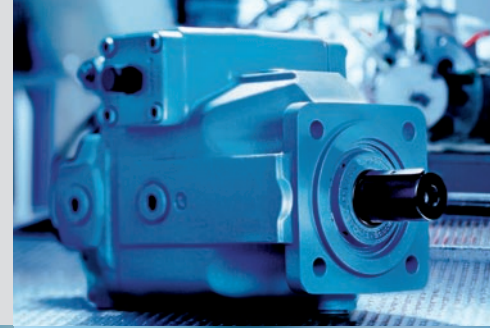
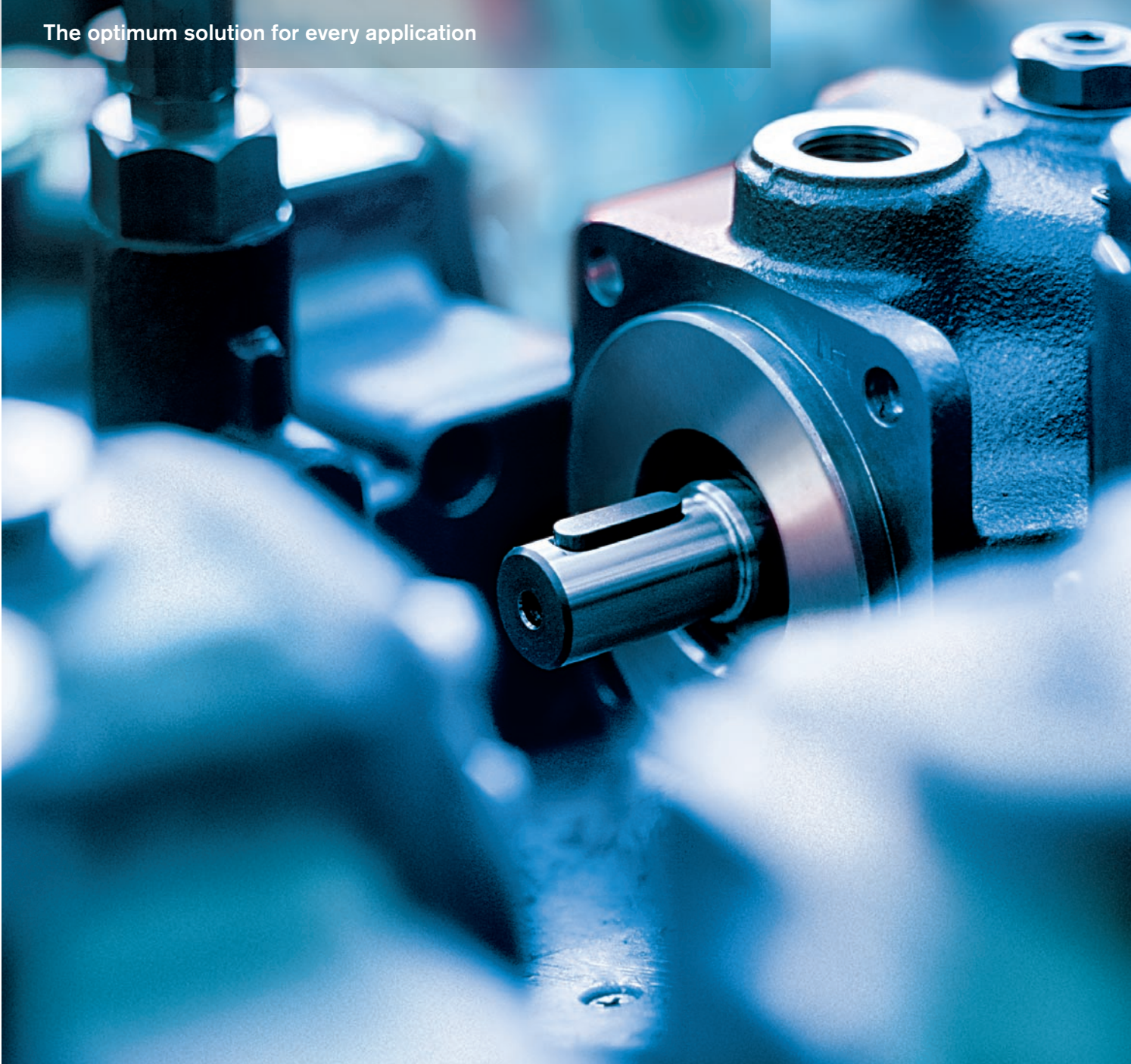


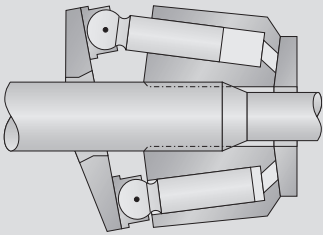
Hydraulic Pumps from Rexroth – Setting Standards in Industrial Applications



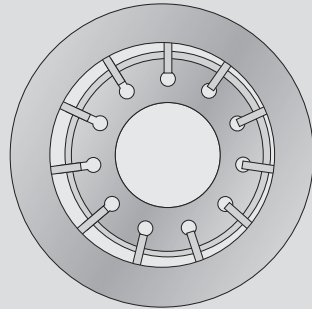
The optimum solution for every application



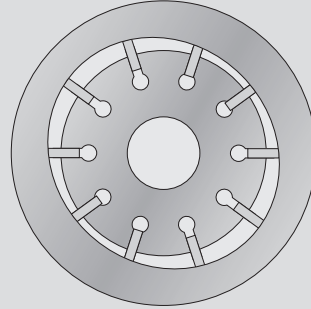
Rexroth Puts on Pressure: the Optimum Hydraulic Pump Solution for Every Application



