

## Technical Produkt Information No. 671

### Hydraulic unit with oil-air-cooler

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### To whom is this TPI addressed ?

This technical product information note is addressed to  
- methods engineers and fitters of the user or reseller, and  
- works fitters and machine operators of the final customer

### What you will find in the TPI

The TPI offers you all the important information needed for the installation and maintenance of hydraulic units of the series 0-086-137-

**It includes a hydraulics plan, a list of units and devices and a drawing of the unit.** You will have received these in the course of the processing of the order. If you have not received these documents, please order them from us, quoting the article number stated in the order.

### What you will not find in the TPI

This TPI does not provide information to aid design work for the integrating of a hydraulic unit into machines or the different units to be actuated by it such as clutches, brakes and clutch-brake combined units. You will find information on Ortinghaus clutch-brake combined units in TPI No. 630 and 730.

### Symbols used in this documentation

It is essential that you observe paragraphs bearing this symbol in order to avoid harm to persons or damage to your machines etc.



Paragraphs with this symbol provide you with additional information or aids to facilitate your work with our hydraulic units. You should also observe this information in order to avoid damage



### Our recommendation

Please pass on this TPI to your customers!  
You can obtain further copies of it from us for your customers. You may also make copies of this TPI to pass on to your customers.

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The Ortlinghaus hydraulic units correspond to the latest state of the art. The relevant safety regulations and in particular the European directives for pressure vessels and for the other hydraulic components as well as for the electromagnetic compatibility have been taken into account in the designing of these units.

### Application

The hydraulic unit will be used in oil cooling circuits. Dissipated energy (e.g. friction power of a brake) heats the cooling fluid which is recooled via the oil - air - cooler on the hydraulic unit.

**Observe without fail the following rules when working with hydraulic units:**

### Working with oil

Remember that oil is easily inflammable and can be poisonous in certain circumstances. In addition oil may not be permitted to get into the ground or into water.

As a result please observe the following precautionary measures:

- Keep suitable extinguishing agents ready for use!
- Avoid naked flames!
- Do not permit the oil to come into contact with the skin for extended periods of time!
- Change clothing that gets contaminated!
- Hang up if necessary appropriate warning notices!
- Collect any oil that escapes, e.g. with a pan under the hydraulic unit.



### Disposal

Oil may not be permitted to get into environment! For this reason dispose of waste oil, used filter inserts and oily cleaning material via the proper disposal points!



### Effect of the cooling fluid on other components

Inadequate compatibility of the cooling fluid with seals, membranes, coats of paint etc. can impair the functionality of these items or lead to danger. For this reason:

- Use only the pressure oils recommended by us. Contact us before using other media or in the case of unusual operating conditions.



### Working in the actuation area:

Hazards can arise as the result of errors in the control or in individual components, e.g. in the form of uncontrolled movements or emerging jets of fluid. Scalds can be caused by hot pressure media. For this reason:

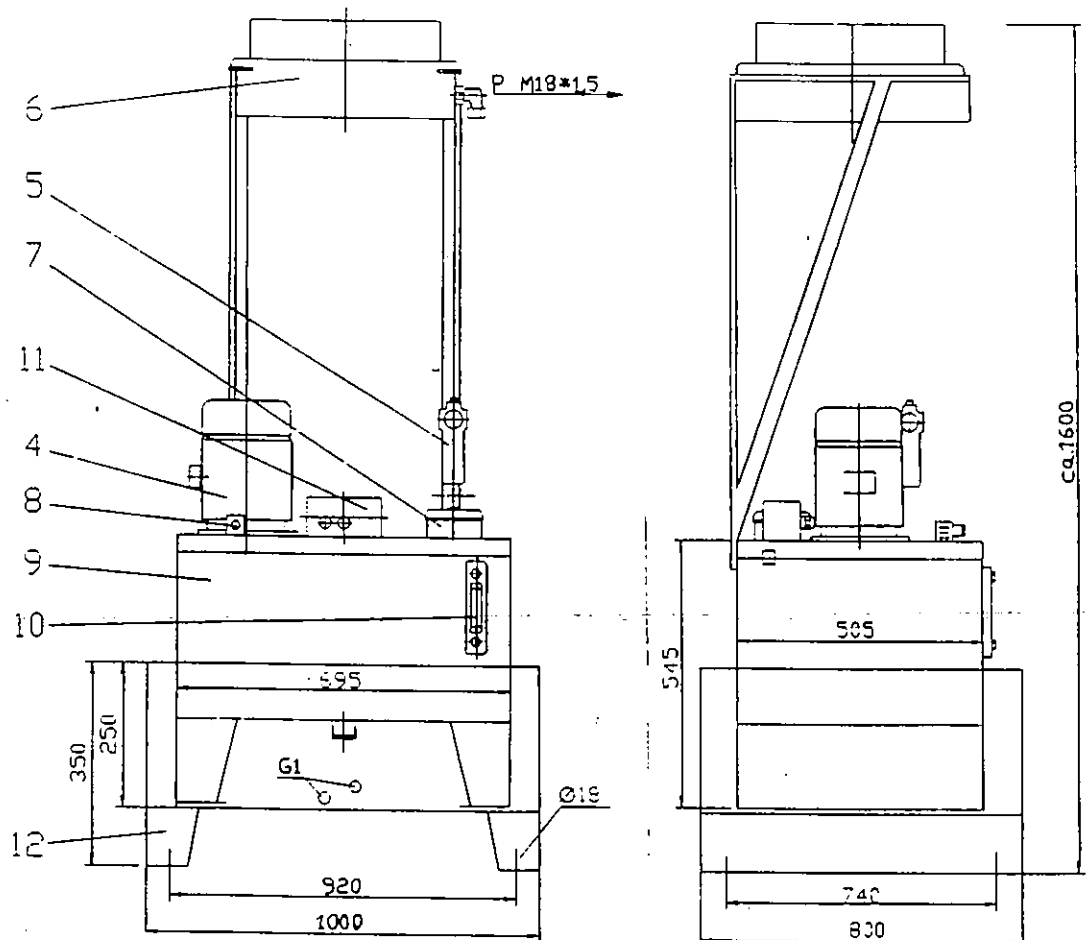
- Keep away from parts which become hot.
- If necessary ensure that there is adequate cooling or that there are adequate guards.
- Set up the control in such a way that no potentially hazardous movements can take place in the event of a disruption, or where the above is not possible, install suitable guards.
- If necessary attach a warning notice to the machine.



### Mode of functioning

The electric motor (4) works the pump (1), which moves the cooling fluid through the oil-air-cooler (6). A pressure relief valve (5) is installed for safety reasons. An electronic level indicator is monitoring the oil level in the tank (9).

If the temperature of the cooling oil becomes higher than the presetted upper switching point the temperature controller switches on the electric blower. In the lower switching point the electric blower will be switched off.



### Elements of the hydraulic unit

- 1 Pump (immersed)
- 4 Pump motor
- 5 Pressure relief valve
- 6 Oil cooler wit helectric blower
- 7 Filling and venting point
- 8 Oil level monitor
- 9 Oilt tank
- 10 Oil level display
- 11 Temperature monitor
- 12 Drip tray

## Preparations

When transporting and erecting a hydraulic unit, you should observe a number of rules in order to avoid damage and to permit the unit to be operated properly.

Using the circuit diagrams, list of units and type plates, check whether the unit as supplied is in accordance with what has been ordered!

Check here, for example, the size, fitting out and electrical connection data.

## Transport and assembly

For transportation use if possible the ring bolts, welded-on rings or openings in the feet which are provided. At transportation protect the sight glasses and mounted devices from coming into contact with chains and ropes.

Ensure that the hydraulic unit stands horizontally.

Ensure that it is easily accessible and that there is adequate ventilation.

Protect the hydraulic unit from dirt, moisture and extreme temperatures (below 0°, above 60° Celsius).

The floor at the point of erection must be sealed to prevent the hydraulic fluid getting into it. If this is not possible, place the hydraulic unit in a drip tray.

## Connecting the unit

Proceed in the following sequence when connecting the unit:

1. Connect all hydraulic lines including, if necessary, the cooling water line.
2. Make all the electrical connections.

**Important:** All electrical installation work may only be carried out by specialists and in accordance with the particular valid electrical circuit diagram.

