

Operating Manual

DELTA

Inline Measuring Techniques



Read and understand this manual prior to operating or servicing this product.

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1. General Terms

This operating manual has to be read carefully and observed by the competent operating and maintenance personnel.

We have to point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with this operating manual.

Descriptions and data given herein are subject to technical changes.

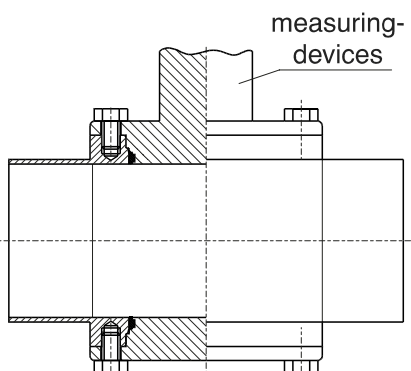
2. Safety Instructions



DANGER!

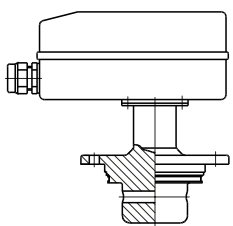
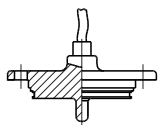
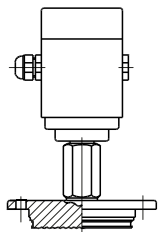
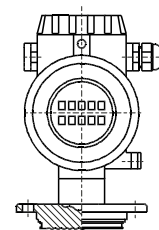
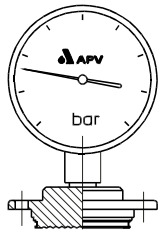
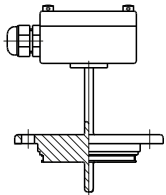
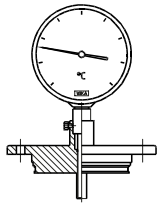
- The line system must be depressurized before any maintenance.
- Observe assembly instructions to ensure safe maintenance of the measuring device.
- Moreover, the special safety instructions of the individual measuring devices (e.g. for electric connections) must be observed.

3. Field of Application



- The APV Inline housings with different measuring devices are used in applications in which hygienic process conditions must be provided by crevice-free sealing and reliable cleaning.
- Two different measuring devices can usually be used in one housing.
- With larger nominal diameters special housings can be equipped with 4 connections for measuring devices.
- For applications with increased line pressures special housing are available.

4. Measuring Device



All measuring devices have the same dimensions of flange connection and can, thus, be used independently of the nominal diameter.

Selection can be made from different measuring devices:

Temperature measurement

- **Thermometer:**
bimetal thermometer according to type sheet TM 52.01
type series R 5216
accuracy class: 1
- **Temperature sensor:**
resistance thermometer PT 100 according to DIN/IEC
751 cl. B in twin core wiring
electric terminal box out of polycarbonate
protective type: IP 67

Pressure measurement

- **Pressure gauge:**
pressure transmitter for front flush stainless steel membrane
radial output with different connecting directions
filling: glycerine
quality class: 1.0
- **Pressure measuring transducer:**
pressure measuring transducer 141 GB with front flush stainless steel membrane
with or without LCD
temperature: + 120°C
filling: Silicone oil
protective type: IP 66
- **Pressure sensor**
pressure transmitter type CERABAR with ceramic measuring cells
and potential-free analog output,
pressure transmitter with front flush stainless steel membrane
filling: Silicone oil
quality class: 0.2
protective type: IP 65

Flow measurement

- **Flow controller**
immersion sensor ST 74614 according to calorimetric measuring principle
measuring range: 1 ... 150 cm/s
different analysis devices
protective type: IP 67

Conductivity measurement

- **Conductivity transmitter LMIT 08:**
compact device with electrodeless measuring cell out of Teflon,
different measuring range change-overs
with and without LCD
protective type: IP 67

4. Measuring Device

Optical measuring technique:

turbidity measurement
colour measurement
concentration measurement

Ultrasonic measuring technique:

concentration measurement
density measurement

Sight glass:

with and without illumination.

5. Cleaning

As a result of the design of the Inline housing being free of dead spaces (no sump and no dome) all product-wetted parts can be cleaned properly during the cleaning process.

