



Operating Instructions
for
Screw-Type Volumetric Flow Meter
High Pressure Version
Model: OMH



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2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

as per PED 2014/68/EU

In acc. with Article 4 Paragraph 3, "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

Diagram 9, Pipe, Group 2 no dangerous fluids

3. Instrument Inspection

All Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:

The standard delivery includes:

- Measuring device type: Screw-Type Volumetric Flow Meter High Pressure Version OMH (incl. pulse generator)
- measuring transducer (only with OMH-../45)

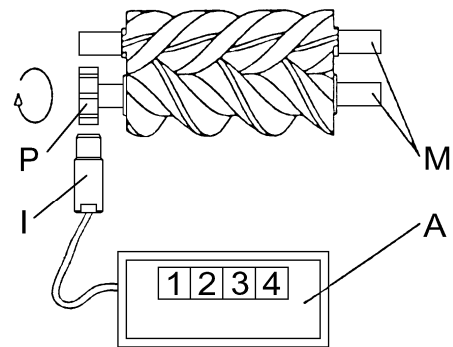
4. Regulation Use

Any use of the OMH which exceeds the manufacturers specifications, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

The measuring principle of the KOBOLD screw-volumeter is positive displacement.

The fluid to be measured causes the measuring spindles **M** to rotate. With each rotation an exact volume is given. These rotations are being transmitted to the display **A** by the pole wheel **P** and pick up **I**. At the display the volume can be shown in any unit of measurement.



6. General Information

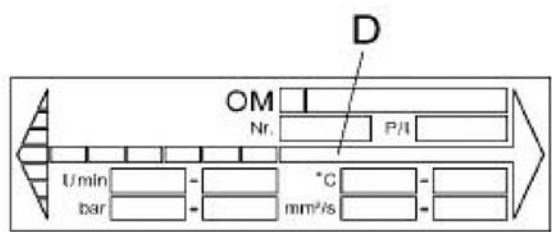
- It is important that any staff concerned with the unit read the operation and maintenance manual prior to start up of the unit.
- The user is responsible for taking all precautions outlined in this manual
- This screw-volumeter should not be operated outside of the data specifications given on the type plate. Any deviations require confirmation from the supplier.
- It is not possible to put all the information you may require in the manual. Should you require any special information, please contact us.
- Depending on the operating conditions, wear, corrosion or age of the unit, its specified attributes may be affected. It is therefore essential that the unit is periodically maintained. The user must replace all parts which would not guarantee a longer operating life with trouble-free operation. If the unit operates unusually or damage is observed, it is not allowed to continue operation.
- Installations which could lead to personal injury and/or material failure should be equipped with an alarm system and/or bypass. This system should be checked regularly.

7. Warranty

The warranty is according to our terms of delivery. Repairs during the guarantee period must be carried out only by individuals authorised by us and in accordance with our agreement and instructions.

8. Mechanical Connection

Mounting position: any
 Flow direction: both directions are possible, preferable flow **D** according to the identification plate.



Minimum pressure: on the outlet of the volumeter the pressure should be higher than 0,1 bar. In no case the medium may run out free of the volumeter

Unclean medium: filtration with max. 0,3 - 0,5 mm mesh width is required

Foreign substance: the pipe system must be free from welding beads, scabs a. s.o., as they can block the volumeter

Over pressure valve: a blocked volumeter stops the complete flow of the medium, therefor depending the application, an overpressure valve is required.

Fastening: without tensions to prevent distortion of the volumeter pipe thread connection.

Pipe thread connection: the thread length of the pipe may not be longer than the thread length of the volumeter (reduction of the flow area resp. damage of internal parts of flowmeter)

Manometer connections: should be approachable
 thread: R 1/4")

Storing: incorrect storing can cause corrosion even seizing

Attention: When the volumeter or installations are damaged, medium could flow out. To prevent consequential damage an appropriate alarm device should be installed.

9. Electrical Connection

The dry sleeve is mounted, adjusted and tested with the pick up inside as a whole unit, by KOBOLD.

The pick-up insert, including milled nut and spring, are screwed into the dry sleeve by the customer (see included data sheet).



Caution: The dry sleeve must be free of foreign substance. The spring must be able to press the pick-up insert flush with the frontside of the dry sleeve.

The free cable ends will be connected to a display unit according connection diagram and technical data on the included data sheet.



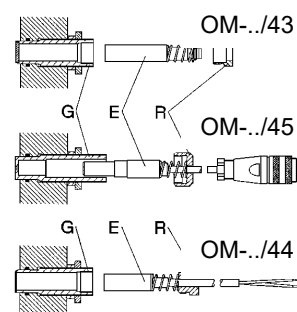
Caution: The complete sensor unit (sensor, measuring transducer and cable) should not be located in an area of high intensity electromagnetic field, as may come from high voltage transmissions, electric motors, frequency converters etc.; this could cause measuring errors or even destruction of the sensor system.

Even though the pipe-system is filled the pick-up insert of the pick-up can be changed without regulating a new distance to the pole wheel.

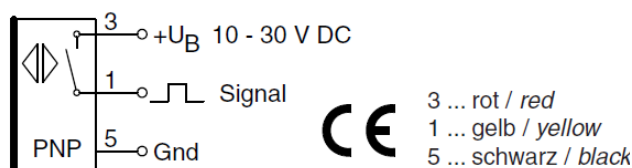
Exchange pick-up insert E by opening milled nut R.



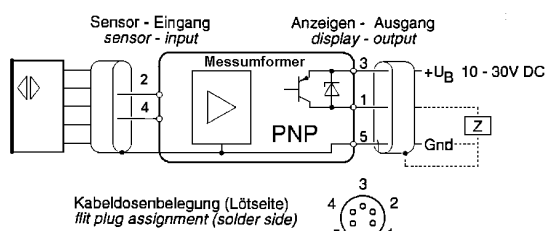
Caution: Dry sleeve G must not turn!



