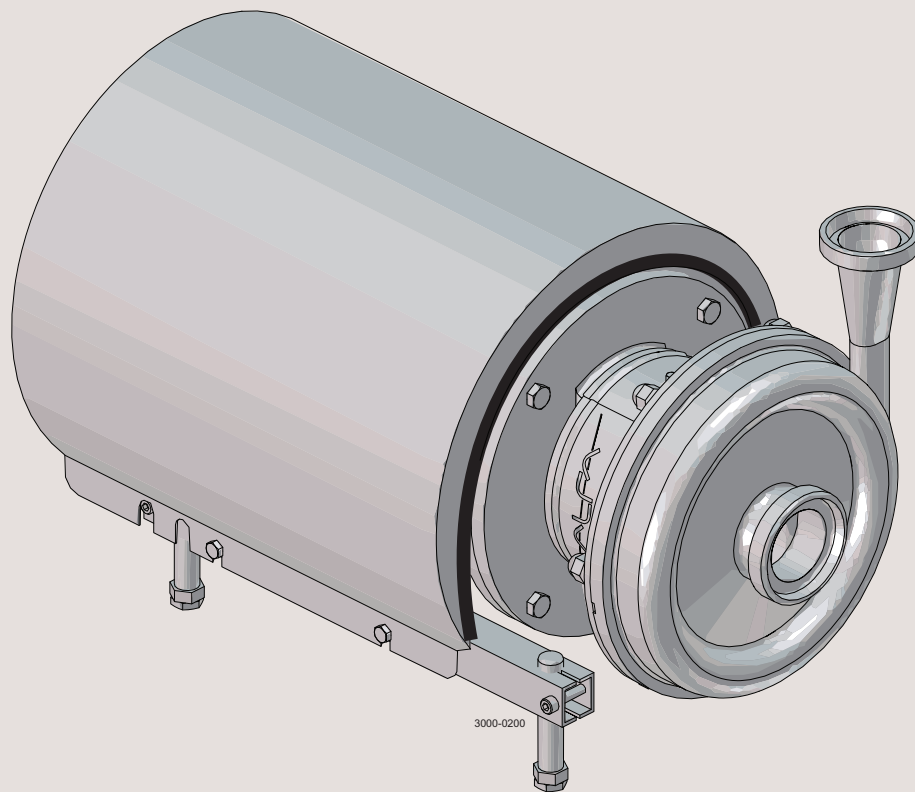




Instruction Manual

LKH Centrifugal Pump



ESE00698-EN29 2020-12

Original manual

The information herein is correct at the time of issue but may be subject to change without prior notice

| | |
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1 EC Declaration of Conformity

Revision of Declaration of Conformity 2013-12-03

The Designated Company

Alfa Laval Kolding A/S

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Pump

Designation

LKH-5, LKH-10, LKH-15, LKH-20, LKH-25, LKH-35, LKH-40, LKH-45, LKH-50, LKH-60, LKH-70, LKH-85, LKH-90

Type

Serial number from AAB000000001 to AAB999999999

Serial number from 10.000 to 1.000.000

Serial number from 100700000001-100799999999

is in conformity with the following directive with amendments:

- Machinery Directive 2006/42/EC

The person authorised to compile the technical file is the signer of this document

Global Product Quality Manager
Hygienic Fluid Handling

Title

Lars Kruse Andersen

Name

Kolding
Place

2020-01-23
Date

Signature



*Unsafe practices and other important information are emphasised in this manual.
Warnings are emphasised by means of special signs.
Always read the manual before using the pump!*

2.1 Important information

WARNING

Indicates that special procedures must be followed to avoid serious personal injury.

CAUTION

Indicates that special procedures must be followed to avoid damage to the pump.

NOTE

Indicates important information to simplify or clarify procedures.

This Instruction manual is designed to provide the user with the information to perform tasks safely for all phases in the life time of the product supplied.

The User shall always read the safety section first. Hereafter the User can skip to the relevant section for the task to be carried out or for the information needed.

This is the complete manual for the supplied product.

Skills for personal:

Operators:

The operators shall read and understand the instruction manual for the supplied product

Maintenance personnel:

The maintenance personnel shall read and understand the instruction manual.

The maintenance personnel or technicians shall be skilled within the field required to carry out the maintenance work safely.

Trainees:

Trainees can perform tasks under the supervision of an experienced employee.

People in general:

The public shall not have access to the supplied product.

How to contact Alfa Laval

Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information directly.

2 Safety

*Unsafe practices and other important information are emphasised in this manual.
Warnings are emphasised by means of special signs.
Always read the manual before using the pump!*

2.2 Warning signs

General warning:



Dangerous electrical voltage:



Caustic agents:



All warnings in the manual are summarised on this page.

Pay special attention to the instructions below so that severe personal injury and/or damage to the pump are avoided.

2.3 Safety precautions

General

Always ensure that personnel must have experience with lifting operations.

Always ensure the lifting point to be in line with center of gravity. Adjust lifting point if necessary.

Always keep an eye on the load and stay clear during the lifting operation.

Always ensure that the lifting equipment is suitable for the specific pump.

Always use appropriate lifting equipment for heavy parts when relevant. Use lifting logs when applied.

To prevent unexpected start and contact with electrical live and moving parts.

Always disconnect the power supply safely:

- The power supply disconnecting device must be disconnected (in off position) and locked.

- In case the pump is capable of being plugged into an electrical supply, removal of the plug is sufficient, provided that the operator can check from any of the points to which he has access that the plug remains removed.

Always refer to the motor instruction manual for installation and maintenance of the motor.

Never touch the impeller through the inlet/outlet during start/stop as this can cause serious injury.

Installation:

Always read the technical data thoroughly. (See chapter 6 Technical data)



Pump without impeller screw:

Always remove the impeller before checking the direction of rotation.

Never start the pump if the impeller is fitted and the pump casing is removed.

Pump with Impeller screw:

Never start in the wrong direction of rotation with liquid in the pump.

Always have the pump electrically connected by authorised personnel. (See the motor instruction)



Operation:

Always read the technical data thoroughly. (See chapter 6 Technical data)

Never touch the pump or the pipelines when pumping hot liquids or when sterilising.

Never run the pump with both the suction side and the pressure side blocked.

Never run the pump when partially installed or not completely assembled.

Necessary precautions must be taken if leakage occurs as this can lead to hazardous situations.

Always handle lye and acid with great care.

Never use the pump for products not mentioned in the Alfa Laval pump selection program.

The Alfa Laval pump selection program can be acquired from your local Alfa Laval sales company.



Maintenance:

Always read the technical data thoroughly. (See chapter 6 Technical data)

Never service the pump when it is hot.

Never service the pump if pressurised.

Always use Alfa Laval genuine spare parts.



Motors with grease nipples:

Always lubricate according to motor manufacturer's recommended procedures.

Always locate and remove grease vent plugs, if provided, prior to adding grease.

Always check motor nameplate for grease type and lubrication intervals.



2 Safety

All warnings in the manual are summarised on this page.

Pay special attention to the instructions below so that severe personal injury and/or damage to the pump are avoided.

Transportation:

Transportation of the pump or the pump unit:

Never lift or elevate in any way other than described in this manual

Always drain the pump head and accessories of any liquid

Always ensure that no leakage of lubricants can occur

Always transport the pump in its upright position

Always ensure that the unit is securely fixed during transportation

Always use the original packaging or similar during transportation

Always use suitable transport device ie. forklift or pallet lifter

Storage:

Ideally as a guide Alfa Laval would recommend:

- Store supplied product as supplied in original packaging
 - Port opening should be protected against any ingress
 - Bare steel (not stainless) should be lightly oiled/greased
 - Store in a clean, dry place without direct sunlight or UV light
 - Temperature range -5 to 40°C
 - Relative humidity less than 60%
 - No exposure to corrosive substances (also air contained)
-

3.1 Unpacking/delivery

Step 1

Always use a lifting crane when handling the pump (see technical data).

CAUTION

Alfa Laval cannot be held responsible for incorrect unpacking.

WARNING:

Be aware that certain pump configurations can tilt, and therefore cause injuries to feet or fingers. The pump should be supported underneath the adaptor, when not installed in the process line.

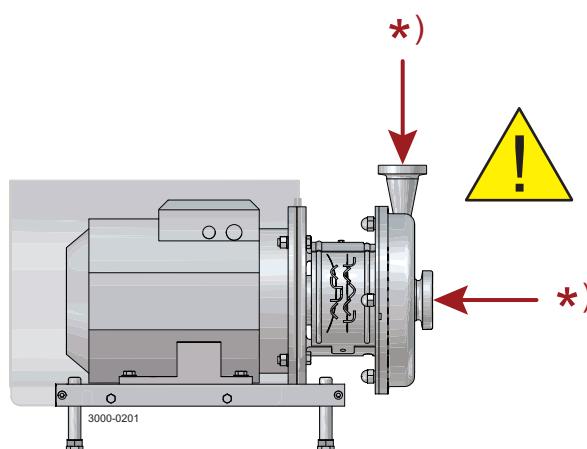
Check the delivery for:

1. Complete pump.
2. Delivery note.
3. Motor instructions.

Step 2

Remove any packing materials from the inlet and the outlet.
 Avoid damaging the inlet and the outlet.
 Avoid damaging the connections for flushing liquid, if supplied.

*) Remove packing materials!

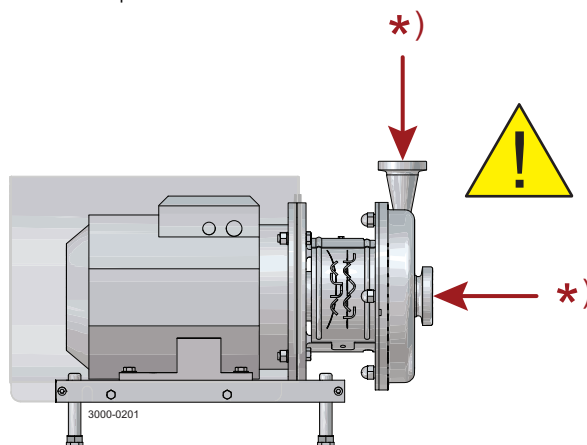


Step 3

Inspect the pump for visible transport damage.

*) Remove packing materials!

Inspection!

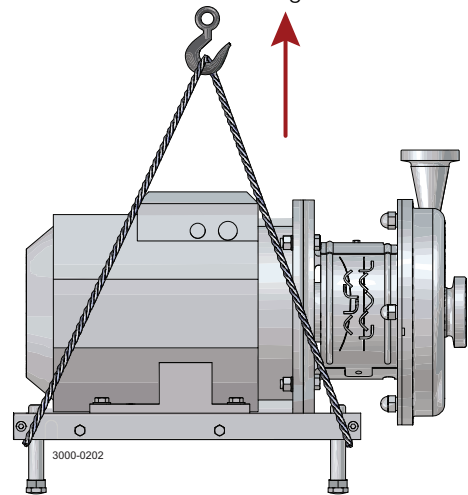


3 Installation

Step 4

Always remove the shroud, if fitted, before lifting the pump.

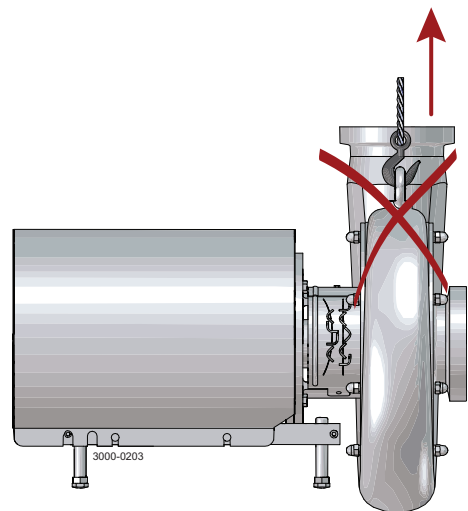
Remove the shroud before lifting!



Step 5

ONLY LKH-85 and LKH-90

Do **NOT** use eyebolt in casing to lift the pump. The eyebolt is for casing removal only.



Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.
- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.
The large pump sizes are very heavy.
Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

3.2 Installation

Step 1



Always read the technical data thoroughly.
(See chapter 6 Technical data)



Always use a lifting crane when handling the pump.



Always have the pump electrically connected by authorised personnel. (See the motor instructions).

CAUTION

Alfa Laval cannot be held responsible for incorrect installation.

CAUTION

The pump does not prevent back flow when intentionally or unintentionally stopped. If back flow can cause any hazardous situations, precautions must be taken e.g. check the valve to be installed in the system preventing hazardous situations from arising.

CAUTION

If the pump has been stored for longer period of time there is a risk that the seal faces may stick together and consequently cause damage to the seal at start-up. Please ensure that the pump shaft can be rotated by hand before start-up.

WARNING:

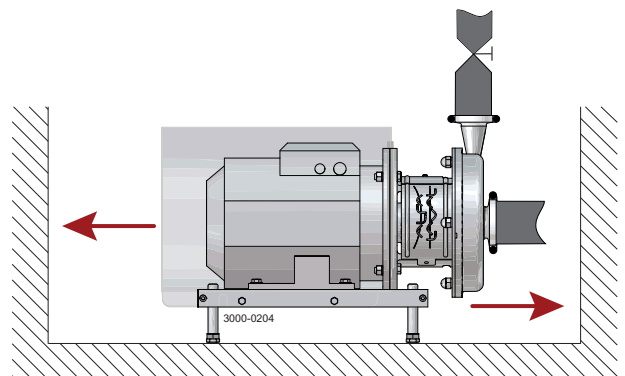
Alfa Laval recommends the supply disconnecting device shall be in accordance with EN60204-1. Always disconnect the supply disconnecting device safely after installation before continuing the installation.

Step 2

Ensure at least 0.5 m (1.6 ft) clearance around the pump.

Ensure the floor/frame is able to support the weight of the pump.
See Technical data and other environment requirements in section 6.

Ensure the pump is supported by all four feet equally.



3 Installation

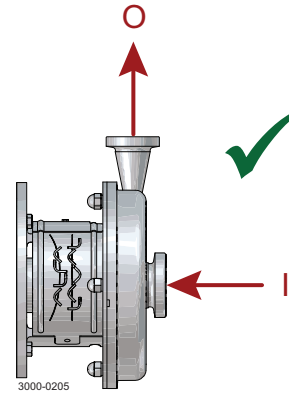
Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.
- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.
The large pump sizes are very heavy.
Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

Step 3

Check that the flow direction is correct.

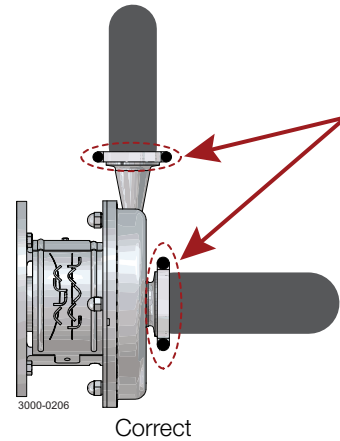
O: Outlet

I: Inlet



Step 4

1. Ensure that the pipelines are routed correctly.
2. Ensure that the connections are tight.
3. Remember seal rings. Few bends



Step 5

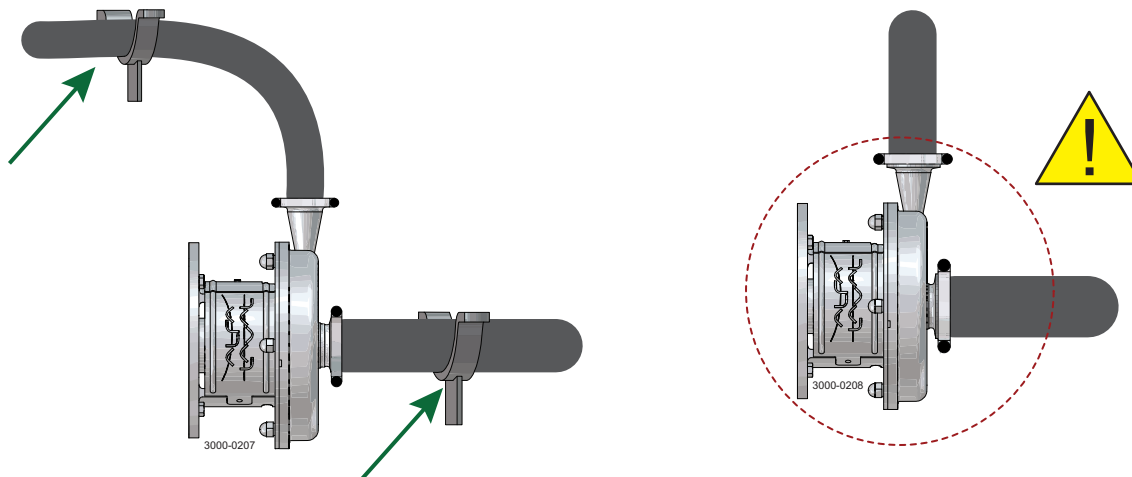
Avoid stress on the pump.

Piping system must be self-supported.

Pay special attention to:

- Vibrations.
- Thermal expansion of the tubes.
- Excessive welding.
- Overloading of the pipelines.

Example of piping system self-supported.

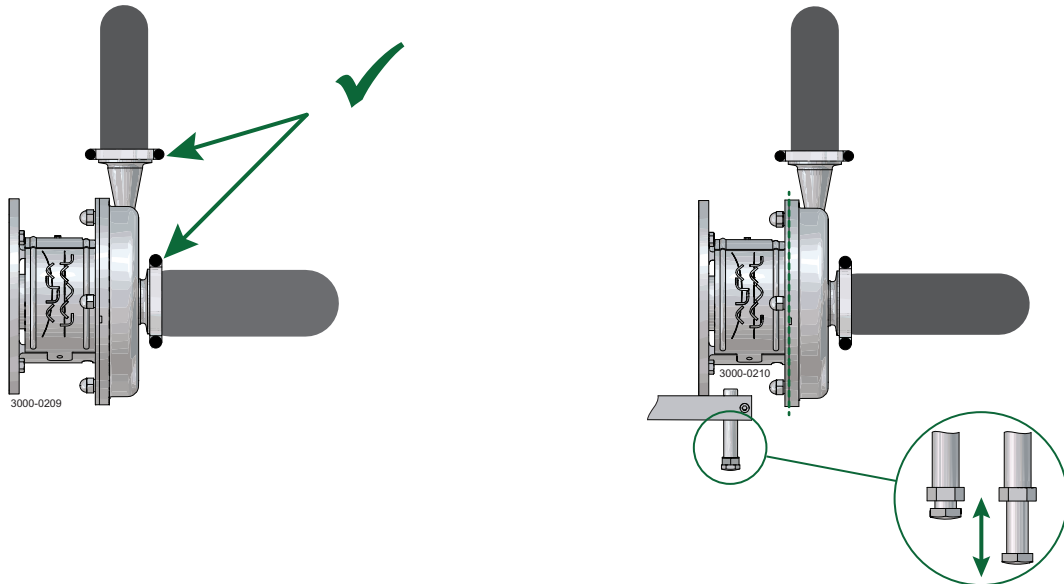


Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.
- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.
The large pump sizes are very heavy.
Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

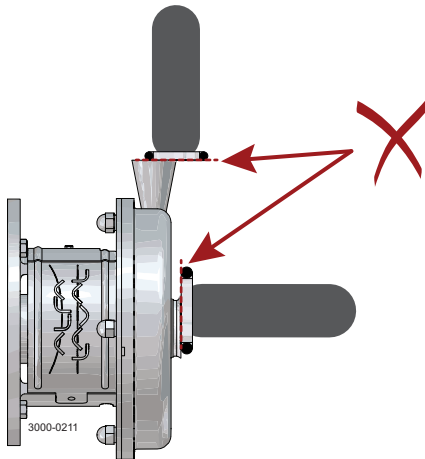
Step 6

Ensure correct alignment of pump inlet and outlet with piping system.

Alignment can be done by adjusting the pump legs.



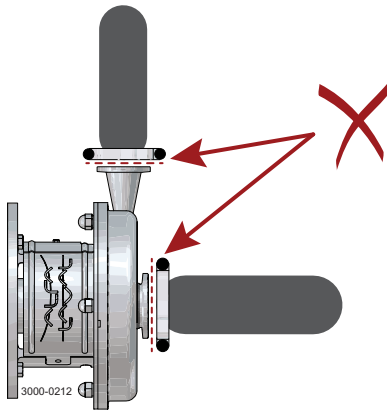
Centre of inlet and outlet to be aligned with centre of piping system.



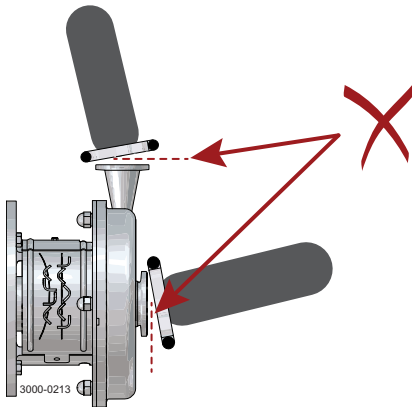
3 Installation

Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.
- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.
The large pump sizes are very heavy.
Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

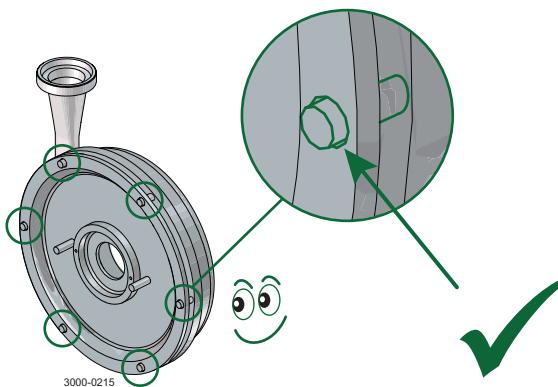
No gaps between connections on pump inlet and inlet pipe, and pump outlet and outlet pipe.



Angle between connections on pump inlet and inlet pipe, pump outlet and outlet pipe not allowed.



Ensure correct alignment of pump casing and pump backplate. Angle not allowed. Alignment can be done by adjusting the pump legs.



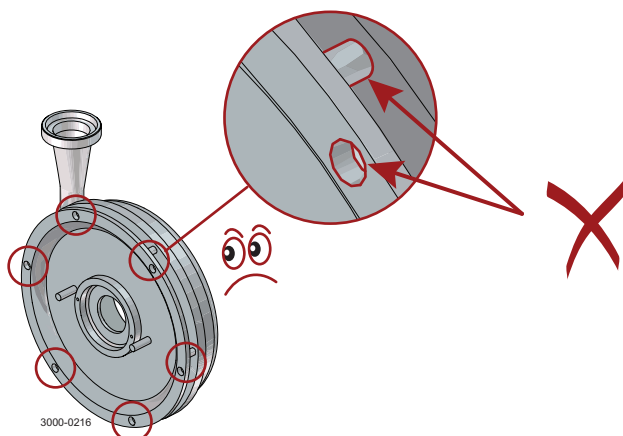
3 Installation

Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.

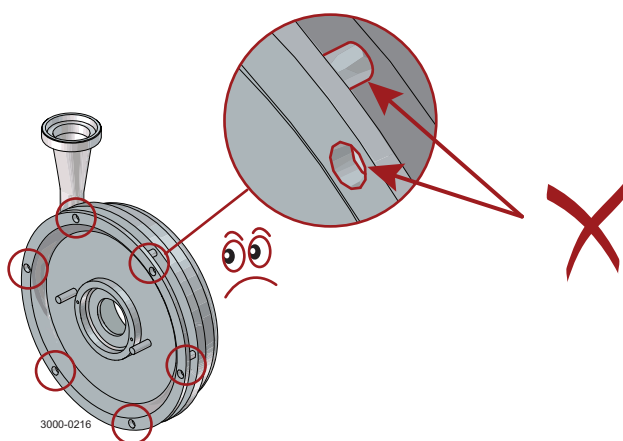
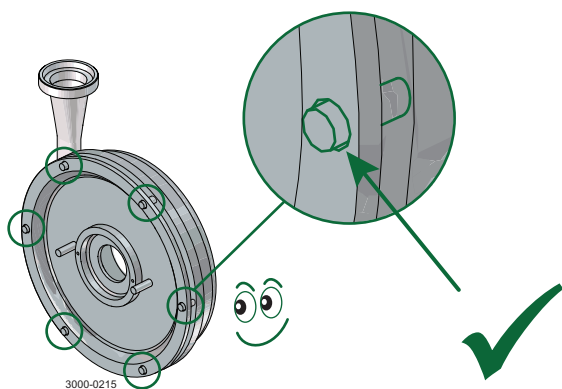
- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.

The large pump sizes are very heavy.

Alfa Laval therefore recommends the use of a lifting crane when handling the pump.



Ensure stud bolts in casing are aligned with holes in backplate.



Note

In case of shaft seal leakage, the media will drip from the slot in the bottom of the adaptor. In case of shaft seal leakage, Alfa Laval recommends putting a drip tray underneath the slot to collect the leakage.

3 Installation

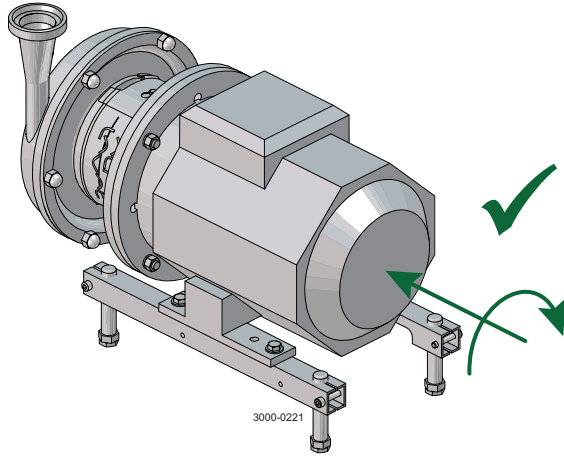
Read the instructions carefully and pay special attention to the warnings! Always check the pump before operation.

- See pre-use check in section 3.3 Pre-use check - pump without impeller screw.

The large pump sizes are very heavy.

Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

Always ensure the adaptor shield and motor fan guard are present and mounted correctly and allow no access to rotating parts before installing and starting the pump.



Read the instructions carefully and pay special attention to the warnings!
LKH-5 to -60 comes without impeller screw as standard but can be supplied with one.
Check the direction of rotation of the impeller before operation.
- See the indication label on the pump.

3.3 Pre-use check - pump without impeller screw

Step 1

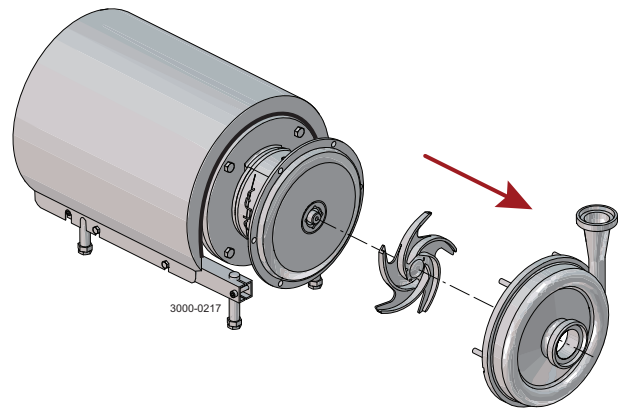


Always remove the impeller before checking the direction of rotation.



Never start the pump if the impeller is fitted and the pump casing is removed.

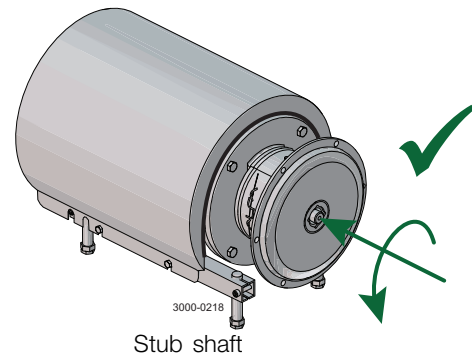
1. A. LKH-5: Remove screws (56), spring washers (56a), clamps (55+55a) and pump casing (29).
B. LKH-10 to -60: Remove cap nuts (24), washers (24a) and pump casing (29).
2. Remove impeller (27) (see also instruction in section 5.4 Assembly of pump/single shaft seal).



Step 2

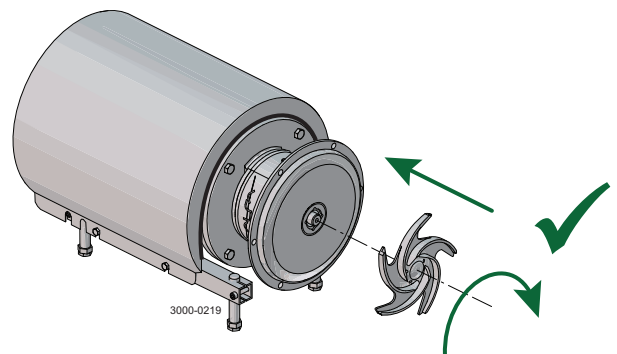
Warning: Stay clear and ensure no one is near the shaft during test of rotation.

1. Connect power supply.
2. Start and stop the motor momentarily.
3. Ensure that the direction of rotation of the stub shaft (7) is anticlockwise as viewed from the inlet side.
4. Disconnect power supply safety.



Step 3

Fit and tighten impeller (27).

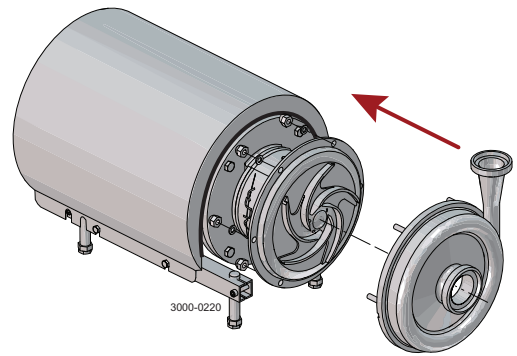


3 Installation

Read the instructions carefully and pay special attention to the warnings!
LKH-5 to -60 comes without impeller screw as standard but can be supplied with one.
Check the direction of rotation of the impeller before operation.
- See the indication label on the pump.

Step 4

1. Fit pump casing (29).
2.
 - A. LKH-5: Fit clamps (55+55a), spring washers (56a) and tighten screws (56)
 - B. LKH-10 to -60: Fit washers (24a) and tighten cap nuts (24), according to torque values in chapter 6 Technical data



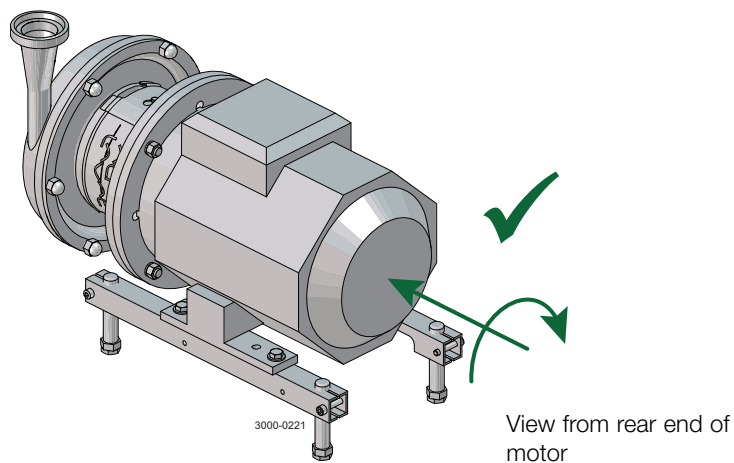
Read the instructions carefully and pay special attention to the warnings!
LKH-5 to -60 comes without impeller screw as standard but can be supplied with one.
Check the direction of rotation of the impeller before operation.
- See the indication label on the pump.

3.4 Pre-use check - pump with impeller screw



Never start in the wrong direction of rotation with liquid in the pump.

1. Connect power supply
2. Start and stop the motor momentarily.
3. Ensure that the direction of rotation of the motor fan is clockwise as viewed from the rear end of the motor.
4. Disconnect power supply safely



3 Installation

Read the instructions carefully and pay special attention to the warnings!

LKH-5 to -60 comes without impeller screw as standard but can be supplied with one.

Check the direction of rotation of the impeller before operation.

- See the indication label on the pump.

3.5 Recycling information

Unpacking

- Packing material consists of wood, plastics, cardboard boxes and in some cases metal straps
- Wood and cardboard boxes can be re-used, recycled or used for energy recovery
- Plastics should be recycled or burnt at a licensed waste incineration plant
- Metal straps should be sent for material recycling

Maintenance

- During maintenance, oil and wearing parts in the machine are replaced
- All metal parts should be sent for material recycling
- Worn out or defective electronic parts should be sent to a licensed handler for material recycling
- Oil and all non-metal wearing parts must be disposed of in accordance with local regulations

Scrapping

- At the end of use, the equipment must be recycled according to relevant local regulations. Besides the equipment itself, any hazardous residues from the process liquid must be taken into consideration and dealt with in a proper manner. When in doubt, or in the absence of local regulations, please contact your local Alfa Laval sales company.
-

Read the instructions carefully and pay special attention to the warnings!

4.1 Operation/Control

Step 1



Always read the technical data thoroughly. See chapter 6 Technical data

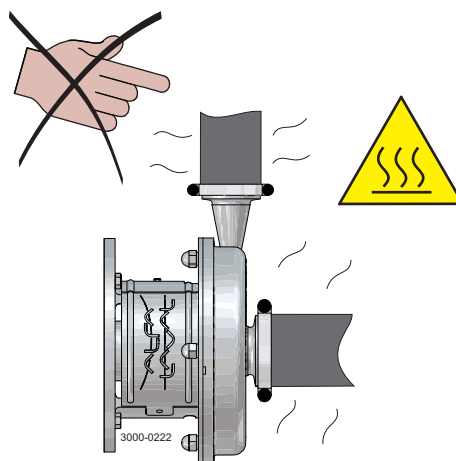
CAUTION

Alfa Laval cannot be held responsible for incorrect operation/control.

Step 2



Never touch the pump or the pipelines when pumping hot liquids or when sterilising.

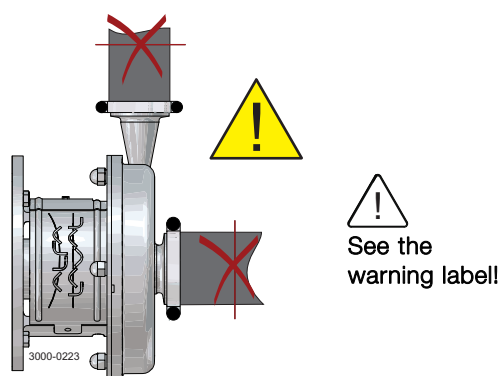


Step 3



Never run the pump with both the suction side and the pressure side blocked.

Danger of explosion!



4 Operation

Read the instructions carefully and pay special attention to the warnings!

Step 4

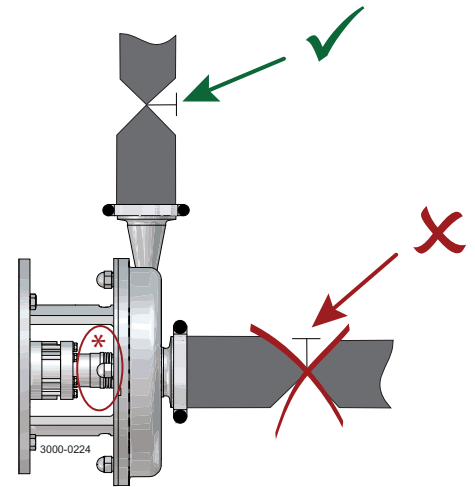
CAUTION

The shaft seal must not run dry.

CAUTION

Never throttle the inlet side.

*) Do not allow to run dry



Step 5

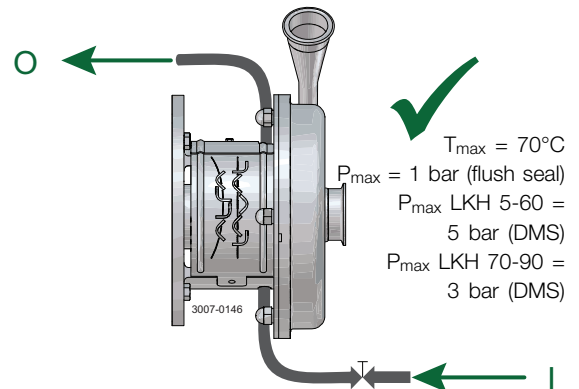
Double mechanical/flushed shaft seal:

1. Connect the inlet of the flushing liquid correctly. (1/8" G).
2. Regulate the water supply correctly.

*For LKH-85: connect inlet/outlet of the flushing liquid directly on the flushing housing. (ø6 tube).

O: Outlet

I: Inlet

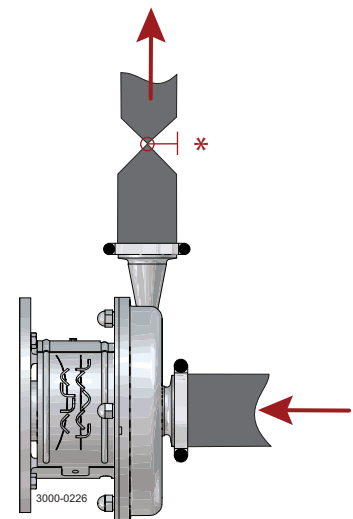


Step 6

Control:

Reduce the capacity and the power consumption by means of:

- *) Throttling the pressure side of the pump.
- Reducing the impeller diameter.
- Reducing the speed of the motor.



*Pay attention to possible faults.
Read the instructions carefully.*

4.2 Trouble shooting

NOTE!

Read the maintenance instructions carefully before replacing worn parts.

| Problem | Cause/result | Remedy |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor overloaded | <ul style="list-style-type: none"> - Pumping of viscous liquids - Pumping of high density liquids - Low outlet pressure (counter pressure) - Lamination of precipitates from the liquid | <ul style="list-style-type: none"> - Larger motor or smaller impeller - Higher counter pressure (throttling) - Frequent cleaning |
| Cavitation: <ul style="list-style-type: none"> - Damage - Pressure reduction (sometimes to zero) - Increase in the noise level | <ul style="list-style-type: none"> - Low inlet pressure - High liquid temperature | <ul style="list-style-type: none"> - Increase the inlet pressure - Reduce the liquid temperature - Reduce the pressure drop before the pump - Reduce speed |
| Leaking shaft seal | <ul style="list-style-type: none"> - Running dry - Incorrect rubber grade - Abrasive particles in the liquid | Replace: All wearing parts If necessary: <ul style="list-style-type: none"> - Change rubber grade - Select stationary and rotating seal ring in silicon carbide/silicon carbide |
| Leaking O-ring seals | Incorrect rubber grade | Change rubber grade |

4 Operation

The pump is designed for cleaning in place (CIP). CIP = Cleaning In Place.
Study the instructions carefully and pay special attention to the warnings!
NaOH = Caustic Soda.
HNO₃ = Nitric acid.

4.3 Recommended cleaning

Step 1



Always handle lye and acid with great care.
Always follow the instructions in the safety data sheet for the cleaning agent.

Caustic danger!



Always use rubber gloves!

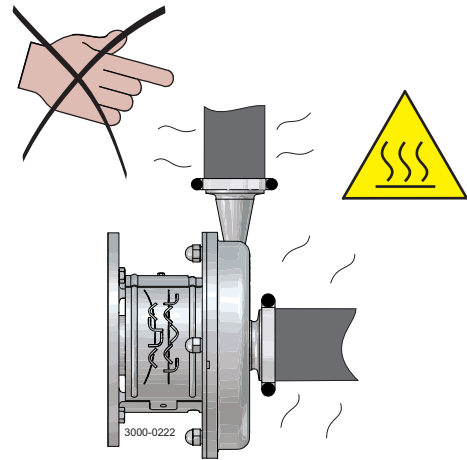


Always use protective goggles!

Step 2



Never touch the pump or the pipelines when sterilising.



Step 3

Examples of cleaning agents: Use clean water, free from chlorides.

1. 1% by weight NaOH at 70°C (158°F).

1 kg (2.2 lb) NaOH + 100 l (26.4 gal) water = Cleaning agent.

2.2 l (0.6 gal) 33% NaOH + 100 l (26.4 gal) water = Cleaning agent.

2. 0.5% by weight HNO₃ at 70°C (158°F).

0.7 l (0.2 gal) 53% HNO₃ + 100 l (26.4 gal) water = Cleaning agent.

1. Avoid excessive concentration of the cleaning agent
⇒ Dose gradually!
2. Adjust the cleaning flow to the process.
Sterilisation of milk/viscous liquids
⇒ Increase the cleaning flow!

The pump is designed for cleaning in place (CIP). CIP = Cleaning In Place.
Study the instructions carefully and pay special attention to the warnings!
NaOH = Caustic Soda.
HNO₃ = Nitric acid.

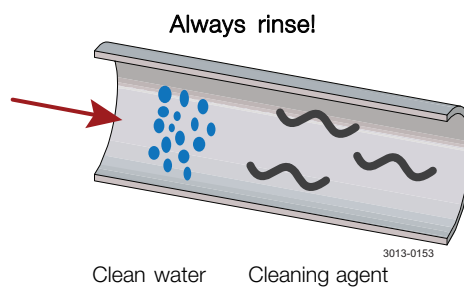
Step 4



Always rinse well with clean water after using a cleaning agent.

NOTE

Cleaning agents must be stored/disposed of in accordance with current regulations/directives.



NOTE:

If pumps are sterilised using steam, standard 3A requires the process system to be designed to automatically shut down if the product pressure in the system becomes less than that of the atmosphere and it cannot be started until the system is re-sterilised.

5 Maintenance

Maintain the pump with care. Read the instructions carefully and pay special attention to the warnings!
Always keep spare shaft seals and rubber seals in stock.
See separate motor instructions.
Check the pump for smooth operation after service.

5.1 General maintenance

Step 1



Always read the technical data thoroughly. (See chapter 6 Technical data)



Always disconnect the power supply safely when servicing the pump.

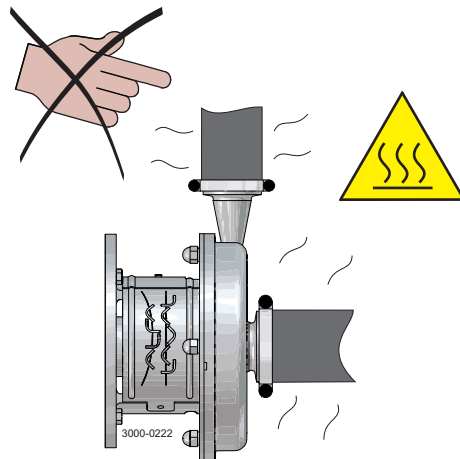
NOTE

All scrap must be stored//disposed of in accordance with current rules/directives.

Step 2



Never service the pump when it is hot.



Step 3



Never service the pump when pump is pressurised.

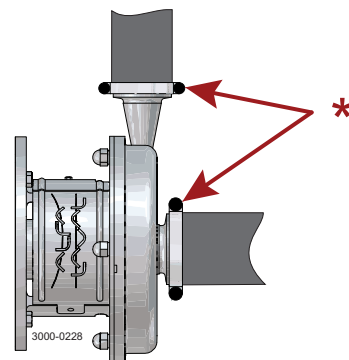
CAUTION

Fit the electrical connections correctly if they have been removed from the motor during service.

CAUTION

Pay special attention to the warnings!

*) Atmospheric pressure required!



Step 4

Recommended spare parts:

Order service kits from the service kits list
(See chapter 7 Parts list and service kits).

Ordering spare parts

Contact your local Alfa Laval sales company.

Note:

If the pump is supplied with FEP O-rings, Alfa Laval recommends that the casing O-ring is replaced during pump maintenance.

Maintain the pump with care. Read the instructions carefully and pay special attention to the warnings!
 Always keep spare shaft seals and rubber seals in stock.
 See separate motor instructions.
 Check the pump for smooth operation after service.

Safety check

A visual inspection of adaptor shield and motor fan guard must be carried out every 12 months.

If loss or damage to shield or guard, especially when this leads to deterioration of safety performance, it shall be replaced.

The fixing of shield and guards should only be replaced with fixings of the same or an equivalent type.

Inspection acceptance criteria:

- It is not possible to reach the shaft or fan
- The shield and guard must be securely mounted
- Ensure that the screws are tightened

Procedure in case of non-acceptance:

- Fix and/or replace the shield or guard.

| | Shaft seal | Rubber seals | Motor bearings |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preventive maintenance | Replace after 12 months: (one-shift) Complete shaft seal | Replace when replacing the shaft seal | |
| Maintenance after leakage (leakage normally starts slowly) | Replace at the end of the day: Complete shaft seal | Replace when replacing the shaft seal | |
| Planned maintenance | <ul style="list-style-type: none"> - Regular inspection for leakage and smooth operation - Keep a record of the pump - Use the statistics for inspection planning Replace after leakage: Complete shaft seal | Replace when replacing the shaft seal | Yearly inspection is recommended <ul style="list-style-type: none"> - Replace complete bearing if worn - Ensure that the bearing is axially locked (See motor instructions) |
| Lubrication (Use food approved greas or oil) | Before fitting Lubricate the O-rings with silicone grease or silicone oil | Before fitting Silicone grease or silicone oil | See section 6.2 Relubrication intervals |

Pre-use check

CAUTION!

Fit the electrical connections correctly if they have been removed from the motor during servicing.
 (See pre-use check in section 3 Installation).

Pay special attention to warnings!

1. Start and stop the motor momentarily
2. Ensure that the pump operates smoothly.

5 Maintenance

5.2 Cleaning Procedure

Cleaning procedure for soiled impeller screw tapped hole:

Warning: Always follow the instructions in the safety data sheet for the cleaning agent.

1. Remove stub shaft (7) as per section 4 of the Service manual.
2. Submerge and soak the stub shaft for 5 minutes in COP tank with 2% caustic wash
3. Scrub the blind tapped impeller screw hole vigorously by plunging a clean 1/2" diameter sanitary bristle pipe brush in and out of the hole for two minutes while submerged.
4. Soak stub shaft (7) in acid sanitiser for 5 minutes, then scrub blind tapped hole as described in step 3 above.
5. Rinse well with clean water and blow-dry blind tapped hole with clean air.
6. Swab test the inside of the tapped hole to determine cleanliness.
7. Should the swab test fail, repeat steps 2 to 6 above until the swab test is passed.

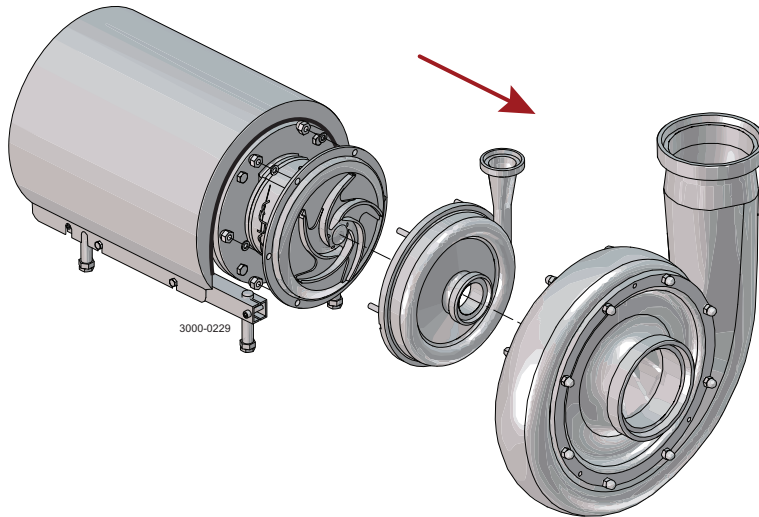
Should swab testing continue to fail, or time is of the essence, install a new (spare) stub shaft (7).

Read the instructions carefully. The items refer to the parts list and service kits section.
Handle scrap correctly.
* : Relates to the shaft seal.

5.3 Dismantling of pump/shaft seals

Step 1

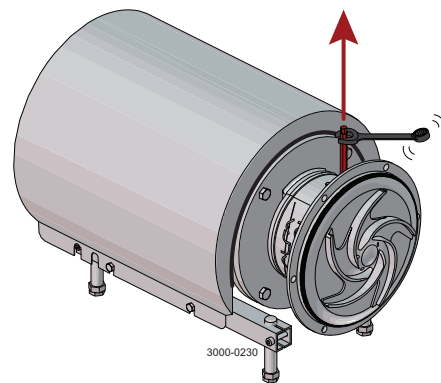
1.
 - A. LKH-5: Remove screws (56), spring washers (56a), clamps (55+55a) and pump casing (29).
 - B. LKH-10 to 90: Unscrew cap nuts (24) and remove washers (24a) and pump casing (29).



LKH-85 and LKH-90

Step 2

Flushed / Double mechanical shaft seal:
Unscrew tubes (42) using a spanner.



5 Maintenance

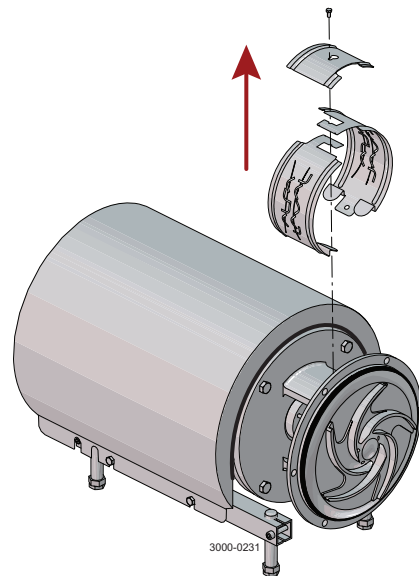
Read the instructions carefully. The items refer to the parts list and service kits section.

Handle scrap correctly.

* : Relates to the shaft seal.

Step 3

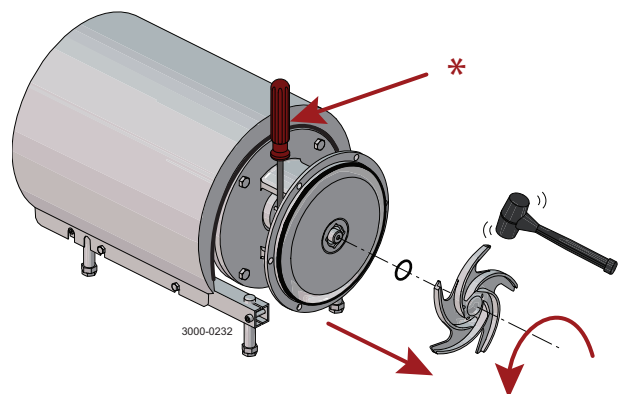
Remove screw (23) and safety guard (22).



Step 4

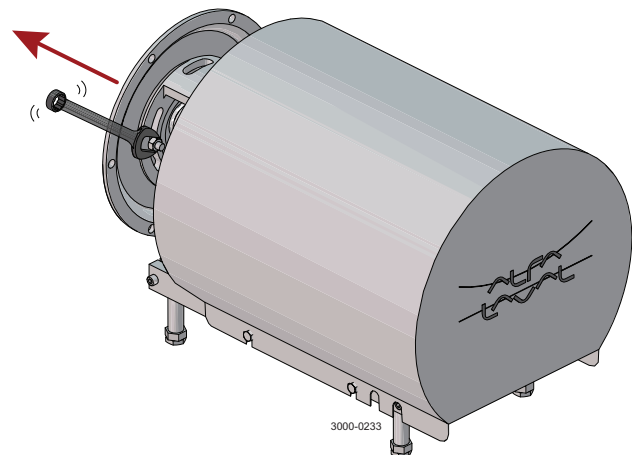
1. Remove impeller screw (36), if fitted.
2. Remove impeller (27). If necessary, loosen the impeller by knocking gently on the impeller vanes.
3. Remove the O-ring (38) from the impeller, if fitted.

*) Counterhold with a screwdriver!



Step 5

1. Pull off the O-ring (26) from back plate (25).
2. Unscrew nuts (20) and remove washers (21) and the back plate.



Read the instructions carefully. The items refer to the parts list and service kits section.

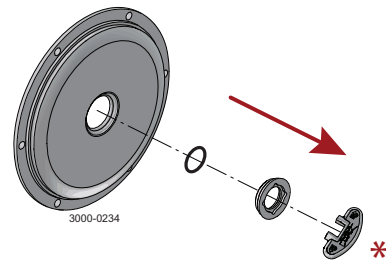
Handle scrap correctly.

* : Relates to the shaft seal.

Step 6

1. Remove the stationary seal ring (11).
2. Remove the O-ring (12) from back plate (25).

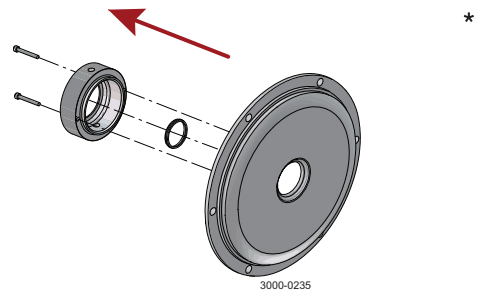
*) Use the tool supplied. Left hand thread!



Step 7

Flushed shaft seal:

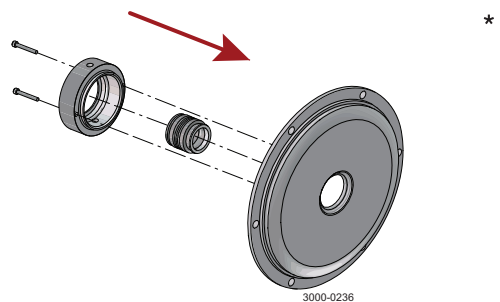
1. Remove screws (41) and seal housing (40).
2. Pull out lip seal (43) from the seal housing.



Step 8

Double mechanical shaft seal:

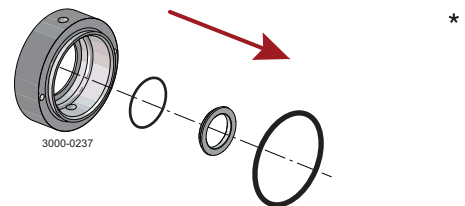
1. Remove screws (41) and seal housing (40a).
2. Remove rotating seal rings (14) and drive ring (52) from spring (13).
3. Remove O-rings (15) from rotating seal rings (14).
4. LKH-70 to 90: Remove cups (54) from rotating seal rings.



Step 9

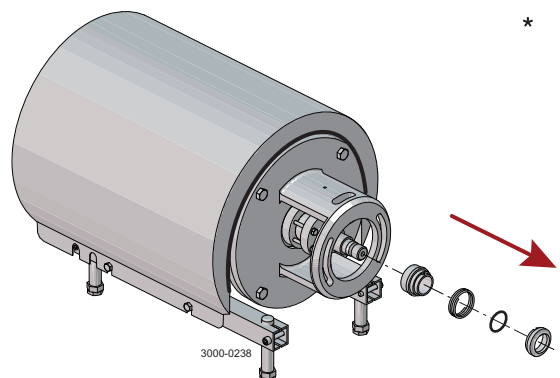
Double mechanical shaft seal:

1. Remove stationary seal ring (51) from seal housing (40a).
2. Remove O-ring (50) from stationary seal ring (51).
3. Remove O-ring (44) from seal housing (40a).



Step 10

1. Remove the complete shaft seal from stub shaft (7).
2. Remove spring (13) and rotating seal ring (14) from the drive ring (10).



5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.

Handle scrap correctly.

* : Relates to the shaft seal.

5.4 Assembly of pump/single shaft seal

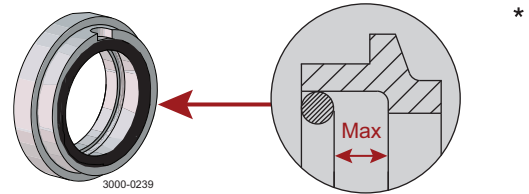
Step 1

1. Remove spring (13).

NOTE!

Make sure that O-ring (15) has maximum clearance from the sealing surface.

If change from double mechanical shaft seal to single shaft seal the shaft needs to be adjusted. see Section 5.7 Adjustment of shaft (LKH-5) and Section 5.8 Adjustment of shaft (LKH-10 to -90).

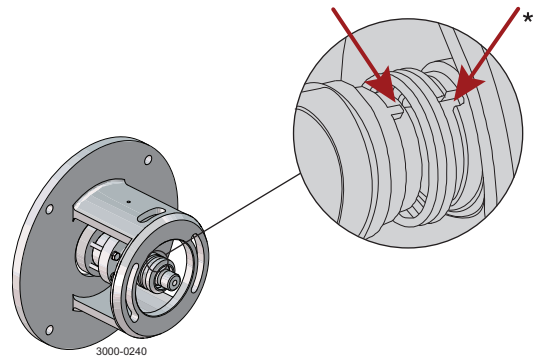


Step 2

1. Refit spring (13) on rotating seal ring (14).
2. Fit the spring and the rotating seal ring on drive ring (10).

CAUTION

Ensure that the driver on the drive ring enters the notch in the rotating seal ring.

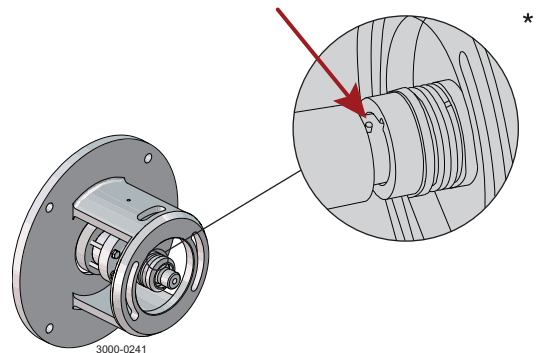


Step 3

- Fit the complete shaft seal on stub shaft (7).

NOTE!

Make sure that Connex pin (8) on the stub shaft enters the notch in drive ring (10).



Step 4

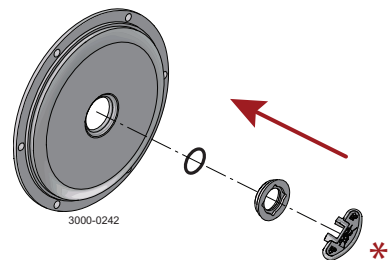
1. Fit O-ring (12) on stationary seal ring (11) and lubricate.
2. Screw the stationary seal ring into back plate (25).

CAUTION

Only tighten by hand to avoid deforming the stationary seal ring.

(Max. 7 Nm/5 lbf-ft)

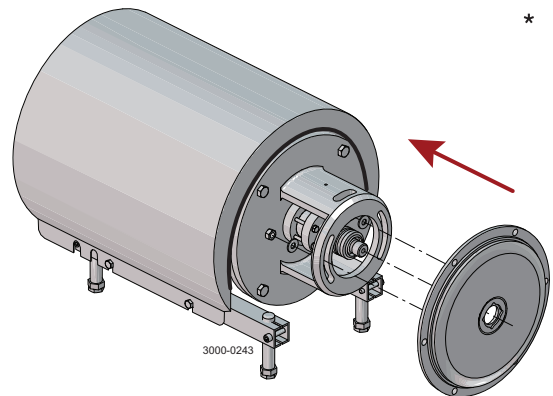
*) Use the tool supplied. Left hand thread!



Read the instructions carefully. The items refer to the parts list and service kits section.
Handle scrap correctly.
* : Relates to the shaft seal.

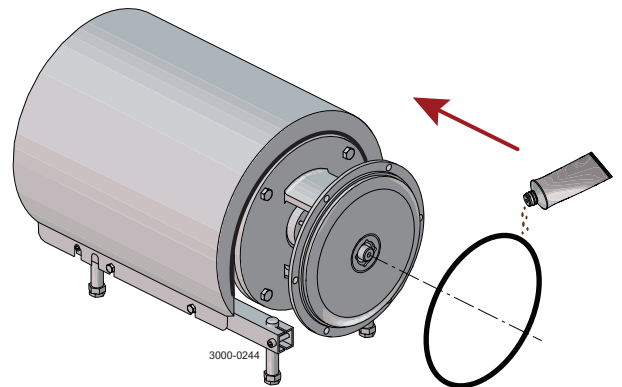
Step 5

1. Clean the sealing surfaces with contact cleaner before fitting back plate (25).
2. Carefully guide the back plate onto adaptor (16).
3. Fit washers (21) and nuts (20).



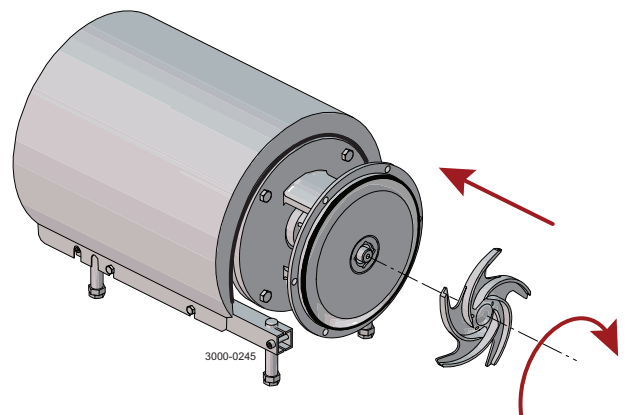
Step 6

Lubricate O-ring (26) and slide it onto back plate (25).



Step 7

1. Lubricate O-ring (38) and fit it in impeller (37), if impeller screw is used.
 2. Lubricate impeller hub with silicone grease or oil.
 3. Screw the impeller onto stub shaft (7).
 4. Fit impeller screw (39) and tighten, if used.
- Torque - 5-60 = 20 Nm (15 lbf-ft)
Torque - 70-90 = 50 Nm (37 lbf-ft)



5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.

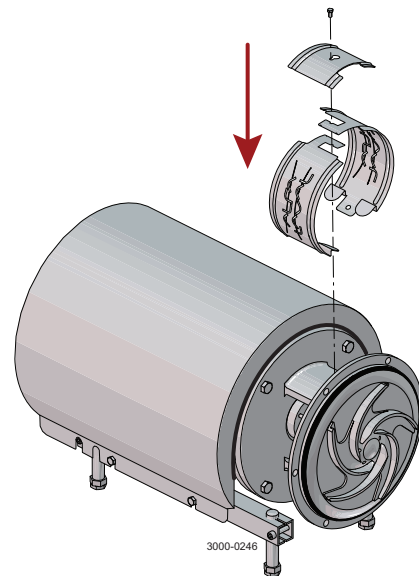
Handle scrap correctly.

* : Relates to the shaft seal.

Step 8

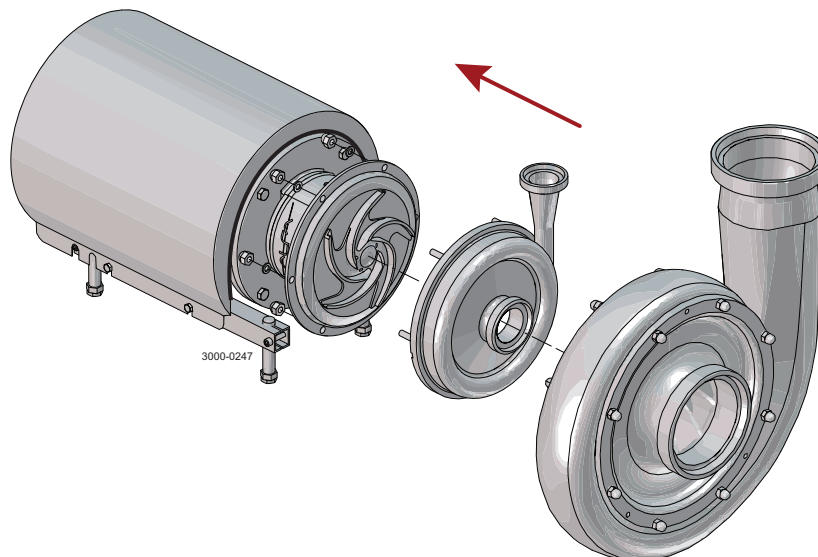
Fit safety guards (22) and screw (23) and tighten.

If pump is not supplied with flush connections, the holes in the adaptor will be covered by the guard.



Step 9

1.
 - A. LKH-5: Fit pump casing (29), clamps (55+55a), spring washers (56a) and screws (56).
 - B. LKH-10 to -90: Fit pump casing (29), washers (24a) and cap nuts (24).
2. Adjust pump casing to the right position.
3.
 - A. LKH-5: Tighten nuts (20) for back plate (25) and tighten screws (56).
 - B. LKH-10 to -90: Tighten nuts (20) for back plate (25) and tighten cap nuts (24), according to torque values in chapter 6 Technical data.



LKH-85 and LKH-90

Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

5.5 Assembly of pump/flushed shaft seal

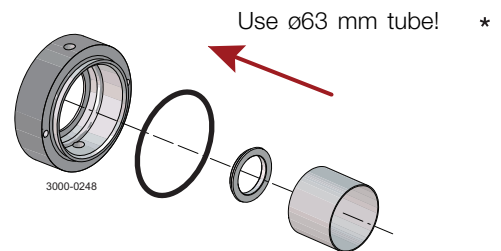
Step 1

Flushed shaft seal:

LKH-5 to -60 use $\varnothing 63$ mm tube

LKH-70 to -90 press in lip seal by hand

1. Fit lip seal (43) in seal housing (40).
2. Lubricate O-ring (44) and slide onto the seal housing (40).
3. Fit the seal housing on back plate (25) and tighten screws (41).



Note

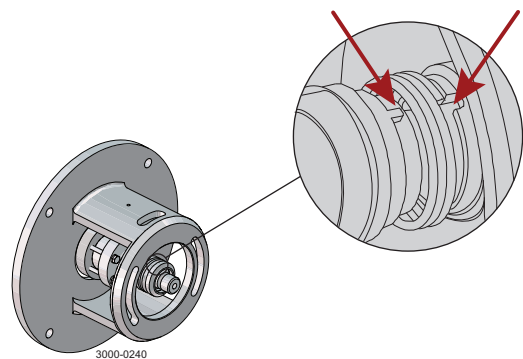
If change from double mechanical shaft seal to flushed shaft seal the shaft needs to be adjusted. see Section 5.7 Adjustment of shaft (LKH-5) and Section 5.8 Adjustment of shaft (LKH-10 to -90).

Step 2

1. Lubricate O-ring (45) and fit it in drive ring (10).
2. Fit spring (13) and rotating seal ring (14) on the drive ring.

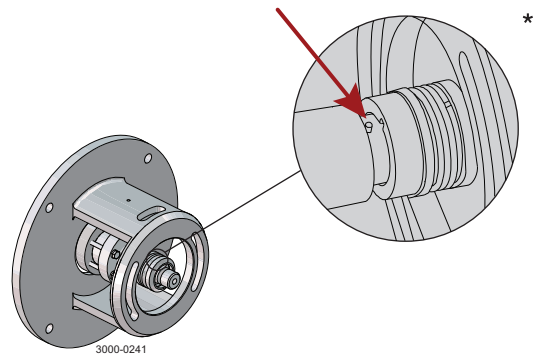
CAUTION

Ensure that the driver on the drive ring enters the notch in the rotating seal ring.



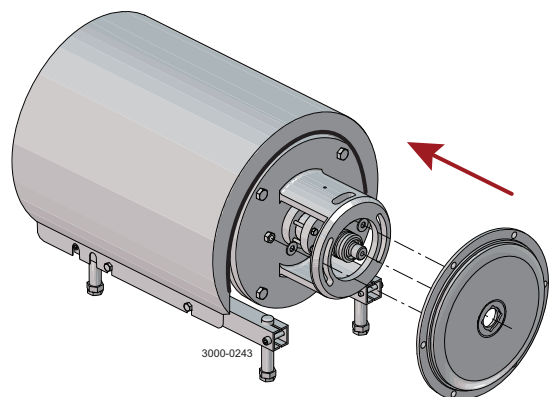
Step 3

Fit complete shaft seal on stub shaft (7) so that Connex pin (8) on the stub shaft enters the notch in drive ring (10).



Step 4

1. Carefully guide back plate (25) onto adaptor (16).
2. Fit washers (21) and nuts (20).

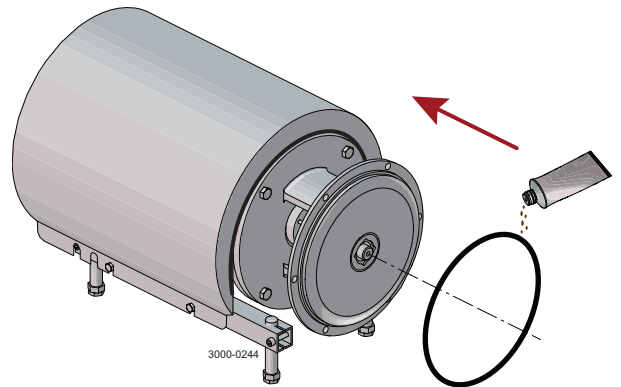


5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

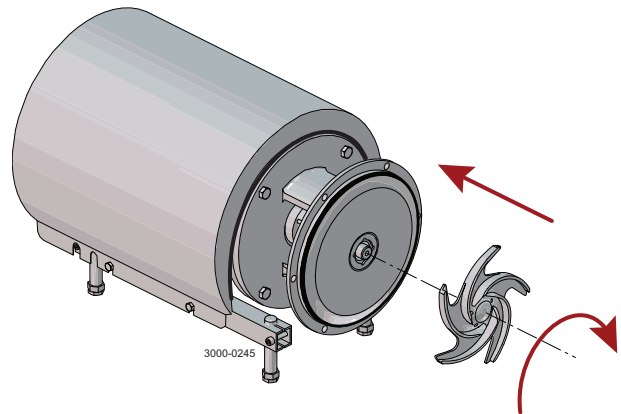
Step 5

Lubricate O-ring (26) and slide it onto back plate (25).



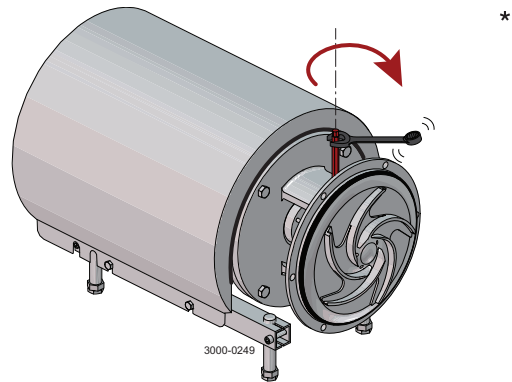
Step 6

1. Lubricate O-ring (38) and fit it in impeller (37), if impeller screw is used.
 2. Lubricate the impeller hub with silicone grease or oil.
 3. Screw impeller (27) onto stub shaft (7).
 4. Fit impeller screw (36) and tighten, if used.
- Torque - 5-60 20 Nm (15 lbf-ft)
Torque - 70-90 50 Nm (37 lbf-ft)



Step 7

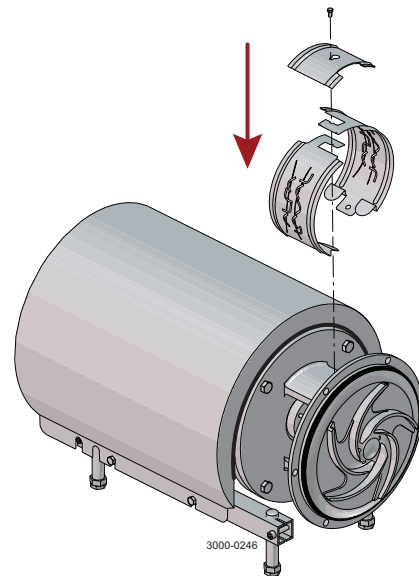
1. Screw tubes (42) into seal housing (40).
2. Tighten with a spanner.



Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

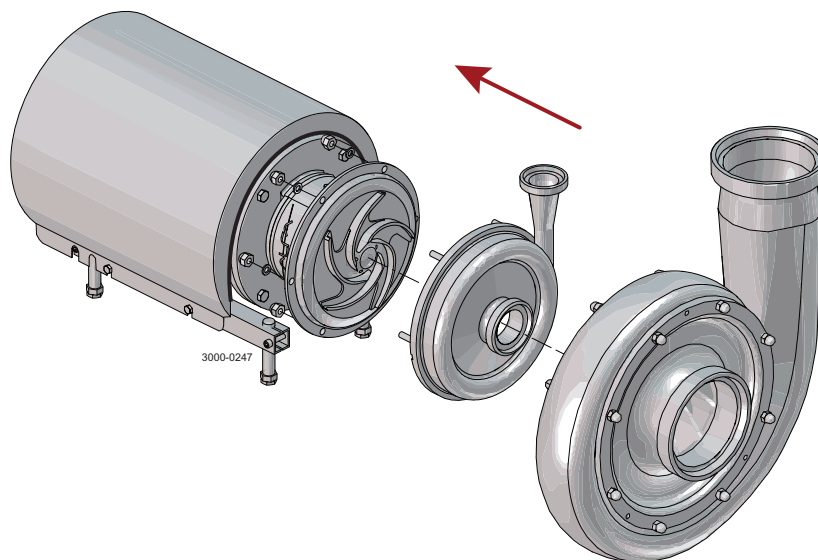
Step 8

Fit safety guard (22) and screw (23) and tighten.



Step 9

1.
 - A. LKH-5: Fit pump casing (29), clamps (55+55a), spring washers (56a) and screws (56).
 - B. LKH-10 to -90: Fit pump casing (29).
2. Tighten nuts (20) for back plate (25).
3.
 - A. LKH-5: Tighten nuts (20) for back plate (25) and tighten screws (56).
 - B. LKH-10 to -90: Fit washers (24a) and cap nuts (24) and tighten, according to the torque values in chapter 6 Technical data.



LKH-85 and LKH-90

5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.

Lubricate the rubber seals before fitting them.

* : Relates to the shaft seal.

5.6 Assembly of pump/double mechanical shaft seal

Step 1

1. Fit O-rings (15) in rotating seal rings (14). *
2. LKH-70 to -90: Fit cups (54) on rotating seal rings (14).
3. Fit spring (13) on one of the rotating seal rings (14) and place the drive ring (52) in between.

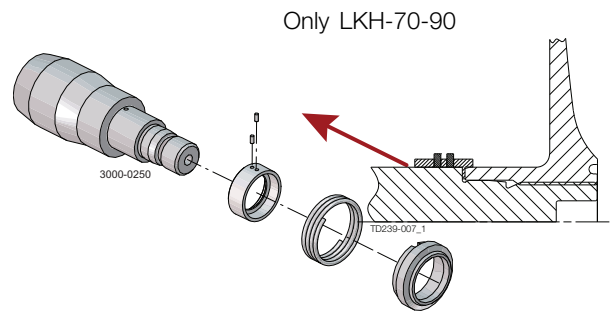
Step 2

1. LKH-70 to -90: Turn the drive ring (52) in order to place it correctly on the pump shaft (7). *
2. Fit the second rotating ring (14) on the other end of the spring.
3. Place the parts on the stationary seal ring fitted in back plate (25).

NOTE

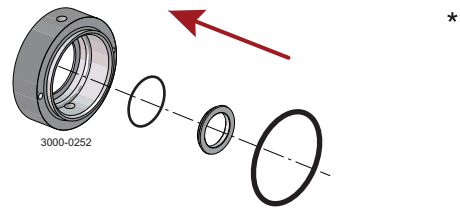
Ensure that both drive pins on the drive ring enter the notches in rotating seal rings.

If change from single shaft seal to double mechanical shaft seal the shaft needs to be adjusted. see Section 5.7 Adjustment of shaft (LKH-5) and Section 5.8 Adjustment of shaft (LKH-10 to -90).



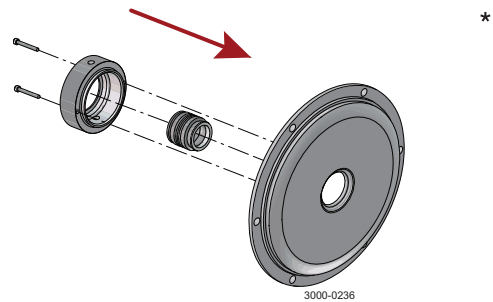
Step 3

1. Lubricate O-ring (44) and slide onto seal housing (40a). *
2. Lubricate O-ring (50) and fit on stationary seal ring (51) and fit this in the seal housing.



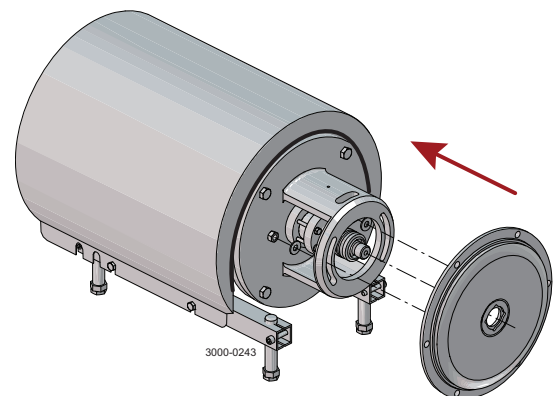
Step 4

1. Clean the sealing surfaces with contact cleaner. *
2. Fit seal housing (40a) on the back plate (25) and tighten screws (41).



Step 5

1. To enable fitting of back plate (25) with the shaft seal, remove Connex pin (8) from stub shaft (7) (if fitted).
2. Carefully guide the back plate onto adaptor (16).
3. Fit washers (21) and nuts (20).

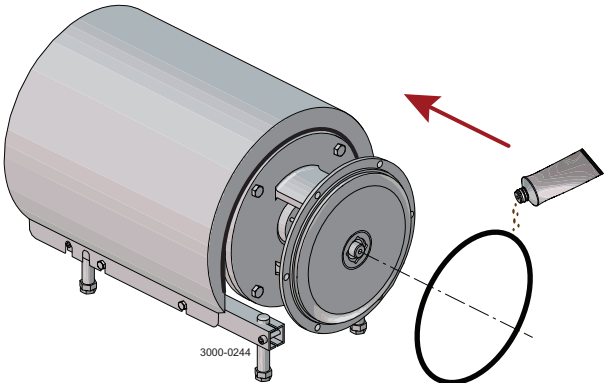


5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

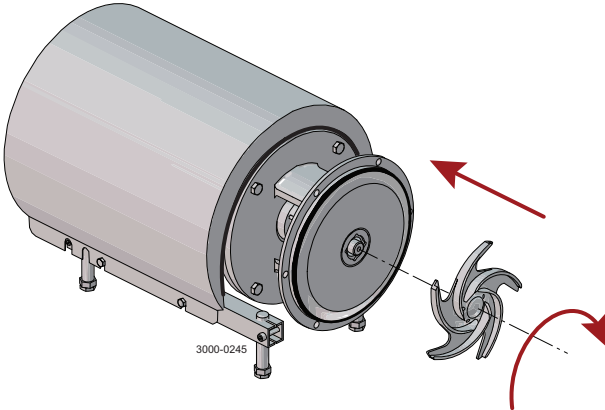
Step 6

Lubricate O-ring (26) and slide it onto back plate (25).



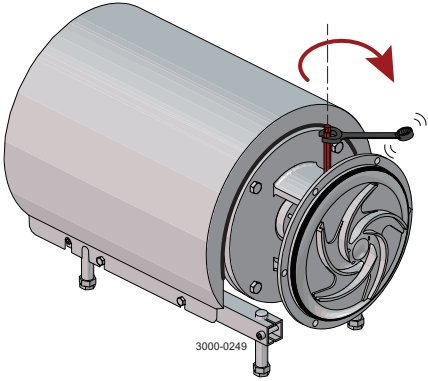
Step 7

- 1. Lubricate O-ring (38) and fit it in impeller (37), if impeller screw is used.
 - 2. Lubricate the impeller hub with silicone grease or oil.
 - 3. Screw impeller (27) onto stub shaft (7).
 - 4. Fit impeller screw (36) and tighten, if used.
- Torque - 5-60 20 Nm (15 lbf-ft)
Torque - 70-90 50 Nm (37 lbf-ft)



Step 8

- 1. Screw tubes (42) into seal housing (40a).
- 2. Tighten with a spanner.



5 Maintenance

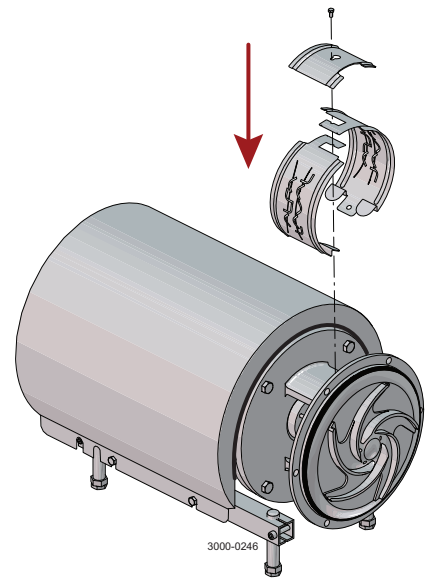
Read the instructions carefully. The items refer to the parts list and service kits section.

Lubricate the rubber seals before fitting them.

* : Relates to the shaft seal.

Step 9

Fit safety guard (22) and screw (23) and tighten.



Step 10

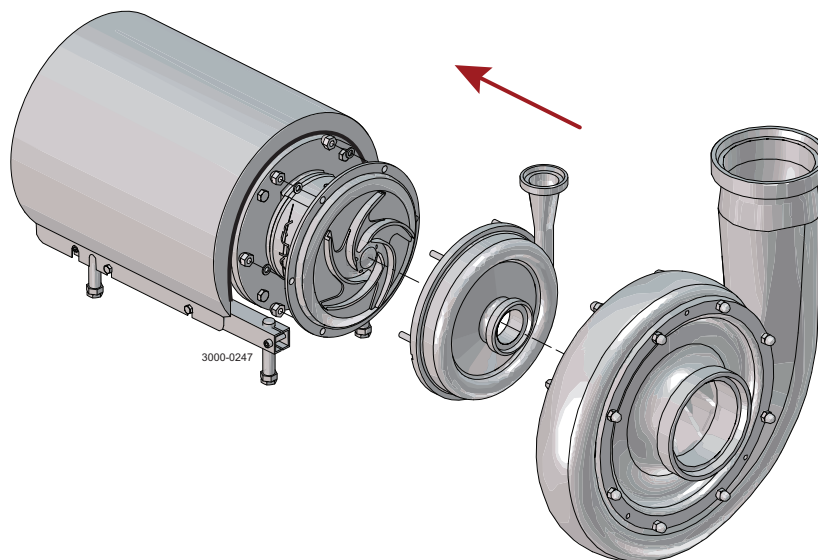
1. Fit pump casing (29).

2. Tighten nuts (20) for back plate (25).

3.

A. LKH-5: Fit clamps (55+55a), spring washers (56a) and screws (56) and tighten.

B. LKH-10 to -90: Fit washers (24a) and cap nuts (24) and tighten, according to torque values in chapter 6 Technical data.



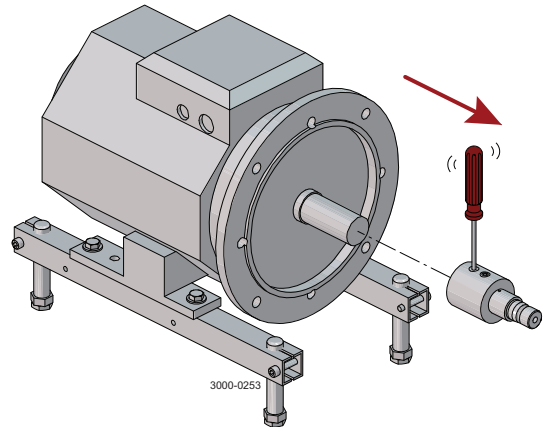
LKH-85 and LKH-90

Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

5.7 Adjustment of shaft (LKH-5)

Step 1

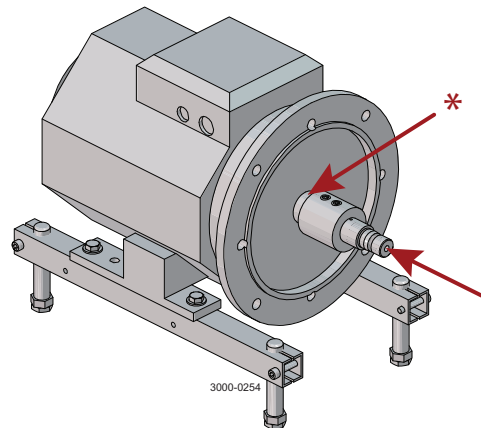
1. Loosen screws (6).
2. Pull off stub shaft (7).



Step 2

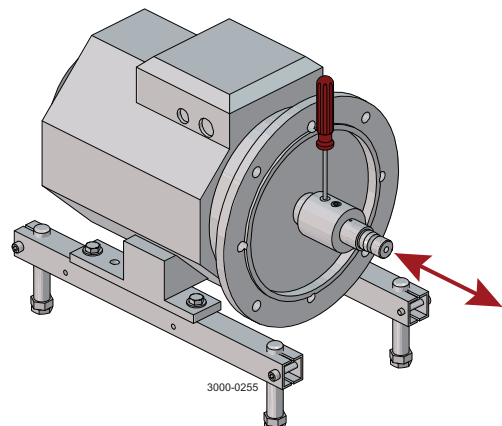
1. Push stub shaft (7) onto the motor shaft. Screws (4) must fit in the keyway on the motor shaft.
2. Check that the clearance between the end of the stub shaft and the motor flange is 10-20 mm (0.39 - 0.78 inch).

*) 10-20 mm (0.39-0.78 inch)



Step 3

1. Tighten screws (4) lightly and evenly.
2. Ensure that stub shaft (7) can be moved on the motor shaft.

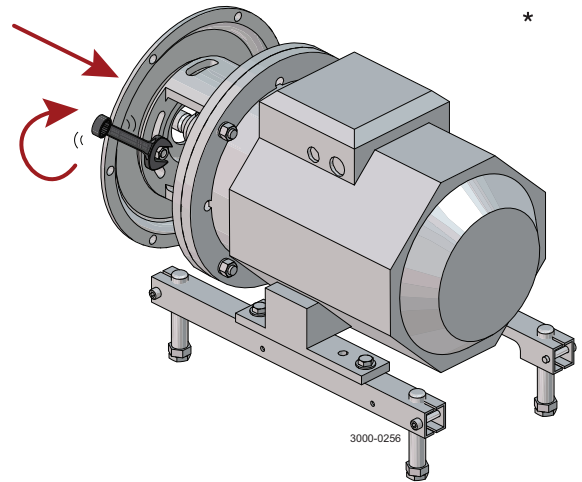


5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.
Lubricate the rubber seals before fitting them.
* : Relates to the shaft seal.

Step 4

1. For the double mechanical shaft seal: Fit drive ring (52) on stub shaft (7).
2. Fit back plate (25), washers (21) and nuts (20) and tighten.

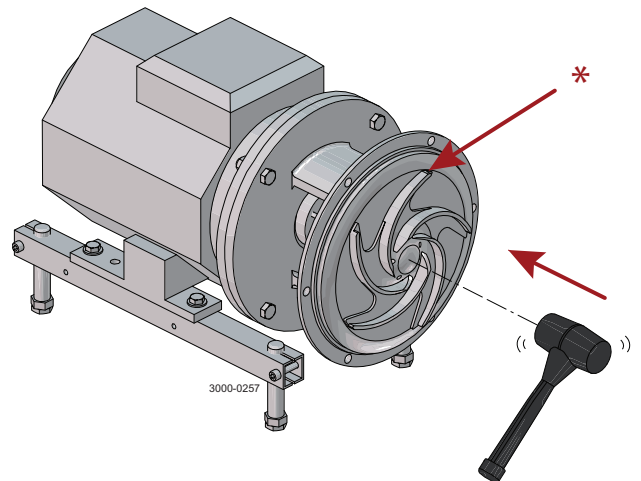


Step 5

1. Fit impeller (27) on stub shaft (7).
2. Ensure that the clearance between the impeller and back plate (25) is correct: 0.5 mm (0.02 inch) for LKH-5.

The clearance can be adjusted by knocking gently with a plastic hammer.

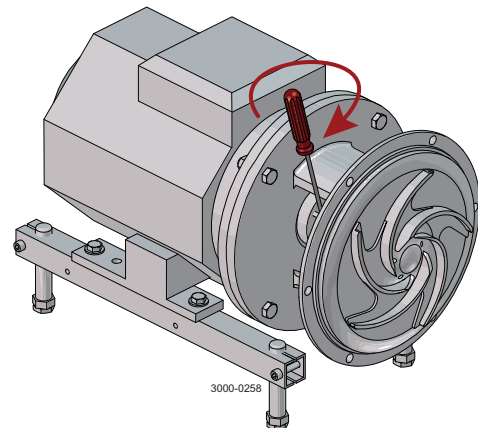
*) LKH-5 = 0.5 mm (0.02 inch)



Step 6

Tighten screws (4) evenly to 15 Nm (11 lbf-ft).

Tighten screws diagonally.



Read the instructions carefully. The items refer to the parts list and service kits section.

Lubricate the rubber seals before fitting them.

* : Relates to the shaft seal.

5.8 Adjustment of shaft (LKH-10 to -90)

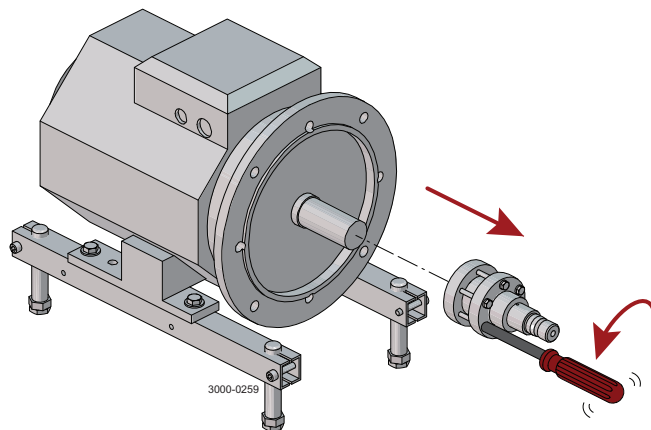
LKH-70 to -90

For securing the best fixture to the motor shaft ensure the following:

- Conical surfaces on the pump shaft and compression rings are applied with grease.
- No grease on the motor shaft.
- No grease on the inside diameter of the pump shaft.
- Screws for the compression rings are applied with grease.

Step 1

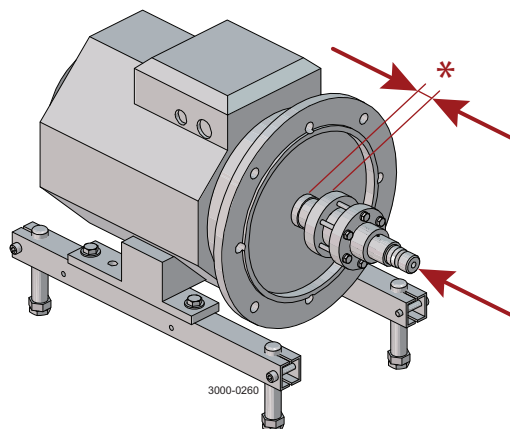
1. Loosen screws (6).
2. Pull off stub shaft (7) together with compression rings (5a, 5b).



Step 2

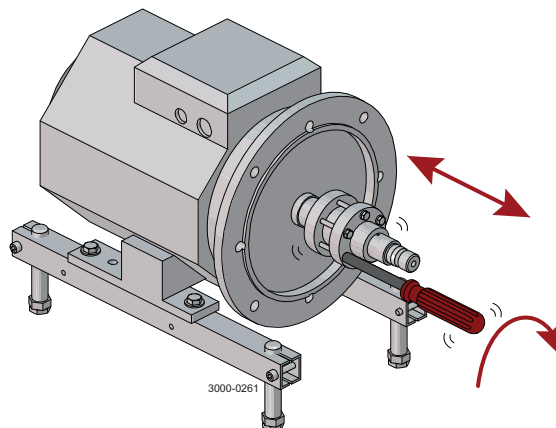
1. Push stub shaft (7) together with compression rings (5a, 5b) onto the motor shaft.
2. Check that the clearance between the end of the stub shaft and the motor flange is 10-20 mm (0.39 - 0.78 inch).

*) 10-20 mm (0.39-0.78 inch)



Step 3

1. Tighten screws (6) lightly and evenly.
2. Ensure that stub shaft (7) can be moved on the motor shaft.



5 Maintenance

Read the instructions carefully. The items refer to the parts list and service kits section.

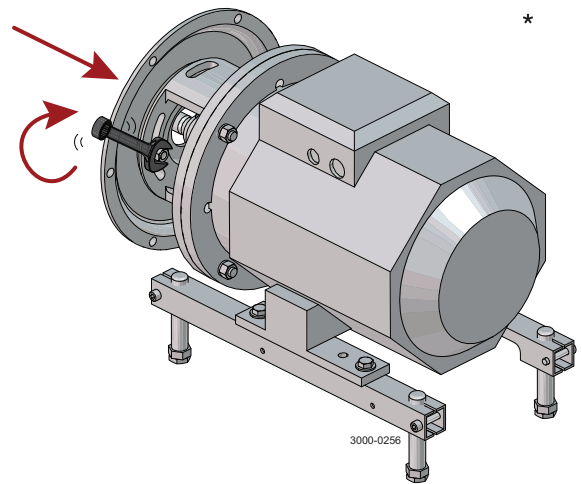
Lubricate the rubber seals before fitting them.

* : Relates to the shaft seal.

Step 4

1. For the double mechanical shaft seal:

- Fit drive ring (52) on stub shaft (7).
- Fit back plate (25), washers (21) and nuts (20) and tighten.

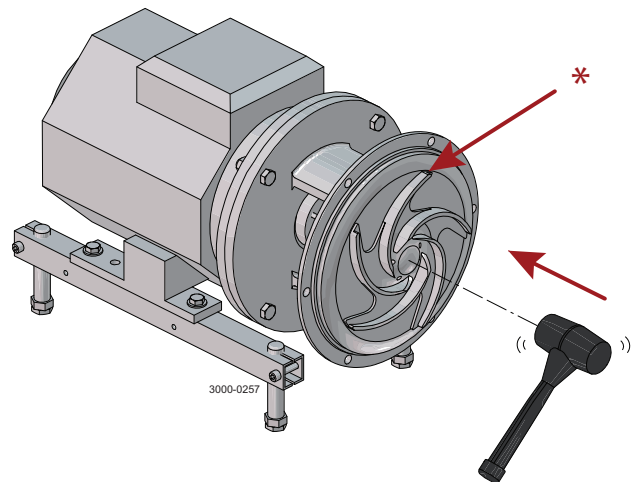


Step 5

- Fit impeller (27) on stub shaft (7).
- Ensure that the clearance between the impeller and back plate (25) is correct: 0.5 mm (0.02 inch) for LKH-10 to 60 and 1.0 mm (0.039 inch) for LKH-70 to -90.
- Tighten screws (6) evenly until the stub shaft (7) cannot move on the motor shaft.

The clearance can be adjusted by knocking gently with a plastic hammer.

*) LKH-10 to -60 = 0.5 mm (0.02 inch)
LKH-70 to -90 = 1.0 mm (0.039 inch)



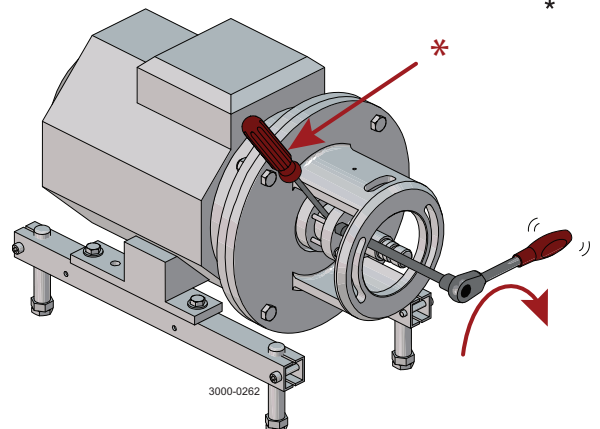
Step 6

- Remove impeller (27), back plate (25) and drive ring (52).
- Tighten screws (6) evenly to 15 Nm (11 lbf-ft).

Tighten screws diagonally.

*) 15Nm (11 lbf-ft)

Counterhold with a screwdriver



*It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.*

6.1 Technical data

The LKH pump is a highly efficient and economical centrifugal pump, which meets the requirements of sanitary and gentle product treatment and chemical resistance. LKH is available in the following sizes LKH-5, -10, -15, -20, -25, -35, -40, -50, -60, -70, -75, -85 and -90. The instruction manual is part of the delivery. Read the instructions carefully. The large pump sizes are very heavy. Alfa Laval therefore recommends the use of a lifting crane when handling the pump.

| Data | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|----------------------|----------------|------------------------|----------------|----------|-----------|----------------------------|---------|---------|------------|------------------------|----------|----------|-----------|-----------------------------------------|---------|---------|------------|
| Max. inlet pressure * | <table> <tr> <td>LKH-5 :</td> <td>600 kPa</td> <td>(6 bar)</td> <td>(87 psi)</td> </tr> <tr> <td>LKH-10 to -70 (50 Hz):</td> <td>1000 kPa</td> <td>(10 bar)</td> <td>(145 psi)</td> </tr> <tr> <td>LKH-85 and LKH-90 (50 Hz):</td> <td>500 kPa</td> <td>(5 bar)</td> <td>(72.5 psi)</td> </tr> <tr> <td>LKH-10 to -60 (60 Hz):</td> <td>1000 kPa</td> <td>(10 bar)</td> <td>(145 psi)</td> </tr> <tr> <td>LKH-70, LKH-75, LKH-85, LKH-90 (60 Hz):</td> <td>500 kPa</td> <td>(5 bar)</td> <td>(72.5 psi)</td> </tr> </table> | LKH-5 : | 600 kPa | (6 bar) | (87 psi) | LKH-10 to -70 (50 Hz): | 1000 kPa | (10 bar) | (145 psi) | LKH-85 and LKH-90 (50 Hz): | 500 kPa | (5 bar) | (72.5 psi) | LKH-10 to -60 (60 Hz): | 1000 kPa | (10 bar) | (145 psi) | LKH-70, LKH-75, LKH-85, LKH-90 (60 Hz): | 500 kPa | (5 bar) | (72.5 psi) |
| LKH-5 : | 600 kPa | (6 bar) | (87 psi) | | | | | | | | | | | | | | | | | | |
| LKH-10 to -70 (50 Hz): | 1000 kPa | (10 bar) | (145 psi) | | | | | | | | | | | | | | | | | | |
| LKH-85 and LKH-90 (50 Hz): | 500 kPa | (5 bar) | (72.5 psi) | | | | | | | | | | | | | | | | | | |
| LKH-10 to -60 (60 Hz): | 1000 kPa | (10 bar) | (145 psi) | | | | | | | | | | | | | | | | | | |
| LKH-70, LKH-75, LKH-85, LKH-90 (60 Hz): | 500 kPa | (5 bar) | (72.5 psi) | | | | | | | | | | | | | | | | | | |
| Temperature range | -10°C to +140°C (EPDM) (14 to 284°F) | | | | | | | | | | | | | | | | | | | | |
| Max. speed: | <table> <tr> <td>2 poles: 0,75 - 45 kW</td> <td>900 - 4000 rpm</td> </tr> <tr> <td>2 poles: 55 - 110 kW</td> <td>900 - 3600 rpm</td> </tr> <tr> <td>4 poles: 0,75 - 75 kW</td> <td>900 - 2200 rpm</td> </tr> </table> | 2 poles: 0,75 - 45 kW | 900 - 4000 rpm | 2 poles: 55 - 110 kW | 900 - 3600 rpm | 4 poles: 0,75 - 75 kW | 900 - 2200 rpm | | | | | | | | | | | | | | |
| 2 poles: 0,75 - 45 kW | 900 - 4000 rpm | | | | | | | | | | | | | | | | | | | | |
| 2 poles: 55 - 110 kW | 900 - 3600 rpm | | | | | | | | | | | | | | | | | | | | |
| 4 poles: 0,75 - 75 kW | 900 - 2200 rpm | | | | | | | | | | | | | | | | | | | | |
| Maximum product viscosity: | 800 cP | | | | | | | | | | | | | | | | | | | | |
| Materials | | | | | | | | | | | | | | | | | | | | | |
| Product wetted steel parts | AISI 316L | | | | | | | | | | | | | | | | | | | | |
| Other steel parts | Stainless steel | | | | | | | | | | | | | | | | | | | | |
| Product wetted seals | EPDM (standard) | | | | | | | | | | | | | | | | | | | | |
| Other O-rings | EPDM (standard) | | | | | | | | | | | | | | | | | | | | |
| Alternative seals | Nitrile (NBR), fluorinated rubber (FPM) and FEP | | | | | | | | | | | | | | | | | | | | |
| Shaft seal | | | | | | | | | | | | | | | | | | | | | |
| Seal types | External single, flushed or double mechanical seal | | | | | | | | | | | | | | | | | | | | |
| Max. temperature flush media | 70°C NOTE: When the pump is not in operation the flush housing can be sterilized up to 125°C | | | | | | | | | | | | | | | | | | | | |
| Max. water pressure (flushed seal) | Normally atmospheric (max. 1 bar) (max. 14.5 psi) | | | | | | | | | | | | | | | | | | | | |
| Water consumption (flushed seal) | 0.25 - 0.5 l/min. (0.07-0.13 gl) | | | | | | | | | | | | | | | | | | | | |
| Max. water pressure LKH-5 to -60 (DMS) | Normally atmospheric (max. 5 bar) (max. 72.5 psi) | | | | | | | | | | | | | | | | | | | | |
| Max. water pressure LKH-70 to -90 (DMS) | Normally atmospheric (max. 3 bar) (max. 43.5 psi) | | | | | | | | | | | | | | | | | | | | |
| Water consumption (double mechanical seal) | 0.25-0.5 l/min. (0.07-0.13 gl) | | | | | | | | | | | | | | | | | | | | |
| Material, stationary seal ring | Acid-resistant steel with sealing surface of silicon carbide | | | | | | | | | | | | | | | | | | | | |
| Material, rotating seal ring | Carbon (standard) or silicon carbide | | | | | | | | | | | | | | | | | | | | |
| Material, O-rings | EPDM (standard) | | | | | | | | | | | | | | | | | | | | |
| Alternative material, O-rings | Nitrile (NBR), fluorinated rubber (FPM) and FEP | | | | | | | | | | | | | | | | | | | | |
| Motor | | | | | | | | | | | | | | | | | | | | | |
| Foot-flanged motor according to IEC metric standard, 2 poles = 3000/3600 rpm. at 50/60 Hz IP55, insulation class F | | | | | | | | | | | | | | | | | | | | | |
| Motor sizes (kW), 50 Hz | 0.75 - 110 kW | | | | | | | | | | | | | | | | | | | | |
| Motor sizes (kW), 60 Hz | 0.9 - 110 kW | | | | | | | | | | | | | | | | | | | | |
| Motor sizes (Hp), 60 Hz | 1.5 - 150 Hp | | | | | | | | | | | | | | | | | | | | |

For further information, see PD sheet.

* Max 5 bar (72psi) inlet pressure allowed if the pump is mounted on an explosion proof motor Exd or Exde, type WEG W21.

6 Technical data

*It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.*

6.2 Relubrication intervals

For recommended grease types and general maintenance follow the recommendations in the motor instruction manual.

For relubrication intervals see motor name plate.

For further information contact your local Alfa Laval Technical Support.

Warning: Polyurea based grease (used on eg. LKH85 motors) must not be mixed with Lithium based grease or vice versa.

6.3 Torque Specifications

The table below specifies the tightening torques for the screws, bolts and nuts in this pump.

Always use the torques specified below if no other values are stated. This can be a matter of personal safety.

| Size | Tightening torque | |
|------|-------------------|--------|
| | Nm | lbf-ft |
| M8 | 20 | 15 |
| M10 | 40 | 30 |
| M12 | 67 | 49 |
| M14 | 110 | 81 |

6.4 Weight (kg)

Pump Type: LKH

| Size | 80 | | 90 | | 100 | 112 | 132 | | Motor 160 | | 180 | 200 | | | 250 | | 280 | | |
|------|--------|-------|-------|-------|-----|-----|-------|-------|-----------|------|--------|------|------|------|------|------|------|------|-------|
| | 0.75kW | 1.1kW | 1.5kW | 2.2kW | 3kW | 4kW | 5.5kW | 7.5kW | 11kW | 15kW | 18.5kW | 22kW | 30kW | 37kW | 45kW | 55kW | 75kW | 90kW | 110kW |
| 5 | 42 | 42 | 49 | 51 | | | | | | | | | | | | | | | |
| 10 | | | 53 | 55 | 70 | 75 | | | | | | | | | | | | | |
| 15 | | | | | 73 | 78 | 95 | | | | | | | | | | | | |
| 20 | | | 55 | 57 | 72 | 77 | 94 | 108 | | | | | | | | | | | |
| 25 | | | | | | 81 | 98 | 112 | 171 | 185 | | | | | | | | | |
| 35 | | | | | | 81 | 98 | 112 | 171 | 185 | | | | | | | | | |
| 40 | | | | | | | | 115 | 174 | 188 | 206 | 225 | | | | | | | |
| 45 | | | | | | 82 | 99 | 113 | 172 | 186 | | | | | | | | | |
| 50 | | | | | | | 101 | 115 | 174 | 188 | 206 | 225 | | | | | | | |
| 60 | | | | | | | 102 | 116 | 175 | 189 | 207 | 226 | 334 | | | | | | |
| 70 | | | | | | | 138 | 152 | 196 | 210 | 228 | 259 | 365 | 380 | 396 | 522 | 557 | | |
| 85 | | | | | | | | | | | | | 417 | 432 | 448 | 574 | 609 | 889 | 949 |
| 90 | | | | | | | | | | | | | 430 | 445 | 461 | 587 | 622 | | |

Weight can vary depending of configuration. Weight is only to be seen as a reference value during handling, transporting and packaging.

*It is important to observe the technical data during installation, operation and maintenance.
Inform personnel about the technical data.*

6.5 Noise emission

| Pump Type | Sound pressure level (dBA) |
|-----------|----------------------------|
| LKH-5 | 60 |
| LKH-10 | 69 |
| LKH-15 | 72 |
| LKH-20 | 70 |
| LKH-25 | 74 |
| LKH-35 | 71 |
| LKH-40 | 75 |
| LKH-45 | 70 |
| LKH-50 | 75 |
| LKH-60 | 77 |
| LKH-70 | 88 |
| LKH-75 | 79 |
| LKH-85 | 86 |
| LKH-90 | 75 |
| LKH-112 | 70 |
| LKH-113 | 69 |
| LKH-114 | 68 |
| LKH-122 | 75 |
| LKH-123 | 77 |
| LKH-124 | 80 |
| SolidC-1 | 68 |
| SolidC-2 | 72 |
| SolidC-3 | 73 |
| SolidC-4 | 72 |
| MR-166 | 76 |
| MR-185 | 82 |
| MR-200 | 81 |
| MR-300 | 82 |
| GM | 54 |
| FM-OS | 61 |

The above LKH noise levels are the same for LKHPPF, LKHI, LKH UltraPure, LKH Evap and LKHHex.
The above SolidC noise levels are the same for SolidC UltraPure.

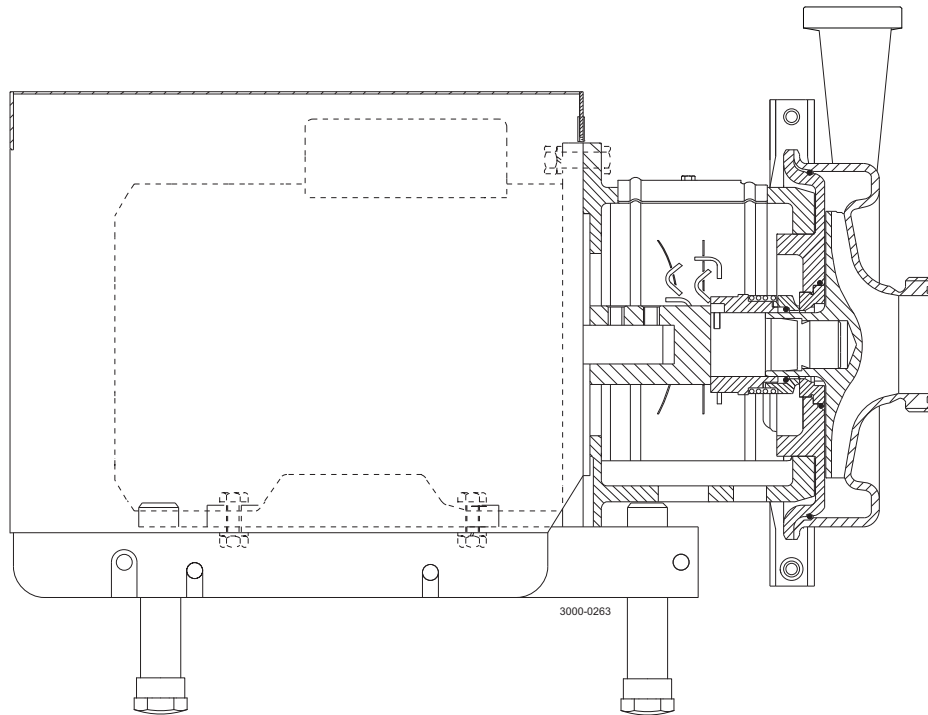
The noise measurements have been carried out using the original motor and shroud, at the approximate Best Efficiency Point (BEP) with water at ambient temperature and at 50 Hz.

Very often, the noise level generated by the flow through the process system (e.g. valves, pipes, tanks etc.) is much higher than what generated by the pump itself. Therefore, it is important to consider the noise level from the total system and take the necessary precautions with regard to personal safety if required.

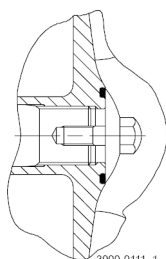
7 Parts list and service kits

The drawing shows LKH pump, sanitary version.

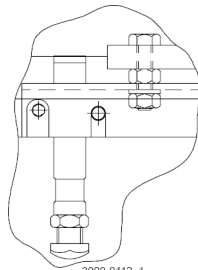
7.1 LKH-5 Sanitary version



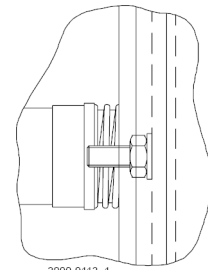
US legs are different to the ones shown. For further information see US spare parts.



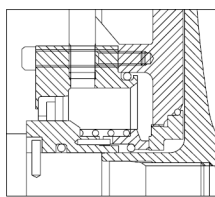
Impeller screw



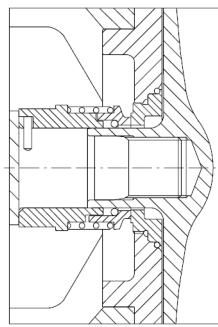
Fitting of legs
0.75-1.1 kW



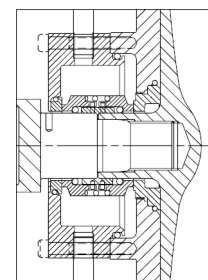
Fitting of back plate



Flushed shaft seal



Single shaft seat

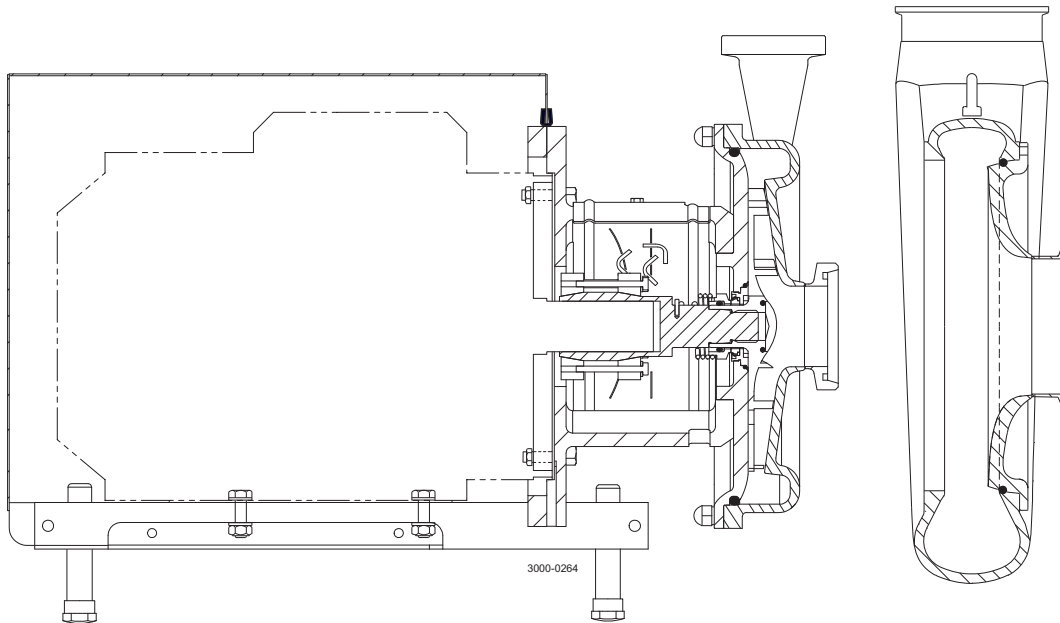


Double mechanical shaft seal

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

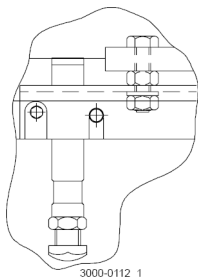
7.2 LKH-10, -15, -20, -25, -35, -40, -50, -60, -70, -75, -85, -90 sanitary version



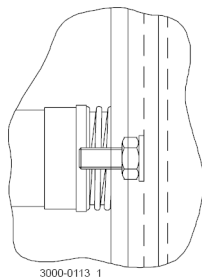
LKH10 -75

LKH-85 and LKH-90

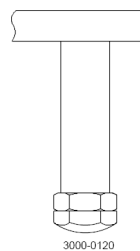
US legs are different to the ones shown. For further information see US spare parts.



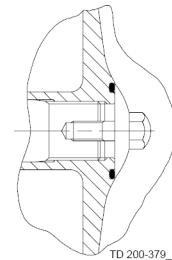
Only used for 0.75, 1.1
and 3 kW
Fitting of legs



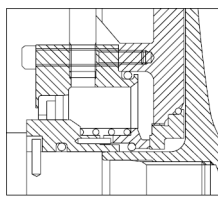
Fitting of back plate



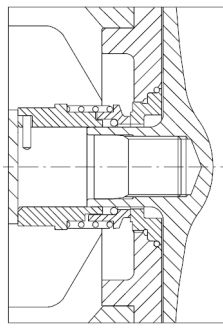
Only used for 55 - 110 kW
Fitting of legs



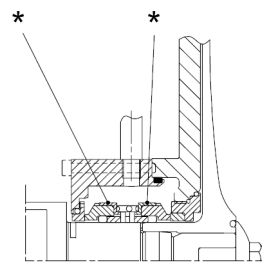
Impeller screw



Flushed shaft seal



Single shaft seal

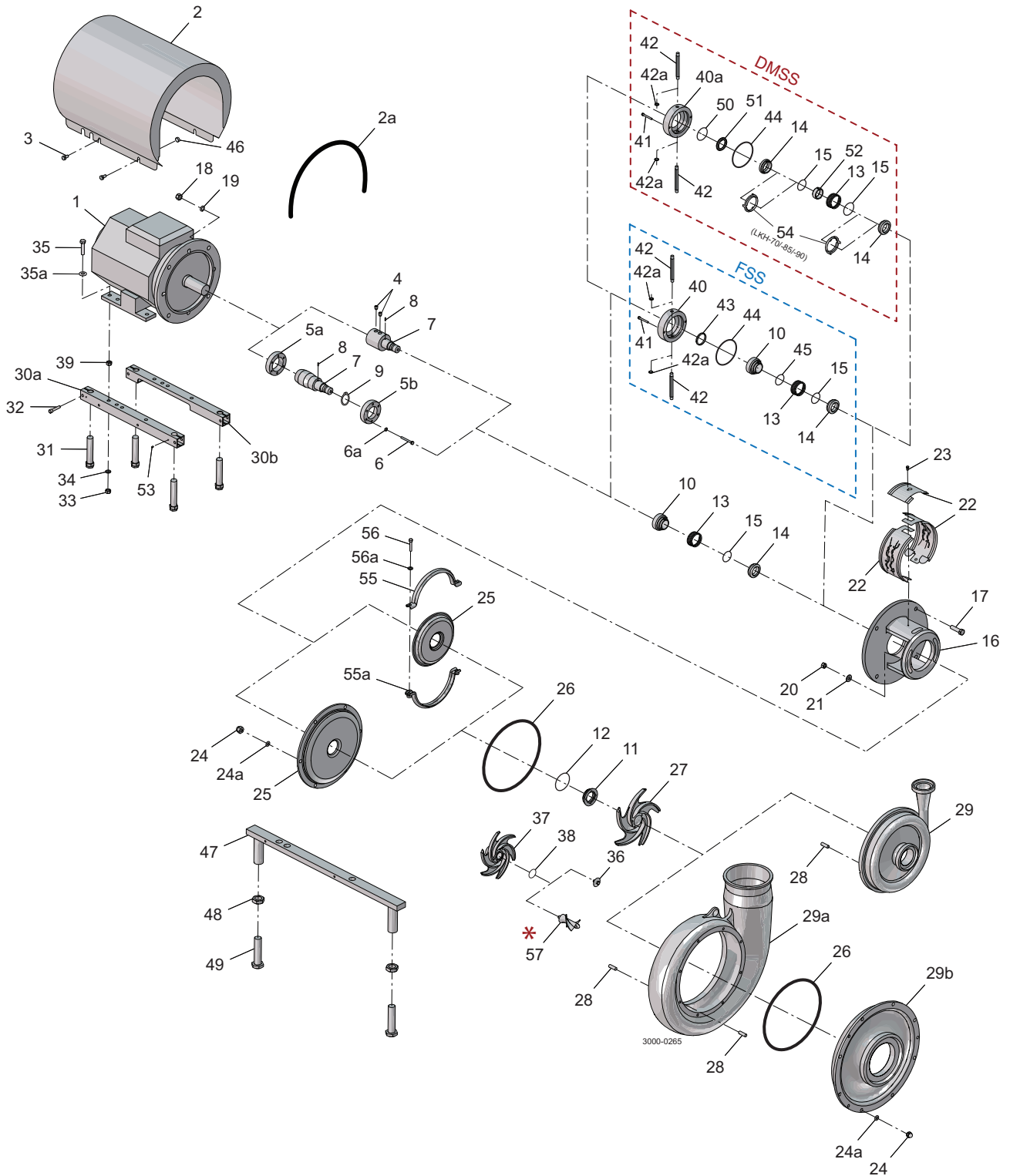


Double mechanical shaft seal
* Only used for LKH-70, -75, -85, -90

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

7.3 LKH - Product wetted parts



* If inducer (57) is retrofitted. Pump inlet may have to be slightly ground.

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

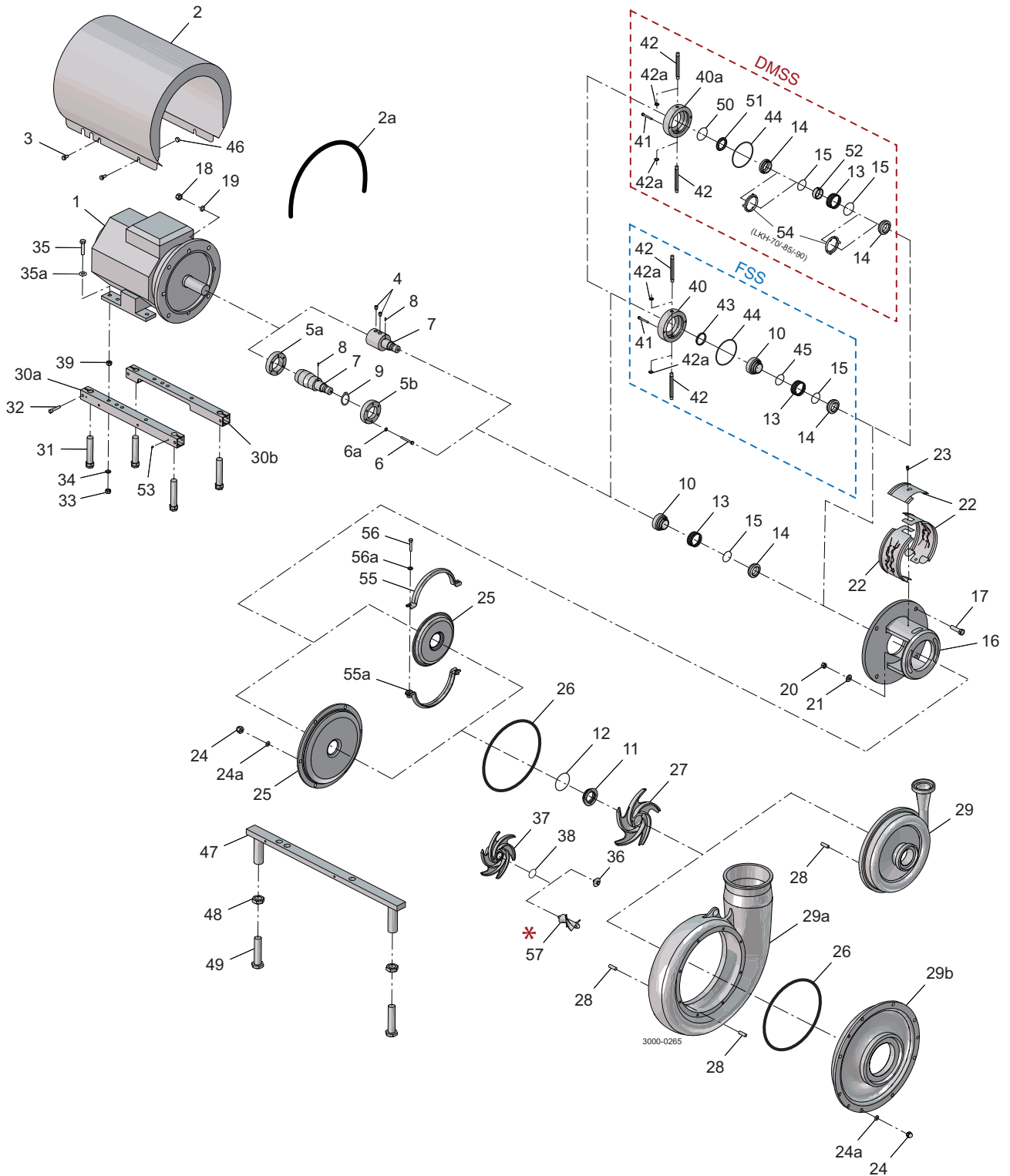
Parts list

| Pos. | Qty | Denomination |
|------|-----|-----------------------------|
| 20 | 2 | Nut |
| 21 | 2 | Washer |
| 24 | 6 | Cap nut |
| 24a | 6 | Washer |
| 25 | 1 | Back plate |
| 26 | 1 | O-ring |
| 27 | 1 | Impeller |
| 28 | 6 | Bolt |
| 29 | 1 | IDF Malepart |
| 36 | 1 | Impeller screw |
| 37 | 1 | Impeller for impeller screw |
| 38 | 1 | O-ring |
| 55 | 1 | Upper clamp |
| 55a | 1 | Lower clamp |
| 56 | 2 | Screw |
| 56a | 2 | Spring washer |
| 57 * | 1 | Inducer |

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

7.4 LKH - Motor-dependent parts



* If inducer (57) is retrofitted. Pump inlet may have to be slightly ground.

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

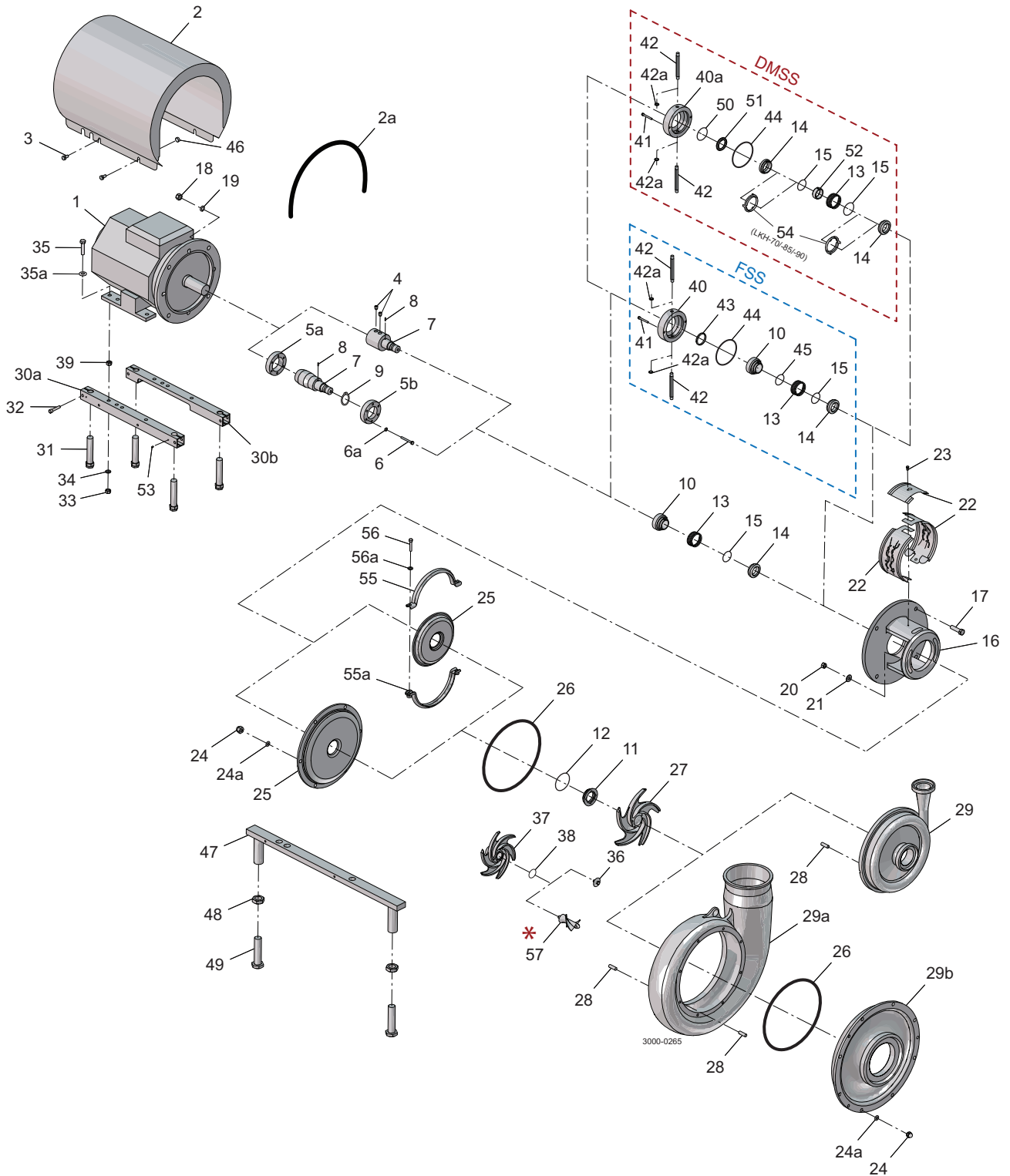
Parts list

| Pos. | Qty | Denomination |
|------|-----|---------------------------------|
| 1 | 1 | Motor ABB |
| | 1 | Motor ABB |
| 2 | 1 | Shroud |
| 3 | 4 | Screw |
| 4 | 2 | Screw |
| 5a | 1 | Compression ring with thread |
| 5b | 1 | Compression ring without thread |
| 6 | 6 | Screw |
| 6a | 6 | Washer |
| 7 | 1 | Shaft incl. pin |
| 8 | 1 | Connex pin |
| 9 | 1 | Retaining ring |
| 16 | 1 | Adaptor |
| 17 | 4 | Screw for adaptor |
| 18 | 4 | Nut for adaptor |
| 19 | 4 | Washer for adaptor |
| 22 | 1 | Safety guard set |
| 23 | 1 | Screw for safety guard |
| 30a | 1 | Support bar, right |
| 30b | 1 | Support bar, left |
| 31 | 4 | Leg |
| 32 | 4 | Screw |
| 33 | 4 | Nut |
| 34 | 4 | Spring washer |
| 35 | 4 | Screw |
| 35a | 4 | Washer |
| 39 | 4 | Nut |
| 46 | 4 | Distance sleeve |
| | 4 | Distance sleeve |
| 47 | 2 | Leg bracket |
| 48 | 4 | Nut for leg |
| 49 | 4 | Screw for leg |
| 53 | 4 | Pivot screw |

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

7.5 LKH - Shaft seal



* If inducer (57) is retrofitted. Pump inlet may have to be slightly ground.

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

Parts list

| Pos. | Qty | Denomination |
|------|-----|---------------------------|
| 10 | 1 | Drive ring |
| 11 | 1 | Stationary seal ring |
| 12 | 1 | O-ring |
| 13 | 1 | Spring |
| 14 | 1 | Rotating seal ring |
| 15 | 1 | O-ring |
| 40 | 1 | Seal housing |
| 40a | 1 | Seal housing |
| 41 | 2 | Screw for seal housing |
| 42 | 2 | Tube |
| 42a | 2 | Fitting |
| 43 | 1 | Lip seal |
| 44 | 1 | O-ring for seal housing |
| 45 | 1 | O-ring for drive ring |
| 50 | 1 | O-ring |
| 51 | 1 | Sec. stationary seal ring |
| 52 | 1 | Drive ring |
| 54 | 2 | Cup |

Service kits

| Denomination | EPDM | NBR | FPM | FEP |
|---------------------------------------------------------------------|------------|------------|------------|------------|
| Service kit for single shaft seal C/SiC | | | | |
| □ Service kit, C/SiC (LKH-5) | 9611922302 | 9611922303 | 9611922304 | 9611922305 |
| □ Service kit, C/SiC (LKH-10/15) | 9611922072 | 9611922073 | 9611922074 | 9611922075 |
| □ Service kit, C/SiC (LKH-20) | 9611922080 | 9611922081 | 9611922082 | 9611922083 |
| □ Service kit, C/SiC (LKH-25/35/45) | 9611922178 | 9611922179 | 9611922180 | 9611922181 |
| □ Service kit, C/SiC (LKH-40/50/60) | 9611922088 | 9611922089 | 9611922090 | 9611922091 |
| Service kit for single shaft seal SiC/SiC | | | | |
| ◇ Service kit, SiC/SiC (LKH-5) | 9611922522 | 9611922523 | 9611922524 | 9611922525 |
| ◇ Service kit, SiC/SiC (LKH-10/15) | 9611922546 | 9611922547 | 9611922548 | 9611922549 |
| ◇ Service kit, SiC/SiC (LKH-20) | 9611922570 | 9611922571 | 9611922572 | 9611922573 |
| ◇ Service kit, SiC/SiC (LKH-25/35/45) | 9611922594 | 9611922595 | 9611922596 | 9611922597 |
| ◇ Service kit, SiC/SiC (LKH-40/50/60) | 9611922619 | 9611922620 | 9611922621 | 9611922622 |
| Service kit for single shaft seal and impeller screw C/SiC | | | | |
| ◆ Service kit, C/SiC (LKH-5) | 9611922306 | 9611922307 | 9611922308 | 9611922309 |
| ◆ Service kit, C/SiC (LKH-10/15) | 9611922114 | 9611922115 | 9611922116 | 9611922117 |
| ◆ Service kit, C/SiC (LKH-20) | 9611922122 | 9611922123 | 9611922124 | 9611922125 |
| ◆ Service kit, C/SiC (LKH-25/35/45) | 9611922182 | 9611922183 | 9611922184 | 9611922185 |
| ◆ Service kit, C/SiC (LKH-40/50/60) | 9611922130 | 9611922131 | 9611922132 | 9611922133 |
| ◆ Service kit, C/SiC (LKH-70) | 9611922238 | 9611922239 | 9611922240 | 9611922241 |
| ◆ Service kit, C/SiC (LKH-85) | 9611922952 | 9611922953 | 9611922954 | 9611922955 |
| ◆ Service kit, C/SiC (LKH-90) | 9611922867 | 9611922868 | 9611922869 | 9611922870 |
| Service kit for single shaft seal and impeller screw SiC/SiC | | | | |
| ◇ Service kit, SiC/SiC (LKH-5) | 9611922526 | 9611922527 | 9611922528 | 9611922529 |
| ◇ Service kit, SiC/SiC (LKH-10/15) | 9611922550 | 9611922551 | 9611922552 | 9611922553 |
| ◇ Service kit, SiC/SiC (LKH-20) | 9611922574 | 9611922575 | 9611922576 | 9611922577 |
| ◇ Service kit, SiC/SiC (LKH-25/35/45) | 9611922598 | 9611922599 | 9611922600 | 9611922601 |
| ◇ Service kit, SiC/SiC (LKH-40/50/60) | 9611922623 | 9611922624 | 9611922625 | 9611922626 |

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

| Denomination | EPDM | NBR | FPM | FEP |
|----------------------------------------------------------------------|------------|------------|------------|------------|
| ◇ Service kit, SiC/SiC (LKH-70) | 9611922643 | 9611922644 | 9611922645 | 9611922646 |
| ◇ Service kit, SiC/SiC (LKH-85) | 9611922964 | 9611922965 | 9611922966 | 9611922967 |
| ◇ Service kit, SiC/SiC (LKH-90) | 9611922879 | 9611922880 | 9611922881 | 9611922882 |
| Service kit for flushed shaft seal C/SiC | | | | |
| ○ Service kit, C/SiC (LKH-5) | 9611922310 | 9611922311 | 9611922312 | 9611922313 |
| ○ Service kit, C/SiC (LKH-10/15) | 9611922076 | 9611922077 | 9611922078 | 9611922079 |
| ○ Service kit, C/SiC (LKH-20) | 9611922084 | 9611922085 | 9611922086 | 9611922087 |
| ○ Service kit, C/SiC (LKH-25/35/45) | 9611922186 | 9611922187 | 9611922188 | 9611922189 |
| ○ Service kit, C/SiC (LKH-40/50/60) | 9611922092 | 9611922093 | 9611922094 | 9611922095 |
| Service kit for flushed shaft seal SiC/SiC | | | | |
| ■ Service kit, SiC/SiC (LKH-5) | 9611922530 | 9611922531 | 9611922532 | 9611922533 |
| ■ Service kit, SiC/SiC (LKH-10/15) | 9611922554 | 9611922555 | 9611922556 | 9611922557 |
| ■ Service kit, SiC/SiC (LKH-20) | 9611922578 | 9611922579 | 9611922580 | 9611922581 |
| ■ Service kit, SiC/SiC (LKH-25/35/45) | 9611922602 | 9611922603 | 9611922604 | 9611922605 |
| ■ Service kit, SiC/SiC (LKH-40/50/60) | 9611922627 | 9611922628 | 9611922629 | 9611922630 |
| Service kits | | | | |
| Denomination | EPDM | NBR | FPM | FEP |
| Service kit for flushed shaft seal and impeller screw C/SiC | | | | |
| * Service kit, C/SiC (LKH-5) | 9611922314 | 9611922315 | 9611922316 | 9611922317 |
| * Service kit, C/SiC (LKH-10/15) | 9611922118 | 9611922119 | 9611922120 | 9611922121 |
| * Service kit, C/SiC (LKH-20) | 9611922126 | 9611922127 | 9611922128 | 9611922129 |
| * Service kit, C/SiC (LKH-25/35/45) | 9611922190 | 9611922191 | 9611922192 | 9611922193 |
| * Service kit, C/SiC (LKH-40/50/60) | 9611922134 | 9611922135 | 9611922136 | 9611922137 |
| * Service kit, C/SiC (LKH-70) | 9611922242 | 9611922243 | 9611922244 | 9611922245 |
| * Service kit, C/SiC (LKH-85) | 9611922956 | 9611922957 | 9611922958 | 9611922959 |
| * Service kit, C/SiC (LKH-90) | 9611922871 | 9611922872 | 9611922873 | 9611922874 |
| Service kit for flushed shaft seal and impeller screw SiC/SiC | | | | |
| ⊙ Service kit, SiC/SiC (LKH-5) | 9611922534 | 9611922535 | 9611922536 | 9611922537 |
| ⊙ Service kit, SiC/SiC (LKH-10/15) | 9611922558 | 9611922559 | 9611922560 | 9611922561 |
| ⊙ Service kit, SiC/SiC (LKH-20) | 9611922582 | 9611922583 | 9611922584 | 9611922585 |
| ⊙ Service kit, SiC/SiC (LKH-25/35/45) | 9611922606 | 9611922607 | 9611922608 | 9611922609 |
| ⊙ Service kit, SiC/SiC (LKH-40/50/60) | 9611922631 | 9611922632 | 9611922633 | 9611922634 |
| ⊙ Service kit, SiC/SiC (LKH-70) | 9611922647 | 9611922648 | 9611922649 | 9611922650 |
| ⊙ Service kit, SiC/SiC (LKH-85) | 9611922968 | 9611922969 | 9611922970 | 9611922971 |
| ⊙ Service kit, SiC/SiC (LKH-90) | 9611922883 | 9611922884 | 9611922885 | 9611922886 |
| Service kit for double mechanical shaft seal C/SiC | | | | |
| △ Service kit, C/SiC (LKH-5) | 9611922318 | 9611922319 | 9611922320 | 9611922321 |
| △ Service kit, C/SiC (LKH-10/15) | 9611922206 | 9611922207 | 9611922208 | 9611922209 |
| △ Service kit, C/SiC (LKH-20) | 9611922214 | 9611922215 | 9611922216 | 9611922217 |
| △ Service kit, C/SiC (LKH-25/35/45) | 9611922222 | 9611922223 | 9611922224 | 9611922225 |
| △ Service kit, C/SiC (LKH-40/50/60) | 9611922230 | 9611922231 | 9611922232 | 9611922233 |
| Service kit for double mechanical shaft seal SiC/SiC | | | | |
| ⊗ Service kit, SiC/SiC (LKH-5) | 9611922538 | 9611922539 | 9611922540 | 9611922541 |

7 Parts list and service kits

The drawing shows the LKH pump, sanitary version.

| | | | | | |
|---|-------------------------------------------|------------|------------|------------|------------|
| ⌘ | Service kit, SiC/SiC (LKH-10/15) | 9611922562 | 9611922563 | 9611922564 | 9611922565 |
| ⌘ | Service kit, SiC/SiC (LKH-20) | 9611922586 | 9611922587 | 9611922588 | 9611922589 |
| ⌘ | Service kit, SiC/SiC (LKH-25/35/45) | 9611922610 | 9611922611 | 9611922612 | 9611922613 |
| ⌘ | Service kit, SiC/SiC (LKH-40/50/60) | 9611922635 | 9611922636 | 9611922637 | 9611922638 |

Service kit for double mechanical shaft seal and impeller screw C/SiC

| | | | | | |
|---|-----------------------------------------|------------|------------|------------|------------|
| ▲ | Service kit, C/SiC (LKH-5) | 9611922322 | 9611922323 | 9611922324 | 9611922325 |
| ▲ | Service kit, C/SiC (LKH-10/15) | 9611922210 | 9611922211 | 9611922212 | 9611922213 |
| ▲ | Service kit, C/SiC (LKH-20) | 9611922218 | 9611922219 | 9611922220 | 9611922221 |
| ▲ | Service kit, C/SiC (LKH-25/35/45) | 9611922226 | 9611922227 | 9611922228 | 9611922229 |
| ▲ | Service kit, C/SiC (LKH-40/50/60) | 9611922234 | 9611922235 | 9611922236 | 9611922237 |
| ▲ | Service kit, C/SiC (LKH-70) | 9611922416 | 9611922417 | 9611922418 | 9611922419 |
| ▲ | Service kit, C/SiC (LKH-85) | 9611922960 | 9611922961 | 9611922962 | 9611922963 |
| ▲ | Service kit, C/SiC (LKH-90) | 9611922875 | 9611922876 | 9611922877 | 9611922878 |

Service kit for double mechanical shaft seal and impeller screw SiC/SiC

| | | | | | |
|---|-------------------------------------------|------------|------------|------------|------------|
| • | Service kit, SiC/SiC (LKH-5) | 9611922542 | 9611922543 | 9611922544 | 9611922545 |
| • | Service kit, SiC/SiC (LKH-10/15) | 9611922566 | 9611922567 | 9611922568 | 9611922569 |
| • | Service kit, SiC/SiC (LKH-20) | 9611922590 | 9611922591 | 9611922592 | 9611922593 |
| • | Service kit, SiC/SiC (LKH-25/35/45) | 9611922614 | 9611922615 | 9611922616 | 9611922617 |
| • | Service kit, SiC/SiC (LKH-40/50/60) | 9611922639 | 9611922640 | 9611922641 | 9611922642 |
| • | Service kit, SiC/SiC (LKH-70) | 9611922651 | 9611922652 | 9611922653 | 9611922654 |
| • | Service kit, SiC/SiC (LKH-85) | 9611922972 | 9611922973 | 9611922974 | 9611922975 |
| • | Service kit, SiC/SiC (LKH-90) | 9611922887 | 9611922888 | 9611922889 | 9611922890 |

Parts marked with □♦○★▲◆◇✦■⌘⊙ are included in the service kits. Recommended spare parts: Service kits. (900601/9)

Conversion kit - single to double mechanical shaft seal: Please order double mechanical service kit + pos. 40a+41+42 (for LKH-85 pos 40a+41+42a). Conversion kit single to flushed shaft seal: Please order Flushed service kit + pos. 10+40+41+42 (for LKH85 pos.10+ 40+41+42a).

Replace to inducer (for pump with impeller screw). Please order pos. 7+57+38. Replace inducer (for pump without impeller screw) please order pos. 7+57+37+38.

How to contact Alfa Laval

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