Radial Piston Motors
series
HMF and HMT

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Former editions of this catalogue are null and void. Subject to change
General Introduction to the Motors

Description
HM motors have a crankshaft operated by 5 or 7 pistons driven by oil pressure. This design is known for good breakaway torque, high torque even at low speeds, and high mechanical and volumetric efficiency. Furthermore, this design offers some special advantages because of the way the cylinders and pistons are attached.

Mechanical Piston to Crankshaft Connection
The pistons are retained by pull-out rings rather than by springs at the piston support ring. This prevents them from lifting off and suddenly hitting back on the shaft. The motors are thus more resistant to cavitation.

Motor Characteristics
Data on power output, maximum peak and continuous pressure, and peak and continuous speeds can be found under the respective motor sizes. Especially the continuous operation characteristics have been kept low to allow for a wide range of applications. In particular cases, when application conditions are known, particularly for very infrequent operation, the rated values for continuous operation may be increased. We always ask you to discuss the intended application with us, so that we can choose the right motor for you. When you look at the tables you will notice that the same displacement can be found for different series. This will give you the possibility to choose between a longer bearing life expectancy and a cheaper version with a smaller outer diameter.

As can be seen in the section drawing, the cylinders are pivotally mounted in the motor case with laterally positioned bolts. During piston travel they position themselves in a way that the piston/cylinder axis always points to the eccentric centre. This eliminates pressure-induced shear force from the piston onto the cylinder wall and leads to lower friction forces and less cylinder wall wear. The cylinders are not part of the motor case and can therefore be manufactured from very hard and ductile materials at little cost.

As with the HMs and HMw series, the load on the slipper pads is mostly hydrostatically compensated. Furthermore, the pistons have no direct contact with the crankshaft, but push against a support ring with roller bearings, again minimising friction. This makes higher speeds as with the HMs and HMw series possible. At low speeds this prevents a stick-slip effect.

Motor Sealing
All dynamic pressure zones of the motor in the control and piston area use a “seal ring + rotating ring” sealing system that allows for a certain readjustment capability and which does not produce high friction. This way the high efficiency of the motor is fully maintained for a major part of their life time, provided the gaskets are not overly stressed by thermal load or dirt in the oil. Due to this sealing, the motor tolerates thermal shocks more easily, which can occur when too hot oil is filled in a still-standing, cold motor. Additionally, this form of sealing provides better protection against jamming due to dirt particles.

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The bearing life expectancy, a possibility for theoretically calculating the life time, depends very much on the pressure and much less on the speed. If the pressure is reduced to half of the intended value, the life time increases tenfold! Reducing the speed to the half only doubles the life time. If the specific operating parameters are known, we can calculate the life expectancy for every motor for you. Experience shows that the calculated life expectancy will be affected by the rate oil temperatures rise and the extent of oil pollution as well as by carbon residue in continuous operation. But if the hydraulic system is ideally monitored, you may work without the following limitations:

<table>
<thead>
<tr>
<th>Non-stop Dauerbetrieb in Stunden</th>
<th>&lt;3</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
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<tbody>
<tr>
<td>Faktor Verkürzung der Lebensdauer</td>
<td>1</td>
<td>1,25</td>
<td>1,5</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
General Introduction to the Motors

Maximum Shaft Load
Depending on the bearing that you select, the motors tolerate lower radial loads. Additionally, depending on the selected bearing they accept no or only small axial loads. In general, if there are considerable loads, we recommend using these motors in connection with our JPSM epicyclic gearings (see appropriate catalogue).

Maximum Return Line Pressure
The motors can operate with high return line pressures as they occur, for instance when the motors are connected in series. The sum of the pressures at both connections can be approximately 360 bar; the motor can tolerate the sum of the peak pressures at the motor inlet and outlet to 700 bar.

Leak Oil Pressure
The leak oil draining from the motor should not be under considerable pressure, even though a pressure preload up to 1.5 bar will not damage the unit. The peak pressure should be < 5 bar. Therefore, avoid connecting the motor leak oil to other leak oil drains with a single line. Especially valves can create short peaks in leak oil pressure, depending on pipe cross section, which could damage the shaft seal ring for example. Special motors with a maximum leak oil pressure up to 15 bar are available on request.

Low-Speed
The motors are especially designed for running smoothly even at low speeds. In this case it is advantageous to preload the return line with 10 bar. The minimum speeds for all motors over 1000 cm³/rev range from 5 to 7 rpm. When driving high masses and for lower requirements concerning smooth running, the minimum speed is even lower.

High-Speed
For higher speeds that exceed the standard ratings of the HMF motors, the new HMT series is available.

Turning the Shaft Mechanically
The motors are capable of being mechanically turned at the shaft without much resistance, as it is the case when towing a hydraulically propelled vehicle or unwinding winches under a mechanical load. Then the allowed speed is even much higher than the rated maximum speed.

This free-wheeling operation works ideally when the motor is permanently supplied with enough oil for the driven parts inside the motor case due to leak oil preloading with a 0.3 to 0.5 bar check valve. The motor can also operate without any oil in the piston section. Therefore, the motor connectors should be connected to the air between the oil level in the reservoir and the reservoir ceiling for free-wheeling operation.

