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# Instruction Manual

Models FD30 / PB30  
Fittings for the DO30G

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## 1. Introduction

To support the Yokogawa Model DO30G sensor for measuring dissolved Oxygen, two types of sensor holders are offered; an immersion fitting (Model FD30V27) and a floating ball fitting (Model PB30). Both fittings are intended for mounting the DO30G in a tank, measuring either on the surface or sub-surface of the process liquid.

The type of sensor holder, as well as the point of installation, should be selected to allow measurement in a location where the measurement truly represents the entire solution. Avoid areas where the measurement value varies significantly e.g. stagnant corners. Select a place where the sensor is always immersed in the process liquid.

Properties of the sensor holders are:

### Model FD30V70

- Sub-surface measurement of dissolved Oxygen
- Available in different pipe-lengths – i.e. 40mm outer diameter
- Available with a metric to inch adapter – i.e. 40 to 42mm outer diameter (standard 1¼" pipe)
- Standard equipped with membrane check-facility
- Available in flanged and non-flanged version
- Optional Jet Cleaning (JC Option) for avoiding fouling of the membrane
- Optional Mounting Set (MS1 Option) for convenient mounting)

### Model PB30

- Designed for minimal user maintenance
- Good flow of sample at the membrane due to wave action and constant ball movement
- Constant measurement depth
- Standard equipped with membrane check-facility
- Shipped including a winch mounting mechanism

## 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 organization 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 organization 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 organization 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 organization for repair or replacement and the returned material should be accompanied by a letter of transmittal, which should include the following information:

- Part number, Model code and Serial number
- Date and number of sales order
- Length of time of service and type of service
- Description of the faulty operation of the device and the circumstances of the failure
- Pressure, temperature, process composition and all other process conditions or environmental circumstances which are related to the installation and possibly failure of the device
- Statement as to whether warranty or non-warranty service is requested
- 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.

## 4. General specifications

### 4.1 Model FD30 Immersion Fitting

#### Wetted materials

- Body & flange : Polyvinylchloride (PVC)
- O-rings : Silicone rubber
- Blanking plug : Ryton R4 (remove before use!)
- Conductive bushing : Brass

#### Temperature

- Minimum : -10 °C
- Maximum : +50 °C

#### Pressure

: 2 bar max.

#### Immersion length

: 0.5 to 2.0 m (10 cm steps) When ordered as a subassembly (pipe length 00), a tube with PVC cement will be delivered with the holder

#### Weight

- Without flange : 1.35 kg + 0.2 kg per 0.5 meter
- With flange : 0.5 kg extra

#### Options

- Sensor/cable : See DO30G
- Flexible conduit : PVC and Nylon
  - Option /PH5 : 5 meter protection hose
  - Option /PH10 : 10 meter protection hose
- Jet cleaner (Option /JC) : Materials: PVC, Nylon, PVDF and PTFE
  - Temperature: as FD30
  - Pressure: as FD30
  - Immersion length: nominal + 4 cm
- Mounting set (Option /MS1) : Material; Galvanized steel

## Model and Suffix code

### Immersion Fitting

Model	Suffix	Option	Description
FD30V27			Immersion Fitting PVC
Immersion length	-00 -xx		Pipe supplied by user Between 0.5 and 2.0 (in steps of 0.1m) Example: 06 = 0.6 m
Mounting flange	-FN -F1 -F2		No flange DIN DN50 PN10 ANSI 2" 150 lbs
	*A		Style A
Protection hose		/PH5 /PH10	5 meter 10 mtr
Jet Cleaner		/JC	*
Mounting set		/MS1	*

\* Not available with flanged versions.

### 4.2 Model PB30 Floating Ball Fitting

**Wetted materials** : High impact polystyrene, PVC & Brass

**Temperature** : 0-40 °C

**Mounting bracket** : Galvanized steel, for rail, or surface mounting

**Sensor/cable** : See DO30G

#### Shipping details

- Weight : 12.5 kg Approx.
- Package size : 490 x 320 x 340 mm
- Main support arm : 2.5 m

## Model and Suffix Codes

### Floating Ball

Model	Suffix Code	Description
PB30		Floating Ball Fitting
Pipe length	-00 -25	Pipe supplied by user 2.5 meter
Sensor type	-SNN	No sensor
Cable length	-00	No cable

## 5. Installation

### 5.1 General

It is important to have the point of measurement in a location that is representing the process composition. Check whether the specifications of the sensor/fitting/holder fulfill the maximum occurring process conditions. Install the fitting in a place where it can be maintained and calibrated safely and easily. After installation of the sensor it may need several hours to stabilize readings. Stabilization can take up to 24 hours.