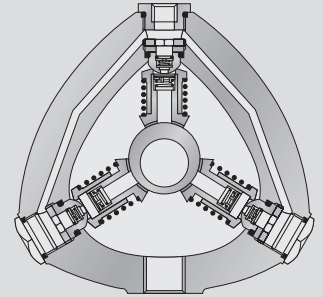
Axial piston pumps



Vane pumps, variable displacement



Vane pumps, fixed displacement

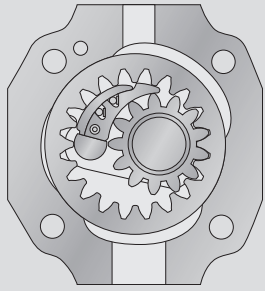


Radial piston pumps

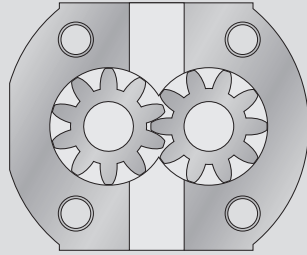
As with the wide range of application areas for hydraulic drives, there are just as many demands on pump technology. So what are the main requirements for your particular application?

- Efficiency
- Economy
- Low noise operation
- Low flow pulsation
- Controllability
- Conformity to standards
- Compact design
- Robustness
- Low maintenance
- Service-friendly
- Application-specific

A single design principle is not able to meet all requirements. For this reason Rexroth offers you a choice. Our wide product range comprises variable and fixed displacement pumps and every displacement principle:



Internal gear pumps



External gear pumps



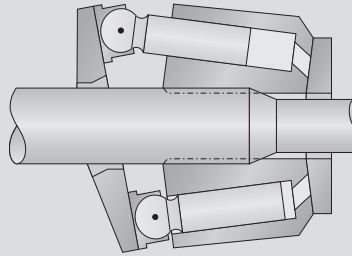
Axial piston units, external and internal gear pumps, vane pumps, fixed and variable displacement, as well as radial piston pumps. Select the optimum displacement type to suit your application.

Axial piston pumps	4
DFE Pressure Control Systems	6
Vane pumps, variable displacement	8
Vane pumps, fixed displacement	10
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External gear pumps	16
Combination pumps	18

The Universal Solution: Axial Piston Pumps from Rexroth

Fixed or variable displacement – Rexroth manufactures axial piston pumps based on the bent axis and swashplate principle.

This covers both medium and high-pressure ranges.

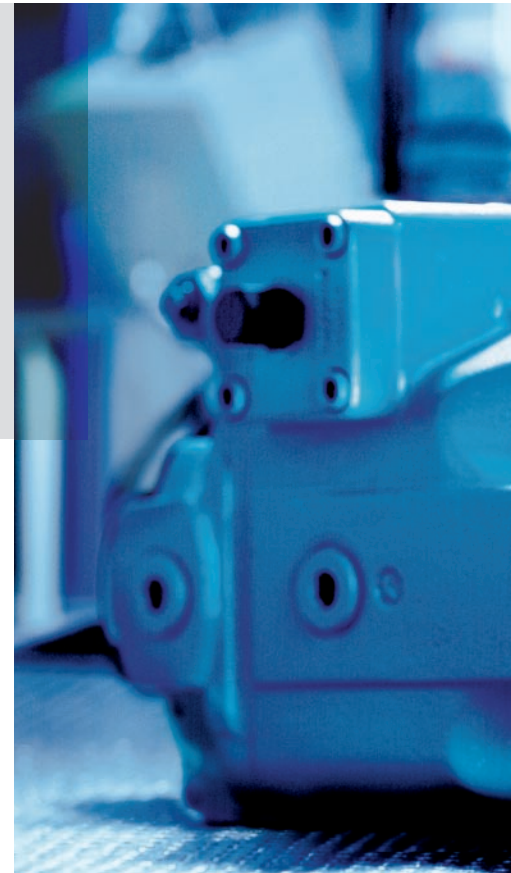


Axial piston pumps from Rexroth are characterized by an exceptionally robust construction. This is what makes them so reliable, guaranteeing a long service life and a high level of availability. The pumps are very economical developed and highly efficient, which has led them to become the standard hydraulic pump in universal use.

Industrial applications require high flexibility, not only in performance, but also with respect to the simplicity of open and closed loop control functions. Rexroth offers here the most diverse, optimally matched and user-orientated solutions: whether hydromechanical or electrohydraulic – axial piston pumps from Rexroth operate reliably to the individual performance profile of your application.

In plastics machinery they ensure a minimum of non-productive time due to their high dynamic response and excellent machine performance. Optimum adjustment of the required flow rates to the relevant application reduces energy consumption to the absolute minimum, thus also lowering operating costs.

