



Mechanical Separation
Division

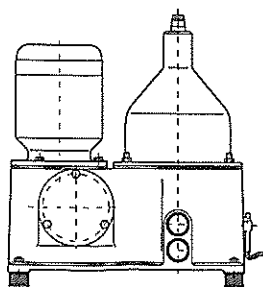
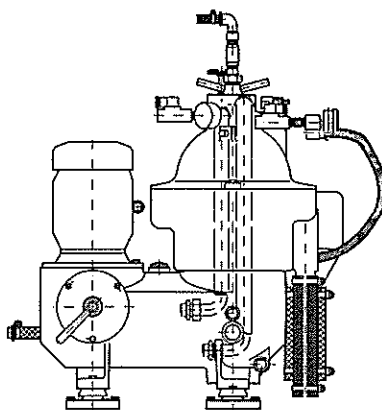
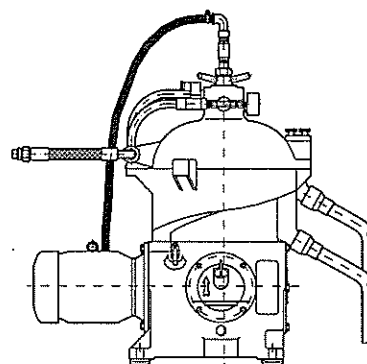
Westfalia Separator
Mineraloil Systems GmbH

Installation Instructions

No.: 2058-9601-010

Edition: 0107

For: Separators



Subject to modification!

GEA Westfalia Separator Mineraloil Systems GmbH reserves the right to modifications without notice.

The authors will always be grateful for any comments on possible errors and faults and for suggestions to improve this documentation. They can be sent to
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Copies of this documentation can be obtained from our local agencies.

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Preface

These installation guidelines

- are part of the overall documentation compiled for the separator.
- describe the procedures for constructing, manufacturing and designing separators.
- contain fundamental instructions for installing separator installations.
- contain general guidelines for separator installations.

These guidelines specify the minimum specifications for designing and constructing frames, tanks, piping and the electrical installation.

Putting together and installing the installation components must be carried out in accordance with the order-specific documents:

- Installation diagram and equipment list
- Dimensioned drawing (notes on required space for operating and servicing, minimum clearance from walls/pillars or other machines)

We reserve the right to carry out technical modifications on the separator!

Attention must be paid to the operating, maintenance and mounting instruction manuals of all units and fittings.

For your safety



- **Strictly adhere to instructions marked with this symbol.**
This avoids damage to the separator and other equipment.



- **Take special care when carrying out operations marked with this symbol -**
otherwise danger to life.

Note:

- This symbol is not a safety precaution but rather a reference to information which help to better understand the separator or plant components and the processes.



- **Use only genuine spare parts from Westfalia Separator.**
The use of non-genuine parts leads to:
 - safety risks,
 - less durability and availability,
 - increased service requirement.

If a safety risk occurs, this may have legal consequences for the responsible persons. In such cases, Westfalia Separator accepts no liability or warranty claims.

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1 General

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1.1 Safety precautions

- Pay special attention to the safety precautions contained in the overall documentation compiled for the separator!

1.2 Material

- The specified material must conform to the standards set out in these installation guidelines as a minimum requirement.
- All materials used must be new and from the same series.

1.3 Installation

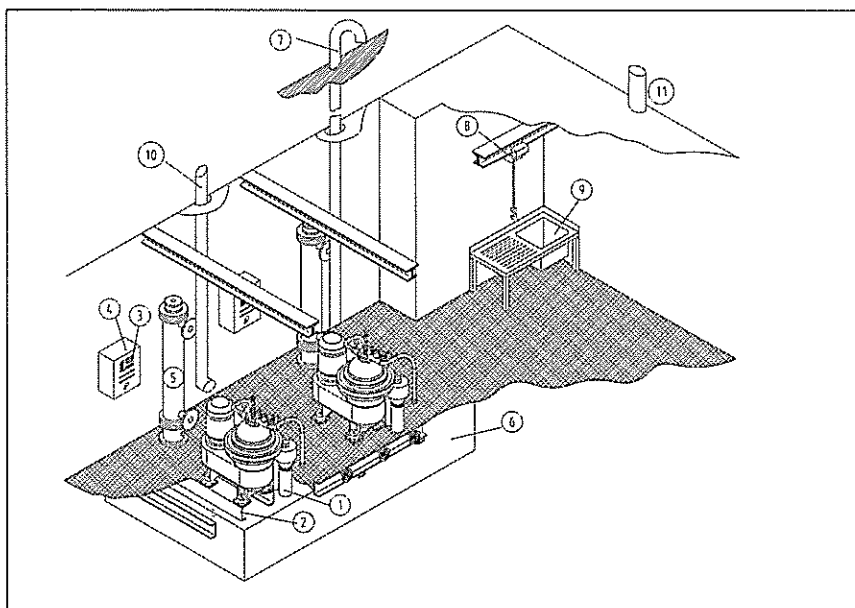


Fig. 1 Installation example

- | | |
|------------------------|-----------------------|
| 1 Separator: | 7 Solids tank venting |
| 2 Separator foundation | 8 Crane |
| 3 Control unit | 9 Cleaning table |
| 4 Control cabinet | 10 Aeration |
| 5 Preheater | 11 Venting |
| 6 Solids tank | |

- The applicable regulations and standards of classification societies or other authorised bodies must be observed.
- All lubricating points and the gear / drive housing of the separator must be easily accessible without having to remove pipes or gratings.
- All operating elements must be within comfortable reach of the operator and at a suitable height.
- Operating elements must not be mounted higher than 1800 mm above the working platform.
- All units must be arranged so that they do not cramp the working area and so that they can be safely serviced and operated.

- All fixed piping and fittings must be safely supported to reduce vibrations and movement to a minimum.
- Contact points or supports must be fitted so that the pipes are able to move with changing temperatures without creating tension in the pipes.
- Pipes and pipe connections must be accessible for maintenance.
- Pipes must not be used for supporting distributors or appliances.
- These regulations and standards do not apply to small purpose-built parts whose durability, accessibility and operation are not influenced. They must be fitted in accordance with the manufacturer's recommendations.
- No galvanized parts may be fitted in product-carrying lines (e.g. heavy oil, diesel oil, steam lines and thermal oil lines). This does not apply if type-tested pipe joints are fitted in pipe trace heating systems.
- Y-strainers should preferably be fitted **horizontally** with the strainer insert pointing downwards or to the side (turned through 90°).
If this is not possible for space reasons, the dirt pan can be fitted vertically with a throughflow from top to bottom. In this case, ensure that the strainer can be dismantled.

1.4 Storage

- Parts may be stored only in original Westfalia Separator transport packaging.
- A storage time of more than 12 months is only possible after consulting the manufacturer.
- The storage site should be a closed, dry room.
- The storage temperature must not be below 5°C (41 F) and must not exceed 50 °C (122 °F).



IMPORTANT:

- Outdoor exposure is not admissible!



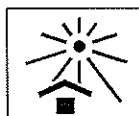
Pay attention to the following points on storage and transport packaging.



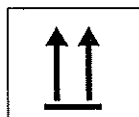
- Handle fragile goods with care!



- Protect the goods against moisture and humidity.



- Protect the goods against heat!



- Pay attention when erecting the goods.

1.4.1 Installation of controls



IMPORTANT:

- Outdoor exposure is not admissible!
- Select the installation site so that
 - the control unit is not exposed to dust and aggressive atmosphere.
 - the control unit is not installed in an excessively humid environment or damp area.
 - the sun cannot shine on the control panel or displays making operation and observation more difficult.
 - heating up of the control unit is avoided.
- Where appropriate, check screw-type and plug-type connectors for secure contact.



- Connect thermostatically controlled cabinet heating to external voltage and switch it on.
- The control cabinet heating must switch on before the temperature drops below the dew point.
- Bedewing can occur during the night which is not good for electronic apparatus.
- Check that the line voltage and frequency conform to the connection data of the control unit (see nameplate).
- Pay attention to admissible installation and operating data:

| | |
|------------------------|---------------------------------|
| Voltage fluctuations | +/- 10 % of the line voltage |
| Frequency fluctuations | +/- 2 % of the line voltage |
| Ambient temperatures | + 5 to + 45 °C (41 to 113 °F) |
| Atmospheric humidity | max. 50 % at 40 °C (104 °F) |
| | max. 90 % at 20 °C (68 °F) |
| Installation height | above sea level up to 1000 m |
| Transport temperatures | – 25 to + 55 °C (–13 to 131 °F) |



IMPORTANT:

Improper installation and operation discharges the supplier from the warranty obligation.