If there is oil in the pistons during free-wheeling operation, unpleasant rattle noise might occur, which is not harmful to the motor but nevertheless annoying.

Motor Noise
One of the advantages of radial piston motors is the low noise level. An ideal noise level can be achieved if the return line is preloaded with 5 - 10 bar or the motor operates in a closed loop system.

Connecting Motors in Series
The motors can be connected in series. Due to the low leak oil level, this type of connection provides excellent synchronisation of the motors, especially at high speeds. By switching between parallel and serial operation when using two motors, the speed may optionally be doubled for the same oil flow or the torque almost doubled. For the connection of two motors, Jahns offers the following circuitry accessories.

- Electrically activated flow divider valve for occasionally engaging a ‘differential lock’. For this see our catalogue „Hydraulic Oil Flow Divider“.
- Flow divider valves that allow for motors to rotate at different speeds even when connected in series (differential effect), as it is necessary for vehicle propel operation.

Hydraulic Operating Fluid
Even though we principally recommend using HLP mineral oils with an optimal viscosity of 40 to 80 cSt, viscosities of 20 to 150 cSt are within specifications as well.

In recent time a huge number of different synthetic and/or biodegradable operating fluids have become available on the market. It is not possible for us to test each of those fluids in order to issue certificates of compliance. Please contact the liquid manufacturers for references. If those companies can offer references for high-speed axial piston units, such as axial piston pumps, then those liquids are equally suited for our
General Introduction to the Motors

motors. Any limitations stated in the references, such as the requirement for special sealing, apply to our motors as well.

The use of emulsion based operating fluids limits the operating parameters to the following values because of the relatively low lubricating power of those fluids:

- Continuous pressure 150 bar
- Speed 50 % of catalogue specifications
- Operating temperature +10°C to +60°C

**Filtration**

We recommend a filter mesh size of 25 µm or better.

**Leak Oil Discharge at the Motor**

Radial piston motors require the motor case to be filled with oil prior to first use!

Do not think this is unnecessary just because oil is delivered to the motor by the oil lines! Most Jahns’ motors feature a minimal internal and external oil leakage, therefore motors not filled prior to use run more or less ‘dry’ for hours, before they are filled by their own leak oil, especially during depressurized first use operation!

The leak oil line is to be connected to the labelled leak oil ports of the motors; and at one point before reaching the reservoir, the level of the line has to be higher than the motor level.

If the reservoir is above motor level, the use of a 0.5 bar check valve in the front of the leak oil port is recommended. This small leak oil pressure does not pose any problems, yet the check valve prevents oil from leaking into the environment when the leak oil line is disconnected.

Do not try to achieve this effect by the use of isolation valves, since it is easy to forget to open such valves.

If the motors are removed from the machine, e.g. because of repair work, and have been drained, then they have to be filled again before further operation.

Especially when motors are mounted with their output shaft pointing upwards, suitable measures have to be taken to ensure that the front bearing is lubricated as well!

**Pressure Lines**

Select the lines according to the instructions of the pipe manufacturers regarding allowable maximum pressure and pipe cross-section. In order to avoid oil compressibility to the extent possible and with regard to pressure oscillations, the lines should be as short as possible.

New piping is often a source for dirt entering the hydraulic system because of material particles, lack of trimming, lack of descaling of welded pipes etc. In order to ensure maximum cleanliness, we recommend flushing the oil system with fresh oil.

During the first hours of operation the pipes should be checked for leakage.

**Improper Handling of the Motors**

The cost-efficient and light design of the units means that the motors are deliberately equipped with motor cases that are not fit for the units being thoughtlessly dropped to the ground, for driving them out of their centring device by applying force, or for trying to align motors seated unaligned in their centring devices by forcefully pulling on their fixing screws.

The components activated by the motors should not have any angular or axial offsets which push against the motor shaft. The motor shaft should especially not be pushed axially nor should couplings, flanges, etc. be driven on the shaft with a hammer.

If angular or axial offsets cannot be avoided, we have a motor solution available that allows for a pure shaft coupling with torque support.
Radial Piston Motor HMC-45..

All motors of the HMC-45.. series come with spherical roller bearing, multiple spline shaft to DIN 5480 and the J30 control. For other controls see pages 34 and 35. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMC - 4546 - V C - J30/1 - TW

Series
nominal size
Output shafts
W = multiple spline shaft
N = multiple spline hollow shaft
P = cylindrical feather key shaft
K = tapered feather key shaft
Storage
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T.. = tachogenerator
models starting on page 36

Control

Weight approx. 300 kg
Mass moment of inertia 0.103 kgm²
Oil volume in motor case litres 21 litres
# Radial Piston Motor HMC-45