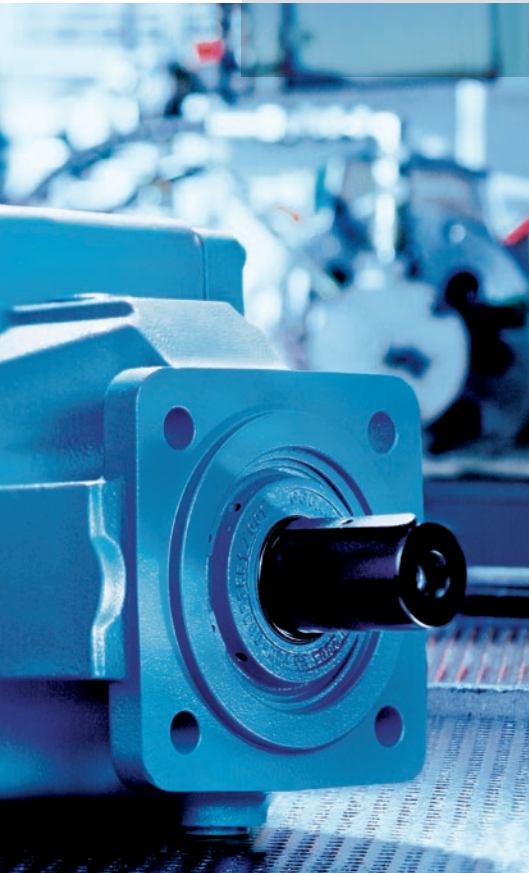
The use of pumps in centrifuges, stirring and mixing devices in the chemical industry demands high continuous performance, whereas in the construction of presses high operating pressures are required for economical operation. In ship-building, once again operational safety is top priority if steering systems, propeller drives, transverse beam rudders, stabilizers or ballast pumps are to be hydraulically operated.



However varied the demands may be from the wide range of application areas, the extensive range of Rexroth axial piston pumps can always offer an optimum solution.

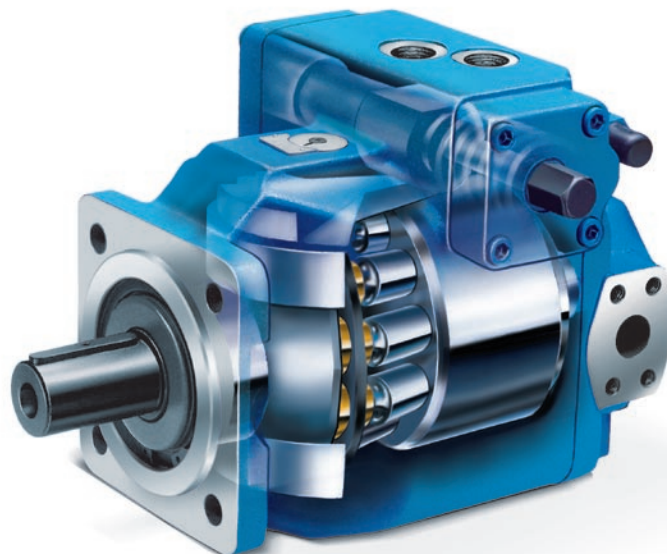
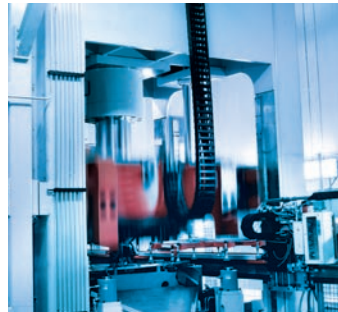
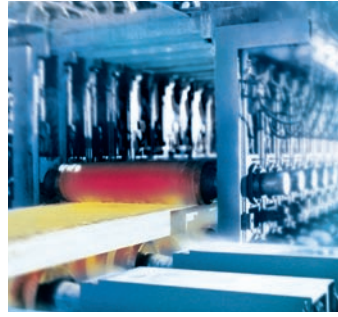
Performance profile of axial piston units:

- Displacements from 5 to 1,000 cm³
- Nominal pressures up to 420 bar
- Max. speeds up to 5,600 rpm
- Max. power up to 933 kW
- Modular controllers



Application areas

- Steel works and rolling mills
- Foundries
- Power unit construction
- Shipbuilding
- Offshore
- Presses
- Mining
- Plastics machinery
- Machine tools
- Wood-working machinery



Dynamic and Energy-saving: Pressure-flow-controlled Systems from Rexroth

When it comes to combining hydraulic and electronic components for open and closed loop control Rexroth is continually setting new standards. The user benefits from decades of experi-

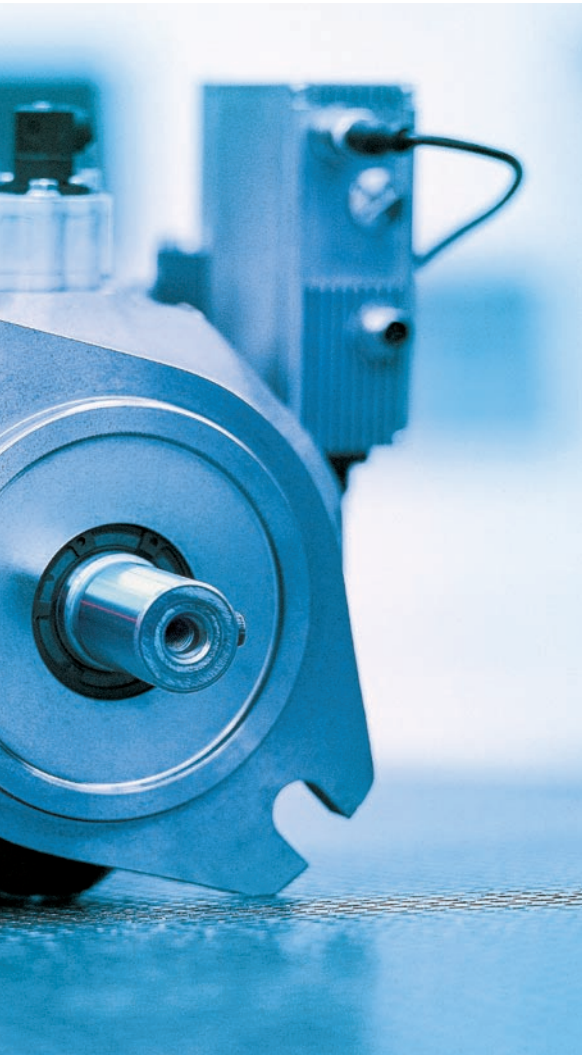
ence and know-how in hydraulics and electronics. This has resulted in hi-tech systems that meet the requirements of efficiency combined with maximum economy.

