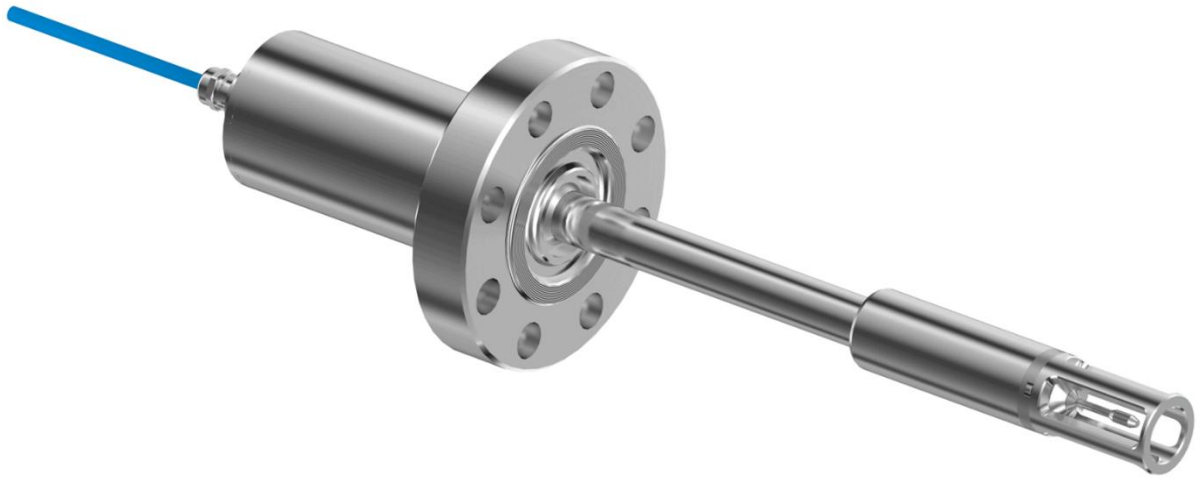
Rheonics Inline Process Sensors

SDP Operator Manual

Rheonics Sand Detector Probe Sensor

DOC. ID: SDP-OP-27772A



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GLOBAL SUPPORT

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1 Before you begin

1.1 About the manual

This manual provides information on operating the Rheonics SDP sand detector sensor. This manual refers to external articles from Rheonics knowledge base, if any article link is not working, the user should refer to the main web page or contact Rheonics Support Team.

1.2 Contact

Contact the Rheonics team with any inquiry. For sales and delivery-related questions, contact the Sales Team at info@rheonics.com. For installation, integration, and troubleshooting, contact the Support Team at support@rheonics.com.

1.3 Warning Messages



ATTENTION
This word indicates useful information for the operator but without risk for the operation of Rheonics product.



CAUTION
This word indicates a medium or highly recommended action to ensure the proper function of Rheonics product.



WARNING
This word indicates a hazard or mandatory action to ensure the proper function and safety of Rheonics product.

1.4 Related Documentation

You can find all product documentation on the USB storage device that was shipped with the sensors. You can also find them on the website: https://rheonics.com/resources

For more information on the sensor, refer to the following documents on Rheonics website: https://rheonics.com/resources/manuals/. Contact Rheonics Support Team if you cannot find a document online.

Title	Code	Description
SDP Operator Manual	**SDP-OP**	**Sand Detector Sensor Operator Manual**
SDP Integrator Manual	SDP-IM	Sand Detector Sensor Integration Manual
SRV Operator Manual	SRV-OP	SRV Sensor Operator Manual
RCP Software Manual	RCP-OM	Rheonics Software Installation and User Manual
SME Operator Manual	SME-OP	Rheonics SME Sensor Module Electronics Manual

Table 1: Related documentation

1.5 Nomenclature

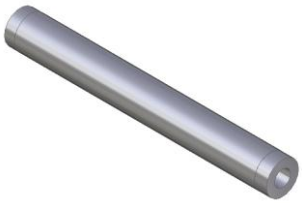
Abbreviation	Full-term	Description
SDP	Sand detector probe	Switch level sensor for sand detection
SRV	Symmetric Resonator Viscometer	Viscosity Sensor
SME	Sensor module electronics	Sensor electronics

Table 2: Nomenclature

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2 Packing List

The contents of your order may vary. Always refer to the packaging list included with the unit for the definitive scope of delivery. The table provided below is for reference only.

