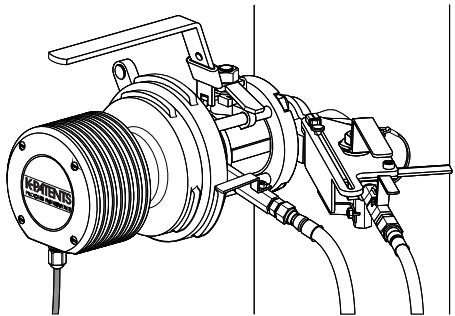
Pocket Guide

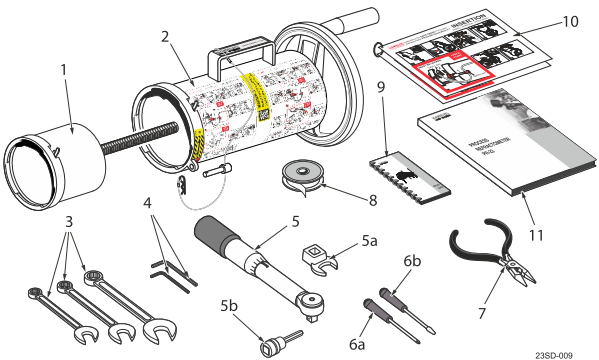
Safe-Drive Generation 2.1

PR-23-SD
SDI2-23-SN2-XS
SDI2-23-WP2-XS
SDI2-23-PL-SS
SDR2-23



VAISALA

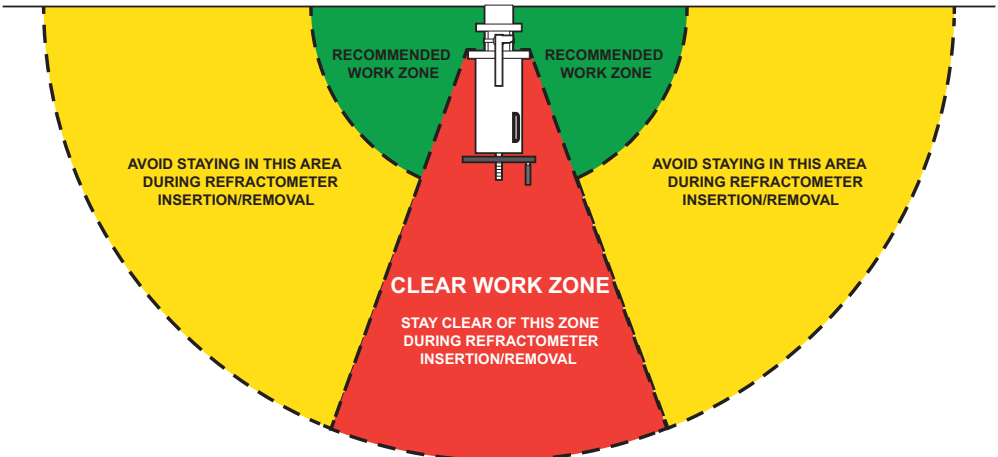
IM-EN-SDI21-PG
Rev. 2.00



INSTALLATION EQUIPMENT

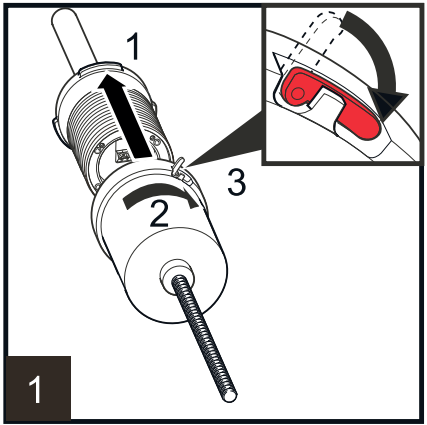
1. Retractor inner casing
2. Retractor outer casing
3. Combination wrenches 32 mm, 14 mm, 8 mm
4. Allen keys 8 mm, 5 mm
5. Torque wrench
    5a. open end fitting 19 mm
    5b. hex bit socket 8 mm
6. Screwdriver
    6a. Phillips head
    6b. Flat head
7. Pliers
8. Thread seal tape
9. Pocket guide for insertion and retraction
10. Laminated instruction cards
11. Best Practices document

SAFETY REQUIREMENTS


RECOMMENDED
WORK ZONE
RECOMMENDED
WORK ZONE
AVOID STAYING IN THIS AREA
DURING REFRACTOMETER
INSERTION/REMOVAL
AVOID STAYING IN THIS AREA
DURING REFRACTOMETER
INSERTION/REMOVAL
CLEAR WORK ZONE
STAY CLEAR OF THIS ZONE
DURING REFRACTOMETER
INSERTION/REMOVAL

