

Hydraulic Gear Pumps

AZPF



The internal sealing of the pressure chambers is achieved by operating pressure-dependent forces. This ensures optimum efficiency. On the outer face, the movable bearing bushes are pressurized with operating pressure and pressed as seals against the gear wheels. Special seals form the boundary of the pressurized zone. The radial sealing at the tips of the gear teeth against the case is provided by smallest possible gaps that are formed pressure-dependent between the gear wheels and the housing.

The external gear pump consists essentially of a pair of gear wheels supported in bearing bushes and the housing with a front and a rear cover. The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal ring. The bearing forces are absorbed by slide bearings. These are designed for high pressures and have excellent dry-running qualities, especially at low rotational speeds. The gear wheels have 12 teeth. This keeps both flow pulsation and noise emission to a minimum.

Platform B, F, N and G. Within each platform different displacements can be realized by different gear widths. The pumps are available in the versions Standard, High-Performance, SILENCE und SILENCE PLUS. Further configuration variants are given by different flanges, shafts, valve arrangements and multiple pump combinations.

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Rexroth external gear pumps are available in four frame sizes: Platforms B, F, N and G, with different gear widths within a platform for different displacements. The pumps come in Standard, High-Performance, SILENCE and SILENCE PLUS versions. Additional versions with different flanges, shafts, valve attachments and multiple pump combinations are also available.

Design:

The external gear pump consists essentially of a pair of gear wheels supported in bearing bushings and the housing with a front cover and an end cover. The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal. The bearing forces are absorbed by slide bearings. These bearings were designed for high pressures and have excellent emergency running properties, especially at low rotational speeds. The gear wheels have 12 teeth.

This keeps both flow pulsation and noise emission to a minimum. The internal sealing of the pressure chambers is achieved by delivery pressure-dependent forces. This ensures optimum efficiency. On the rear side, the movable bearing bushings are pressurized with working pressure and pressed as seals against the gear wheels. The pressurized compression areas are limited by special seals. The seal in the area between the gear teeth and the housing is ensured by the smallest of gaps that adjust depending on the pressure between the gear teeth and housing.



AZPJ

These are realized by means of pressure-dependent gap sealing and high-precision manufacturing technology. With extremely low-noise SILENCE PLUS pumps, the intrinsic noise is reduced by 15 dB (A) on average as compared with standard external gear pumps and the flow pulsation is also decreased by 75%.

Pumping principle:

Continuous tooth contact reduces operating noise: A non-involute rounded tooth profile, combined with helical gearing, forms the heart of the SILENCE PLUS. Thanks to permanent tooth contact, the hydraulic fluid is transported almost continuously and noiselessly. The possibility of noise developing from trapped oil between the tooth flanks is prevented in the first place. **A hydrostatic bearing ensures long service life:** The high performance and long service life of the SILENCE PLUS is due to a Rexroth patented solution: Hydrostatic grooves provide wear-free compensation for the internal axial forces generated in the helical gearing – even at pressures up to 280 bar.

Construction:

The external gear pump consists essentially of a pair of gear wheels supported in bearing bushes and the housing with a front and a rear cover. The drive shaft protrudes from the front cover where it is sealed by the shaft seal ring. The bearing forces are absorbed by slide bearings. These are designed for high pressures and have excellent dry-running qualities, especially at low rotational speeds. The gear wheels have 7 teeth. This keeps both flow pulsation and noise emission to a mini-mum.

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The radial sea-ling at the tips of the gear teeth against the case is provided by smallest possible gaps that are formed pressure-dependent between the gear wheels and the housing.

AZPN



The external gear pump consists essentially of a pair of gears supported in bearing bushings or bearing, dependent on the series, and the case with a front and rear cover. The drive shaft protrudes from the front cover where it is sealed by the shaft seal ring. The bearing forces are absorbed by special bearing bushings with sufficient elasticity to produce surface contact instead of line contact. They also ensure excellent resistance to galling – especially at low speed. The gears have 12 teeth. This keeps both flow pulsation and noise emission to a minimum. The internal sealing is achieved by forces which are proportional to delivery pressure. This ensures optimum efficiency. The bearings provide the seal at the ends of the gaps between the teeth which carry the pressurized oil. The sealing zone between the gear teeth and the bearings is controlled by the admission of operating pressure to the rear of the bearing bushings.



AZPS

This efficiency is achieved by means of precision production engineering and pressure-sensitive gap sealing. Moreover, in the low-noise SILENCE pumps, the dual-flank principle helps to reduce flow pulsation by up to 75 %.