### ATTENTION

Do not insert the fitting/holder into the process without the sensor mounted, to avoid the cable leads becoming wet.

### 5.2 Assembling and mounting of the immersion fitting

#### 5.2.1 Checklist

The FD30V27-xx-FN fittings will be delivered completely assembled. Flanges (suffix code -F1 or -F2) and options will be delivered separately. The FD30V27-00 version will be delivered in parts excluding the pipe (see Figure 1). The holder piece (3) and the top piece (1a/b) have an internal diameter suitable for both 40 mm and 11/4" customer's pipe. The jet cleaning (option /JC) will be delivered as indicated in Figure 2.

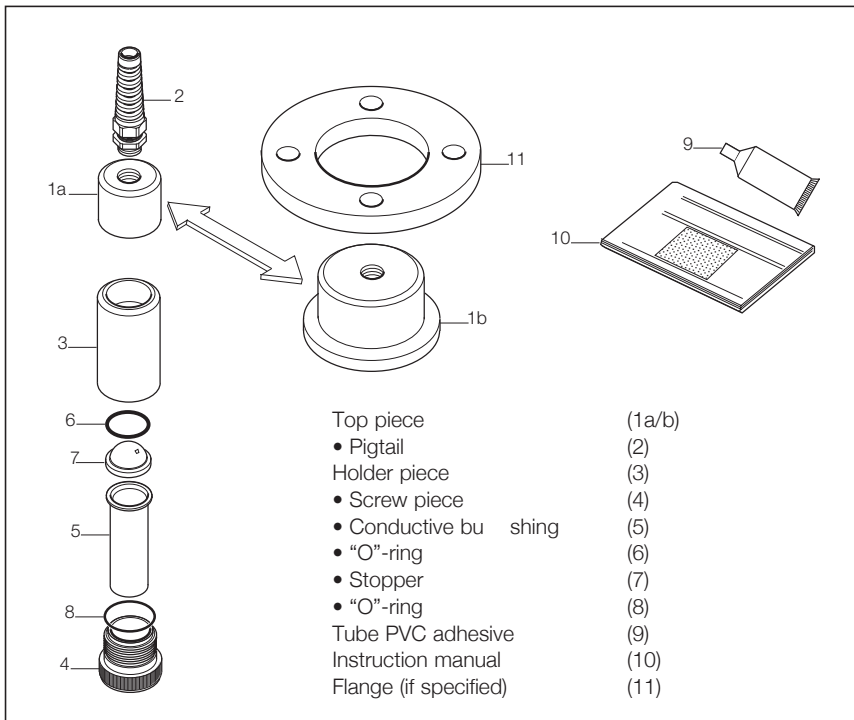
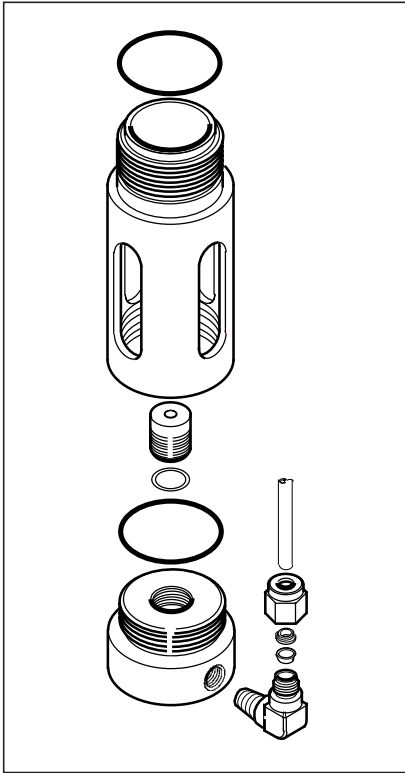


Figure 1



**Figure 2**

### 5.2.2 Preparing the immersion fitting

Prepare the immersion fitting by unscrewing the screw piece (4) from the bottom of the fitting. Remove the stopper (7), which can be discarded, and the conductive bushing (5). The screw piece will be used to fix the DO sensor in the fitting. When a flexible conduit (protecting hose) will be used, the pigtail part (2) can also be discarded. When an immersion fitting with cleaner is used the cleaning cage will be used to fix the DO-sensor. In that case the screw piece can also be discarded. In case of a FD30V27-00 version the top piece and the holder piece should be mounted on the customers pipe using the supplied adhesive. Ensure that the sealing will be watertight.

