its widest point is 48 mm. This should pass through the smallest section and into the larger pipe for effective measurement.



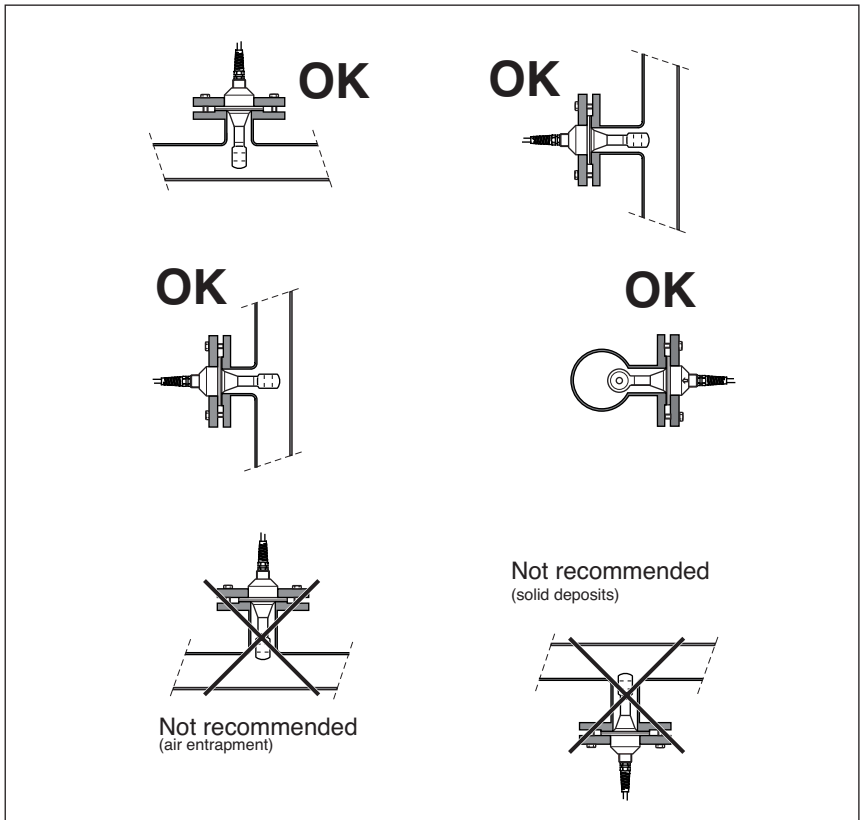
**Fig 5-7.**

Please note that with a flanged pipe mounting, the system should be calibrated by grab sample to set up the correct installation factor (taking account of the effect from the pipe walls).



With a standard 80mm/3" T-piece or branch the sensor will sit in the side arm. This will normally present no problem, as turbulence will refresh the solution surrounding the sensor, ensuring that the measurement remains valid. (see fig.5-8.)

**Fig 5-8.**



**Fig. 5-9. Installations examples of the ISC40-TF sensor**

#### 5-4. Installation of subassemblies

The key difference between a sensor adapter and a subassembly is, that with subassembly installation the sensor can be removed from the process installation without removing the subassembly first. This allows easier access to the sensor for maintenance activities.

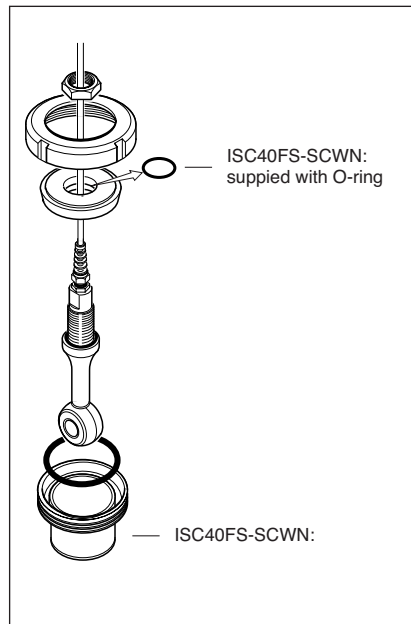
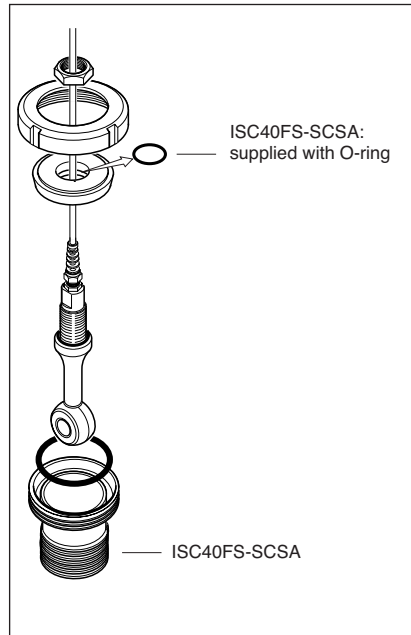
Generally, the subassembly consists of three parts of which one part is fitted permanently to the process installation; the second part is fitted to the sensor and the third part holds the earlier parts together. In addition to these three parts there are elastomeric seals where appropriate. Dependent on the type of subassembly the permanent part is welded or threaded to the process installation.

