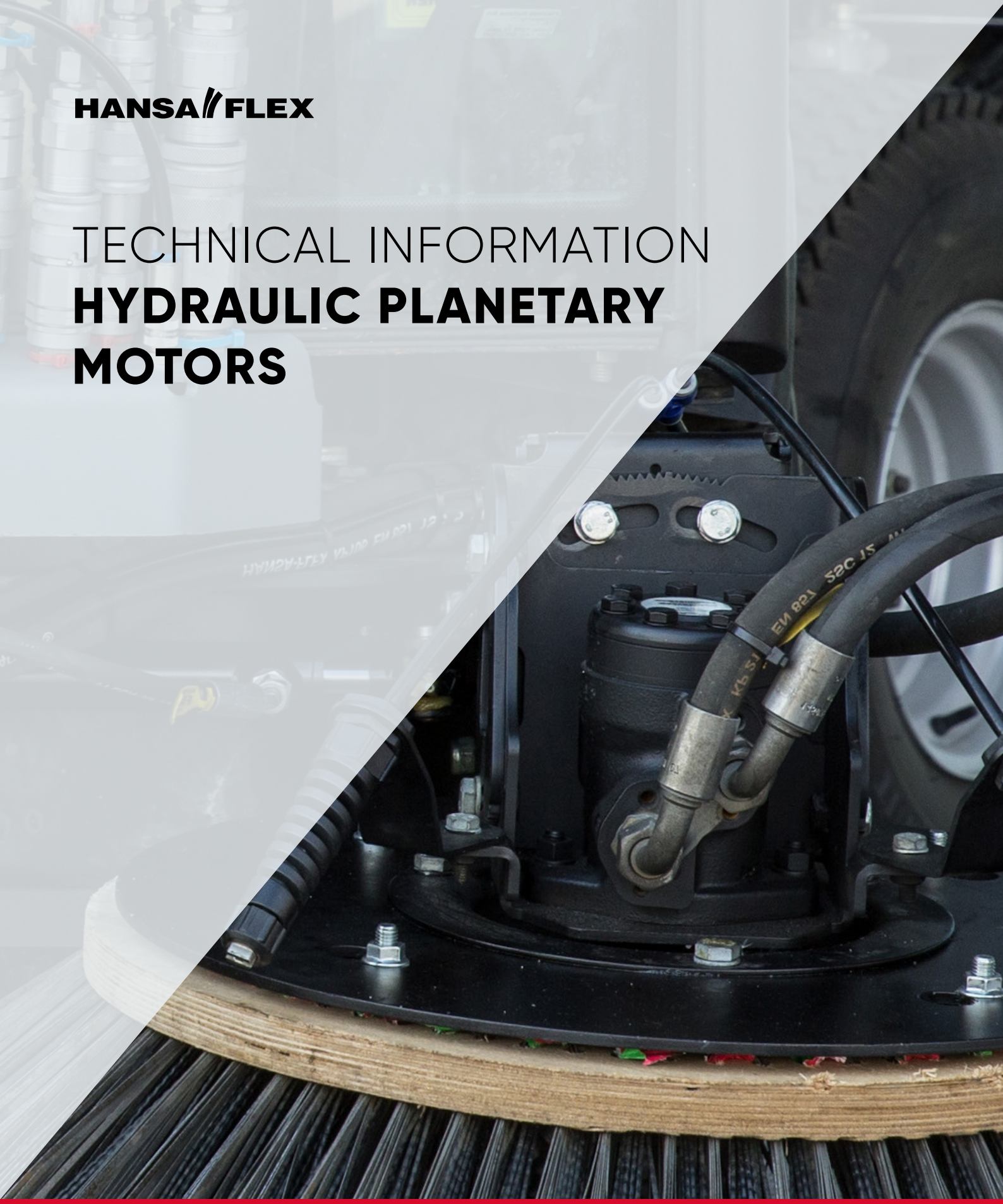
HANSA-FLEX

TECHNICAL INFORMATION
HYDRAULIC PLANETARY MOTORS



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Technical information – Hydraulic planetary motors

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1. General

The installation, commissioning and maintenance of hydraulic systems or their components may be carried out only by suitably qualified personnel and in strict observance of all the relevant safety regulations.