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>4531</th>
<th>4538</th>
<th>4546</th>
<th>4556</th>
<th>4567</th>
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<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>2042</td>
<td>2471</td>
<td>2985</td>
<td>3611</td>
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<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>31,9</td>
<td>38,6</td>
<td>46,6</td>
<td>56,4</td>
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<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>420</td>
<td>420</td>
<td>420</td>
<td>420</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>280</td>
<td>260</td>
<td>220</td>
<td>200</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>180</td>
<td>170</td>
<td>140</td>
<td>130</td>
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<tr>
<td>Max. power output</td>
<td>kW</td>
<td>110</td>
<td>130</td>
<td>150</td>
<td>190</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>55</td>
<td>65</td>
<td>75</td>
<td>95</td>
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</table>

## Output shafts

<table>
<thead>
<tr>
<th>W</th>
<th>80x3x25, DIN 5480</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>80x3x25, DIN 5480</td>
</tr>
<tr>
<td>V</td>
<td>BS 3550 20T pitch 6/12</td>
</tr>
</tbody>
</table>

### Diagrams

- **Total efficiency**
- **Total leakage**

Efficiency diagram applies for HMC and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor  HMF-10..

All motors of the HMF-10.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J20 control. For other controls see pages 34 and 35.

For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Series
nominal size
Output shafts

V  =  multiple spline shaft DIN 5463
W  =  multiple spline shaft DIN 5480
H  =  multiple spline hollow shaft DIN 5463
N  =  multiple spline hollow shaft DIN 5480
K  =  tapered feather key shaft
P  =  feather key shaft

Storage

A  =  roller bearing
B  =  ball bearing

Model code

e. g.  HMF   -   1020   -     V     A     -   J20/1  -   TW

Tachogenerator

TW  =  tachometer shaft Ø 6 mm
T  =  tachogenerator models starting on page 36

Control

J20  =  pressure connection G1”
/1  =  alignment to cylinder 1 models starting on page 34

Weight approx. 22 kg
Mass moment of inertia  0,00009 kgm²
Oil volume in motor case litres  0,8 litres

symbol DIN ISO 1219

Leckölanschluß G1/4”
Teilkreis Ø 163
Radial Piston Motor HMF-10..

### Nominal size

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>1006</th>
<th>1009</th>
<th>1011</th>
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<th>1017</th>
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<th>1023</th>
<th>1026</th>
<th>1030</th>
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<tbody>
<tr>
<td>Displacement cm³/Umdr</td>
<td>39</td>
<td>59</td>
<td>74</td>
<td>86</td>
<td>115</td>
<td>129</td>
<td>151</td>
<td>166</td>
<td>191</td>
</tr>
<tr>
<td>Specific theor. torque Nm/bar</td>
<td>0,6</td>
<td>0,9</td>
<td>1,1</td>
<td>1,3</td>
<td>1,8</td>
<td>2,0</td>
<td>2,4</td>
<td>2,6</td>
<td>3,0</td>
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<tr>
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<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>280</td>
</tr>
<tr>
<td>Continuous pressure bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed U/min</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>900</td>
<td>900</td>
<td>900</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Continuous speed U/min</td>
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<td>700</td>
<td>700</td>
<td>650</td>
<td>650</td>
<td>600</td>
<td>600</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>Max. power output kW</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>20</td>
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<tr>
<td>Continuous power output kW</td>
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<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

### Output shafts

- **V = 6-28-34 DIN 5463**
- **W = 35x2x16 DIN 5480**
- **H = 6-28-34 DIN 5463**
- **N = 35x2x16 DIN 5480**
- **K = tapered feather key shaft**
- **P = cylindrical feather key shaft**

### Diagrams

#### Total efficiency

<table>
<thead>
<tr>
<th>bar</th>
<th>93%</th>
<th>92%</th>
<th>90%</th>
<th>87%</th>
</tr>
</thead>
<tbody>
<tr>
<td>cm³/min</td>
<td>400 bar</td>
<td>300 bar</td>
<td>200 bar</td>
<td>100 bar</td>
</tr>
</tbody>
</table>

Efficiency diagram applies for HMF-1020 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMF-15..

All motors of the HMF-15.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J20 control. For other controls see pages 34 and 35.
For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g.     HMF - 1524 - V A - J20/1 - TW

Series             nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5463
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
B = ball bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator
models starting on page 36

Control
J20 = pressure connection G1"
I = alignment to cylinder 1
models starting on page 34

Weight approx. 30 kg
Mass moment of inertia 0.0013 kgm²
Oil volume in motor case litres 1.0 litres

symbol DIN ISO 1219
Radial Piston Motor HMF-15..

<table>
<thead>
<tr>
<th>Nominal size</th>
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<th>1517</th>
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<th>1531</th>
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<th>1538</th>
<th>1545</th>
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<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
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<td>201</td>
<td>221</td>
<td>243</td>
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<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>1,5</td>
<td>1,7</td>
<td>2,4</td>
<td>2,6</td>
<td>3,1</td>
<td>3,5</td>
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<td>280</td>
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<td>Continuous pressure</td>
<td>bar</td>
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<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
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<td>1000</td>
<td>900</td>
<td>800</td>
<td>800</td>
<td>700</td>
<td>600</td>
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<tr>
<td>Continuous speed</td>
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<td>550</td>
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<td>450</td>
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<td>Max. power output</td>
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Output shafts