In figure 5-10 an illustration is given for a welding type subassembly versus a threaded model.

#### NOTE:

Installation of the subassembly must fulfill the same dimensional requirements as described in § 5-1. Therefore specific attention is asked for the dimensional specifications of the subassemblies (see section 7).

The assembly of the sensor in the subassembly is shown in the exploded view in fig. 5-10.



**Fig. 5-10.**

### 5-5. Installation of flow fittings

Installation of the flow fittings involves three steps:

#### 5-5-1. Installation of the sensor

Fig 5-11 shows how the sensor is mounted onto the sensor holding plate. It is important that the position of the sensor in the fitting allows easy flow through the hole in the sensor. Generally good flow is assured if the flats of the sensor are oriented perpendicular to the outlet piping.

#### 5-5-2. Installation on wall, railing or stanchion

For this purpose the flow fitting has an optional pipe/wall mounting kit. This kit consists of a clamp ring with bolts and nuts which clamps around the flow chamber. Therefore the flow chamber can be turned in the mounting assembly allowing for more flexibility in installation.

Part of the fitting is a mounting plate which can be mounted on a wall or panel with 2- 4 anchor bolts with a diameter of 10 mm (3/8") max.

For those installations where pipe mounting is requested, a saddle and U-bolt is supplied which allows mounting on a 2" nominal pipe size either horizontal or vertical.

For dimensions see section 7.

#### 5-5-3. Installation of the sanitary fitting

Screw the tube completely in the stainless steel nut. Thread the sensor cable through parts in the right sequence. Screw the tube handtight into the flange (note: a mechanical stop will be felt). Tighten the plastic nut onto the sensor. Screw the plastic nut completely tight. Tighten the lock nut. The installation of this part is illustrated in figure 5-12.

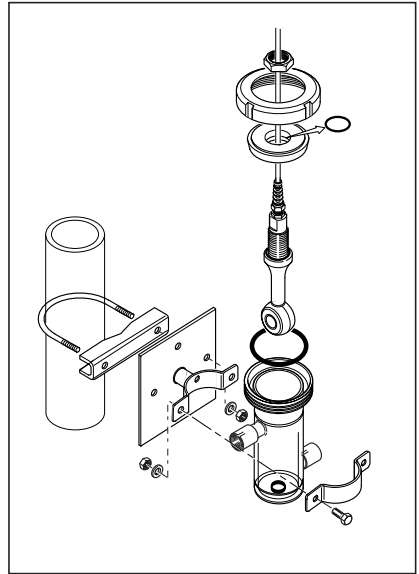


Fig. 5-11.

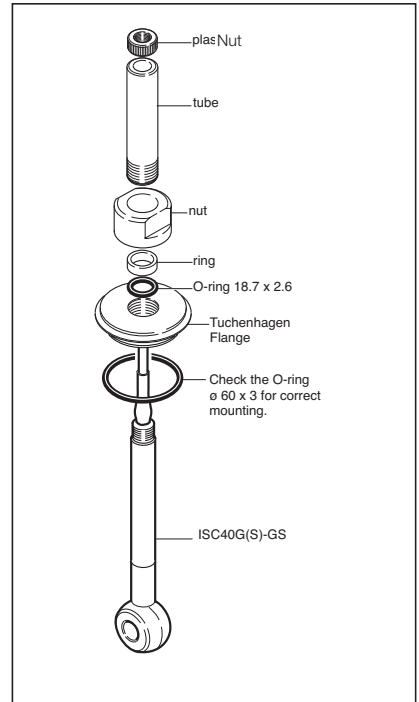


Fig. 5-12.

#### 5-5-4. Installation in the process piping

Basically the fittings have 1/2" threaded holes for process connection (NPT 1/2" or R1/2 dependent on model). The orientation of these holes is illustrated in the dimensional drawings, see section 7.

In these pictures is also indicated the face to face dimensions of the optional process flange adapters. These flanges are either DN25 PN10 ; or ANSI 1" 150# dependent on model.

#### NOTES:

1. It is important that the sample piping is oriented in such a way that the direction of the flow is upward to assure complete filling of the flow chamber.
2. When stainless steel flow chambers are used the analyser must be recalibrated as indicated in the instruction manual under "INSTALLATION FACTOR".