6. Installation

The housing must be installed in such a way that a faultless function of the measuring device is given. Moreover, the installation must allow for fluids to drain off the housing.

With horizontal installation, measuring devices must be installed vertically.



Attention!

- Observe welding instructions!
-

6.1 Welding Instructions

Before welding, the measuring devices and the housing cover must be removed. See to a careful handling to avoid damage.

- Welding may only be carried out by certified welders (EN 287-1). (Seam quality EN 25817 „B“).
- The welding of the valve housings must be effected in such a way that deformation strain cannot be transferred to the valve body.

6.1 Welding Instructions

- The preparation of the weld seam up to 3 mm thickness must be carried out in butt manner as an square butt joint without air. (Consider shrinkage!)
- TIG orbital welding should be aimed at!
- After welding of the valve housings, the pipelines must be cleaned from welding residues and soiling in order to prevent other components from being damaged.
- Any damage resulting from the nonobservance of these welding instructions is not subject to our guarantee.

7. Maintenance

- The maintenance intervals depend on the individual application and are to be determined by the operator himself by temporary checks.
- Installation of measuring devices see assembly instructions.
- **All seals must be slightly greased before their installation.**

Recommendation:

APV food grade grease for EPDM, HNBR and FPM

(0,75 kg /tin - ref.-No. 000 70-01-019/93)

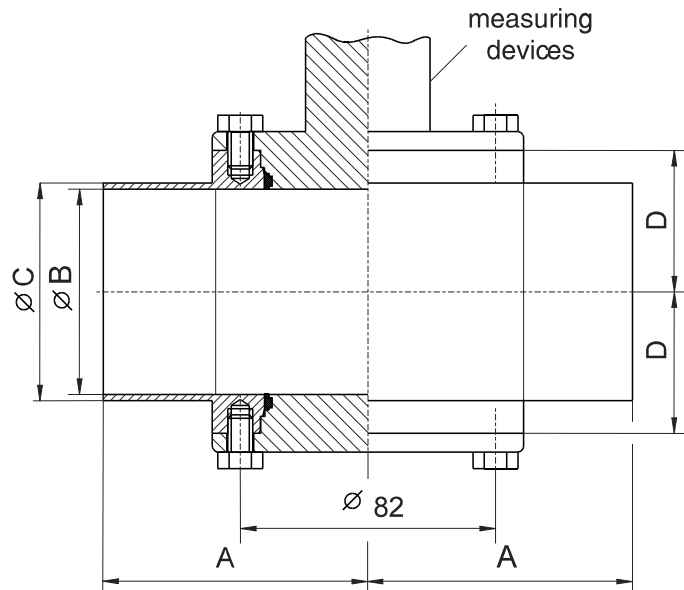
(60 g /tube - ref.-No. 000 70-01-018/93)

- ! For all applications, use only those greases which are suited for the corresponding seal material !

8. Materials

| | | |
|----------------------|---|---|
| Product-wetted parts | : | 1.4571 / 1.4404 |
| Seals | : | standard EPDM option HNBR, FPM |
| Measuring devices | : | see technical documents of manufacturer or item 4. |

9. Dimensions / Weights



| DN | A | B | C | D | weight in kg |
|-----|-----|-----|-----|------|--------------|
| 25 | 68 | 26 | 29 | 25,5 | |
| 40 | 67 | 38 | 41 | 31,5 | |
| 50 | 72 | 50 | 53 | 37,5 | |
| 65 | 85 | 66 | 70 | 45,5 | |
| 80 | 98 | 81 | 85 | 53,0 | |
| 100 | 111 | 100 | 104 | 62,5 | |
| 125 | 130 | 125 | 129 | 75,0 | |
| 150 | 150 | 150 | 154 | 87,5 | |

10. Technical Data

max. line pressure : 10 bar
(higher pressure on request)

max. operating temperature : 140⁰ C EPDM, HNBR
135⁰ C FPM

sterilization temperature : 150⁰ C EPDM, HNBR
(short-term) : 140⁰ C FPM

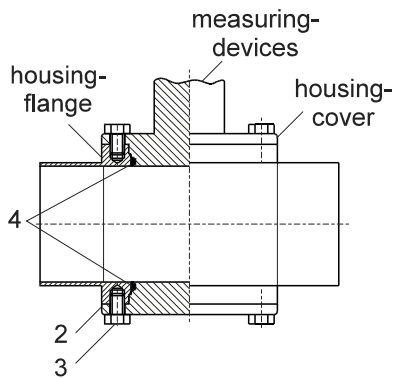
For information about the measuring devices refer to the technical documents of the manufacturers.