Item	Description	Reference Image
1	Rheonics Sand Level Detector Probe	
2*	Custom flange	
3*	Extension tube	
4*	Cable connector protector	
5	Sensor cable	

6	SME - Sensor module electronic (different variants possible)	

*Optional

Table 3: Packing list

3 About Rheonics SDP

Rheonics Sand Detector Sensor, SDP, is a switch-level sensor used to detect the accumulation or presence of sand in a desander vessel, accumulator, or pipelines, used in the oil and gas industry. Rheonics SDP is designed for high-pressure environments such as those found in desanders.

The SDP electronics (SME) outputs numerical values to identify the presence of sand and the type of media going through the process. Refer to the SDP-IM for further details on sensor data integration.

Rheonics RCP software that comes with the sensor allows real-time data monitoring, configuration of the sensor, collection of historical data, etc. Refer to the RCP-OM for more information.

3.1 Technical Specifications

Specifications of the sensor vary depending on the sensor configuration ordered through the SDP - Request for Quotation[1] by the user. The general specifications of the SDP are presented in Table 4.

Specification	Value
Operating temperature	Specified in order
Operating pressure	Specified in order
Probe surface material	Stainless Steel 316L
O-Ring material	NBR 90 ±5 Shore A
Power supply	24 V DC
Certificates available	Ex, ATEX, JPEx: Intrinsically safe

Table 4: SDP technical specifications

[1] https://rheonics.com/request-for-quotation/sdp/

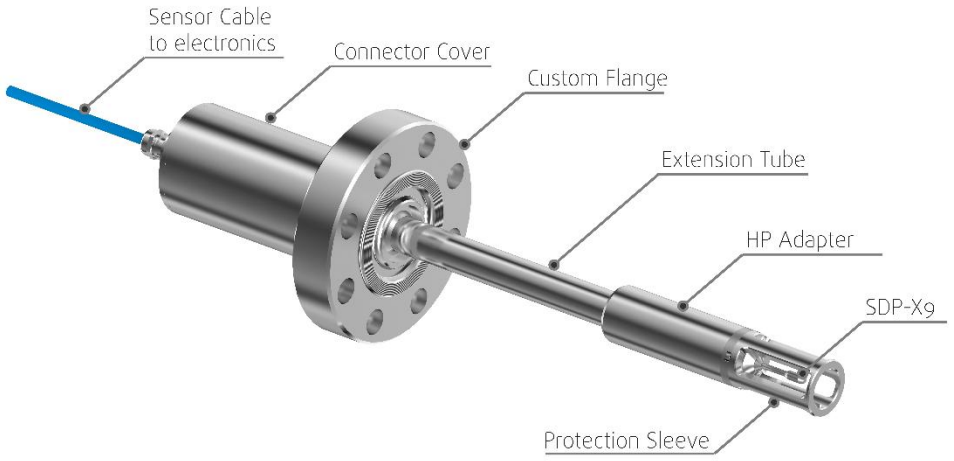
3.2 Main Parts

Rheonics SDP sensor is composed of the sensor probe, electronics, and cable. The cable is required to connect the sensor probe to the electronics. For information on the electronics, follow the SME-OP manual.

Figure 1 shows an exemplary assembly of the SDP probe. Due to the high-pressure rating required for the SDP, a high-pressure (HP) adapter is used. A flange and an extension tube are used to connect the probe to the process and immerse the sensing element to the point where measurements are needed. The flange and extension tube are either offered by Rheonics or sourced independently by customers and assemble to the SDP probe following the guidelines: Rheonics Sand Detector Probe Assembly Instructions[2].

A connector cover may be used to protect the sensor cable connection.