Based on axial piston variable displacement pumps Rexroth has designed a closed loop electronic control system for pressure, flow and output without throttling losses in the energy train.

The system works with a high dynamic response and is energy saving. Precision, infinite control is achieved by means of a closed loop electronic circuit. Reducing the number of components to a minimum also simplifies the design, offering optimum compatibility.

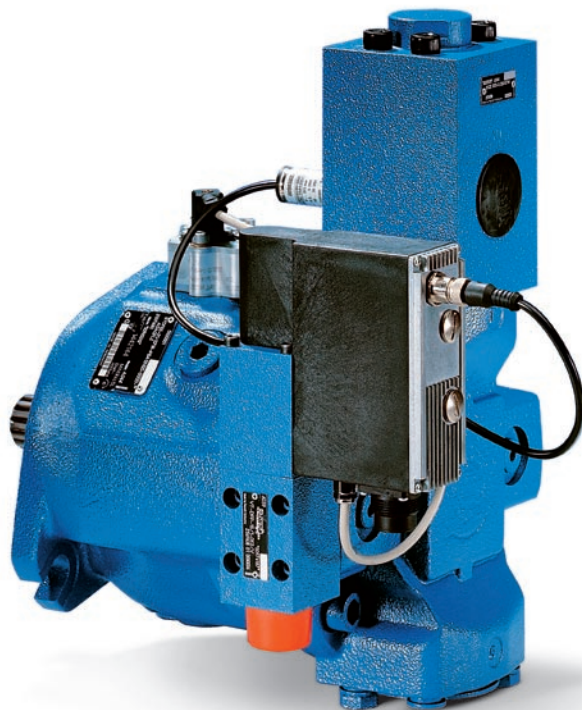
The DFE System has proved itself, for example, in plastic injection molding machines, rubber transfer molding presses, pressure die casting machines and a variety of other presses. It is also used in providing the oil supply for test stands.





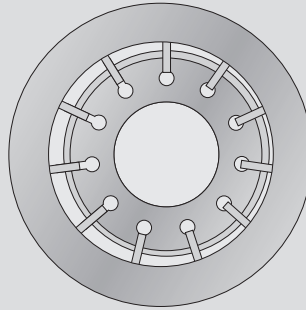
Application areas

- Plastics machinery
- Presses
- Test stands



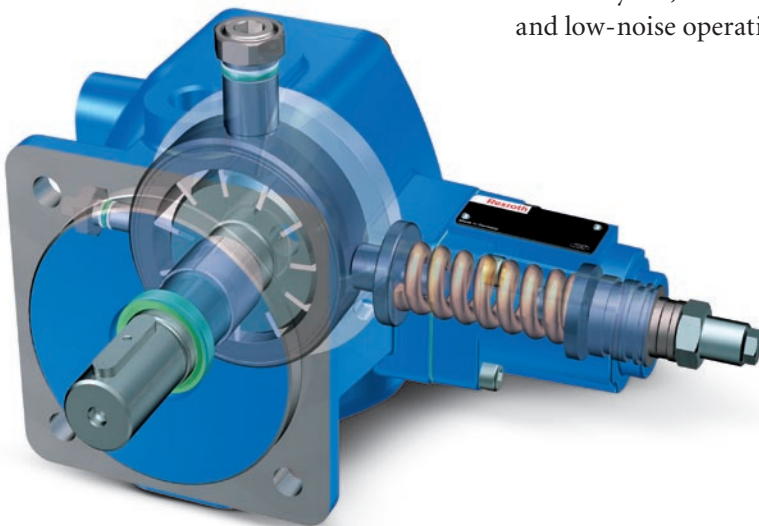
Variable Displacement – Low Noise: Vane Pumps from Rexroth

Complex tasks require reliable components – especially in machine tools. Work pieces have to be processed swiftly, economically and with maximum safety. The PV7 variable displacement vane pump from Rexroth has developed to become the standard pump used in these applications.



The direct-operated version of the Rexroth PV7 pump is suitable for all applications requiring a variable displacement pump working at low pressures.

The cost-optimized pump principle impresses with its excellent efficiency combined with short control cycles, low flow pulsation and low-noise operation.



