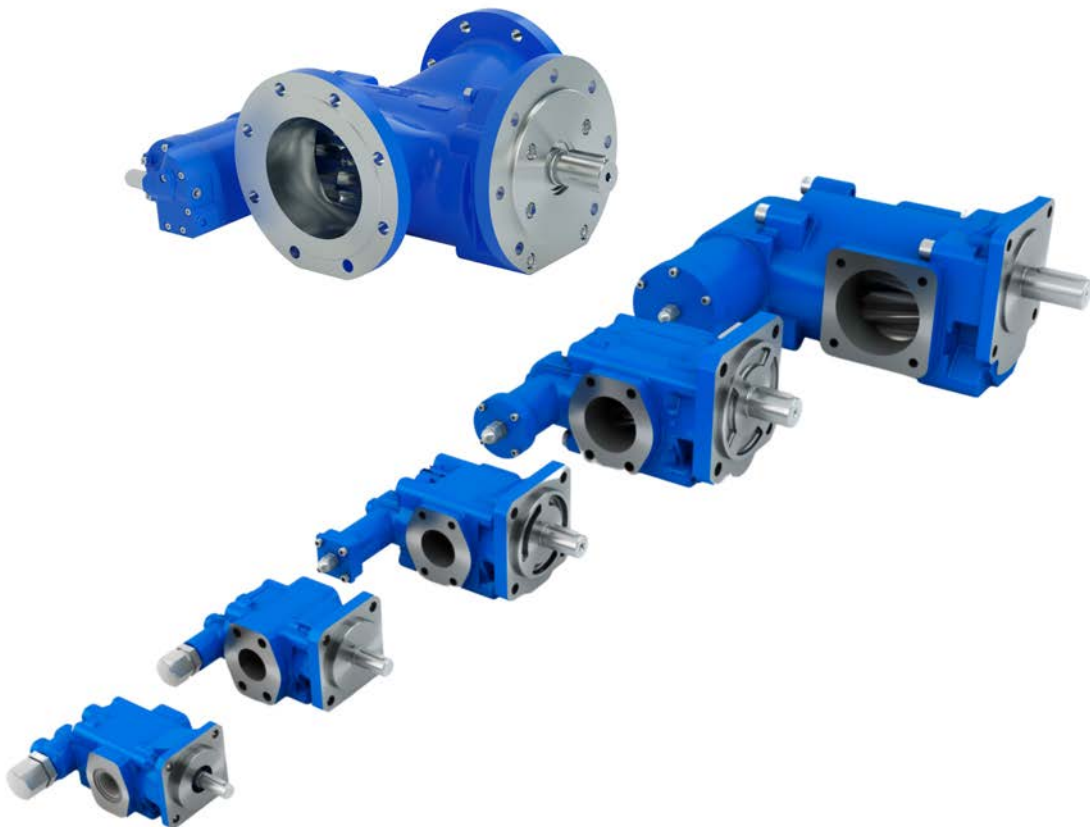


Data sheet

Gear pumps and pump units R25/2.5 to R105/2600



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An example configuration is shown on the title page. The delivered product may be different than the one shown.

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1 Areas of application

RICKMEIER gear pumps are used primarily in oil hydraulics, lubrication technology and for the transport of various oils or lubricating substances.

Typical areas of application		
General machine construction	Automobile manufacturing	Apparatus construction
Construction machines	Mining technology	
Chemical plant construction		
Diesel motors	Printing machines	
Electric motor construction		
Vehicle technology		
Gas turbines	Gearing	Foundry technology
Woodworking technology		
Industrial gear manufacturing		
Refrigeration technology	Compressor construction	Power plant construction
Engine and motor construction		
Paper machines	Pump construction	
Ship construction		
Textile machines		
Compressor construction		
Water turbines	Rolling mill industry	Machine tools
Wind power generation		
Cement factory construction		

Typical flow media	
Waste oil	ATF oil
Drilling oil	
Diesel fuels	
Emulsions	
Gear oil	
Heating oils	Hydraulic oil
Motor oil	
Polyglycol oil	Polyalphaolefin oil
Cutting oil	Heavy oil
Heat transfer oil	
Drawing oil	Other flow media on request

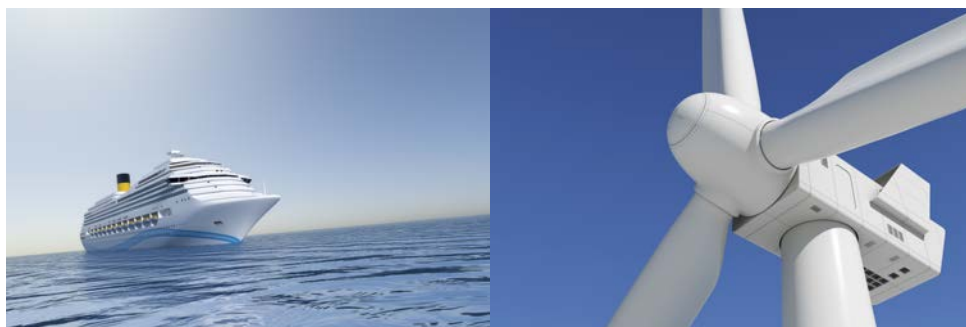


Fig. 1: Application examples

2 Description

2.1 Design

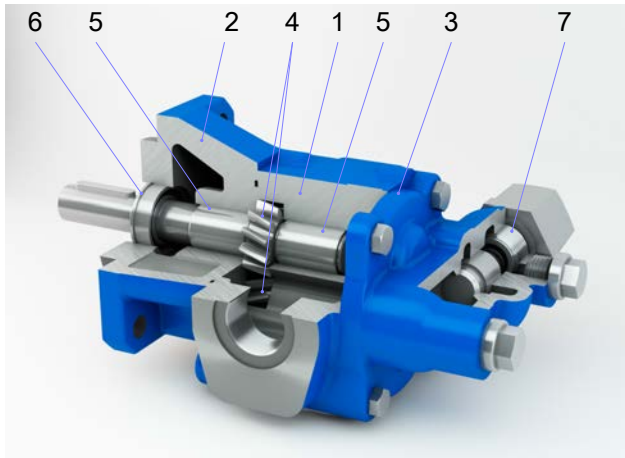


Fig. 2: Gear pump - standard design

1 Gear casing	2 Driving cover
3 End cover	4 Hardened gear shafts
5 Multicomponent friction bearing	6 Radial shaft seal
7 Option: pressure relief valve	

2.2 Product description

RICKMEIER gear pumps are characterised by a simple and robust structure. Short, straight flow channels ensure good priming characteristics and quiet running. Together with a special design of the toothing and the gear casing, an extremely low noise level is ensured during operation.

The casings of the standard version are made of grey cast iron, the gear parts of hardened steel. Generously dimensioned, specially coated multicomponent friction bearings have a long service life and very good dry-running properties.

The shaft seal is designed as standard with a radial shaft seal. In addition, numerous sealing variants are possible (such as a mechanical seal).

3 Functioning principle

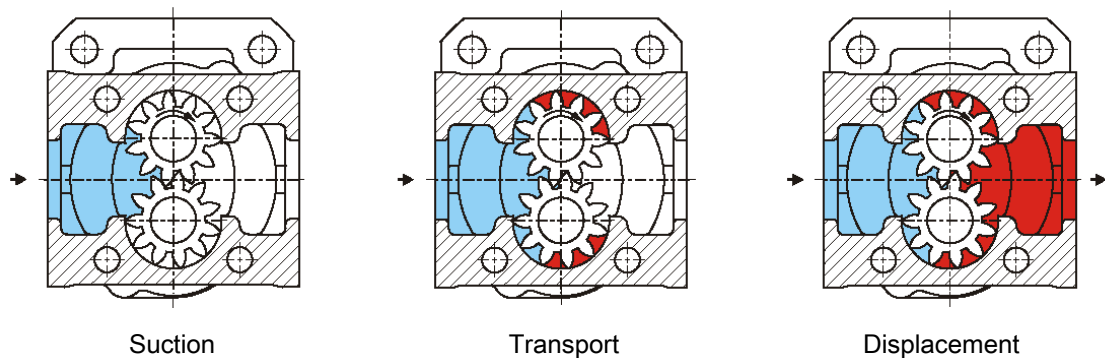


Fig. 3: Gear pump delivery principle

Gear pumps are rotary displacement pumps. When the gear shafts turn, the medium enclosed in the space between the teeth is transported from the suction to the pressure side. Then the medium is displaced toward the pressure side by the intermeshing teeth. The transport of the flow medium results in a pressure drop on the suction side of the gear pump. The flow medium compensates for this pressure drop by flowing in, thereby maintaining the feed process.

This process is the same for both gaseous and liquid media. As a result, the gear pump is capable of priming the suction pipe itself until it is completely filled with liquid flow medium.



Note

The venting of the suction line is not possible under the following conditions:

- The suction line is leaking which means that a vacuum cannot develop.
- The pressure in the suction-side pipeline system and/or tank is too low to allow a subsequent flow of the pumped medium. This is possible if a vacuum is present or if the liquid level is too far below the gear pump.
- On the pressure side of the gear pump, a non-return valve is installed (provide a bleeder valve).

Pressure relief valve

The pressure relief valve integrated in the end cover of the gear pump as an option is designed as a spring-loaded valve. It may only be used as an occasionally actuated valve for pressure relief.



Note

If a larger partial volume of the flow medium must be drained off over an extended period, a separate valve with a return pipe to the suction tank in the pipe (e.g. Rickmeier valves of type RSn, DBV40 or DB9) must be provided.



Fig. 4: Pressure relief valve for pipe installation (example: DB9)

4 Direction of rotation and delivery

4.1 Determining the direction of rotation

Unless otherwise stated, the gear pump rotation is "clockwise" when looking at the face of the driving gear shaft (see the following figure).

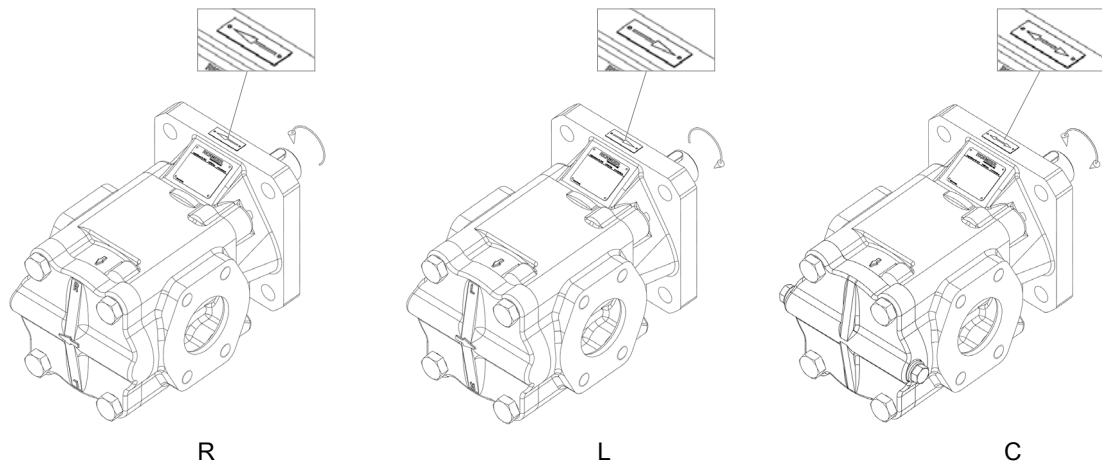


Fig. 5: Direction of rotation and delivery

(Direction of rotation R: clockwise; direction of rotation L: anti-clockwise; direction of rotation C: clockwise and anti-clockwise)



Note

When the optional C version is equipped, the gear pumps can be operated in both clockwise and anti-clockwise rotation (with changing direction of delivery). This version is only possible in the case of gear pumps without a pressure relief valve.

4.2 Changing the direction of rotation and conveyance

Depending on the design and size, it is possible to convert the gear pumps locally to the other direction of rotation (with a changed direction of delivery). Please contact our [customer service](#) (giving the data on the name plate).

5 Guidelines and acceptance

RICKMEIER is certified according to EN ISO 9001 and EN ISO 14001.

In addition, RICKMEIER implements the specifications in accordance with the REACH Regulation 1907/2006/EC.

RICKMEIER gear pumps can be supplied in accordance with the ATEX Directive 2014/34/EU. Since the approval depends on the application and design of the gear pump, please contact Sales.

Upon request, all products can be supplied with factory certificate EN 10204-2.2 or acceptance test certificate EN 10204-3.1.

The purchase of gear pumps through classification societies is also possible at our company (e.g., through Lloyd's Register, Bureau Veritas, DNV GL and many others).

6 Standard design and variants

The variable modular system of RICKMEIER gear pumps makes it possible to implement a wide variety of material, casing, sealing and functional variants.

In addition to a standard version, the gear pumps can be adapted to the respective application due to the diverse and variable possibilities.

6.1 Materials

	Standard	Alternative
Casing	– EN-GJL-250 (GG-25)	– EN-GJS-400-15 (GGG-40)
Gear wheel shafts	– Case-hardened steel (16MnCrS5)	
Radial shaft seals	– NBR – FKM	– HNBR – PTFE – EPDM – Additional upon request
Mechanical seals	– Hard carbon/SiC	– Various material combinations upon request
O-rings	– NBR – FKM	– HNBR – PTFE – EPDM – Additional upon request
Friction bearing	– Composite bearing type P10/DU	– Friction bearings free of ferrous and non-ferrous metals – Additional upon request
Corrosion protection	– 2-component paint	– Various coating materials and structures available upon request, for example: C4






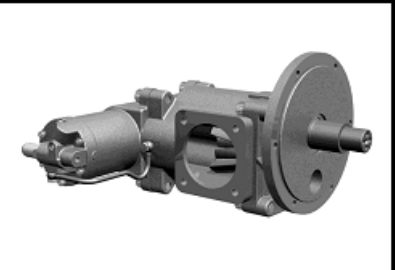
Tab. 1: Materials

6.2 Mounting flange

In the standard version, the gear pumps have a square mounting flange.

On request, the standard mounting flanges can be provided with a bolt-on angled pump foot ("FU" design).

Alternatively, it is possible to design the mounting flange as a custom solution in any shape, such as round or oval.

Standard	<i>Alternative (customer-specific solutions in any form)</i>
<p data-bbox="268 495 357 528">Square</p>  <p data-bbox="268 864 437 898">Example: R25</p>	<p data-bbox="858 495 916 528">Oval</p>  <p data-bbox="858 864 1027 898">Example: R25</p>
<p data-bbox="268 904 762 965">Additional bolt-on angled pump foot ("FU" design)</p>  <p data-bbox="268 1301 437 1335">Example: R35</p>	<p data-bbox="858 904 938 938">Round</p>  <p data-bbox="858 1301 1027 1335">Example: R35</p>
	 <p data-bbox="858 1626 1027 1659">Example: R65</p>
	 <p data-bbox="858 1946 1027 1980">Example: R95</p>

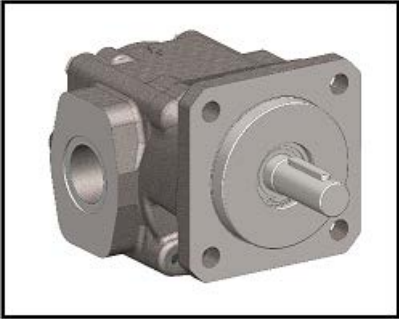



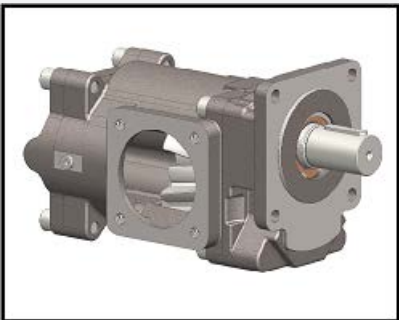

Tab. 2: Mounting flange design variants

6.3 Connections

Depending on the size, the pipe connections are designed as follows:

R25	Threaded hole with inch thread or metric SAE flange pattern according to ISO 6162
R35 through R65	Metric SAE flange pattern according to ISO 6162
R95	Flange pattern according to Rickmeier standard
R105	Flange pattern according to EN 1092-1

Depending on customer requirements, alternatively special gear casings with any connection diagram can be supplied, such as axial pipe connections, plug-in pipe connections or flange patterns according to SOLAS (in combination with standard pump components).

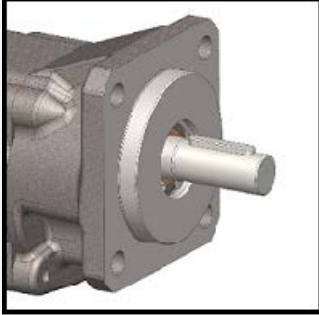



Standard	Alternative (customer-specific solutions in any form) or flange patterns according to SOLAS
<p>Threaded hole with inch thread</p>  <p>Example: R25</p>	<p>Axial</p>  <p>Example: R25</p>
<p>Metric SAE flange pattern according to ISO 6162</p>  <p>Example: R25</p>	<p>Flange pattern offset to middle of axis</p>  <p>Example: R65</p>
<p>Flange pattern according to Rickmeier standard (Size R95)</p>  <p>Example: R95</p>	<p>Double pump (duplex pump) in sizes R25 to R65</p>  <p>Example: R35</p>
<p>Flange pattern according to EN 1092-1 (Size R105 – upon request)</p>	

Tab. 3: Pipe connection design variants

6.4 Shaft end

In the standard design, the gear pumps have a cylindrical shaft end and fitted key.

