



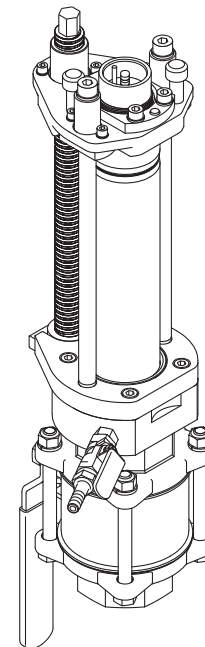
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Operating Manual

WA 700/10



Retractable armature (10 bar)

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Note
For the most recent version of the manual, please visit www.ysi.com.

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7 Contact Information

7.1 Ordering & Technical Support

Telephone: (800) 897-4151
(937) 767-7241
Monday through Friday, 8:00 AM to 5:00 PM ET

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Internet: www.ysi.com

When placing an order please have the following information available:
YSI account number (if available) Name and Phone Number
Model number or brief description Billing and shipping address
Quantity Purchase Order or Credit Card

7.2 Service Information

YSI has authorized service centers throughout the United States and Internationally. For the nearest service center information, please visit www.ysi.com and click 'Support' or contact YSI Technical Support directly at 800-897-4151.

When returning a product for service, include the Product Return form with cleaning certification. The form must be completely filled out for an YSI Service Center to accept the instrument for service. The Product Return form may be downloaded at www.ysi.com and clicking on the 'Support' tab.

Connections	Connection for weld-in socket	G2" internal thread
	Rinsing connection	G1/4" internal thread, closed with blank stopper and O-ring
	Outlet of ventilating stopcock	8 mm hose coupling
Materials	Housing components, flanges, sensor holding plate	Stainless steel 1.4571 and high strength aluminum alloy AlMgCu1.5F53
	All medium-contacting metal parts	Stainless steel 1.4571 and stainless steel 1.4408
	O-rings	FPM (Viton)
	Ball valves:	
	– Housing components	– Stainless steel 1.4408
	– Seals	– PTFE (Teflon)
	– Screws	– Stainless steel V4A
Sockets	Gunmetal RG7	
Trapezoid spindle	Stainless steel 1.4404	

1 Overview

1.1 Structure and function

Structure of the retractable armature with built-in sensor (e.g. VisoTurb 700 IQ)

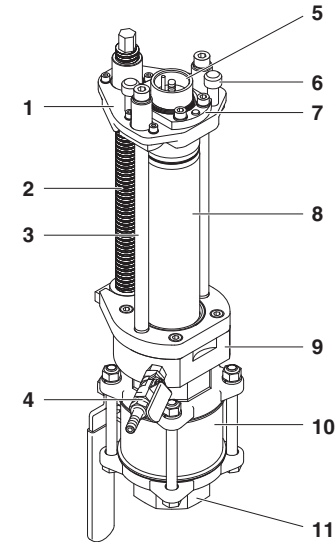


Fig. 1-1 Overview of the retractable armature, WA 700/10

1	Sensor holding plate
2	Spindle drive to insert and retract the sensor
3	Guide bars
4	Small ball valve (ventilating stopcock)
5	Sensor
6	Safety bolt
7	Sensor adapter, specifically for the sensor type
8	Sensor receiving tube
9	Ball valve adapter
10	Large ball valve (stopcock)
11	Connection for weld-in socket

Features

The WA 700/10 retractable armature is used for the installation of YSI online sensors in a pressure tank or pipeline. In addition, the sensor can be removed for calibration or maintenance, without having to make the container or the pipe pressurised. Thus, the process does not need to be interrupted, and the pipeline does not have to be shut off.

A large number of different YSI online sensors can be used with the aid of various adapters.

Function

The armature operates according to the elevation principle. To exchange the sensor, the sensor is retracted using a hand-driven spindle and the large ballcock is closed. The armature can then be vented and the sensor removed.

In addition, the armature is configured for the connection of a rinsing appliance. To rinse the sensor, it is moved out of the container/pipeline and the large ball valve is closed. The armature and the sensor head are then rinsed with a cleaning solution. The process does not need to be interrupted and the sensor does not need to be removed.

1.2 Recommended fields of application

Stationary measurements in pressure tanks and pipelines, particularly in water/wastewater applications.

6 Technical data

Fulfills the requirements according to Article 3(3) of the Guideline 97/23/E.C. ("Pressure instrument guidelines").