Pay attention in particular to the fact that the voltage, type of current and polarity are correct.



### Connecting the hydraulic lines

- For the hydraulic connections use only pipes or hoses of adequate dimensions. These must be compatible with the cooling fluid used!
- Use only pipes and hoses that are in a properly clean state (deburred and flushed out).
- Lead returnflow and leakage lines back in a pressureless manner; they should also have an adequate cross-section.
- Ensure that the hydraulic lines will not be subjected to oscillations, stresses and mechanical loads.



### Filling the oil with cooling fluid

The frictional behaviour of wet running brakes is determined by the quality of oil. With an unsuitable lubricant the brake can vibrate specially on a lower working speed. The recommended types of oil contain some additives which avoid noise of the brake. The lubricants give corresponding informations in their specification sheets. In the following suitable lubricants are listed. The list is not complete and in a randomize order. This means not a typical rating.

Automatic Transmission Fluids (ATF - oils)

Qualification: ATF Type A, Suffix A

e.g.: AVIA ATF 66 M

BP Autran ATF, BP Autran DX II

Mobil ATF, Mobil ATF 200, Mobil ATF 220

Shell Donax TM, Shell Donax TA

Before filling:

- Close the oil drain openings,
- Remove the cover of the air filter or of the returnflow filter,
- Take out the filter insert,
- Add the cooling fluid; add oil from a drum **only with filtering!**
- Fill the stock tank up the „**maximum**“ mark on the level display,
- Insert the filter insert again and put on the lid.

**Important:** Fill the unit with cooling fluid using a pump and a filter in accordance with purity class 16 / 13 (to ISO 4406); this purity class can be reached with a filter fineness of  $\beta_{10} = 75$ .

**Work steps at commissioning**

- Check that the oil is being delivered  
If the pump is not delivering oil, switch it off and check the direction of rotation of the motor as well as the level of oil in the stock tank again.
- Check all lines and connections for tightness and tighten up unions if necessary.  
In particular during the initial period of time following commissioning, check at regular intervals that all lines and connections are tight. Tighten up any unions that are leaking.

**Checking the oil level**

At commissioning check the level of the oil in the oil tank without fail!  
As a result of oil being removed to fill lines and oil consumers (cylinders etc.), the level of oil in the tank will sink.  
Top up the oil until the level of the oil is visible in the level display (approx. in the middle of the sight glass). Care must be taken here that the oil flowing back does not cause the unit to overflow when the machine is shut down (you must find this out by experience for your own system)!  
Depending on the way the units are equipped, level switches may be available which can be used to monitor both the minimum and the maximum level of oil.

**Only use the same type of oil for topping up as is already in the unit. !**



### Regular maintenance

Regular maintenance of the hydraulic units includes the following work:

- Oil changes,
- Visual checks for leaks,
- Tightening up of unions if necessary.



**Important:** Before carrying out any work on the hydraulic unit, the system must be depressurised (pressure gauge). Take care that there are no subcircuits which are, for example, effectively not connected with the pressure gauges as the result on nonreturn valves and which might still be under pressure!

If you are not certain, slacken a union carefully. If oil emerges vigorously, there is still pressure in the system.

### Oil changes

The time between the changes of the oil depend on the amount of oil in the circuit and the operating hours. With hydraulic units that have been installed for the first time, take samples of the oil after approx. 6 months and in the subsequent of max. 3 months. Check the samples of ageing condition. This can be done in the laboratories of the lubricants or independent laboratories. With the time between the first installation and the observation of an advanced ageing condition the future oil changing intervals can be determined.

### Procedure when changing oil

Take precautions in advance so that you can get rid of any oil that might escape in an environmentally friendly manner (have available an absorbent granulate, cleaning cloths). Dispose of the old oil as well as any contaminated aids in accordance with regulations! Then proceed as follows:

- Switch off the pump,
- Allow the oil in circulation to run back to the stock tank,
- Empty the tank using a drum pump,
- Remove the remaining quantity of oil through the oil drain screw,
- Clean the inside of the tank if it is very dirty,
- Insert the oil drain screw again,
- Add new oil.