The shaft version with tapered seat 1:10 is available in many sizes (e.g., for the positive connection of a pinion). In addition, shaft ends of different designs are possible, for example, cylindrical without fitted key or cylindrical with internal thread, with splined shaft DIN 5480 or with tappet (Oldham coupling).

Standard	Alternative
Cylindrical, with fitted key	Conical seat 1:10
	
Example: R25	Example: R25
	Toothed shaft profile according to DIN 5480
	
	Example: R35
	Tappet (Oldham coupling)
	
	Example: R35

Tab. 4: Shaft end design variants

6.5 Shaft seal

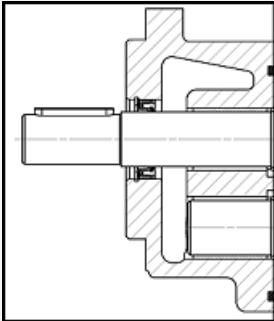
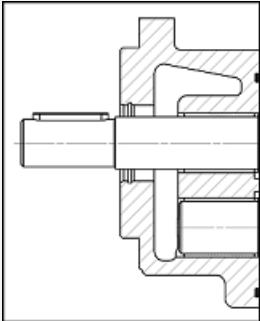
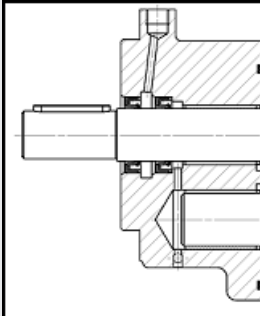
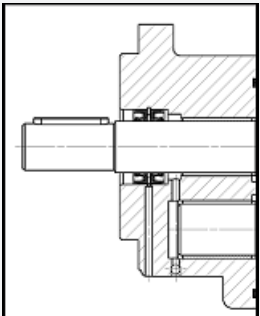
6.5.1 Radial shaft seal (RWDR)

For many use cases, the standard built-in radial shaft seal is the best economical and technical solution. It is a wear-optimized design that ensures a long service life.

In addition, the following seal variants are available for special requirements in various material combinations (see Table 5):

- *Without radial shaft seal (direct attachment of the gear pump to the gearing or motor casing)*
- *Single radial shaft seal with increased inlet pressure at the pump inlet (up to 6 bar)*
- *Double radial shaft seal with connection hole for liquid reservoir*
- *Double radial shaft seal for vacuum operation with connection hole for liquid reservoir*
- *Double radial shaft seal for media separation (with leakage control hole)*

A screw-in oil reservoir for liquid feed can be supplied on request.

Standard	Alternative
<p>Simple radial shaft seal</p> 	<p>Without radial shaft seal</p> 
	<p>Double radial shaft seal with connection hole for liquid reservoir</p> 
	<p>Double radial shaft seal for media separation (with leakage control hole)</p> 

Tab. 5: Sealing with radial shaft seal design variant

6.5.2 Mechanical seal (GLRD)

All gear pumps can be equipped as a special design with mechanical seals. The suitable design and material combination will be selected according to application and flow medium.

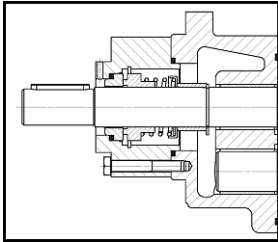


Fig. 6: Mechanical seal

6.5.3 Magnetic coupling (MK)

If absolute freedom from leakage is required, the gear pumps and pump units can be hermetically sealed by equipping them with a magnetic coupling. This variant is ideal, for example, when pumping critical media, for vacuum operation or in systems with a high inlet pressure.

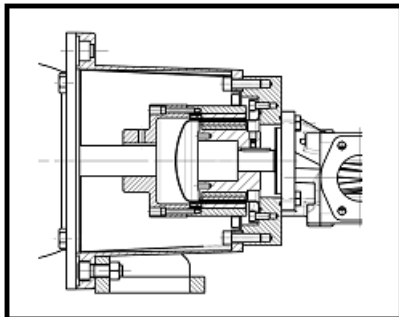
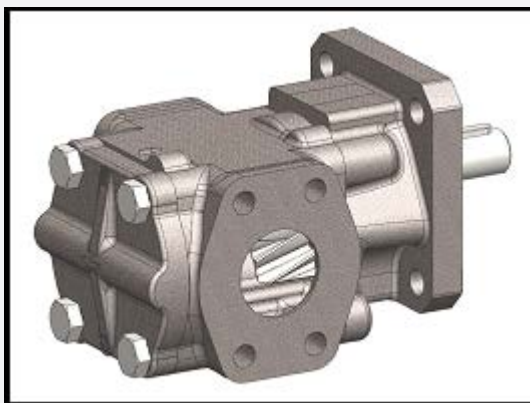


Fig. 7: Magnetic coupling

6.6 Pressure relief valve (DB)

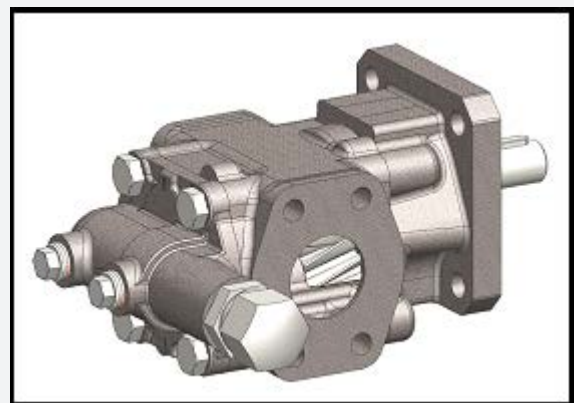
All gear pumps of the R5 series can alternatively be supplied with or without pressure relief valve (DB).

Without DB



Example: R35

With DB



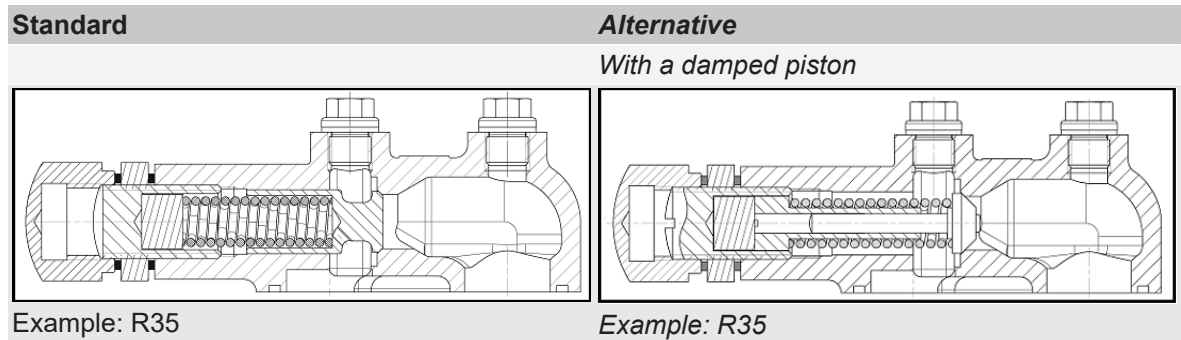
Example: R35

Tab. 6: Design variants for gear pump with or without pressure relief valve

The pressure relief valve integrated into the end cover of the gear pump is a spring-loaded valve. Since the discarded oil circulates internally, it may only be used as an occasionally actuated valve for pressure relief.

We can offer the following variants for the design of the pressure relief valve:

- With a damped piston
- In heat-resistant design for operating temperatures > 120°C
- As a pressure control valve with external actuation



Tab. 7: Pressure relief valve (DB) design variants

6.7 Noise optimisation

In applications with flow media with increased air content, a significant noise pollution by the gear pump is often determined. Pump casings of all sizes can be optionally equipped with an internal additional machining, which in this case causes a significant reduction of the sound pressure level.

Depending on operating data and air content, sound pressure level reductions up to 15 dB(A) are possible. The delivery performance and efficiency of the gear pump are not adversely affected by this, but no noise reduction is to be expected due to this modification in the case of flow medium that do not contain air.

7 Designation and configuration

7.1 Type key

The designation of the RICKMEIER gear pumps is made according to the following key:

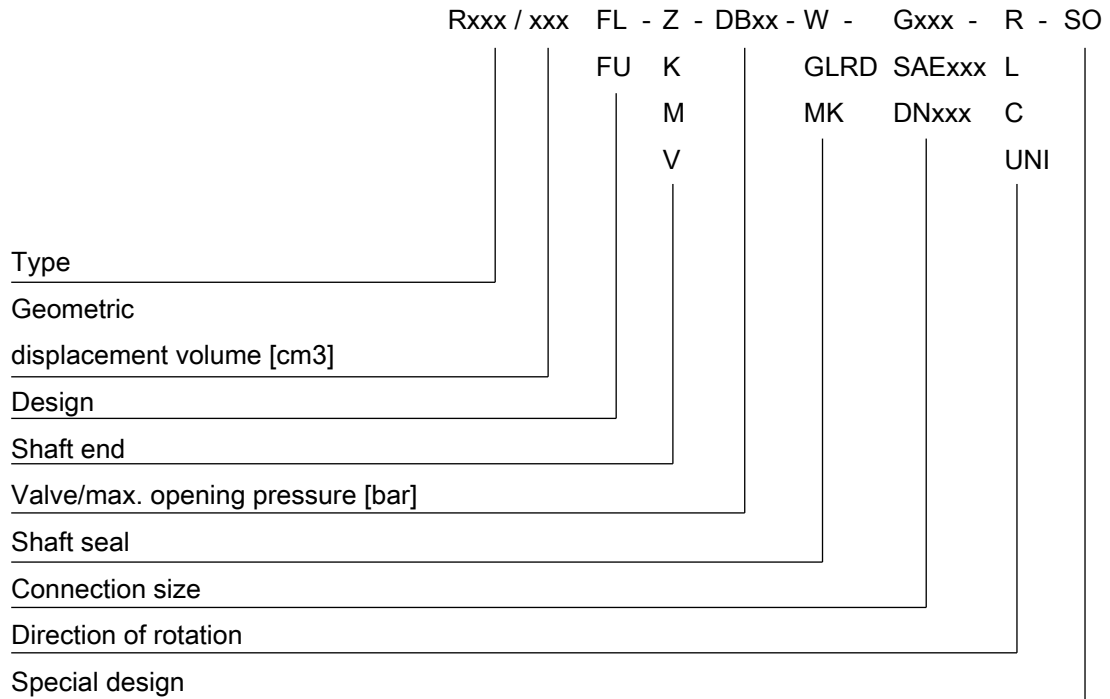


Fig. 8: Type key

7.2 Pump selection

The following selection tables allow you to configure the desired pump design by ticking options. The completed sheets can be sent to us together with your request.

For many applications, the **bolded** standard versions are sufficient. For further information on the *italicised* options and special designs, please contact us.

The gear pumps can naturally also be designed with our support. In that case, please contact us; please use the table in the following chapter "Pump design."

7.2.1 Size (type)/geometric displacement volume V_g

<input type="checkbox"/> R25	<input type="checkbox"/> 2.5	<input type="checkbox"/> 3.15	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6.3
	<input type="checkbox"/> 8	<input type="checkbox"/> 10	<input type="checkbox"/> 12.5	<input type="checkbox"/> 16	<input type="checkbox"/> 20
<input type="checkbox"/> R35	<input type="checkbox"/> 25	<input type="checkbox"/> 31.5	<input type="checkbox"/> 40		
	<input type="checkbox"/> 50	<input type="checkbox"/> 63	<input type="checkbox"/> 80		
<input type="checkbox"/> R45	<input type="checkbox"/> 80	<input type="checkbox"/> 100	<input type="checkbox"/> 112	<input type="checkbox"/> 125	
	<input type="checkbox"/> 160	<input type="checkbox"/> 180	<input type="checkbox"/> 200		
<input type="checkbox"/> R65	<input type="checkbox"/> 200	<input type="checkbox"/> 250	<input type="checkbox"/> 315		
	<input type="checkbox"/> 400	<input type="checkbox"/> 500	<input type="checkbox"/> 630		
<input type="checkbox"/> R95	<input type="checkbox"/> 710	<input type="checkbox"/> 800	<input type="checkbox"/> 900	<input type="checkbox"/> 1000	
	<input type="checkbox"/> 1120	<input type="checkbox"/> 1250	<input type="checkbox"/> 1400	<input type="checkbox"/> 1600	<input type="checkbox"/> 1800
<input type="checkbox"/> R105	<input type="checkbox"/> 1800	<input type="checkbox"/> 2000	<input type="checkbox"/> 2200	<input type="checkbox"/> 2400	<input type="checkbox"/> 2600

→ Please select a displacement volume V_g [cm³] and the corresponding size!

7.2.2 Design

<input type="checkbox"/> FL	Square mounting flange
<input type="checkbox"/> FU	<i>With bolted-on foot</i>
<input type="checkbox"/> OTHER	<i>E.g., round, oval</i>

→ Please select a design! For designs other than "FL", please contact us.

7.2.3 Shaft end

<input type="checkbox"/> Z	Cylindrical shaft end with fitted key
<input type="checkbox"/> K	<i>Tapered shaft end</i>
<input type="checkbox"/> M	<i>Tappet</i>
<input type="checkbox"/> V	<i>Gearing</i>
<input type="checkbox"/> OTHER	<i>E.g., cylindrical shaft end with fitted key</i>

→ Please select a shaft end! If the shaft end differs from "Z", please contact us.

7.2.4 Pressure relief valve

<input type="checkbox"/> Without DB	Without pressure relief valve
<input type="checkbox"/> With DB	With pressure relief valve
	<input type="checkbox"/> <i>Optional: damped design</i>
	<input type="checkbox"/> <i>Optional: heat-resistant design (for media temperatures > 120°C)</i>
	<input type="checkbox"/> <i>Optional: pilot-operated version (possible with size R65/R95/R105)</i>

→ Please select whether the gear pump should be equipped with or without an integrated pressure relief valve (DB)! If "With DB" is selected, please select optional versions (if desired).

7.2.5 Pressure relief valve - pressure range/presetting

R25	<input type="checkbox"/> DB4 (1...4 bar)	<input type="checkbox"/> DB16 (4...16 bar)	<input type="checkbox"/> DB25 (16...25 bar)
R35	<input type="checkbox"/> DB6 (1...6 bar)	<input type="checkbox"/> DB16 (6...16 bar)	<input type="checkbox"/> DB25 (16...25 bar)
R45	<input type="checkbox"/> DB4 (1...4 bar)	<input type="checkbox"/> DB16 (4...16 bar)	<input type="checkbox"/> DB25 (16...25 bar)
R65	<input type="checkbox"/> DB4 (1...4 bar)	<input type="checkbox"/> DB16 (4...16 bar)	<input type="checkbox"/> DB25 (16...25 bar)
R95	<input type="checkbox"/> DB7 (1...7 bar)	<input type="checkbox"/> DB12 (7...12 bar)	
R105	<input type="checkbox"/> DB7 (1...7 bar)	<input type="checkbox"/> DB12 (7...12 bar)	
Presetting for opening pressure:		bar	

→ For the version "With DB" please select a pressure range for the preselected size!

→ Please enter the desired presetting for the opening pressure; otherwise the opening pressure is preset to the maximum pressure.

7.2.6 Shaft seal

<input type="checkbox"/> Without	Without
<input type="checkbox"/> W	<input type="checkbox"/> Simple radial shaft seal (RWDR), wear-optimised
	<input type="checkbox"/> <i>Variant: single radial shaft seal with increased inlet pressure at the pump inlet (up to 6 bar)</i>
	<input type="checkbox"/> <i>Variant: double radial shaft seal with connection hole for liquid reservoir</i>
	<input type="checkbox"/> <i>Variant: double radial shaft seal for vacuum operation with connection hole for liquid reservoir</i>
	<input type="checkbox"/> <i>Variant: double radial shaft seal for media separation (with leakage control hole)</i>
<input type="checkbox"/> GLRD	<input type="checkbox"/> Mechanical seal with inlet pressure at the pump inlet up to 10 bar
	<input type="checkbox"/> <i>Variant: mechanical seal for inlet pressure at pump inlet > 10 bar</i>
<input type="checkbox"/> MK	<input type="checkbox"/> Magnetic coupling with stainless steel containment shell, inlet pressure up to 16 bar
	<input type="checkbox"/> <i>Alternatively: other containment shell materials and higher inlet pressures available on request</i>

→ Please select a shaft seal! When selecting "W," "GLRD" or "MK," please choose desired version.