Instrument safety

Space required

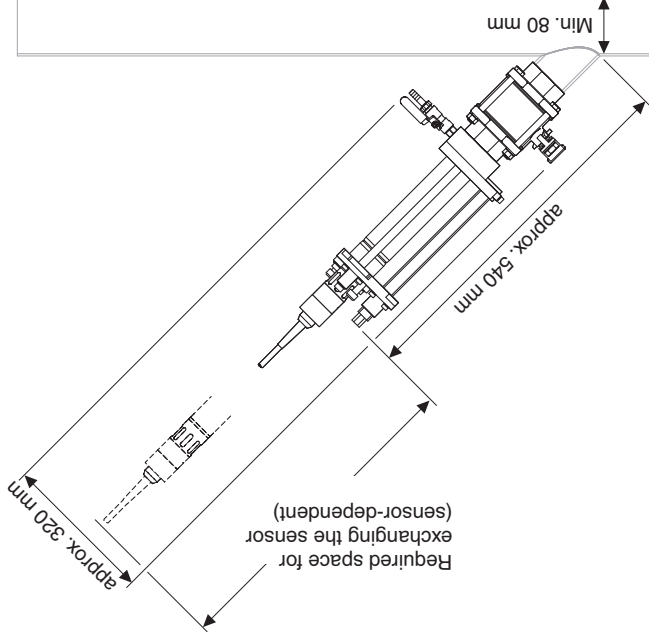


Fig. 6-1 Dimension drawing of the WA 700/10

Operating pressure

Pressure difference
 $P_{inner} - P_{outer}$

Min. $-9 \cdot 10^4$ Pa
(0.9 bar negative pressure)
Max. $+10^6$ Pa
(10 bar overpressure)

Operating temperature

0 ... +60 °C (32 ... 140 °F), frost-free

Ambient temperature

0 ... +60 °C (32 ... 140 °F), frost-free

Storage temperature

-20 ... +60 °C (-4 ... 140 °F), dry

Weight

Approx. 10 kg

5.2 Cleaning

Pollution in the inside of the armature, in particular on the O-rings and on the sealing surfaces, can lead to leakages. After visual inspection, clean the inside with a brush and the following cleaning agents:

Cleaning	Contamination	Cleaning agents	Reaction time at room temperature
	Water-soluble substances	Tap water	Any
	Greases and oils	<ul style="list-style-type: none"> – Warm water and household detergents; – In the case of heavy pollution: Methylated spirits 	<ul style="list-style-type: none"> – Any – Maximum of 5 minutes <p><u>Note</u> If necessary, regrease the O-rings after cleaning.</p>
	Lime deposits and hydroxide coatings	Acetic acid (10 %)	Any

2 Safety instructions

This operating manual contains essential instructions that must be followed during the commissioning, operation and maintenance of the instrument. Consequently, all responsible personnel must read this operating manual carefully before working with the instrument. The operating manual must always be kept available within the vicinity of the instrument.

Safety instructions in this operating manual are indicated by the warning symbol (triangle) in the left column. The signal word (e.g. "Caution") indicates the danger level:

General safety instructions



Other labels



Warning indicates instructions that must be followed precisely in order to prevent serious danger to personnel.

Caution indicates instructions that must be followed precisely in order to avoid slight injuries to personnel or damage to the instrument or the environment.

Note indicates notes that draw your attention to special features.

Note indicates cross-references to other documents, e.g. component operating manuals.

2.1 Authorized use

Authorized use consists exclusively of the use of the armature in the installation of YSI online sensors in pressure tanks or pipelines. Please adhere to the technical specifications given in chapter 6 TECHNICAL DATA. Any other use is considered to be **unauthorized**.

2.2 Instrument identification

The name label and the maximum operational limits for pressure and temperature are engraved on the sensor holding plate. The eight-digit series number and the year of manufacture appear on a label on the side of the ball valve adapter (Fig. 2-1):

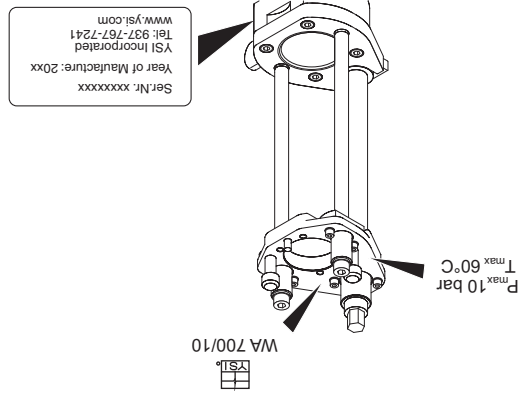


Fig. 2-1 Details of the instrument identification on the armature

2.3 General safety instructions

The failure-free function and operational safety of the instrument is only guaranteed if the generally applicable safety measures and the special safety instructions in this operating manual are followed during its use.