#### 5-6. Installation of immersion fittings

For installation of the immersion fittings follow the two steps below:

##### 5-6-1. Installation of the sensor

The exploded view in figure 5-13 shows the mounting of the sensor in the Stainless Steel and PVC fittings.

##### 5-6-2. Installation on a railing or stanchion

The immersion fitting comes with the optional rail mounting kit for mounting on vertical stanchion. This kit consists of a piece of guide pipe and two pipe clamps. The guide pipe is mounted horizontally to the stanchion using one pipe clamp. The second pipe clamp connects the guide pipe to the immersion fitting. The distance between the pipe clamps determines the distance between stanchion and immersion fitting. The positioning of the pipe clamp on the immersion fitting determines the immersion depth of the sensor. This is illustrated in figure 5-14.

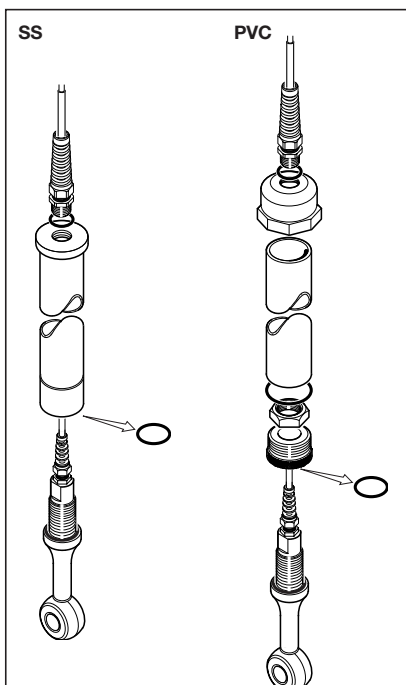


Fig. 5-13.

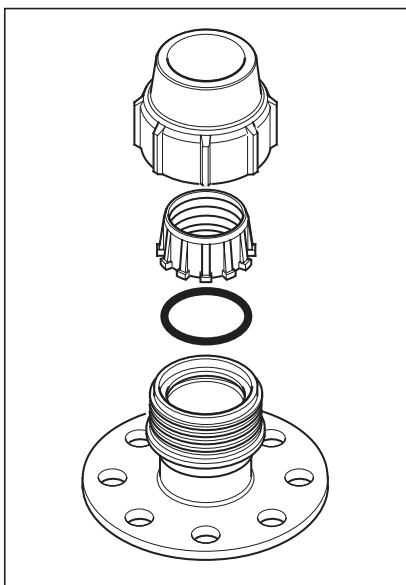


Fig. 5-14.

Alternative ways of mounting the immersion fitting are:

### 1. Guide pipe

The top of the immersion fitting has a larger diameter than the shaft to facilitate this type of mounting. An user supplied 50 mm or 2" Nominal Diameter Schedule 40 guide pipe is fitted to the wall or to the mounting rail. The immersion fitting slides into the guide pipe easily and therefore the sensor can be easily removed from the channel for inspection.

### 2. Flange mounting

The immersion fittings can be ordered with mounting flanges according to DN50 PN10; ANSI 2" 150# dimensions. You must be assured that the mating flange has the same hole pattern as the supplied flange. The pressure specifications of the mounting flange are not necessarily the same specifications as the immersion fitting. The specifications of the fitting are described in the specification section. An example of flange mounting is illustrated in figure 5-15, where the Polypropylene compression type adjustable flange is shown, which is optionally available for the PVC-C version immersion fittings. The flange can be compressed on any position of the fitting to allow exact insertion depth of the sensor.

### 3. Platform mounting

Sometimes there is a walking platform that can be used to mount the immersion fitting. The top of the immersion fitting has a larger diameter than the shaft to facilitate this type of mounting. If it is possible to drill an precise hole of 51 mm (2") in the platform, sliding the fitting through the hole is all is needed. Normally this is not possible in the expanded metal type. Then it is possible to use a blind flange to support the fitting in which a 51 mm (2") hole is drilled.

