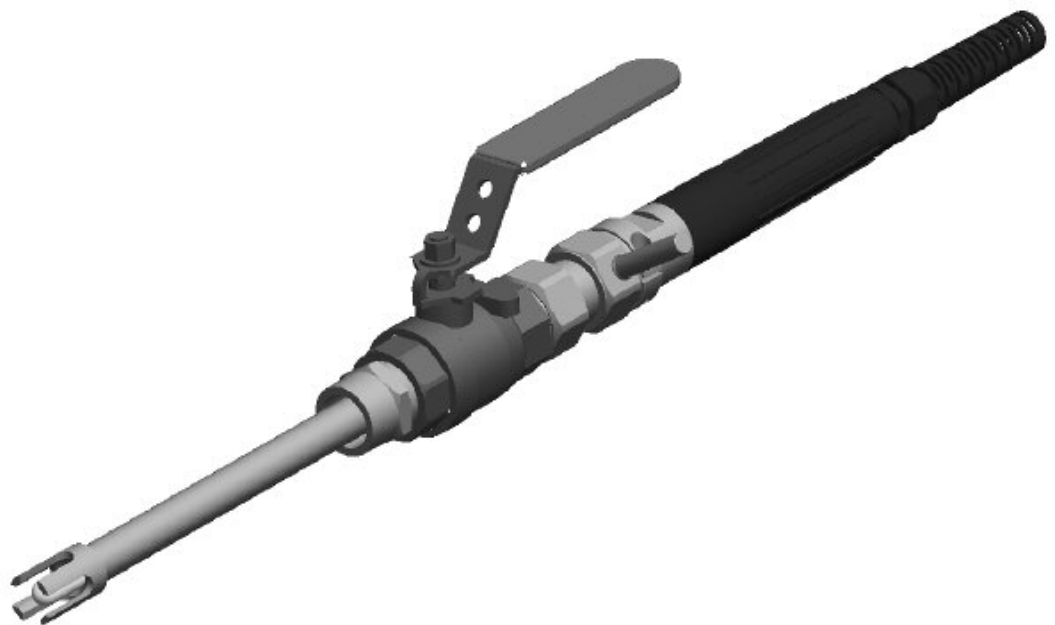


METTLER TOLEDO

InTrac[®] 785

Instruction manual



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InTrac® 785

Instruction manual

Product and maintenance log

Product name : _____

Article no. : _____

Serial no. : _____

A logbook of activities should be maintained for the above-mentioned product, recording all data about events, adopted measures, manipulations etc. relative to the product, such as checking of the shipment, initial installation, service/maintenance, repair work, startup and shutdown etc.

How to use this instruction manual

This Instruction manual is an integral part of the METTLER TOLEDO retractable housing InTrac 785 and contains notes and instructions that are important for safety and operation.

All persons working on or with the InTrac 785 must have first read and understood the Sections appropriate to the work in hand.

Please read this Instruction manual carefully before using the InTrac housing. Keep this document close to the unit, so that operating personnel may easily be able to refer to it at any time.



Caution! Please first read Section 1 «Introduction» and Section 2 «Safety instructions».

Proprietary designations

The following are proprietary names and, for the sake of simplicity, will be mentioned in this Instruction manual without the registration marking, e.g. ®.

- InTrac® is a registered trade mark of Mettler-Toledo GmbH, CH-8606 Greifensee, Switzerland.
- Viton® and Kalrez® are registered trademarks of DuPont.

Use of warnings and symbols



Danger! Warning of a danger that can lead to extensive material damage, to death or grave bodily injury.



Caution! Warning of a possible dangerous situation that can lead to light bodily harm and/or material damage.



Attention: Information referring to technical requirements. Non-adherence can lead to malfunctions, uneconomic working and possibly also to loss of productivity.

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1 Introduction

- The retractable housing InTrac785 is safe to operate. When used correctly, it represents no danger.
- Before starting to use the housing, carefully read this instruction manual: the safety precautions and warnings contained in it must be observed.
- The retractable housing has been tested by METTLER TOLEDO and dispatched ready for installation.

In addition to this instruction manual please also note the following:

- all local safety regulations concerning the execution of pneumatic and water installations.
- all instructions and warning remarks in the publications of the products that are used in conjunction with the retractable housing (electrodes, sensors, controls, etc.).
- all safety precautions for the plant into which the retractable housing will be installed.
- all instructions and warnings labeled on the retractable housing.

2 Safety

2.1 Introduction

The instruction manual contains the most important information for using InTrac 785 efficiently and in accordance with regulations. A basic condition for safe handling and operation without malfunctions is a knowledge of these safety instructions and observance of the further warnings in the instruction manual.

This instruction manual, and in particular the safety regulations, are intended for personnel entrusted with the operation and maintenance of the retractable housing. It is assumed that these persons are familiar with the equipment in which the retractable housing is installed. Therefore, before any work is started with the retractable housing, this instruction manual must be read and understood by those persons involved.

The instruction manual must be stored where it is constantly accessible and available to any person working with the InTrac 785.

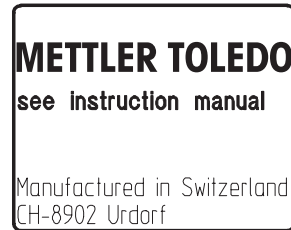
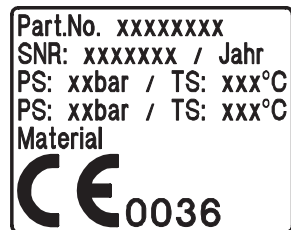
On receipt of the shipment, check immediately:

- the retractable housing and accessories for any sign of transport damage. Report any damage immediately to the carrier and to your supplier.
- the type designation on the housing body.
- for completeness of the supply. Please notify your supplier immediately if the shipment is incomplete or in any way incorrect (see Section 3.1 «Scope of delivery»).

2.3 Housing designations

Housing designation as well as article no. and serial no. for clear identification when communicating with the manufacturer can be noted from the type plate.

Type plate for housings



2.4 Intended use

The retractable housings are intended solely for measurement tasks in conjunction with the specified METTLER TOLEDO electrodes/sensors, namely pH and redox (ORP) combination electrodes as well as dissolved oxygen (DO) or turbidity sensors. Use the retractable housings only for this purpose.