### 5.2.3 Mounting the sensor in the immersion fitting

Pull the sensor cable through the O-ring into the fitting and through the pigtail (see Figure 3). In case a flexible conduit will be used please remove the pigtail and follow the instructions delivered with the protecting hose option. Push the O-ring over the cable assembly until it lies on the knurled ring. Plug the cable assembly into the sensor body, if this was not performed before. Secure the cable assembly with the knurled ring. Place the sensor in the fitting and put the bushing (essential for sensor diagnostics) around the sensor as far as it will go. Then screw the screw piece, or the cleaning cage, in again. This will fix the sensor in place by compressing the O-ring. Tighten the pigtail at the top of the fitting.

### 5.2.4 Mounting the sensor cleaner (/JC option)

- After fixing the sensor with the cleaning cage it is possible to screw the cleaner tubing on the cage using the swage lock coupling material provided with the cleaner.
- It is recommended to fix the tubing to the holder using tie wraps.
- Keep some flexible length of tubing for ease of maintenance.

The cleaner can be used for both water and air. It is recommended to use a solenoid valve of the normally closed type with matching connections. The solenoid valve can be switched with the wash contact of the EXA DO-converter.

### 5.3 Installing the floating ball fitting

#### 5.3.1 Checklist

The floating ball fitting with sensor for Dissolved Oxygen will be delivered in parts and has to be assembled before it can be used. Check if all standard parts are delivered, see Figure 4. Please note that items (4) and (2 + 6) are optional and, if not specified with the order, these parts will not be delivered. The position ring (9) will only be received when PB30-00. is ordered. This part is only needed when 1 1/2" pipe will be used in stead of 50 mm.

#### 5.3.2 Installation

Mount the floating ball not exactly vertical, but under a slight angle, so that air bubbles do not 'stick' or adhere to the membrane.

#### 5.3.3 Assembling the floating ball fitting (ref to Figure 4)

- Attach the mounting bracket (1) to wall or pipe; clamps are already fixed to the bracket.
- Install the main support arm (2) (in case of PB30-00... the customers pipe), in the mounting bracket (1) and adjust its length to the desired length.
- Use the supplied adhesive (7) to stick the lower support to the main support arm (2). When a 1 1/2" pipe is used, the position ring (10) must be mounted in between them to compensate for the difference.
- Attach (not for PB30-00...) the 90° elbow (6) to the upper end of the main support arm and cement it with adhesive (7).
- Guide the cable assembly (4) through the main support arm.
- Position the complete sensor (4) in the lower support.
- Place the lower support (3) into the ball (8) by screwing the fixing nut hand-tight.
- Connect the leads of the cable to the EXA DO converter.