7.2.7 Connection/connection size

R25	2.5...10	<input type="checkbox"/> G 3/4	<input type="checkbox"/> SAE 3/4	Nominal diameter 20
	12.5...20	<input type="checkbox"/> G 1	<input type="checkbox"/> SAE 1	Nominal diameter 25
R35	25...40	SAE 1.1/2		Nominal diameter 40
	50...80	SAE 2		Nominal diameter 50
R45	80...112	SAE 2		Nominal diameter 50
	125...200	SAE 2.1/2		Nominal diameter 65
R65	200...315	SAE 3		Nominal diameter 80
	400...630	SAE 4		Nominal diameter 100
R95	710...1120	<input type="checkbox"/> F132 (Rickmeier standard)	Nominal diameter 132	
		<input type="checkbox"/> DIN EN 1092-1 (DN 160)	Nominal diameter 160	
	1250...1800	<input type="checkbox"/> F160 (Rickmeier standard)	Nominal diameter 160	
		<input type="checkbox"/> DIN EN 1092-1 (DN 160)	Nominal diameter 160	
R105	1800...2600	DIN EN 1092-1 (DN 200)		Nominal diameter 200

→ Please select a connection type for size R25 and R95!

→ If other connection types or sizes are desired, please contact us.

7.2.8 Direction of rotation (facing the shaft end)

<input type="checkbox"/> R	Clockwise
<input type="checkbox"/> L	Anti-clockwise
<input type="checkbox"/> C	<i>Clockwise/anti-clockwise rotation with changing direction of delivery</i>
<input type="checkbox"/> UNI	<i>Clockwise/anti-clockwise rotation with consistent direction of delivery (Size R35/R45/R65)</i>

→ Please select a direction of rotation version! With "UNI", the use of a reversing valve is required.

7.2.9 Materials

Casing	<input type="checkbox"/> EN-GJL-250 (GG-25)
	<input type="checkbox"/> <i>Alternative: EN-GJS-400-15 (GGG-40)</i>
Radial shaft seals	<input type="checkbox"/> NBR
	<input type="checkbox"/> FKM
	<input type="checkbox"/> <i>Alternative: HNBR, PTFE, EPDM, additional upon request</i>
Mechanical seal	<input type="checkbox"/> Hard carbon/SiC
	<input type="checkbox"/> <i>Alternative: various material combinations upon request</i>
O-rings	<input type="checkbox"/> NBR
	<input type="checkbox"/> FKM
	<input type="checkbox"/> <i>Alternative: HNBR, PTFE, EPDM, additional upon request</i>

Friction bearing	<input type="checkbox"/> Composite bearing type P10/DU
	<input type="checkbox"/> <i>Alternative: friction bearings free of ferrous and non-ferrous metals, additional upon request</i>
Coating	<input type="checkbox"/> 2-component paint
	<input type="checkbox"/> <i>Alternatively: other colours, coating materials and structures available on request</i>

→ Please select materials for housing, preselected shaft seal, O-rings, friction bearing and coating!
→ If other materials are desired, please contact us.

7.2.10 Additional options

<input type="checkbox"/> <i>Attachment bearing/attachment bearing unit</i>	<i>For an increased radial load on the shaft journal</i>
<input type="checkbox"/> <i>Double pump</i>	<i>Two pump stages (size R25/R35/R45)</i>
<input type="checkbox"/> <i>Noise optimisation</i>	<i>For flow media with increased air content</i>

→ Please select additional, desired optional versions! For further information and/or the coordination of design details, please contact us.

Further information on pump selection:

7.3 Pump design

If you require a technical design from us or if you are planning for operation outside the limits specified in the following chapter, please send us the following data:

Desired flow rate (min.):	l/min
Speed:	
– Constant	rpm
– min./max.	rpm
Inlet pressure (manometric)	
– Constant	bar
– min./max.	bar
Outlet pressure (manometric)	
– Constant	bar
– min./max.	bar
Environmental temperature:	
– Constant	°C
– min./max.	°C
Flow media temperature:	
– Constant	°C
– min./max.	°C
Kinematic viscosity:	
– Constant	mm ² /s
– min./max.	mm ² /s
Flow medium:	

Further information on pump design:

8 Technical data

The technical data in this catalogue are intended for general information. During installation, operation and maintenance, the operating instructions and the information specified on the products must be observed.

8.1 Operational limits

The maximum permissible operating conditions for gear pumps in the standard version are described in the following. Contact RICKMEIER whenever it is necessary to exceed these specifications. In such cases, please contact our [Sales department](#).

As a prerequisite for a long service life and maximum operational safety, the flow medium must retain its lubricity and, if possible, be clean and non-corrosive, but in any case must always be free of hard admixtures.

Consideration must be given also to the following:

Properties		Min.	Max.
Flow medium	Kinematic viscosity	5 mm ² /s ¹⁾	20000 mm ² /s ¹⁾
	Degree of contamination (according to ISO 4406:1999, max.)		21/19/17
	Gas content (undissolved, max.)		10 vol. % ²⁾
	Temperature (NBR seals)	-25 °C	80 °C
	Temperature (FKM seals)	-25 °C	150°C ³⁾
Inlet pressure (constant pressure according to DIN 24312)	Radial shaft seal, standstill ⁴⁾	-0.4 bar ⁵⁾	5 bar
	Radial shaft seal during operation ⁴⁾	-0.4 bar ⁵⁾	0.5 bar ⁶⁾
	Mechanical seal	-0.4 bar ⁵⁾	10 bar ⁷⁾
	Magnetic coupling	-0.4 bar ⁵⁾	16 bar ⁷⁾

Tab. 8: Operational limits of the standard design

¹⁾ Depending on the application and operating conditions, lower and/or higher viscosities are possible, please contact us.

²⁾ Undissolved gas in the flow medium leads to increased noise emissions.

³⁾ If used above 120°C, special measures may be required under certain circumstances (e.g., heat-resistant clutch, pressure relief valve with heat-resistant spring, etc.); with optionally available sealing materials, different temperature ranges can be implemented.

⁴⁾ Manometric

⁵⁾ For speeds up to 1500 rpm, up to -0.5 bar permissible; in the short term: -0.6 bar (e.g., during start-up)

⁶⁾ With optionally available radial shaft seal up to 6 bar

⁷⁾ Versions for higher pressures available on request

8.2 Operating data

8.2.1 Maximum approved operating data

Size	Delivery volume	Maximum approved operating data				Guide values
		Operating pressure ¹⁾	Speed	Axial force ²⁾	Radial force ³⁾	Sound pressure level ⁴⁾
		Vg [cm ³]	p [bar]	n [1/min]	Fa [N]	Fr [N]
R25	2.5	25	3600	90	30	54
	3.15					
	4					
	5					
	6.3					
	8					
	10					
	12.5					
	16					
R35	25	25	3600	200	500	63
	31.5					
	40					
	50					
	63					
	80					
	100					
	125					
	160					
R45	80	25	3000	300	1150	69
	100					
	112					
	125					
	160					
	180					
	200					
	235					
	250					
R65	200	25	2200	800	2000	75
	250					
	315					
	400					
	500					
	630					
	800					
	1000					
	1250					
R95	710	25	1800	1500	7800	85
	800					
	900					
	1000					
	1120					
	1250					
	1400					
	1600					
	1800					

Size	Delivery volume	Maximum approved operating data				Guide values
		Operating pressure ¹⁾	Speed	Axial force ²⁾	Radial force ³⁾	Sound pressure level ⁴⁾
		V _g [cm ³]	p [bar]	n [1/min]	F _a [N]	F _r [N]
R105	1800	12	1600	1500	14000	90
	2000					
	2200					
	2400					
	2600					

Tab. 9: Technical data of standard design

¹⁾ For certain operating conditions, the maximum approved operating data given in the table must not be used simultaneously. For example, avoid high operating pressures at low speed; cf. figure "Permitted pressure difference." High operating pressures in conjunction with high speed and high viscosity are also not permissible in certain combinations. Please contact us if operation of the gear pump in these limit ranges is expected.

²⁾ Values apply with viscosity 33 mm²/s and speed 1450 rpm, "clockwise" axial force direction in the "clockwise" direction of rotation in the direction of the drive, in the "anti-clockwise" direction of rotation in the direction of the gear pump (right-hand drive pinion).

³⁾ Values apply with viscosity 33 mm²/s, higher radial forces on version with attachment bearing available on request.

⁴⁾ The specified sound pressure level values apply to cavitation-free operation of the gear pump on the test stand at speed 1450 rpm, outlet pressure 5 bar and with air-free flow medium (distance to the gear pump: 1 m).

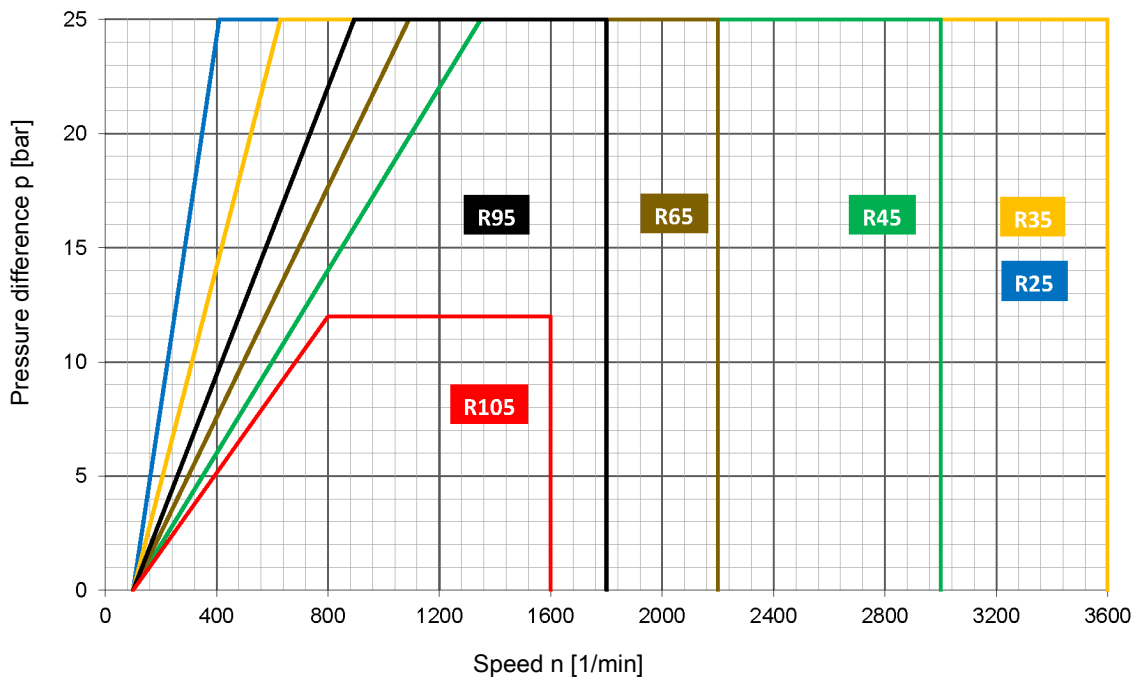


Fig. 9: Permissible pressure difference (viscosity = 33 mm²/s)

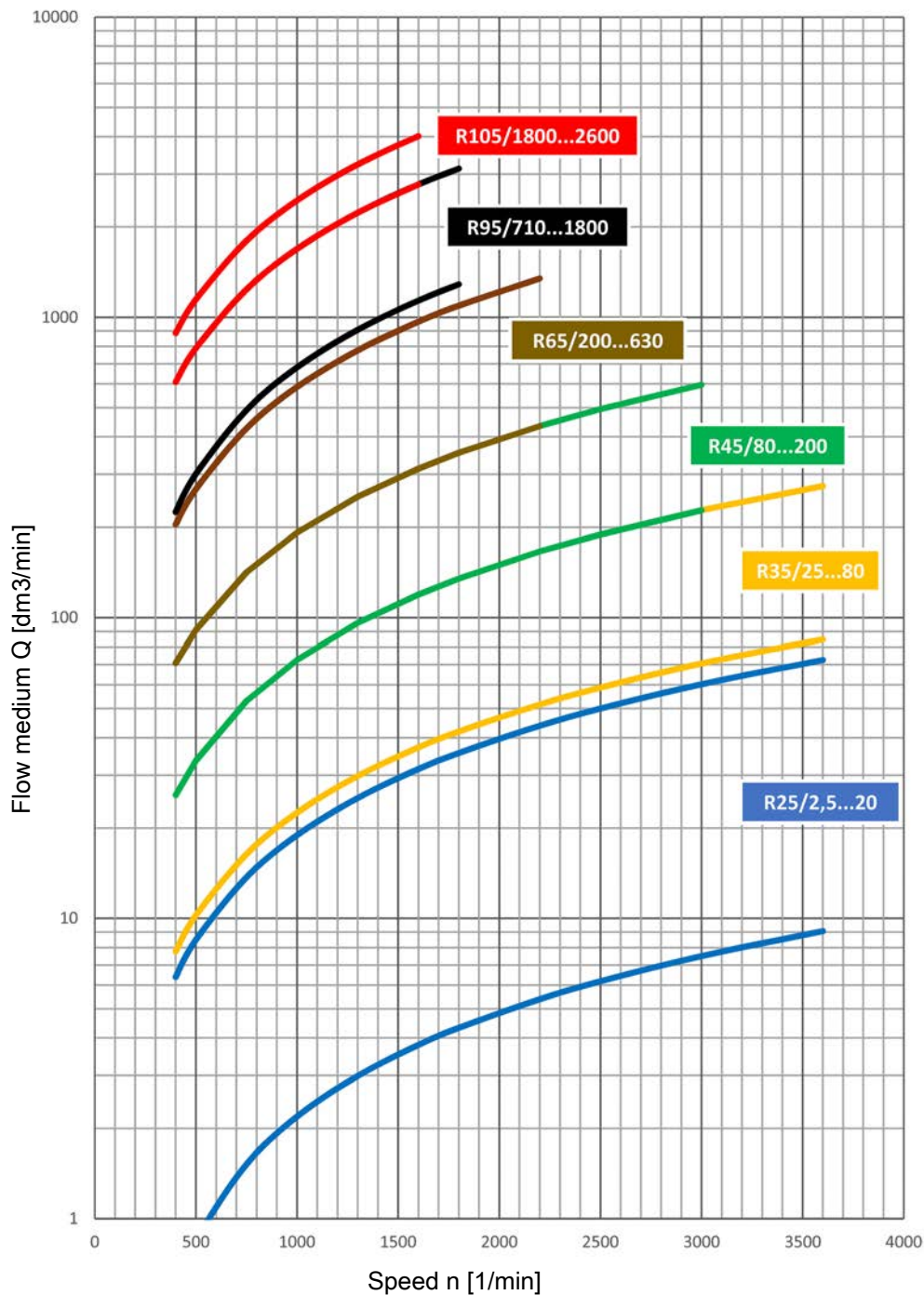


Fig. 10: Flow rate versus speed (values apply for kinematic viscosity = 33 mm²/s and outlet pressure p₂ = 5 bar)

8.2.2 Flow medium and drive power

- The values shown in the following table are guide values and apply for a mineral oil with a viscosity of 33 mm²/s and a density of 860 kg/m³.
- Please contact us for help in calculating delivery volume and power requirement in the case of deviating operating conditions.
- At a lower viscosity, a decrease in the flow medium is to be expected.
- At a higher viscosity, the power requirement P increases.
- An electric motor with a drive power 10% higher than the power requirement indicated or calculated must be selected.