CONTENTS

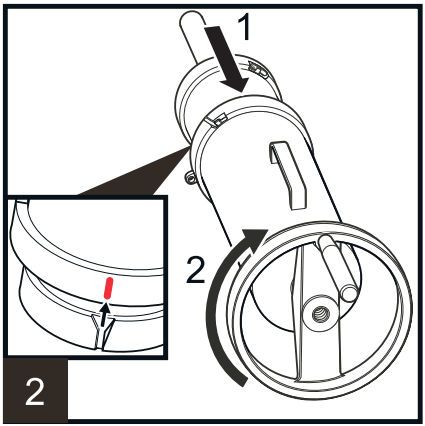
SENSOR INSERTION



1. Insert the sensor into Inner casing. Make sure that the sensor cable gland has been taken off. Match the bayonet closing with sensor flange so that the latch is slightly to the left of the top and the sensor cable passage is straight down.

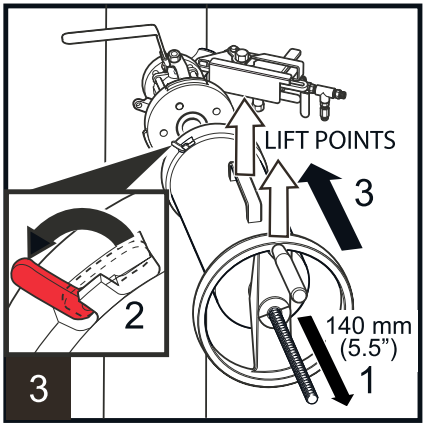
2. When sensor flange is flush with the bottom of Inner casing, rotate Inner casing 60 degrees clockwise to lock it to the flange.

3. Push down locking latch to secure the connection.



1. Fit Outer casing over Inner casing. To match the casings, check that the rail on the Inner casing matches the groove on Outer casing. The latch of Inner casing should be slightly to the right from the top and the handle of Outer casing should point up.

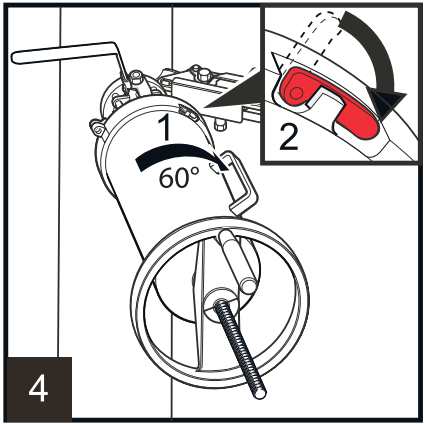
2. Turn the hand-wheel clockwise until it stops to draw the Inner casing with sensor into Outer casing.



1. The sensor should now be inside Retractor and about 140 mm (5.5”) of the screw thread should stick out of the middle of the wheel.

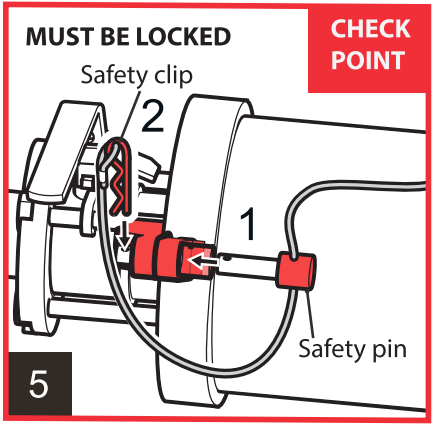
2. Unlock the latch on Outer casing.

3. Take a firm hold of the hand-wheel and handle and lift Retractor (with sensor) over the isolation valve flange. Keep handle up.



1. Rotate Outer casing 60° clockwise to lock the bayonet.

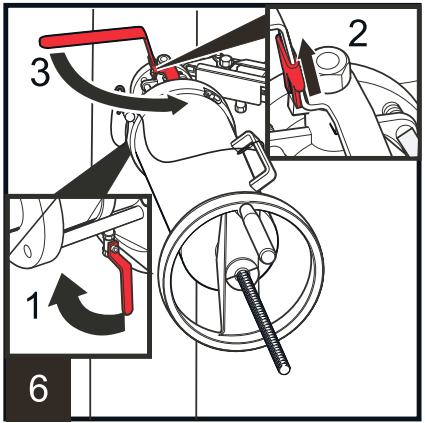
2. Lock Outer casing latch.