11. Assembly Instructions

The item numbers refer to the spare parts list RN 01.256.

11.1 Dismantling from the line system

- a. Shut off line pressure in the product line and discharge line if possible.
- b. Disconnect electric and pneumatic connecting lines.
- c. Remove hex. screws **(3)**. Screw two screws into the threaded holes of the housing cover **(2)**, thus, pressing the measuring device and the housing cover off.



11.2 Dismantling of wear parts

- If the measuring device has additional wear parts, the corresponding operating instruction must be observed.
- a. Pull off housing seal **(4)**.

11.3 Installation of seals and measuring devices

- a. Pull the slightly greased seal on the flange of the measuring device or of the housing cover **(2)**.

See to a correct fit of the seal.

- b. Place the measuring device or housing cover straightly on the housing flange and tighten it by the hex. screws **(3)**.
- c. Connect electric and pneumatic lines.

12. Trouble Shooting

- leakage between housing flange and flange of measuring device or housing cover : replace housing seal.

13. Spare Parts Lists

(see annex)

BA INLM 000002
ID-No.: H 1 7 5 7 6 0
Translation of original manual



rev. 0



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02/94

| | | | | | | | | | |
|------------------------------------|--|-----------------------------|--|--------------------|--|-------|--|-----------|--|
| Ersatzteilliste: spare parts list: | | Besteht aus 6 Blatt Blatt 1 | | Gezeichnet 20.3.98 | | Datum | | Name | |
| Inline-Messtechnik DN 25-150 | | | | Geprüft | | | | Tryptko | |
| Gehäuse und Meßgeräte | | | | Normgepr. | | | | | |
| Inline measuring techniques | | | | | | | | | |
| housing and measuring devices | | | | | | | | | |
| | | Datum 3/98 | | | | | | | |
| | | Name Tryptko | | | | | | | |
| | | | | | | | | RN 01.256 | |



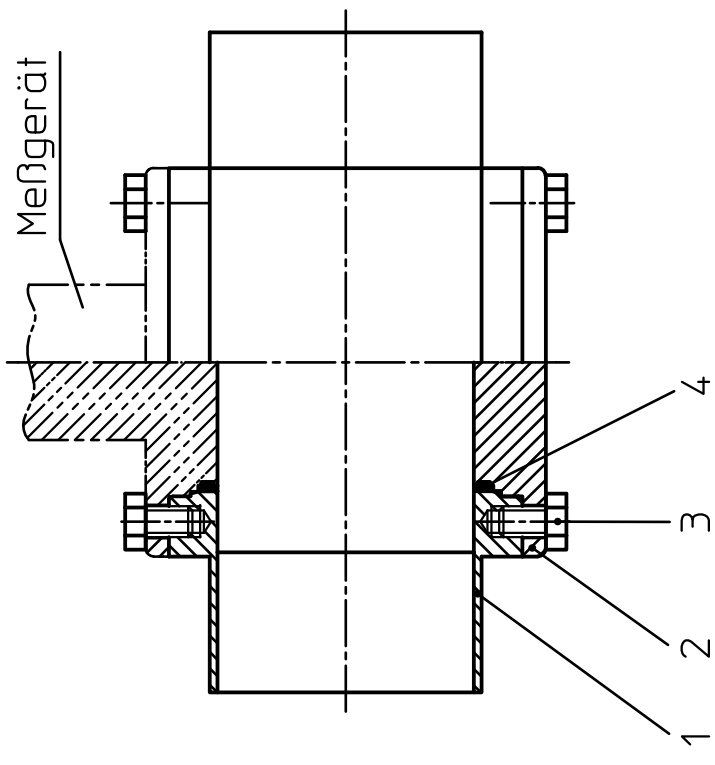
APV Rosista GmbH
D-59425 Urra
Germany

Es stehen verschiedene Dichtungswerkstoffe zur Verfügung. Bitte WS-Nr. ergänzen

The following seal materials are available (fill in last two digits of ref.-no.)