OM-.../44



OM-.../45



Further details about the pulse generators can be found in the additional instructions: "Operating instructions for pulse generators for the OM series... Type: /43../44../45"

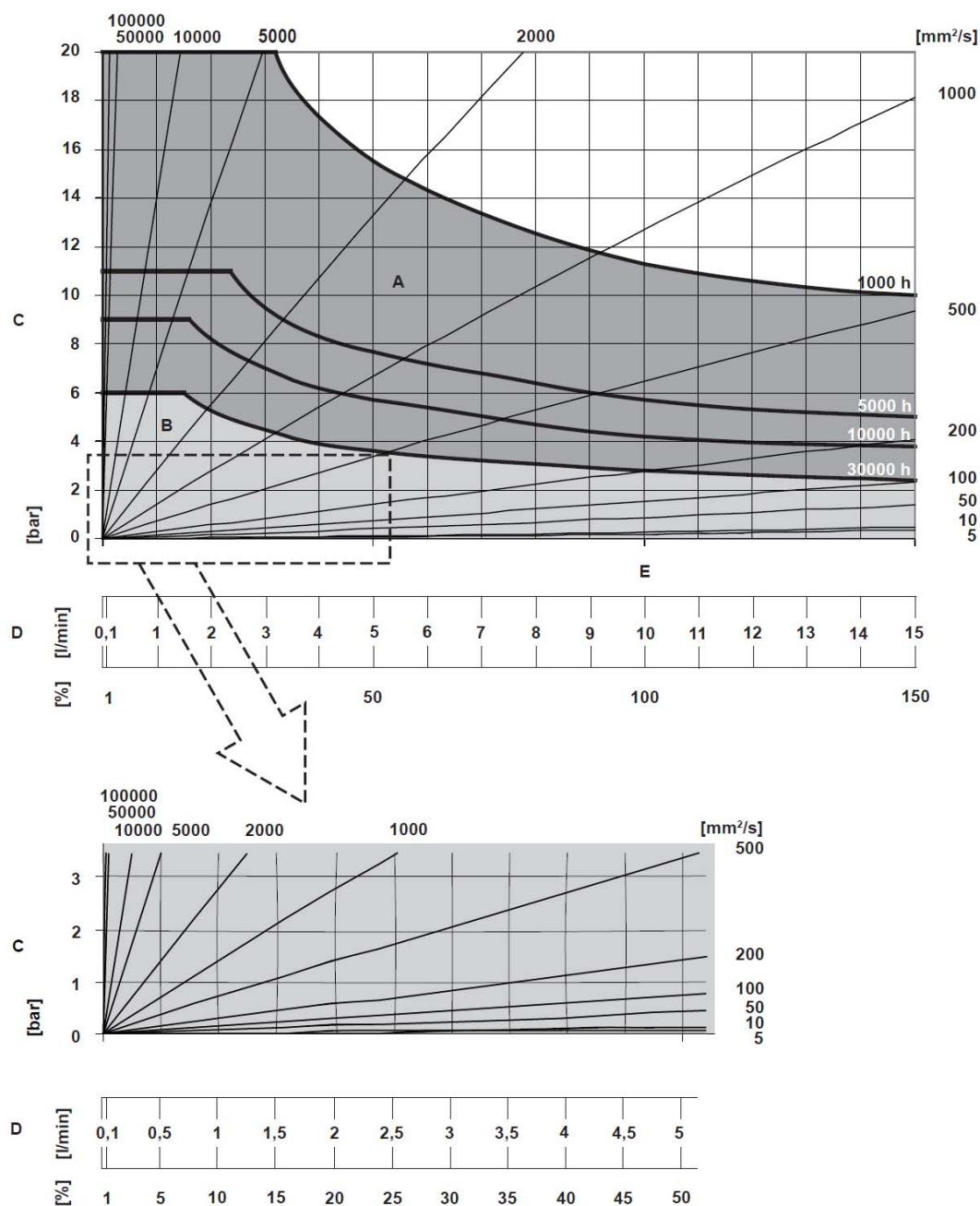
10. Start up

Technical data on the identification plate and on the attached leaflets must be taken into consideration.

Venting: The system must be free of air (affects the accuracy)