The following are also part of the stipulations for the correct and appropriate use of the retractable housings:

- compliance with the instructions, regulations and information contained in this Instruction Manual
- adherence to the prescribed inspection and maintenance/servicing intervals.
- correct maintenance of the housings.
- operation in compliance with prevailing regulations concerning the environment and operating conditions (see Section 8.1) as well as with the admissible mounting positions.
- observance of local legislation.



Danger! The housing may only be operated together with the specified electrodes/sensors. If no electrode/sensor is present, or an incorrect type installed within the housing, this will lead to invalidation of the specifications of the housing, specifically pressure resistance, temperature, chemical resistance and protection against explosion. Consequently, there can be leakage from the retractable housing and/or risk of explosion liable to cause bodily harm and also to endanger the environment.

2.5 Inappropriate use

Any utilization other than the above mentioned, as well as any utilization that is not consistent with the technical data is taken as being not in conformance with regulations. The operator bears the sole risk for any damage caused by such utilization.

2.6 Basic principles

The retractable housing InTrac 785 is built in accordance with state-of-the-art technology and recognized technical safety regulations.

However, the housing can be a source of risks and dangers:

- if the housing is operated by insufficiently trained persons.
- if the housing is not used in compliance with regulations and/or stipulations for appropriate use.

InTrac 785 may only be used in a technically correct condition for the purpose intended by the supplier, with awareness by the user of safety and danger factors, taking the Instruction Manual and local safety regulations into consideration.

Malfunctions and damage that can affect the safety and function must immediately be remedied by the operator or an expert, and notified to the manufacturer in writing!



Danger! A defective retractable housing must neither be installed nor put into operation. Faulty containment and installation out of conformance with regulations and instructions can lead to the escape of medium or to pressure surges (explosion), potentially harmful both to persons and to the environment.

2.7 Warning notices and symbols

The following symbols are used in this Instruction Manual to mark safety instructions:



Danger! Warning of a possible dangerous situation that can lead to light bodily harm and/or material damage.



Caution! Warning of a possible dangerous situation that can lead to light bodily harm and/or material damage.



Attention: Information referring to technical requirements. Non-adherence can lead to malfunctions, uneconomic working and possibly also to loss of productivity.

2.8 Responsibilities, organizational measures

2.8.1 Responsibilities of operator

- The operator is under obligation only to permit persons to work with InTrac785 retractable housings, who are familiar with the basic requirements of work safety and accident prevention, and who have been instructed in the handling of the housing. This Instruction Manual serves as the basic document.
- In addition to the instruction manual there are also generally valid legal and other binding regulations for work safety and accident prevention as well as for environmental protection, and these must be provided by the operator and instructed to personnel using the housings.
- The operator/user must be fully aware of safety and potential danger factors during work with the housings and this awareness must be checked by the operator at regular intervals.
- Measures must be taken to ensure that the retractable housings are only operated in a safe and fully functional condition.
- If the housings are employed in hazardous areas, compliance with prevailing regulations is to be ensured.



Caution! Before the retractable housing is put into operation, the operator must have already clarified that use of the housing in conjunction with the other associated equipment and resources is fully authorized.

2.8.2 Responsibilities of personnel

- All persons whose duty it is to operate the retractable housings are under obligation to read Section 1 «Introduction» and Section 2 «Safety» as well as the warning notices in this Instruction Manual.
- In addition to the Instruction Manual, generally valid legal and other binding regulations for work safety and accident prevention must be adhered to.
- Any method of working which is doubtful from a safety perspective and which exceeds the operation according to regulations must be omitted.
- High-pressure jets may not be used to clean polymer/plastic parts and components of the housing.



Attention: Before every start-up, the retractable housing must be checked for:

- damage to the connections, fastenings, etc.
- leakage
- perfect functioning
- authorization for use in conjunction with other plant equipment and resources.



Danger! A defective retractable housing may neither be installed nor put into operation.

Faulty containment or installation out of conformance with regulations and instructions can lead to the escape of medium or to pressure surges (explosion), potentially harmful both to persons and to the environment.

2.8.3 Selection and qualifications of personnel – basic duties


- Work on or with the retractable housings may only be carried out by reliable and appropriately trained or instructed personnel. The personnel must have read this Instruction Manual in advance.
- Clear responsibilities must be established for the personnel entrusted with operation, service, repair, etc. of the housings.
- It must be ensured that only specifically assigned personnel may operate the housings.




Danger! Incorrect manipulation or operation of the housings or non-observance of safety regulations can lead to problems with the housings and to the escape of process medium, thereby presenting a potential hazard to the environment, personnel and material.


2.9 Product-specific hazards


2.9.1 Sensor design


 **Danger!** The sensor may only be removed when the housing is in «Maintenance» position (retracted/withdrawn) and the ball valve is closed, since if the electrode/sensor is missing from the housing, there will be path for the process medium to escape to the environment.

This can endanger personnel and cause damage to the environment and material. Toxic or aggressive media can pose a threat to human life through poisoning, chemical burns or scalding.

 **Attention:** If an electrode/sensor is broken, it must be replaced immediately.

 **Danger!** A broken sensor jeopardizes process safety, since it is not then possible to achieve reliable measurement results.

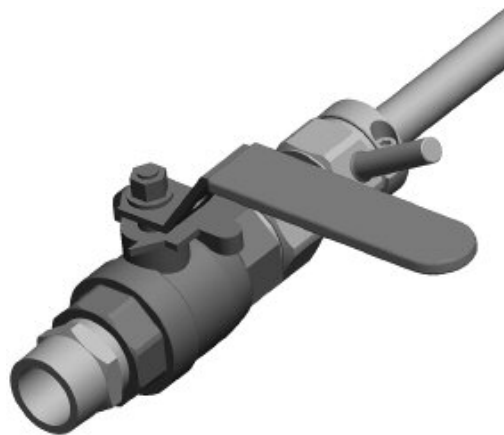
 **Gefahr:** The sensor may only be removed when the housing is in «Maintenance» position and the ball valve is closed.

 **Gefahr:** The housing may only be moved to the «Measuring» position when a sensor is fitted and the ball valve is open.

Principally, personal protective equipment such as protective goggles and clothing must be worn.

Any manipulation of the electrode/sensor may only be carried out when the retractable housing is in the retracted/withdrawn position («Maintenance» position) and the ball valve is closed.