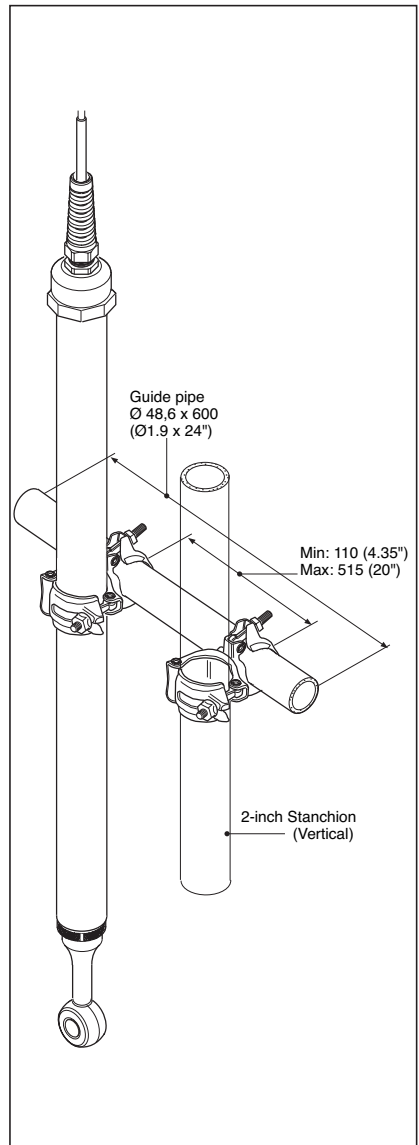


Fig. 5-15. ISC40FD - □ - □□ - □□□ /MS1

## 6. SPARE PARTS

### 6-1. Options ISC40 sensor as spare parts

Option	Description	Material	Process connection	Part number.
/SFA	Flange adapter	AISI316 SS	2" ANSI 150 lbs	K1541ZR
/SFD	Flange adapter	AISI316 SS	DN50 PN16	K1541ZQ
/PSG	Screw-in adapter	PVC	ISO 7/1-R2	K1541ZN
/SSG	Screw-in adapter	AISI316 SS	ISO 7/1-R2	K1541ZL
/SFT	Flange adapter	AISI316 SS	Sanitary Tuchenhagen	K1541ZP
/STC1	Flange adapter	AISI316 SS	Sanitary 2" tri-clamp	K1541ZG
/STC2	Flange adapter	AISI316 SS	Tri-clamp complete	K1541ZF
All adapters include Viton O-ring (s)				
/PH03	03 m protection hose			K1500DN
/PH05	05 m protection hose			K1500DP
/PH10	10 m protectionhose			K1500DQ
/PH15	15 m protectionhose			K1500DR
/PH20	20 m protection hose			K1500DS
Stainless Steel mounting nut for sensor				K1500AL (3pcs)

### 6.2. Options ISC40FF and ISC40FD as spare parts

#### ISC40FF--A

Option	Description	Material	Process connection	Part number
/FF1	Flange adapter	PVDF	DN15 PN10	K1521AL
/FF2	Flange adapter	PVDF	DN25 PN10	K1521AP
/FF3	Flange adapter	PVDF	ANSI 1/2"- 150lbs	K1521AE
/FF4	Flange adapter	PVDF	ANSI 1"- 150lbs	K1521AH
/FP1	Flange adapter	PP	DN15 PN10	K1521AM
/FP2	Flange adapter	PP	DN25 PN10	K1521AQ
/FP3	Flange adapter	PP	ANSI 1/2"- 150lbs	K1521AF
/FP4	Flange adapter	PP	ANSI 1"- 150lbs	K1521AJ
/FS1	Flange adapter	AISI 316 SS	DN15 PN10	K1521AK
/FS2	Flange adapter	AISI 316 SS	DN25 PN10	K1521AN
/FS3	Flange adapter	AISI 316 SS	ANSI 1/2"- 150lbs	K1521AD
/FS4	Flange adapter	AISI 316 SS	ANSI 1"- 150lbs	K1521AG

#### ISC40FD

Option	Description	Material	Process connection	Part number
/MS1	Pipe mounting set	Carbon steel	DIN DN50 PN10	K1541ZY
/FA	Adjustable flange			K1520EV
/PH5	Protection hose for 5 m cable			K1500CJ
/PH10	Protection hose for 10 m cable		ANSI 2" 150 lbs hole pattern (only for PVC)	K1500CK