11. Pressure bearing capacity

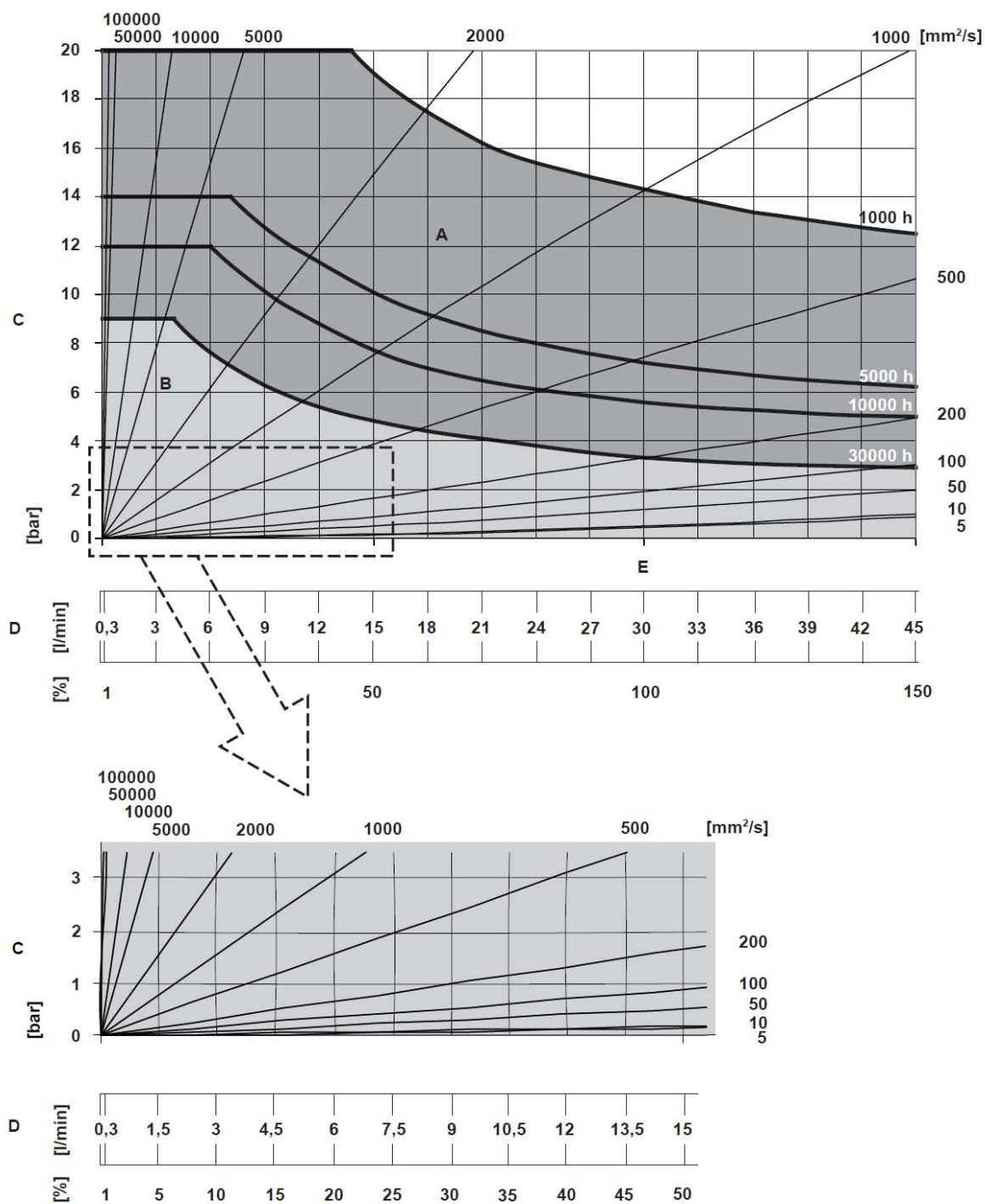
Pressure bearing capacity OMH 15



- A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{nenn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

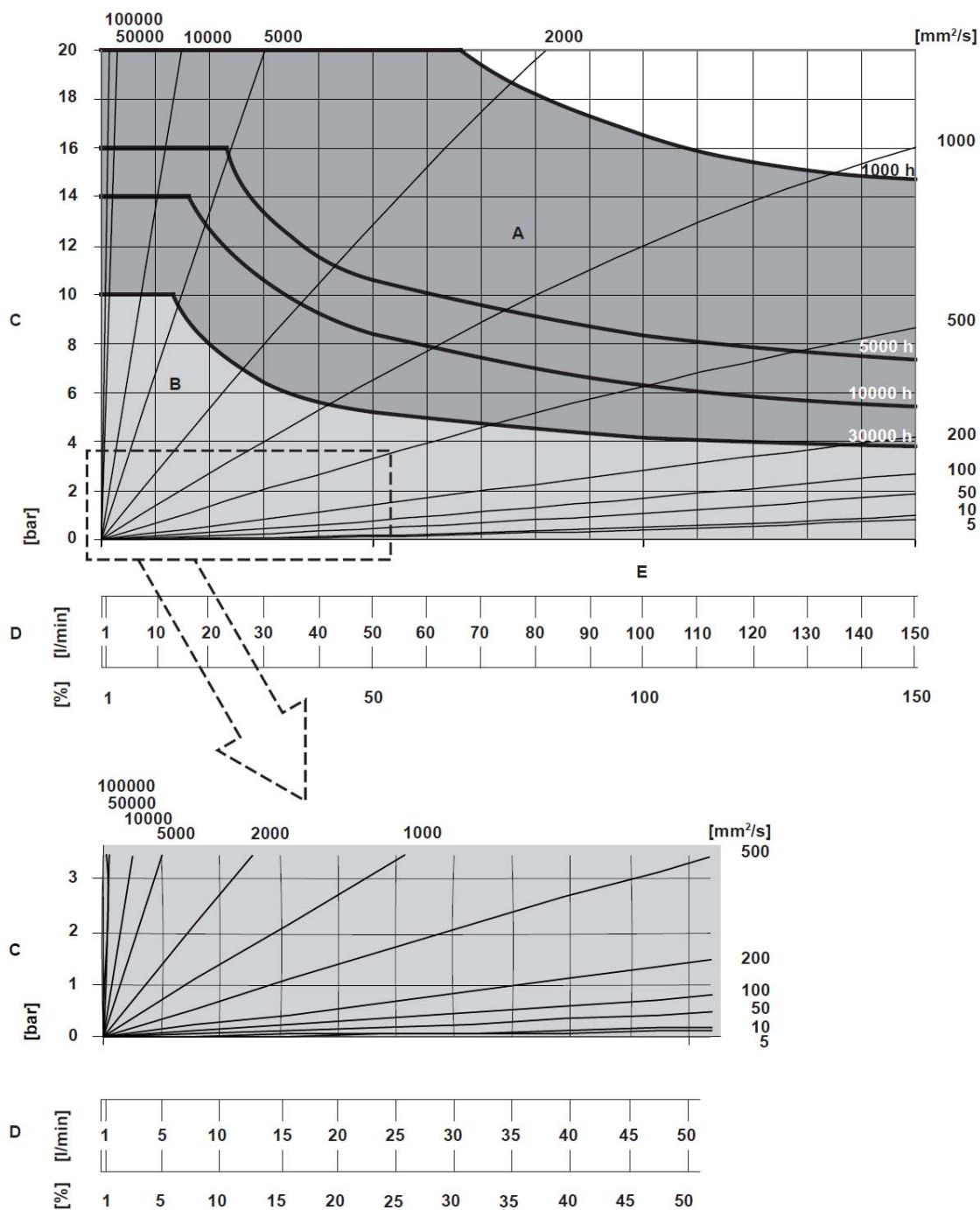
Pressure bearing capacity OMH 20



- A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{nenn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