1.5 Transport

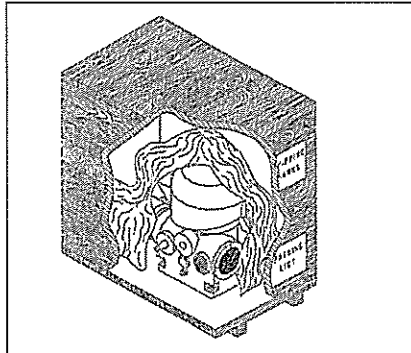


Fig. 2

The adjacent packing illustrates a seaworthy packaging from Westfalia Separator.

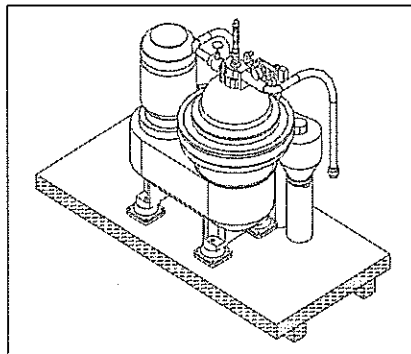


Fig. 3

- After removing the side boards and filling material, the bottom board can be used as a special pallet for fork lift trucks.

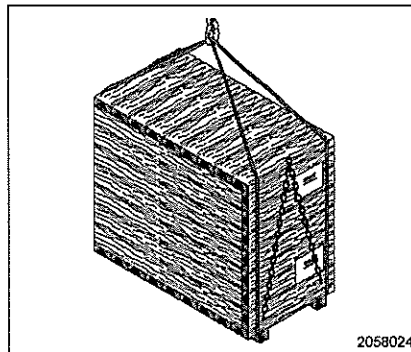


Fig. 4

- If no forklift trucks are available, transport the case with the aid of a crane (see diagram).
- Attach the ropes to the points on the packing case as marked on the packing case.

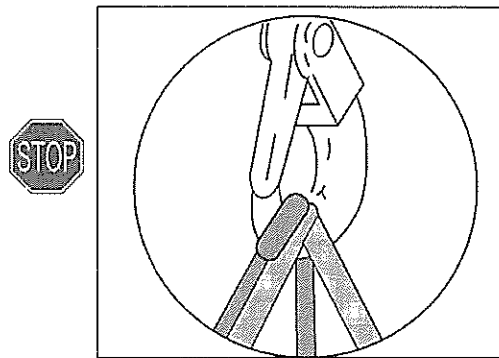


Fig. 5

- Attach ropes round the case and hang them into the load hook of the crane.
- **CAUTION!**
Wind one piece of rope twice round the hook to prevent the ropes from slipping.

1.5.1 Transporting the separator

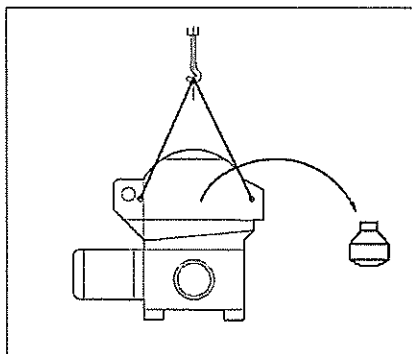


Fig. 6

• **IMPORTANT:**

To avoid damage, the bowl **must** be removed from the separator before transport.

- The separator is normally delivered without installed bowl.

Exception:

- The OTC 2, OTC 3 and OSD 2 separators are delivered and transported with installed bowl.



CAUTION!

Prevent accidents by using suitably rated hoists for transport and installation.

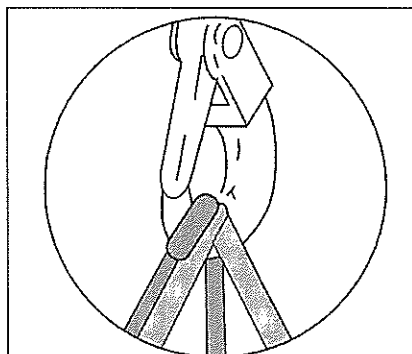
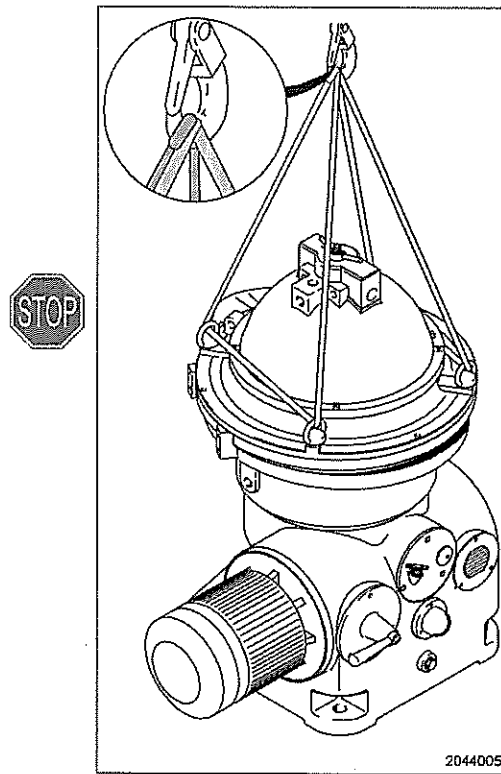


Fig. 7

- When transporting rope, make sure that one piece of rope is wound twice round the hook to prevent the ropes from slipping.
- The rope must be properly attached to the separator.
- Ensure that no pulling or pushing forces act on machine parts when using ropes.

The following examples show how the transport ropes must be attached on the different frame designs (see Fig. 8).



Separator with gear drive

- Hang the ropes into the eye bolts and load hook of the hoist as illustrated.
Wind one piece of rope twice round the hook to prevent the ropes from slipping.
- Do not use the eye bolt of the motor to suspend the separator.
- Make sure the machine touches down gently.

For OSD 6 or 18 – separator with belt drive

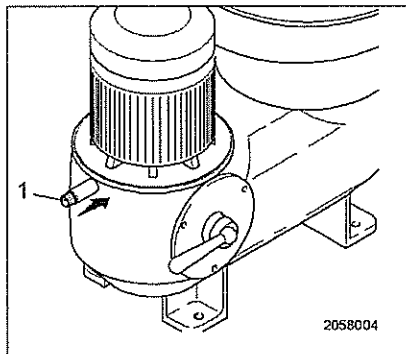


Fig. 9

- Screw double nipple 1 into the hole in the frame.

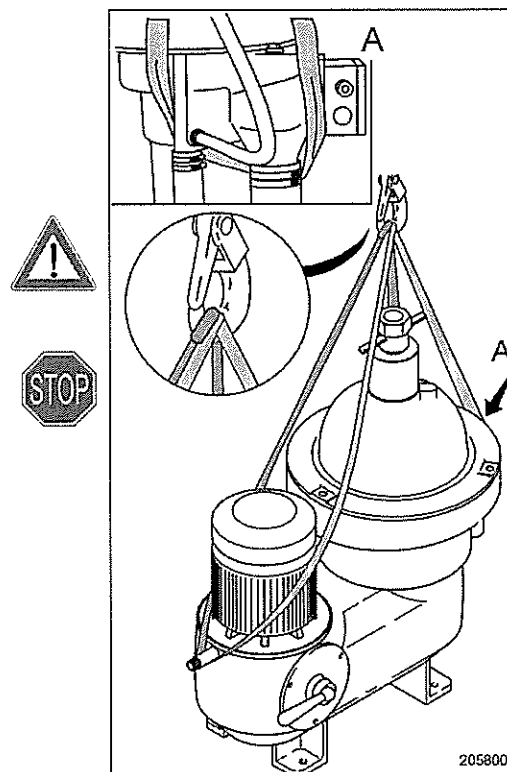


Fig. 10

- Attach the transport ropes
 - to the machine as illustrated and
 - hang them into the load hook of the hoist as illustrated.
 Wind one piece of rope twice round the hook to prevent the ropes from slipping.
- Make sure that the ropes do not damage any machine components.
- Do not use the eye bolt of the motor to suspend the separator.
- Make sure the machine touches down gently.