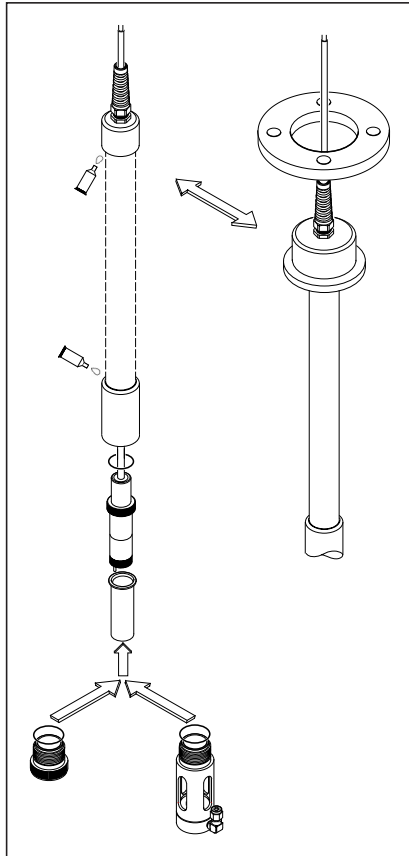


Figure 3



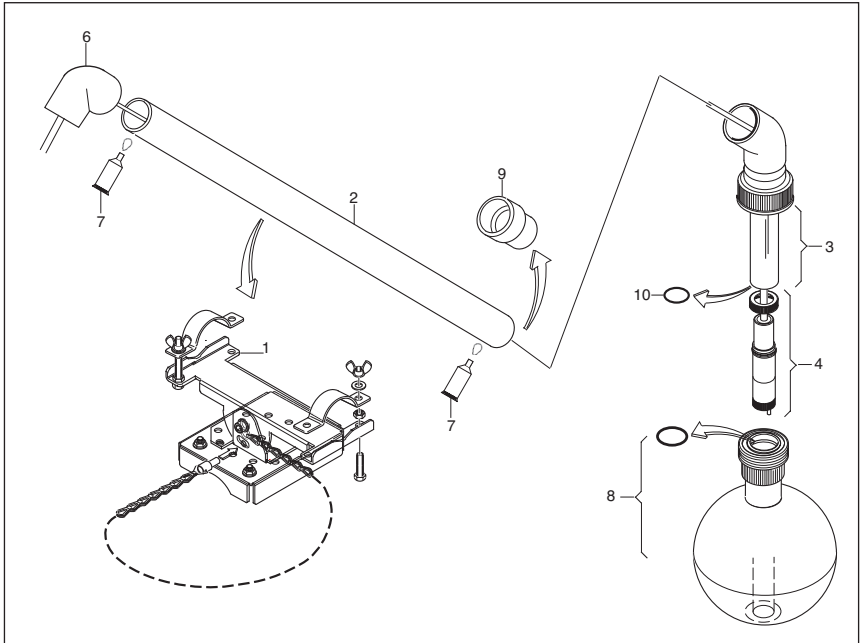


Figure 4

## 6. Spare parts

### 6.1 Model FD30V27 Immersion Fitting

Item	Description	Spare part no
6	5 x O-ring	K1500FX
8	5 x O-ring	K1500FY

### 6.2 Sensor Cleaner (/JC option)

Item	Description	Spare part no
1	5 x O-ring 37.7 X 2.6 for mounting sensor in fitting	K1500FY
2	Holder	
3+4	Nozzle parts	K1500AZ
7	10m tubing (1/4 ") for jet cleaner	K1530UL
3,4,6	Spray nozzle for jet cleaner	K1530UK

### 6.3 Model PB30 Floating Ball Fitting

Item	Description	Spare part no
1	Mounting bracket	K1530DQ
2	Main support arm	
3	Lower support arm with O-ring	K1530QA
4	DO30G sensor	See DO30G
6	Elbow 90°	
7	Tube PVC adhesive	
8	Floating ball assembly with O-ring	K1530SA
9	Position ring	
10	O-ring 25.3 x 3.2 Viton 70° shore	K1500AV (5x)

**Dimensions**

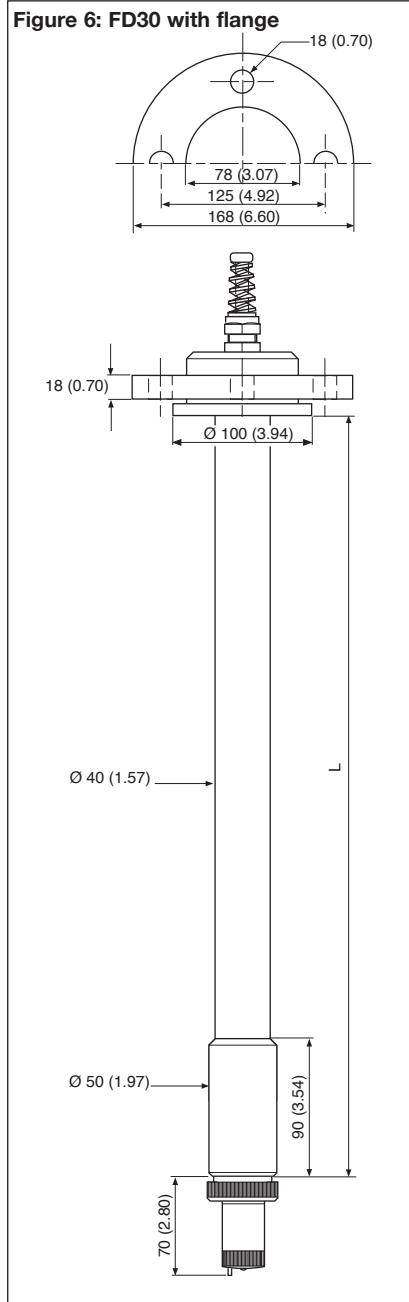
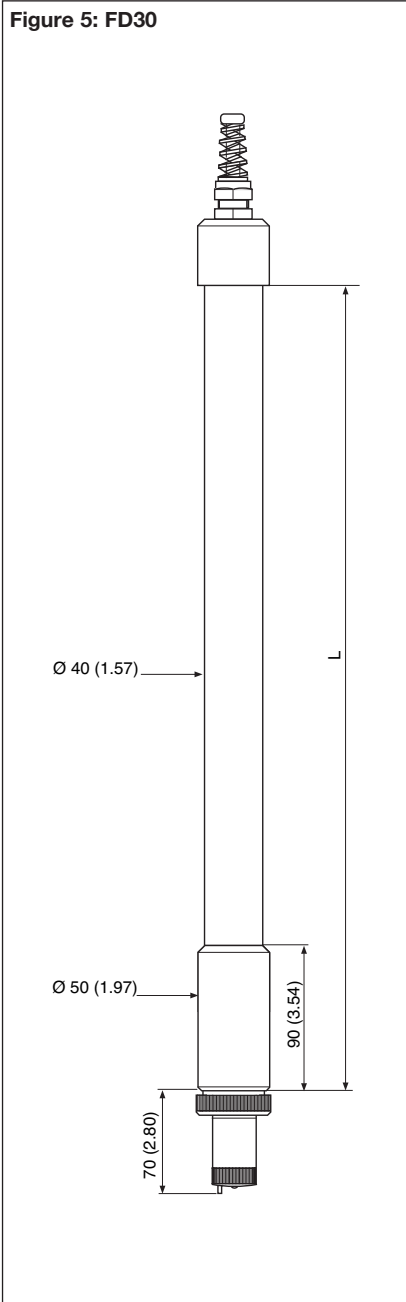