1. Insert the safety pin.

2. Lock the safety pin with safety clip.

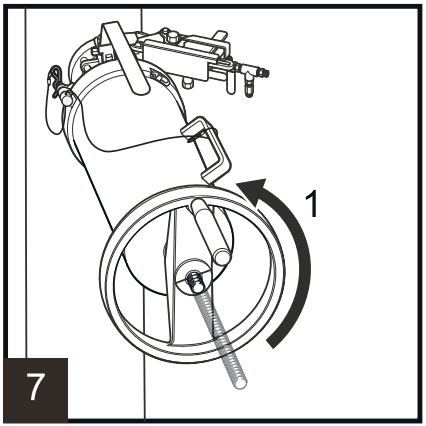
DO NOT PROCEED UNTIL YOU HAVE COMPLETED THIS STEP!



1. Close the blow-out ball valve under Isolation valve.

2. Lift up the Isolation valve handle locking plate.

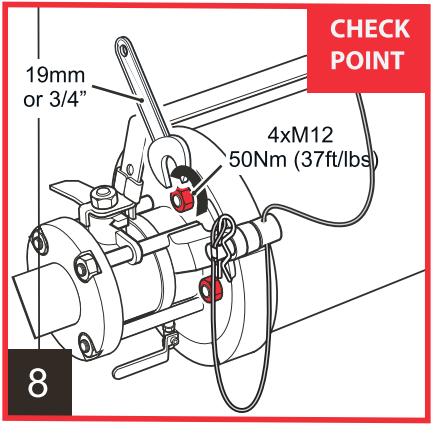
3. Open Isolation valve by turning the valve handle 90°. The valve is open when the ball valve handle is parallel to Retractor and sensor.



Now the sensor can be inserted into the process.

1. Turn the hand-wheel counterclockwise until it stops, i.e. until the sensor flange connects with Isolation valve and only the end of the screw thread is visible.

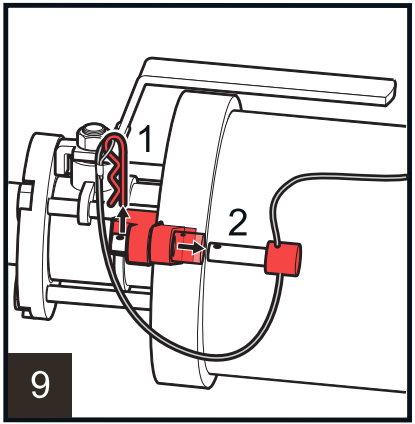
Warning! If you detect leaking, revert immediately to the previous step. Do not continue the installation until the reason for leakage has been cleared and fixed.



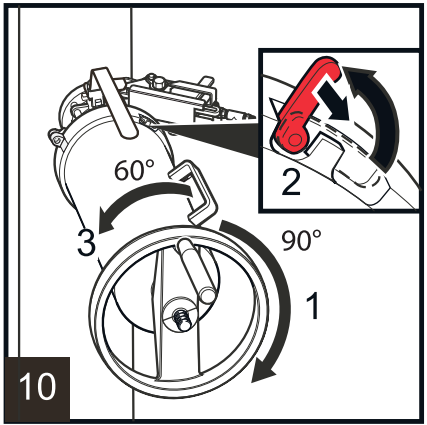
Fit the four M12 nuts to the bolts holding the sensor to Isolation valve and screw them on with a 19 mm or ¾” wrench.

Important: Do not tighten the nuts too hard, set the torque at 50 Nm (37 ft/lbs).

DO NOT PROCEED UNTIL YOU HAVE COMPLETED THIS STEP!



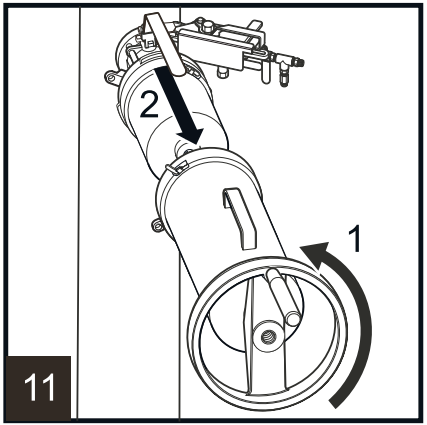
1. Remove the safety clip.
2. Remove the safety pin.



1. Turn the wheel 90° clockwise.

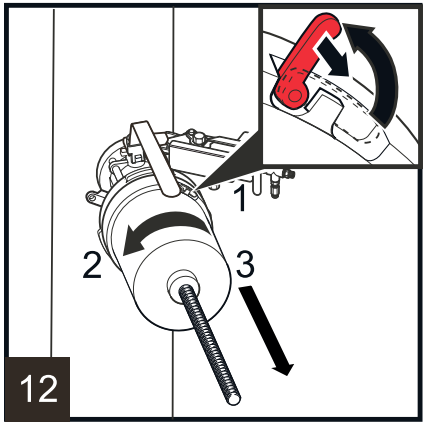
2. Open the locking latch on Outer casing.

