

Gear Pumps - AP300



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1 General information

1.1 Introduction to the product

Gear pumps are widely used in modern hydraulic systems due to their high performance, long service life and low purchase and maintenance costs.

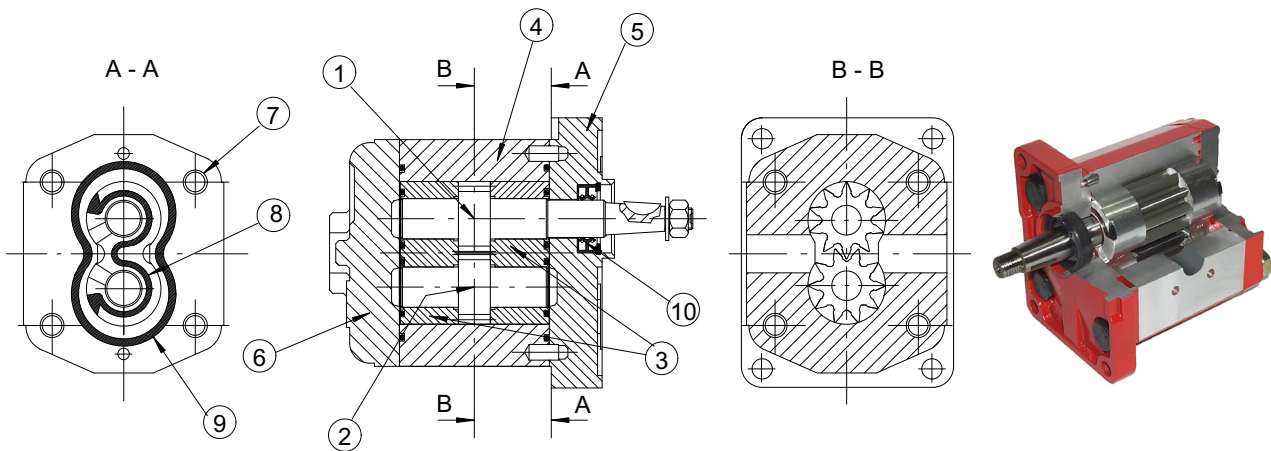
Product development has made it possible to achieve high operating pressures, excellent volumetric and mechanical efficiency, and lower noise levels, in operation, by means of:

- meticulous CAD design of the gear teeth and balancing areas
- an exacting choice of high-performance materials

- carefully controlled heat treatments
- increasingly tight coupling tolerances, and a high standard of surface finish.

Bucher Hydraulics S.p.A. has achieved these results by constantly improving its design, control, and manufacturing techniques in line with the latest technological developments, while simultaneously introducing a Quality Control System which ensures that every single product offers the same high standards.

Product description



- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Drive gear 2. Driven gear 3. Balancing 4. Pump body 5. Front cover | <ol style="list-style-type: none"> 6. Rear cover 7. Mounting tie rod 8. Balancing seal 9. Oil seal 10. Shaft seal |
|---|--|

Referring to the pump shown in the figure, the drive gear (1) drives round the driven gear (2), transferring the oil from the suction port to the pressure port as it turns round.

The gears are made from high strength steel alloy.

The bushings (3) serve a dual purpose:

- to act as a bearing for the gears
- to balance axial and radial thrust in proportion to the change in operating pressure.

The gears-bushings assembly is fitted inside the pump body (4), in which generally the suction and pressure ports are formed.

The pump body is made of high strength extruded aluminium alloy.

The front cover (5), which also acts as a mounting flange, and the rear cover (6) are connected to one another by mounting tie rods (7).

The pump assembly is completed by a series of seals:

- Balancing seals (8) can be fitted in recesses in the bushings as shown in the figure, or in the covers. Their purpose is to delimit the longitudinal balancing area separating the suction and pressure zones.
- Oil seals (9) prevent oil from leaking out.

- An oil retaining ring with the dual purpose of preventing oil leaks from the drive gear shaft and preventing dust or other pollutants from entering the pump itself. Unless otherwise specified, the seals are in nitrilic compound offering high mechanical strength and heat resistance.

- Viton seals are available on request.

(see 2.2 Recommended fluids/Allowed temperatures).

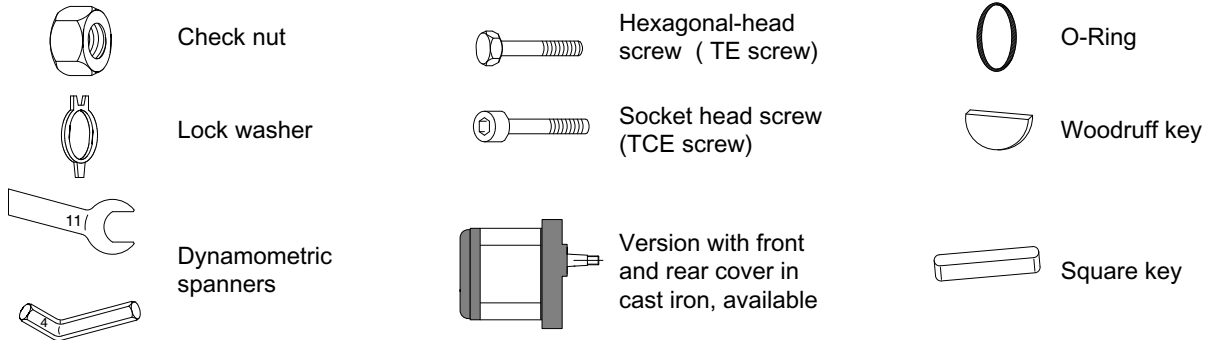
Versions available

The Bucher Hydraulics S.p.A. product range includes single pumps of groups 05-100-200-300 (corresponding to the common group denominations: 05-1-2-3) and several combinations of double pumps, triple pumps, and so on, that can be assembled together according to versions of displacement, flanging, and auxiliary valves indicated in this catalogue.

Bucher Hydraulics S.p.A. will examine any request for special versions, features, and customisations not shown in this catalogue.

To make such a request, please contact our Sales Department.

1.2 Non-standard symbols used in the text



2 Technical information

2.1 Identifying the rotation direction

The rotation direction of a gear pump is identified by looking at the pump from the front and with the drive gear turned upwards (see figures below).

Pumps with clockwise rotation (D) have a drive gear which turns clockwise, with the suction port on the left and the pressure port on the right.

Pumps with counterclockwise rotation (S) have a drive gear which turns counterclockwise, with the suction port on the right and the pressure port on the left.

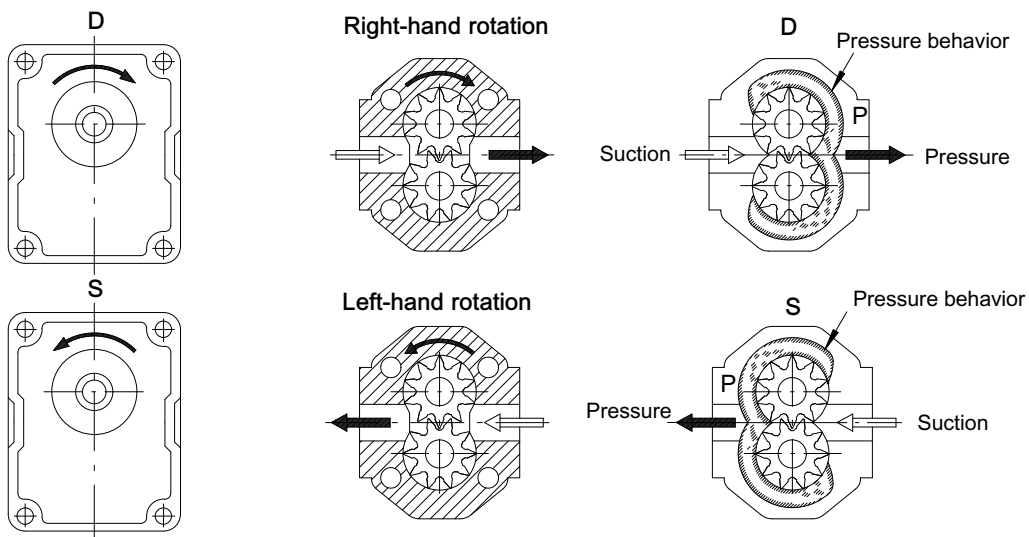
The figure also shows the pressure flow inside the pumps as the oil is transferred from the suction port to the pressure port.

Pumps with a unidirectional rotation (D or S) have the denomination AP.

It is possible to change the rotation direction of the entire range of pumps without having to replace any component, except for the AP100 group, for which it is necessary to replace the front cover.

To ensure a good technical result, we recommend in any case that such inversion be carried out at our factory.

Technical descriptions are available on request, which show the correct procedure for the pump rotation inversion.



2.2 Recommended fluids/Allowed temperatures

We recommend using only mineral oil-based hydraulic fluids that comply with the ISO/DIN standards.