Gerotor and geroler planetary motors are slow-rotating hydraulic motors with a high torque and constant displacement.

These motors convert hydraulic energy (pressure and volumetric flow) into mechanical energy (torque and rotational speed). The displacement (piston displacement / size of motor) determines the speed of rotation and the torque for a given volumetric flow and pressure. For a given displacement (size of motor), the volumetric flow determines the speed of rotation and the pressure difference determines the torque.

These motors share the following characteristics:

- Good starting torque
- Smooth running over the given speed of rotation range
- Constant operating torque over a large speed of rotation range
- Efficiency ca. 50…90%, depending on the motor type and operating point
- Lower efficiency with very low speeds of rotation
- Robust and compact design
- High radial and axial load capacity
- Suitable for use in open and in closed hydraulic systems

Typical fields of application:

- Municipal vehicles (e.g. mechanical sweepers, spreaders, mowers)
- Conveyor belts
- Agricultural machinery
- Construction plant
- Screening and crushing equipment
- Forestry machinery
- Lifting equipment and winches
- Mechanical tools and stationary equipment
- Maritime equipment

2. Safety instructions

The maximum loads (volumetric flows, pressures, forces, temperatures) given in the product documentation must not be exceeded.

The operator (the employer) of the system must ensure that:

- The safety instructions and operating manuals are available and complied with
- The product is used for the intended applications stated in the operating and installation instructions and on the identification plate
- The currently applicable accident prevention and installation regulations are observed
- The permissible operating data and conditions of use are complied with
- Safety devices are used and the prescribed maintenance works are carried out

3. Technical information

3.1.Installation instructions / assembly

- The mounting flanges must bear flatly against one another to ensure adequate contact and minimise mechanical strains.
- Hydraulic pipelines and hose lines must be properly installed so as to avoid the occurrence of pockets of air
- The pressure lines must be fitted with a pressure gauge connection.
- Hydraulic components must be installed in accordance with their specific instructions.
- To avoid contamination, the plastic protective caps should not be removed from the connection openings before the fitting is made ready for installation.
- Forcing the motor into position by tightening the mounting screws during installation should be avoided.
- Use only the intended sealants on the screw fittings (not sealing cord, Teflon etc.).
- Use only the supplied seals such as O-rings, sealing washers etc.
- Do not exceed the maximum tightening torque specified in the manuals when tightening the screw fittings.
- The level of cleanliness of the oil used should be at least 20/17/14 (ISO 4406 code).
- Always use a filter when filling or topping up oil.

3.2.Commissioning

- Fill the oil container up to the top fill level mark using a fine filter.
- Check that all the components are properly connected together.
- Start the hydraulic motor and, if possible, allow it to run at the lowest possible speed of rotation.
- If the motor has a bleed screw, open it until air-free oil comes out.
- If the motor is part of a load-sensing system, an additional check must be made to ensure there is no air in the lift-sensing pipelines.

3.3. Technical parameters

Planetary gear

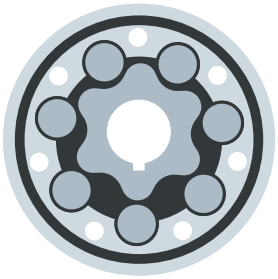
The motor works on the principle of an internal gear that consists of a fixed outer gear ring which has teeth on the inside with which an inner rotor engages. This engagement transmits the output torque and speed of rotation. There are two different versions:

Gerotor motors

With fixed gear ring. Gerotor motors have a low efficiency and high friction due to the rigidly mounted gear ring surfaces.

Geroler motors

With rollers in gear ring. The hydrodynamic bearings of the rollers ensure good rolling behaviour with low friction and can transfer high torques.