Figure 1: SDP probe components

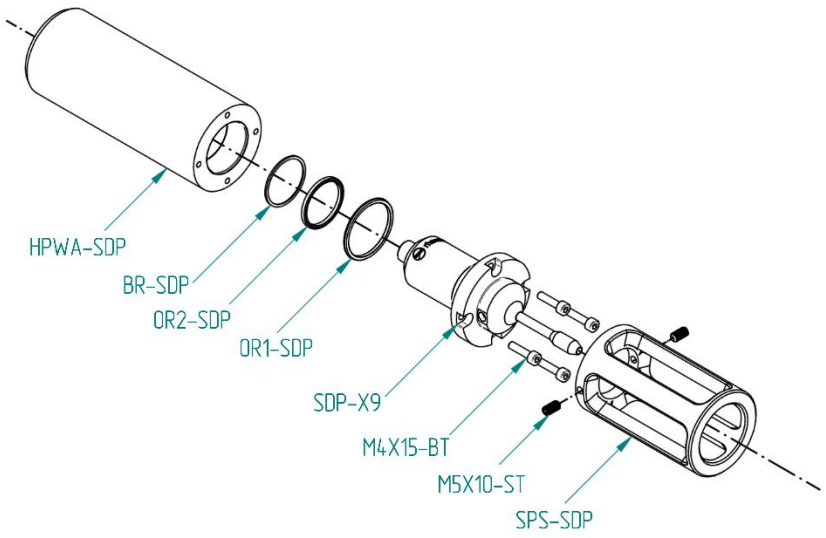


Rheonics SDP sensor probe is based on the SDP-X9, which is assembled with the high-pressure welding adapter (HPWA-SDP) and a protection sleeve (SPS-SDP). These and the rest of the main components of the SDP probe are shown in Table 5.

For more information regarding the probe, refer to the SRV Operator Manual: SRV-OP.

[2]: https://support.rheonics.com/en/support/solutions/articles/81000418002

Figure 2: SDP probe assembly exploded view

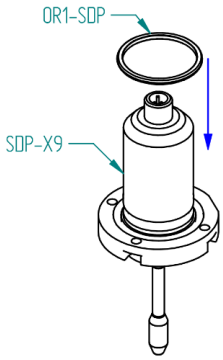
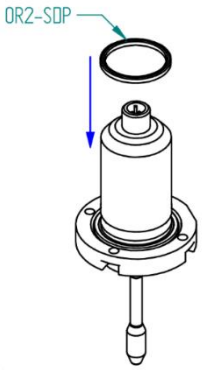
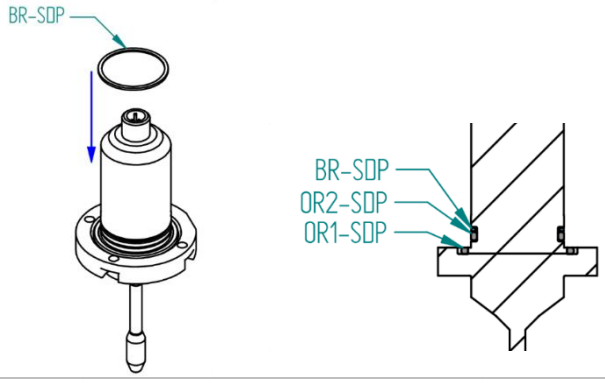
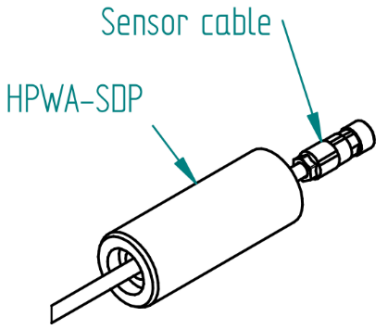


Product Key	Description	Qty.
SPS-SDP	Protection Sleeve SDP	1
M5X10-ST	M5 10 mm Set Screw - A4	2
M4X15-BT	M4 15 mm Cap Head Screw - A4	4
SDP-X9	SDP Probe Base	1
OR1-SDP	O-Ring 32x2.5 mm - 90 shore - NBR	1
OR2-SDP	O-Ring 26x2.5 mm - 90 shore - NBR	1
BR-SDP	Back-up Ring – 26.2/30.2x1.4 mm - PTFE	1
HPWA-SDP	HP Weld Adapter for SDP	1