<table>
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<tr>
<th>V</th>
<th>6-28-34</th>
<th>DIN 5463</th>
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<tbody>
<tr>
<td>W</td>
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<table>
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<th>DIN 5463</th>
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<tbody>
<tr>
<td>N</td>
<td>35x2x16</td>
<td>DIN 5480</td>
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</table>

Output shafts:

V = 6-28-34 DIN 5463
W = 35x2x16 DIN 5480

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N = 35x2x16 DIN 5480

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P = cylindrical feather key shaft

Diagrams

Total efficiency

<table>
<thead>
<tr>
<th>bar</th>
<th>93%</th>
<th>92%</th>
<th>90%</th>
<th>87%</th>
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<tbody>
<tr>
<td>300</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>200</td>
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</tr>
<tr>
<td>100</td>
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Total leakage

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<th>cm³/min</th>
<th>400 bar</th>
<th>300 bar</th>
<th>200 bar</th>
<th>100 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Efficiency diagram applies for HMF-1524 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMF-20..

All motors of the HMF-20.. series come with roller bearing, multiple spline shaft to DIN 5462 and the J20 control. For other controls see pages 34 and 35.

For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

<table>
<thead>
<tr>
<th>Model code</th>
<th>Series</th>
<th>nominal size</th>
<th>Output shafts</th>
<th>Tachogenerator</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMF - 2047 - V</td>
<td>20</td>
<td>47</td>
<td>W = multiple spline shaft DIN 5480</td>
<td>TW = tachometer shaft Ø 6 mm</td>
<td>J20</td>
</tr>
<tr>
<td>A - J20/1 - TW</td>
<td>47</td>
<td>0,0046 kgm²</td>
<td>V = multiple spline shaft DIN 5462</td>
<td>T = tachogenerator models starting on page 36</td>
<td>/1</td>
</tr>
<tr>
<td></td>
<td>2,0</td>
<td>litres</td>
<td>N = multiple spline hollow shaft DIN 5480</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>H = multiple spline hollow shaft DIN 5462</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>K = tapered feather key shaft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P = feather key shaft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A = roller bearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CH = spherical roller bearing in motor cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>roller bearing in motor body</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Weight approx. 47 kg
Mass moment of inertia 0,0046 kgm²
Oil volume in motor case litres 2,0 litres

Symbol DIN ISO 1219
Radial Piston Motor HMF-20..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>2030</th>
<th>2039</th>
<th>2047</th>
<th>2054</th>
<th>2066</th>
<th>2076</th>
<th>2088</th>
<th>2097</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>192</td>
<td>251</td>
<td>304</td>
<td>347</td>
<td>425</td>
<td>493</td>
<td>565</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>3,0</td>
<td>3,9</td>
<td>4,7</td>
<td>5,4</td>
<td>6,6</td>
<td>7,6</td>
<td>8,8</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>750</td>
<td>750</td>
<td>750</td>
<td>700</td>
<td>700</td>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>450</td>
<td>450</td>
<td>450</td>
<td>425</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Output shafts

$V = 8 - 36 - 40$ DIN 5462
$W = 40 \times 3 \times 12$ DIN 5480
$H = 8 - 36 - 40$ DIN 5462
$N = 40 \times 3 \times 12$ DIN 5480
$K =$ tapered feather key shaft
$P =$ cylindrical feather key shaft

Diagrams

Total efficiency

Total leakage

Efficiency diagram applies for HMF-2047 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMF-25..

All motors of the HMF-25.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J20 control. For other controls see pages 34 and 35.
For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e. g. HMF - 2576 - V A - J20/1 - TW

Series
nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5462
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
CH = spherical roller bearing in motor cover
        roller bearing in motor body

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator
models starting on page 36

Control
J20 = pressure connection G1"
/1 = alignment to cylinder 1
models starting on page 34

Weight approx. 86 kg
Mass moment of inertia 0,0046 kgm²
Oil volume in motor case litres 4,5 litres

symbol DIN ISO 1219

Leckanschluss G1/2”
Teilkreis Ø 378

Weight approx. 86 kg
Mass moment of inertia 0,0046 kgm²
Oil volume in motor case litres 4,5 litres
Radial Piston Motor HMF-25..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>2555</th>
<th>2566</th>
<th>2576</th>
<th>2593</th>
<th>2511</th>
<th>2512</th>
<th>2513</th>
<th>2515</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>352</td>
<td>426</td>
<td>486</td>
<td>595</td>
<td>690</td>
<td>792</td>
<td>873</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>5,4</td>
<td>6,6</td>
<td>7,5</td>
<td>9,2</td>
<td>10,7</td>
<td>12,3</td>
<td>13,6</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>425</td>
<td>425</td>
<td>425</td>
<td>400</td>
<td>350</td>
<td>350</td>
<td>280</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>670</td>
<td>620</td>
<td>580</td>
<td>550</td>
<td>480</td>
<td>480</td>
<td>390</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>525</td>
<td>500</td>
<td>450</td>
<td>450</td>
<td>400</td>
<td>400</td>
<td>350</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

Output shafts

<table>
<thead>
<tr>
<th>V = 8-46-54</th>
<th>DIN 5463</th>
<th>H = 8-36-40</th>
<th>DIN 5462</th>
<th>K=tapered feather key shaft</th>
<th>P=cylindrical feather key shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>W = 40x3x12</td>
<td>DIN 5480</td>
<td>N = 40x3x12</td>
<td>DIN 5480</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagrams

Total efficiency

Total leakage

Efficiency diagram applies for HMF-2593 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMF-30..

