

Hydrostatic Pump Repair

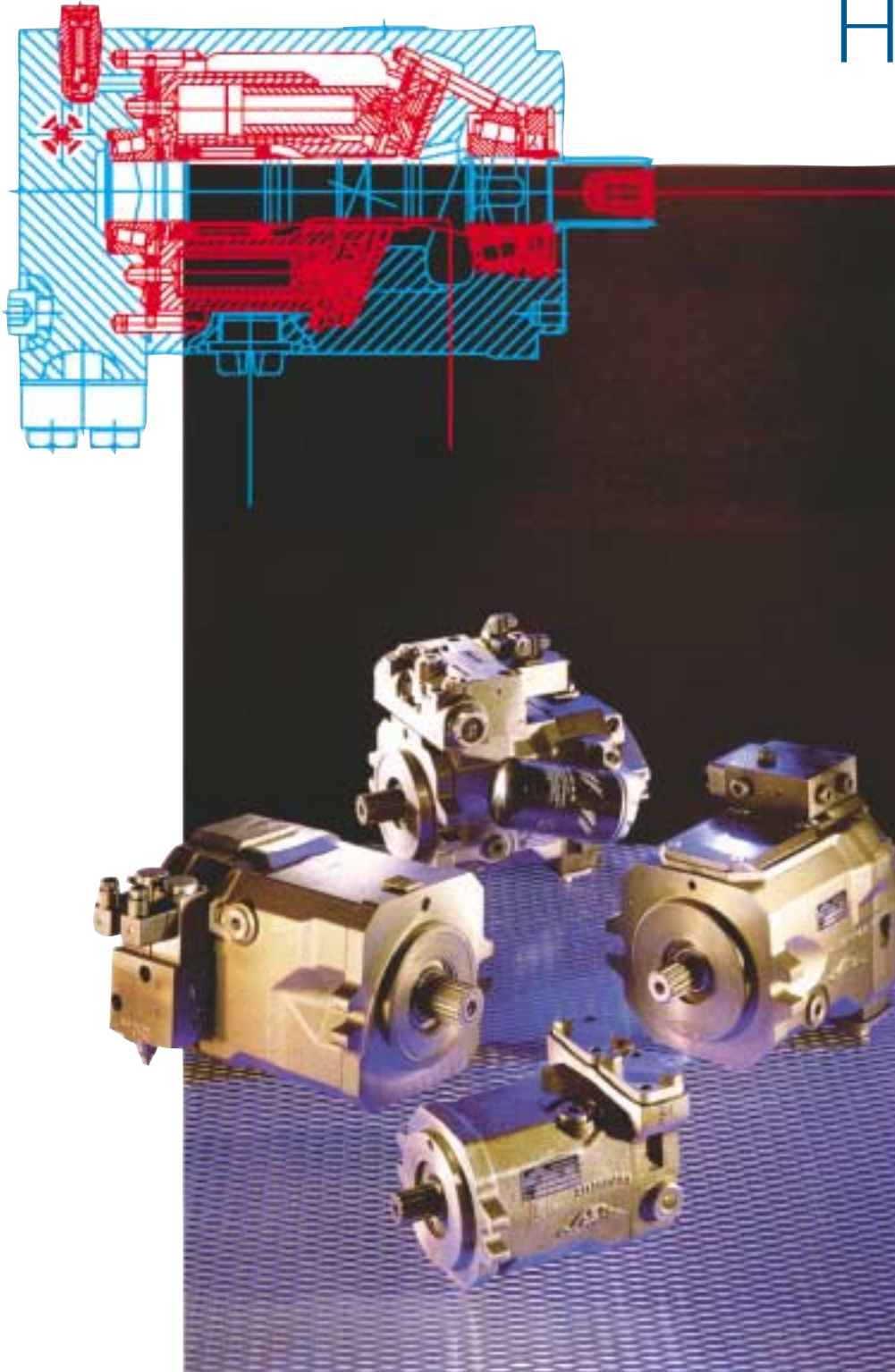
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New Generation Hydraulics