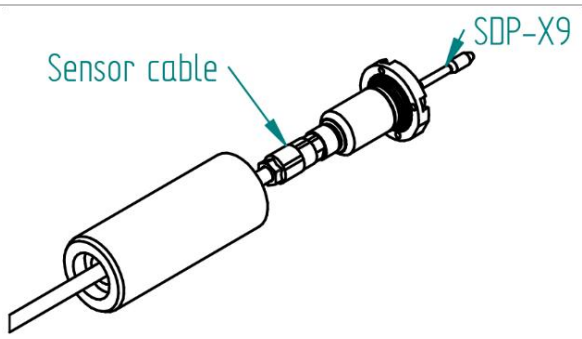
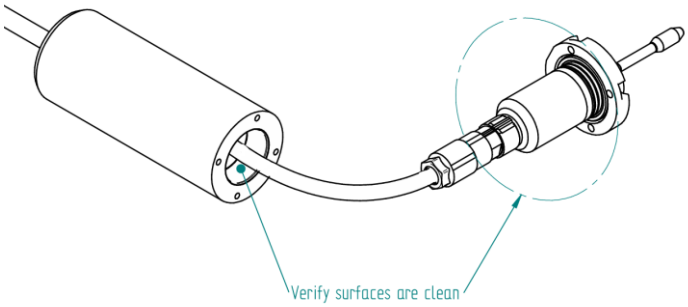
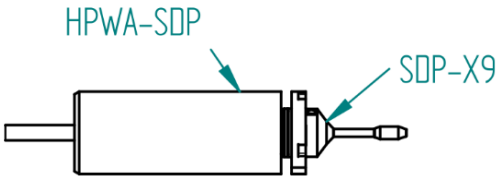
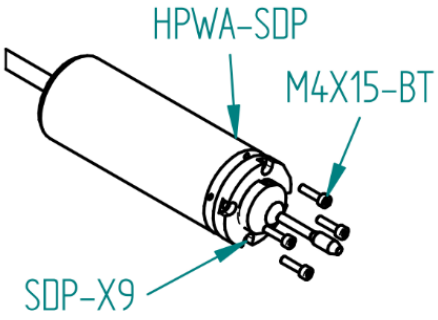
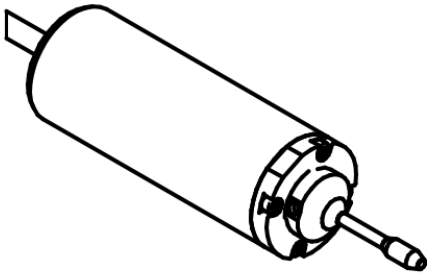
Table 5: SDP probe main components

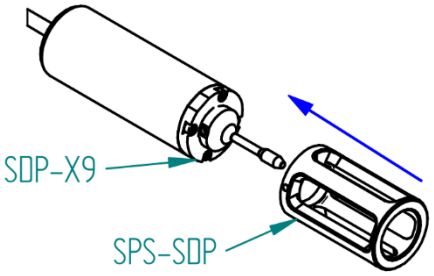
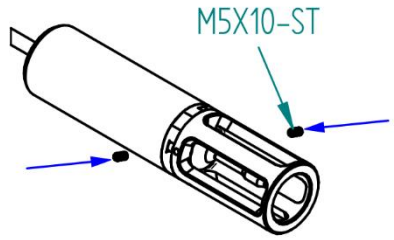
4 Assembly

4.1 SDP probe assembly

Step	Description	Image
Steps 1-3 may have already been done at Rheonics' factory		
1	Place the OR1-SDP on the SDP-X9.	
2	Place the OR2-SDP on the SDP-X9.	
3	Place the BR-SDP behind next to the OR2-SDP. Make sure the order of rings are as in the image.	
4	Feed the sensor cable through the HPWA-SDP.	