The failure-free function and operational safety of the WA 700/10 are only guaranteed within the operational limits under the environmental conditions that are specified in chapter 6 TECHNICAL DATA.

If safe operation is no longer possible, the instrument must be taken out of operation and secured against inadvertent operation.

- has been damaged during transport
- has been stored under adverse conditions for a lengthy period of time
- is visibly damaged
- no longer operates as prescribed.

If you are in any doubt, contact the supplier of your instrument.

Function and operational safety

Safe operation

5 Maintenance and cleaning

5.1 Maintenance

The following table provides an overview of the maintenance activities. The intervals are recommended values only. Depending on the condition of the armature (e.g. frequency of the sensor change), the intervals can be changed accordingly.

Maintenance schedule

Interval	Maintenance activities
Every six months	Grease the O-rings in the receiving tube and in the ball valve adapter with the supplied joint grease
Every six months	Lubricate the spindle, spindle bearing and guide rods with lubricant grease.
Every six months	Suitable lubricant grease: Manufacturer: Fuchs Lubritech GmbH, Germany (or similar lubricant grease)
Every six months	Visual inspection: - Check the state of the O-rings (pollution, cracks, deformation). If necessary, clean or replace the O-rings - Check the state of the sealing surfaces. If necessary, clean the sealing surfaces (For details of cleaning, see section 5.2) - Check that the ventilating stop-cock is clean, and, if necessary, clean it (for details of cleaning, see section 5.2)
Every six months	Check that the ventilating stop-cock is clean, and, if necessary, clean it (for details of cleaning, see section 5.2)

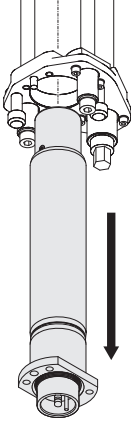
Obligations of the operator

The WA 700/10 was developed for use in pressure tanks and pipelines. The operator of the WA 700/10 must ensure:

- that only trained qualified personnel carry out installation activities,
- that the operating limits for pressure and temperature are strictly observed at all times,
- that the armature only comes into contact with media that cannot corrode the materials of the armature (for details of the materials, see chapter 6 TECHNICAL DATA),
- that no high external tensile or compressive loads are applied to the armature,
- that the personnel is familiar with the hazards of pressure tanks and pipelines, and the safe handling of armatures,
- that the personnel is familiar with the hazards that can result from the measuring media (biological/chemical properties, temperature), and, if necessary, know how to proceed when dealing with dangerous substances.

Installing the sensor

The installation is described in detail in chapter 3 from page 11. After the installation, bring the sensor into the processing position again (see section 4.1).



6 Pull the sensor out. At the same time, guide the sensor adapter past the safety bolts by rotating it slightly.

7 Check the state of the inside of the armature. If necessary, rinse out the armature again. Remove any particles of grime from the O-rings.

Removing the sensor



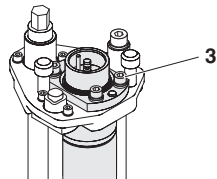
Caution

Danger from spraying measuring medium/rinsing solution. If the armature is operated incorrectly, measuring medium/rinsing solution can escape from the armature as a fierce jet. Depending on its properties (chemical/biological properties, temperature), this could lead to serious physical injury. In addition, danger can arise from residual measuring medium/rinsing solution on the sensor and in the armature.

In any case, before loosening the screws on the sensor adapter, make sure that:

- the large ball valve is completely closed (sensor in changing position),
- the supply to the rinsing appliance is discontinued.

Depending on the measuring medium/rinsing solution, suitable precautions must be taken to protect the operator against any contact (protective goggles, protective gloves, etc.).



- 5 Undo and remove the four screws (pos. 3) on the sensor adapter.



Caution

If the last screw can only be loosened with difficulty, the armature could possibly still be under pressure. In this case, check that the position of the ball valves is correct (changing position).