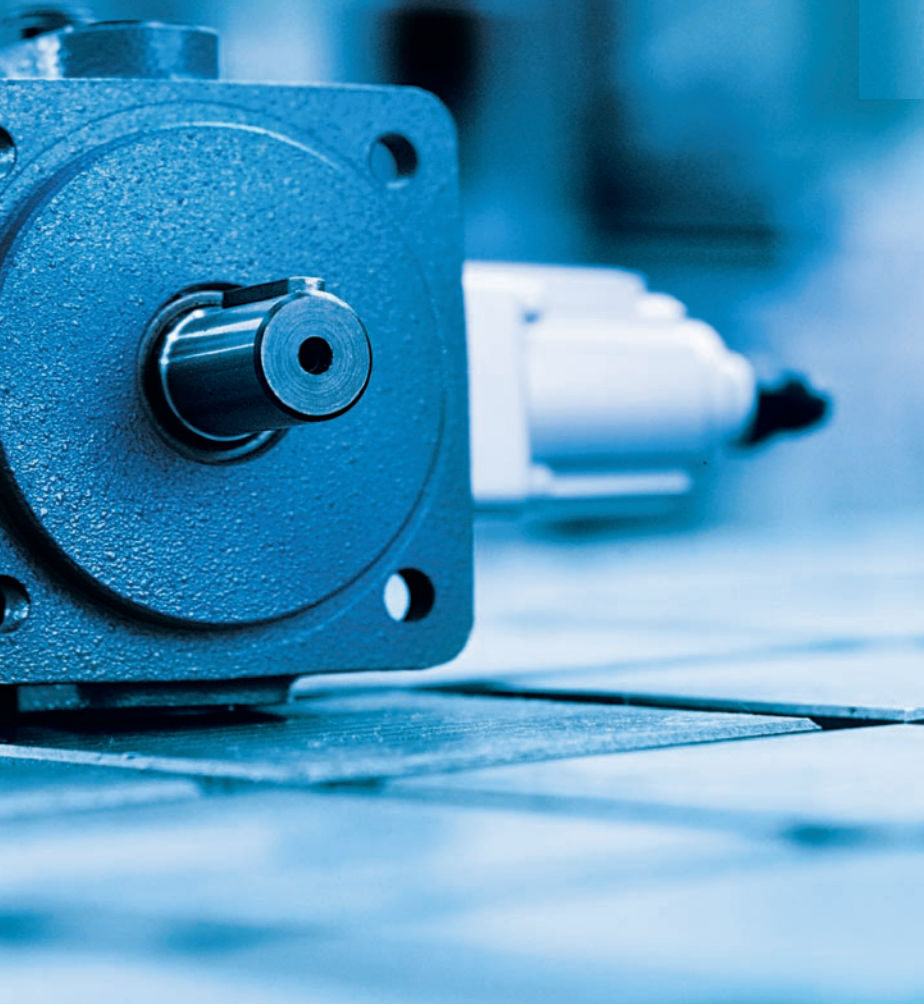
The hydraulically operated version of the PV7 pump, with its wide range of sizes from 14 to 150 cm³ and numerous controller variants, is used whenever low noise emissions are required by the user in the medium pressure range up to 160 bar.

As with all Rexroth components vane pumps of the PV7 group are highly flexible in the number of possible combinations.



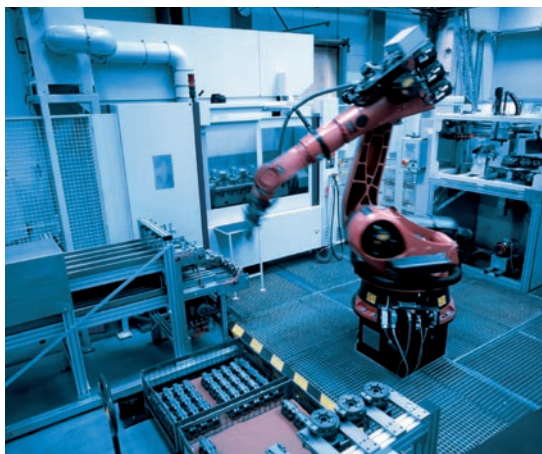
Performance profile of variable displacement vane pumps:

- Displacements from 10 to 150 cm³
- Nominal pressures up to 160 bar
- Max. speeds up to 1,800 rpm
- Max. power up to 54 kW
- Modular controllers



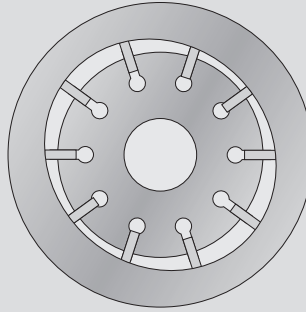
Application areas

- Machine tools
- Gluing stations
- Assembly stations
- Test stand construction
- General machine construction



Low Flow Pulsation: Fixed Displacement Vane Pumps from Rexroth

Vane pumps with fixed displacement are used whenever larger flow volumes are required as opposed to high pressures.



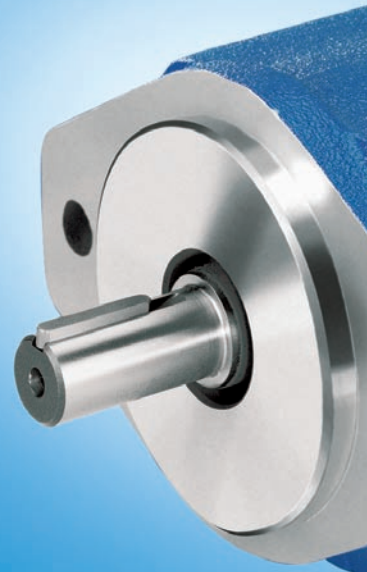
Rexroth vane pumps Type PVV and PVQ are particularly suitable for the low to medium pressure range, offering a high level of economic efficiency and low-noise operation.

Both the PVV and PVQ versions are available as dual-flow pumps integrated into a single housing. The compact design, combined with a common suction port for both pump stages reduces assembly costs, yet takes up a minimum of space. They represent a universal economical solution for requirements in the small and medium sized series.

Thanks to its particularly suitable for industrial applications, this pump principle, in the form of Type PVV, has proved itself many times over in the application areas of coolers and filters. However, vane pumps also perform rapid transverse functions in combination with internal gear pumps or axial piston pumps, providing high pressures for alternation of loads.