8.2.2.1 Speed n = 950 rpm

Calculated flow medium Q _{calc.} [l/min] at the following operating pressure p [bar]								Displacement volume V _g [cm ³]	Power requirement P [kW] at the following operating pressure p [bar]							
2	4	6	8	10	15	20	25		2	4	6	8	10	15	20	25
2.3	2.1	2.0	1.8	1.7	1.4	1.2	0.9	2.5	0.02	0.03	0.04	0.05	0.06	0.09	0.11	0.14
2.9	2.7	2.6	2.5	2.3	2.1	1.8	1.6	3.15	0.02	0.03	0.05	0.06	0.07	0.11	0.14	0.17
3.8	3.6	3.4	3.2	3.1	2.8	2.5	2.2	4	0.03	0.04	0.06	0.08	0.09	0.13	0.17	0.21
4.7	4.4	4.2	4.0	3.8	3.5	3.1	2.8	5	0.03	0.05	0.07	0.09	0.11	0.16	0.21	0.26
5.9	5.6	5.3	5.1	4.9	4.4	4.0	3.6	6.3	0.04	0.06	0.09	0.11	0.13	0.19	0.26	0.32
7.5	7.1	6.8	6.6	6.3	5.7	5.2	4.8	8	0.05	0.08	0.11	0.14	0.17	0.24	0.32	0.39
9.3	8.7	8.2	7.8	7.4	6.5	5.8	5.0	10	0.06	0.09	0.13	0.16	0.20	0.29	0.38	0.47
11.9	11.3	10.9	10.5	10.2	9.4	8.6	8.0	12.5	0.07	0.11	0.16	0.20	0.25	0.36	0.48	0.59
15.2	14.6	14.1	13.6	13.2	12.2	11.3	10.5	16	0.08	0.14	0.20	0.25	0.31	0.46	0.60	0.74
19.0	18.2	17.6	16.9	16.4	15.2	14.0	13.0	20	0.09	0.17	0.24	0.32	0.39	0.58	0.76	0.95
22.5	21.6	20.9	20.2	19.6	18.3	17.1	16.0	25	0.15	0.24	0.32	0.41	0.49	0.70	0.91	1.13
29	28	27	26	25	24	22	21	31.5	0.2	0.3	0.4	0.5	0.6	0.9	1.1	1.4
37	36	35	35	34	33	31	30	40	0.2	0.4	0.5	0.6	0.8	1.1	1.5	1.8
46	44	43	42	41	38	36	34	50	0.2	0.4	0.6	0.7	0.9	1.3	1.7	2.2
58	56	55	53	52	50	47	45	63	0.3	0.5	0.8	1.0	1.2	1.7	2.3	2.8
73	71	69	67	66	62	59	56	80	0.5	0.8	1.0	1.3	1.5	2.2	2.8	3.5
92	90	87	85	83	79	75	72	100	0.6	0.9	1.2	1.6	1.9	2.7	3.5	4.4
102	99	97	95	92	88	84	80	112	0.6	1.0	1.3	1.7	2.1	3.0	3.9	4.8
116	113	111	109	107	103	99	95	125	0.8	1.2	1.6	2.0	2.4	3.4	4.4	5.4
151	148	146	144	142	137	133	129	160	1.0	1.5	2.0	2.6	3.1	4.4	5.7	7.0
164	160	157	154	151	144	138	133	180	0.9	1.5	2.1	2.7	3.3	4.8	6.3	7.8
184	179	175	171	168	160	153	147	200	1.3	1.9	2.6	3.2	3.8	5.4	7.0	8.6
231	225	220	216	211	202	194	186	250	1.8	2.6	3.5	4.3	5.1	7.1	9.2	11.2
291	284	277	272	267	255	245	235	315	2.2	3.2	4.3	5.3	6.3	8.9	11.5	14.0
369	360	351	344	337	322	309	296	400	2.5	3.8	5.1	6.3	7.6	10.8	14.1	17.3
462	450	440	431	423	404	388	373	500	3.3	4.9	6.5	8.1	9.8	13.8	17.9	22.0
579	561	547	534	522	496	473	452	630	4.4	6.4	8.5	10.5	12.6	17.7	22.8	27.9
677	653	633	615	599	563	531	501	710	5.5	7.9	10.3	12.8	15.2	21.2	27.2	33.2
770	748	729	713	698	665	636	609	800	7.3	10.0	12.7	15.5	18.2	25.0	31.8	38.6
863	837	816	797	780	742	708	677	900	8.0	11.1	14.1	17.2	20.3	27.9	35.6	43.2
953	919	891	866	843	792	747	706	1000	8.2	11.6	15.0	18.4	21.8	30.2	38.7	47.2
1071	1036	1007	982	959	907	861	820	1120	9.6	13.5	17.3	21.1	24.9	34.4	44.0	53.5
1194	1153	1119	1089	1062	1001	947	898	1250	10.6	14.9	19.1	23.4	27.7	38.3	49.0	59.7
1345	1306	1274	1245	1220	1162	1112	1066	1400	10.7	15.5	20.3	25.1	29.8	41.7	53.7	65.6
1440	1384	1337	1296	1259	1177	1105	1039	1600	12.5	17.7	22.9	28.1	33.3	46.2	59.2	72.2
1654	1616	1582	1552	1523				1800	14.0	19.9	25.7	31.5	37.3			
1839	1797	1761	1727	1695				2000	15.6	22.1	28.5	35.0	41.4			
2024	1979	1939	1903	1868				2200	17.2	24.3	31.4	38.5	45.6			
2211	2162	2120	2080	2043				2400	18.7	26.5	34.2	42.0	49.8			
2434	2384	2336	2290	2246				2600	21.1	29.4	37.7	46.0	54.3			

8.2.2.2 Speed n = 1150 rpm

Calculated flow medium $Q_{\text{calc.}}$ [l/min] at the following operating pressure p [bar]								Displacement volume V_g [cm ³]	Power requirement P [kW] at the following operating pressure p [bar]							
2	4	6	8	10	15	20	25		2	4	6	8	10	15	20	25
2.9	2.7	2.5	2.4	2.2	1.9	1.7	1.4	2.5	0.02	0.03	0.05	0.06	0.07	0.11	0.14	0.17
3.6	3.4	3.2	3.1	3.0	2.7	2.4	2.2	3.15	0.03	0.04	0.06	0.07	0.09	0.13	0.17	0.21
4.6	4.4	4.2	4.1	3.9	3.6	3.2	3.0	4	0.03	0.05	0.07	0.09	0.11	0.16	0.21	0.26
5.7	5.4	5.2	5.0	4.8	4.4	4.1	3.7	5	0.04	0.06	0.09	0.11	0.13	0.19	0.25	0.31
7.2	6.9	6.6	6.4	6.2	5.7	5.3	4.9	6.3	0.05	0.08	0.11	0.13	0.16	0.24	0.31	0.38
9.2	8.8	8.5	8.2	7.9	7.3	6.8	6.3	8	0.06	0.09	0.13	0.17	0.20	0.29	0.38	0.47
11.3	10.8	10.3	9.8	9.4	8.5	7.7	7.0	10	0.07	0.11	0.16	0.20	0.25	0.36	0.47	0.57
14.5	13.9	13.5	13.1	12.7	11.9	11.1	10.4	12.5	0.08	0.14	0.19	0.25	0.30	0.44	0.58	0.72
18.6	17.9	17.4	16.9	16.4	15.4	14.5	13.7	16	0.10	0.17	0.24	0.31	0.38	0.56	0.73	0.90
23.2	22.4	21.7	21.1	20.5	19.2	18.1	17.0	20	0.12	0.21	0.30	0.39	0.48	0.70	0.92	1.15
27.5	26.5	25.8	25.1	24.4	23.0	21.8	20.7	25	0.20	0.30	0.40	0.50	0.61	0.86	1.12	1.37
35	34	33	32	31	30	28	27	31.5	0.2	0.3	0.5	0.6	0.7	1.1	1.4	1.7
45	44	43	43	42	40	39	38	40	0.3	0.5	0.6	0.8	1.0	1.4	1.8	2.2
56	54	53	52	51	48	46	44	50	0.3	0.5	0.7	0.9	1.1	1.6	2.1	2.6
71	69	67	66	65	62	60	57	63	0.4	0.7	0.9	1.2	1.5	2.1	2.8	3.4
89	87	85	83	81	78	74	71	80	0.6	0.9	1.3	1.6	1.9	2.7	3.5	4.3
112	110	107	105	103	99	95	92	100	0.7	1.1	1.5	1.9	2.3	3.3	4.3	5.3
124	121	119	117	114	110	106	102	112	0.8	1.2	1.7	2.1	2.6	3.7	4.8	5.9
141	138	136	134	132	127	123	120	125	1.0	1.5	2.0	2.5	3.0	4.2	5.4	6.7
183	180	178	176	174	170	166	162	160	1.3	1.9	2.5	3.2	3.8	5.4	7.0	8.6
201	197	193	190	187	180	175	169	180	1.2	2.0	2.7	3.4	4.1	5.9	7.8	9.6
224	219	214	210	207	199	192	185	200	1.7	2.4	3.2	4.0	4.8	6.7	8.6	10.5
281	275	270	266	261	252	243	236	250	2.4	3.4	4.4	5.4	6.4	8.9	11.4	13.8
355	347	341	335	330	318	307	298	315	3.0	4.2	5.5	6.7	7.9	11.1	14.2	17.3
450	440	432	424	418	402	389	376	400	3.4	4.9	6.5	8.1	9.6	13.5	17.4	21.3
563	551	540	531	523	504	488	473	500	4.4	6.3	8.3	10.3	12.3	17.2	22.1	27.0
706	688	674	661	649	623	600	578	630	6.0	8.5	11.0	13.4	15.9	22.1	28.3	34.5
828	805	785	768	752	716	685	656	710	7.6	10.6	13.5	16.4	19.3	26.6	33.9	41.2
939	917	898	882	867	834	804	778	800	10.1	13.4	16.7	20.0	23.3	31.6	39.8	48.0
1053	1027	1006	987	970	932	898	867	900	11.2	14.9	18.6	22.3	26.0	35.2	44.5	53.7
1166	1132	1104	1079	1056	1005	960	920	1000	11.2	15.3	19.4	23.5	27.6	37.9	48.1	58.4
1308	1273	1245	1219	1196	1145	1100	1058	1120	13.5	18.1	22.7	27.3	31.9	43.5	55.0	66.6
1460	1419	1385	1355	1328	1268	1215	1167	1250	14.8	20.0	25.2	30.3	35.5	48.4	61.3	74.2
1641	1601	1569	1540	1514	1456	1406	1360	1400	14.7	20.5	26.2	32.0	37.8	52.2	66.6	81.1
1765	1708	1662	1622	1585	1504	1433	1369	1600	17.5	23.8	30.1	36.3	42.6	58.3	74.1	89.8
2013	1976	1943	1913	1886				1800	20.8	27.8	34.9	41.9	49.0			
2238	2197	2162	2129	2099				2000	23.1	30.9	38.7	46.6	54.4			
2463	2419	2380	2346	2313				2200	25.4	34.0	42.6	51.2	59.8			
2690	2643	2602	2564	2529				2400	27.7	37.1	46.5	55.9	65.3			
2961	2914	2869	2827	2785				2600	31.4	41.4	51.5	61.5	71.6			

8.2.2.3 Speed n = 1450 rpm

Calculated flow medium Q _{calc.} [l/min] at the following operating pressure p [bar]								Displacement volume V _g [cm ³]	Power requirement P [kW] at the following operating pressure p [bar]							
2	4	6	8	10	15	20	25		2	4	6	8	10	15	20	25
3.7	3.5	3.3	3.2	3.0	2.7	2.4	2.2	2.5	0.03	0.04	0.06	0.08	0.09	0.13	0.18	0.22
4.5	4.3	4.2	4.0	3.9	3.6	3.3	3.1	3.15	0.03	0.05	0.07	0.09	0.11	0.16	0.21	0.26
5.9	5.7	5.5	5.3	5.1	4.8	4.4	4.1	4	0.04	0.07	0.09	0.12	0.14	0.20	0.27	0.33
7.3	7.0	6.8	6.5	6.4	5.9	5.5	5.2	5	0.05	0.08	0.11	0.14	0.17	0.25	0.32	0.40
9.2	8.8	8.6	8.3	8.1	7.6	7.1	6.7	6.3	0.06	0.10	0.13	0.17	0.21	0.30	0.39	0.49
11.7	11.3	10.9	10.6	10.3	9.7	9.2	8.7	8	0.07	0.12	0.17	0.21	0.26	0.37	0.49	0.60
14.5	13.8	13.3	12.9	12.4	11.5	10.6	9.8	10	0.09	0.15	0.20	0.26	0.31	0.45	0.59	0.73
18.4	17.8	17.4	16.9	16.5	15.7	14.9	14.2	12.5	0.11	0.18	0.25	0.32	0.39	0.56	0.74	0.91
23.6	22.9	22.4	21.8	21.4	20.3	19.3	18.5	16	0.13	0.22	0.31	0.40	0.49	0.71	0.93	1.15
29.6	28.7	27.9	27.3	26.7	25.3	24.1	23.1	20	0.15	0.27	0.38	0.49	0.61	0.89	1.17	1.45
34.9	33.9	33.0	32.3	31.6	30.1	28.8	27.5	25	0.27	0.39	0.52	0.65	0.78	1.11	1.43	1.75
44	43	42	42	41	39	37	36	31.5	0.3	0.4	0.6	0.8	0.9	1.3	1.7	2.2
57	56	55	54	54	52	51	49	40	0.4	0.6	0.8	1.0	1.3	1.8	2.3	2.8
71	69	68	67	65	63	61	59	50	0.4	0.7	0.9	1.2	1.4	2.1	2.7	3.3
90	88	86	85	84	81	78	76	63	0.6	0.9	1.2	1.6	1.9	2.7	3.6	4.4
113	111	109	107	105	101	97	94	80	0.8	1.2	1.6	2.0	2.4	3.4	4.4	5.4
143	140	137	135	133	129	125	121	100	1.0	1.5	2.0	2.5	3.0	4.3	5.5	6.8
158	155	152	150	147	143	138	134	112	1.1	1.7	2.2	2.8	3.3	4.7	6.1	7.5
179	176	173	171	169	164	160	156	125	1.4	2.0	2.6	3.3	3.9	5.4	7.0	8.5
232	229	227	225	223	219	215	211	160	1.7	2.5	3.4	4.2	5.0	7.0	9.0	11.0
255	251	247	244	241	235	229	223	180	1.8	2.7	3.6	4.5	5.4	7.7	10.0	12.3
284	278	274	269	266	257	249	243	200	2.3	3.3	4.3	5.2	6.2	8.6	11.1	13.5
357	351	345	340	336	326	318	310	250	3.5	4.8	6.0	7.3	8.5	11.6	14.7	17.9
450	442	435	429	424	412	401	392	315	4.3	5.8	7.4	9.0	10.5	14.5	18.4	22.3
571	561	553	545	538	523	509	496	400	5.0	7.0	9.0	10.9	12.9	17.8	22.7	27.7
714	702	691	682	673	654	638	622	500	6.4	8.8	11.3	13.8	16.3	22.5	28.7	34.9
897	879	864	851	839	813	789	768	630	9.0	12.1	15.3	18.4	21.5	29.3	37.2	45.0
1056	1033	1013	996	981	946	915	887	710	11.5	15.2	18.8	22.5	26.2	35.4	44.6	53.8
1193	1170	1152	1135	1120	1087	1057	1031	800	15.3	19.5	23.6	27.8	31.9	42.3	52.7	63.1
1338	1312	1291	1272	1255	1216	1182	1152	900	16.9	21.6	26.3	30.9	35.6	47.3	58.9	70.6
1486	1451	1423	1398	1375	1325	1281	1241	1000	16.5	21.7	26.9	32.0	37.2	50.2	63.1	76.1
1665	1630	1601	1576	1553	1502	1457	1416	1120	20.5	26.3	32.2	38.0	43.8	58.3	72.9	87.4
1860	1818	1785	1755	1728	1669	1616	1569	1250	22.7	29.2	35.7	42.2	48.7	65.0	81.3	97.6
2086	2045	2012	1982	1956	1898	1846	1800	1400	21.8	29.1	36.3	43.6	50.9	69.1	87.3	105.5
2251	2196	2150	2110	2074	1995	1926	1863	1600	26.8	34.7	42.6	50.5	58.5	78.3	98.1	117.9
2551	2515	2484	2456	2431				1800	34.5	43.4	52.3	61.2	70.0			
2836	2797	2763	2733	2705				2000	38.4	48.2	58.1	67.9	77.8			
3121	3078	3042	3010	2980				2200	42.2	53.0	63.9	74.7	85.6			
3409	3363	3324	3290	3257				2400	46.0	57.9	69.7	81.6	93.4			
3752	3709	3668	3630	3593				2600	52.3	65.0	77.7	90.3	103.0			