All motors of the HMF-30.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J20 control. For other controls see pages 34 and 35.

For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMF - 3012 - V A - J20/1 - TW

Series
nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5482
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator models starting on page 36

Control
J20 = pressure connection G1*
/1 = alignment to cylinder 1 models starting on page 34

Weight approx. 110 kg
Mass moment of inertia 0,0172 kgm²
Oil volume in motor case litres 6,5 litres

symbol DIN ISO 1219

Leckölanschluss G1/2"
Teilkreis Ø 285
Radial Piston Motor HMF-30..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>3062</th>
<th>3078</th>
<th>3096</th>
<th>3010</th>
<th>3012</th>
<th>3014</th>
<th>3016</th>
<th>3017</th>
<th>3019</th>
<th>3020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>402</td>
<td>503</td>
<td>616</td>
<td>714</td>
<td>793</td>
<td>904</td>
<td>1022</td>
<td>1116</td>
<td>1247</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>6,2</td>
<td>7,8</td>
<td>9,6</td>
<td>10,5</td>
<td>12,4</td>
<td>14,1</td>
<td>16</td>
<td>17,4</td>
<td>19,5</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>400</td>
<td>400</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td>320</td>
<td>320</td>
<td>280</td>
<td>280</td>
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<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
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<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>550</td>
<td>550</td>
<td>500</td>
<td>500</td>
<td>450</td>
<td>450</td>
<td>400</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>425</td>
<td>425</td>
<td>400</td>
<td>400</td>
<td>350</td>
<td>325</td>
<td>300</td>
<td>275</td>
<td>250</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Output shafts

<table>
<thead>
<tr>
<th>V</th>
<th>8-56-65</th>
<th>DIN 5463</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>65x3x20</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>A 55x50</th>
<th>DIN 5482</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>55x3x17</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

K = tapered feather key shaft
P = cylindrical feather key shaft

Diagrams

Total efficiency

Total leakage

Efficiency diagram applies for HMF-3014 and bigger; smaller motors are 2-3% lower on the average.
All motors of the HMF-35.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J20 control. For other controls see pages 34 and 35.
For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMF - 3520 - V A - J20/1 - TW

Series
nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5482
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator
models starting on page 36

Control
J20 = pressure connection G1"
/1 = alignment to cylinder 1
models starting on page 34

Weight approx. 170 kg
Mass moment of inertia 0.0277 kgm²
Oil volume in motor case litres 10 litres
Radial Piston Motor HMF-35..

### Nominal size

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>3508</th>
<th>3510</th>
<th>3512</th>
<th>3516</th>
<th>3518</th>
<th>3520</th>
<th>3522</th>
<th>3525</th>
<th>3528</th>
<th>3531</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>526</td>
<td>659</td>
<td>807</td>
<td>1039</td>
<td>1185</td>
<td>1340</td>
<td>1462</td>
<td>1634</td>
<td>1816</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>8,2</td>
<td>10,2</td>
<td>12,6</td>
<td>16,2</td>
<td>18,5</td>
<td>20,9</td>
<td>22,8</td>
<td>25,5</td>
<td>28,3</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
<td>350</td>
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<td>350</td>
<td>350</td>
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<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>450</td>
<td>450</td>
<td>400</td>
<td>400</td>
<td>350</td>
<td>350</td>
<td>300</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>300</td>
<td>300</td>
<td>250</td>
<td>250</td>
<td>225</td>
<td>225</td>
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<td>kW</td>
<td>80</td>
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<td>90</td>
<td>90</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>40</td>
<td>40</td>
<td>45</td>
<td>45</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

### Output shafts

- **V** = 8-56-65 DIN 5463
- **H** = A 55x50 DIN 5482
- **K** = tapered feather key shaft
- **P** = cylindrical feather key shaft
- **W** = 65x3x20 DIN 5480
- **N** = 55x3x17 DIN 5480

### Diagrams

- **Total efficiency**
- **Total leakage**

Efficiency diagram applies for HMF-3518 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMF-40..