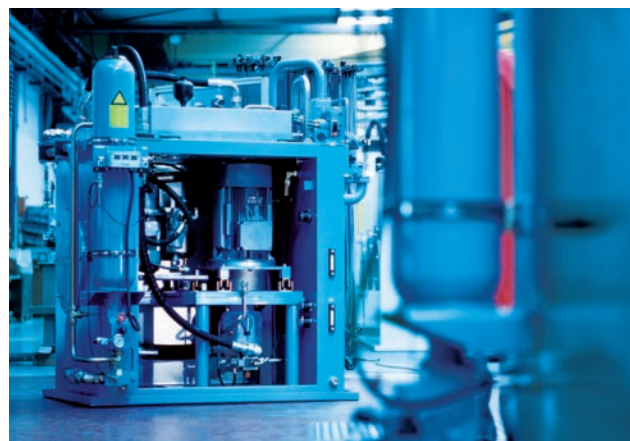
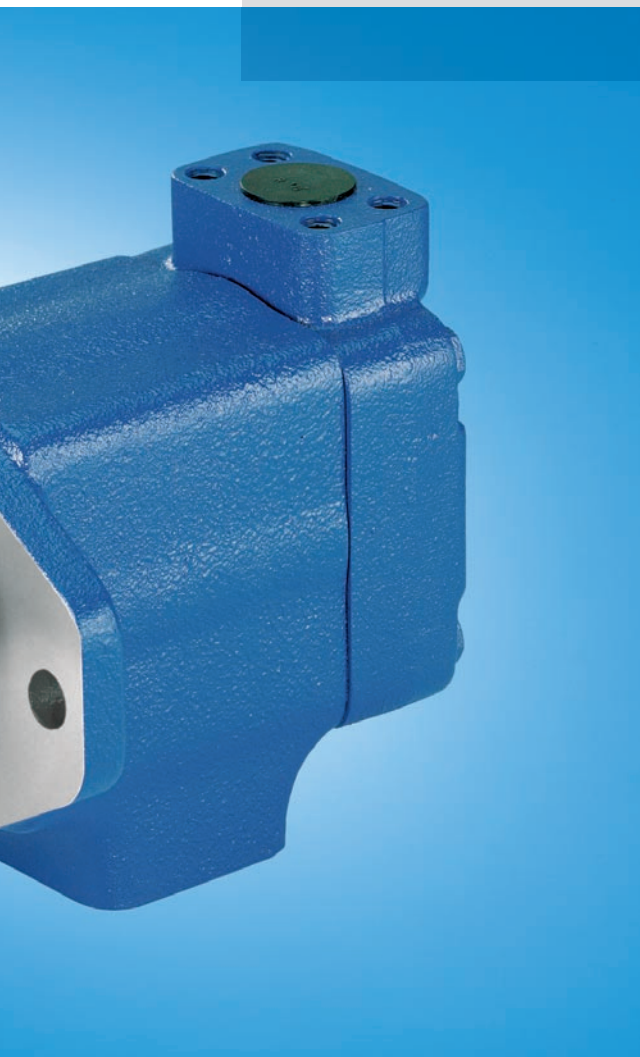
The PVQ variant is the ideal choice in mobile applications. This model with axial compensation is specifically designed to withstand pressure peaks and temperature shocks.

The availability of installations with the Rexroth fixed displacement vane pump is especially high thanks to easy exchangeability. Displacer kits are naturally available on a world-wide basis for this purpose.



Performance profile of fixed displacement vane pumps:

- Displacements from 18 to 193 cm³
- Nominal pressures up to 210 bar
- Max. speeds up to 1,800 rpm
- Max. power up to 95 kW
- Replacement displacer kits easy to install

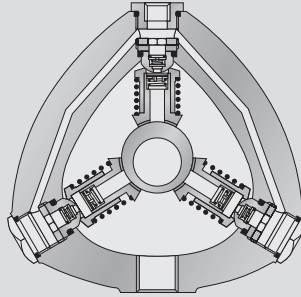


Application areas

- Circulating, filter/cooling circuits
- Plastics machinery
- General machine construction

High Pressure and Power-Density: Radial Piston Pumps from Rexroth

Clamping functions industrial applications are one of the main application areas of the high pressure fixed displacement pump.



High power-density and a long service life characterize radial piston pumps from Rexroth.

Two variants with a nominal pressure of up to 700 bar are designed specifically with their range of sizes to meet the requirements of clamping and other high pressure applications: Type R4 Standard with a displacement ranging from 1.6 to 20 cm³ and the compact Type R4 mini with 0.4 up to 2.0 cm³. For the optimum application the R4 fixed displacement pump is available in 14 nominal sizes, the R4 mini offering 5 sizes.

Whereas the basic types with 3 pistons are used predominantly for clamping functions or shaping tasks, the 5 and 10-piston versions of the R4 Standard are used in a variety of applications in special machine construction. The individual piston flows can be drawn off separately, rendering these pumps extremely flexible in many different tasks.



Performance profile of radial piston pumps:

- Displacements from 0.4 to 20 cm³
- Nominal pressures up to 700 bar
- Max. speeds up to 3,400 rpm
- Max. power up to 25.3 kW

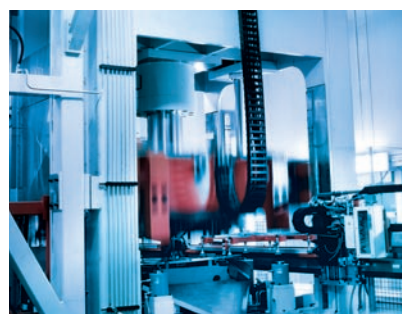
Application areas

- Clamping functions in machine tools
- Presses



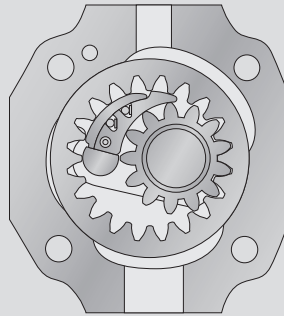
R4 high-pressure radial piston pumps can be easily combined with gear, vane and axial piston pumps from Rexroth to form multiple pumps.