Viscosity range:

recommended $20 \div 120 \text{ mm}^2/\text{s}$ (cSt)

permitted up to $700 \text{ mm}^2/\text{s}$ (cSt)

Operating temperature

| Type of seals | Temperature |
|---------------|---------------------------------------|
| | AP300 |
| Buna N | $-15 \div 80 \text{ }^\circ\text{C}$ |
| Viton* | $-10 \div 120 \text{ }^\circ\text{C}$ |



Attention: Use of pumps at temperatures above 80°C must always be agreed upon with our Technical Office, and in any case this can cause a significant worsening in the volumetric efficiency. For use under conditions different from those indicated in this catalogue, please contact our Sales Department

2.3 Suction

The absolute suction pressure must be $P_{in} \geq 0.75 \text{ bar}$ (11 PSI); therefore, the following must be avoided:

- large height differences between pump and tank
- long stretches of piping
- special features such as:
 - bends
 - reductions in diameter
 - quick couplings
 - etc.

It is also advisable to choose a filter of a suitable size to minimise any pressure drop and to take measures to prevent gradual clogging over time.

(Example 1)

In certain cases, the suction pressure can exceed 1 bar (14.3 PSI), or atmospheric pressure.

Please contact our Sales Department, solution for $P_{in} \leq 3.5 \text{ bar}$ (50 PSI), are available.

If in a particular application the P_{in} pressure is higher than the recommended value, contact our Sales Office.

The diameter of the suction pipe should ensure that the oil speed will fall within the range: $v = 0.6 - 1.2 \text{ m/s}$.

(Example 2)

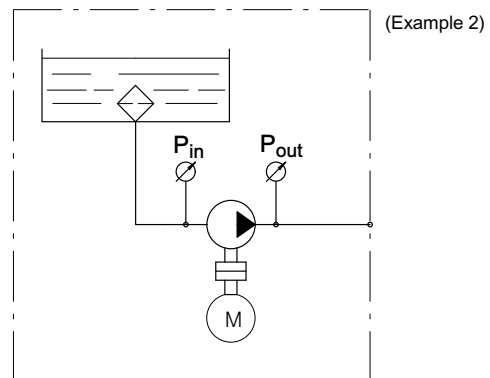
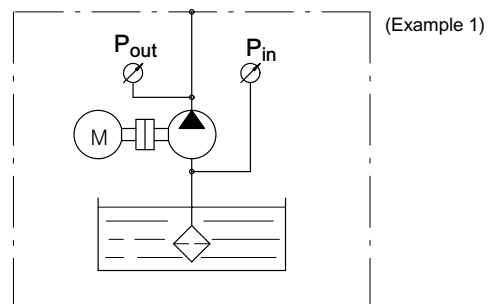
2.4 Filtration

A short service life of a gear pump is normally due to the presence of impurities in the oil.

It is therefore essential to have an effective filter in the system and to carry out regular maintenance to ensure a long, trouble-free service life.

When possible and compatible with the hydraulic circuit installed, Bucher Hydraulics S.p.A. recommends that the system have total filtration (suction, pressure, return).

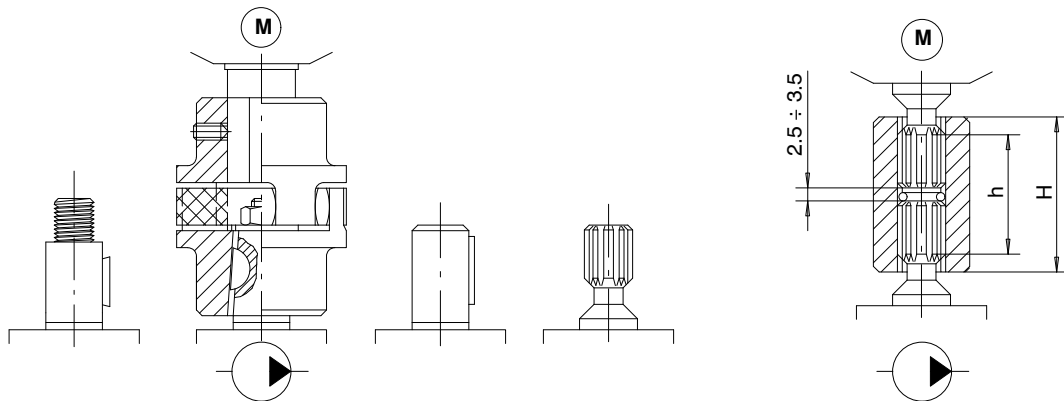
In any case, the filtering system must constantly ensure an oil contamination class equal to or less than those shown in the following table.



| Operating pressure | > 170 bar 2430 PSI | < 170 bar 2430 PSI |
|--------------------------------|-----------------------|-----------------------|
| Contamination class NAS 1638 | 9 | 10 |
| Contamination class ISO 4406 | 18/15 | 19/16 |
| Obtain wit filter $\beta_x=75$ | 20 | 25 |

We also recommend that an adequate air filter be installed on the tank to prevent contaminating substances such as dust, sand, etc. from getting into the oil, as these substances can enter the tank through the air flow caused by the level variations in the tank itself.

2.5 Motor-pump coupling



Absolutely no radial or axial forces should be transmitted to the drive shaft in the motor-pump coupling.

Such forces cause rapid and irregular wear on the balancing surface of the bushings and gear support, with a consequent worsening in pump performance.

The coupling joint must be able to absorb any discrepancies in the coaxial alignment of the motor-pump shafts without placing any load on the pump shaft.

In the couplings between splined shafts, the connecting sleeve must be free to move along its axis.

The length of the sleeve must be sufficient to cover the splined sections of the motor-pump shafts completely in any position.

The distance between the ends of the shafts must be between 2.5 ± 3.5 mm (.10" \pm .14").

Make sure that the splined coupling is suitably lubricated to protect it against rapid deterioration.

If there are radial and/or axial loads on the drive shaft, such as when it is driven by a V-belt and pulley or pair of gear wheels, it should be fitted with a front cover with supporting bearings.

2.6 General precaution

In addition to the recommendations regarding fluids, filtration, coupling, etc., we suggest the following:

- Always check the rotation direction of the pump's drive shaft; it must be compatible with the rotation direction of the pump itself.
- Be particularly careful in cleaning and make sure, when connecting the suction and pressure piping, that no chips, rag threads, teflon tape, etc. get into the pump circulation system.
- Check the tightness of the suction and pressure fittings, the correct positioning of the O-Ring, and make sure there is no dirt between the flange and the pump body.
- The first pump start-up can be facilitated by manually filling the suction piping and the pump itself with oil. To facilitate air bleeding, start the pump with the circuit not pressurised.

- To ensure the best heat distribution inside the tank, make sure the return pipe is not too close to the pump's suction piping. The pipings themselves should be below oil tank level to prevent the formation of foam.
- Do not subject the pumps to operating conditions different from those indicated in section 2.8; for extreme operations, always contact our Technical Department.
- Never use fluids different from those indicated in section 2.2.
- In the event of pump painting, do not use solvents or paints that are incompatible with the material of the seals. Do not bake paint with excessively high temperatures. Do not paint over the product identification plate; the warranty will not be valid if this plate is illegible.

2.6.1 Directives and standards

Atex



Attention: The equipment and protective systems of these catalogue ARE NOT intended for use in potentially explosive atmospheres that is to say where there is an explosive atmosphere referred to in Article 2 of the Directive 99/92/EC and referred to Article 1.3 of the Directive 94/9/EC

2.7 Pressure

Pressure levels:

P1 = continuous pressure

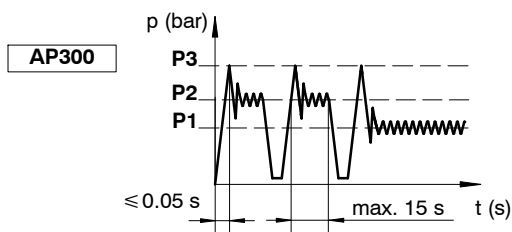
P2 = intermittent pressure

P3 = peak pressure

The recommended oil speed in the pressure pipes is:

$v = 2 \text{ to } 5 \text{ m/s}$

The characteristic data of each pump is given in the tables on the following pages.



Machinery safety

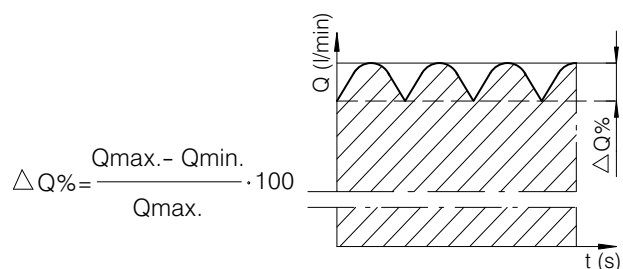
Hydraulic pumps are excluded by Directive 98/37/EC

ISO 9001: 2000

Bucher Hydraulics S.p.A. is certified for research, development and production of directional control valves, gear pumps and motors, power units, electro pumps, cartridge valves and integrated manifolds for hydraulic applications.