### 6-3. O - rings spare parts for ISC40 sensor

Dimensions	O-ring material				Quantity
	EPDM	Viton	Silicon	KALREZ	
<b>O- rings for option FFJ5 /FSJ /PFJ /PSG /SFA SFD /SFJ /SSG /</b> 40.64 x 5.33 / 26.57 x 3. 53 40.64 x 5.33 26.57 x 3. 53	K1500CA	K1500CB	K1500CC	K1500CD K1500CH	5 sets of 2 O-rings 1 O-ring 1 O-ring
<b>O- rings for option /SFT</b> 8.72 x 2.62 / 60 x 3	K1500CM	K1500CL	K1500CN		5 sets of 2 O-rings
<b>O- ring for option /STC1</b> 18.72 x 2.62	K1500CQ	K1500CP	K1500CR		5 O-rings
<b>O- rings for option /STC2</b> 18.72 x 2.72 / 2" clamp seal	K1500CT	K1500CS	K1500CU		5 sets of 2 O-rings
<b>O- rings for protection hose</b> 25.9 x 3.53 / 23.52 x 1.78			K1500DT		5 sets of 2 O- rings
<b>O- rings for old models</b> Viton gasket		K1500AM			5 O-rings
<b>O- rings for model ISC40FF-S</b> 40.64 x 5.33 / 26.57 x 3.53 Ring NW50 40.64 x 5.33 26.57 x 3.53 53.34 x 5.33	K1500DB	K1500DA	K1500DC	K1500CD K1500CH K1500DD	5 sets of 3 O-rings 1 O-ring 1 O-ring 1 O-ring
<b>O- ring for old model ISC40FF-S</b> ring NW25 / ring NW50 Viton gasket		K1541ZJ K1500AM			2 sets of 2 O-rings 5 O-rings
<b>O- ring for model ISC40FF-F and ISC40FF-P</b> 40.64 x 5.33 / 26.57 x 3.53 56.52 x 5.33 40.64 x 5.33 26.57 x 3.53 56.52 x 5.33	K1500DF	K1500DE	K1500DG	K1500CD K1500CH K1500DH	5 sets of 3 O-rings 1 O-ring 1 O-ring 1 O-ring
<b>O- ring for old model ISC40FF-F and ISC40FF-P</b> Viton gasket 56.52 x 5.33		K1500AM K1541ZM			5 O-rings 5 O-rings

### 6.4. Spare part sensor carriers and O-rings for the flow through sub assemblies and fittings

Part no.	Description	Material	O - ring
K1541KC	2" tri-clamp carrier incl. 2 O - rings	AISI 316 Stainless steel	EPDM
K1541KB	3" tri-clamp carrier incl. 2 O - rings	AISI 316 Stainless steel	EPDM
K1541KD	2" carrier incl. 2 O - rings	PVDF	Viton
K1541KL	2" carrier incl. 2 O - rings	Polypropylene	Viton
K1541KA	2" carrier incl. 2 O - rings	AISI 316 Stainless steel	Viton

## 6-5. O - rings spare parts for sensor ISC40FD and ISC40FS

Dimensions	O-ring material				Quantity
	EPDM	Viton	Silicon	KALREZ	
<b>O- rings for model ISC40FD-S</b> 39.35 x 2.62 / 26.57 x 3.53 39.35 x 2.62 26.57 x 3.53	K1500CE	K1500CF	K1500CG	K1500CV K1500CH	5 sets of 2 O - rings 1 O-ring 1 O-ring
<b>O- rings for model ISC40FD-V</b> 39.35 x 2.62 / 26.57 x 3.53 44.17 X 1,78	K1500CX	K1500CW	K1500CY		5 sets of 3 O - rings
<b>O- rings for old model ISC40FD-V</b> 44.17 X 1,78		K1541ZS			5 O-rings
<b>O- rings for model ISC40FS /PSCJ /PCSA /FCSJ /FSCA</b> 40.64 x 5.33 / 26.57 x 3.53 56.52 x 5.33 40.64 x 5.33 26.57 x 3.53 56.52 x 5.33	K1500DF	K1500DE	K1500DG	K1500CD K1500CH K1500DH	5 sets of 3 O - rings  1 O-ring 1 O-ring 1 O-ring
<b>O- rings for model ISC40FS /SCSJ /SCSA /SCWN</b> 40.64 x 5.33 / 26.57 x 3.53 Ring NW50 40.64 x 5.33 26.57 x 3.53 53.34 x 5.33	K1500DB	K1500DA	K1500DC	K1500CD K1500CH K1500DD	5 sets of 3 O - rings  1 O-ring 1 O-ring 1 O-ring
<b>O- rings for model ISC40FS /S2WN</b> 40.87 x 3.53 / 26.57 x 2.62 2" seal-clamp	K1541ZH	K1500DJ	K1500DK		2 sets of 3 O-rings
<b>O- rings for model ISC40FS /STWN</b> 40.87 x 3.53 / 26.57 x 2. 62 3" seal-clamp	K1541ZK	K1500DL	K1500DM		2 sets of 3 O-rings
<b>O- rings for old model ISC40 PCSJ /PCSA /FSCJ /FSCA</b> 56.52 x 5.33		K1541ZM			5 O-rings
<b>O- rings for old model ISC40 SCSJ /SCSA /SCWN</b> NW25 / NW50		K1541ZJ			2 sets of 2 O - rings
<b>O- rings for old model ISC40 FD and FS</b> Viton gasket		K1500AM			5 O-rings