- * Dichtungswerkstoff: material seals:
 - ../73-Viton
 - ../93-EPDM
 - ../33-HNBR

Gehäusedichtung /housing seal
Bei Silikon wird die HNBR-Gehäusedichtung eingesetzt.
For Silicone take the HNBR-housing seal.

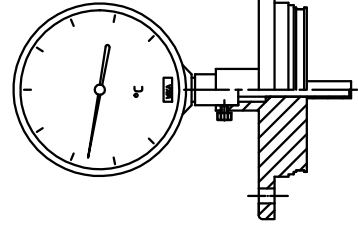


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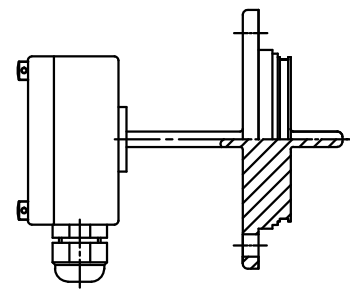
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| Ersatzteilliste: spare parts list: | | Blatt 3 | | Gezeichnet/ 20.3.98 | | Name | |
| Inline-Messtechnik DN 25-150 | | | | Geprüft | | Trytko | |
| Gehäuse und Meßgeräte | | | | Normgepr. | | | |
| Inline measuring techniques | | | | | | | |
| housing and measuring devices | | | | | | | |
| Datum | 3/98 | Datum | 20.3.98 | RN 01.256 | | | |
| Name | Trytko | | | | | | |



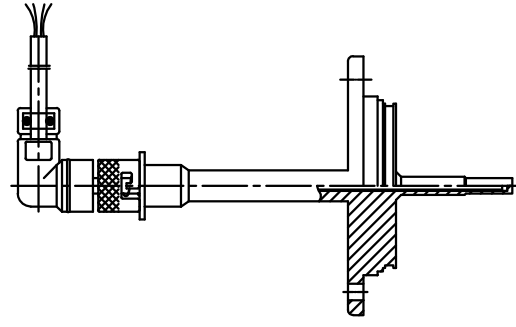
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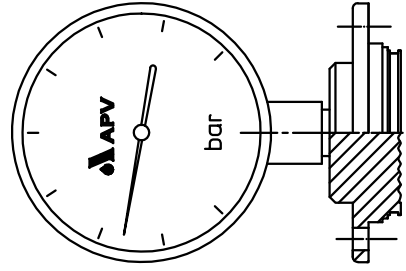
I.1 Thermometer
thermometer



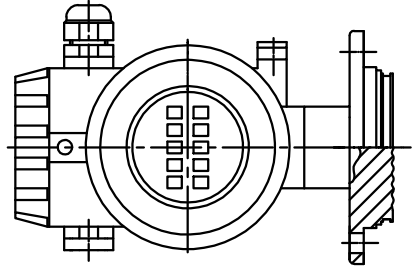
I.2 Temperature sensor
temperature sensor



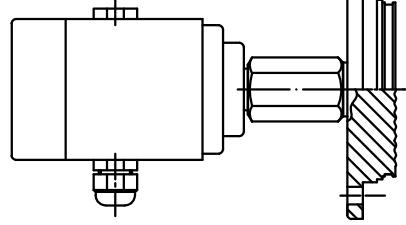
I.3 Widerstandsthermometer
resistance thermometer



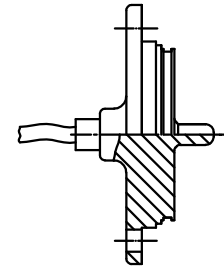
II.1 Manometer
pressure gauge



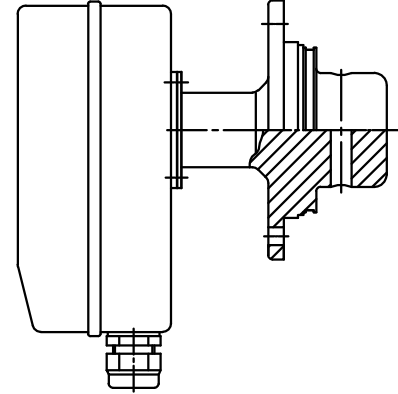
II.2 Druckmeßumformer
pressure transmitter