Pressure flow rate surging

| Pump | z | $\Delta Q\%$ |
|-------|----|--------------|
| AP300 | 10 | 16 |



2.8 Calculating the specification of a gear pump

The following parameters are defined:

- V_c** = (cm³/r) pump displacement;
- n** = (r/min) no. of rpms of the drive shaft;
- Q** = (l/min) flow rate;
- p** = (bar) operating pressure;
- T** = (Nm) drive torque;
- N** = (kW) power;
- η_v** = (%) volumetric efficiency;
- η_m** = (%) mechanical efficiency;
- η_t** = (%) total efficiency

$$Q = \frac{V_c \cdot n}{100000} \cdot \eta_v$$

$$T = 1.59 \cdot \frac{p \cdot V_c}{\eta_m}$$

$$N = \frac{Q \cdot p}{6.12 \cdot \eta_t}$$

Example

AP300/45 V_c= 11.1 cm³/r n= 1500 r/min p=200 bar η_v= 94% η_m= 90% η_t= 84.6%

$$Q = \frac{45 \cdot 1500}{100000} \cdot 94 = 63.45 \text{ l/min.}$$

$$T = 1.59 \cdot \frac{200 \cdot 45}{90} = 159 \text{ Nm}$$

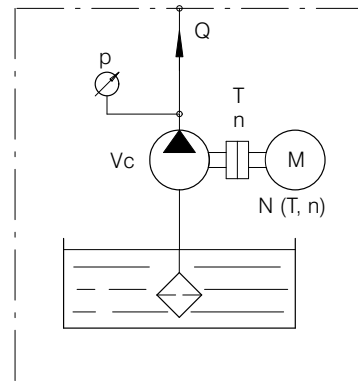
$$N = \frac{63.45 \cdot 200}{6.12 \cdot 84.6} = 24.51 \text{ kW}$$

Example



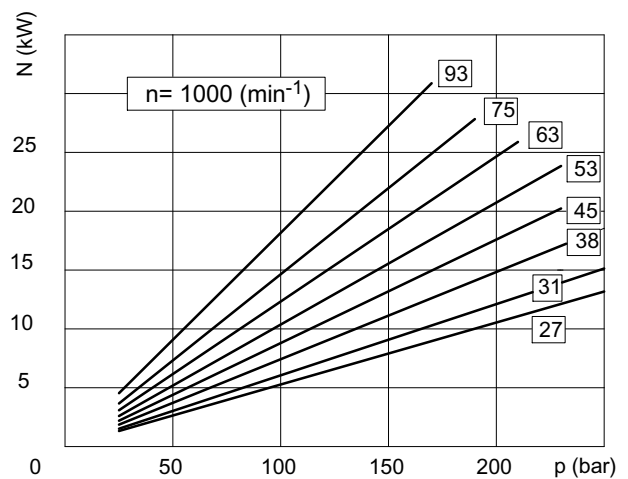
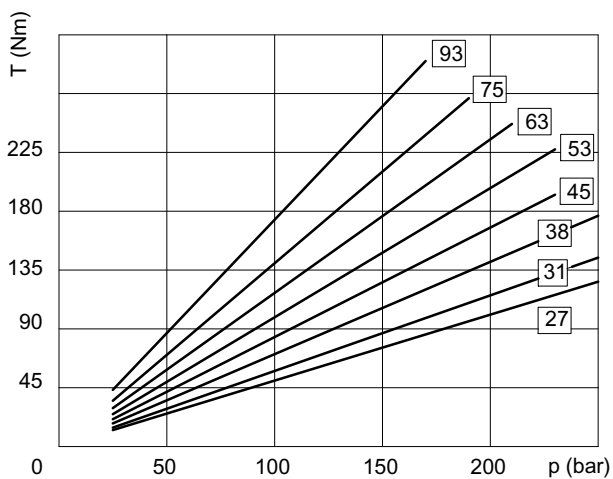
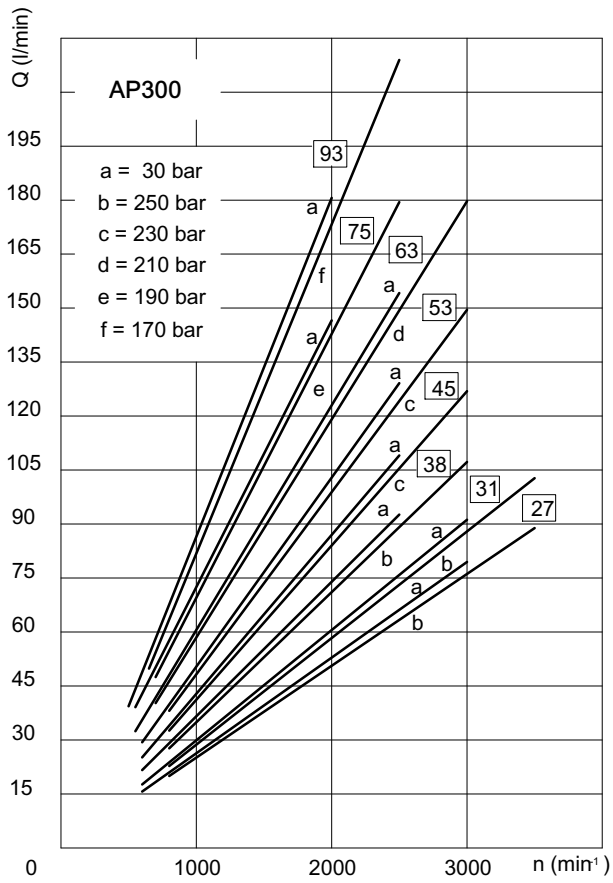
Important: Please contact our Sales Department if even one of the operating limits indicated in the tables below (temperature, pressure, rpm) is exceeded, as well as in the case of two or more maximum values at the same time, or for applications with particularly heavy-duty cycles.

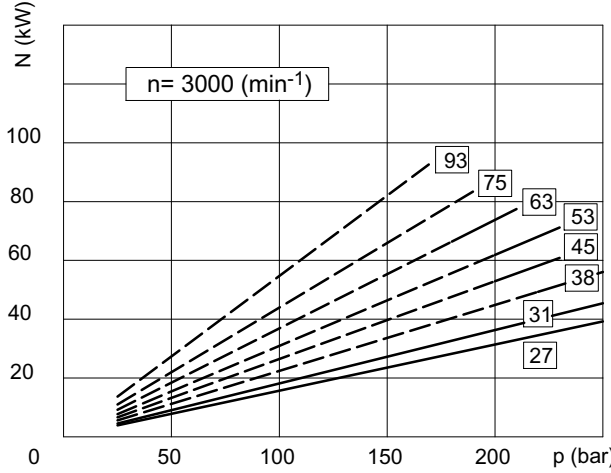
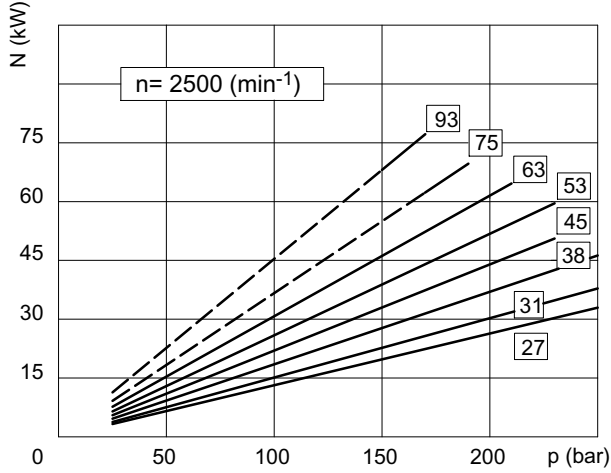
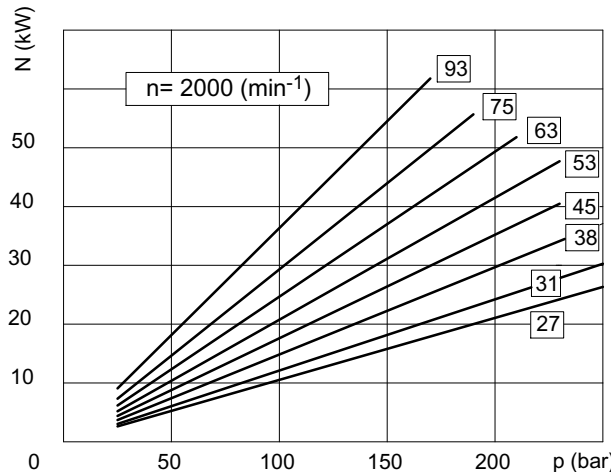
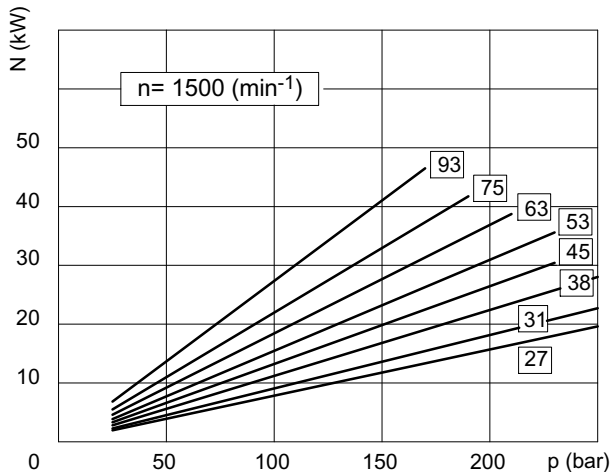
| AP300 Type | Displacement | | Max. pressure | | | | | | n min. | | n max. | |
|---------------|----------------------|------------------|---------------|--------|-----|--------|-----|--------|--------|--------|--------|--------|
| | cm ³ /rev | Cu. In. P. R. | P1 | | P2 | | P3 | | P ≤ P1 | P > P1 | P ≤ P1 | P > P1 |
| | | | bar | P.S.I. | bar | P.S.I. | bar | P.S.I. | | | | |
| AP300/27 | 27.0 | 1.674 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 3000 | 3500 |
| AP300/31 | 31.0 | 1.891 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 3000 | 3500 |
| AP300/38 | 38.0 | 2.318 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 2500 | 3000 |
| AP300/45 | 45.0 | 2.745 | 200 | 2900 | 230 | 3300 | 260 | 3700 | 600 | 800 | 2500 | 3000 |
| AP300/53 | 53.0 | 3.233 | 200 | 2900 | 230 | 3300 | 260 | 3700 | 600 | 800 | 2500 | 3000 |
| AP300/63 | 63.0 | 3.843 | 180 | 2600 | 210 | 3000 | 240 | 3400 | 550 | 700 | 2500 | 3000 |
| AP300/75 | 75.0 | 4.575 | 170 | 2400 | 190 | 2700 | 220 | 3150 | 550 | 700 | 2000 | 2500 |
| AP300/93 | 93.0 | 5.673 | 150 | 2100 | 170 | 2400 | 200 | 2900 | 500 | 650 | 2000 | 2500 |