All motors of the HMF-40.. series come with roller bearing, multiple spline shaft to BS 3550 and the J30 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMF - 4033 - V A - J30/1 - TW

Series
nominal size
Output shafts
V = multiple spline shaft BS 3550
N = multiple spline hollow shaft DIN 5480
P = feather key shaft

Storage
C = spherical roller bearing
F = conical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator
models starting on page 36

Control
J30 = pressure connection
SAE 1¼" 6000 psi
1 = alignment to cylinder 1
models starting on page 34

Weight approx. 240 kg
Mass moment of inertia 0.103 kgm²
Oil volume in motor case litres 25.0 litres
Radial Piston Motor HMF-40..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>4026</th>
<th>4033</th>
<th>4039</th>
<th>4047</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³</td>
<td>1690</td>
<td>2127</td>
<td>2513</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>26,4</td>
<td>33,2</td>
<td>39,2</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>350</td>
<td>350</td>
<td>325</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>350</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>225</td>
<td>200</td>
<td>175</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td>150</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

Output shafts

$V = \text{BS 3550 20T pitch 6/12}$  $N = \text{80x3x25, DIN 5480}$  $P = \text{cylindrical feather key shaft}$

Diagrams

**Total efficiency**

- 93%
- 92%
- 90%
- 88%

**Total leakage**

- 400 bar
- 300 bar
- 200 bar
- 100 bar

Efficiency diagram applies for HMF-4033 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMT-15..

All motors of the HMT-15.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J21 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMT - 1524 - V A - J21/1 - TW

Series
nominal size
Output shafts
  W = multiple spline shaft DIN 5480
  V = multiple spline shaft DIN 5463
  N = multiple spline hollow shaft DIN 5480
  H = multiple spline hollow shaft DIN 5463
  K = tapered feather key shaft
  P = feather key shaft

Storage
  A = roller bearing
  C = spherical roller bearing

Tachogenerator
  TW = tachometer shaft Ø 6 mm
  T = tachogenerator

Control
  J21 = pressure connection
  SAE 1" 3000 psi
  /1 = alignment to cylinder 1

Weight approx. 28 kg
Mass moment of inertia 0,0013 kgm²
Oil volume in motor case litres 1,0 litres
Radial Piston Motor HMT-15..

Nominal size | 1515 | 1524 | 1526 | 1531 | 1538
---|---|---|---|---|---
Displacement cm³/Umdr | 99 | 154 | 172 | 201 | 243
Specific theor. torque Nm/bar | 1,54 | 2,40 | 2,68 | 3,14 | 3,79
Peak pressure bar | 425 | 400 | 375 | 350 | 350
Continuous pressure bar | 250 | 250 | 250 | 250 | 250
Max. speed U/min | 2500 | 2200 | 1800 | 1500 | 1250
Continuous speed U/min | 1000 | 1000 | 900 | 800 | 700
Max. power output kW | 70 | 70 | 70 | 70 | 70
Continuous power output kW | 40 | 40 | 40 | 40 | 40

Output shafts

<table>
<thead>
<tr>
<th>V</th>
<th>6-28-34</th>
<th>DIN 5463</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>35x2x16</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>6-28-34</th>
<th>DIN 5463</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>35x2x16</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

K = tapered feather key shaft
P = cylindrical feather key shaft
Konus 1:10

Diagrams

Total efficiency

Total leakage

Efficiency diagram applies for HMT-1526 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMT-20..

All motors of the HMT-20.. series come with roller bearing, multiple spline shaft to DIN 5462 and the J21 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e.g. HMT - 2047 - V A - J21/1 - TW

<table>
<thead>
<tr>
<th>Series</th>
<th>nominal size</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>multiple spline shaft DIN 5480</td>
</tr>
<tr>
<td>V</td>
<td>multiple spline shaft DIN 5462</td>
</tr>
<tr>
<td>N</td>
<td>multiple spline hollow shaft DIN 5480</td>
</tr>
<tr>
<td>H</td>
<td>multiple spline hollow shaft DIN 5462</td>
</tr>
<tr>
<td>K</td>
<td>tapered feather key shaft</td>
</tr>
<tr>
<td>P</td>
<td>feather key shaft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
<tr>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output shafts</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
</tr>
<tr>
<td>V</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>H</td>
</tr>
<tr>
<td>K</td>
</tr>
<tr>
<td>P</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tachogenerator</th>
</tr>
</thead>
<tbody>
<tr>
<td>TW</td>
</tr>
<tr>
<td>T</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>J21</td>
</tr>
<tr>
<td>/1</td>
</tr>
</tbody>
</table>

Weight approx. 52 kg
Mass moment of inertia 0.0046 kgm²
Oil volume in motor case litres 2.0 litres
Radial Piston Motor HMT-20..

### Nominal size

<table>
<thead>
<tr>
<th></th>
<th>2030</th>
<th>2039</th>
<th>2047</th>
<th>2054</th>
<th>2066</th>
<th>2076</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>192</td>
<td>251</td>
<td>304</td>
<td>347</td>
<td>425</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>3,00</td>
<td>3,92</td>
<td>4,75</td>
<td>5,42</td>
<td>6,63</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>425</td>
<td>425</td>
<td>400</td>
<td>375</td>
<td>350</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>1350</td>
<td>1250</td>
<td>1150</td>
<td>1100</td>
<td>900</td>
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<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>900</td>
<td>700</td>
<td>650</td>
<td>600</td>
<td>525</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
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<td>Continuous power output</td>
<td>kW</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
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</table>

### Output shafts

<table>
<thead>
<tr>
<th>V</th>
<th>8-36-40</th>
<th>DIN 5462</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>40x3x12</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>H</th>
<th>8-36-40</th>
<th>DIN 5462</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>40x3x12</td>
<td>DIN 5480</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>K</th>
<th>tapered feather key shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>cylindrical feather key shaft</td>
</tr>
</tbody>
</table>

### Diagrams

#### Total efficiency

Efficiency diagram applies for HMT-2047 and bigger; smaller motors are 2-3% lower on the average.