3. Rotate Outer casing handle 60° counterclockwise.



1. Turn the hand-wheel counterclockwise to drop the thread.

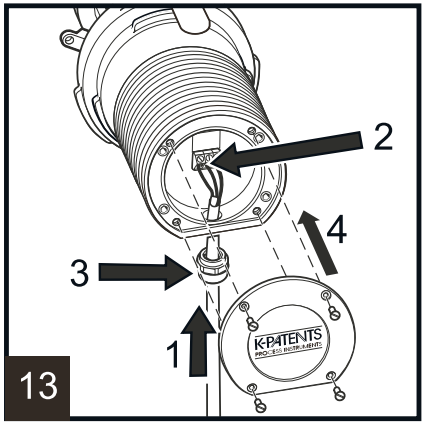
2. Lift off Outer casing.



1. Lift up the latch of Inner casing to unlock it.

2. Rotate the casing 60° counterclockwise to release it from the flange.

3. Lift Inner casing away from the sensor head.



Ensure the DTR is switched off. Connect the sensor cable to the DTR.

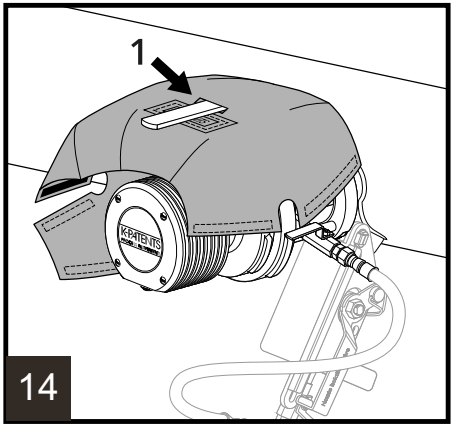
1. Push the interconnecting cable through the cable gland and into the sensor.

2. Connect the interconnecting cable to the sensor.

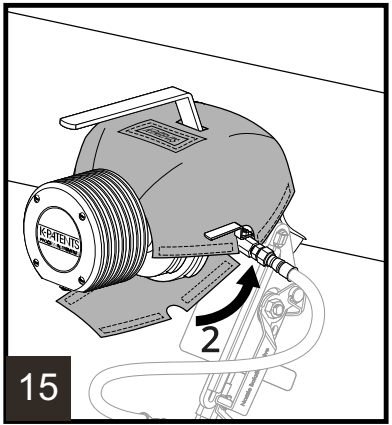
3. Tighten the cable gland onto the sensor.

4. Fit the nameplate onto the sensor and screw it on.

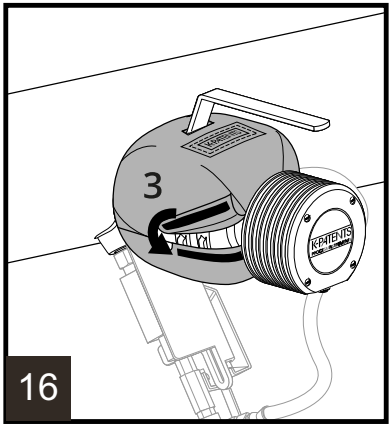
Turn on DTR power to power up the SAFE-DRIVE system. Open wash valve.



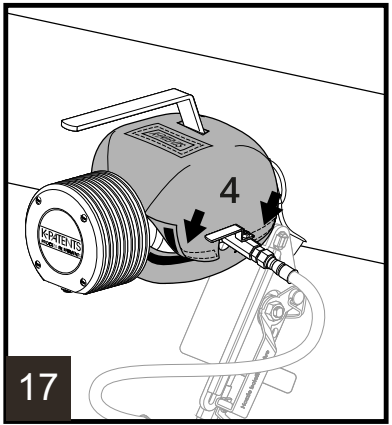
To mount the thermal cover, pass Safe-Drive shut-off valve handle through the hole provided in the thermal cover, making sure the label is facing towards you.



Wrap cover under and around the Safe-Drive valve body aligning the cutouts with the drain valve.



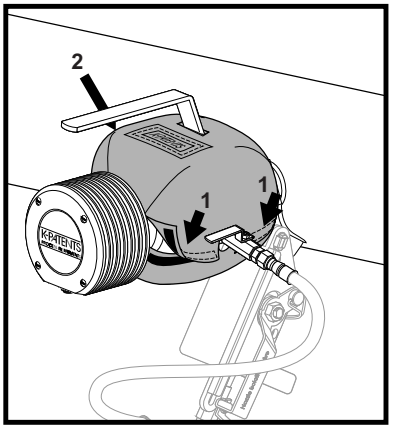
Close the thermal cover by using the velcro strips, first the single join on the left.