«Maintenance» position of the housing with ball valve closed



2.9.2 Manipulation of and maintenance work on the housings



Attention: Before dismantling a retractable housing or commencing any maintenance work on it, ensure that the equipment in which the retractable housing is installed is in a safe condition (depressurize, no explosion risk, empty, rinse, vent, etc.). Retractable housings may only be stripped down after having been completely dismantled.

Manipulation of the housings may only take place after it has been ensured that no process medium can escape through the housing in the event of incorrect manipulation.

For this reason, the complete system must be emptied and vented in advance (**safe condition**).

It is principally necessary to wear personal protective outfit such as protective goggles and clothing.

Only such maintenance and repair work as is specifically described in this Instruction Manual may be performed on the retractable housing.

Only original spare parts from METTLER TOLEDO may be used for replacing defective components (see Section 8.2 «Spare parts»).



Danger! Non-compliance with the prescribed maintenance instructions can endanger personnel and the environment.

2.9.3 Housings with ball valve sealing



Caution! Housings with ball valve sealing cannot assure permanent sealing of the process medium from the flushing chamber during insertion and retraction operations.

An optional flushing chamber (see accessories page 36) can be fitted to prevent flowback of the medium. This allows sealing water to be created while the housing is withdrawn (must be installed by the customer) in order to generate counter-pressure in respect of the process. This also cleans the sensor at the same time.

2.9.4 Installation in pressurized systems



Attention: The maximum permissible temperature and pressure specifications must not be exceeded. The values depend upon the design and type of the retractable housing. The relative specifications are given on the type plate of the individual housings.



Danger! If temperature and pressure limits are exceeded, there is a risk to the integrity of the system, thereby presenting a potential threat to human life and to the environment.

Housing	Material	Max. permissible pressure [PS] / [TS]	
InTrac 785	1.4435/316L, Alloy C22, Ti	16 bar/130 °C	232 psig/266 °F

2.10 Residual hazards



Attention: Despite all precautionary measures taken, residual hazards still remain.

2.10.1 Rupture of pneumatic or hydraulic connections



Danger! The escape of aggressive medium can present a threat to human life and to the environment.

2.10.2 Leaky connections

- Connections can become loosened through the effects of vibration.
- The connection between housing and process adaptor is a potential source of leakage.



Attention: The connections between the housing and the process adaptor must be checked regularly by the customer/operator, and kept in full working condition.



Danger! Leaky connections can allow process medium, cleaning solution or control (compressed) air to escape to the environment, presenting a hazard for persons and the environment.

2.10.3 Malfunctions in overriding control and safety systems



Attention: Problems occurring in the overriding control system can trigger off uncontrolled insertion and retraction of the housing. This can in turn lead to a complete breakdown or malfunctioning of the safety devices.

2.10.4 Medium residues



Danger! When retracting the immersion tube from the process, small quantities of process-medium will remain attached to the electrode/sensor. If this medium is a toxic or environmentally damaging substance, or contains pathogenic germs, then such contamination must be removed and disposed of in accordance with regulations!

The optional flushing chamber (see accessories page 36) allows the sensor in the housing to be cleaned before it is removed.

2.10.5 Manually operated housings



Danger! The electrode or sensor may only be removed when the housing is in the «Maintenance» position.



Danger! In the case of the manually operated InTrac 785, the retractable immersion tube can be pushed out of the process at an increased velocity by the process pressure.

2.10.6 Heat protection



Danger! The housing is not equipped with heat protection. During steam-sterilization procedure or very hot process media, the surface of the housing can reach high temperatures and cause burns.

2.10.7 External influences



Attention: Objects falling on the housing can damage or destroy the unit, or cause leaks etc.



Attention: Lateral forces may damage or destroy the unit.

2.11 Safety measures



Attention: Always observe and comply with local laws and regulations! These are not an integral part of this Instruction Manual.



Danger! It is principally necessary to wear protective equipment such as protective goggles and protective clothing.



Attention: The operator is responsible for the instruction of personnel. Additional copies of this Instruction Manual can be ordered from the equipment supplier. As an integral part of the retractable housing, this Instruction Manual must at all times be readily accessible to users at the point of operation of the housing.

The operator is obliged to inform the supplier/manufacturer of the retractable housing immediately about any safety-relevant incidents, or observations made, during use of the housing.



Danger! Incorrect manipulation and/or instruction errors can lead to potential hazards for persons and for the environment.



Attention: Before every start-up, the retractable housing must be checked for:

- damage to the connections, fastenings, etc.
- leakage
- defective cables and lines etc.
- authorization for use of the housing in conjunction with the associated plant resources.



Danger! A defective housing must never be installed or put into operation. Poor containment, leaky connections etc. or non-compliant installation of the housings can lead to escape of process medium and thereby to a potential threat to life (incl. risk of explosion.).

2.12 Modifications



Attention: No attachments or modifications to the retractable housings are allowed.



Danger! The manufacturer/supplier accepts no responsibility for any damage caused by unauthorized attachments and alterations or for the incorporation of spare parts which are not of METTLER TOLEDO provenance. The risk is borne entirely by the operator.

3 Product descriptions

3.1 Scope of delivery

Standard supply of the retractable housing is made up of the following.

Retractable housing finished assembled in accordance with description in order confirmation:

- Instruction Manual
- certificates in line with the specifications

3.2 Packing

The packing consists of cardboard and foam plastic.

Keep the packing for possible later use, such as for storage or transport of the housing. However, if you wish to dispose of the packing, please observe your local regulations in this respect.



Attention: see Section 9.3 «Disposal».

3.3 Checking the shipment

When unpacking the shipment, examine carefully for signs of damage. Any damage noted must be reported immediately to the carrier and your supplier.

Check that the shipment accords to the delivery papers and to your order.



Attention: Damaged housings must not be installed or put into operation (see Section 2).

3.4 Product overview

The retractable housings are available in different versions:

A list of the suitable electrodes/sensors can be found in the relative Appendix to this Manual.

- Immersion depth («H»)

- **200 mm**

Exact dimension illustrations of all housings are to be found in the relative Appendix to this Manual.