Series 02

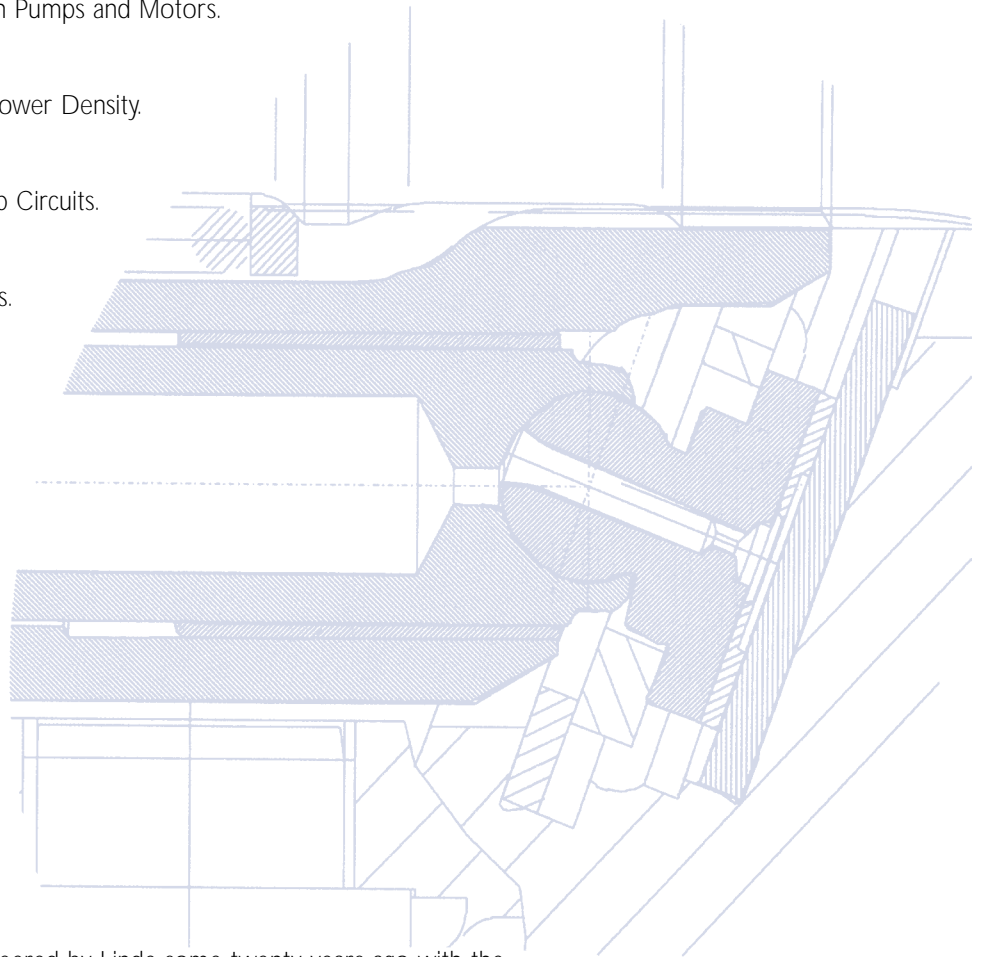
New Generation Series 02

Objectives

Linde engineers set the target to design a new range of axial piston pumps and motors to carry Linde Hydraulics well into the next millennium.

The main objectives were:-

1. Common Rotating Groups for both Pumps and Motors.
2. Extreme Compactness with High Power Density.
3. Suitable for Closed and Open Loop Circuits.
4. Common Installation Configurations.
5. High Performance and Efficiency.
6. Integrated System Protection.
7. Reliability and Durability.
8. Modular Construction.
9. Low Noise Level.
10. Cost Effective.



Many of the features listed above were pioneered by Linde some twenty years ago with the well proven 'B' series swash plate pumps and bent axis motors. Hundreds of thousands of which have been applied worldwide by leading international manufacturers of both mobile and industrial machines and exemplified in Linde's own range of high volume production for lift trucks. The direct feed back from this in-house design and development of both hydrostatic transmission and vehicles give Linde engineers a unique advantage over other suppliers of axial piston hydraulic equipment.

The question, therefore, was how to improve on what is already a very successful range of axial piston hydraulic pumps and motors.

New Generation Series 02

Realization

Linde engineers solved the task set for them with an innovative redesign of the basic in-line axial piston, swash plate rotating group.

Traditional swash plate units have the ball on the piston end which locates into a socket on the slipper pad. By putting the ball end on the slipper pad the ball itself now goes inside the piston thus reducing the overall unit length, this arrangement also permits the swash angle to be increased from the conventional 18 degrees to **21 DEGREES**. The swept volume for the same overall size is therefore increased and as displacement per revolution multiplied by pressure and speed equals fluid power, then the objective of higher power density was achieved.

Cost effectiveness was obtained by the use of common rotating groups in both pumps and motors and many parts also are common to units of different sizes.

A significant reduction in total number of necessary parts was achieved thus minimizing inventory of components both for production and spares to the benefit of Linde customers.

Further reduction was made by considerable investment in dedicated machine tools and automatic manufacturing systems to cut machining cycle times. At the same time, improved machining technique and the use of modern materials, resulted in better surface finishes of the dynamic components allowing reduced clearances for higher volumetric efficiencies and lower friction losses for improved mechanical efficiency.

Features common to the entire **SERIES 02** are:

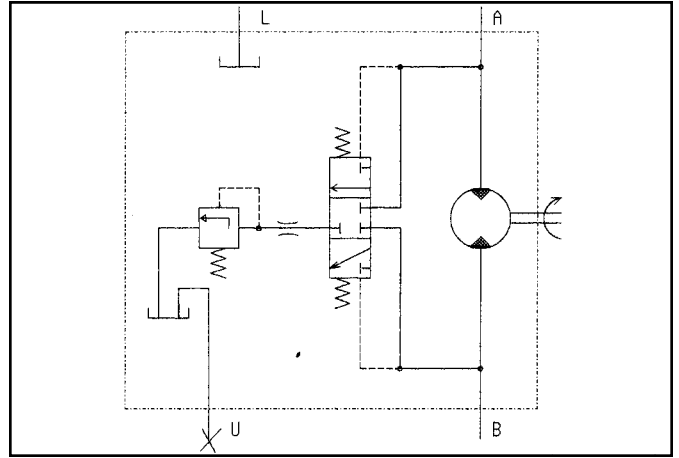
- Pumps and Motors fitted with Linde **UNIQUE 21° SWASH ANGLE** reverse piston ball/slipper arrangement.
- SAE 2 bolt Mounting Flanges with SAE and ANSI Splined Shafts and SAE High Pressure Ports. (420 bar)

These rotating groups have been operational since 1994 and are therefore fully proven before being released for general application.

The design Objectives were Realized!

21 degrees for the 21st century

HMF ...- 02 Fixed Motors for closed and open loop applications



<i>Sizes</i>	28, 35, 50, 75, 105, 135 cm ³ /rev
<i>Pressure</i>	rated 420 bar, max. 500 bar
<i>Speed</i>	up to 4500 rev/min
<i>Mounting</i>	SAE 2 bolt flanges, SAE and ANSI splined shafts
<i>Features</i>	Purge (hot oil) valve optional High Pressure (Crossover) Relief valves optional (Single or two stage characteristics) Speed sensor optional
<i>Advantages</i>	Extremely compact with high power density High starting torque efficiency Low noise level