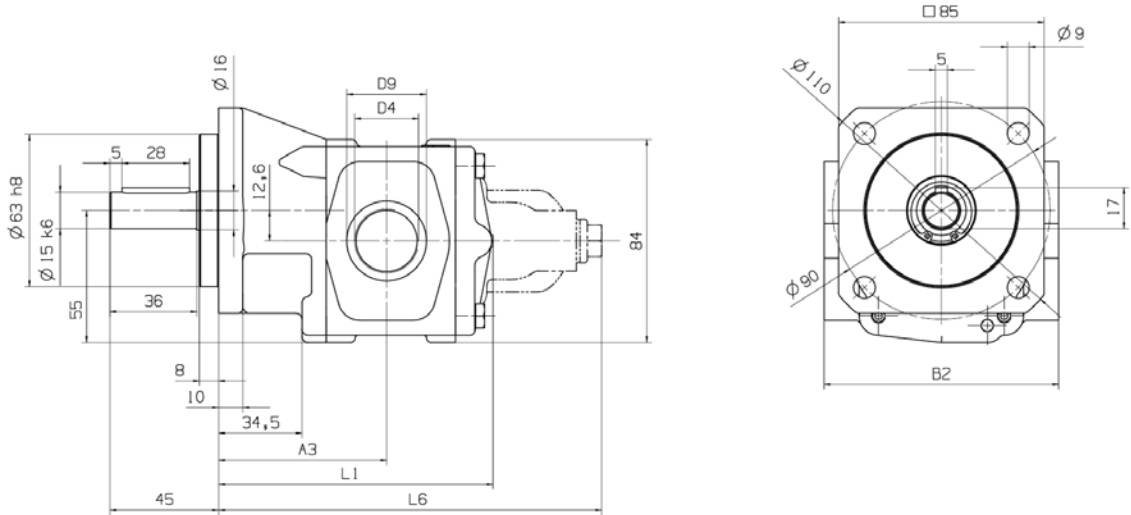
8.2.2.4 Speed n = 1750 rpm

Calculated flow medium Q _{calc.} [l/min] at the following operating pressure p [bar]								Displacement volume V _g [cm ³]	Power requirement P [kW] at the following operating pressure p [bar]							
2	4	6	8	10	15	20	25		2	4	6	8	10	15	20	25
4.5	4.3	4.1	3.9	3.8	3.5	3.2	2.9	2.5	0.03	0.05	0.07	0.09	0.11	0.16	0.21	0.26
5.5	5.3	5.1	5.0	4.8	4.5	4.2	4.0	3.15	0.04	0.07	0.09	0.11	0.14	0.20	0.26	0.32
7.2	6.9	6.7	6.5	6.3	5.9	5.6	5.3	4	0.05	0.08	0.11	0.14	0.17	0.25	0.32	0.40
8.8	8.5	8.3	8.1	7.8	7.4	7.0	6.6	5	0.06	0.10	0.13	0.17	0.21	0.30	0.39	0.48
11.1	10.8	10.5	10.2	10.0	9.4	8.9	8.5	6.3	0.08	0.12	0.16	0.21	0.25	0.37	0.48	0.59
14.1	13.7	13.4	13.0	12.7	12.1	11.5	11.0	8	0.09	0.15	0.20	0.26	0.31	0.45	0.59	0.73
17.6	16.9	16.4	15.9	15.4	14.4	13.5	12.7	10	0.12	0.18	0.25	0.32	0.38	0.55	0.72	0.88
22.4	21.7	21.2	20.8	20.4	19.4	18.6	17.9	12.5	0.14	0.22	0.30	0.39	0.47	0.68	0.89	1.10
28.7	27.9	27.3	26.8	26.3	25.1	24.1	23.2	16	0.17	0.27	0.38	0.49	0.59	0.86	1.12	1.39
35.9	34.9	34.1	33.4	32.8	31.4	30.2	29.0	20	0.19	0.33	0.46	0.60	0.74	1.08	1.42	1.76
42.3	41.2	40.3	39.5	38.7	37.1	35.7	34.3	25	0.34	0.50	0.65	0.81	0.96	1.35	1.74	2.13
54	53	52	51	50	48	47	45	31.5	0.4	0.6	0.8	1.0	1.1	1.6	2.1	2.6
69	68	67	66	65	63	62	61	40	0.5	0.8	1.0	1.3	1.6	2.2	2.8	3.4
86	84	83	81	80	78	75	73	50	0.5	0.9	1.2	1.5	1.8	2.5	3.3	4.1
109	107	105	104	103	100	97	95	63	0.7	1.1	1.5	1.9	2.3	3.4	4.4	5.4
137	134	132	130	128	124	120	117	80	1.1	1.6	2.0	2.5	3.0	4.2	5.4	6.6
173	170	167	165	163	158	154	150	100	1.3	1.9	2.5	3.1	3.7	5.3	6.8	8.3
191	188	185	183	180	175	171	167	112	1.4	2.1	2.8	3.4	4.1	5.8	7.5	9.2
216	213	210	208	206	201	196	192	125	1.8	2.6	3.3	4.1	4.8	6.7	8.6	10.5
281	278	276	274	272	268	264	260	160	2.3	3.2	4.2	5.2	6.2	8.6	11.0	13.5
309	305	302	299	296	289	283	278	180	2.4	3.5	4.6	5.7	6.8	9.6	12.3	15.1
344	338	333	328	324	315	307	300	200	3.1	4.2	5.4	6.6	7.7	10.7	13.6	16.5
433	426	420	415	411	401	392	384	250	4.7	6.2	7.7	9.3	10.8	14.5	18.3	22.1
545	537	530	524	518	506	495	485	315	5.8	7.7	9.6	11.5	13.4	18.1	22.8	27.6
693	682	673	666	659	643	629	616	400	7.1	9.4	11.8	14.2	16.6	22.5	28.4	34.4
865	852	842	832	824	804	788	772	500	8.7	11.7	14.7	17.7	20.7	28.2	35.7	43.2
1088	1070	1054	1041	1029	1003	979	958	630	12.7	16.5	20.2	24.0	27.8	37.2	46.7	56.1
1283	1260	1242	1225	1210	1176	1146	1119	710	16.2	20.6	25.1	29.5	34.0	45.1	56.2	67.3
1447	1424	1405	1388	1373	1340	1310	1284	800	21.6	26.6	31.6	36.6	41.6	54.2	66.7	79.3
1624	1597	1576	1557	1539	1501	1467	1437	900	23.9	29.6	35.2	40.8	46.5	60.5	74.6	88.7
1805	1770	1742	1717	1695	1645	1601	1562	1000	22.8	29.1	35.3	41.6	47.8	63.5	79.1	94.7
2021	1986	1957	1932	1909	1858	1814	1774	1120	29.2	36.2	43.2	50.3	57.3	74.8	92.4	110.0
2259	2217	2184	2154	2128	2069	2018	1971	1250	32.3	40.2	48.0	55.9	63.8	83.4	103.1	122.7
2530	2488	2454	2424	2398	2338	2287	2240	1400	30.3	39.1	47.9	56.6	65.4	87.4	109.3	131.3
2738	2683	2638	2599	2564	2486	2418	2357	1600	38.3	47.8	57.4	67.0	76.5	100.5	124.4	148.3

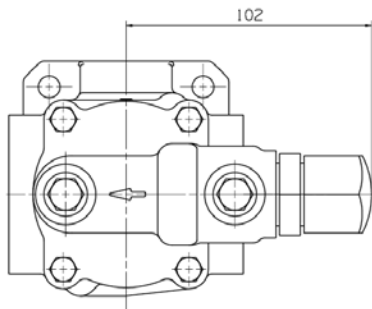
9 Dimensional sheets of gear pumps

The following pages contain dimensions of the gear pumps in the basic version. If you have questions about the design or special designs, please contact us.

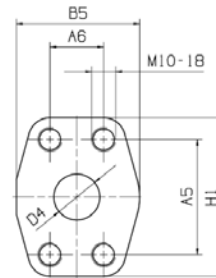
9.1 Size R25



Option: pressure relief valve



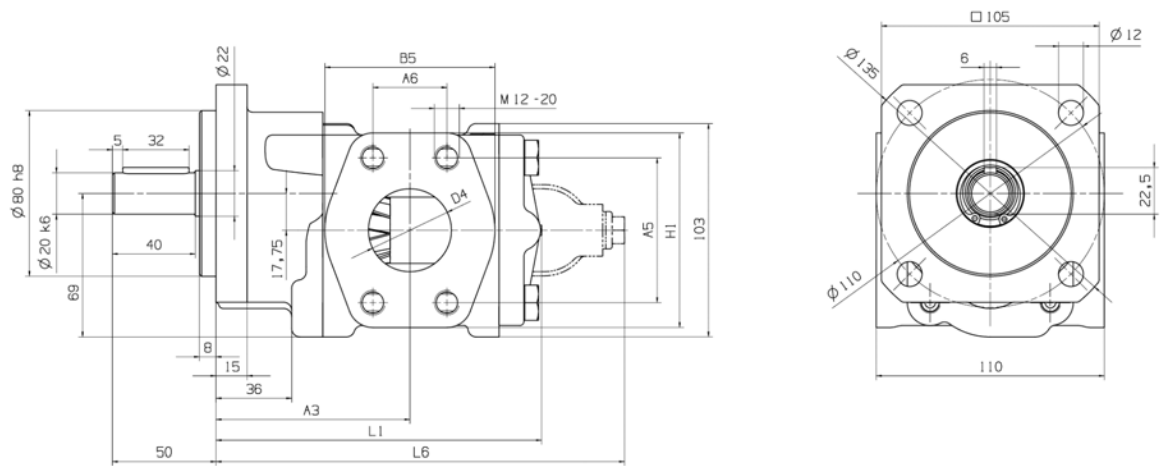
Option: SAE connection



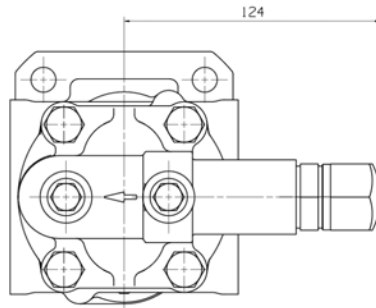
V_g [cm ³]	Dimensions [mm]										Weight [kg]				
	Suction and pressure connection										Standard	Excess weight of DB			
	Threaded connection					SAE connection									
	B2	D4	D9	A5	A6	B2	B5	D4	H1	Flange size	A3	L1	L6		
2.5	97	G3/4	33-1	47.6	22.2	95	51	19	66	SAE3/4"	69.5	114	159	4.0	0.8
3.15															
4															
5															
6.3															
8															
10															
12.5	97	G1	40-1	52.4	26.2	95	59	25	70	SAE1"	74.5	141	186	4.8	0.8
16															
20															

Tab. 10: Dimensional sheet of size R25

9.2 Size R35



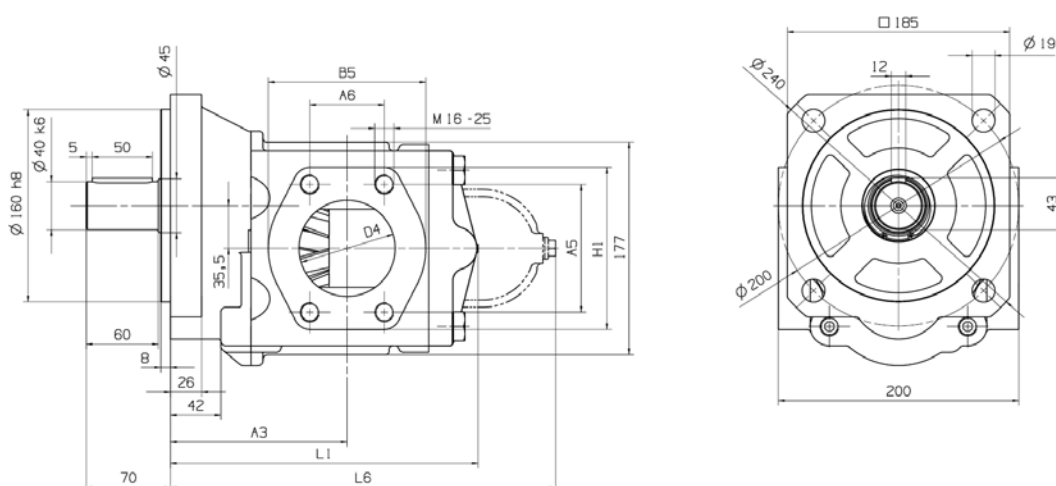
Option: pressure relief valve



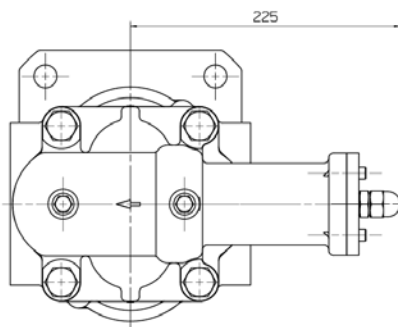
V _g [cm ³]	Dimensions [mm]									Weight [kg]	
	Suction and pressure connection						Flange size	A3	L1	L6	Standard
A5	A6	B5	D4	H1							
25	69.9	35.7	82	40	94	SAE1.1/2"	93.5	157	197	7.4	0.7
31.5										7.5	
40										7.6	
50	77.8	42.9	97	50	102	SAE2"	100.5	187	227	8.5	0.7
63										8.6	
80										8.7	

Tab. 11: Dimensional sheet of size R35

9.4 Size R65



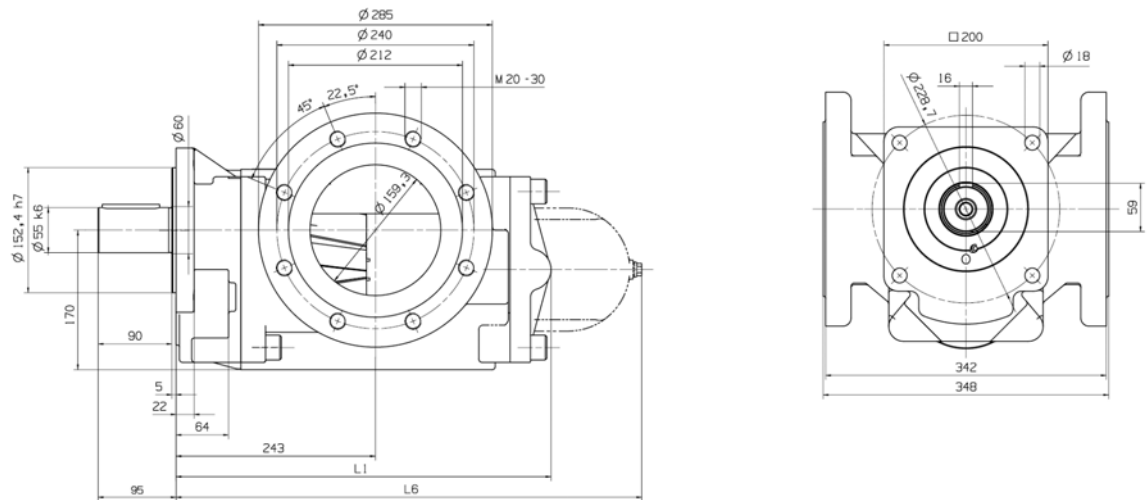
Option: pressure relief valve



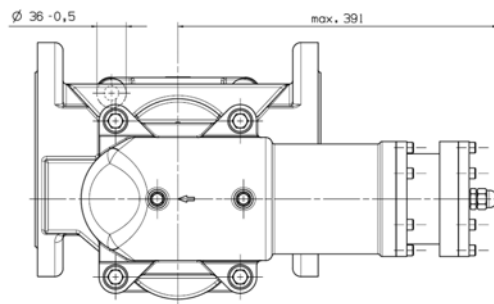
V_g [cm ³]	Dimensions [mm]									Weight [kg]	
	Suction and pressure connection										Standard
A5	A6	B5	D4	H1	Flange size	A3	L1	L6			
200	106.4	62	131	80	135	SAE3''	147	256	321	35.5	3.6
250										36.0	
315										36.5	
400	130.2	77.8	152	102	162	SAE4''	157	358	423	47.0	3.6
500										48.0	
630										49.0	

Tab. 13: Dimensional sheet of size R65

9.5.2 Option: version with DIN connection



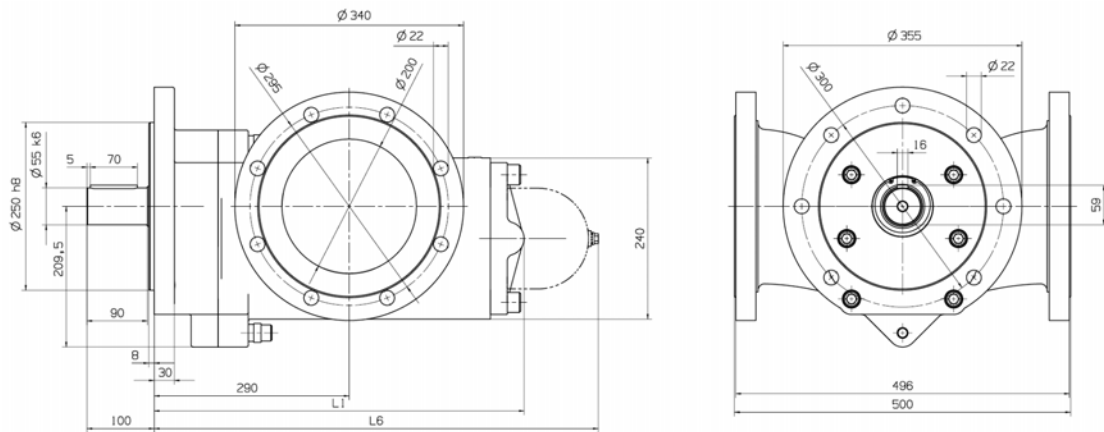
Option: pressure relief valve



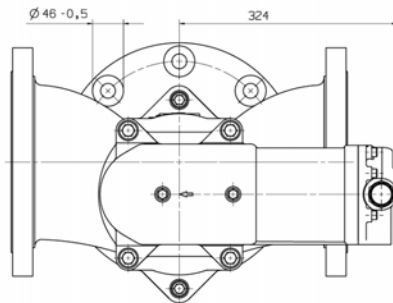
V_g [cm ³]	Dimensions [mm]			Weight [kg]	
	Suction and pressure connection			Standard	Excess weight of DB
Flange size	L1	L6			
710	DN160	457	568	135	32
800					
900					
1000					
1120					
1250					
1400					
1600					
1800					

Tab. 15: Dimensional sheet of size R95 with DIN connection

9.6 Size R105



Option: pressure relief valve (pilot-operated)



V_g [cm ³]	Dimensions [mm]			Weight [kg]	
	Suction and pressure connection			Standard	Excess weight of DB
	Flange size	L1	L6		
1800	DN200	550	660	175	22
2000					
2200					
2400					
2600					

Tab. 16: Dimensional sheet of size R105

10 Dimensional sheets of pump units

Pump units are equipped as standard with three-phase asynchronous motors of efficiency class IE3. Single-phase AC motors and DC motors of various voltage levels are also available on request.