### 7. DIMENSIONS

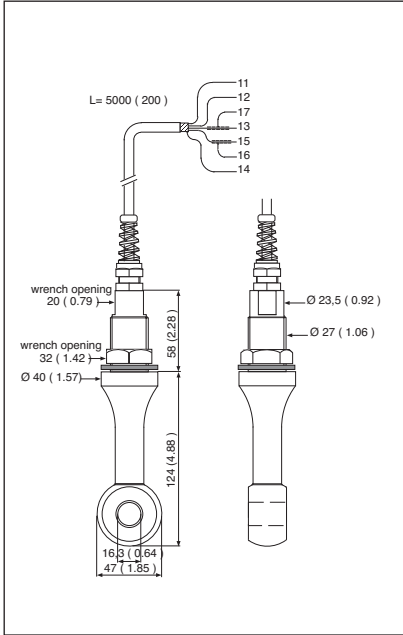


Fig. 7-1. Sensor

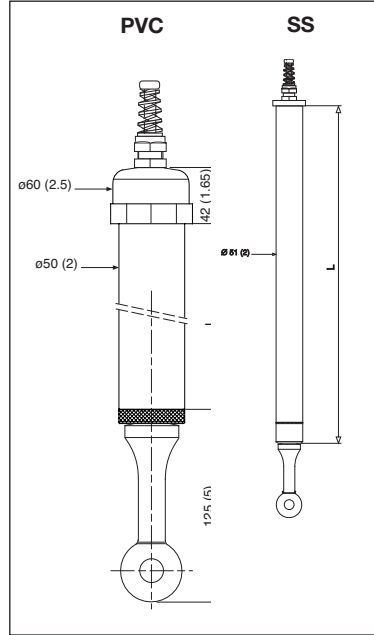


Fig. 7-2. Immersion fittings

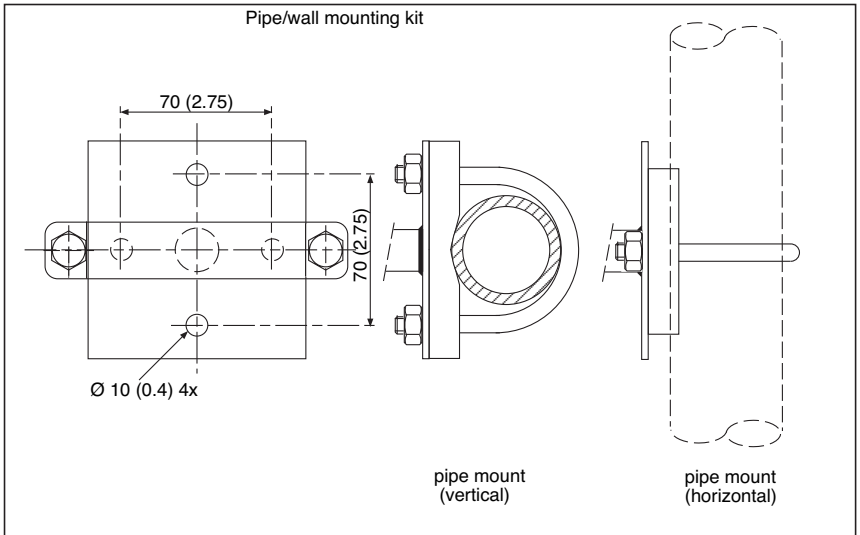


Fig. 7-3. Pipe/wall mounting kit