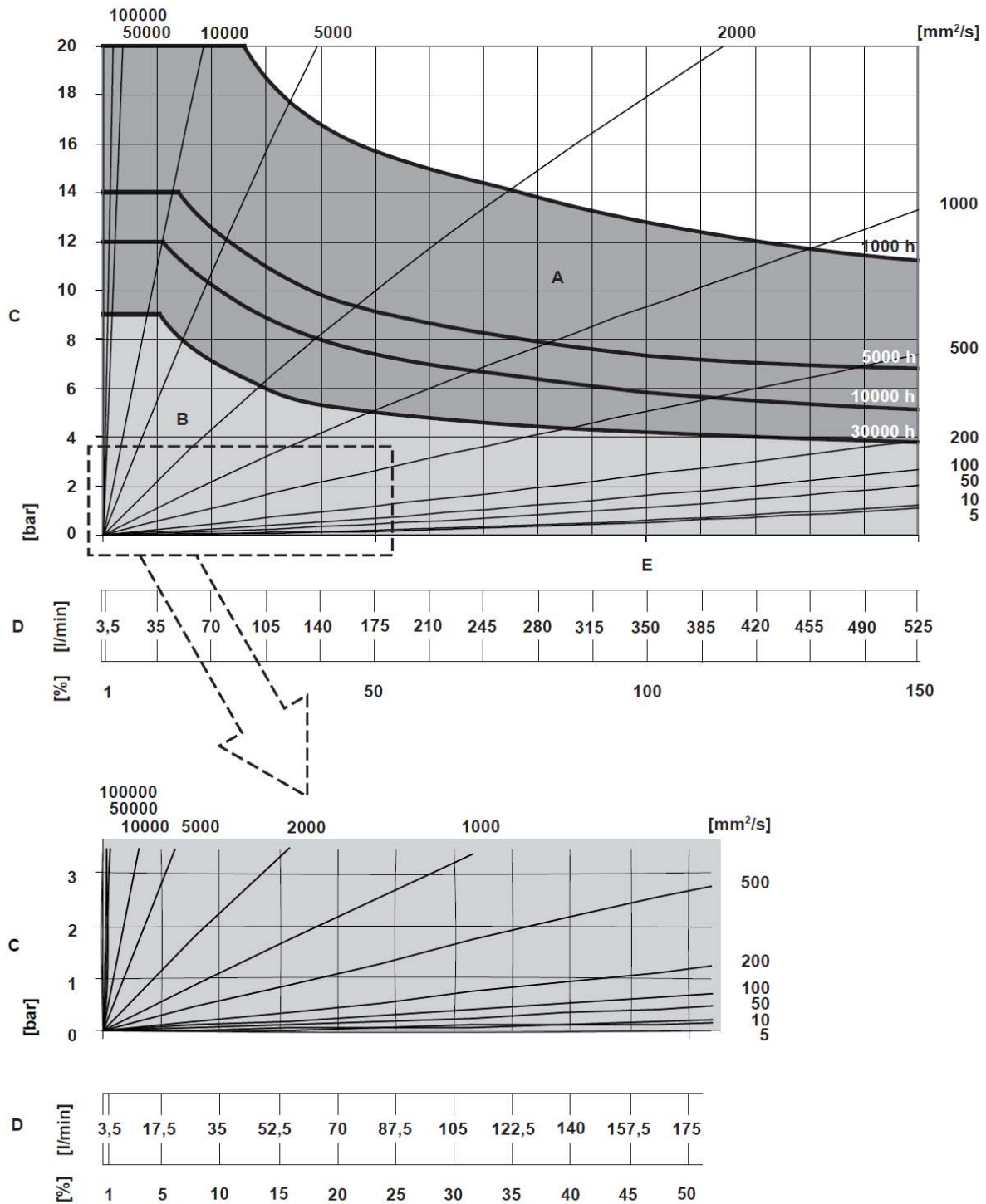
Pressure bearing capacity OMH 25



- A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{nenn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