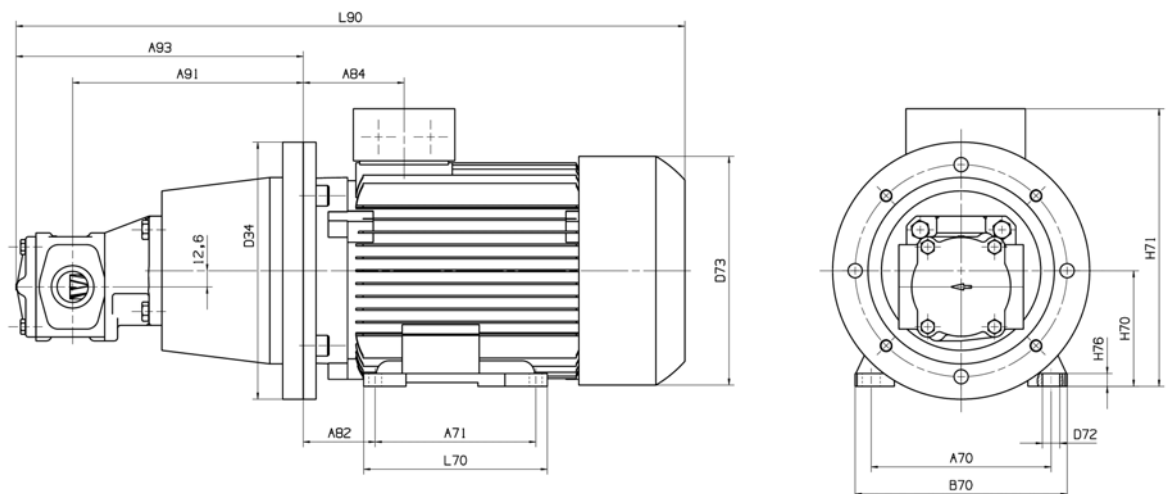
The motor dimensions specified in the dimension tables, which are not standardised in EN 50347, refer to our standard make (special manufacturers are available on request). The dimensions of the standard pump units for different motor sizes can be found in the tables on the following pages.

For different versions (e.g., other motor designs, V1 design, gear pumps with pressure relief valve and/or mechanical seal or magnetic coupling), we will gladly inform you about the respective dimensions and weights on request.

For railway, ship or other applications with special vibration loads, we recommend the heavy-duty design for the unit foot. This changes the drilling pattern of the foot attachment; dimensions on request.

10.1 Size R25

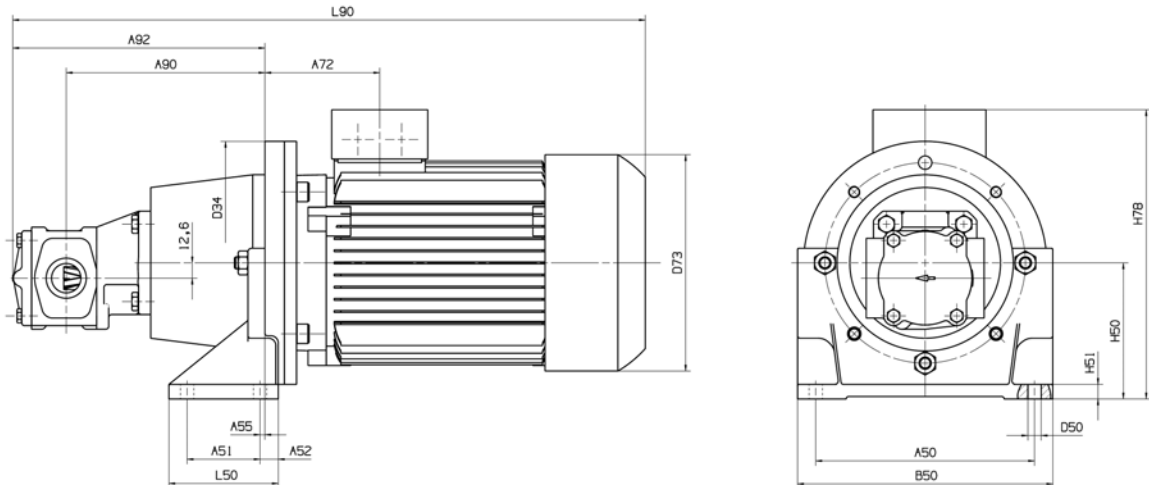
10.1.1 Type IM B35



Size	Dimensions [mm]															
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
2.5...10	71M	112	90	45	63.5	159.5	203.5	132	160	7	145	71	182	7	106	414
	80M	125	100	50	73	169.5	213.5	150	200	9.5	159	80	201	8	118	501
	90S	140	100	56	78.5	179.5	223.5	165	200	10	178	90	216	10	143	521
12.5...20	71M	112	90	45	63.5	164.5	231	132	160	7	145	71	182	7	106	441
	80M	125	100	50	73	174.5	241	150	200	9.5	159	80	201	8	118	528
	90S	140	100	56	78.5	184.5	251	165	200	10	178	90	216	10	143	548
	90L	140	125	56	78.5	184.5	251	165	200	10	178	90	216	10	143	548
	100L	160	140	63	96.5	198.5	265	196	250	12	198	100	266	12	176	601

Tab. 17: Dimensional sheet of size R25 - type IM B35

10.1.2 Type IM B5 with unit foot

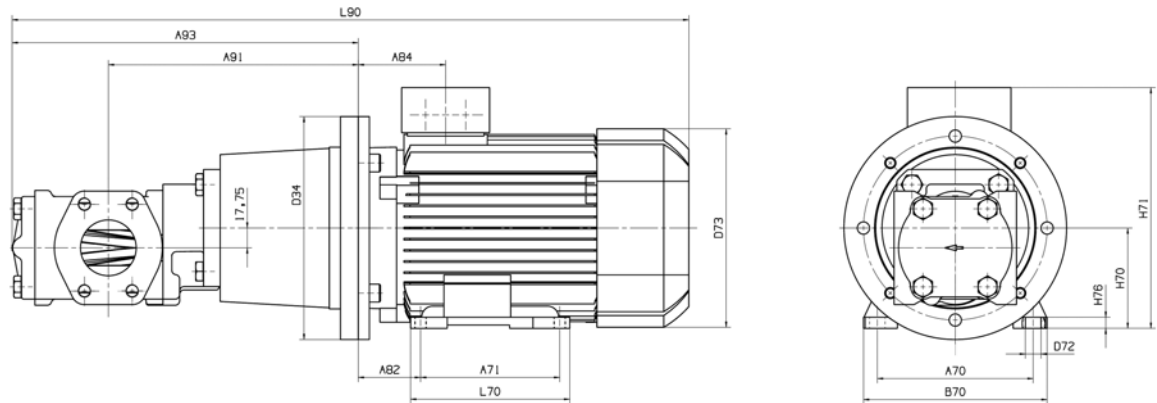


Size		Dimensions [mm]															
V_g [cm ³]	Motor	A50	A51	A52	A55	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
2.5...10	71M	140	50	15	7	76.5	146.5	190.5	160	160	9	145	100	10	211	80	414
	80M	180	60	15	4	89	153.5	197.5	210	200	11	159	112	12	233	90	501
	90S	180	60	15	4	94.5	163.5	207.5	210	200	11	178	112	12	238	90	521
12.5...20	71M	140	50	15	7	76.5	151.5	218	160	160	9	145	100	10	211	80	441
	80M	180	60	15	4	89	158.5	225	210	200	11	159	112	12	233	90	528
	90S	180	60	15	4	94.5	168.5	235	210	200	11	178	112	12	238	90	548
	90L	180	60	15	4	94.5	168.5	235	210	200	11	178	112	12	238	90	548
	100L	220	60	21	0	114.5	180.5	247	250	250	13	198	132	15	298	97	601

Tab. 18: Dimensional sheet of size R25 - type IM B5 with unit foot

10.2 Size R35

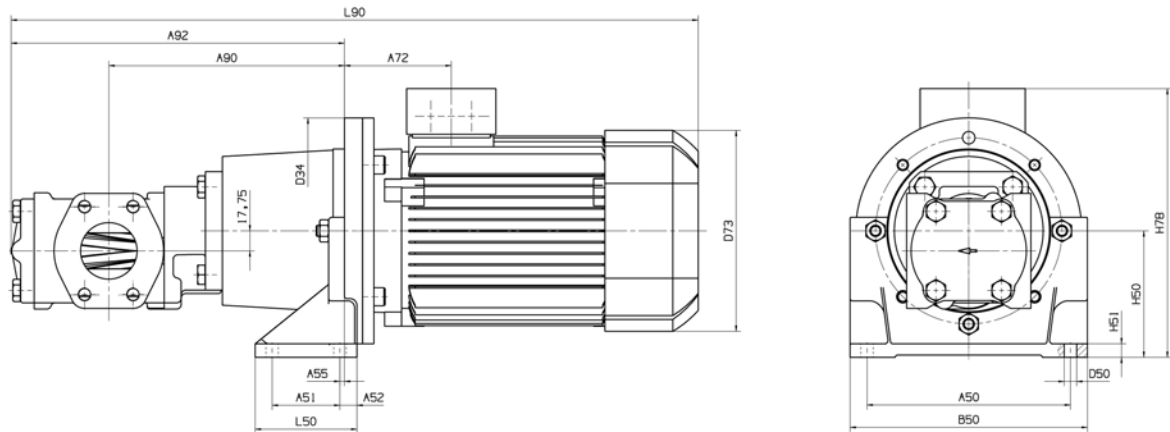
10.2.1 Type IM B35



Size	Dimensions [mm]															
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
25...40	71M	112	90	45	63.5	194.5	257.5	132	160	7	145	71	182	7	106	468
	80M	125	100	50	73	193.5	256.5	150	200	9.5	159	80	201	8	118	544
	90S	140	100	56	78.5	217.5	280.5	165	200	10	178	90	216	10	143	578
	90L	140	125	56	78.5	217.5	280.5	165	200	10	178	90	216	10	143	578
	100L	160	140	63	96.5	213.5	276.5	196	250	12	198	100	266	12	176	612
	112M	190	140	70	96	213.5	276.5	226	250	12	222	112	289	12	176	507
50...80	80M	125	100	50	73	200.5	286.5	150	200	9.5	159	80	201	8	118	574
	90S	140	100	56	78.5	224.5	310.5	165	200	10	178	90	216	10	143	608
	90L	140	125	56	78.5	224.5	310.5	165	200	10	178	90	216	10	143	608
	100L	160	140	63	96.5	220.5	306.5	196	250	12	198	100	266	12	176	642
	112M	190	140	70	96	220.5	306.5	226	250	12	222	112	289	12	176	636
	132S	216	140	89	115.5	255.5	341.5	256	300	12	262	132	334	15	218	727

Tab. 19: Dimensional sheet of size R35 - type IM B35

10.2.2 Type IM B5 with unit foot

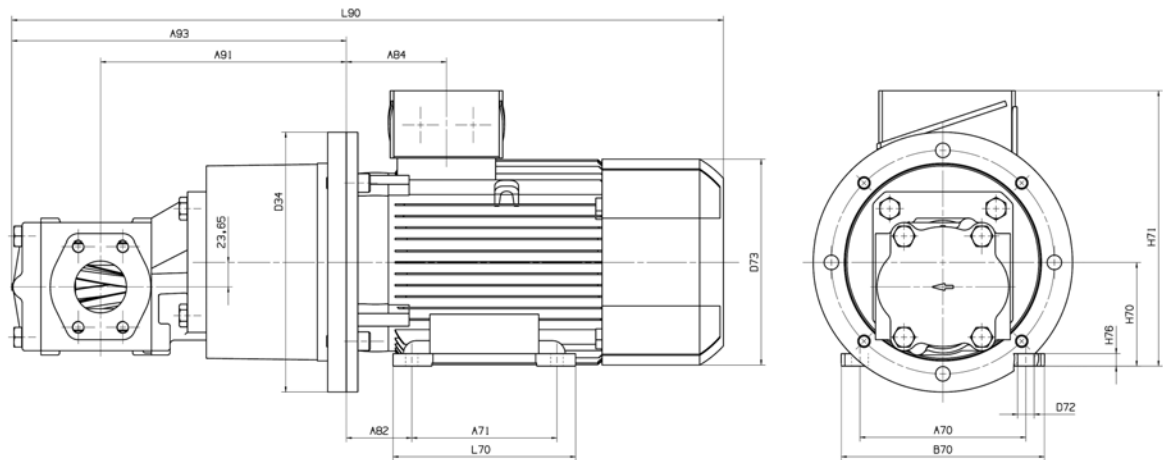


Size		Dimensions [mm]															
V_g [cm ³]	Motor	A50	A51	A52	A55	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
25...40	71M	140	50	15	7	76.5	181.5	244.5	160	160	9	145	100	10	211	80	468
	80M	180	60	15	4	89	177.5	240.5	210	200	11	159	112	12	232	90	544
	90S	180	60	15	4	94.5	201.5	264.5	210	200	11	178	112	12	238	90	578
	90L	180	60	15	4	94.5	201.5	264.5	210	200	11	178	112	12	238	90	578
	100L	220	60	21	0	115.5	194.5	257.5	250	250	13	198	132	15	298	97	612
	112M	220	60	21	0	115	194.5	257.5	250	250	13	222	132	15	309	97	606
50...80	80M	180	60	15	4	89	184.5	270.5	210	200	11	159	112	12	232	90	574
	90S	180	60	15	4	94.5	208.5	294.5	210	200	11	178	112	12	238	90	608
	90L	180	60	15	4	94.5	208.5	294.5	210	200	11	178	112	12	238	90	608
	100L	220	60	21	0	115.5	201.5	287.5	250	250	13	198	132	15	298	97	642
	112M	220	60	21	0	115	201.5	287.5	250	250	13	222	132	15	309	97	636
	132S	260	80	20	0	135.5	235.5	321.5	290	300	14	262	160	18	362	116	727

Tab. 20: Dimensional sheet of size R35 - type IM B5 with unit foot

10.3 Size R45

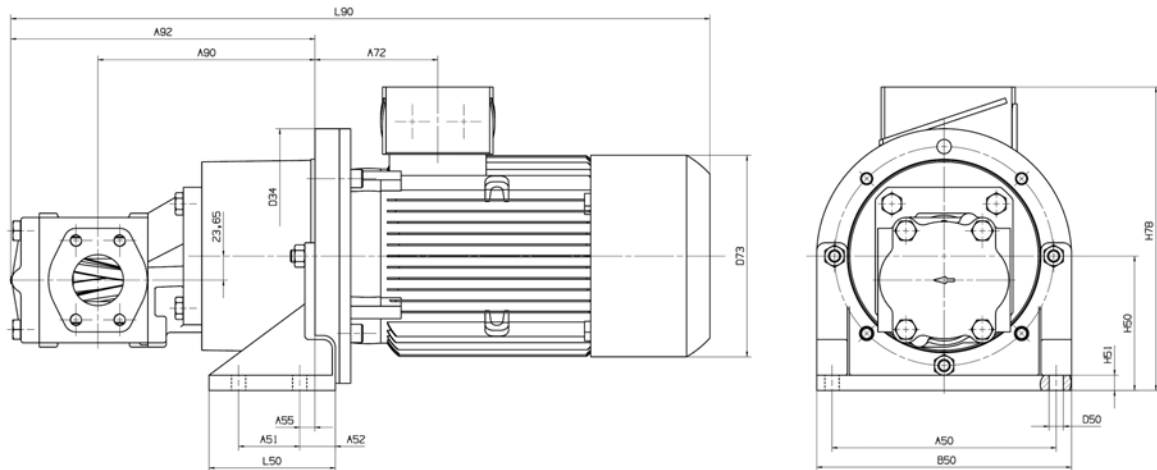
10.3.1 Type IM B35



Size	Dimensions [mm]															
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
80...112	100L	160	140	63	96.5	237	322.5	196	250	12	198	100	266	12	176	658
	112M	190	140	70	96	237	322.5	226	250	12	222	112	289	12	176	652
	132S	216	140	89	115.5	257	342.5	256	300	12	262	132	334	15	218	728
	132M	216	178	89	115.5	257	342.5	256	300	12	262	132	334	15	218	728
	160M	254	210	108	155	290	375.5	300	350	15	314	160	397	18	300	870
125...200	100L	160	140	63	96.5	243	366.5	196	250	12	198	100	266	12	176	702
	112M	190	140	70	96	243	366.5	226	250	12	222	112	289	12	176	696
	132S	216	140	89	115.5	263	386.5	256	300	12	262	132	334	15	218	772
	132M	216	178	89	115.5	263	386.5	256	300	12	262	132	334	15	218	772
	160M	254	210	108	155	296	419.5	300	350	15	314	160	397	18	300	914
	160L	254	254	108	155	296	419.5	300	350	15	314	160	397	18	300	914