- Medium-wetted materials

- **stainless steel DIN 1.4435/AISI 316 L**

- **DIN 2.4602/AISI Alloy C22 (e.g. Hastelloy)**

- **titanium**

- **The ball valve is always made of stainless steel DIN 1.4408/PTFE**

- Medium-wetted sealing materials (O-rings)

- **Viton® -FDA**

- **Kalrez®-FDA and USP Class VI**

- Process connections

- **Flange attachments (DIN, ANSI)**

- **NPT external thread**

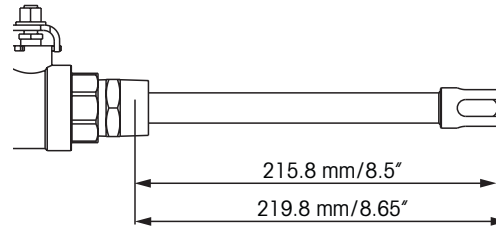
The exact version of the housing can be seen from the type designation on the housing.

Example: **InTrac785/AF/220/4435/N10/Vi/-**

3.5 Construction of the retractable housings

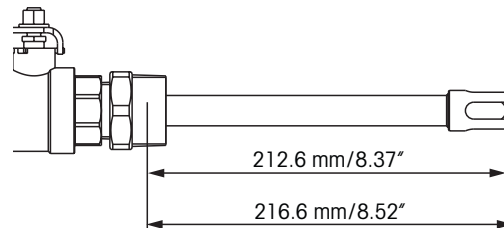
3.5.1 Lower part of housing for process adaption

1" NPT – InTrac785/AN/220/****/N10/**/-



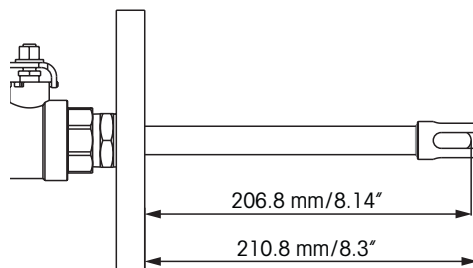
The immersion depth is reduced by 40 mm when a flushing chamber is fitted.

1¼" NPT – InTrac785/AN/220/****/N14/**/-



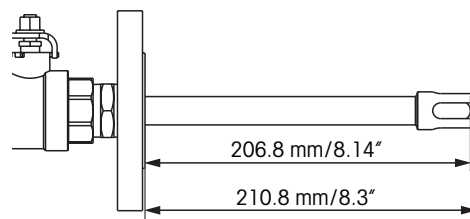
The immersion depth is reduced by 40 mm when a flushing chamber is fitted.

DIN flange DN50-PN16 – InTrac785/AN/220/****/D04/**/-



The immersion depth is reduced by 40 mm when a flushing chamber is fitted.

ANSI flange A150-1.5" – InTrac785/AN/220/****/A02/**/-



The immersion depth is reduced by 40 mm when a flushing chamber is fitted.

3.6 Description of function of retractable housings

With the retractable housings InTrac 785, electrodes/sensors can be cleaned or replaced without interrupting the ongoing process.

The immersion tube is moved into the desired end position, «Measuring» position or «Maintenance» position, by hand after releasing the fixing nut by hand or using a wrench No. 38.

«Measuring» position

In the «Measuring» position, the immersion tube is fully inserted. The process medium flows past the tip of the electrode/sensor through the openings at the end of the immersion tube. O-rings seal the housing against ingress of process medium. In this position the ball valve must be open and the securing nut must be tightened by hand or with a no. 38 spanner.



«Measuring» position

«Maintenance» position

In the «Maintenance» position, the electrode/sensor can be cleaned or removed/exchanged.

Before the sensor is removed, the ball valve must be closed manually to seal the housing from the process. The sensor may only be removed when the ball valve is closed.



«Maintenance» position

4 Installation and start-up

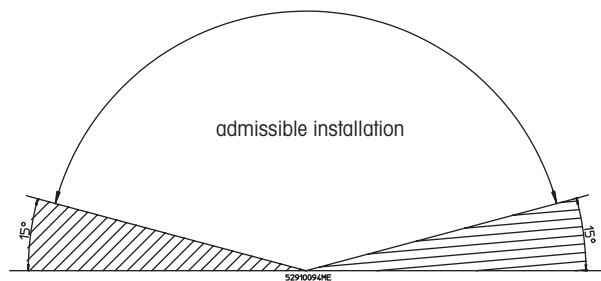
4.1 Preparation of the equipment

The retractable housings are mounted and fixed on a vessel (reactor, tank, pipe, etc.) either by means, a flange connection, or via a NPT external thread.



Attention: Attachment of the flange connection or threaded bushing is the responsibility of the customer.

In order to guarantee correct function of the retractable housings, please pay attention to the following installation instructions:



- The retractable housing can be mounted vertically or in an inclined position.
- **Caution!** In the case of inclined mounting, the angle of the housing must be equal to or greater than 15° above the horizontal.
- The retractable housing is to be mounted in such a position that there is always enough clearance available for its correct functioning (correct «Measuring» position in the sample medium) as well as for maintenance work (checks, fitting and removal of the electrodes/sensors). The relative dimensions can be seen on the drawings in the relative Appendix to this Instruction Manual, or in the specifications.
- Mounting of the retractable housing in exposed positions should be avoided. If this is not possible, relative measures to protect against damage or interference must be taken.

4.2 Fitting and installation work



Caution! In all installation work described below, ensure that the equipment in which the housing is to be installed is in a non-hazardous condition (depressurized, empty, rinsed, vented, etc.).

4.2.1 Fitting the housing



Caution! Never place or support the housing on the front end of the centering spigot or immersion tube (risk of damage). Ensure that the housing is fitted to the correct, prescribed socket or flange as directed (see Section 4.2.1.1).

4.2.1.1 Fitting via a flange

1. Clean the sealing surfaces of the flange (housing and flange connection on vessel) and check for damage.



Caution! If the process media/reaction products are considered to be dangerous, it is imperative that an embedded seal is used at the flange interface and/or a splash guard mounted. Fitting of the retractable housing with damaged flange connections is not allowed and can present a hazard to persons and/or lead to material damage.



2. Use the appropriate flange gasket and check for sound condition. Replace if necessary.

Attention in the case of housings made of special materials: Check that the seal is present on the flange of the retractable housing and is not damaged. Replace if necessary. Ensure correct quality and positioning of the seal.

3. Check the vessel to ensure that there are no obstacles in the insertion direction which could hinder the motion of the immersion tube.
4. Position the housing on the flange connection, align, and tighten evenly crosswise using the prescribed number of bolts and nuts.

4.2.1.2 Fitting via NPT external thread

1. Wind Teflon tape around the external male thread.
2. Screw the housing carefully into the female socket.
3. Check the Installation for leaks.