For OSD 35 – separator with belt drive

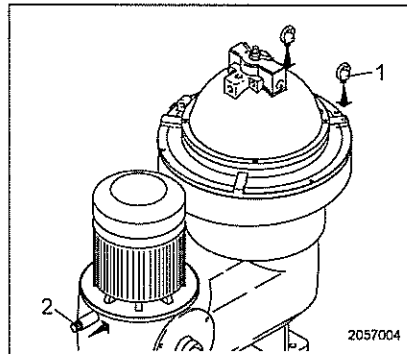


Fig. 11

- Screw two eye bolts 1 into the upper section of the frame.
- Screw double nipple 2 into the hole in the frame.

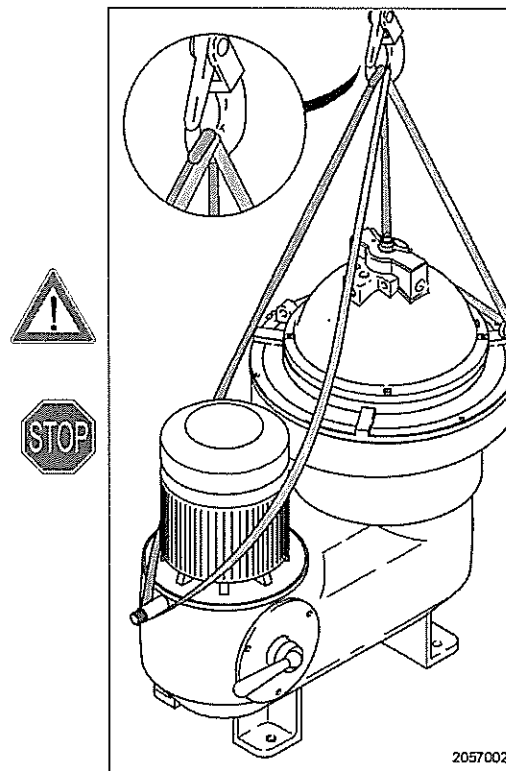


Fig. 12

- Attach the transport ropes
 - around the double nipple.
 - Thread through the eye bolts and
 - hang them into the load hook of the hoist as illustrated.
 Wind one piece of rope twice round the hook to prevent the ropes from slipping.
- Make sure that the ropes do not damage any machine components.
- Do not use the eye bolt of the motor to suspend the separator.
- Make sure the machine touches down gently.

For OSD 60 – separator with belt drive

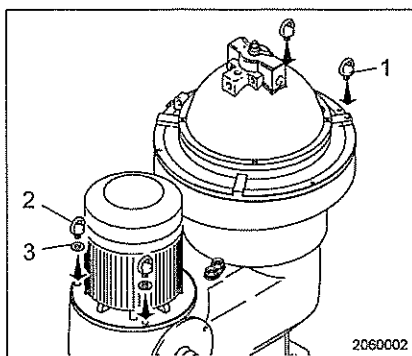


Fig. 13

- Check that
 - two eye bolts 1 are screwed into the upper section of the frame.
 - Screw two eye bolts 2 with washers 3 into the intermediate flange / frame holes.

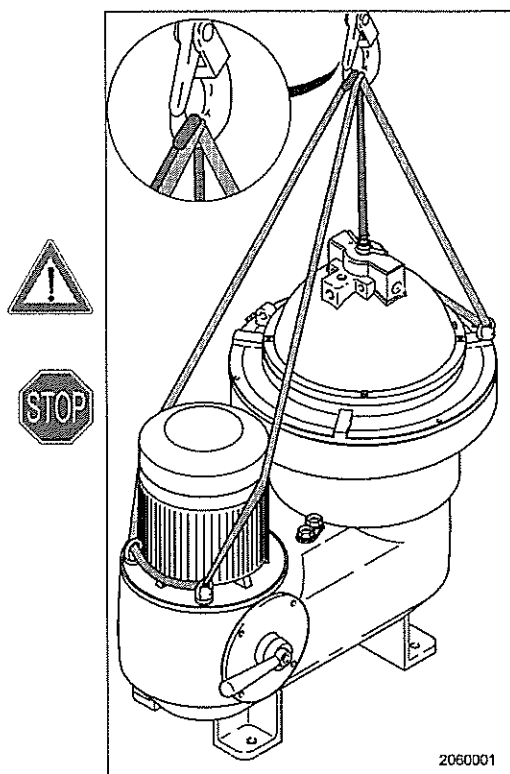


Fig. 14

- Attach the transport ropes
 - Thread through the four eye bolts and
 - hang them into the load hook of the hoist as illustrated. Wind one piece of rope twice round the hook to prevent the ropes from slipping.
- Make sure that the ropes do not damage any machine components.
- Do not use the eye bolt of the motor to suspend the separator.
- Make sure the machine touches down gently.

1.6 Preservation measures on site

After installation until commissioning

- All parts such as tools, spare parts and bowl must be stored in the original packaging in a suitable place until commissioning.
- The parts must be stored at 5 to 50 °C (41 - 122 °F) in dry, weatherproof rooms to prevent the packaging from getting damaged.
- The spindle and gear/drive chamber are lubricated at the factory which protects them for a period of 12 months.
- In the case of a storage and standstill period of longer than 12 months, the time-dependent maintenance intervals specified in the instruction manual must be adhered to before putting the machine back into operation.
- After this time (12 months) has expired, it must be checked at 12 monthly intervals that all bearings and the spindle have sufficient lubrication.
- Oil to be used:
 - Shell oil S.7294 (SAE 30/SAE 50) for bearings and spindle,
 - roller bearing grease for the spindle cap.

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2 Separator

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2.1 Space requirement for separators

- No piping may be laid in the operating area apart from the feed and discharge lines for the separator.

2.1.1 Separators with gear drive



- The hatched area represents the operating area.
- See the following table to determine the operating area.



- Before installing the separator, pay special attention to the removal dimension X for the electric motors!

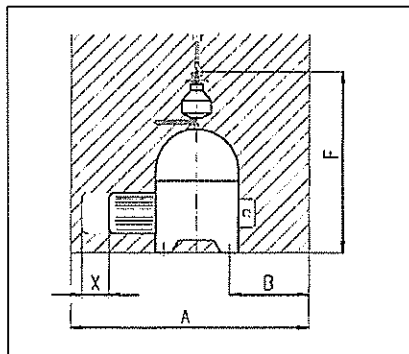


Fig. 15

Front view of separator

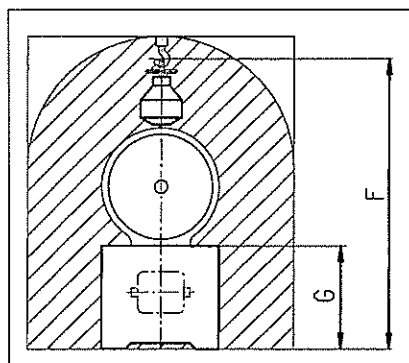


Fig. 16

Side view of separator

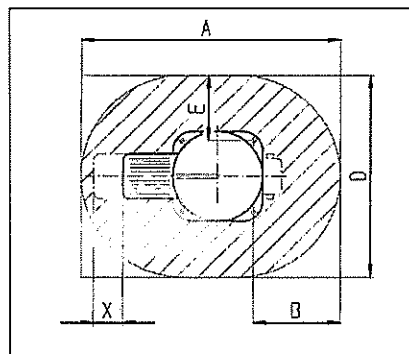


Fig. 17

Top view of separator

Table for determining the operating area for separators with gear drive

| Separator model | Dimensions in mm | | | | | | |
|--------------------|------------------|-----|------|-----|------|-----|-----|
| | A | B | D | E | F | G | X |
| OTB 3 | 1160 | 400 | 1220 | 500 | 1030 | 410 | 120 |
| OTB 9 | 1150 | 360 | 1310 | 500 | 980 | 500 | 120 |
| OSC 5 | 1150 | 360 | 1350 | 500 | 1090 | 550 | 120 |
| OSC 30 | 1890 | 450 | 1450 | 700 | 1400 | 790 | 220 |
| OSC 50 | 2120 | 390 | 1500 | 700 | 2030 | 920 | 250 |

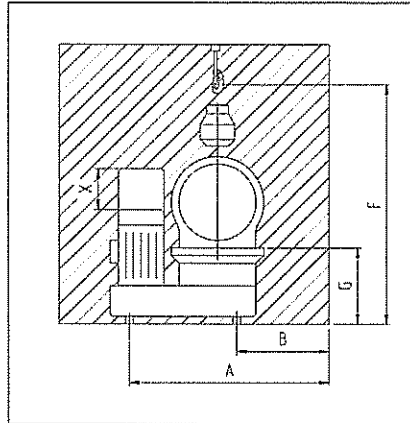
2.1.2 Separators with belt drive



- The hatched area represents the operating area.
- See the following table to determine the operating area.