Distribution valve

The distribution valve is driven synchronously with the gear set so that each chamber of the chamber is filled precisely and without losses. There are various types of distribution valves:

Spool valve

The spool valve is part of the output shaft. This arrangement transmits the mechanical energy from the gear set to the output shaft and performs the valve control. This principle is used in our HKEPMM, HKHMBMM, HK EPM, HKHMBMP, HKEPMR and HKHMBMR series.

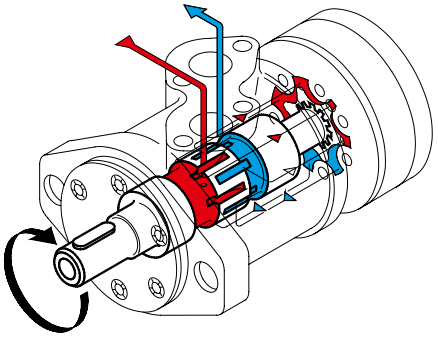
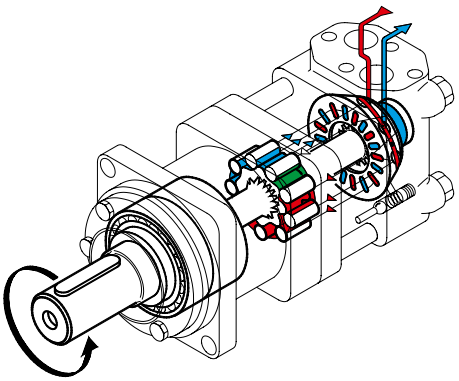


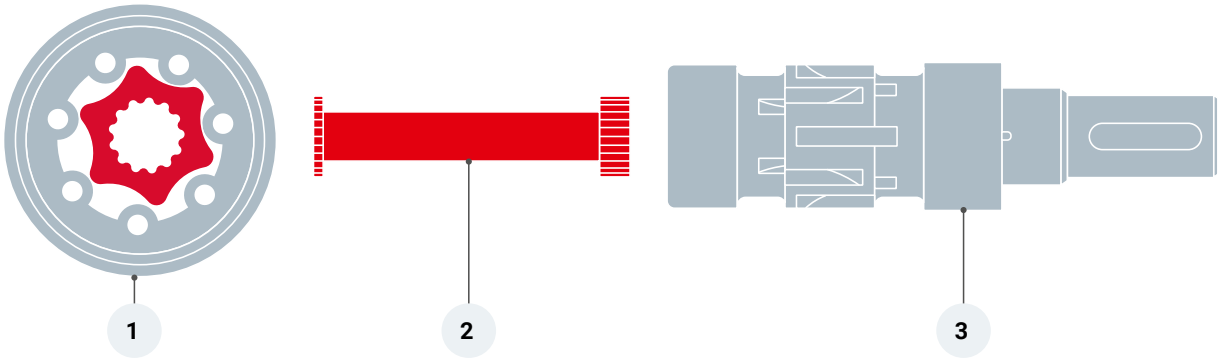
Plate valve with valve drive

The plate valve is separate from the output shaft and is driven by a short cardan shaft. A balance plate equalises the hydraulic forces around the plate valve and thus ensures a high volumetric efficiency at all pressures. This principle is used in our HKEPMS, HKHMBMS, HK EPMT and HKHMBMT series.



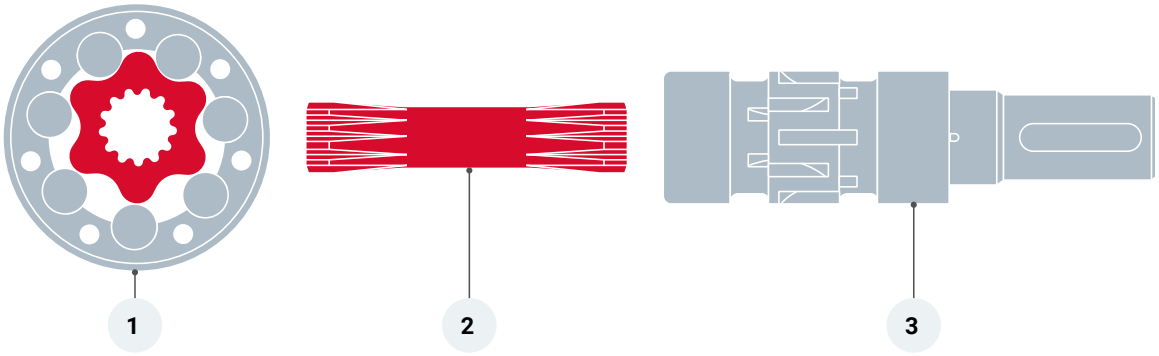
Construction and characteristics of the motor series