3 Commissioning

3.1 Scope of delivery

Scope of delivery of the WA 700/10:

- Retractable armature with short operating manual
- Receiving tube
- Retaining ring, 2-part
- Operating manual
- Tube of joint grease

3.2 Required components

In addition to the retractable armature, the following components are required for the installation and fitting of a sensor:

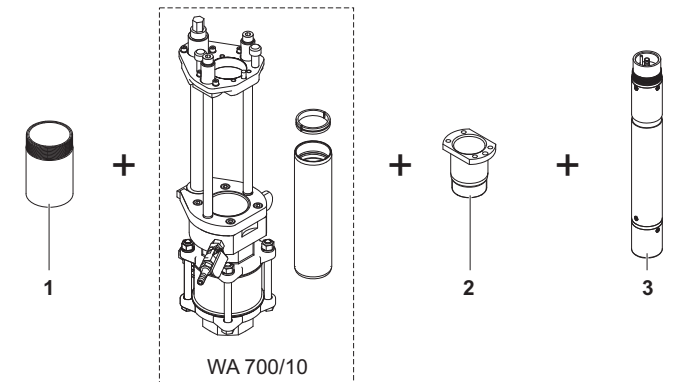


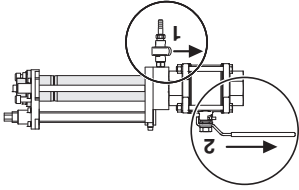
Fig. 3-1 Components required for installation

1	Weld-in socket, depending on the material of the tank or pipeline
2	Sensor adapter, specific to the sensor type (example)
3	Sensor (example)

4 Operation

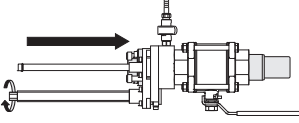
4.1 Bringing the sensor into the measuring position

- 1 If necessary, discontinue the supply to the rinsing appliance.
- 2 Completely close the small ball valve (pos. 1).
- 3 Completely open the large ball valve (pos. 2).



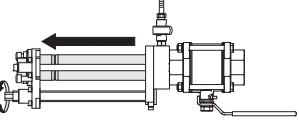
Caution
Before the sensor is moved in, ensure that the large ball valve is completely open. Otherwise, the sensor will move against the closed ball valve and could be damaged.

- 4 Moving the sensor in:
Using a wrench (wrench size 13), turn the spindle anticlockwise up to the stop.



4.2 Changing the sensor

- 1 Moving the sensor out:
Using a wrench, turn the spindle clockwise up to the stop.



Bringing the sensor into the changing position

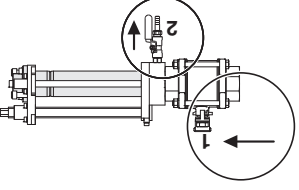
- 2 Completely open the small ball valve (pos. 1).

- 3 Completely close the large ball valve (pos. 2).

Caution: Overpressure is possible!

- 4 If necessary, rinse the retractable armature with the aid of the rinsing appliance. Then, discontinue the supply to the rinsing appliance.

The sensor is now in the changing position.



3.3 Installation

3.3.1 Welding the weld-in socket into place

Warning
Improper welding of the weld-in socket can lead to severe injury to personnel and damage to property. Note the following points in this regard:

- Only allow trained qualified personnel to carry out mounting activities.
- Only carry out welding activities when the armature has been unscrewed. The effect of heat could damage the armature.

Note
Further instructions for installation are given in the mounting instructions of the weld-in socket.



3.3.2 Installing the ventilating stopcock/rinsing appliance

The ventilating stopcock is used primarily to release any residual pressure before the sensor is removed. However, the ventilating stopcock can also be used as the exhaust valve of a rinsing appliance.

Caution
Connect the open end of the ventilating stopcock with a tube placed in a suitable discharge or collecting container. Depending on the measuring medium and rinsing solution, suitable precautions must be provided to protect the operator against any contact. If necessary, personnel must wear protective clothing (protective goggles, protective gloves, etc.).