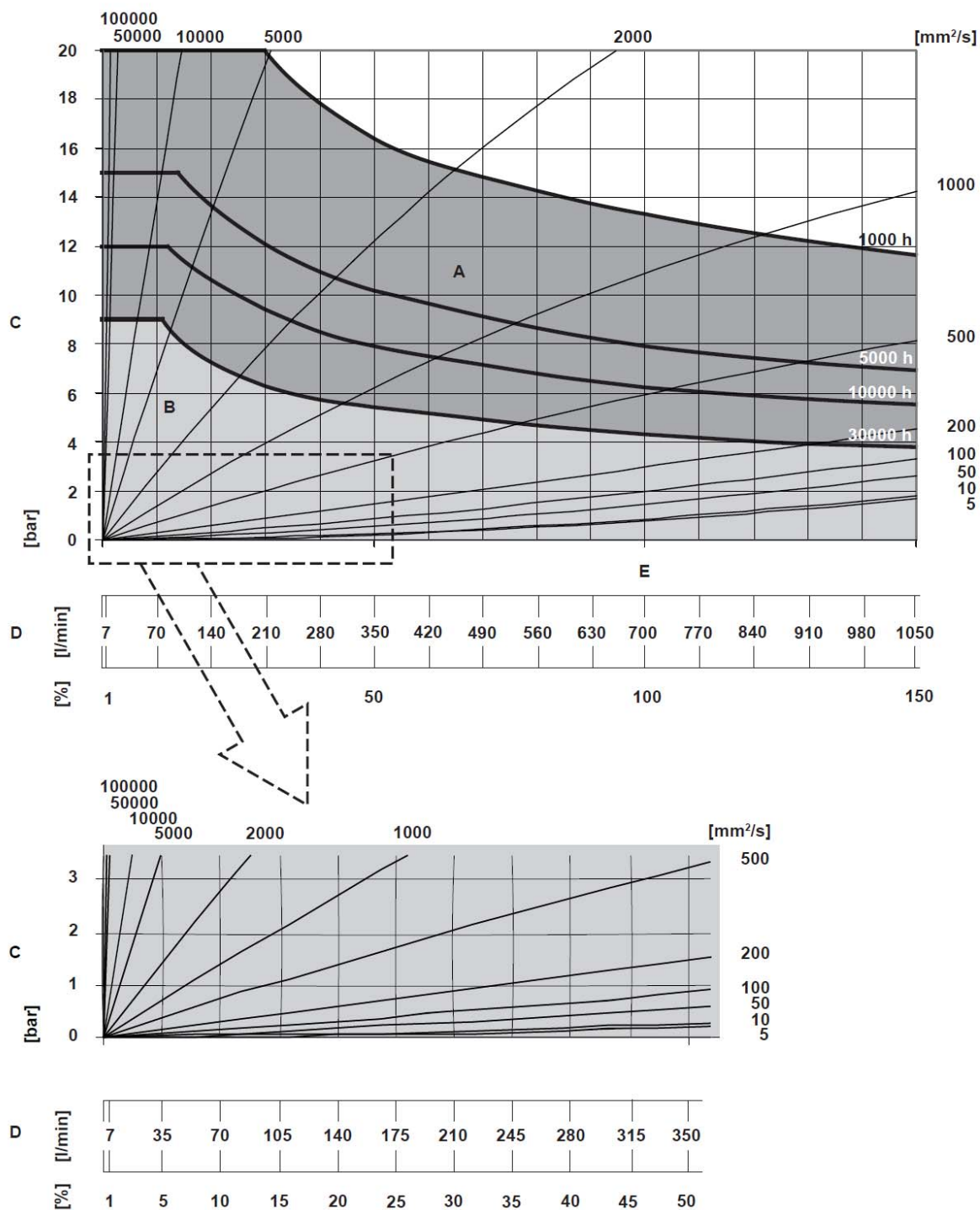
Pressure bearing capacity OMH 40



- A A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{henn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

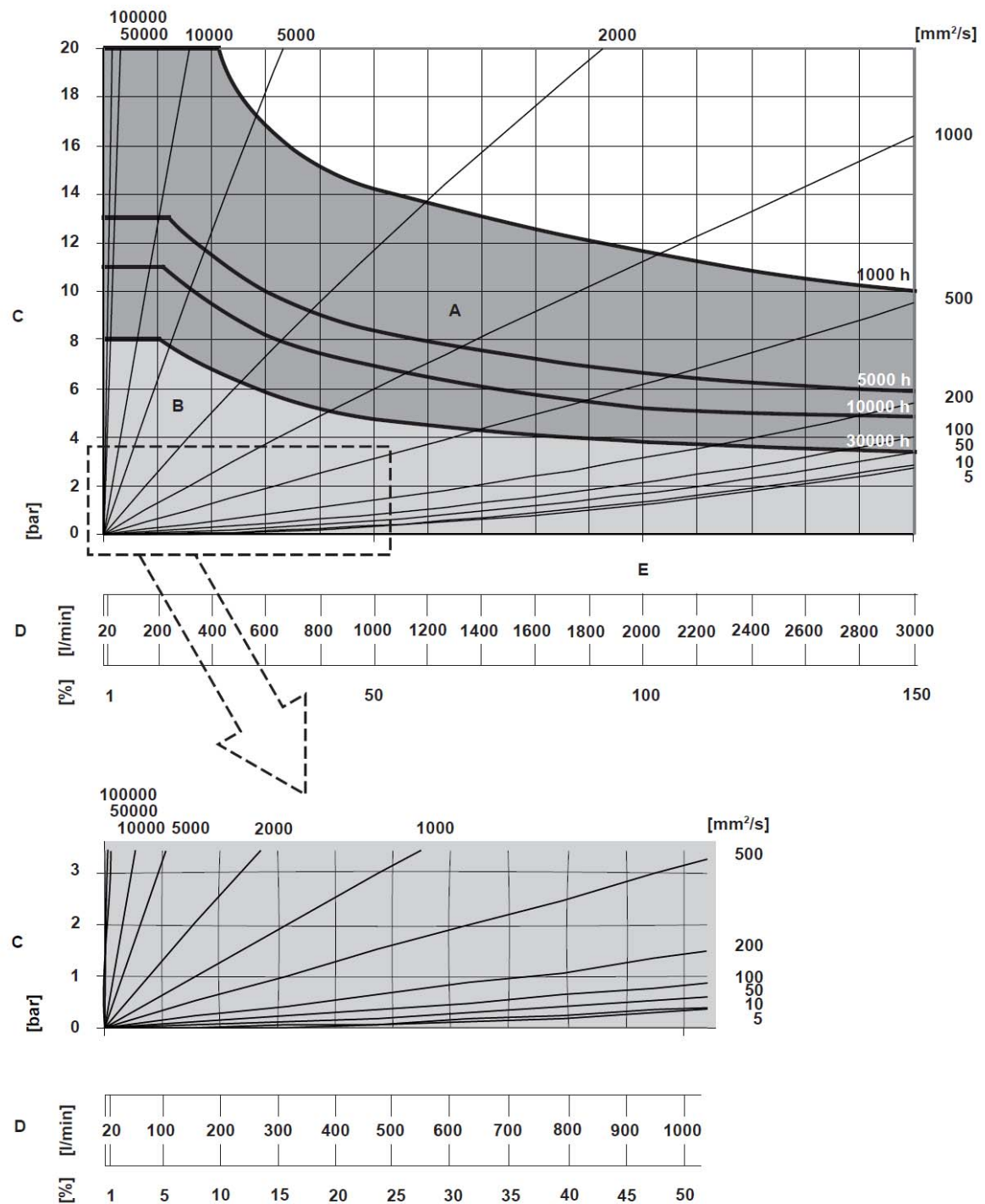
Pressure bearing capacity OMH 50



- A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{nenn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

Pressure bearing capacity OMH1H



- A Short-term operation
- B Continuous operation
- C Pressure loss
- D Flow rate
- E Q_{henn}

The values apply for lubricating liquids at temperature up to 120 °C. Abrasive and aggressive liquids reduce the service file.

12. Dismounting and Mounting

OMH 15

This work should be done by competent personnel only. This instruction should be used as a support for this activity. If spindle set, measuring casing or bearing will be replaced, volumeter must be recalibrated!