Gerotor motor with spool valve



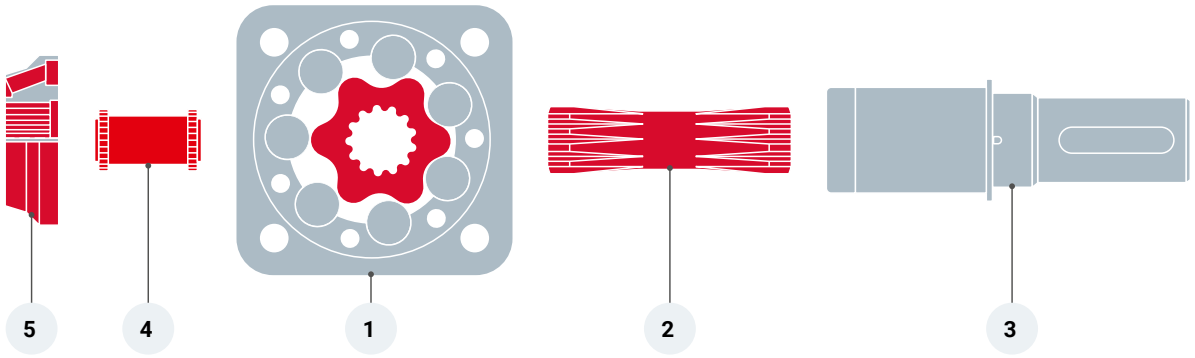
- Gear with fixed gear ring (1)
- Cardan shaft (2)
- Drive shaft with integrated spool valve (3)
- Compact design
- Continuous operation at medium pressure
- Short-term operation at high pressure

Geroler motor with spool valve



- Gear with rollers in the gear ring (1)
- Cardan shaft (2)
- Drive shaft with integrated spool valve (3)
- Long service life
- High efficiency, even under continuous high pressure
- Can be operated with low-viscosity oil
- Suitable for frequent reversals of rotation

Geroler motor with plate valve



- Gear with rollers in the gear ring (1)
- Cardan shaft (2)
- Drive shaft with integrated spool valve (3)
- Plate valve with separate valve drive (4, 5)
- Long service life
- High efficiency, even under continuous high pressure
- Can be operated with low-viscosity oil
- Suitable for frequent reversals of rotation
- Good start-up characteristics, even under high pressure
- Very smooth running at low speeds of rotation
- Particularly suitable for continuous operation under difficult operating conditions
- High capacity for static and dynamic radial loads

4. Maintenance

Repairs to devices may be carried out only by qualified personnel.

Alteration, maintenance or installation work must be in accordance with the instructions in the operating manual and installation instructions. Original replacement parts should always be used.

The relevant safety and operating regulations of the country of use must be observed when performing maintenance work of any kind.

Careful maintenance has a crucial influence on operational safety and the service life of hydraulic systems. Oils and filters must be regularly checked and replaced in accordance with the instructions of the manufacturer. Systems must be regularly checked for leaks.

5. Disposal information

Hydraulic oil, hydraulic hose lines, hydraulic components and electronic components or devices may not be thoughtlessly placed in the ordinary refuse; they must be collected and disposed of in accordance with the applicable waste disposal regulations. The national requirements of the respective country and, if appropriate, the information given in the safety data sheets must be observed.