Tab. 21: Dimensional sheet of size R45 - type IM B35

10.3.2 Type IM B5 with unit foot

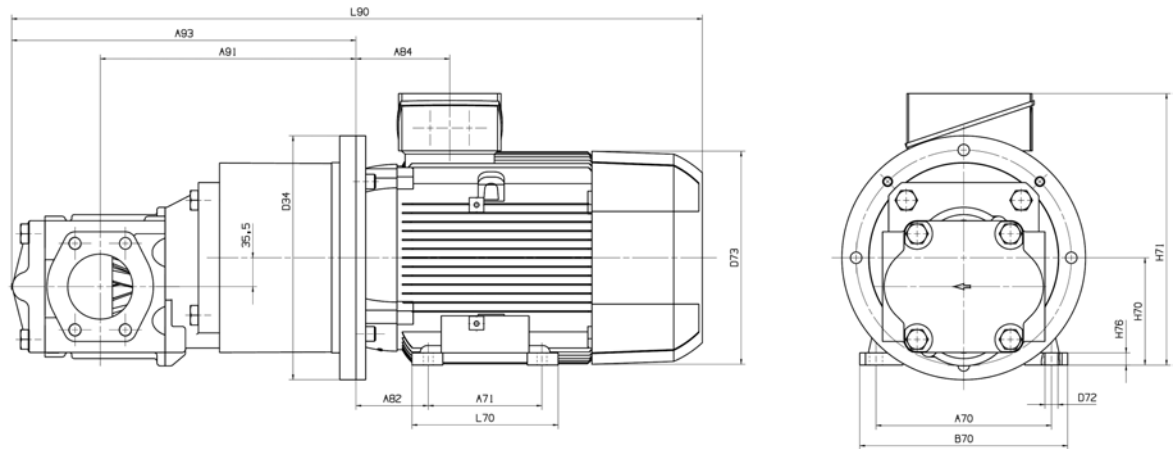


Size	Dimensions [mm]																
V_g [cm ³]	Motor	A50	A51	A52	A55	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
80...112	100L	220	60	21	0	114.5	219	304.5	250	250	13	198	132	15	298	97	658
	112M	220	60	21	0	114	219	304.5	250	250	13	222	132	15	309	97	652
	132S	260	80	20	0	135.5	237	322.5	290	300	14	262	160	18	362	116	728
	132M	260	80	20	0	135.5	237	322.5	290	300	14	262	160	18	362	116	728
	160M	300	110	20	0	181	264	349.5	340	350	18	314	180	22	417	150	870
125...200	100L	220	60	21	0	114.5	225	348.5	250	250	13	198	132	15	298	97	702
	112M	220	60	21	0	114	225	348.5	250	250	13	222	132	15	309	97	696
	132S	260	80	20	0	135.5	243	366.5	290	300	14	262	160	18	362	116	772
	132M	260	80	20	0	135.5	243	366.5	290	300	14	262	160	18	362	116	772
	160M	300	110	20	0	181	270	393.5	340	350	18	314	180	22	417	150	914
	160L	300	110	20	0	181	270	393.5	340	350	18	314	180	22	417	150	914

Tab. 22: Dimensional sheet of size R45 - type IM B5 with unit foot

10.4 Size R65

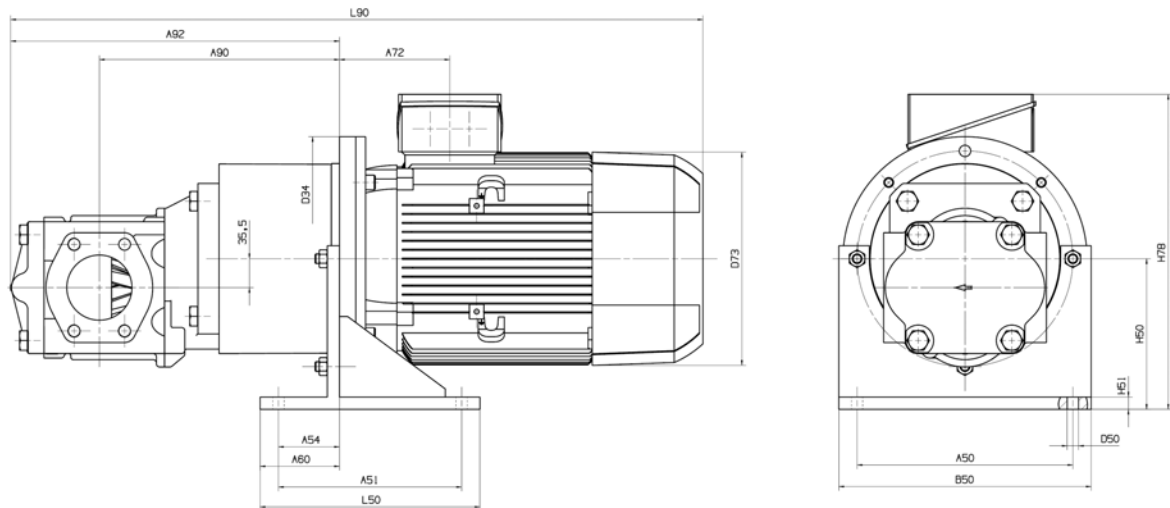
10.4.1 Type IM B35



Size	Dimensions [mm]															
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
200...315	132S	216	140	89	115.5	315	424	256	300	12	262	132	334	15	218	809
	132M	216	178	89	115.5	315	424	256	300	12	262	132	334	15	218	809
	160M	254	210	108	155	351	460	300	350	15	314	160	397	18	300	954
	160L	254	254	108	155	351	460	300	350	15	314	160	397	18	300	954
	180M	279	241	120.5	155	351	460	339	350	15	356	180	466	20	328	1018
	180L	279	279	120.5	155	351	460	339	350	15	356	180	466	20	328	1048
	200L	318	305	133	164	351	460	378	400	19	396	200	515	25	355	1096
400...630	132S	216	140	89	115.5	325	526	256	300	12	262	132	334	15	218	911
	132M	216	178	89	115.5	325	526	256	300	12	262	132	334	15	218	911
	160M	254	210	108	155	361	562	300	350	15	314	160	397	18	300	1056
	160L	254	254	108	155	361	562	300	350	15	314	160	397	18	300	1056
	180M	279	241	120.5	155	361	562	339	350	15	356	180	466	20	328	1120
	180L	279	279	120.5	155	361	562	339	350	15	356	180	466	20	328	1150
	200L	318	305	133	164	361	562	378	400	19	396	200	515	25	355	1198
	225S	356	286	149	164	391	592	436	450	19	449	225	563	34	361	1240
	225M	356	311	149	164	391	592	436	450	19	449	225	563	34	361	1300
250M	406	349	168	192	405	606	490	550	24	497	250	660	40	409	1353	

Tab. 23: Dimensional sheet of size R65 - type IM B35

10.4.2 Type IM B5 with unit foot

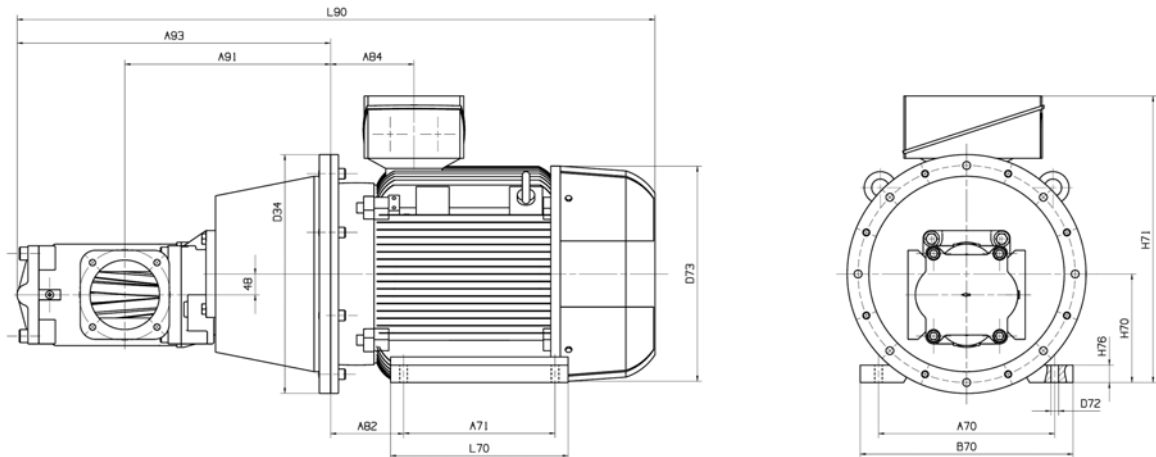


Size		Dimensions [mm]															
V_g [cm ³]	Motor	A50	A51	A54	A60	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
200...315	132S	265	225	75	105	135.5	295	404	300	300	14	262	185	18	387	270	809
	132M	265	225	75	105	135.5	295	404	300	300	14	262	185	18	387	270	809
	160M	300	265	90	110	181	325	434	350	350	18	314	235	18	472	305	954
	160L	300	265	90	110	181	325	434	350	350	18	314	235	18	472	305	954
	180M	300	265	90	110	181	325	434	350	350	18	356	235	18	521	305	1018
	180L	300	265	90	110	181	325	434	350	350	18	356	235	18	521	305	1048
	200L	350	300	100	125	190	325	434	407	400	18	396	260	20	575	350	1096
400...630	132S	265	225	75	105	135.5	305	506	300	300	14	262	185	18	387	270	911
	132M	265	225	75	105	135.5	305	506	300	300	14	262	185	18	387	270	911
	160M	300	265	90	110	181	335	536	350	350	18	314	235	18	472	305	1056
	160L	300	265	90	110	181	335	536	350	350	18	314	235	18	472	305	1056
	180M	300	265	90	110	181	335	536	350	350	18	356	235	18	521	305	1120
	180L	300	265	90	110	181	335	536	350	350	18	356	235	18	521	305	1150
	200L	350	300	100	125	190	335	536	407	400	18	396	260	20	575	350	1198
	225S	400	335	110	138	190	365	566	458	450	18	449	295	20	633	385	1240
	225M	400	335	110	138	190	365	566	458	450	18	449	295	20	633	385	1300
	250M	500	415	140	165	218	379	580	550	550	18	497	350	25	760	465	1353

Tab. 24: Dimensional sheet of size R65 - type IM B5 with unit foot

10.5 Size R95

10.5.1 Type IM B35

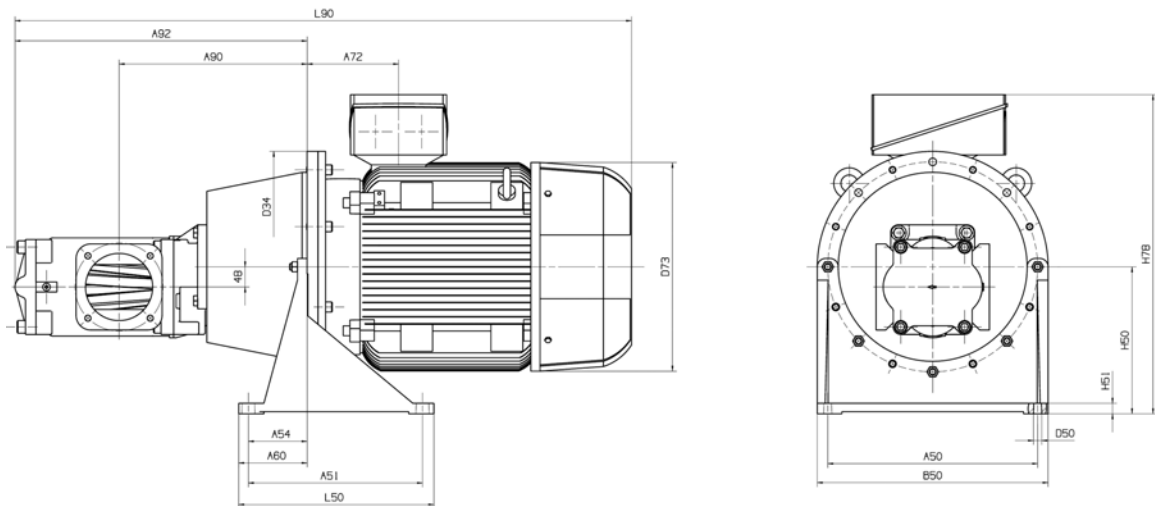


Size		Dimensions [mm]														
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
710...1120	160M	254	210	108	155	425	656	300	350	15	314	160	397	18	300	1150
	160L	254	254	108	155	425	656	300	350	15	314	160	397	18	300	1150
	180M	279	241	120.5	155	425	656	339	350	15	356	180	466	20	328	1214
	180L	279	279	120.5	155	425	656	339	350	15	356	180	466	20	328	1244
	200L	318	305	133	164	397	628	378	400	19	396	200	515	25	355	1264
	225S	356	286	149	164	431	662	436	450	19	449	225	563	34	361	1310
	225M	356	311	149	164	431	662	436	450	19	449	225	563	34	361	1370
	250M	406	349	168	192	434	665	490	550	24	497	250	660	40	409	1412
	280S	457	368	190	210	434	665	540	550	24	551	280	713	40	479	1485
1250...1800	280M	457	419	190	210	434	665	540	550	24	551	280	713	40	479	1595
	200L	318	305	133	164	437	687	378	400	19	396	200	515	25	355	1323
	225S	356	286	149	164	471	721	436	450	19	449	225	563	34	361	1369
	225M	356	311	149	164	471	721	436	450	19	449	225	563	34	361	1429
	250M	406	349	168	192	474	724	490	550	24	497	250	660	40	409	1471
	280S	457	368	190	210	474	724	540	550	24	551	280	713	40	479	1544
	280M	457	419	190	210	474	724	540	550	24	551	280	713	40	479	1654
	315S	508	406	216	238	519	769	610	660	28	616	315	830	50	527	1681
	315M	508	457	216	238	519	769	610	660	28	616	315	830	50	578	1846

Tab. 25: Dimensional sheet of size R95 - type IM B35

→ Unit dimensions of the R95 with DIN flange connections (cf. Chapter 9.5.2) on request.

10.5.2 Type IM B5 with unit foot



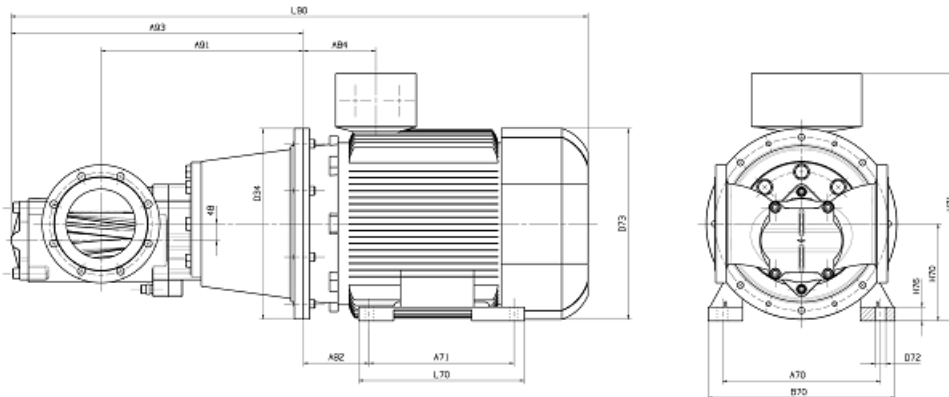
Size	Dimensions [mm]																
V_g [cm ³]	Motor	A50	A51	A54	A60	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
710...1120	160M	300	265	90	110	181	399	630	350	350	18	314	235	18	472	305	1150
	160L	300	265	90	110	181	399	630	350	350	18	314	235	18	472	305	1150
	180M	300	265	90	110	181	399	630	350	350	18	356	235	18	521	305	1214
	180L	300	265	90	110	181	399	630	350	350	18	356	235	18	521	305	1244
	200L	350	300	100	125	190	371	602	407	400	18	396	260	20	575	350	1264
	225S	400	335	110	138	190	405	636	458	450	18	449	295	20	633	385	1310
	225M	400	335	110	138	190	405	636	458	450	18	449	295	20	633	385	1370
	250M	500	415	140	165	218	408	639	550	550	18	497	350	25	760	465	1412
	280S	500	415	140	165	236	408	639	550	550	18	551	350	25	783	465	1485
280M	500	415	140	165	236	408	639	550	550	18	551	350	25	783	465	1595	
1250...1800	200L	350	300	100	125	190	411	661	407	400	18	396	260	20	575	350	1323
	225S	400	335	110	138	190	445	695	458	450	18	449	295	20	633	385	1369
	225M	400	335	110	138	190	445	695	458	450	18	449	295	20	633	385	1429
	250M	500	415	140	165	218	448	698	550	550	18	497	350	25	760	465	1471
	280S	500	415	140	165	236	448	698	550	550	18	551	350	25	783	465	1544
	280M	500	415	140	165	236	448	698	550	550	18	551	350	25	783	465	1654
	315S	600	495	165	195	270	487	737	660	660	22	616	380	30	895	550	1681
	315M	600	495	165	195	270	487	737	660	660	22	616	380	30	895	550	1846

Tab. 26: Dimensional sheet of size R95 - type IM B5 with unit foot

→ Unit dimensions of the R95 with DIN flange connections (cf. Chapter 9.5.2) on request.