Rinsing appliance (option)

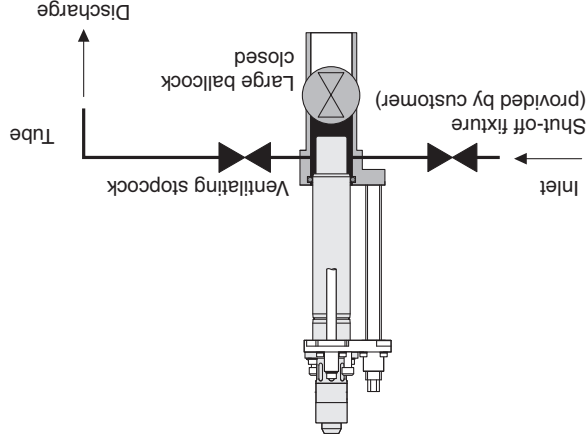


Fig. 3-2 Basic structure of the rinsing appliance

There is a connection on the opposite side of the ventilating stopcock that is closed with a G1/4" threaded stopper and O-ring when it is delivered. The sensor head and the armature can be rinsed with clean water or cleaning agents via this connection. The rinsing solution is drained off via the ventilating stopcock.



Caution

The inlet of the rinsing appliance must be equipped with a shut-off fixture. Otherwise, measuring medium can escape into the inlet of the rinsing appliance.

3.3.3 Screwing the retractable armature onto the weld-in socket

The connection between the retractable armature and weld-in socket consists of a G2" screw thread. Screw the armature up to the stop onto the weld-in socket. Seal the screw thread with the customary pipe sealing products. We recommend sealing with the liquid pipe thread sealant, Loctite 577 (follow the manufacturer's instructions for use).

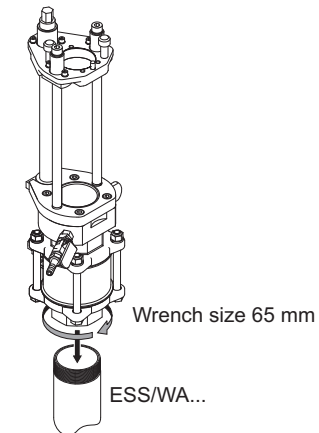


Fig. 3-3 Screwing on the retractable armature

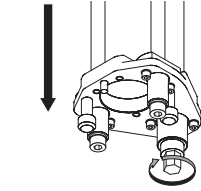


Warning

Danger of escaping measuring medium. Before subjecting the container or the pipeline to pressure, close the large ball valve.

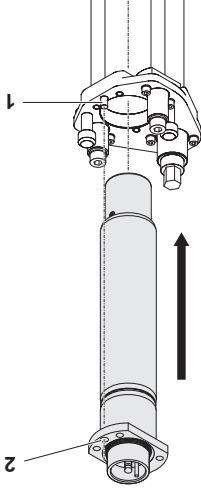
1 Move the armature fully out:

Using a wrench (wrench size 13), turn the spindle clockwise up to the stop.

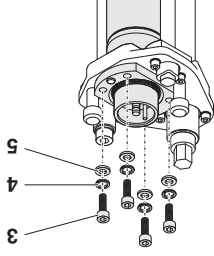


Installing the sensor

2 Push the ready-to-install sensor into the retractable armature up to the stop. At the same time, guide the sensor adapter past the safety bolts by rotating it slightly. In the final position, the locking bolt (pos. 1) must click into the drilled hole (pos. 2).



3 Fix the sensor adapter into place with the screws (pos. 3), spring washers (pos. 4) and washers (pos. 5). Starting torque 4 Nm.



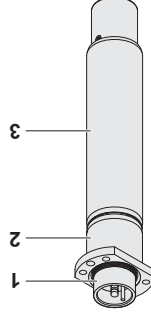
Note
The armature must be screwed on up to the stop to ensure the correct position of the sensor. If, while doing so, the lever of the large ball valve or the ventilating stopcock is unfavorably oriented (e.g. difficult to access), the housing of the large ball valve can be taken apart and remounted again with the two flanges displaced by 90°. When reassembling, make sure that the flanges are absolutely flush with the ball valve.



The sensor is installed in the receiving tube of the retractable armature with the aid of a sensor-specific sensor adapter.

Note
The installation of the sensor in the sensor adapter is described in the mounting instructions of the sensor adapter. This manual also contains special installation recommendations for typical applications of the sensor.

**Ready-to-install sensor:
Example:
VisoTurb 700 IQ**



3.3.4 Installing the sensor

1	Sensor
2	Sensor adapter, ADA-WA ...
3	Receiving tube

Fig. 3-4 Ready-to-install sensor - e.g. VisoTurb 700 IQ