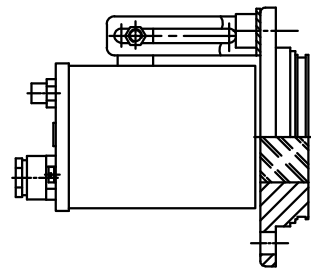
II.3 Druckmeßaufnehmer
pressure transmitter



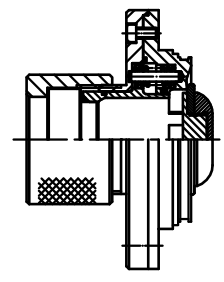
III Strömungswächter
flow controller



IV Leitfähigkeitsmeßgerät
conductivity measurement




V Schauglas mit Beleuchtung
illuminating for sight glass



VI Eintaucharmatur für Orbisphere
Wechselsonden
insertion device for orbisphere
oxygen probes

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| | | | | | |
|------------------------------------|-------------------------------|--------------------|--------------------|--|--------------------|
| Ersatzteilliste: spare parts list: | | Blatt <u>4</u> | |  APV Rosista GmbH D-58425 Urra Germany | |
| Inline-Messtechnik DN 25-150 | | | | | |
| Gehäuse und Meßgeräte | | | | | |
| Inline measuring techniques | | | | | |
| housing and measuring devices | | | | RN 01.256 | |
| Pos. item | Benennung description | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. |
| | Meßgeräte / measuring devices | | | | |

| | | | | | |
|----|--|--------------|--------------|--|--|
| 1. | Temperaturmessung / temperature measurement | | | | |
| 1 | Thermometer / thermometer | | | | |
| | Deckel Thermometer (Fa. WIKA) | | | | |
| | Cover thermometer | | | | |
| | Wika Thermometer 0°-160°C Typ-Nr.R5216 NG100 | DN 25 | DN 40-150 | | |
| | Wika thermometer | 15-00-232/47 | 15-00-055/47 | | |
| | Wika Thermometer -30°-+50°C Typ-Nr.R5216 NG100 | 76-02-001/13 | = | | |
| | Wika thermometer | 76-02-002/13 | = | | |

| | | | | | |
|---|---|---------------|---------------|---------------|--|
| 2 | Temperatursensor / temperature sensor PT100 | | | | |
| | Temperaturbereich temperature range | | | | |
| | Einfachwicklung simple winding | -50°C...+50°C | -0°C...+100°C | -0°C...+200°C | |
| | Doppelwicklung compound winding | 76-02-031/47 | 76-02-032/47 | 76-02-033/47 | ohne Meßumformer without measuring transducer |
| | | 76-02-029/47 | 76-02-035/47 | 76-02-036/47 | ohne Meßumformer without measuring transducer |

| | | | | | |
|---|--|--------------|--------------|--|--|
| 3 | Widerstandsthermometer / resistance thermometer | | | | |
| | Deckel Thermometer Cover thermometer | DN 25-40 | DN 50-80 | | |
| | Widerstandsthermometer (Fa.Pförtner) Resistance thermometer | 15-00-236/47 | 15-00-237/47 | | |

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Ersatzteilliste: spare parts list:
 Inline-Messtechnik DN 25-150
 Gehäuse und Meßgeräte
 Inline measuring techniques
 housing and measuring devices

Blatt 5

| | | | |
|------------|---------|------|--------|
| Datum | 3/98 | Name | Trytko |
| Gezeichnet | 20.3.98 | Name | Trytko |
| Geprüft | | | |
| Normgepr. | | | |

RN 01.256




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 Germany

| Pos. item | Benennung description | WS-Nr. ref.-no. | | WS-Nr. ref.-no. | | WS-Nr. ref.-no. | | WS-Nr. ref.-no. | |
|--------------|-------------------------------------|-------------------------------|------------------------|--------------------|--------------|--------------------|--------------|--------------------|--|
| | | | | | | | | | |
| ll. | Druckmessung / pressure measurement | | | | | | | | |
| 1 | Manometer / pressure gauge | | | | | | | | |
| | | Meßbereich measuring range | Anschluß connection | 12.00 | 18.00 | 15.00 | 9.00 | | |
| | | 0- 6 bar | | 76-02-037/47 | 76-02-040/47 | 76-02-043/47 | 76-02-046/47 | | |
| | | 0-10 bar | | 76-02-038/93 | 76-02-041/93 | 76-02-044/93 | 76-02-047/93 | | |
| | | 0-16 bar | | 76-02-039/93 | 76-02-042/93 | 76-02-045/93 | 76-02-048/93 | | |
| | | 0-60 bar | | 76-02-026/93 | 76-02-028/93 | 76-02-027/93 | 76-02-025/93 | | |