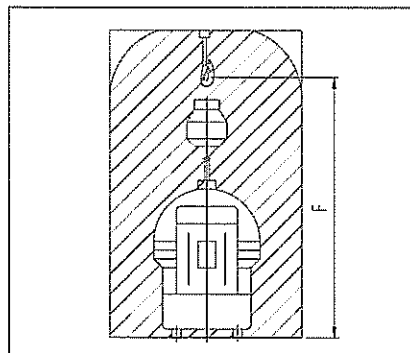


- Before installing the separator, pay special attention to the removal dimension X for the electric motors!



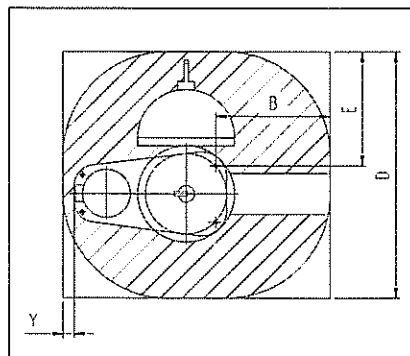
Front view of separator

Fig. 18



Side view of separator

Fig. 19



Top view of separator

Fig. 20

Table for determining the operating area for separators with belt drive

| Separator model | Dimensions in mm | | | | | | | |
|-----------------|------------------|-----|------|-----|------|------|-----|-----|
| | A | B | D | E | F | G | X | Y |
| OTB 18 | 1400 | 600 | 1600 | 550 | 1600 | 540 | 180 | 200 |
| OTC 2 | 800 | 300 | 800 | 120 | - | 280 | 100 | 150 |
| OTC 3 | 800 | 300 | 800 | 120 | - | 280 | 100 | 150 |
| OSC 15 | 1400 | 600 | 1600 | 550 | 1600 | 540 | 180 | 200 |
| OSD 2 | 800 | 300 | 800 | 200 | - | 280 | 100 | 150 |
| OSD 6 | 1400 | 600 | 1400 | 550 | 1450 | 540 | 180 | 150 |
| OSD 18 | 1400 | 600 | 1400 | 550 | 1550 | 630 | 180 | 150 |
| OSD 35 | 1800 | 700 | 1800 | 650 | 1950 | 850 | 230 | 200 |
| OSD 60 | 2000 | 800 | 2000 | 700 | 2500 | 1000 | 300 | 200 |

2.2 Bowl weights

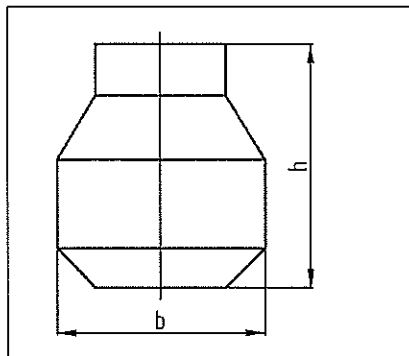


Fig. 21

Table with data for rating the lifting device

| Separator model | b | h | Bowl weight [kg] |
|-----------------|-----|-----|------------------|
| OTB 3 | 210 | 190 | 16 |
| OTB 9 | 258 | 243 | 50 |
| OTB 18 | 350 | 300 | 75 |
| OSC 5 | 275 | 256 | 48 |
| OSC 15 | 300 | 320 | 72 |
| OSC 30 | 425 | 420 | 190 |
| OSC 50 | 536 | 530 | 360 |
| OSD 6 | 255 | 270 | 42 |
| OSD 18 | 300 | 320 | 72 |
| OSD 35 | 425 | 420 | 190 |
| OSD 60 | 536 | 530 | 360 |

2.3 Required hoist specifications for separators

Gear separators

- The hoist must be travel-type or swivel-type.
- The hoist must be arranged so as to enable the following:
 - Vertical fitting and removal of the bowl (see section 2.1.1, table - dimension F).
 - Horizontal removal and fitting of the drive motor (see section 2.1.1, table - dimension X).

Flat belt separators

- The hoist must be travel-type or swivel-type.
- The hoist must be arranged so as to enable the following:
 - Vertical fitting and removal of the bowl (see section 2.1.2, table - dimension F).
 - Horizontal removal and fitting of the drive motor (see section 2.1.2, table - dimension X).

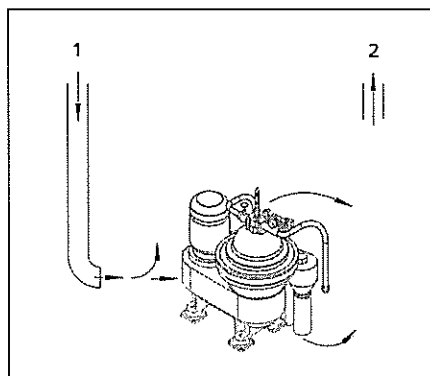
2.4 Ventilating the separator room

- Pay attention to the correct arrangement of the air feed and discharge lines so that
 - the separator room is efficiently ventilated,
 - the admissible room temperature – normally max. 45 °C (113 °F) – is not exceeded.
- The rating of the electrical apparatus is critical in this respect.



IMPORTANT:

If the admissible temperatures are exceeded, additional measures must be taken. Maintenance intervals and maintenance measures may have to be adjusted accordingly.



Installation example of a ventilation system

- 1 Aeration
- 2 Venting

Fig. 22

Approximate values for air exchange

| | |
|----------------------------------|-------------------------|
| For small closed separator rooms | 30 - 50 h ⁻¹ |
| For large separator rooms | 15 - 20 h ⁻¹ |
| For niches in engine rooms | 50 - 70 h ⁻¹ |

Table for air volumes

| Separator model | Air volume [m³/h] |
|-----------------|-------------------|
| OTB 3 | 10 |
| OTB 9 | 10 |
| OTB 18 | 30 |
| OTC 2 | 10 |
| OTC 3 | 10 |
| OSC 5 | 10 |
| OSC 15 | 30 |
| OSC 30 | 100 |
| OSC 50 | 150 |
| OSD 2 | 10 |
| OSD 6 | 10 |
| OSD 18 | 30 |
| OSD 35 | 100 |
| OSD 60 | 150 |

2.5 Foundations



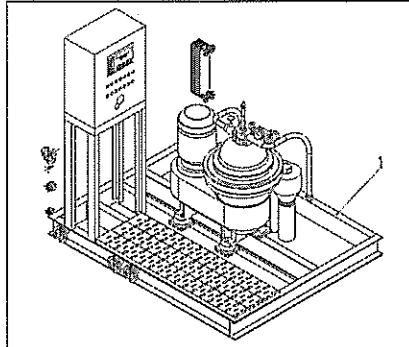
In order to avoid the influence of external vibrations,

- Foundations and foundation frames for Westfalia separators must not be rigidly connected to other foundations.



IMPORTANT:

- If the foundation does not have adequate rigidity and flexural strength, this may result in loss of warranty.



Installation example for a foundation frame

1 Foundation

Fig. 23

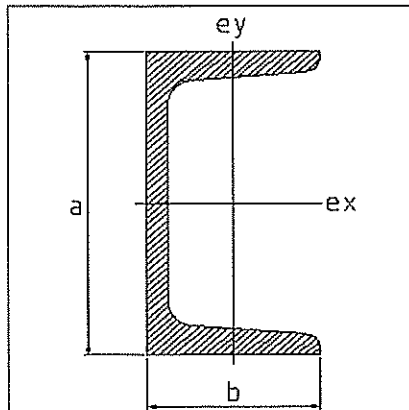


Fig. 24

- The foundation frames must be designed so that dimensions a and b in the table below are adhered to.
- When using other sections, the section modulus of the U-sections must not be lower than the value specified in DIN 1026.
- The foundation must be rigid with a maximum admissible deflection of 1:250.
- The separator feet must be fastened on the neutral axis of the frame.