10.6 Size R105

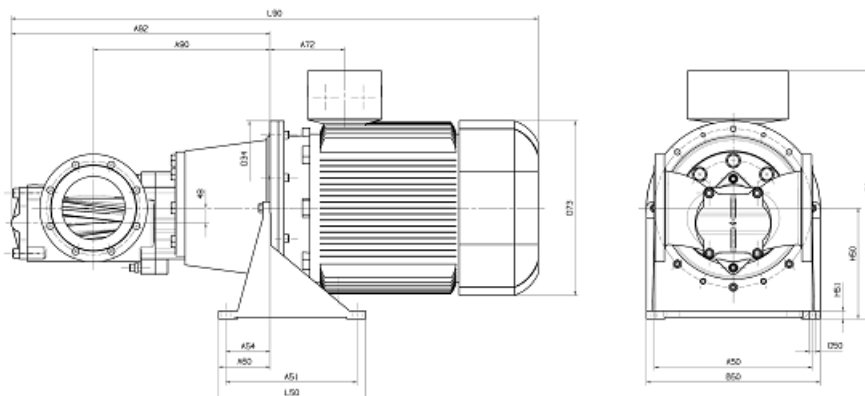
10.6.1 Type IM B35



Size	Dimensions [mm]															
V_g [cm ³]	Motor	A70	A71	A82	A84	A91	A93	B70	D34	D72	D73	H70	H71	H76	L70	L90
1800...2600	225S	356	286	149	164	543	803	436	450	19	449	225	563	34	361	1451
	225M	356	311	149	164	543	803	436	450	19	449	225	563	34	361	1511
	250M	406	349	168	192	585	845	490	550	24	497	250	660	40	409	1592
	280S	457	368	190	210	585	845	540	550	24	551	280	713	40	479	1655
	280M	457	419	190	210	585	845	540	550	24	551	280	713	40	479	1775
	315S	508	406	216	238	600	860	610	660	28	616	315	830	50	527	1772
	315M	508	457	216	238	600	860	610	660	28	616	315	830	50	578	1937

Tab. 27: Dimensional sheet of size R105 - type IM B35

10.6.2 Type IM B5 with unit foot

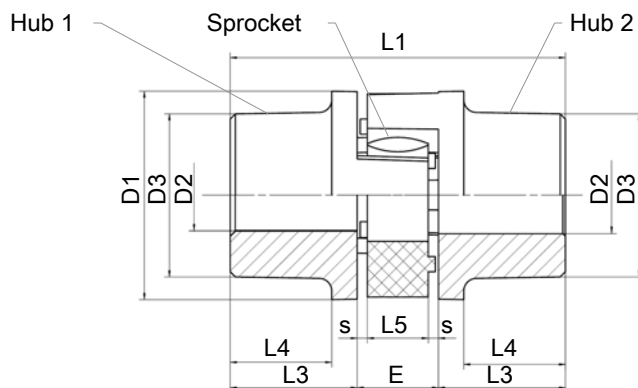


Size	Dimensions [mm]																
V_g [cm ³]	Motor	A50	A51	A54	A60	A72	A90	A92	B50	D34	D50	D73	H50	H51	H78	L50	L90
1800...2600	225S	400	335	110	138	189	518	778	458	450	18	449	295	20	633	385	1451
	225M	400	335	110	138	189	518	778	458	450	18	449	295	20	633	385	1511
	250M	500	415	140	165	218	559	819	550	550	18	497	350	25	760	465	1592
	280S	500	415	140	165	236	559	819	550	550	18	551	350	25	783	465	1655
	280M	500	415	140	165	236	559	819	550	550	18	551	350	25	783	465	1775
	315S	600	495	165	195	270	568	828	660	660	22	616	380	30	895	550	1772
	315M	600	495	165	195	270	568	828	660	660	22	616	380	30	895	550	1937

Tab. 28: Dimensional sheet of size R105 - type IM B5 with unit foot

11 Accessories

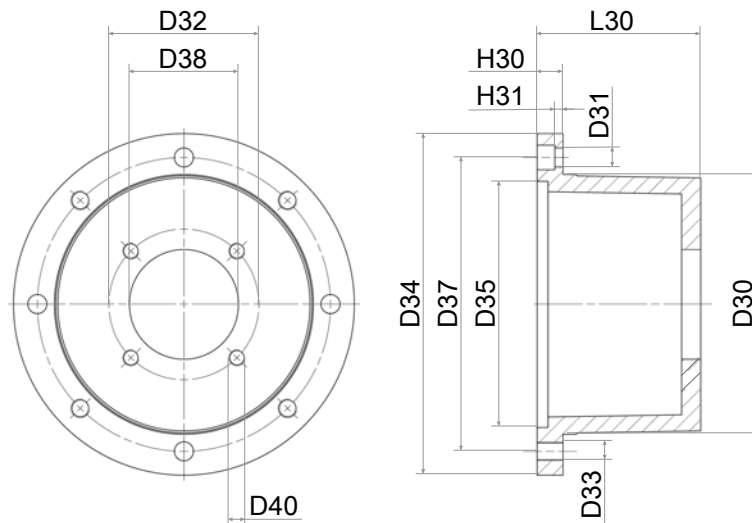
11.1 Coupling



Size Pump	Motor	Order designation	Dimensions [mm]														Weight [kg]
			Hub 1				Hub 2				Sprocket						
			D1	L1	D2	D3	L3	L4	D2	D3	L3	L4	D5	L5	s	E	
R25	71	KC040A14A15-43	40	66	14	40	25	-	15	40	25	-	18	12	2	16	0.42
	80	KC040A15A19-43	40	66	15	40	25	-	19	40	25	-	18	12	2	16	0.42
	90	KC040A15A24-43	40	66	15	40	25	-	24	40	25	-	18	12	2	16	0.35
	100/112	KB055A15A28-11	55	78	15	40	30	24	28	55	30	-	27	14	2	18	0.34
R35	71	KC040A14A20-43	40	66	14	40	25	-	20	40	25	-	18	12	2	16	0.40
	80	KA055A19A20-11	55	78	19	40	30	24	20	40	30	24	27	14	2	18	0.30
	90	KA055A20B24-11	55	78	20	40	30	24	24	40	30	24	27	14	2	18	0.22
	100/112	KB055A20A28-11	55	78	20	40	30	24	28	55	30	-	27	14	2	18	0.28
	132	KB065A20B38-11	65	90	20	48	35	28	38	65	35	-	30	15	2.5	20	0.43
R45	100/112	KC065A28A28-11	65	90	28	65	35	-	28	65	35	-	30	15	2.5	20	0.59
	132	KC065A28B38-11	65	90	28	65	35	-	38	65	35	-	30	15	2.5	20	0.50
	160	KB080A28A42-21	80	114	28	66	45	37	42	77	45	37	38	18	3	24	2.45
R65	132	KB080A38A40-21	80	114	38	66	45	37	40	77	45	37	38	18	3	24	2.30
	160	KC080A40A42-21	80	114	40	77	45	37	42	77	45	37	38	18	3	24	2.35
	180	KB095A40A48-21	95	126	40	75	50	40	48	94	50	40	46	20	3	26	3.68
	200	KB095A40A55-23	95	126	40	75	50	40	55	94	50	40	46	20	3	26	3.47
	225	KB105A40A60-23	105	140	40	85	56	45	60	104	56	45	51	21	3.5	28	4.85
	250	KB120A40A65-23	120	160	40	98	65	52	65	118	65	52	60	22	4	30	7.80
R95	160	KF095A42A55-21	95	151	42	94	75	65	55	94	50	40	46	20	3	26	5.63
	180	KF095A48A55-21	95	151	48	94	75	65	55	94	50	40	46	20	3	26	5.40
	200	KC105A55A55-21	105	140	55	104	56	45	55	104	56	45	51	21	3.5	28	5.52
	225	KC105A55A60-23	105	140	55	104	56	45	60	104	56	45	51	21	3.5	28	5.33
	250	KA135A55A65-21	135	185	55	115	75	61	65	115	75	61	68	26	4.5	35	10.56
	280	KH135A55A75-63	135	210	55	115	75	47	75	135	100	-	68	26	4.5	35	14.40
	315	KH160A55A80-63	160	235	55	135	85	53	80	160	110	-	80	30	5	40	23.87
R105	225	KA160A55A60-21	160	210	55	135	85	69	60	135	85	69	80	30	5	40	17.06
	250	KH120A55A65-21	120	185	55	98	65	52	65	120	90	-	60	22	4	30	9.10
	280	KH135A55A75-21	135	210	55	115	75	47	75	135	100	-	68	26	4.5	35	14.40
	315	KA200A55A80-21	200	245	55	160	100	81	80	160	100	81	100	34	5.5	45	29.54

Tab. 29: Coupling

11.2 Bracket

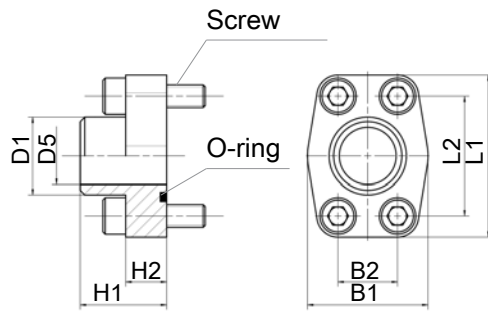


Size Pump	Motor	Order designation	Dimensions [mm]											Weight [kg]	
			D34	D35	D37	D33	D31	H31	L30	H30	D30	D38	D32		D40
R25	71	PT160A063-090	160	110	130	M8	9	4	90	13	110	63	90	M8	0.4
	80	PT200A063-100	200	130	165	M10	11	5	100	16	145				0.9
	90	PT200A063-110							110						0.8
	100	PT250A063-124	250	180	215	M12	14		124	18	190				1.4
R35	71	PT160A080-101	160	110	130	M8	9	4	101	13	110	80	110	M10	1.2
	80	PT200A080-100	200	130	165	M10	11	5	100	16	145				0.7
	90	PT200A080-124							124						0.8
	100/112	PT250A080-120	250	180	215	M12	14	6	120	19	190				1.2
	132	PT300A080-155	300	230	265			7	155	20	234				2.1
R45	100/112	PT250A110-135	250	180	215	M12	14		135	18	190	110	145	M12	1.8
	132	PT300A110-155	300	230	265			7	155	20	234				2.2
	160	PT350A110-188	350	250	300	M16	18	8.5	188	26	260				2.9
R65	132	PT300A160-168	300	230	265	M12	14	5	168	20	234	160	200	M14	1.9
	160/180	PT350A160-204	350	250	300	M16	18	7	204	26	260			M18	3.5
	200	PT400A160-204	400	300	350			8.5			300				6.3
	225	PT450A160-234	450	350	400				234		350				6.6
	250	PT550A160-248	550	450	500				248		450				12.5
R95	160/180	PT350A152-256	350	250	300	M16	18	7	256	26	260	152.4	228.6	M16	4.15
	200	PT400A152-228	400	300	350				228		300				5.5
	225	PT450A152-262	450	350	400				262		350				9.1
	250	PT550A152-265	550	450	500				265		450				14.0
	280	PT550A152-265													14.0
	315	PT660A152-310	660	550	600	M20	22	10.5	310	32	550				19.0
R105	225	PT450H250-253	450	350	400	M16	18	7.5	253	25	350	250	300	M20	8.3
	250	PT550H250-295	550	450	500			8.5	295	26	450				10.0
	280	PT550H250-295						8.5							10.0
	315	PT660H250-310	660	550	600	M20	22	10.5	310	32	550				19.0

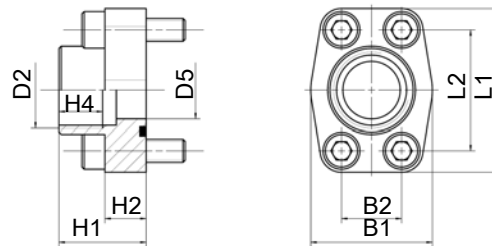
Tab. 30: Bracket

11.3 Connection flanges

SAE weld-on flange



SAE threaded flange



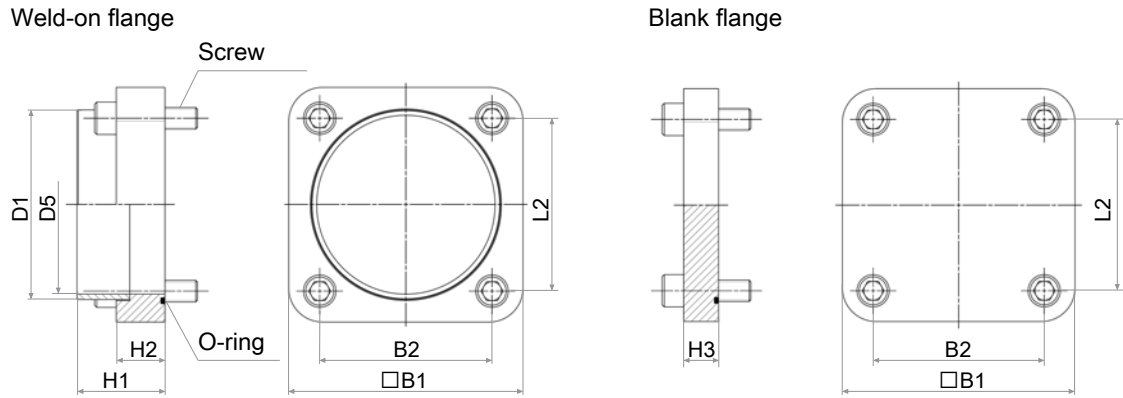
SAE size	Dimensions [mm]								O-ring	Screws DIN 912	Weight [kg]
	D1	D5	B1 ¹⁾	B2	L1 ¹⁾	L2	H1	H2 ¹⁾			
3/4"	27	19	50	22.3	65	47.6	36	18	24.99x3.53	M10x35	0.49
1"	34	25	55	26.2	70	52.4	38	18	32.92x3.53	M10x35	0.56
1.1/2"	49	38	78	35.7	93	69.9	44	25	47.22x3.53	M12x45	1.19
2"	61	50	90	42.9	102	77.8	45	25	56.74x3.53	M12x45	1.37
2.1/2"	77	64	105	50.8	114	88.9	50	25	69.44x3.53	M12x45	1.69
3"	89	73	124	61.9	134	106.4	50	27	85.32x3.53	M16x50	2.70
4"	115	99	146	77.8	162	130.2	50	27	110.70x3.53	M16x50	3.45

Tab. 31: SAE weld-on flange

SAE size	Dimensions [mm]									O-ring	Screws DIN 912	Weight [kg]
	D2	D5 ¹⁾	B1 ¹⁾	B2	L1 ¹⁾	L2	H1	H2 ¹⁾	H4 min.			
3/4"	G1/2	13	50	22.3	65	47.6	36	18	15	24.99x3.53	M10x35	0.55
	G3/4	19							18			0.52
1"	G1/2	13	55	26.2	70	52.4	38	18	18	32.92x3.53	M10x35	0.63
	G3/4	19							18			0.62
	G1	25							20			0.61
1.1/2"	G3/4	19	78	35.7	93	69.9	44	25	18	47.22x3.53	M12x45	1.65
	G1	25							20			1.51
	G1.1/4	32							22			1.35
	G1.1/2	38							24			1.25
2"	G1	25	90	42.9	102	77.8	45	25	22	56.74x3.53	M12x45	1.71
	G1.1/4	32							22			1.68
	G1.1/2	38							24			1.65
	G2	51							26			1.38
2.1/2"	G1.1/2	38	105	50.8	114	88.9	50	25	24	69.44x3.53	M12x45	1.83
	G2	51							26			1.80
	G2.1/2	63							30			1.76
3"	G2	51	124	61.9	134	106.4	50	27	26	85.32x3.53	M16x50	2.50
	G3	73							30			2.20
4"	G3	73	146	77.8	162	130.2	50	27	30	110.70x3.53	M16x50	2.95

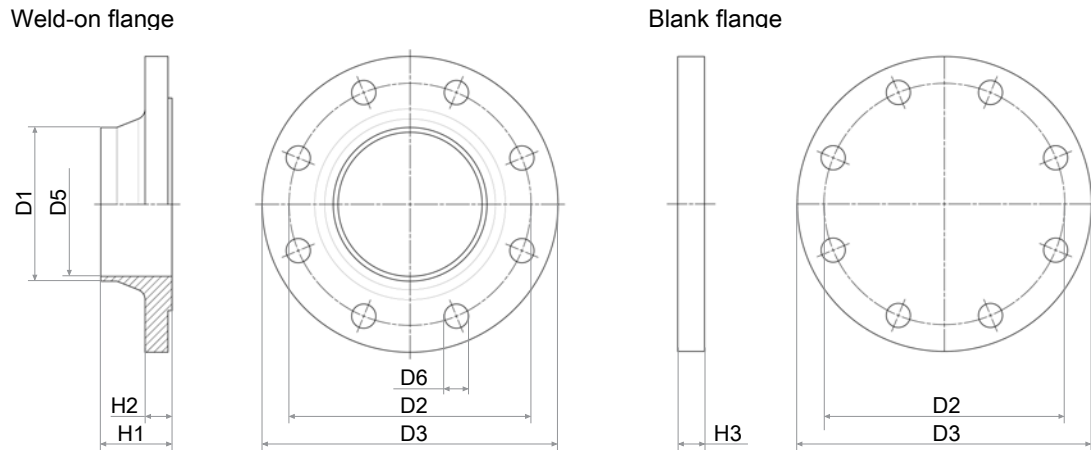
Tab. 32: SAE threaded flange

¹⁾ Manufacturer-dependent deviations are possible.



Size	Dimensions [mm]								O-ring	Screws DIN 912	Weight [kg]	
	D1	D5	B1	B2	L2	H1	H2	H3			Connection flange	Blank flange
F132	139.7	132	173	127.2	127.2	65	36	26	139.29x3.53	M16x60	5.0	5.8
F160	168.3	160	205	254.6	254.6	65	36	26	177.39x3.53	M16x60	6.5	8.1

Tab. 33: Connection and blank flange size R95 (standard)



Size	Dimensions [mm]									Weight [kg]	
	D1	D2	D3	D5	D6	H1	H2	H3	Connection flange	Blank flange	
DN160	168.3	240	285	159.3	22	55	22	22	7.8	10.5	
DN200	219.1	295	340	206.5	22	62	24	24	11.6	16.5	

Tab. 34: DIN connection and blank flange size R95 and R105

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