And finally the two velcro joins on the right.

SENSOR REMOVAL

Sensor removal

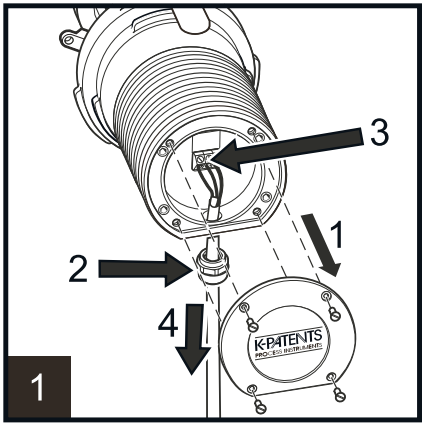


Before sensor removal process, remove the thermal cover.

First open the two velcro fasteners on the right.

Then open the single fastener on the left.

Unwrap the cover underneath the sensor and then remove the cover.

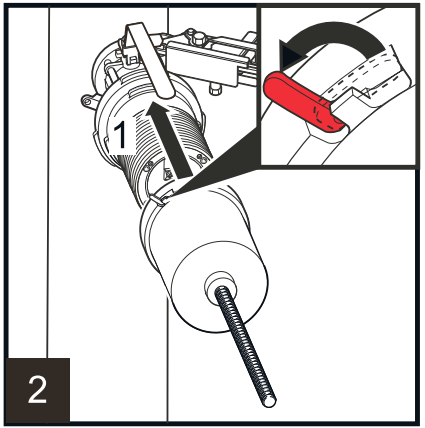


Switch off the DTR to cut off power from the sensor. Close wash valve.

1. Unscrew and remove sensor nameplate.
2. Loosen the cable gland.
3. Unscrew the wires.
4. Remove the sensor cable and cable gland.

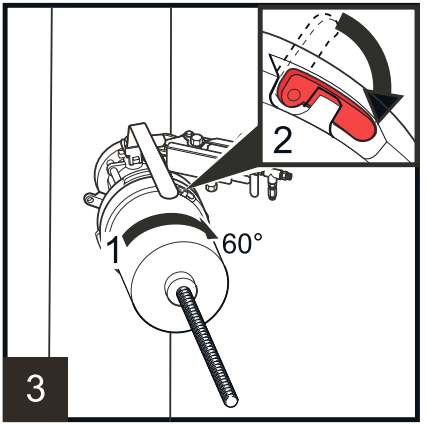
Note: If another in-line sensor is connected to the same DTR, disconnect the loose cable from the DTR and turn on power again.

Sensor removal



1. Lift up the latch of Inner casing to unlock it. Lift Inner casing over the sensor head. The latch of Inner casing should be slightly to the left.

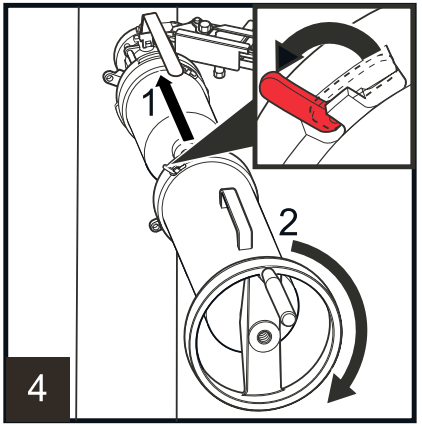
Sensor removal



1. Rotate Inner casing 60° clockwise to lock it onto the flange.

2. Lock Inner casing latch.

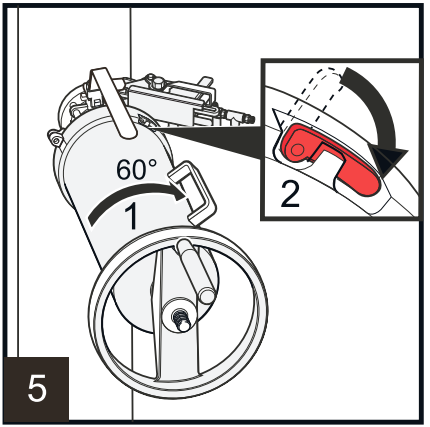
Sensor removal



1. Open the locking latch on Outer casing. Grab Outer casing with one hand on the handle and the other hand on the wheel. Fit Outer casing over Inner casing.