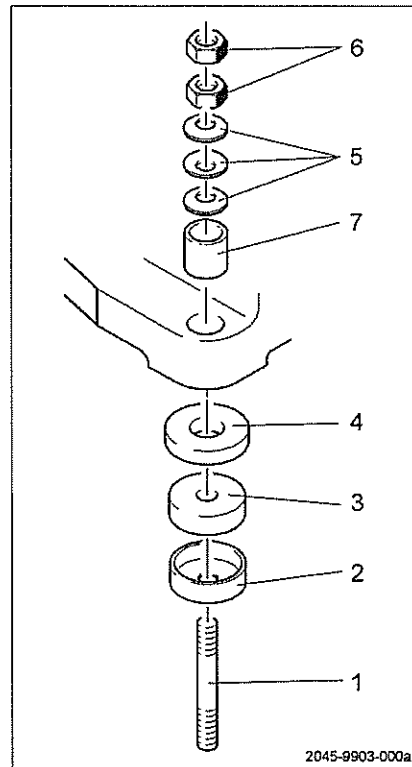
Table for dimensioning foundation frames

| Separator model | Dimensions in mm | |
|--------------------|------------------|----|
| | a | b |
| OTB 3 | 80 | 60 |
| OTB 9 | 80 | 60 |
| OTB 18 | 140 | 60 |
| OTC 2 | 80 | 60 |
| OTC 3 | 80 | 60 |
| OSC 5 | 140 | 60 |
| OSC 15 | 140 | 60 |
| OSC 30 | 180 | 70 |
| OSC 50 | 180 | 70 |
| OSD 2 | 80 | 60 |
| OSD 6 | 140 | 60 |
| OSD 18 | 140 | 60 |
| OSD 35 | 180 | 70 |
| OSD 60 | 180 | 70 |

2.6 Securing the separators

The following sections show how to secure the different separators:

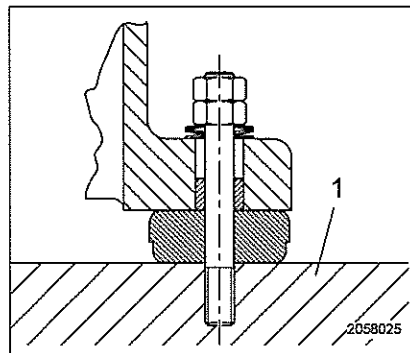
2.6.1 Separators OTB 3, OTB 9, OSC 5



- Assembly of separators with the aid of stud screws (see 2.6.6) on a steel foundation frame.

- 1 Stud
- 2 Bottom disk
- 3 Rubber cushion
- 4 Top disk
- 5 Cup springs
- 6 Nut
- 7 Bush

Fig. 25



- 1 Steel foundation

Fig. 26

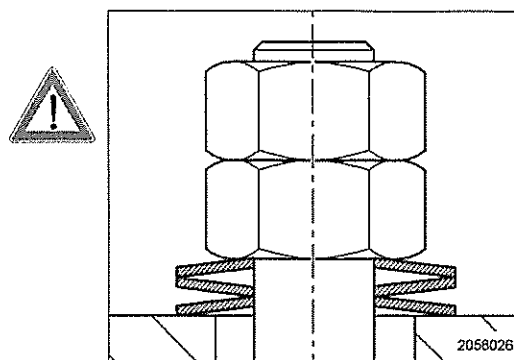
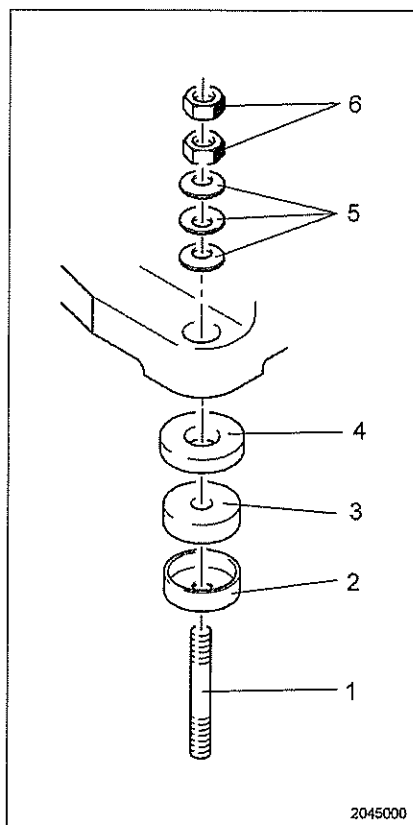


Fig. 27

- Mount the nuts as shown on page 36.
- **IMPORTANT:**
Pay attention to correct fitting of the cup springs!

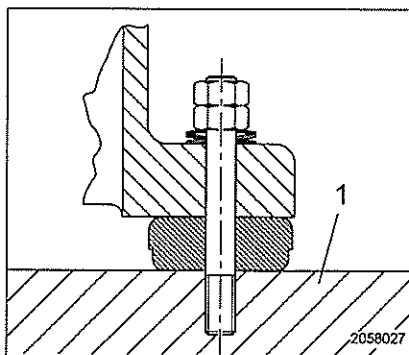
2.6.2 Separators OTB 18, OSC 15, OSC 30, OSC 50



Assembly of separators with the aid of stud screws (see 2.6.6) on a steel foundation frame.

- 1 Stud
- 2 Bottom disk
- 3 Rubber cushion
- 4 Top disk
- 5 Cup springs
- 6 Nut

Fig. 28



- 1 Steel foundation

Fig. 29

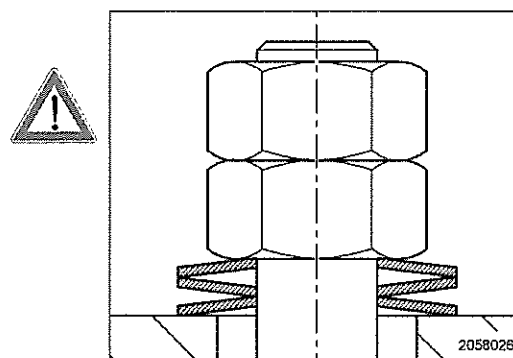


Fig. 30

- Mount the nuts as shown on page 36.
- **IMPORTANT:**
Pay attention to correct fitting of the cup springs!

2.6.3 Separators OTC 2, OTC 3, OSD 2

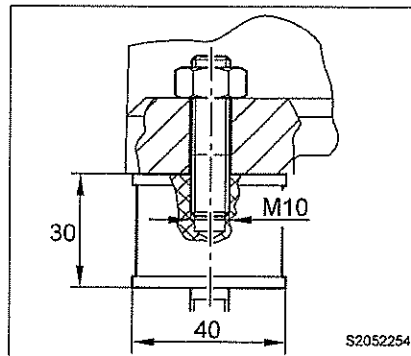


Fig. 31

Assembly of separators with the aid of rubber-metal cushions on a steel foundation frame.

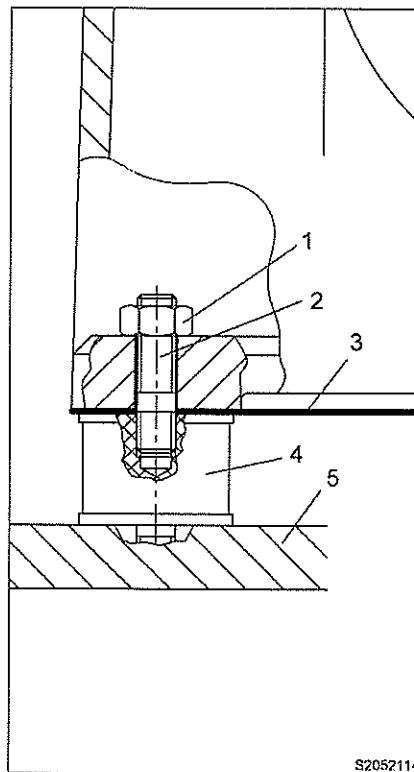


Fig. 32

- Screw rubber-metal cushions 4 into foundation 5.
- Screw studs 2 into rubber-metal cushions 4.
- Place plate 3 over the studs.
- Place the separator on plate 3 and
- bolt **tight** with hexagon nuts 1.