#### Total leakage
Radial Piston Motor HMT-25..

All motors of the HMT-25.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J30 control.
For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e. g.          HMT  -  2576  -  V  A  -  J30/1  -  TW

Series         nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5462
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator models starting on page 36

Control
J30 = pressure connection
SAE 1½" 6000 psi
1 = alignment to cylinder 1
models starting on page 34
Radial Piston Motor HMT-25..

### Nominal size

<table>
<thead>
<tr>
<th></th>
<th>2555</th>
<th>2566</th>
<th>2576</th>
<th>2593</th>
<th>2511</th>
<th>2512</th>
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</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>352</td>
<td>426</td>
<td>486</td>
<td>595</td>
<td>690</td>
<td>792</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,49</td>
<td>6,64</td>
<td>7,58</td>
<td>9,28</td>
<td>10,8</td>
<td>12,4</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>425</td>
<td>425</td>
<td>425</td>
<td>400</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>850</td>
<td>800</td>
<td>800</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>575</td>
<td>550</td>
<td>500</td>
<td>400</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Max. power output</td>
<td>kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Continuous power output</td>
<td>kW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
</tbody>
</table>

### Output shafts

- V = 8-46-54 DIN 5463
- H = 8-36-40 DIN 5462
- K = tapered feather key shaft
- P = cylindrical feather key shaft
- W = 40x3x12 DIN 5480
- N = 40x3x12 DIN 5480

### Diagrams

#### Total efficiency

- Efficiency diagram applies for HMT-2593 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMT-30..

All motors of the HMT-30.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J30 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e. g. HMT - 3012 - V A - J30/1 - TW

Series  
nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5482
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator
models starting on page 36

Control
J30 = pressure connection
SAE 1½" 6000 psi
/1 = alignment to cylinder 1
models starting on page 34

Weight approx. 116 kg
Mass moment of inertia 0.0172 kgm²
Oil volume in motor case litres 7.0 litres
Radial Piston Motor HMT-30..

### Nominal size

<table>
<thead>
<tr>
<th></th>
<th>3078</th>
<th>3096</th>
<th>3012</th>
<th>3014</th>
<th>3016</th>
<th>3017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement cm³/Umdr</td>
<td>503</td>
<td>616</td>
<td>793</td>
<td>904</td>
<td>1022</td>
<td>1116</td>
</tr>
<tr>
<td>Specific theor. torque Nm/bar</td>
<td>7,85</td>
<td>9,61</td>
<td>12,4</td>
<td>14,1</td>
<td>16</td>
<td>17,4</td>
</tr>
<tr>
<td>Peak pressure bar</td>
<td>425</td>
<td>400</td>
<td>400</td>
<td>375</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Continuous pressure bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed U/min</td>
<td>780</td>
<td>750</td>
<td>730</td>
<td>700</td>
<td>700</td>
<td>650</td>
</tr>
<tr>
<td>Continuous speed U/min</td>
<td>600</td>
<td>575</td>
<td>550</td>
<td>500</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>Max. power output kW</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
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<tr>
<td>Continuous power output kW</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

### Output shafts

- **V** = 8-56-65 DIN 5463
- **H** = 55x50 DIN 5482
- **K** = tapered feather key shaft
- **P** = cylindrical feather key shaft
- **W** = 65x3x20 DIN 5480
- **N** = 55x3x17 DIN 5480

### Diagrams

- **Total efficiency**
- **Total leakage**

Efficiency diagram applies for HMT-3012 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMT-35..

All motors of the HMT-35.. series come with roller bearing, multiple spline shaft to DIN 5463 and the J30 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

Model code

e. g. HMT - 3518 - V A - J30/1 - TW

Series
nominal size
Output shafts
W = multiple spline shaft DIN 5480
V = multiple spline shaft DIN 5463
N = multiple spline hollow shaft DIN 5480
H = multiple spline hollow shaft DIN 5482
K = tapered feather key shaft
P = feather key shaft

Storage
A = roller bearing
C = spherical roller bearing

Tachogenerator
TW = tachometer shaft Ø 6 mm
T = tachogenerator models starting on page 36