2. Turn the hand-wheel clockwise to get the thread of Inner casing running through the hand-wheel.

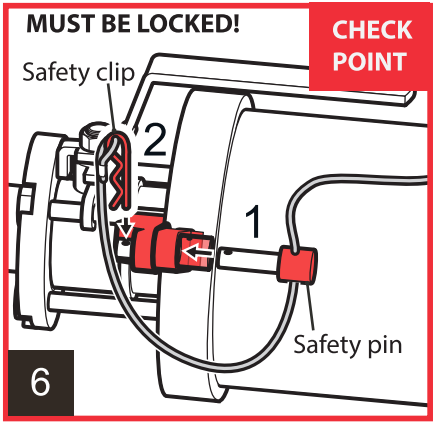
Sensor removal



1. Rotate Outer casing 60° clockwise to lock the bayonet.

2. Lock Outer casing latch.

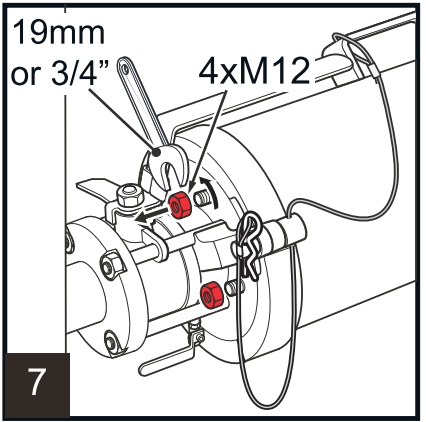
Sensor removal



1. Insert the safety pin.

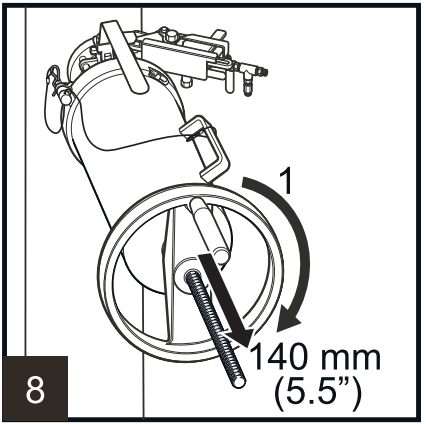
2. Lock the safety pin with the safety clip.

DO NOT PROCEED UNTIL YOU HAVE COMPLETED THIS STEP!



Open and remove the four M12 nuts on the bolts holding the sensor to Isolation valve using a 19 mm or ¾” wrench.

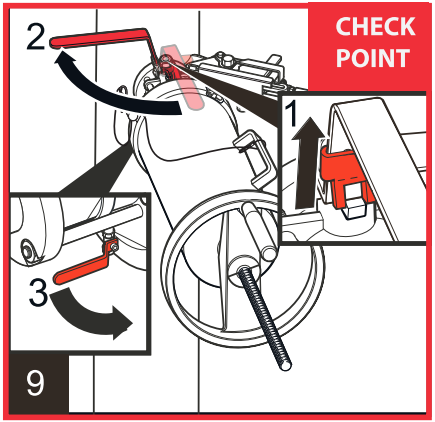
Sensor removal



1. To remove the sensor from the process, turn the hand-wheel clockwise until it stops. At this stage about 140 mm (5.5”) of the thread should stick out from the middle of the wheel.

Warning! If you detect leaking, revert immediately to the previous step. Do not continue removal until the reason for leakage has been cleared and fixed.

Sensor removal

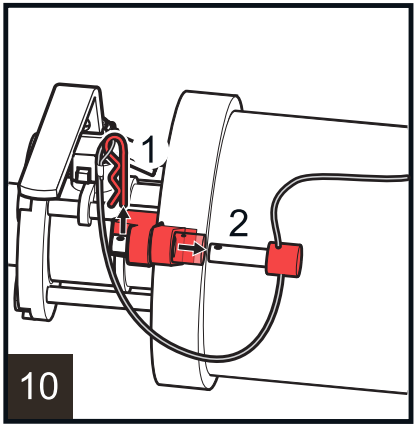


1. Lift up Isolation valve handle locking plate.

2. Close Isolation valve by turning the handle 90°.
Important: Isolation valve is properly closed when the handle points away from the sensor and the locking plate drops down over the handle.

3. Open the blow-out valve under Isolation valve for box cleaning to get rid of any process liquid inside Isolation valve.
Warning! Some process liquid will leak out through the small ball valve, beware of splashing!