The R4 mini is integrated into the high-pressure clamping modules of the UPE family as a pick & place solution. These ready-to-install hydraulic power units with modular control form the ideal basis for realizing clamping and control functions in a confined space.



Multi-talented with High Efficiency: Internal Gear Pumps from Rexroth

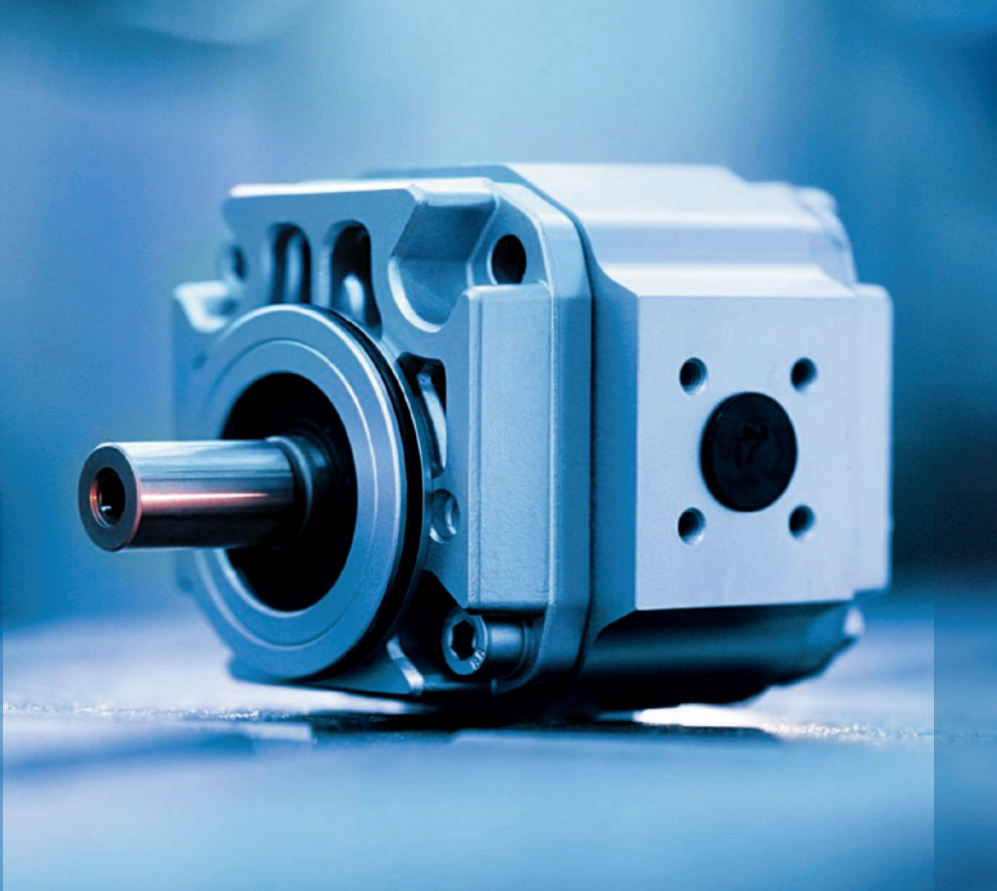
Universal, flexible and application-friendly is how we can describe the range of internal gear pumps from Rexroth. There is virtually no other pump concept that is put to use in so many different applications.



Internal gear pumps from Rexroth have proved themselves in metal production (e.g. steel works and rolling mills), metal processing (e.g. presses), the food and packaging industry and plastics machinery, as well as in logistics and recycling, stage technology and, in particular, in the wide field of mobile hydraulics.

The numerous applications in virtually every branch of industry is based on the technical characteristics of this pump principle: the internal gear pump offers delivery with an extremely low flow pulsation, as well as low intrinsic noise and structure-borne sound emission. This ensures that no undesired high noise level is emitted from the system as a whole.





Performance profile of internal gear pumps:

- Displacement from 1.7 to 250 cm³
- Nominal pressures up to 315 bar
- Max. speeds up to 3,600 rpm
- Max. power up to 95 kW
- High degree of efficiency due to complete sealing gap compensation

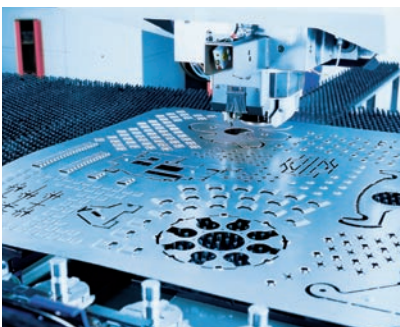
Putting into practice the principle of hydraulic compensation is a prerequisite for a high level of efficiency when converting mechanical energy into hydraulic power. This leads not only to measurable energy savings and low operating costs; it also saves the additional expense of heat elimination.

Internal gear pumps are available in connection dimensions complying with all major international standards. Power unit manufacturers can use their accessory parts in accordance with the current local standards; there will be an internal gear pump available in the right dimensions.

The PGF product group can be application and/or customer-specific. Favorably priced models geared towards functionality for direct flange-free mounting on gears, pump frames or electric motors, special models with frame designs to suit specific installation conditions and all types of valve integration – these are some listed examples. Starting from the concept, the competent advice, right through to the professional completion of the job – every deviation from the norm is a success.