4.2.1.3 Direct installation in an existing ball valve

Fitting in an existing ball valve is possible. The following type must be available:
1" F NPT.



Note: If the housing is connected via a ball valve supplied by the customer, METTLER TOLEDO accepts no responsibility for the safety and functionality of the measuring point.

4.2.1.4 Attaching the flushing lines (optional flushing chamber)



- **Danger!** When retracting the immersion tube from the process, small quantities of process medium will remain attached to the electrode/sensor and will thus enter the discharge line during flushing procedures. If the process medium contains toxic, caustic substances damaging to the environment, then it is imperative to consult local regulations relative to the design and construction of effluent (treatment) installations.
- When constructing the flushing water installation, use only materials which are resistant to corrosion and chemicals.

Recommendations for proper operation and safe use

All flushing lines must be equipped with check valves which may only be opened when the immersion tube is in the retracted position («Maintenance»). After maintenance work on the sensors, the valves must be closed.

Basic installation

The basic installation is intended for cleaning/flushing of the electrodes and sensors when the housing is in the «Maintenance» position.

- Inlet:
The inlet line is connected to the flushing water inlet (thread G 1/8") of the housing via an appropriate shut-off device.
- Outlet:
For the water outlet, the flushing water outlet (thread G 1/8") is connected to the appropriate drain (comply with local regulations).



Attention: The water outlet should be positioned at a somewhat higher level than the inlet so that the chamber lock is always filled with water or buffer solution even when the inlet is closed. This prevents the pH electrode from drying out. Where necessary, use a suitable lead-off (first upwards) for the outlet line.

4.2.2 Fitting the electrode/sensor



1. Move the housing to maintenance position and close ball valve «4» by hand.
2. Unscrew the cable antikink «1».
3. Unscrew the protective sleeve «2».
4. Check that the correct type of electrode/sensor has been selected (see Section 10 «Appendix»).
5. Check the electrode/sensor for damage (e.g. breakage of electrode).



Caution! A damaged electrode/sensor must never be installed.

6. Check washers and O-rings on electrodes/sensors and replace if necessary.
7. Remove watering cap from the tip of the electrode/sensor and rinse electrode/sensor with water.
8. Carefully insert electrode/sensor into the immersion «3» tube and screw in by hand as far as it will go.



Danger! Under no circumstances whatsoever may tools be used.

9. Remove the cover cap of the electrode/sensor screw cap connection.
10. Run the connection cable through the antikink protection «1» and protective sleeve «2», and connect the plug to the electrode/sensor.
11. Mount protective sleeve «2» and tighten by hand. Finally, also hand-tighten the cable antikink protection «1».

4.3 Startup procedures for housings

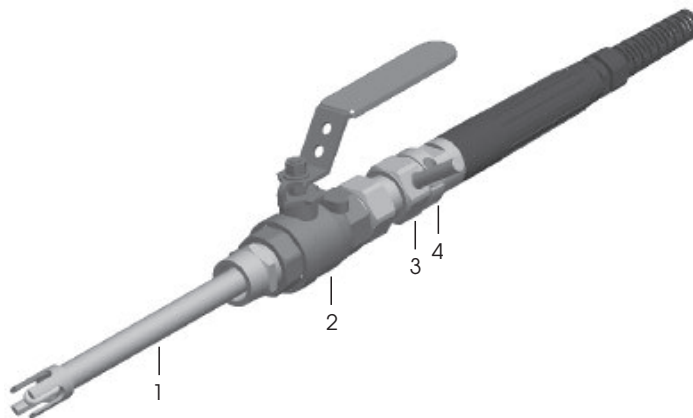
Before startup, all fitting and installation work (see Section 4.2) must have been completed!

Each time before startup, check the measuring system. Inspect the electrode/sensor assembly and examine for leaks from housing and apparatus (see also Section 7). Do not commence operation until the measuring system has been checked and any necessary corrective action taken.

Proceed as follows for startup:



Attention: Make sure that a sensor is fitted correctly. The housing must not be moved to measuring position without a sensor fitted.

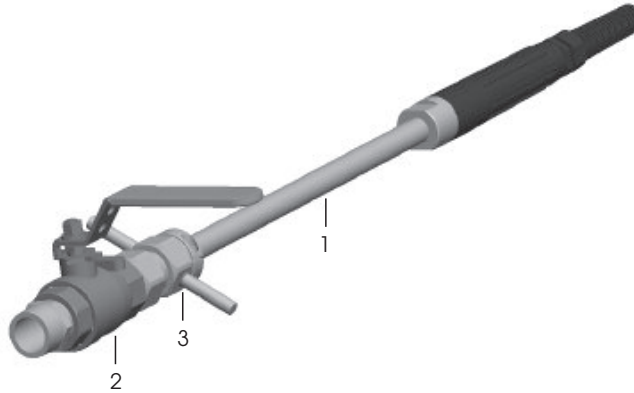


1. Loosen fixing screw «3» to release the immersion tube «1» by hand or using a no. 38 spanner.
2. Open the ball valve «2».
3. Slide the immersion tube into the measuring position as far as necessary or until it stops.
4. If the housing is not inserted as far as the stop, fix the adjusting ring «4» in the desired position.
5. Tighten fixing screw «3» by hand or using a no. 38 spanner.

4.4 Shutdown procedure for housings



Note! The optional flushing chamber can be used to create sealing water to prevent the medium flowing back when the position is changed from the measuring position to maintenance position.



1. Loosen fixing screw **«3»** to release the immersion tube **«1»** by hand or using a no. 38 spanner.
2. Move housing to the «Maintenance» position.
3. Close the ball valve **«2»** manually.
4. Optionally open flushing water supply, flush electrode/sensor and close flushing water supply again.
5. Ensure that the equipment in which the housing is installed is in a non-hazardous condition (depressurize, empty, rinse, purge and vent, etc.).

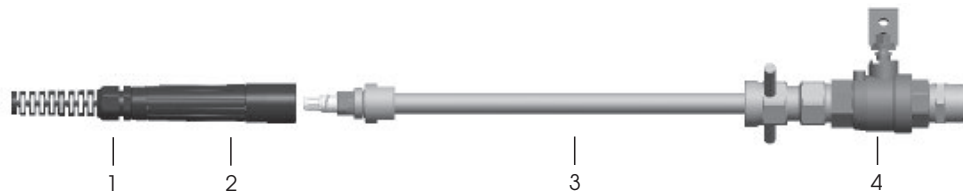
4.5 Dismantling work

4.5.1 Removing the electrode/sensor



Caution! Electrodes/sensors may only be removed and fitted in «Maintenance» position with the ball valve closed.