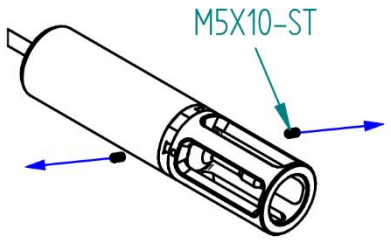
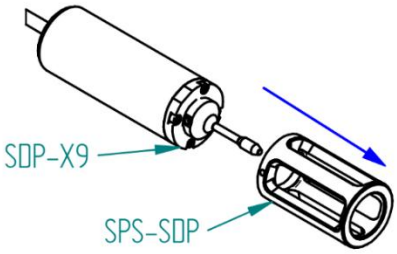
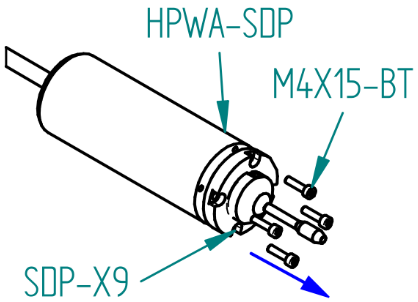
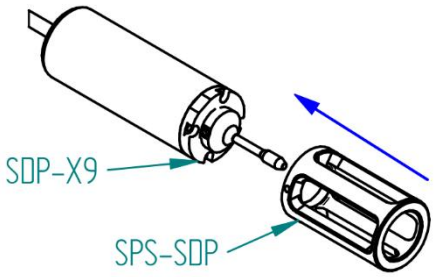
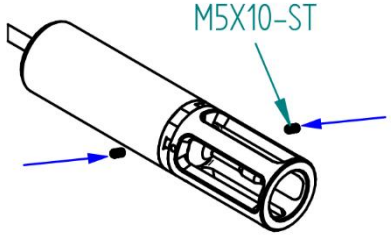
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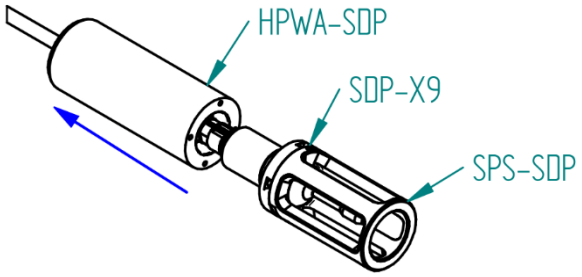
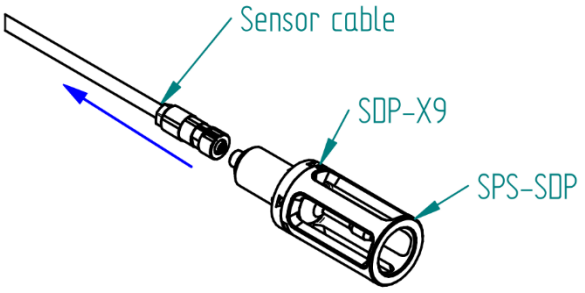
5	Connect the sensor cable to the SDP-X9 M12 back connector.	
6	Before inserting the SDP-X9 in the HPWA-SDP, check the O-rings. Make sure the sealing surface is clean (no sand or deposits). A lubricant, compatible with the O-ring material, may be used.	
7	Push the SDP-X9 in the HPWA-SDP. The SDP-X9 will not go all the way in due to the O-rings.	
8	Align the 4 holes to thread the M4X15-BT in the assembly.	
9	Use the M4X15-BT screws to fully insert the SDP-X9 into the HPWA-SDP.	

10	Place the SPS-SDP on the front side of the SDP-X9. Align the threads of the SPS-SDP with the lateral grooves of the SDP-X9.	
11	Tighten the M5X10-ST in the SPS-SDP to secure the SPS-SDP.	

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4.2 SDP probe removal

Step	Description	Image
1	Remove the M5X10-ST from the SPS-SDP.	
2	Remove the SPS-SDP from the SDP-X9.	
3	Remove the M4X15-BT from the SDP-X9.	
4	Reinsert the SPS-SDP on the SDP-X9.	
5	Tighten back the M5X10-ST on the SPS-SDP. Now the SDP-X9 can be safely held.	

6	Hold on the SPS-SDP to remove the SDP-X9 from the HPWA-SDP. It may require some force since the fit is tight due to the OR2-SDP.	
7	Remove the sensor cable from the SDP-X9 M12 back connector.	
9	Inspect the O-Rings and back-up ring. Change them if needed.	-

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6 Notes/Errata

7 Revision and Approvals

Version	Nature of changes	Approvals	Date
1.0	Original version	DB	30-10-25

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