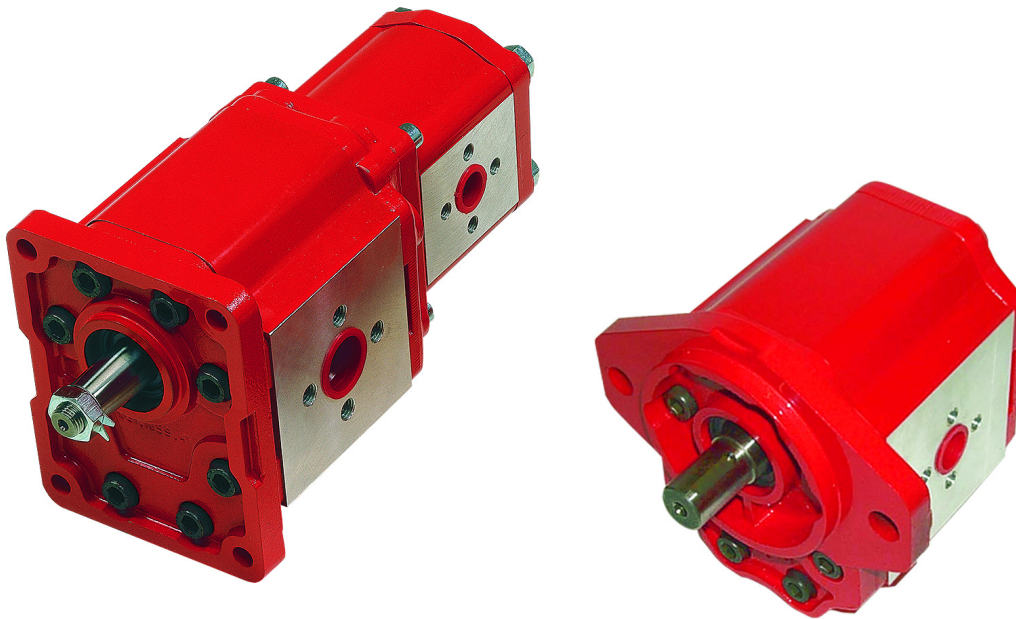
2.9 Diagrams

Oil viscosity: 37 mm²/s
Oil temperature: 40° C





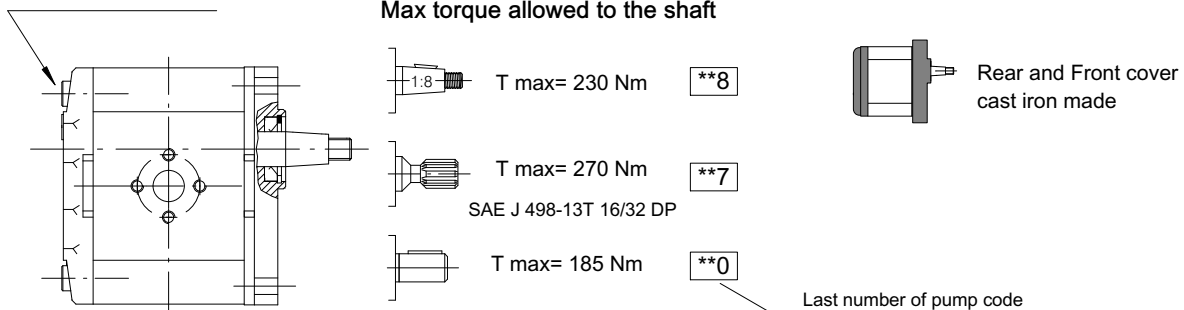
3 Gear pump group AP300



| AP300 Type | Displacement | | Max. pressure | | | | | | n min. | | n max. | |
|---------------|----------------------|------------------|---------------|--------|-----|--------|-----|--------|--------|--------|--------|--------|
| | cm ³ /rev | Cu. In. P. R. | P1 | | P2 | | P3 | | P ≤ P1 | P > P1 | P ≤ P1 | P > P1 |
| | | | bar | P.S.I. | bar | P.S.I. | bar | P.S.I. | | | | |
| AP300/27 | 27.0 | 1.674 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 3000 | 3500 |
| AP300/31 | 31.0 | 1.891 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 3000 | 3500 |
| AP300/38 | 38.0 | 2.318 | 220 | 3150 | 250 | 3600 | 280 | 4000 | 600 | 800 | 2500 | 3000 |
| AP300/45 | 45.0 | 2.745 | 200 | 2900 | 230 | 3300 | 260 | 3700 | 600 | 800 | 2500 | 3000 |
| AP300/53 | 53.0 | 3.233 | 200 | 2900 | 230 | 3300 | 260 | 3700 | 600 | 800 | 2500 | 3000 |
| AP300/63 | 63.0 | 3.843 | 180 | 2600 | 210 | 3000 | 240 | 3400 | 550 | 700 | 2500 | 3000 |
| AP300/75 | 75.0 | 4.575 | 170 | 2400 | 190 | 2700 | 220 | 3150 | 550 | 700 | 2000 | 2500 |
| AP300/93 | 93.0 | 5.673 | 150 | 2100 | 170 | 2400 | 200 | 2900 | 500 | 650 | 2000 | 2500 |

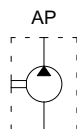
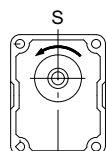
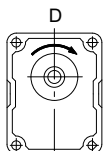
 65 ±10 Nm

Max torque allowed to the shaft



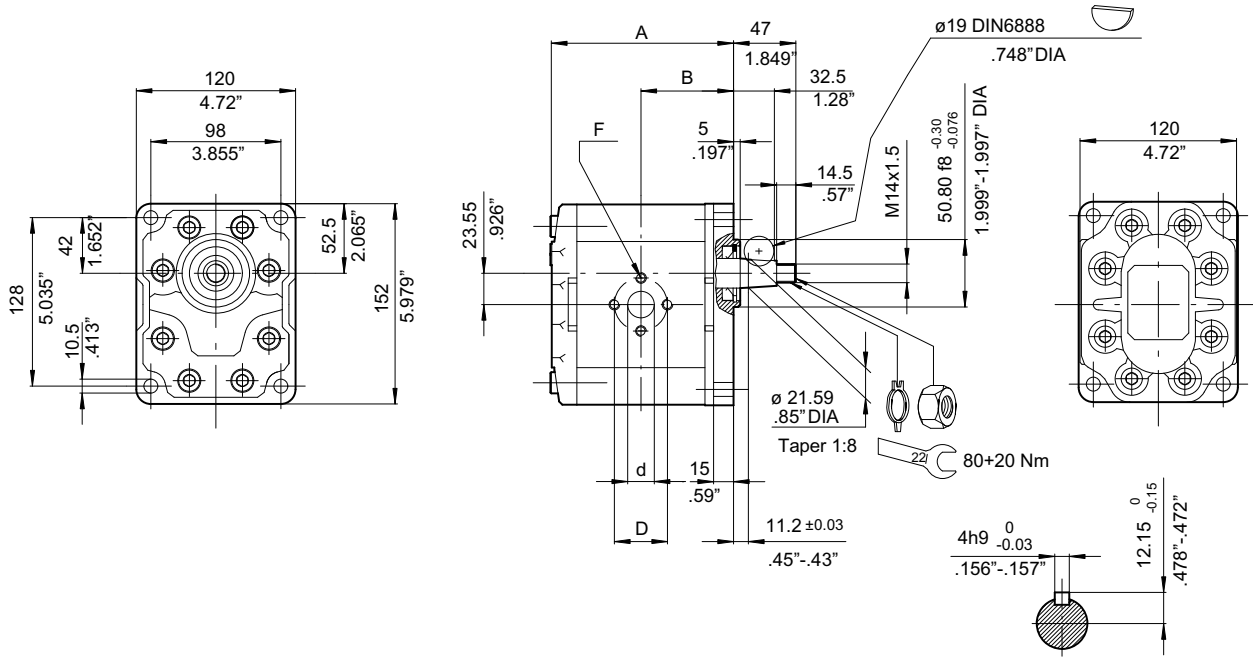
Clockwise
rotation (D)

Counter-clockwise
rotation (S)