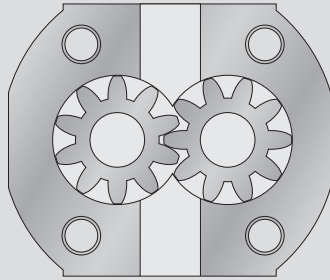
Application areas

- Bending presses
- Shears
- Nibbling machines
- Machine tools
- Plastics machinery
- Packaging machinery
- Material handling
- Food industry
- Stage technology
- General machine construction



The Cost-effective Classic: External Gear Pumps from Rexroth

Quality, power, flexibility, economy – for decades now Rexroth has been setting standards with its extensive program of external gear pumps. Single or combination pumps, as well as low-noise versions offer many different potential applications.



A price beyond competition is the technical principle behind this pump when it comes to generation of pressure. Sophisticated in design and use of materials, proven many times over after years in operation, technically up-to-date thanks to continual development – external gear pumps are justifiably the most commonly used pumps in mobile hydraulic applications: there is hardly a pump concept that can meet the many diverse requirements of this branch so easily.

Pressures of up to 280 bar and speeds of above 6,000 rpm are attainable – depending on the model. The range of permissible media comprises all the commonly used fluids.

Due to the modular design of Rexroth external gear pumps and motors the number of customer-specific versions is virtually unlimited. As hydrostatic units they can be combined in various ways to form multiple pumps, using valve technology and with all the necessary flanges and housing connections.





Performance profile of external gear pumps:

- Displacements from 1 to 56 cm³
- Nominal pressures up to 280 bar
- Pressure-dependent gap sealing
- High precision of production
- Optimum level of efficiency
- High load capacity

Application areas

- General machine construction
- Material handling
- Agricultural engineering
- Construction machinery





Meeting Requirements at Every Stage: Combination Pumps from Rexroth

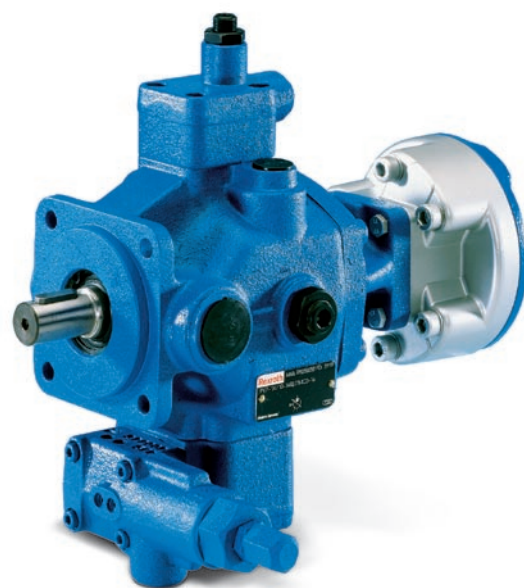
Rexroth pumps can be combined using the modular principle, permitting the application of the optimum pump principle at every stage of a combination pump.

Combining pumps of different design principles can optimize economic efficiency of a system or installation to the exact requirements: e. g. axial piston pumps for high pressing power, internal gear pumps for speed in the medium pressure range and vane pumps for filter functions – a threefold combination with a suitable pump at every stage. All components optimally matched – and from a single source.

The possibilities offered by these combination pumps inspire our customers time and again to try other variants in their applications. Not infrequently have innovative ideas first been put into practice as economic solutions using Rexroth combination pumps.

Combinations	Rear pump					
	Axial piston pumps	Vane pumps, variable displacement	Vane pumps, fixed displacement	Radial piston pumps	Internal gear pumps	External gear pumps
Front pump						
Axial piston pumps	●		●	●	●	●
Vane pumps, variable displacement	●	●	●	●	●	●
Vane pumps, fixed displacement	●		●		●	●
Radial piston pumps						●
Internal gear pumps	●		●	●	●	●
External gear pumps						●

● = Possible



Intelligent Hydraulics in New Dimensions

Wherever forces need to be utilized economically, the advantages of industrial hydraulics are obvious – whether it is required to lift and lower loads smoothly, perform linear or rotary movements, achieve constant acceleration, maintain given speeds, approach positions exactly, transmit powers or interlink sequences.

Rexroth is the technology and market leader in industrial hydraulics with a comprehensive product range and distinct application expertise.

At Rexroth you can select from the worlds' largest standard product range in the field of hydraulics, application and customer-specific

system solutions of high quality. With advanced micro-electronics Rexroth has made hydraulics even more powerful.

For you, Rexroth is the ideal partner for developing highly efficient machines and production facilities – from the first point of contact to commissioning and throughout the entire life cycle. Teams that operate worldwide carry out the complete engineering of your systems and, if requested, up to the hand-over of turnkey systems and beyond – service included.

Thanks to the use of hydraulic drive and control technology from Rexroth you will be more competitive than ever.

The Drive & Control Company

Rexroth offers a unique and comprehensive range of products and services across technologies in its six fields of technology and service areas – strong in high-quality individual technologies, combined with highest application-specific competence in system packages with integrated complete solutions.

Industrial
Hydraulics

Electric
Drives and
Controls

Linear
Motion and
Assembly
Technologies

Pneumatics

Service
Automation

Mobile
Hydraulics



Rely on service across technologies

Rexroth integrates all services for the entire product spectrum in the field of factory and industrial automation into a single organization: from immediate support, spare parts service, field and repair service, retrofit/modernization through to training.

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