**ATTENTION!**

The tightening torque for the stud screw 2 (M10) must be 30 Nm.

2.6.4 Separators OSD 6, OSD 18, OSD 35, OSD 60

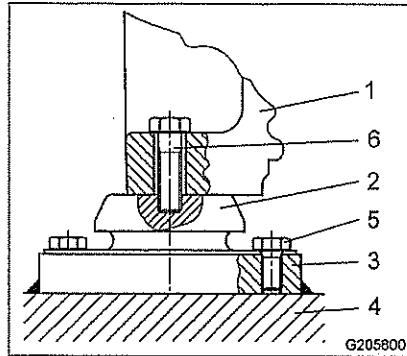


Fig. 33

- Align separator 1 with feet 2 and plates 3 on foundation 4.
- Tack plates 3.
- Unscrew screws 5.
- Lift separator with feet (see section 1.5.1).
- Weld plates 3 to foundation 4.
- Place the separator on plates 3 and
- bolt **tight** with hexagon nuts 5.
- Screw **tight** hex head screws 6.



ATTENTION!

The torques for the hex head screw 6 are specified in the table below.

| Separator model | Hex head screw | Torque: |
|-----------------|----------------|---------|
| OSD 6 | M 12 | 52 Nm |
| OSD 18 | | |
| OSD 35 | M 16 | 100 Nm |
| OSD 60 | | |

2.6.5 Important mounting instructions

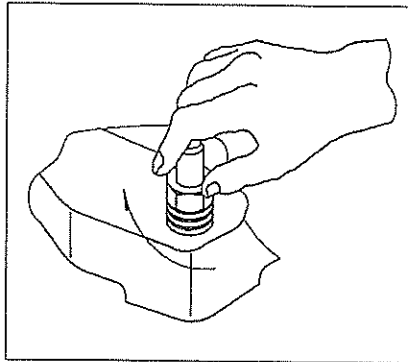


Fig. 34

- Tighten the nut by hand.

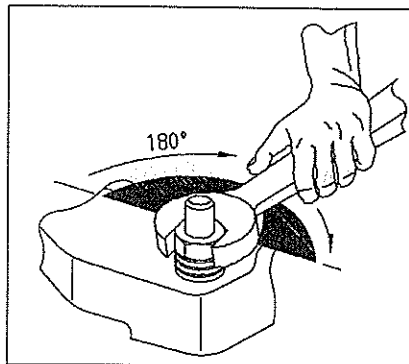


Fig. 35

- Tighten the nut through a further 180°.

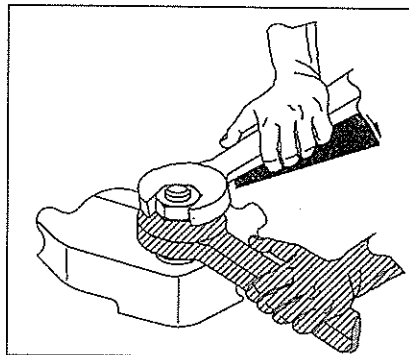


Fig. 36

- Tighten the second nut by hand.
- Lock the nuts.

2.6.6 Dimensions of the studs

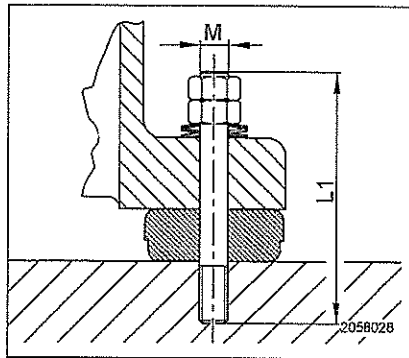


Fig. 37

Installation example on steel foundation

- The dimensions for selecting the studs are given in the table below:

| Separator model | Dimensions in mm | |
|-----------------|------------------|----|
| | L1 | M |
| OTB 3 | 96 | 12 |
| OTB 9 | 96 | 12 |
| OTB 18 | 96 | 16 |
| OSC 5 | 96 | 12 |
| OSC 15 | 96 | 16 |
| OSC 30 | 135 | 20 |
| OSC 50 | 135 | 20 |

- When installing the separator, make sure the surface is absolutely even!
- Uneven surfaces can be levelled using shims which, however, must have a close fit.

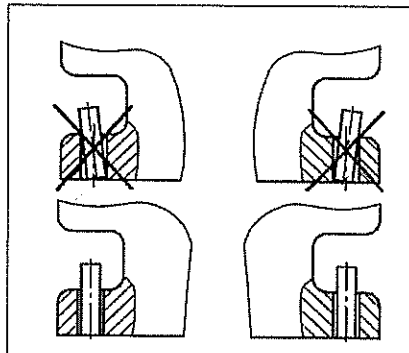


Fig. 38

- The separators must not be warped or twisted when installed on the foundation.

2.7 Welding procedure for fastening the foundation frame

The following sections show the welding procedure for fastening the foundation frame:

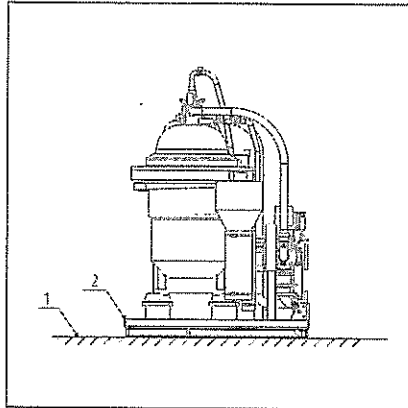


Fig. 39

Mounting the separator installations on board of a ship

- The foundation frame 2 can be directly welded onto the steel structure 2 from the shipyard.

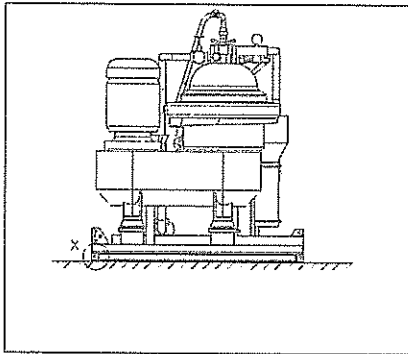


Fig. 40

Example 1

- The length of the weld seams must be 100 mm.
- The distance between the weld seams must be approx. 350 mm.

This means that there are 3 weld seams with a length of 100 mm along a length of one metre.

Example 2

- The foundation frame can likewise be welded all the way round.

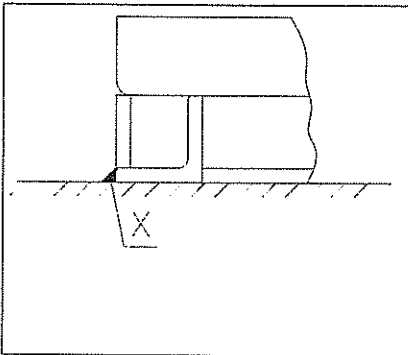


Fig. 41

Detail view

In this view you can see an example for welding the foundation frame to the steel structure.

The letter X indicates a fillet weld.

2.7.1 Installing the separator

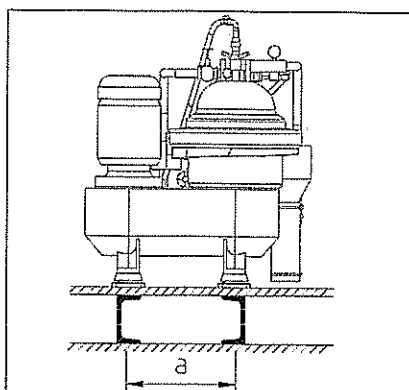


Fig. 42

Mounting the separator installations on board of a ship

- The frames must be fitted beneath the separator feet.
- The dimension a for the frame distance must be observed.
- The position of the separator feet is given in sections 2.1.1 and 2.1.2.

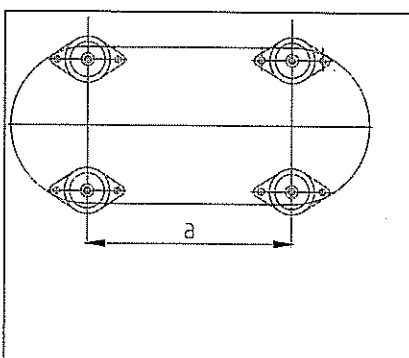
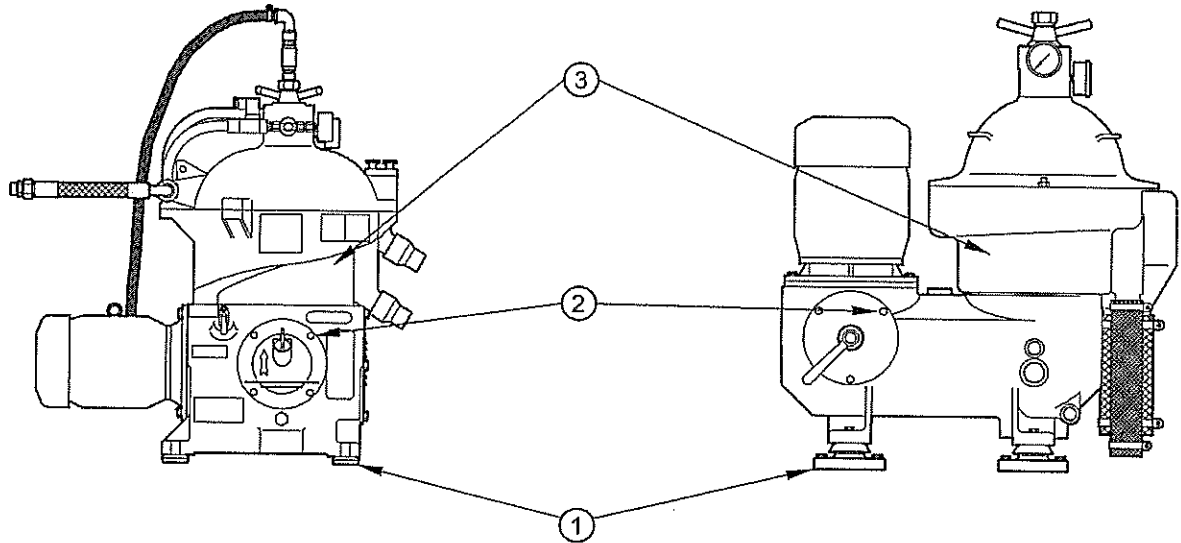


Fig. 43

- The dimension a for the frame distance is given in the table below for the respective separator model.

| Separator model | Dimension "a" [mm] |
|-----------------|-----------------------|
| OTB 3 | 320 mm |
| OTB 9 | 370 mm |
| OTB 18 | 640 mm |
| OTC 2 | 452 mm |
| OTC 3 | 452 mm |
| OSC 5 | 370 mm |
| OSC 15 | 640 mm |
| OSC 30 | 550 mm |
| OSC 50 | 600 mm |
| OSD 2 | 452 mm |
| OSD 6 | 350 mm |
| OSD 18 | 425 mm |
| OSD 35 | 555 mm |
| OSD 60 | 700 mm |

2.8 Vibrations



2058020

Fig. 44

| Separator model | Tolerable vibration values at the separator installation surface ① max. [mm/s] | Admissible vibration value at the reference point ② [mm/s] | Limit values for Vibro 1 with installed vibration sensor ③ [mm/s] |
|-----------------|--|--|---|
| OTB 3 | 1,8 | 2,8 | 2,8 |
| OTB 9 | 1,8 | 2,8 | 2,8 |
| OTB 18 | 2,8 | 4,5 | 4,5 |
| OTC 2 | 1,8 | 2,8 | 2,8 |
| OTC 3 | 1,8 | 2,8 | 2,8 |
| OSC 5 | 1,8 | 2,8 | 2,8 |
| OSC 15 | 2,8 | 4,5 | 4,5 |
| OSC 30 | 2,8 | 4,5 | 4,5 |
| OSC 50 | 2,8 | 4,5 | 4,5 |
| OSD 2 | 1,8 | 2,8 | 2,8 |
| OSD 6 | 2,8 | 4,5 | 4,5 |
| OSD 18 | 2,8 | 4,5 | 4,5 |
| OSD 35 | 2,8 | 4,5 | 4,5 |
| OSD 60 | 2,8 | 4,5 | 4,5 |

① Measured at separator standstill and normal ship operating conditions
 ② Measured with separators in operation
 ③ The Vibro sensor is attached in this range

2.9 Pipelines on the separator

The following sections describe the general set-up of the piping system in the separator installation:

2.9.1 Product line

- Product lines must be laid
 - in accordance with the guidelines of Westfalia Separator or
 - in accordance with the requirements of the classification societies.



- **Use only genuine parts from Westfalia Separator!**
- The lines must be flushed before commissioning to protect the valves and units.
- The following lines must have no rigid connection with the separator in order to prevent vibrations:
 - Product feed and discharge
 - Water connection
 - Solids discharge
 - Dirty water discharge
 - Frame drain
- This can be realised by means of hoses or compensators, whereby there are special requirements for shockproof separators.
- Hose pipes must be laid so that they cannot be twisted, kinked, clamped or rubbed.



- **Use only hoses from Westfalia Separator!**

2.9.2 Operating, filling and displacement water lines

- Water lines must be laid so that they can be completely drained at the lowest point with no dismantling.
- Y-strainers are fitted horizontally at the factory – with the strainer insert pointing downwards. See section 1.3 – Installation.
- The solenoid valves for operating, filling and displacement water to the separator are fitted so that the hose between the separator and solenoid valves cannot empty.

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3 Operating, filling and displacement water

| | | |
|-----|--|----|
| 3.1 | Water quality | 44 |
| 3.2 | Supply pressure and temperature | 44 |
| 3.3 | Water connection for operating, filling and displacement water | 45 |
| 3.4 | Dimensions and number of consumers | 45 |
| 3.5 | Water quantity | 47 |

3.1 Water quality

- The water should be as pure as possible and meet the following standards:

| | |
|--|--------------|
| Hardness: | |
| – up to 55 °C (131 °F) separating temperature | < 12° dH |
| – above 55 °C (131 °F) separating temperature | < 6° dH |
| Note: | |
| – When using demineralised water or condensate, corrosion must be reckoned with. | |
| – The use of boiler feed water is not permissible! | |
| – Land water is not recommended because the degrees of hardness are normally too high. | |
| To convert the hardness values stated, use the following equation: 1° dH = 1,79° fH = 1,25° eH = 17,9 ppm CaCO ₃ | |
| pH | 6,5 – 8,5 |
| Chloride ions | < 100 mg/l |
| Suspended matter | max. 10 mg/l |
| Particle size | max. 50 µm |

3.2 Supply pressure and temperature

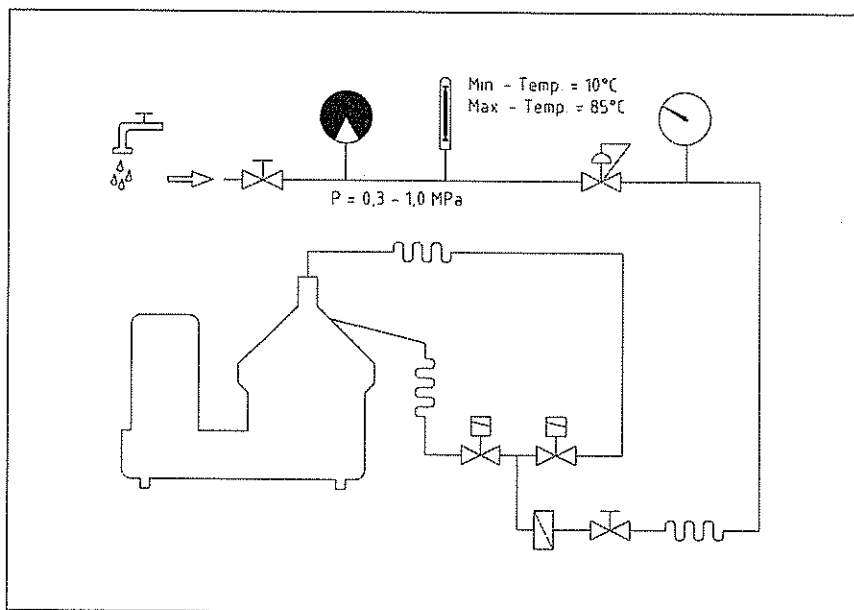


Fig. 45

Note:

The pressure after the water pressure reducer must not drop below 0.2 Mpa with open operating water valve.

- The supply pressure and the temperature for the operating, filling and displacement water must meet the following specifications:

| | |
|-----------------|---------------------|
| Temperature | min. 10 °C (50 °F) |
| | max. 85 °C (185 °F) |
| Supply pressure | 0.3 – 1.0 MPa |

3.3 Water connection for operating, filling and displacement water

- Pay special attention to section 2.9.2!

3.4 Dimensions and number of consumers

- Collective lines must be dimensioned so that the separators are always supplied with an adequate water volume to assure perfect functioning.
- Lines must be laid so that manual override of the valves and filter replacement are possible.



- The maximum length between pressure reducer and solenoid valve must not exceed 5 m.

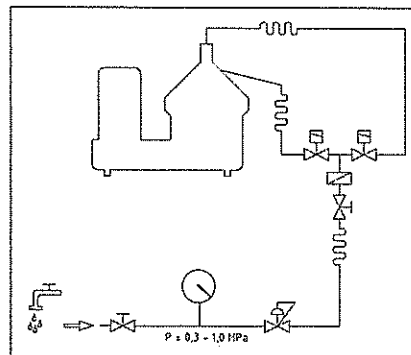


Fig. 46

- In the case of 1 consumer, the collective line must have the same nominal diameter as the feed lines to the separator.
- The nominal diameter R is given in the table below.

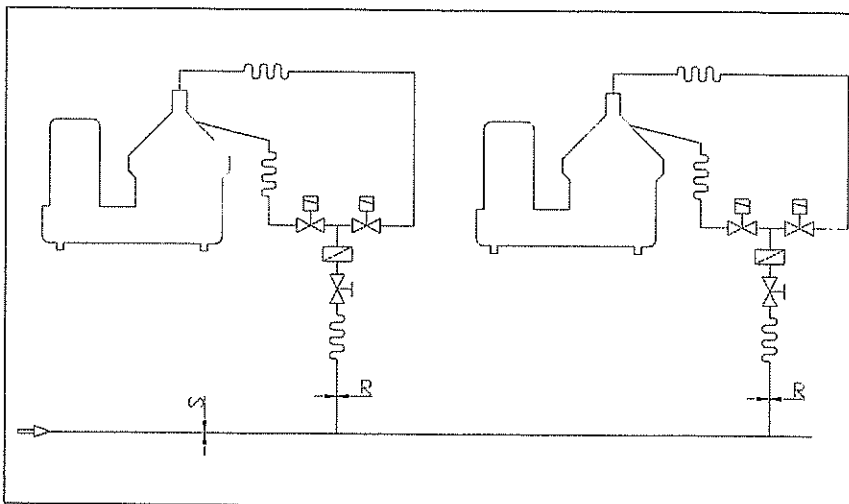


Fig. 47

In the case of 2 consumers:

- the collective line must have a nominal diameter **S** (see table).
- the supply lines to the separator must have a nominal diameter **R** (see table).

Note:

When two separators request water at different times, the water supply can be rated as for one separator.

In the case of 3 consumers:

- the collective line must have a nominal diameter of **DN 32**.
- the supply lines to the separator must have a nominal diameter **R** (see table).

Table for selecting the nominal diameters "S" and "R".

| Separator model | Nominal diameter (DN) | |
|-----------------|-----------------------|------------------|
| | Collective line S | Supply line R |
| OSC 5 | 25 | 20 |
| OSC 15 | 25 | 20 |
| OSC 30 | 32 | 20 |
| OSC 50 | 32 | 20 |
| OSD 2 | 25 | 20 |
| OSD 6 | 25 | 20 |
| OSD 18 | 25 | 20 |
| OSD 35 | 32 | 20 |
| OSD 60 | 32 | 20 |

3.5 Water quantity

For exact program control, with simultaneous actuation of the valves, the following water quantities are required:

| Separator model | V2 Filling water | V2 Displacement water | V3 Operating water | Total consumption per cycle * | Total consumption per cycle without filling water |
|--|---------------------|--------------------------|-----------------------|-------------------------------|---|
| | l/s | l/s | l/s | Approx. 1 | |
| OSC 5 | 0,1 | 0,1 | 0,5 | 3 | 2 |
| OSC 15 | 0,1 | 0,1 | 0,8 | 5 | 3,5 |
| OSC 30 | 0,1 | 0,1 | 0,8 | 10 | 6,5 |
| OSC 50 | 0,1 | 0,1 | 0,8 | 23 | 13 |
| OSD 2 | 0,25 | 0,25 | 0,25 | 2 | 1,5 |
| OSD 6 | 0,1 | 0,1 | 0,5 | 3 | 2 |
| OSD 18 | 0,1 | 0,1 | 0,8 | 5 | 3,5 |
| OSD 35 | 0,1 | 0,1 | 0,8 | 10 | 6,5 |
| OSD 60 | 0,1 | 0,1 | 0,8 | 23 | 13 |
| * Ejection cycle = Σ (filling water + displacement water + operating water) | | | | | |

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4 Compressed air

| | | |
|-----|---|----|
| 4.1 | Compressed air quality | 50 |
| 4.2 | Supply pressure | 50 |
| 4.3 | Compressed air consumption of the separators OSC, OSD and OTB . | 51 |

4.1 Compressed air quality



- The compressed air must be free from impurities and dry.

4.2 Supply pressure

Recommended set-up of compressed air line per treatment system.

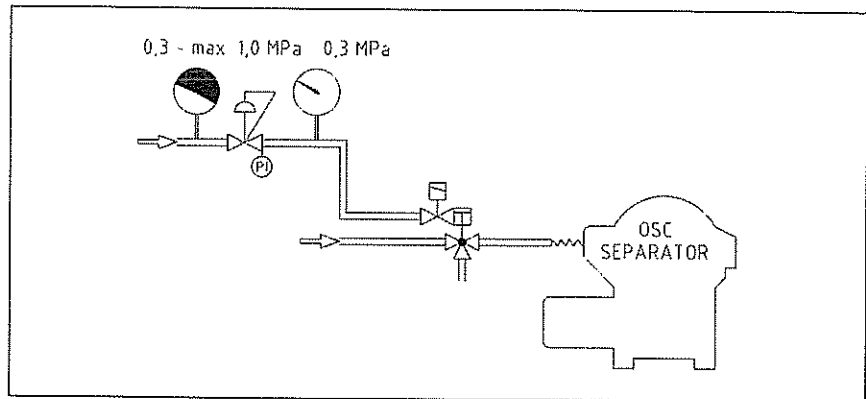


Fig. 48 OSC / OTB separators

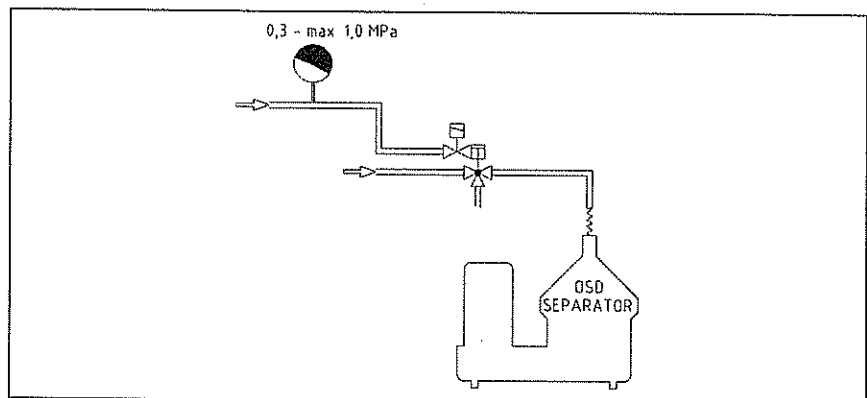


Fig. 49 OSD separators

- A supply pressure of 0.3 to max. 1.0 MPa is admissible.
- After the reducer station 0.3 MPa must still be available to the consumers.
- **Note:**
On OSD separators, a compressed air control unit is no longer included in the standard scope of supply.
- If other pneumatic components are operated, the corresponding instructions relating to air quality and air lubrication must be observed.