Dismounting:

- do not turn sensor sleeve
- if the red sealing point is damaged, the warranty for the flowmeter expires
- Remove volumeter from installation
- Remove flange cover (Fig.1)
- Remove bearing cover (Fig.2)
- Press out spindle set (with rolling bearings, distance sleeve and spacers) from measuring casing (Fig.3)
- change of bearings:
 - Remove pressed-on pole wheel from measuring spindle with detaching device.
 - Remove circlips and spacers
 - Remove rolling bearings
- Remove o-rings
- Clean all parts carefully, do not scratch sealing surfaces!

Mounting

- mount o-rings
- change of bearings:
 - press rolling bearings on measuring spindle
- press on pole wheel
- insert measuring spindle set into measuring case (Fig.3)
- press distance sleeve into measuring case
- mount spacers (Fig.3)
- mount bearing cover (Fig.2)
- mount flange cover (Fig.1)
- tighten screws crosswise
- install volumeter (see electrical connection)

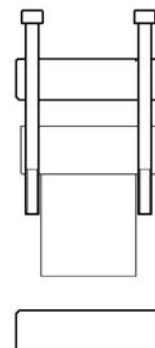


Fig.1

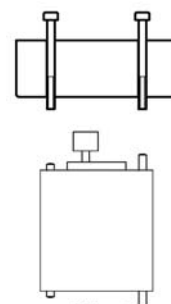


Fig.2

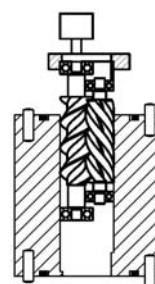


Fig.3

OMH - 20 / 25

This work should be done by competent personnel only. This instruction should be used as support for this activity. If spindle set or measuring casing will be replaced, volumeter must be recalibrated!

Dismounting:

- do not turn sensor sleeve
- if the red sealing point is damaged, the warranty for the flowmeter expires
- remove volumeter from installation
- remove end covers. If construction is with flange cover remove it also (Fig.1)
- press out spindle set (with rolling bearings and distance sleeve) from measuring casing (Fig.2)
- change of bearings:
Large spindle: loosen the screw, remove wedge-locking plate and support-device and remove pressed-on pole wheel from measuring spindle with detaching device
Small spindle: Remove screw, wedge locking plate and support device.
remove rolling bearings
- remove o-rings
- Clean all parts carefully, do not scratch sealing surfaces!

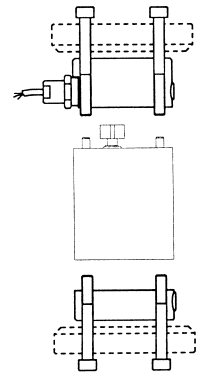


Fig.1

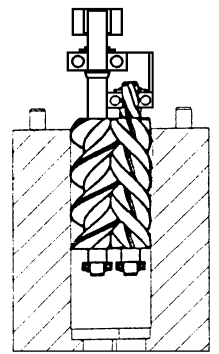


Fig.2

Mounting:

- mount o-rings
- change of bearings:
press rolling bearings onto the measuring spindle
- mount the distance sleeve, the pole wheel, the support device and the wedge locking plate with the screw.
- turning moments for the screw:
OMH20: Large spindle 2,9 Nm
Small spindle 1,5 Nm
OMH25: Large spindle 10,0 Nm
Small spindle 6,0 Nm
- mount circlips and spacers (Fig.1)
- press on pole wheel
- insert spindle set into measuring case (Fig.2)
- press distance sleeve into measuring case
- mount end covers. If the construction is with flange cover, mount these too (Fig.3)
- tighten screws crosswise
- install volumeter

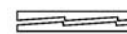


Fig.1

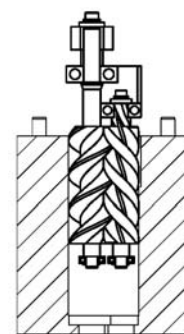


Fig.2

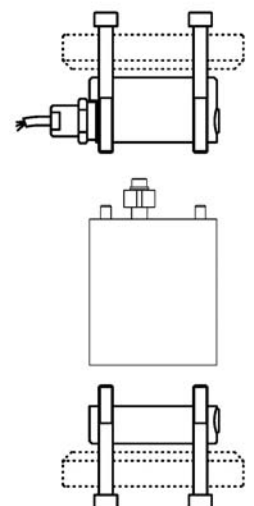


Fig.3

OMH - 40 / 50

This work should be done by competent personnel only. This instruction is only used as support for this activity. If spindle set or measuring casing will be replaced, volumeter must be recalibrated!

Dismounting:

- do not turn sensor sleeve
- if the red sealing point is damaged, the warranty for the flowmeter expires.
- remove volumeter from installation
- remove end covers (Fig.1).
- remove crown (without pick up) (Fig.2)
- loosen measuring casing and take it off carefully (Fig.3)
- Large spindle: loosen screw, remove wedge locking plate and support device, remove pressed on pole wheel with detaching device, remove distance-ring. (Fig.4a)
- remove circlips from crown
- remove spindle set (with rolling bearings) from crown (Fig.4)
- change of bearings:
Small spindle: Loosen screw, remove wedge locking plate and support device.
remove circlips and spacers (4b)
pull off rolling bearings
- remove o-rings
- Clean all parts carefully, do not scratch sealing surfaces!

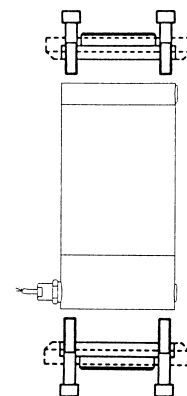


Fig.1

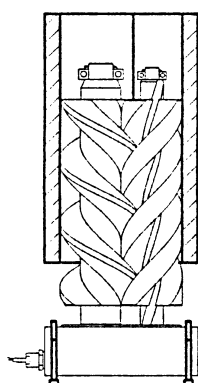


Fig.3

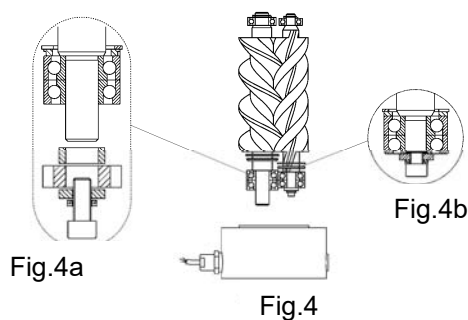


Fig.4a

Fig.4

Fig.4b

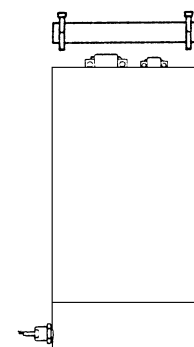


Fig.2

Mounting:

This work should be done by competent personnel only. This instruction should be used as support for this activity. If spindle set or measuring casing will be replaced, volumeter must be recalibrated!