Figure 7: Option /MS1

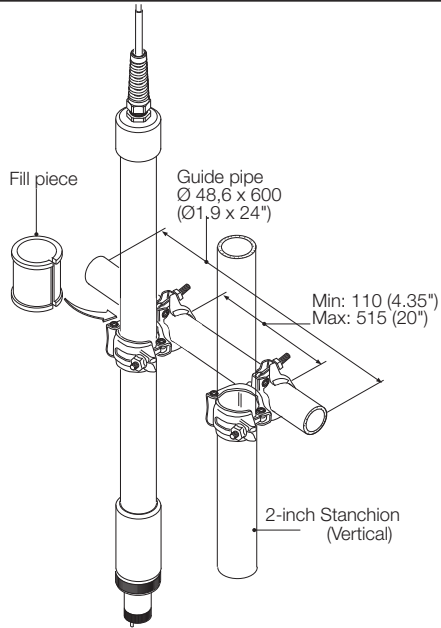
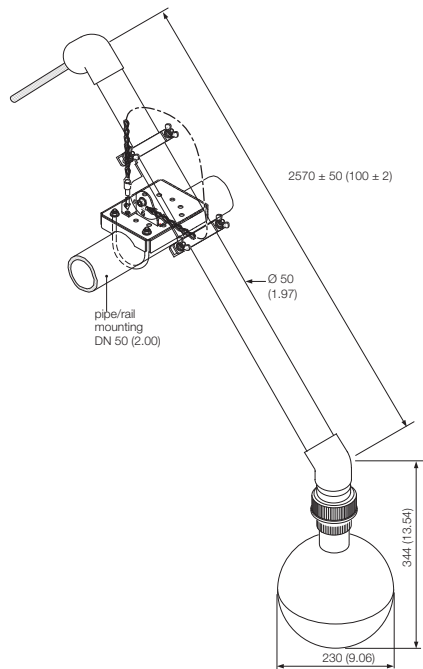
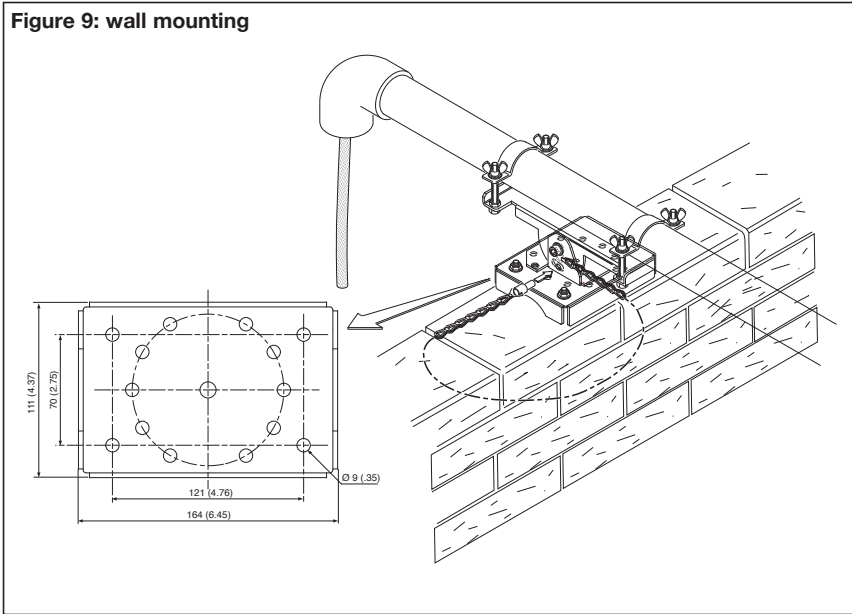


Figure 8: PB30 rail mounting



**Figure 9: wall mounting**



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