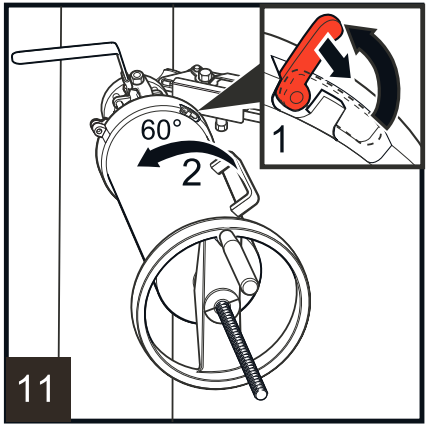
DO NOT PROCEED UNTIL YOU HAVE COMPLETED THIS STEP!



1. Remove the safety clip.

2. Pull out the safety pin.

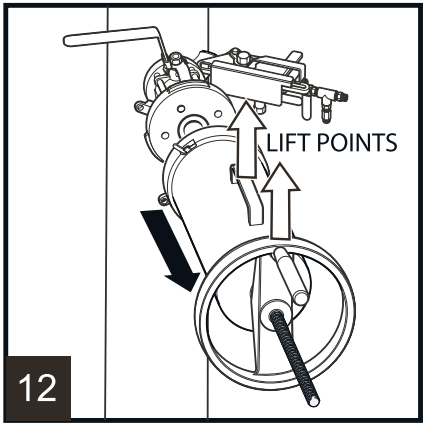
Sensor removal



1. Lift open Outer casing locking latch.

2. Rotate Outer casing 60° counterclockwise so that the handle comes up on top.

Sensor removal



Take a firm hold on the hand-wheel and the handle and pull out Retractor with sensor inside.

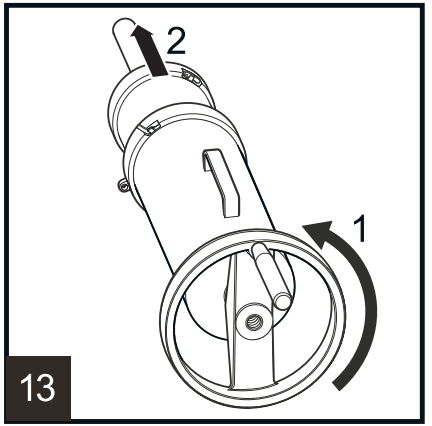
Warning! A firm hold of the tool is essential as the combination of the tool and the sensor is noticeably heavier than Retractor alone.

Note: To ensure Isolation valve after the SAFE-DRIVE tool with the sensor has been removed, you can bolt a standard ANSI 1.5” 105 lbs blind flange to Isolation valve with ½” (M12) bolts and nuts.

A lock can be added to Isolation valve handle.

Warning! The sensor tip is hot and may be covered with liquor. It is recommended to rinse the sensor tip and Isolation valve with hot water.

Sensor removal

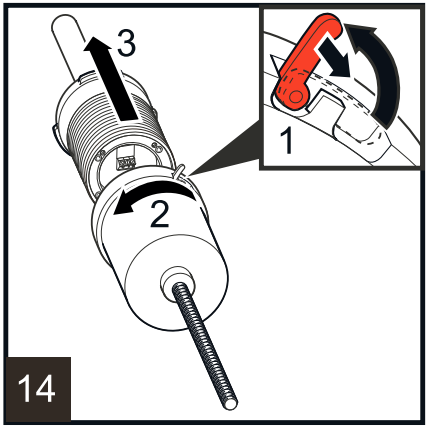


Put Retractor with sensor onto a table or similar surface so that the hand-wheel has space to turn.

1.Turn the hand-wheel counterclockwise to drop the thread, i.e. until Outer casing is no longer connected to the parts inside.

2. Pull off Outer casing.

Sensor removal



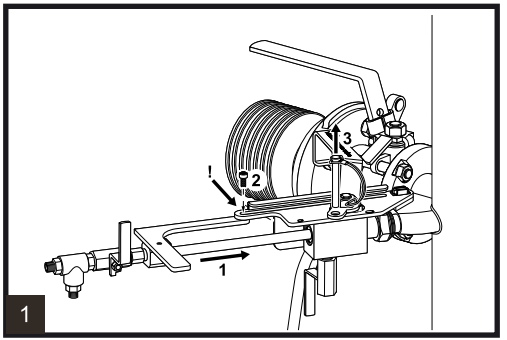
1. Open the latch on Inner casing.

2. Keep sensor steady with one hand and rotate Inner casing counterclockwise with the other hand to unlock Inner casing from sensor.