InTrac785 retractable housings



1. Move the housing into the «Maintenance» position.
2. Close the ball valve «4» manually.
3. Optionally open flushing water supply, flush electrode/sensor and close flushing water supply again.
4. Unscrew cable antikink «1».
5. Unscrew protective sleeve «2».
6. Disconnect the signal cable from the electrode/sensor.
7. Unscrew electrode/sensor and carefully remove from immersion tube «3».



Attention: Specific information on the electrode (calibration/alignment with the measuring system, storage, etc.) is to be found in the relative documentation for the electrode or measuring system.

4.5.2 Removing the retractable housing

1. Shut down the housing (see Section 4.4).
2. Remove the electrode/sensor (see Section 4.5.1).
3. Dismantle flushing water lines if installed.



Caution! Close the connection in order to prevent ingress of dirt.

4. Undo threaded or flange connection and carefully remove housing.



Caution! Never place or support the housing on the front ends of the centering spigot or immersion tube (risk of damage).

5 Operation

5.1 Important information for everyday operation



Caution! No attempt may be made to move the immersion tube into the «Measuring» position without an electrode/sensor installed, otherwise sample medium can flow out via the open immersion tube.

During operation:

- **never** remove fastening components (screw/bolts of flange, ring nut, etc.).
- Never remove the sensor with the housing in measuring position.
- Never remove the sensor unless the ball valve is closed.
- Never close the ball valve with the housing in measuring position.

If any malfunctions occur during operation, the equipment in which the housing is installed must first be made safe before any corrective measures are taken.

For all work on the equipment during everyday operation, wear the stipulated protective clothing (protective goggles, gloves, breathing apparatus, etc).

5.2 Inspection work in everyday operation

The following inspection work should be performed in everyday operation:

- Check fastenings (ring nut, flange, NPT-thread) of the housing at the vessel for firm seating and leaks.
- Check the condition of the electrode/sensor. A faulty or damaged electrode/sensor must be replaced immediately.

5.3 Cleaning the electrode/sensor

The electrode/sensor must be cleaned before removal, before calibration of the measurement system or at regular intervals during operation (depending on the process medium). Proceed as follows:

1. Move the housing into the «Maintenance» position.
2. Close the ball valve manually.
3. Optionally open flushing water supply and flush the electrode/sensor or remove the sensor from the fitting and flush it externally.
4. Optionally close flushing water supply again or replace the sensor that has been flushed externally.

5.4 Calibrating the measuring system

The frequency of calibration of the measurement system depends on the electrode/sensor type and the sample medium. To calibrate the measurement system, proceed as follows:

1. Move housing into the «Maintenance» position.
2. Close the ball valve manually.
3. Optionally open flushing water supply, flush electrode/sensor and then close flushing water supply again.
4. Remove electrode/sensor and flush it externally (procedure, see Section 4.5.1).
5. Perform calibration in accordance with the operating instructions for the respective electrode/sensor and transmitter.
6. Re-install electrode/sensor (procedure, see Section 4.2.5).
7. Optionally open flushing water supply, flush the electrode/sensor and then close flushing water supply again.
8. Open the ball valve manually.
9. Move the housing into the «Measuring» position.
10. Tighten fixing screw by hand or using a no. 38 spanner.

6 Maintenance

6.1 Important information on maintenance



Danger! The information and instructions given in Section 1 and Section 2 must be fully adhered to.



Caution! Maintenance and service work on the housings may only be carried out by appropriately trained personnel.

Only original spare parts from METTLER TOLEDO may be used, otherwise all guarantees become automatically invalid.

Only the maintenance and repair work described in the following Sections may be performed on the retractable housings.



Caution! It is possible that the process medium could harm the environment and your health (toxic, caustic, corrosive, etc.). Therefore, ensure that the equipment is in a non-hazardous condition before you start with any maintenance work.



Danger! Before startup, the housing must be checked to ensure that:

- the right types of O-ring have been selected and that they are undamaged and correctly positioned.



Attention! Only original spare parts from METTLER TOLEDO may be used, otherwise all guarantees become automatically invalid.

6.2 Replacing seals in contact with the process medium

All seals that come into contact with process medium should always be replaced at least every 6 months for reasons of safety. With **aggressive media**, the seals may need to be changed at correspondingly **shorter intervals**. Medium-wetted seals must be examined at least monthly, as well as during normal maintenance procedures, to check for dirt or damage. Frequent insertion and retraction motion of the immersion tube can also have an influence on the necessary maintenance intervals.



Attention: Seals are wearing parts which must be regularly examined by the operator of the housing, and replaced if necessary (dependent upon application).

Replacement of medium-wetted seals

METTLER TOLEDO recommends that medium-wetted seals should under all circumstances be replaced at least every 6 months.

Check on medium-wetted seals

METTLER TOLEDO recommends that medium-wetted seals should under all circumstances be examined and checked every 3 months.

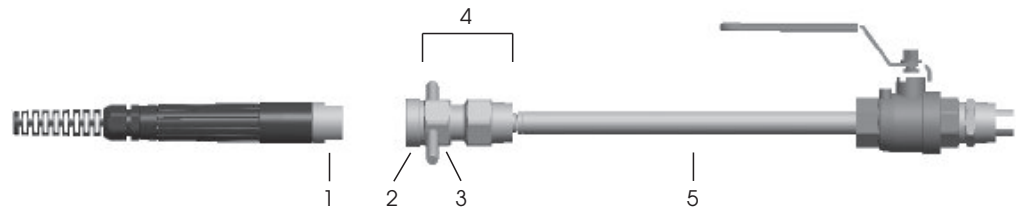
In the case of aggressive or abrasive media, the seals may need to be checked at shorter intervals.