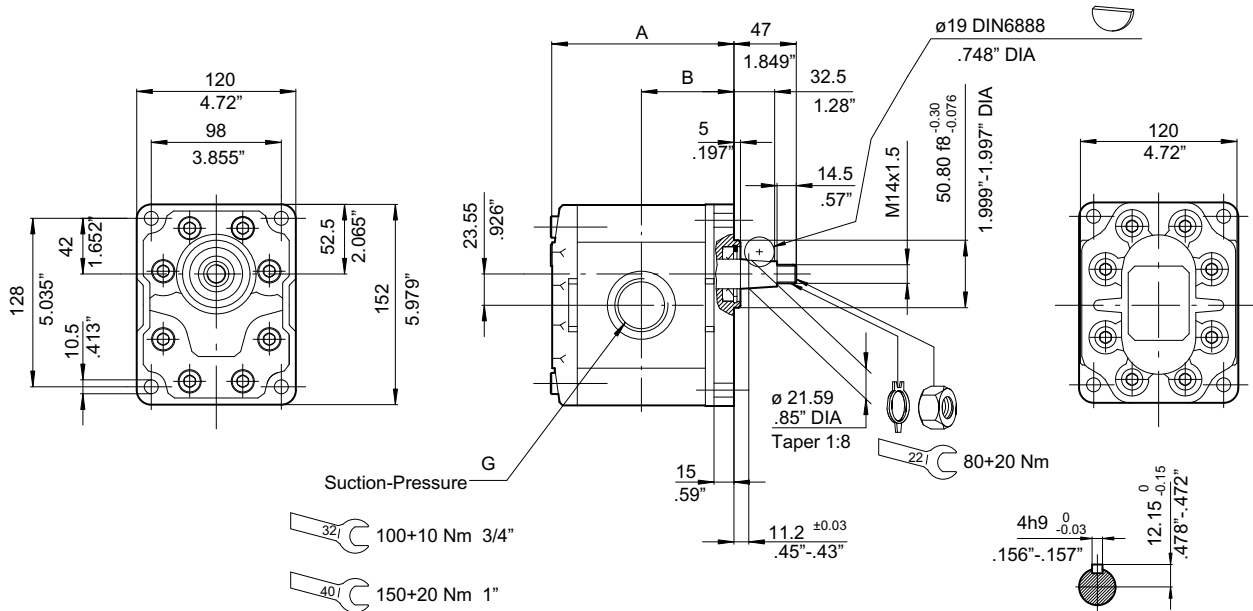
Notes:

- For uses at the operating limits, see note in section 2.8.
- For the types of pumps without ordering code, contact our Sales Dept.



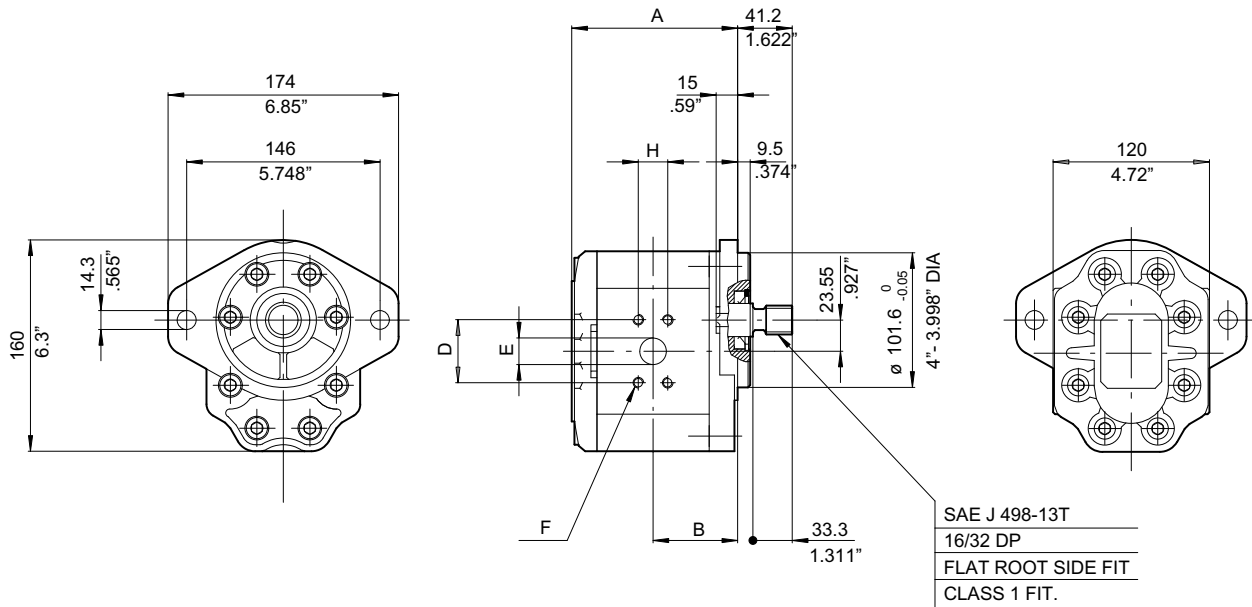
| Type | Displacement cm ³ /rev | Dimensions | | | | Suction | | | | | Pressure | | | | |
|----------|--------------------------------------|------------|------|---------|------|---------|------|---------|------|----------|----------|------|---------|------|---------|
| | | A mm | inch | B mm | inch | d mm | inch | D mm | inch | F mm | d mm | inch | D mm | inch | F mm |
| AP300/27 | 27 | 126.0 | 4.96 | 64.0 | 2.51 | 27 | 1.06 | 51 | 2.00 | M10X1.5 | 20 | .78 | 40 | 1.56 | M8X1.25 |
| AP300/31 | 31 | 129.0 | 5.07 | 65.0 | 2.55 | | | | | | | | | | |
| AP300/38 | 38 | 133.5 | 5.25 | 67.5 | 2.65 | | | | | | | | | | |
| AP300/45 | 45 | 138.5 | 5.43 | 70.0 | 2.75 | | | | | | | | | | |
| AP300/53 | 53 | 143.0 | 5.62 | 72.5 | 2.85 | | | | | | | | | | |
| AP300/63 | 63 | 150.0 | 5.90 | 75.5 | 2.97 | 31 | 1.22 | 62 | 2.43 | M12X1.75 | 25 | .98 | 51 | 2.00 | M10X1.5 |
| AP300/75 | 75 | 157.5 | 6.20 | 79.5 | 3.13 | | | | | | | | | | |
| AP300/93 | 93 | 169.0 | 6.65 | 85.5 | 3.36 | | | | | | | | | | |

| Clockwise rotation: D | | Counter-clockwise rotation: S | |
|-----------------------|--------------|-------------------------------|--------------|
| Type | Order Code | Type | Order Code |
| AP300/27 D 218 | 200103113201 | AP300/27 S 218 | 200103113301 |
| AP300/31 D 218 | 200103213201 | AP300/31 S 218 | 200103213301 |
| AP300/38 D 218 | 200103313201 | AP300/38 S 218 | 200103313301 |
| AP300/45 D 218 | 200103413201 | AP300/45 S 218 | 200103413301 |
| AP300/53 D 218 | 200103513201 | AP300/53 S 218 | 200103513302 |
| AP300/63 D 218 | 200103613202 | AP300/63 S 218 | 200103613301 |
| AP300/75 D 218 | 200103713201 | AP300/75 S 218 | 200103713301 |
| AP300/93 D 218 | 200103813201 | AP300/93 S 218 | 200103813303 |



| Type | Displacement cm ³ /rev | Dimensions | | | | Suction G BSPP | Pressure G BSPP |
|----------|--------------------------------------|------------|--------|------|--------|----------------------|-----------------------|
| | | A | | B | | | |
| | | mm | inches | mm | inches | | |
| AP300/27 | 27 | 126.0 | 4.96 | 64.0 | 2.51 | 1" | 3/4" |
| AP300/31 | 31 | 129.0 | 5.07 | 65.0 | 2.55 | | |
| AP300/38 | 38 | 133.5 | 5.25 | 67.5 | 2.65 | | |
| AP300/45 | 45 | 138.5 | 5.43 | 70.0 | 2.75 | | |
| AP300/53 | 53 | 143.0 | 5.62 | 72.5 | 2.85 | | |
| AP300/63 | 63 | 150.0 | 5.90 | 75.5 | 2.97 | | |
| AP300/75 | 75 | 157.5 | 6.20 | 79.5 | 3.13 | | |
| AP300/93 | 93 | 169.0 | 6.65 | 85.5 | 3.36 | | |