The geometry of the displacement gearing, matched in form by the rotation of the drive shaft, results in the parabolic flow characteristic shown here on the left. In a standard pump, this characteristic is repeated each time a gear tooth meshes. With their dual-flank system, the flow pulsation of SILENCE pumps is reduced by 75 % – with correspondingly lower excitation of downstream system components – at double the fundamental frequency. During this process, the gear pair exhibits an extremely reduced rear flank backlash, so that hydraulic sealing is provided not just by the front flank of the driven gear, but also by the rear flanks. In this way, the front and rear flanks alternately contribute to flow displacement. And by adapting the shape of the metering notches, the expansion of the hydraulic line of action is half that of the standard pump. The external gear unit consists essentially of a pair of gears supported in bearing bushings and the case with a front and a rear cover. The drive shaft protrudes from the front cover where it is sealed by the shaft seal ring. The bearing forces are absorbed by special bearing bushings with sufficient elasticity to produce surface contact instead of line contact. They also ensure excellent resistance to galling – especially at low speed. The gears have 12 teeth. This keeps both flow pulsation and noise emission to a minimum.

The internal sealing is achieved by forces which are proportional to delivery pressure. This ensures optimum efficiency. The bearings provide the seal at the ends of the gaps between the teeth which carry the pressurized oil. The sealing zone between the gear teeth and the bearings is controlled by the admission of operating pressure to the rear of the bearing bushings. Special seals form the boundary of the zone. The radial clearance at the tips of the gear teeth is sealed by internal forces pushing them against the case.

AZPT



Moreover, in the low-noise SILENCE pumps, the dual-flank principle helps to reduce flow pulsation by up to 75 %. The geometry of the displacement gearing, matched in form by the rotation of the drive shaft, results in the parabolic flow characteristic shown here on the left. In a standard pump, this characteristic is repeated each time a gear tooth meshes. With their dual-flank system, the flow pulsation of SILENCE pumps is reduced by 75 % – with correspondingly lower excitation of downstream system components – at double the fundamental frequency.

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External Gear Pump AZPB



This efficiency is achieved through pressure-based gap sealing and high-precision manufacturing technology. Rexroth external gear pumps are available in four platforms: B, F, N and G, with different gear widths within a platform for different displacements. The pumps come in Standard, High-Performance, SILENCE and SILENCE PLUS versions. Different flanges, shafts, valve arrangements and multiple pump combinations produce additional variants for each version.

The external gear pump consists essentially of a pair of gear wheels supported in bearing bushes and the housing with a front and a rear cover. The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal. The bearing forces are absorbed by slide bearings. These were designed for high pressures and have excellent emergency running properties, especially at low rotational speeds. The gear wheels have 12 teeth. This keeps both flow pulsation and noise emission to a minimum. The internal sealing of the pressure chambers is achieved by delivery pressure-dependent forces. This ensures optimum efficiency. On the rear side, the movable bearing bushes are pressurized with working pressure and pressed as seals against the gear wheels. The pressurized compression springs are limited by special seals. The seal on the area between the gear teeth and the housing is ensured by the smallest of gaps that adjust depending on the pressure between the gear teeth and housing.

AZPU



Moreover, in the low-noise SILENCE pumps, the dual-flank principle helps to reduce flow pulsation by up to 75 %. The geometry of the displacement gearing, matched in form by the rotation of the drive shaft, results in the parabolic flow characteristic shown here on the left. In a standard pump, this characteristic is repeated each time a gear tooth meshes. With their dual-flank system, the flow pulsation of SILENCE pumps is reduced by 75 % – with correspondingly lower excitation of downstream system components – at double the fundamental frequency. During this process, the gear pair exhibits an extremely reduced rear flank backlash, so that hydraulic sealing is provided not just by the front flank of the driven gear, but also by the rear flanks. In this way, the front and rear flanks alternately contribute to flow displacement. And by adapting the shape of the metering notches, the expansion of the hydraulic line of action is half that of the standard pump. The external gear pump consists essentially of a pair of gears supported in bearing bushings or bearing, dependent on the series, and the case with a front and rear cover. The drive shaft protrudes from the front cover where it is sealed by the shaft seal ring. The bearing forces are absorbed by special slide bearings with sufficient elasticity to produce surface contact instead of line contact. They also ensure excellent resistance to galling – especially at low speed. The gears have 12 teeth. This keeps both flow pulsation and noise emission to a minimum.