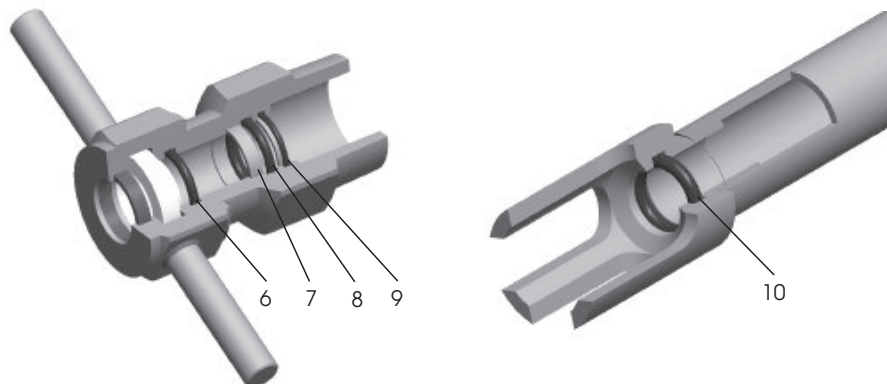
Attention: Recommendations by METTLER TOLEDO concerning maintenance intervals are based solely on experience gained in standard applications and in no way binding or an admission of any guarantee liability whatsoever on the part of the manufacturer/supplier. Depending upon the degree of aggressiveness of the process medium, the necessary maintenance intervals to support smooth operation of the equipment may be correspondingly shorter.



Attention: Details of replacements and examination of the seals are to be documented in the maintenance log.



Change O-rings.



Summary the periodic change of O-rings:

O-rings «6» + «8» 17.86 x 2.62 Viton or Kalrez

Guide ring «7» 20.4 x 3.9 x 1.3

Scraper ring «9» 20.0 x 2.9 x 1.1 with O-Ring 18.77 x 1.78 Viton or Kalrez

O-rings «10» 10.77 x 2.62 Viton or Kalrez



Caution!

- Retractable housings may only be stripped down for maintenance and repair work after having being completely dismantled from the equipment in which they were installed for operation.
- Only perform the dismantling work described and instructed in this Section and replace only the seals listed above. Check that the correct types of seals have been selected, examine for any signs of damage and for correct seating.
- Ensure that the seals are of the correct material quality (see Section 8).

To replace the seals, proceed as follows:

1. Shut down the housing (see Section 4.4).
2. Remove electrode/sensor from the housing (see Section 4.5.1) and store as described in the electrode/sensor Operating Instructions.
3. Remove the housing from the equipment (reactor, vessel, pipe) in which it is installed (see Section 4.5.2) and place it on a clean working surface.



Caution! Never place or support the housing on the front ends of the centering spigot or immersion tube (risk of damage).

4. Remove sensor support «1». Use a no. 30 spanner.
5. Pull adjusting ring «2» over the immersion tube «5» and remove
6. fixing screw «3» by hand or using a no. 38 spanner.
7. Pull entire guide unit «4» including the fixing screw «3» and the tension ring over the immersion tube «5» and remove.
8. Remove the indicated seals with a fine hook. Ensure that the contact surfaces of the seals are thereby not scratched.
9. Lightly grease new O-rings (set of seals) **with lab grease!**



Caution! No grease may be applied to the O-Ring in the immersion tube, as there is a danger that grease could contact and adhere to the electrode/sensor tip (diaphragm/glass membrane) when reinstalling the electrode/sensor, and have adverse effects on its function.

10. O-rings «6», «8» and «10» and guide ring «7» and carefully fit scraper ring with O-ring «9» using an assembly tool (order no. 90 770 1790).
11. Pull entire guide unit «4» including the fixing screw «3» and the tension ring over the immersion tube «5» in the order shown in the drawing above.
12. Pull adjusting ring «2» over the immersion tube «5».
13. Screw in sensor support «1». Use a no. 20 spanner.

7 Trouble shooting

In this section you will find an overview of possible malfunctions which could appear during operation of the retractable housings, their cause, as well as a guide to appropriate remedial measures.



Danger! It is essential to comply with the safety instructions given in Section 1 and Section 2.

Malfunction	Cause	Remedial action
Immersion tube cannot be inserted.	Ball valve is not completely opened.	Check the ball valve position.
Immersion tube can not be pulled out.	Retention nut is not open.	Loosen the retention nut.
Immersion tube can not be pulled out completely.	Ball valve is not completely opened.	Check the ball valve position.
Process liquid is flowing out of the rinsing chamber.	Rinsing chamber is not closed.	Close the outlet of the rinsing chamber with covers or with valves.
Process fluid is entering into the immersion tube.	O-ring defective.	Replace the O-ring in the electrode holder (order O-ring set).



Danger!

Breakage of the protection caging can lead to mixing of process medium and cleaning medium.

8 Product specifications

8.1 Technical data



Attention: The technical specifications for the installed sensors must also be taken into account.

Ambient conditions

Temperature 0...70 °C / 32...158 °F

Process conditions

Functional pressure range 0...6 bar 0...87 psig

Max. permissible pressure **1.4435/316L**
2.4602/Alloy
C22, Ti 16 bar/130 °C 232 psig/266 °F

Operating mode manual

Immersion depth 220 mm/8.66 inches

Medium-wetted parts DIN 1.4435/AISI 316L, DIN 2.4602/Alloy C22, titanium, ball valve 1.4408/PTFE

Medium-wetted seals (O-rings) Viton®-FDA, EPDM-FDA, Kalrez®-FDA and USP Class VI

Weight approx. 3 kg

Outer dimensions** length: approx. 455 mm/18 inches in «Measuring» position
length: approx. 1100 mm/43.3 inches for removal of electrode see dimension drawings in Appendix.

Flushing connections 2...6 bar / 29...87 psig
1x connection «IN»: thread G 1/8"
1x connection «OUT»: thread G 1/8"

Pressure details according to PED Article 1, Paragraph 2.2:
«pressure» is referenced to atmospheric pressure, i.e. overpressure;
accordingly, pressures in the vacuum range are expressed as negative (pressure) values.