Control
J30 = pressure connection G1"
/1 = alignment to cylinder 1 models starting on page 34
Radial Piston Motor HMT-35..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>3510</th>
<th>3512</th>
<th>3516</th>
<th>3518</th>
<th>3521</th>
<th>3523</th>
<th>3525</th>
<th>3528</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement</td>
<td>cm³/Umdr</td>
<td>659</td>
<td>807</td>
<td>1039</td>
<td>1185</td>
<td>1340</td>
<td>1462</td>
<td>1634</td>
</tr>
<tr>
<td>Specific theor. torque</td>
<td>Nm/bar</td>
<td>10,3</td>
<td>12,6</td>
<td>16,2</td>
<td>18,5</td>
<td>20,9</td>
<td>22,8</td>
<td>25,3</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>bar</td>
<td>425</td>
<td>425</td>
<td>425</td>
<td>400</td>
<td>400</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Continuous pressure</td>
<td>bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed</td>
<td>U/min</td>
<td>730</td>
<td>700</td>
<td>680</td>
<td>630</td>
<td>600</td>
<td>600</td>
<td>600</td>
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<tr>
<td>Continuous speed</td>
<td>U/min</td>
<td>500</td>
<td>500</td>
<td>475</td>
<td>475</td>
<td>450</td>
<td>450</td>
<td>400</td>
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<tr>
<td>Max. power output</td>
<td>kW</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
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<tr>
<td>Continuous power output</td>
<td>kW</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
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</tr>
</tbody>
</table>

Output shafts

<table>
<thead>
<tr>
<th>V = 8-56-65 DIN 5463</th>
<th>H = A 55x50 DIN 5482</th>
<th>K = tapered feather key shaft</th>
<th>P = cylindrical feather key shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>W = 65x3x20 DIN 5480</td>
<td>N = 55x3x17 DIN 5480</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagrams

- **Total efficiency**
  - Graph showing efficiency percentage against pressure and speed.
  - Efficiency ranges from 93% to 89%.

- **Total leakage**
  - Graph showing leakage rate against pressure and speed.
  - Leakage rates for pressures 100 bar to 400 bar.

Efficiency diagram applies for HMT-3518 and bigger; smaller motors are 2-3% lower on the average.
Radial Piston Motor HMT-40..

All motors of the HMT-40.. series come with roller bearing, multiple spline shaft to BS 3550 and the J40 control. For notes on function, installation and start-up of the hydraulic motors please refer to page 3 to 5.

<table>
<thead>
<tr>
<th>Model code</th>
<th>HMT - 4033 - V A - J40/1 - TW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td></td>
</tr>
<tr>
<td>nominal size</td>
<td></td>
</tr>
<tr>
<td>Output shafts</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>multiple spline shaft BS 3550</td>
</tr>
<tr>
<td>N</td>
<td>multiple spline hollow shaft DIN 5480</td>
</tr>
<tr>
<td>P</td>
<td>feather key shaft</td>
</tr>
<tr>
<td>Storage</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>spherical roller bearing</td>
</tr>
</tbody>
</table>

Tachogenerator
- TW = tachometer shaft Ø 6 mm
- T = tachogenerator
  models starting on page 36

Control
- J40 = pressure connection
  SAE 2" 6000 psi
- /1 = alignment to cylinder 1
  models starting on page 34

Weight approx. 291 kg
Mass moment of inertia 0.103 kgm²
Oil volume in motor case litres 25.0 litres

symbol DIN ISO 1219

Diagram of the motor showing dimensions and symbols.
Radial Piston Motor HMT-40..

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>4026</th>
<th>4033</th>
<th>4039</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement cm³/Umdr</td>
<td>1690</td>
<td>2127</td>
<td>2513</td>
</tr>
<tr>
<td>Specific theor. torque Nm/bar</td>
<td>26,4</td>
<td>33,2</td>
<td>39,2</td>
</tr>
<tr>
<td>Peak pressure bar</td>
<td>425</td>
<td>400</td>
<td>350</td>
</tr>
<tr>
<td>Continuous pressure bar</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Max. speed U/min</td>
<td>600</td>
<td>575</td>
<td>500</td>
</tr>
<tr>
<td>Continuous speed U/min</td>
<td>400</td>
<td>400</td>
<td>300</td>
</tr>
<tr>
<td>Max. power output kW</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Continuous power output kW</td>
<td>160</td>
<td>160</td>
<td>160</td>
</tr>
</tbody>
</table>

Output shafts

V = BS 3550 20T pitch 6/12

N = 80x3x25, DIN 5480

P = cylindrical feather key shaft

Diagrams

Efficiency diagram applies for HMT-4033 and bigger; smaller motors are 2-3% lower on the average.
**Distributors**

**Distributor J20** G1” connections  
standard control for all hydraulic motors from the HMF series

---

**Distributor J21** connections  SAE 1”, 3000 psi (210 bar)
**Distributors**

**Distributor J30** connections SAE 1½", 6000 psi (420 bar)
for all hydraulic motors from the HMF-40.. and HMC-45.. series standard.
for all hydraulic motors from the HMF-35 series alternatively.

**Distributor J40** connections SAE 2", 6000 psi (420 bar)
for all hydraulic motors from the HMT-40.. serie standard.
Tachometer

Tachometer shaft TW with J20 control
The 6 mm tachometer shaft is available for all controls

Tachometer shaft TW with J21 control

Contact-free tachometer DMS with 24 pulses per revolution
Tachometer

**Tachometer TD41 or TD42**
TD41 rectified three-phase current 50V/1000 rpm, TD42 rectified three-phase current 100V/1000 rpm

**DC tachometer KTD3**
Nominal voltages from 10V/1000 rpm to 60V/1000 rpm are available
Components for hydraulics and process technology