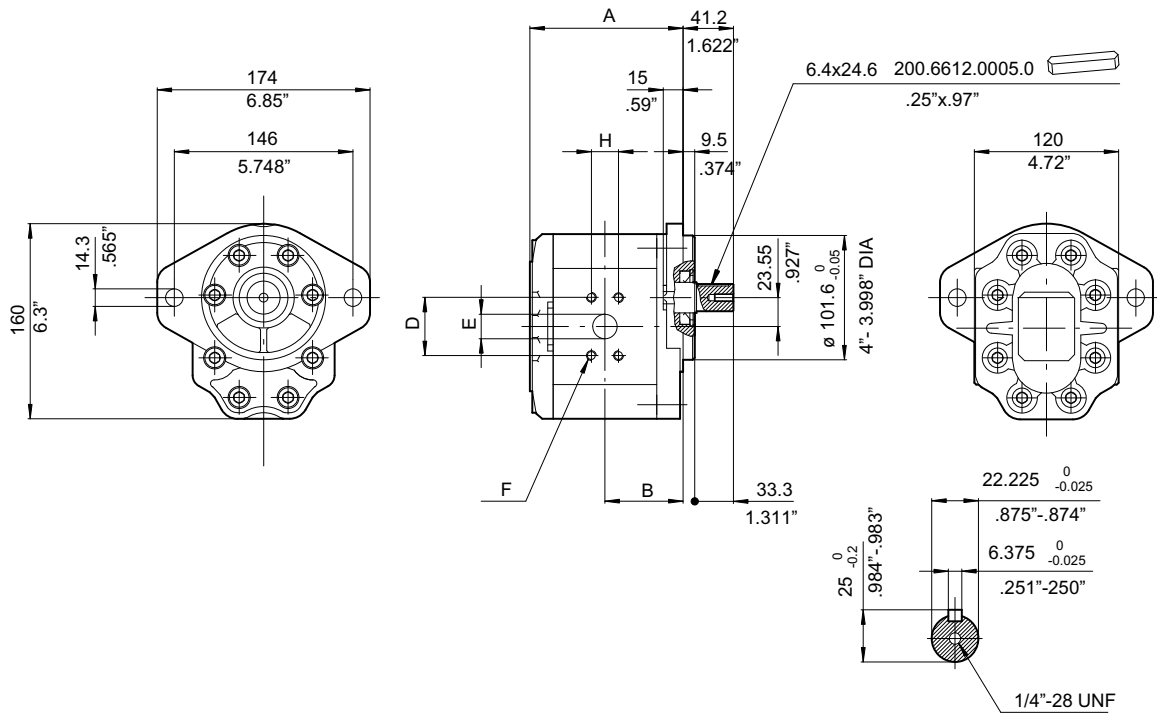
| Clockwise rotation: D | | Counter-clockwise rotation: S | |
|-----------------------|--------------|-------------------------------|--------------|
| Type | Order Code | Type | Order Code |
| AP300/27 D 818 | 200103113203 | AP300/27 S 818 | 200103113307 |
| AP300/31 D 818 | 200103213205 | AP300/31 S 818 | 200103213303 |
| AP300/38 D 818 | 200103313202 | AP300/38 S 818 | 200103313303 |
| AP300/45 D 818 | 200103413203 | AP300/45 S 818 | 200103413303 |
| AP300/53 D 818 | 200103513204 | AP300/53 S 818 | 200103513303 |
| AP300/63 D 818 | 200103613201 | AP300/63 S 818 | 200103613303 |
| AP300/75 D 818 | 200103713202 | AP300/75 S 818 | 200103713303 |
| AP300/93 D 818 | 200103813202 | AP300/93 S 818 | 200103813304 |



| Type | Displ. cm ³ /rev | Dimensions | | | | Suction | | | | | | Pressure | | | | | | | |
|----------|--------------------------------|------------|------|------|------|---------|------|------|------|----|------|---------------|------|------|------|------|----|------|---------------|
| | | A | | B | | H | | D | | E | | F | H | | D | | E | | F |
| | | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | UNC 2B | mm | inch | mm | inch | mm | inch | UNC 2B |
| AP300/27 | 27 | 126.0 | 4.96 | 64.0 | 2.51 | 26.2 | 1.03 | 52.4 | 2.06 | 25 | .99 | 3/8" - 16 | 22.2 | .88 | 47.6 | 1.88 | 19 | .75 | 3/8" - 16 |
| AP300/31 | 31 | 129.0 | 5.07 | 65.0 | 2.55 | 30.2 | 1.19 | 58.7 | 2.31 | 31 | 1.22 | 7/16" - 14 | 26.2 | 1.03 | 52.4 | 2.06 | 25 | .99 | 3/8" - 16 |
| AP300/38 | 38 | 133.5 | 5.25 | 67.5 | 2.65 | | | | | | | | | | | | | | |
| AP300/45 | 45 | 138.5 | 5.43 | 70.0 | 2.75 | | | | | | | | | | | | | | |
| AP300/53 | 53 | 143.0 | 5.62 | 72.5 | 2.85 | 35.7 | 1.40 | 70 | 2.76 | 38 | 1.5 | 1/2" - 13 | 30.2 | 1.19 | 58.7 | 2.31 | 31 | 1.22 | 7/16" - 14 |
| AP300/63 | 63 | 150.0 | 5.90 | 75.5 | 2.97 | | | | | | | | | | | | | | |
| AP300/75 | 75 | 158.0 | 6.22 | 79.5 | 3.13 | | | | | | | | | | | | | | |
| AP300/93 | 93 | 169.0 | 6.65 | 85.5 | 3.36 | | | | | | | | | | | | | | |

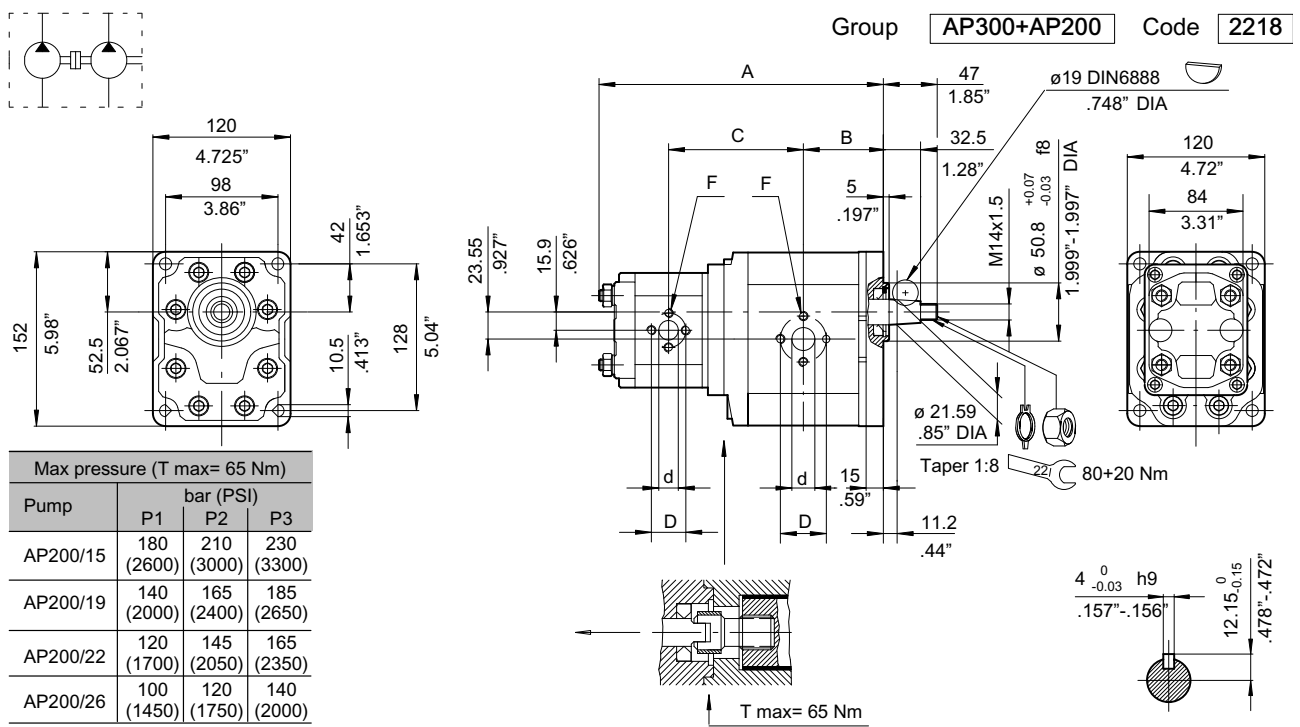
| Clockwise rotation: D | | Counter-clockwise rotation: S | |
|-----------------------|--------------|-------------------------------|--------------|
| Type | Order Code | Type | Order Code |
| AP300/27 D 287S | 200103186201 | AP300/27 S 287S | 200103186301 |
| AP300/31 D 287S | 200103286201 | AP300/31 S 287S | 200103286301 |
| AP300/38 D 287S | 200103386201 | AP300/38 S 287S | 200103386301 |
| AP300/45 D 287S | 200103486201 | AP300/45 S 287S | 200103486301 |
| AP300/53 D 287S | 200103586201 | AP300/53 S 287S | 200103586301 |
| AP300/63 D 287S | 200103686201 | AP300/63 S 287S | 200103686301 |
| AP300/75 D 287S | 200103786201 | AP300/75 S 287S | 200103786301 |
| AP300/93 D 287S | 200103886201 | AP300/93 S 287S | 200103886301 |

Group AP300 Code 280



| Type | Displ. cm ³ /rev | Dimensions | | | | Suction | | | | Pressure | | | | | | | | | |
|----------|--------------------------------|------------|------|---------|------|---------|------|---------|------|----------|------|----------------|---------|------|---------|------|---------|------|----------------|
| | | A mm | inch | B mm | inch | H mm | inch | D mm | inch | E mm | inch | F UNC 2B | H mm | inch | D mm | inch | E mm | inch | F UNC 2B |
| AP300/27 | 27 | 126.0 | 4.96 | 64.0 | 2.51 | 26.2 | 1.03 | 52.4 | 2.06 | 25 | .99 | 3/8" - 16 | 22.2 | .88 | 47.6 | 1.88 | 19 | .75 | 3/8" - 16 |
| AP300/31 | 31 | 129.0 | 5.07 | 65.0 | 2.55 | 30.2 | 1.19 | 58.7 | 2.31 | 31 | 1.22 | 7/16" - 14 | 26.2 | 1.03 | 52.4 | 2.06 | 25 | .99 | 3/8" - 16 |
| AP300/38 | 38 | 133.5 | 5.25 | 67.5 | 2.65 | | | | | | | | | | | | | | |
| AP300/45 | 45 | 138.5 | 5.43 | 70.0 | 2.75 | | | | | | | | | | | | | | |
| AP300/53 | 53 | 143.0 | 5.62 | 72.5 | 2.85 | 35.7 | 1.40 | 70 | 2.76 | 38 | 1.5 | 1/2" - 13 | 30.2 | 1.19 | 58.7 | 2.31 | 31 | 1.22 | 7/16" - 14 |
| AP300/63 | 63 | 150.0 | 5.90 | 75.5 | 2.97 | | | | | | | | | | | | | | |
| AP300/75 | 75 | 158.0 | 6.22 | 79.5 | 3.13 | | | | | | | | | | | | | | |
| AP300/93 | 93 | 169.0 | 6.65 | 85.5 | 3.36 | | | | | | | | | | | | | | |

| Clockwise rotation: D | | Counter-clockwise rotation: S | |
|-----------------------|--------------|-------------------------------|--------------|
| Type | Order Code | Type | Order Code |
| AP300/27 D 280 | 200103180201 | AP300/27 S 280 | 200103180301 |
| AP300/31 D 280 | 200103280201 | AP300/31 S 280 | 200103280301 |
| AP300/38 D 280 | 200103380201 | AP300/38 S 280 | 200103380301 |
| AP300/45 D 280 | 200103480201 | AP300/45 S 280 | 200103480301 |
| AP300/53 D 280 | 200103580201 | AP300/53 S 280 | 200103580301 |
| AP300/63 D 280 | 200103680201 | AP300/63 S 280 | 200103680301 |
| AP300/75 D 280 | 200103780201 | AP300/75 S 280 | 200103780301 |
| AP300/93 D 280 | 200103880201 | AP300/93 S 280 | 200103880301 |



| Max pressure (T max= 65 Nm) | | | |
|-----------------------------|---------------|---------------|---------------|
| Pump | bar (PSI) | | |
| | P1 | P2 | P3 |
| AP200/15 | 180 (2600) | 210 (3000) | 230 (3300) |
| AP200/19 | 140 (2000) | 165 (2400) | 185 (2650) |
| AP200/22 | 120 (1700) | 145 (2050) | 165 (2350) |
| AP200/26 | 100 (1450) | 120 (1750) | 140 (2000) |

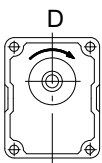
| AP300 Displacement cm ³ /rev. | Suction | | | | | | Pressure | | | | | |
|--|---------|------|----|------|----|----|----------|----|------|----|--|--|
| | d | | D | | F | d | | D | | F | | |
| | mm | inch | mm | inch | mm | mm | inch | mm | inch | mm | | |
| 27 | 27 | 1.06 | 51 | 2.01 | 10 | 20 | .79 | 40 | 1.58 | 8 | | |
| 31 | | | | | | | | | | | | |
| 38 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |
| 53 | 31 | 1.22 | 62 | 2.44 | 12 | 25 | .98 | 51 | 2.01 | 10 | | |
| 63 | | | | | | | | | | | | |
| 75 | | | | | | | | | | | | |
| 93 | | | | | | | | | | | | |

| AP200 Displacement cm ³ /rev. | Suction | | | | | | Pressure | | | | | |
|--|---------|------|----|------|----|------|----------|----|------|----|--|--|
| | d | | D | | F | d | | D | | F | | |
| | mm | inch | mm | inch | mm | mm | inch | mm | inch | mm | | |
| 4.5 | 13.5 | .53 | 30 | 1.18 | 6 | 13.5 | .53 | 30 | 1.18 | 6 | | |
| 6.5 | | | | | | | | | | | | |
| 8.5 | | | | | | | | | | | | |
| 11 | 19 | .75 | 40 | 1.58 | 8 | 19 | .75 | 40 | 1.58 | 8 | | |
| 15 | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | |

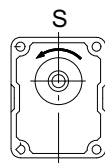
| | AP300/27 | | | AP300/31 | | | AP300/38 | | | AP300/45 | | |
|-------------------------------------|----------------------|-------------------|----------------------|--------------------|-------------------|--------------------|----------------------|---------------------|----------------------|---------------------|---------------------|----------------------|
| | A | B | C | A | B | C | A | B | C | A | B | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> |
| AP200/4.5 AP200/6.5 AP200/8.5 | 215.5 <i>8.5</i> | 64 <i>2.52</i> | 103.5 <i>4.08</i> | 218 <i>8.6</i> | 65 <i>2.56</i> | 105 <i>4.14</i> | 222.5 <i>8.76</i> | 67.5 <i>2.66</i> | 107.5 <i>4.23</i> | 227 <i>8.94</i> | 69.8 <i>2.75</i> | 109.5 <i>4.31</i> |
| AP200/11 AP200/15 | 230.5 <i>9.08</i> | 64 <i>2.52</i> | 111.5 <i>4.39</i> | 233 <i>9.2</i> | 65 <i>2.56</i> | 113 <i>4.45</i> | 237.5 <i>9.35</i> | 67.5 <i>2.66</i> | 115.5 <i>4.55</i> | 242 <i>9.53</i> | 69.8 <i>2.75</i> | 117.5 <i>4.63</i> |
| AP200/19 | 240.5 <i>9.47</i> | 64 <i>2.52</i> | 117.5 <i>4.62</i> | 243 <i>9.57</i> | 65 <i>2.56</i> | 119 <i>4.69</i> | 247.5 <i>9.75</i> | 67.5 <i>2.66</i> | 121.5 <i>4.78</i> | 252 <i>9.92</i> | 69.8 <i>2.75</i> | 123.5 <i>4.86</i> |
| AP200/22 AP200/26 | 245.5 <i>9.67</i> | 64 <i>2.52</i> | 120 <i>4.72</i> | 248 <i>9.76</i> | 65 <i>2.56</i> | 121 <i>4.76</i> | 252.5 <i>9.95</i> | 67.5 <i>2.66</i> | 123.5 <i>4.86</i> | 257 <i>10.12</i> | 69.8 <i>2.75</i> | 126 <i>4.96</i> |

| | AP300/53 | | | AP300/63 | | | AP300/75 | | | AP300/93 | | |
|-------------------------------------|-----------------------|---------------------|----------------------|--------------------|---------------------|----------------------|-----------------------|---------------------|----------------------|-----------------------|---------------------|----------------------|
| | A | B | C | A | B | C | A | B | C | A | B | C |
| | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> | <i>inch</i> |
| AP200/4.5 AP200/6.5 AP200/8.5 | 232.5 <i>9.15</i> | 72.5 <i>2.86</i> | 112 <i>4.4</i> | 239 <i>9.45</i> | 75.5 <i>2.97</i> | 115.5 <i>4.55</i> | 246.5 <i>9.7</i> | 79.5 <i>3.13</i> | 119.5 <i>4.71</i> | 258.5 <i>10.12</i> | 85.5 <i>3.37</i> | 125 <i>4.92</i> |
| AP200/11 AP200/15 | 247.5 <i>9.74</i> | 72.5 <i>2.86</i> | 120 <i>4.72</i> | 254 <i>10</i> | 75.5 <i>2.97</i> | 123.5 <i>4.86</i> | 261.5 <i>10.3</i> | 79.5 <i>3.13</i> | 127.5 <i>5.02</i> | 273.5 <i>10.77</i> | 85.5 <i>3.37</i> | 133 <i>5.23</i> |
| AP200/19 | 257.5 <i>10.13</i> | 72.5 <i>2.86</i> | 126 <i>4.96</i> | 264 <i>10.4</i> | 75.5 <i>2.97</i> | 129.5 <i>5.1</i> | 271.5 <i>10.37</i> | 79.5 <i>3.13</i> | 133.5 <i>5.26</i> | 283.5 <i>11.16</i> | 85.5 <i>3.37</i> | 139 <i>5.47</i> |
| AP200/22 AP200/26 | 262.5 <i>10.3</i> | 72.5 <i>2.86</i> | 128.5 <i>5.06</i> | 269 <i>10.6</i> | 75.5 <i>2.97</i> | 131.5 <i>5.18</i> | 276.5 <i>10.89</i> | 79.5 <i>3.13</i> | 135.5 <i>5.33</i> | 288.5 <i>11.36</i> | 85.5 <i>3.37</i> | 141.5 <i>5.57</i> |

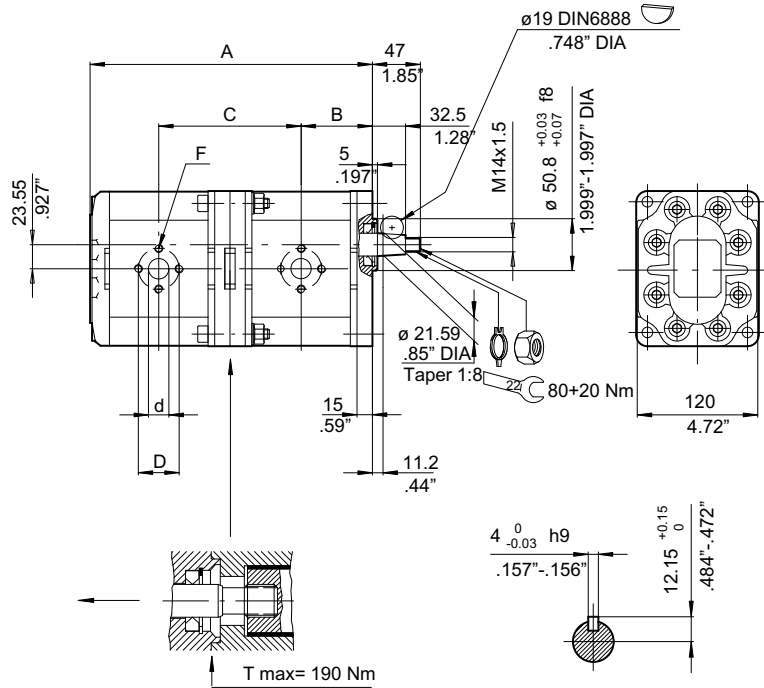
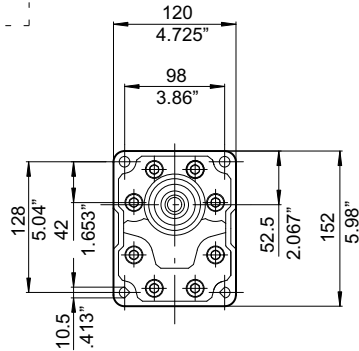
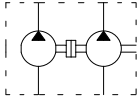
Example of product code



AP300/38 - 200/15 D 2218
(Clockwise rotation: D)



AP300/63 - 200/22 S 2218
(Counterclockwise rotation : S)



| Max pressure (T max= 190 Nm) | | | |
|------------------------------|-----------------|-----------------|-----------------|
| Pump | P1 bar (PSI) | P2 bar (PSI) | P3 bar (PSI) |
| AP300/38 | 200 (2900) | 230 (3300) | 250 (3600) |
| AP300/45 | 190 (2700) | 220 (3200) | 240 (3400) |
| AP300/53 | 160 (2300) | 190 (2700) | 210 (3000) |
| AP300/63 | 130 (1900) | 160 (2300) | 180 (2600) |
| AP300/75 | 100 (1450) | 130 (1900) | 150 (2100) |
| AP300/95 | 80 (1150) | 110 (1600) | 130 (1900) |

| Displacement cm ³ /rev | Suction | | | | | Pressure | | | | |
|--------------------------------------|---------|------|----|------|----|----------|------|----|------|----|
| | d | | D | | F | d | | D | | F |
| | mm | inch | mm | inch | mm | mm | inch | mm | inch | mm |
| 27 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 38 | 27 | 1.06 | 51 | 2.01 | 10 | 20 | .79 | 40 | 1.58 | 8 |
| 45 | | | | | | | | | | |
| 53 | | | | | | | | | | |
| 63 | | | | | | | | | | |
| 75 | 31 | 1.22 | 62 | 2.44 | 12 | 25 | .98 | 51 | 2.01 | 10 |
| 93 | | | | | | | | | | |

Note: With respect to the standards, the maximum pressures of some versions of this pump are reduced in relation to the max. torque allowed to the shaft.

| Displacement cm ³ /rev | A | | B | | C | |
|--------------------------------------|-----|-------|------|------|-------|------|
| | mm | inch | mm | inch | mm | inch |
| 27+27 | 254 | 10.00 | 63.8 | 2.51 | 127.5 | 5.02 |
| 31+27 | 257 | 10.12 | 65.2 | 2.57 | 129 | 5.08 |
| 31+31 | 259 | 10.20 | | | 130.5 | 5.14 |
| 38+27 | 261 | 10.27 | 67.5 | 2.66 | 131.5 | 5.18 |
| 38+31 | 264 | 10.40 | | | 132.5 | 5.22 |
| 38+38 | 269 | 10.60 | | | 135 | 5.32 |
| 45+27 | 266 | 10.00 | 69.8 | 2.75 | 133.5 | 5.26 |
| 45+31 | 268 | 10.55 | | | 135 | 5.31 |
| 45+38 | 273 | 10.75 | | | 137.5 | 5.41 |
| | | | | | 139.5 | 5.50 |
| 45+45 | 278 | 10.95 | | | | |

| Displacement cm ³ /rev | A | | B | | C | |
|--------------------------------------|-----|-------|------|------|-------|------|
| | mm | inch | mm | inch | mm | inch |
| 53+27 | 271 | 10.67 | 72.5 | 2.85 | 136 | 5.36 |
| 53+31 | 274 | 10.78 | | | 137.5 | 5.42 |
| 53+38 | 278 | 10.94 | | | 140 | 5.52 |
| 53+45 | 283 | 11.14 | | | 142 | 5.60 |
| 53+53 | 288 | 11.34 | | | 144.5 | 5.69 |
| 63+27 | 278 | 10.95 | 75.5 | 2.97 | 139.5 | 5.50 |
| 63+31 | 280 | 11.02 | | | 141 | 5.55 |
| 63+38 | 285 | 11.22 | | | 143 | 5.63 |
| 63+45 | 289 | 11.38 | | | 145.5 | 5.73 |
| 63+53 | 295 | 11.61 | | | 148 | 5.83 |
| 63+63 | 301 | 11.85 | | | 151 | 5.95 |
| 75+27 | 285 | 11.22 | 79.5 | 3.13 | 143.5 | 5.65 |
| 75+31 | 288 | 11.34 | | | 144.5 | 5.69 |
| 75+38 | 293 | 11.54 | | | 147 | 5.79 |
| 75+45 | 297 | 11.70 | | | 149.5 | 5.89 |
| 75+53 | 302 | 11.89 | | | 152 | 5.99 |
| 75+63 | 309 | 12.17 | | | 155 | 6.10 |
| 75+75 | 317 | 12.40 | | | 159 | 6.26 |
| 93+27 | 297 | 11.70 | 85.5 | 3.37 | 149 | 5.87 |
| 93+31 | 300 | 11.80 | | | 150.5 | 5.93 |
| 93+38 | 304 | 11.97 | | | 153 | 6.02 |
| 93+45 | 309 | 12.17 | | | 155 | 6.10 |
| 93+53 | 314 | 12.36 | | | 157.5 | 6.2 |
| 93+63 | 321 | 12.64 | | | 161 | 6.34 |
| 93+75 | 328 | 12.91 | | | 165 | 6.5 |
| 93+93 | 340 | 13.39 | | | 170.5 | 6.72 |

Note: For the accessories see pump group AP300 code 218 page 83/96

3.1 Pumps seal kit NBR standard type

| AP300 | |
|------------|--------------|
| Pump code | Seal kit |
| AP300/218 | 200974000140 |
| AP300/818 | |
| AP300/287S | 200974000170 |
| AP300/280 | |

| AP300+AP200 | |
|-------------|--------------|
| Pump code | Seal kit |
| AP300/2218 | 200974000110 |

| AP300+AP300 | |
|-------------|--------------|
| Pump code | Seal kit |
| AP300/2218 | 200974000150 |

4 Composition of product code

4.1 Single pumps

| Type | Rotation | Code |
|----------|----------|------|
| AP300/** | * | **** |

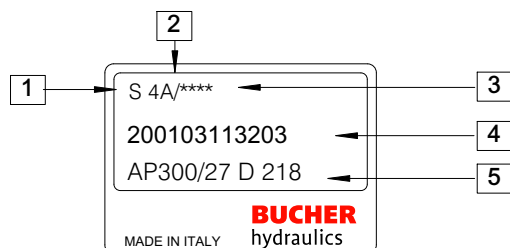
| | |
|----------------|--------------|
| Examples | Order Code |
| AP300/45 S 280 | 200103480301 |

4.2 Double pumps

| Type 1st pump | Type 2nd pump | Rotation | Code |
|---------------|---------------|----------|------|
| AP300/** | AP200/** | **** | **** |
| AP300/** | AP300/** | **** | **** |

| | |
|-------------------------|--------------|
| Examples | Order Code |
| AP300/38-200/8.5 D 2218 | 200132313209 |
| AP300/53-300/38 S 2218 | 200133513303 |

4.3 Product identification plate



1 : Rotation (D= Clockwise rotation - S= Counterclockwise rotation)

2 : Manufacturing year and month

3 : Progressive identification no. (optional)

4 : Bucher Hydraulics S.p.A. product code

5 : Description

4.4 Single pump weight

| AP300 | |
|----------|-----------|
| Pump | Weight Kg |
| AP300/27 | 8.2 |
| AP300/31 | 8.4 |
| AP300/38 | 8.6 |
| AP300/45 | 8.8 |
| AP300/53 | 9.0 |
| AP300/63 | 9.2 |
| AP300/75 | 9.4 |
| AP300/93 | 9.6 |

N.B.: The weight refers to pumps with version code 218 . