



Cooler bell housing

Operating / Installation manual

BMA0005

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The cooler bell housing is a damped connecting element between the electric motor and the hydraulic pump, in combination with an oil/air cooler in accordance with VDMA 24 561.

1.0 General information:

Carefully read through this installation manual before installing the cooler bell housing. Pay particular attention to the safety instructions!

The installation manual is part of your product. Store it carefully and in the vicinity of the cooler bell housing.

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1.1 Safety and information symbols:



Danger Risk of injury to personnel



Caution Damage could occur to the machine



Note Note regarding important information

1.2 General hazard warnings:



During installation and removal of the cooler bell housing, make sure that the entire drive train is secured to prevent accidental activation, and that the system is depressurised. Failure to handle rotating parts in the proper manner can cause serious injury. For this reason, the following safety instructions should be read and followed without exception.

- All work on the cooler bell housing should be performed from the perspective of
->“Safety First”
- Switch off the drive unit before carrying out work on the cooler bell housing.
- Secure the drive unit to prevent unintentional activation, e.g. by attaching information signs to the switch-on points or removing the fuse at the power supply.
- Do not reach into the working area of the machine while it is still in operation.
- Protect the rotating parts to prevent accidental touching. Attach the relevant protective devices and covers.

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2.0 Intended use:

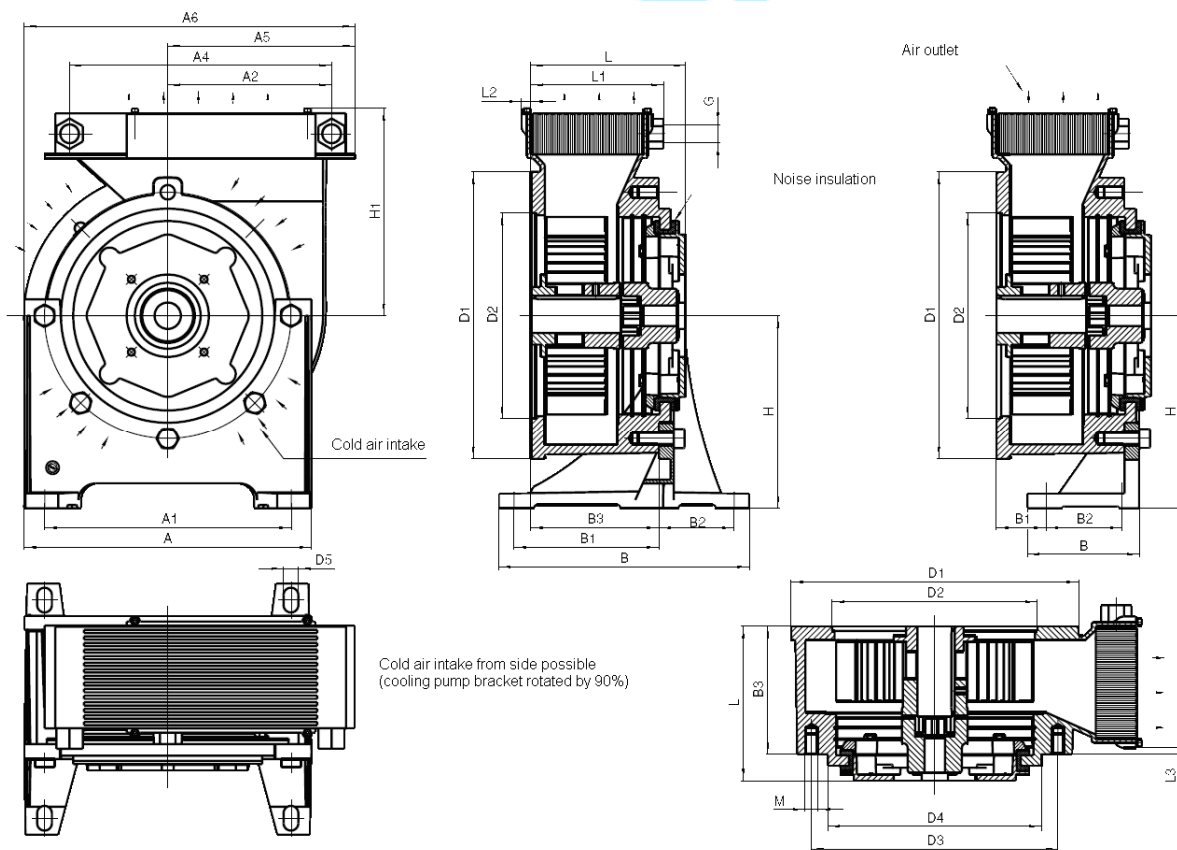
You may only install and maintain the cooler bell housing if you:

- have carefully read and understood the installation manual
- are authorised and trained to do so

The cooler bell housing may only be used in accordance with the technical specifications. Unauthorised structural changes to the cooler bell housing are prohibited. We will not accept any liability for damage occurring as a result of this. In the interest further development, we reserve the right to make technical changes. The cooler bell housing described here corresponds with the latest technical standards at the time of publication of this installation manual. The cooler bell housing is usually delivered ready for installation.

3.0 Dimensions:

Figure 1: Diagram of the cooler bell housing



Bell housing bases are available optionally as accessories

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Table 1: Cooler bell housing dimensions

| Type | Electric motor size | Output P[kW] | Shaft D x l | L | L1 | L2 | L3 | A2 | A4 | A5 | A6 | B3 | H1 | D1 | D2 | D3 | D4 | D5 | M | G | |
|--------|---------------------|--------------|-------------|----------|-------|------|-----|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|----|----|----|--|
| KPV200 | 80 | 0.55 | 19 x 24 | 100 | 88 | 10.3 | -6* | 122.5 | 205 | 141 | 241 | 70 | 180.5 | 200 | 130 | 165 | 145 | 11 | 10 | G½ | |
| | | 0.75 | | 110 | | | | | | | | | | | | | | | | | |
| | | | | 118 | | | | | | | | | | | | | | | | | |
| 90 S+L | 1.1 | 1.5 | 24 x 50 | 124 | | | | | | | | | | | | | | | | | |
| | | | | | 128 | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| KPV250 | 100 L | 2.2 | 28 x 60 | 120 | 108.5 | 26 | 6 | 144.5 | 267 | 174 | 326 | 102 | 199 | 250 | 180 | 215 | 190 | 14 | 12 | G¾ | |
| | | 3.0 | | 124 | | | | | | | | | | | | | | | | | |
| | | | | 128 | | | | | | | | | | | | | | | | | |
| | 112 M | 4 | | 135 | | | | | | | | | | | | | | | | | |
| | | | | 148 | | | | | | | | | | | | | | | | | |
| | | | 175 | | | | | | | | | | | | | | | | | | |
| KPV300 | 132 S+M | 5.5 | 38 x 80 | 144 | 128.5 | 6 | 10 | 168.5 | 267 | 200 | 350 | 126 | 234.5 | 300 | 230 | 265 | 234 | 14 | 12 | G¾ | |
| | | 7.5 | | 150 | | | | | | | | | | | | | | | | | |
| | | | | 155 | | | | | | | | | | | | | | | | | |
| | | | | 168 | | | | | | | | | | | | | | | | | |
| | | | | 196 | | | | | | | | | | | | | | | | | |
| KPV350 | 160 M+L | 11 | 42 x 110 | 188 | 161 | 4 | 7.5 | 198 | 316 | 228 | 403 | 156 | 253 | 350 | 250 | 300 | 260 | 18 | 16 | G¾ | |
| | | 15 | | 204 | | | | | | | | | | | | | | | | | |
| | 180 M+L | 18.5 | 22 | 18 x 110 | 228 | | | | | | | | | | | | | | | | |
| | | | | | | 256 | | | | | | | | | | | | | | | |

Table 2: Bell housing base dimensions

| Type | Bottom flange PTF5 | | | | | | Bottom flange PTF5L | | | | | |
|--------|--------------------|-----|-----|-----|----|-----|---------------------|-----|-----|----|----|-----|
| | A | A1 | B | B1 | B2 | H | A | A1 | B | B1 | B2 | H |
| KPV200 | - | - | - | - | - | - | 210 | 180 | 90 | 20 | 60 | 112 |
| KPV250 | 250 | 215 | 230 | 125 | 60 | 155 | 250 | 220 | 110 | 40 | 60 | 132 |
| KPV300 | 300 | 265 | 270 | 150 | 75 | 185 | 290 | 260 | 120 | 40 | 80 | 160 |
| KPV350 | 350 | 300 | 305 | 175 | 90 | 235 | - | - | - | - | - | - |

4.0 General information



The max. permissible operating pressure for the installed cooler bell housing is 16 bar.



Avoid pressure spikes. During static operation, the operating pressure must not consistently exceed 16 bar, and in the case of pulsating dynamic loading it should be no higher than 16 bar. In the case of dynamic loading, pressure spikes above 16 bar with 1x10 load cycles and $f = 2\text{Hz}$ must be avoided.



The direction of rotation of the motor – as indicated on the pump shaft - is clockwise!



Please see Diagrams 1 and 2 for the permissible oil flow rate and the pressure difference. If the max. permissible flow rate is fully utilised, ensure that the cooling output capacity flows freely, to avoid pressure spikes



If flow rates are experienced which are higher than in these diagrams, consult our Technical Department!



With its cool outlet on the side, the cooler bell housing can be installed on both sides (cooler bell housing rotated through 90°).

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Make sure that there is an unobstructed gap of approx. 10 cm in front of and behind the air intake and outlet. The effectiveness of the cooler bell housing will be increased by the natural flow direction of the warm air if the air outlet is positioned facing upwards.

5.0 Assembly



The screws should normally be secured with Loctite, Omnifit 230M or a comparable thread adhesive.



Please note that serious injury may be caused by tipping the unit (crushing). Secure the unit using suitable supports.



When installing and removing the oil connection lines, the hexagon must be counter-held. The max. tightening torque is 40 Nm.



The oil connection ports must point to the motor (unforeseen use can turn the heat exchanger).



The port for cooler input and output is freely selectable.

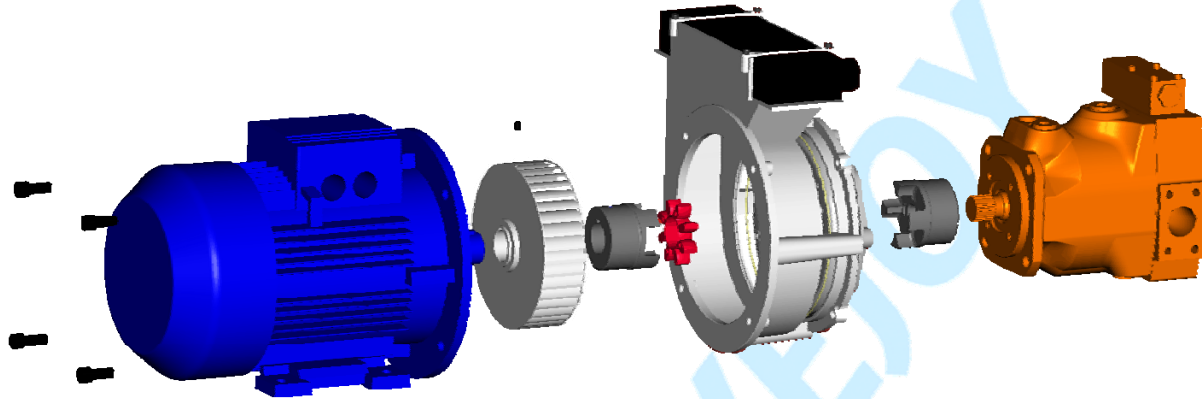


The KPV oil/air cooler should be the final component to be positioned in the oil circuit, in order to avoid a build-up of pressure. Filter units (**even other versions**) should be inserted before the KPV oil/air cooler, as sudden changes in flow rate can lead to pressure spikes, which cannot be absorbed, even by slow-acting valves.

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5.1 Layout of the cooler bell housing system

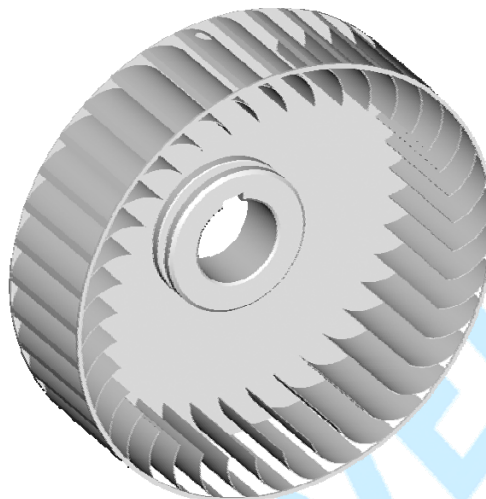
Figure 2: Layout of the system



5.2 Installing the fan wheel

- Slide the fan wheel onto the motor shaft as far as the stop and secure against axial movement using the radial grub screw.
- The screw tightening torque can be found in Table 3.
- For information on installing the coupling, see the installation manual for the coupling type in question. The installation dimensions of the coupling hubs can be taken from the installation diagram of the motor/ pump combination in question.

Figure 4:Radial fan wheel



5.3 Fitting / commissioning the cooler bell housing

- Insert the centring device of the KPV bell housing on the centring flange of the electric motor, and screw together then threaded holes provided in the flange of the electric motor and in the KPV bell housing.
- When choosing the fastening screws, pay attention to the length of the thread in the motor flange of the bell housing, to ensure that the whole length of the thread is used.
- Fit the cooler bell housing using the centring flange on the back and the centring device of the bell housing base. Screw to the bell housing base and the KPV bell housing with cheese head screws, using the threaded hole provided.
- Use screw tightening torques as per Table 3 below.

Table 3: Tightening torques

| Cheese head screw with hexagonal socket acc. to DIN 912 - 8.8 | M8 | M10 | M12 | M16 | M20 |
|---|----|-----|-----|-----|-----|
| Tightening torques T_A [Nm] | 12 | 23 | 40 | 100 | 190 |

6.0 Maintenance instructions

The cooler bell housings are essentially maintenance-free. Due to the principle of negative pressure, and the associated airflow, dirt deposits are easy to recognise from the outside, and can also be cleaned from the outside without the need to disassemble the heat exchanger (e.g. with a vacuum cleaner)

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7.0 Diagrams

Diagram 1: Specific cooling capacity $P/\Delta t$ of the KPV series, depending on the oil flow rate Q and the temperature difference $\Delta t = 1$ K (oil inlet to air outlet).

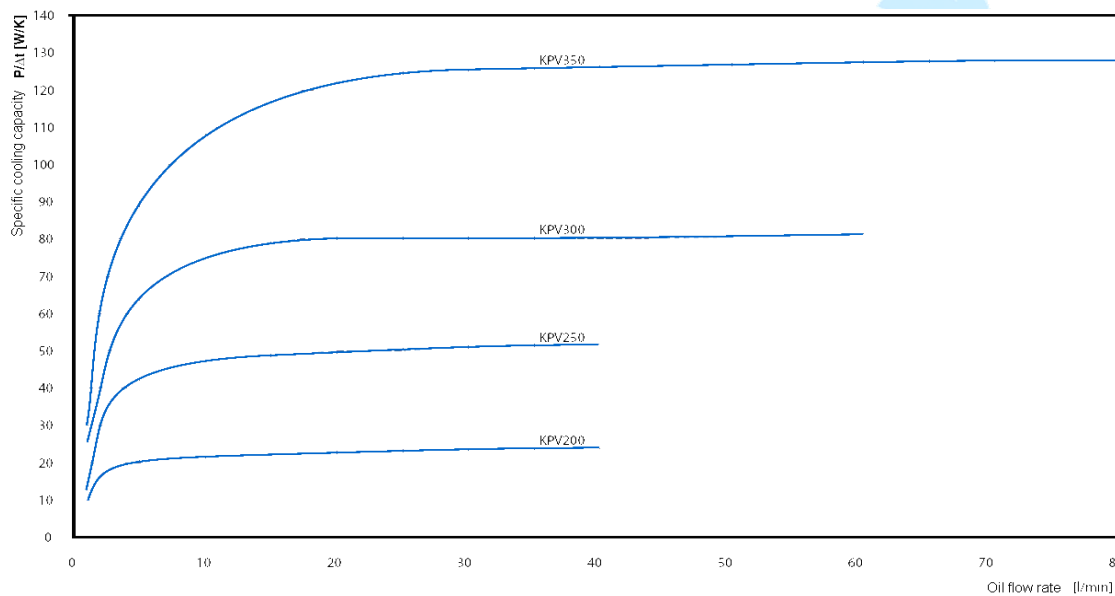


Table 4: Correction factor k for Δp values, depending on other viscosities in cSt

| Korrekturfaktor k für Δp -Werte in Abhängigkeit von anderen Viskositäten in cSt | | | | | | | | | |
|---|------|------|----|------|------|------|-----|-----|------|
| kSt | 15 | 22 | 32 | 46 | 68 | 100 | 150 | 220 | 460 |
| k | 0.64 | 0.73 | 1 | 1.28 | 1.62 | 2.65 | 3.9 | 6.9 | 17.1 |

Diagram 2: Flow resistance of the cooling element at an oil viscosity of 32 cSt.