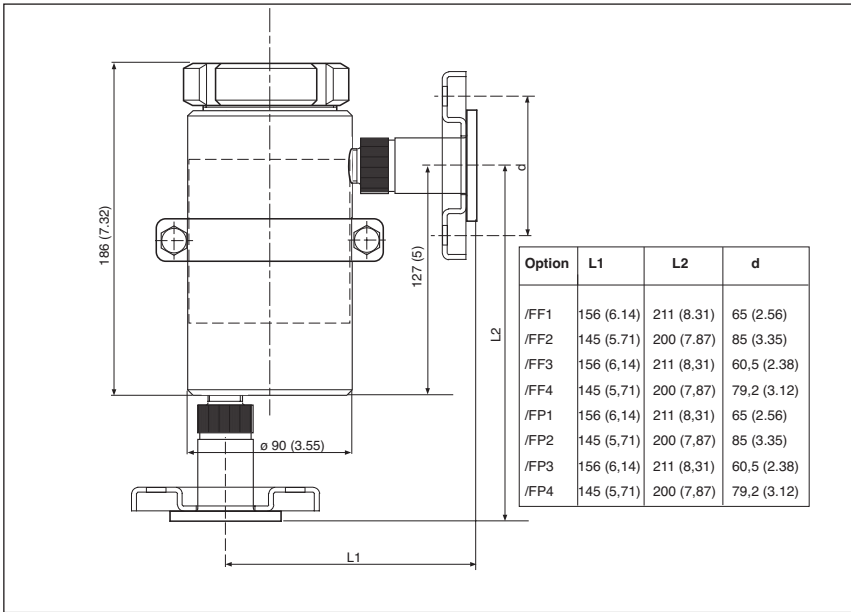


Fig. 7-4. Flow fittings PP/PVDF

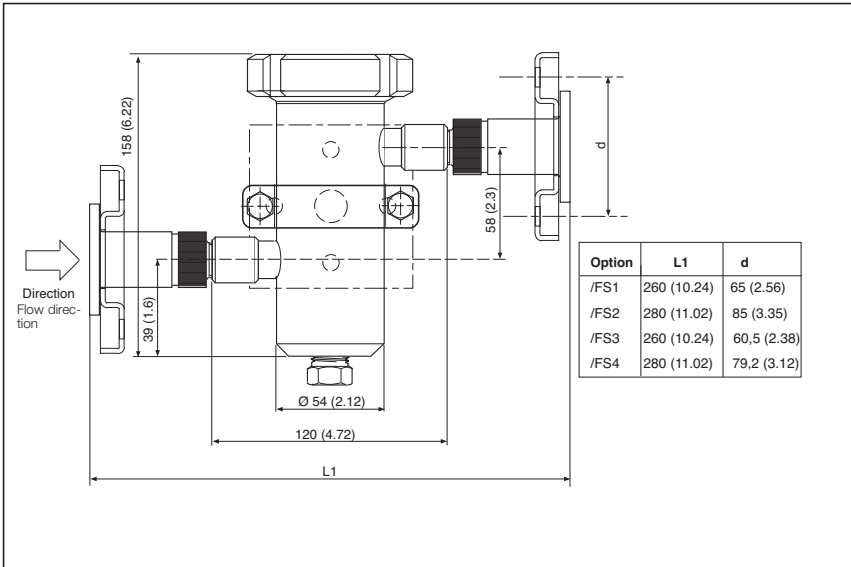


Fig. 7-5. Flow fittings SS

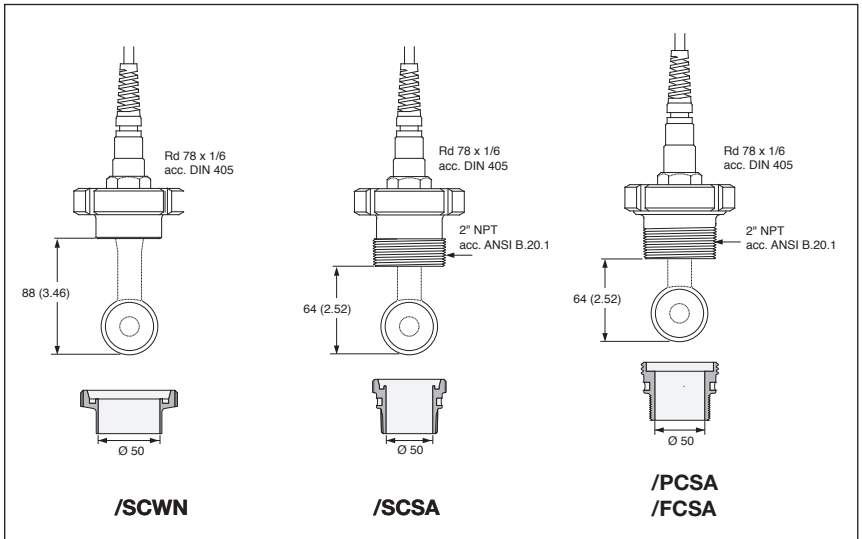


Fig. 7-6.