- mount o-rings
- change of bearings:
- mount circlips and spacers (for boring) on pole wheel side.
- Pay attention to correct position of spacer! (Fig.2)
- turning moment for the screw:
 - OMH 40: large spindle 25 Nm
 - small spindle 10 Nm
 - OMH 50: large spindle 49 Nm
 - small spindle 25 Nm
- press on rolling bearings
- Caution: mount angular ball bearing in Y-arrangement
- mount circlips and spacers on measuring spindles
- mount spindle set into crown (with pick up) (Fig.3)
- mount circlips on crown
- push up pole wheel and tighten set screw on end face (Fig.4)
- mount measuring casing (Fig.3)
- mount crown (without pick up) (Fig. 5)
- mount flange covers (Fig. 6)
- tighten screws crosswise
- install volumeter

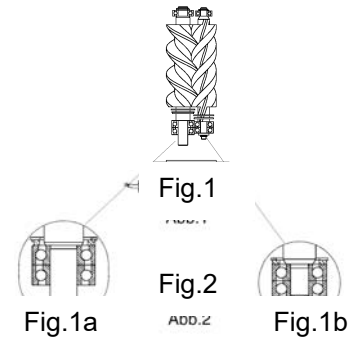


Fig.3

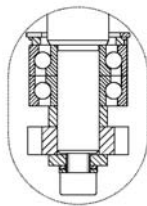


Fig.4

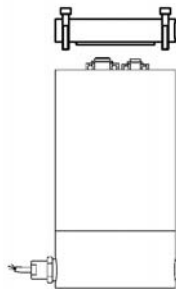


Fig.5

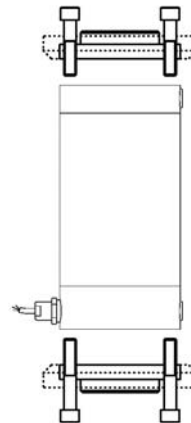


Fig.6

OMH-1H

This work should be done by competent personnel only. This instruction should be used as support for this activity. If spindle set or measuring casing will be replaced, volumeter must be recalibrated!

Dismounting:

- do not turn sensor sleeve
- if the red sealing point is damaged, the warranty for the flowmeter expires.
- remove volumeter from installation
- remove end covers (Fig.1).
- remove crown (without pick up) (Fig.2)
- loosen measuring casing and take it off carefully (Fig. 3)
- Large spindle: Loosen the screw. Remove the wedge locking plate, the support device, the pole wheel with the help of a detaching device and the distance ring. (Fig. 4a)
- remove circlips from crown
- remove spindle set (with rolling bearings) from crown (Abb.4)
- small spindle: loosen the screw. Remove the wedge locking plate and the support device
- change of bearings:
remove second groove nut with locking plate
remove circlips and spacers
pull off rolling bearings
- remove o-rings
- Clean all parts carefully, do not scratch sealing surfaces!

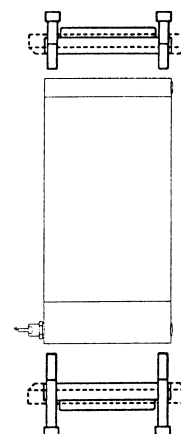


Fig.1

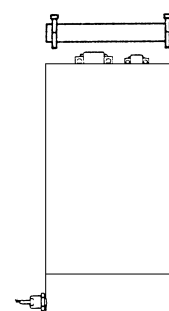


Fig.2

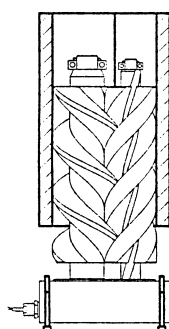


Fig.3

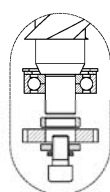


Fig.4a



Fig.4

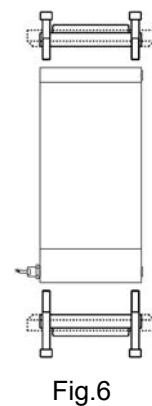
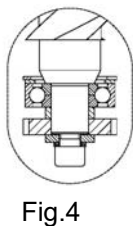
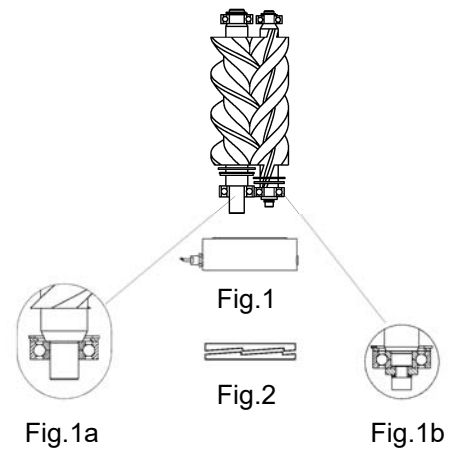


Fig.4b

Mounting:

This work should be done by competent personnel only. This instruction should be used as support for this activity. If spindle set or measuring casing will be replaced, volumeter must be recalibrated!

- mount o-rings
- change of bearings:
- mount circlips and spacers (for boring) on pole wheel side.
- press on rolling bearings
- turning moments for the screws:
OMH-1H: large spindle 200 Nm
 small spindle 49 Nm
OMH-1F: large spindle 200 Nm
 small spindle 86 Nm
- mount circlips and spacers on measuring spindles
- mount groove nut with locking plate on small measuring spindle (Fig.2)
- mount spindle set into crown (with pick up) (Fig.1)
- mount circlips on crown
- mount pole wheel with spacer, feather, locking plate and groove nut (Fig. 4)
- mount measuring casing (Fig.3)
- mount crown (with pick up) (Fig.5)
- mount flange covers (Fig. 6)
- tighten screws crosswise
- install volumeter



Dry sleeve

Dismounting:

- Empty screw volumeter
- Open counter nut (hexagon 24)
- Unscrew the dry sleeve (hexagon 15)

Mounting:

- Screw in the dry sleeve until O-ring is sealed.
- Fill volumeter with medium and start it.
- Screw in the dry sleeve carefully until it slightly grazes the rotating pole wheel (you can hear it through soft strikes), then turn back and tighten screw.
- Screw in pick up insert into dry sleeve.
- Proof signal with oscilloscope.
- If necessary correct distance.

13. Failure

Failure	Reason	Remedy
too high pressure drop	<ul style="list-style-type: none"> • Viscosity of medium and/or flow rate too high 	<ul style="list-style-type: none"> • raise temperature (consider allowed temperature range) • reduce flow rate • use bigger volumeter
leakage	<ul style="list-style-type: none"> • seal not tightened enough • seal is damaged 	<ul style="list-style-type: none"> • tighten screws • exchange seal • check chem. resistance
Blocked volumeter	<ul style="list-style-type: none"> • foreign substance • pick up mounted too far inside • medium is not lubricating enough • not enough inlet pressure 	<ul style="list-style-type: none"> • clean volumeter • use filtration (see chap. 8) • adjust pick up • use OMS • raise inlet pressure
too high measuring default	<ul style="list-style-type: none"> • air lock • degassing • too high pulsation • not enough counter pressure • operation <ul style="list-style-type: none"> -high flow fluctuation -quantity too small -different operation data • high wear • fault at the pick up and/or electronic 	<ul style="list-style-type: none"> • remove air • raise system pressure, reduce temp. • change pump, modify system • see min. pressure • change of operating conditions • new volumeter • filtration of abrasive material • see instructions of pick up and/or electronic
no signal	<ul style="list-style-type: none"> • defective pick up insert • defective connection • screw volumeter is not working • wrong power supply 	<ul style="list-style-type: none"> • screw out pick up insert and check it: pick up insert has to send a pulse by approximation to a ferromagnetic material (see luminous diode) • check luminous diode • check connections • put screw volumeter into action • adjust electronics
no ordinary signal	<ul style="list-style-type: none"> • defective pick up insert • defective contacts • external interferences • distance to pole wheel not correct 	<ul style="list-style-type: none"> • new pick up insert • check contacts • install cables (and measuring transducer) carefully • check signal with oscilloscope - correct the distance

14. Maintenance

KOBOLD-volumeters are free of maintenance. At high bearing load it is useful to change the rolling bearings after a certain service life.

When high accuracy is required, it is further advisable to calibrate the device periodically.

15. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

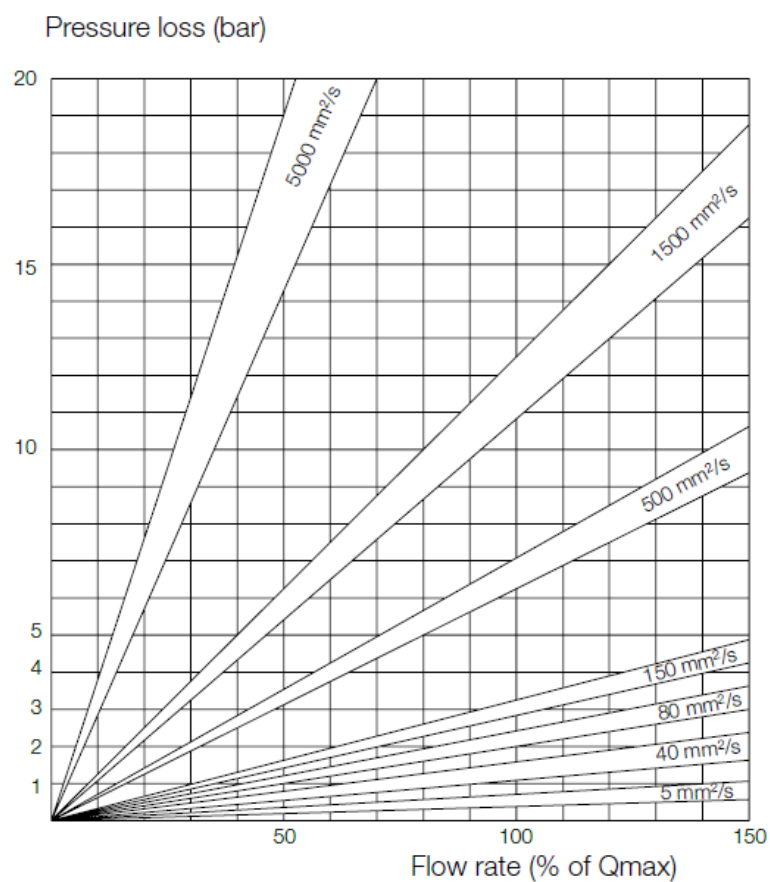
16. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

17. Dimensions and weights

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

18. Pressure loss diagram



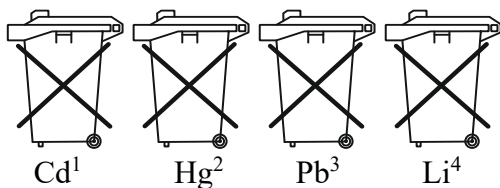
19. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



20. EU Declaration of conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Screw volumeter **Model: OMH-...**

to which this declaration relates is in conformity with the following UK directives stated below:

2011/65/EU	RoHS (category 9)
2015/863/EU	Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Additional for pulse generator **OM.../44**:

the following EU directives are fulfilled:

2014/30/EU	EMC Directive
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and is in conformity with the standards noted below:

EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

Additional for pulse generator **OM.../45**:

the following EU directives are fulfilled:

2014/30/EU	EMC Directive
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and is in conformity with the standards noted below:

EN 61000-6-2:2005/AC:2005 Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments

EN 61000-6-4:2007/A1:2011

Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

Hofheim, 01 Dec. 2023



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