8.2 Spare parts list

Spare parts

Designation	Order no.
O-ring Set Viton	52 403 890
O-ring Set Kalrez	52 403 891
Ball valve 1.4408 1" NPT	52 403 846

Accessoires

Designation	Order no.
Flushing chamber 1.4435/316L	52 403 902
Flushing chamber C22	52 403 903
Flushing chamber Ti	52 403 904
Fitting Set SERTO	52 403 926
Fitting Set Swagelok	52 403 927
Fitting Set Gyrolok	52 403 928
Adapter 1" to 1¼" NPT, 1.4435/316L	52 403 914
Adapter 1" to ANSI A150-1.5", 1.4435/316L	52 403 915
Adapter 1" to DN50-PN16, 1.4435/316L	52 403 916
Adapter 1" to 1¼" NPT, C22	52 403 918
Adapter 1" to ANSI A150-1.5, C22"	52 403 919
Adapter 1" to DN50-PN16, C22	52 403 920
Adapter 1" to 1¼" NPT, Ti	52 403 922
Adapter 1" to ANSI A150-1.5", Ti	52 403 923
Adapter 1" to DN50-PN16, Ti	52 403 924

Replacement of all other parts of the housings may only be carried out by appropriately trained personnel. Please contact your local METTLER TOLEDO representative.

9 Decommissioning, storage, disposal



Please refer to Section 2 «Safety». Decommissioning may only be carried out by persons with appropriate training or by skilled technicians.

9.1 Decommissioning

Proceed as described in Section 4.5.2 «Removing the retractable housing».

9.2 Storage

Store the InTrac 785 in a dry place.

9.3 Disposal

It is recommended that the operator disposes of the device in accordance with local regulations. The operator must deliver the device either to a licensed private or public disposal company, or dispose of it himself in accordance with prevailing regulations. Waste is to be recycled or disposed of without causing any risk to human health, and without using procedures or methods that might harm the environment.

**EC guidelines 75/442/EEC
91/156/EEC**

Sorting

Sorting into waste groups takes place when dismantling the device. The groups are listed in the current European Waste Catalogue. This catalog is valid for all wastes, whether intended for disposal or for recycling.

The packaging is made up of the following materials:

- cardboard
- foam plastic

The housing is made of the following materials:

- steel
- polypropylene
- medium-wetted polymers as given in the specifications

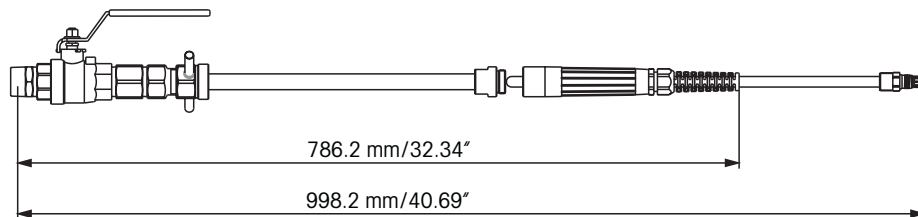
10 Appendices

10.1 Suitable electrodes/sensors

pH: all 12 mm design with Pg 13.5 thread and 425 mm length.
 Oxygen: all 12 mm design with Pg 13.5 thread and 420 mm length.
 Turbidity: all 12 mm design with Pg 13.5 thread and 409 mm length.

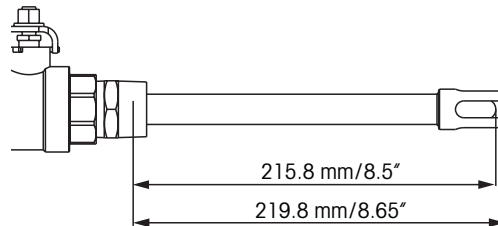
10.2 Dimensional drawing InTrac 785

Maximum dismounting length

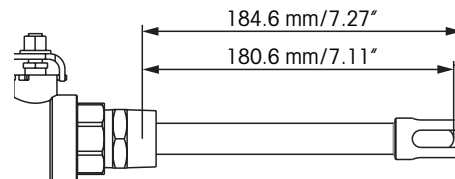


Process connections

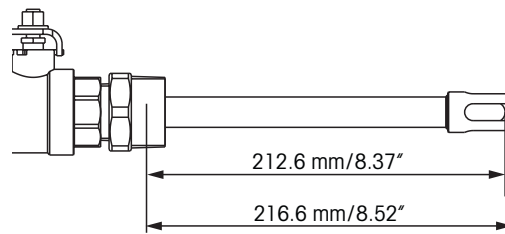
1" NPT – InTrac785/AN/220/****/N10/**/-



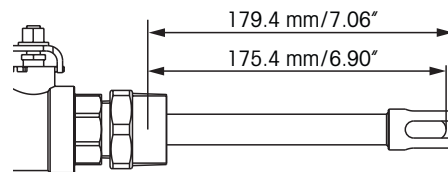
1" NPT – InTrac785/AF/220/****/N10/**/-



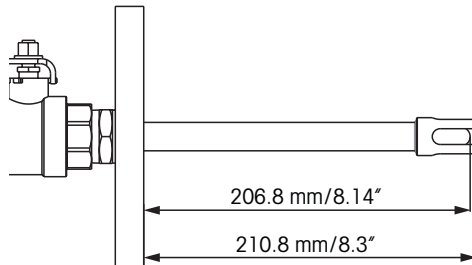
1¼" NPT – InTrac785/AN/220/****/N14/**/-



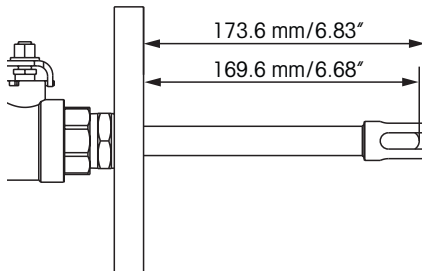
1¼" NPT – InTrac785/AF/220/****/N14/**/-



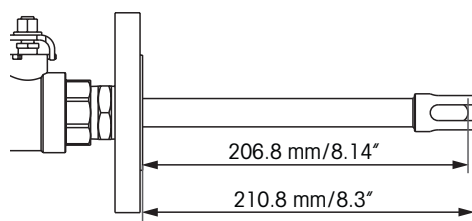
DIN flange DN50-PN16 – InTrac785/AN/220/****/D04/**/-



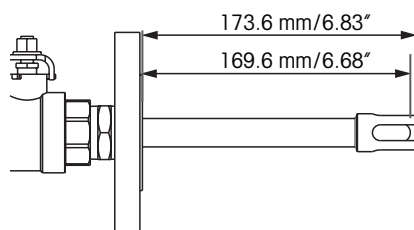
DIN flange DN50-PN16 – InTrac785/AF/220/****/D04/**/-



ANSI flange A150-1.5" – InTrac785/AN/220/****/A02/**/-



ANSI flange A150-1.5" – InTrac785/AF/220/****/A02/**/-



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