## Chemical Compatibility Chart

		Temp. °C % Conc.	Material						
			PVDF (Kynar)	S.S. 316	VITON	PEEK	PP	PVC	PFA
			20 60 100	20 60 100	20 60 100	20 60 100	20 60 100	20 60	20 60 100
Inorganic acid	Sulfuric acid	10	0 0 0	X X X	0 0 0	0 0 0	0 0	0 X	0 0 0
		50	0 0 0	X X X	0 0 0	0 0 X	0 0	0 0	0 0 0
		95	0 X -	X X X	0 0 0	- - -	X -	X X	0 0 0
		fuming	- - -	- - -	0 0 0	- - -	- -	- -	0 0 0
	Hydrochloric acid	10	0 0 0	- - -	0 0 0	0 0 X	0 0	0 X	0 0 0
		sat.	0 0 0	- - -		0 0 X	0 0	0 0	0 0 0
	Nitric acid	25	0 0 X	X X X	0 0 X	0 0 0	0 0	0 X	0 0 0
		50	0 0 X	X X X	- - -	X X X	X -	0 X	0 0 0
		95	0 X -	0 0 0	- - -	- - -	- -	- -	0 0 0
	fuming	- - -	0 0 0	- - -	- - -	- -	- -	0 0 0	
	Phosphoric acid	25	0 0 0	- - -	0 0 0	0 0 0	0 0	0 X	0 0 0
		50	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
95		0 0 0	0 0 0	X X -	0 0 0	0 0	0 0	0 0 0	
Hydrofluoric acid	40	0 0 0	- - -	0 0 0	- - -	0 0	0 X	0 0 0	
	75	0 0 0	- - -	0 0 0	- - -	0 0	X X	0 0 0	
Organic acid	Acetic acid	10	0 0 0	0 0 X	- - -	0 0 0	0 0	0 X	0 0 0
		glacial	0 X -	0 0 X	- - -	0 0 X	0 X	X X	0 0 0
	Formic acid	80	0 0 0	X X X	- - -	X X X	0 0	0 -	0 0 X
Citric acid	50	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0	
Alkali	Calcium hydroxide	sat.	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
	Potassium hydroxide	50	0 0 X	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
	Sodium hydroxide	40	0 0 X	0 0 0	X X X	0 0 0	0 0	0 X	0 0 0
	Ammonia in water	30	0 0 0	0 0 0	X X X	0 0 0	0 0	0 X	0 0 0
Acid salt	Ammonium chloride	sat.	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Zinc chloride	50	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Iron (III) chloride	50	0 0 0	- - -	0 0 0	0 0 0	0 0	0 0	0 0 0
Basic salt	Sodium sulfite	sat.	0 0 0	0 0 0	- - -	0 0 0	0 0	0 0	0 0 0
	Sodium carbonate	sat.	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
Neutral salt	Potassium chloride	sat.	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Sodium sulfate	sat.	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
	Calcium chloride	sat.	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Sodium chloride	sat.	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Sodium nitrate	50	0 0 0	X X X	0 0 0	0 0 0	0 0	0 0	0 0 0
	Aluminium chloride	sat.	0 0 0	- - -	0 0 0	0 0 0	0 0	0 0	0 0 0
Oxidizing agent	Hydrogen peroxide	30	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
	Sodium hypochloride	50	0 0 0	X X X	0 0 X	0 0 0	X X	X X	0 0 0
	Potassium dichromate	sat.	0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0
	Chlorinated lime		0 X -	X X X		X X X	- -	0 0	0 0 0
Organic solvent	Ethanol	80	0 0 X	0 0 0	X - -	0 0 0	0 0	0 X	0 0 0
	Cyclohexane		0 0 X	0 0 0	0 0 0	0 0 0	- -	0 0	0 0 0
	Toluene		0 0 0	0 0 0	- - -	0 0 0	X -	- -	0 0 0
	Trichloroethane		X X X	0 0 X	X X X	0 0 0	- -	- -	0 0 0
	Water		0 0 0	0 0 0	0 0 0	0 0 0	0 0	0 0	0 0 0

O = can be used,  
X = shortens useful life,  
- = cannot be used

**Note:** Information in this list is based on our general experience and literature data and given in good faith. However Yokogawa is unable to accept responsibility for claims related to this information.

## EC DECLARATION OF CONFORMITY

We: **YOKOGAWA EUROPE B.V.**  
**Euroweg 2, 3825 HD Amersfoort**  
**P.O. Box 163, 3800 AD Amersfoort**  
**The Netherlands**

herewith declare under our sole responsibility that the:

### **ISC40S inductive conductivity sensor**

Are in compliance with requirements of: Directive 94/9/EC Equipment and Protective Systems intended for use in potentially explosive atmospheres as amended by Regulation (EC) No 1882/2003:

The listed model conforms in this respect to the following standards:

**EN 50014: 1997**

Electrical apparatus for potentially explosive atmospheres -General Requirements;

**EN 50020: 1994**

Electrical apparatus for potentially explosive atmospheres – Intrinsically Safety "I";

**EN 50284: 1999**

Electrical apparatus for potentially explosive atmospheres – Special requirements for construction test and marking of electric apparatus of equipment group II Category 1G;

The revised Harmonized Standards EN 60079-0:2006; EN 60079-11:2007; EN 60079-26:2006 have been compared to the standards used for certification purposes and no change in the "state of the art" applies to the equipment.

The provisions fulfilled are:

**II 1 G EEx ia IIC T6**

Name of the notified body: N.V. KEMA

Identification number of the notified body: 0344

Address of the notified body: Utrechtseweg 310, 6812 AR Arnhem, The Netherlands

Number of the EC-type Examination Certificate: KEMA 00ATEX1067 X

Subject products are manufactured and tested in accordance with appropriate quality control procedures.

Amersfoort, 12 July 2010



**H.A.A. Leijten**  
**General Manager**  
**Yokogawa Process Analysers**

**Yokogawa Europe B.V.**





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