3. Pull off the sensor.

Sensor removal

WASH NOZZLE INSERTION



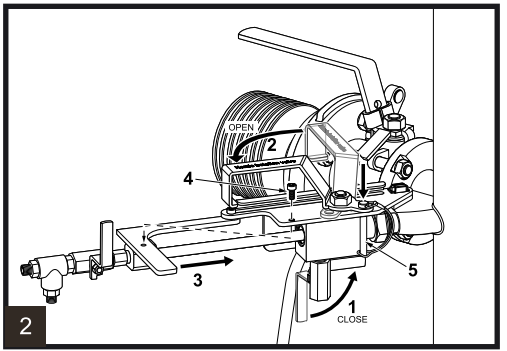
Check nozzle and valve before installing the wash nozzle. Use thread seal tape for all thread connections.

1. Insert the nozzle into the isolation valve (1).

2. Attach the nozzle to the nozzle guide with one special M5x10 screw (2) using a 5mm allen key.

3. Remove the safety pin (3).

Nozzle insertion



2

1. Close the 1/4” check port valve under the nozzle isolation valve (1).

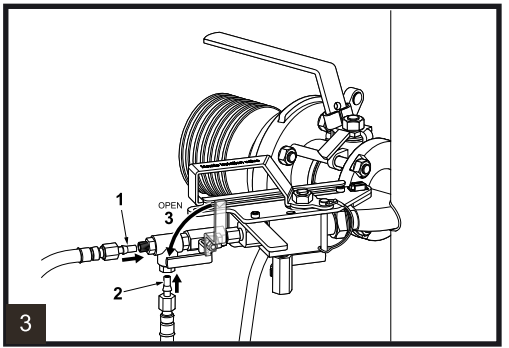
2. Open the isolation valve (2) by turning the handle counterclockwise.

3. Push the nozzle to the process (3).

4. Attach the nozzle to the nozzle guide with one special M5x10 screw (4) using a 5mm allen key.

5. Lock the isolation valve handle with the safety pin (5).

Nozzle insertion



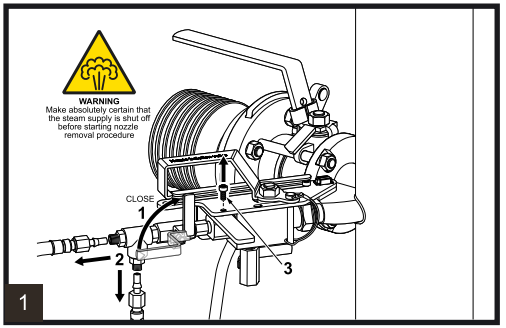
1.1 STEAM: Connect the steam line and sensor flush flexible line to the nozzle T-piece (1, 2).
1.2 WATER: Connect the water line to 1/4" valve (1,2).

2. Open nozzle valve (3).

Nozzle insertion

WASH NOZZLE REMOVAL

Nozzle removal

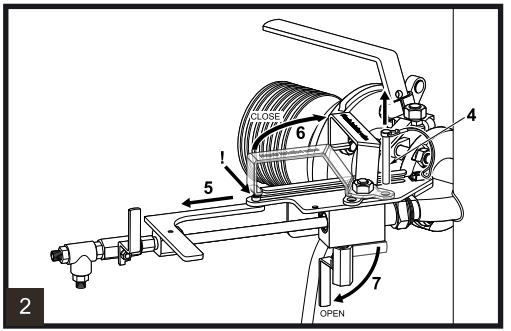


WARNING! Make absolutely certain that the steam or water supply is shut off before starting nozzle removal procedure.

1. Close the nozzle valve (1).

2.1 STEAM Remove the steam supply line (2) and the sensor flush flexible line (2) from the nozzle T-piece.
2.2 WATER Remove the water supply line (2) from the nozzle.

3. Remove the special M5x10 nozzle guide locking screw (3) using a 5mm allen key. Be careful, process pressure will try to push the nozzle out from the process!

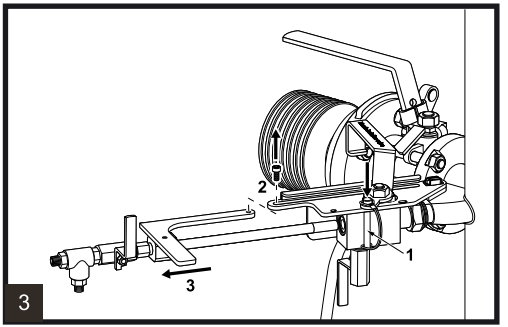


4. Remove the safety pin (4).

5. Slide the nozzle out from the process (5) until the guide plate stops it.

6. Close the nozzle isolation valve (6) by turning the handle clockwise.

7. Open the 1/4" check port valve under the nozzle isolation valve (7).



1. Lock the isolation valve handle with the safety pin (1).

2. Remove the special M5x10 guide plate screw (2) using a 5mm allen key.

3. Remove the nozzle from the isolation valve completely (3).

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