| | | | | | | | | | |
|---|--|--------------------------------|--|---------------|--------------|--------------|--|--|--|
| 2 | Druckmeßumformer / pressure transmitter 141GP | | | | | | | | |
| | | Druckbereich Pressure range | | 0,125-2,5 bar | 1,25-25 bar | | | | |
| | ohne Digitalanzeige without digital display | | | 76-02-085/47 | 76-02-086/47 | 76-02-087/47 | | | |
| | mit Digitalanzeige with digital display | | | 76-02-090/47 | 76-02-091/47 | 76-02-092/47 | | | |

| | | | | | | | | | |
|---|--|--------------------------------|--|--------------|--------------|--------------|--------------|--|--|
| 3 | Druckmeßaufnehmer / pressure transmitter PMC-531 | | | | | | | | |
| | | Druckbereich Pressure range | | 0-0,2 bar | 0-10 bar | 0-20 bar | 0-25 bar | | |
| | ohne Digitalanzeige without digital display | | | 76-02-050/47 | 76-02-052/47 | 76-02-053/47 | 76-02-054/47 | | |
| | mit Digitalanzeige with digital display | | | 76-02-060/47 | 76-02-062/47 | 76-02-063/47 | 76-02-064/47 | | |

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| | | | | | |
|---|--------|----------------|---------|--|-----------|
| Ersatzteilliste: spare parts list: | | Blatt <u>6</u> | |  APV Rosista GmbH D-58425 Urra Germany | |
| Inline-Messtechnik DN 25-150 Gehäuse und Meßgeräte | | | | | |
| Inline measuring techniques housing and measuring devices | | | | | |
| Datum | 3/98 | Datum | 20.3.98 | Name | Trytko |
| Name | Trytko | Gezeichnet | | Geprüft | |
| | | Normgepr. | | | |
| | | | | | RN 01.256 |

| Pos. item | Benennung description | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. | WS-Nr. ref.-no. |
|-----------|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | | | | | | | |
| III | Strömungswächter / flow controller | | | | | | | | |
| | Sensor | 76-02-010/47 | | | | | | | |
| | Sensor | 76-02-010/47 | | | | | | | |
| | Auswertegerät | 76-02-102/93 | | | | | | | |
| | Evaluation device | 76-02-102/93 | | | | | | | |
| | Auswertegerät | 76-02-101/93 | | | | | | | |
| | Evaluation device | 76-02-101/93 | | | | | | | |
| | Auswertegerät | 76-02-100/93 | | | | | | | |
| | Evaluation device | 76-02-100/93 | | | | | | | |
| IV | Leitfähigkeitsmessung / conductivity measurement | P3 | LIMIT | 08 | | | | | |
| | Kompaktversion | 76-02-005/17 | | | | | | | |
| | compact version | 76-02-005/17 | | | | | | | |
| | getrennte Version | 76-02-015/17 | | | | | | | |
| | separated version | 76-02-015/17 | | | | | | | |
| V | Schauglas mit Beleuchtung / illuminating for sight glass | | | | | | | | |
| | Deckel Schauglas | 09-50-991/47 | | | | | | | |
| | Cover for sight glass | 09-50-991/47 | | | | | | | |
| | Leuchte mit Bügel | 42-17-041/93 | | | | | | | |
| | Lamp with support | 42-17-041/93 | | | | | | | |
| VI | Eintaucharmatur für Orbisphere Wechselsonden / insertion device for orbisphere oxygen probes | | | | | | | | |
| | Eintaucharmatur | 165454 | | | | | | | |
| | Insertion device | 165454 | | | | | | | |
| | Deckel APV-Inline | 09-50-998/47 | | | | | | | |
| | Cover APV-Inline | 09-50-998/47 | | | | | | | |
| | Flansch APV-Inline | 15-01-942/47 | | | | | | | |
| | Flange APV-Inline | 15-01-942/47 | | | | | | | |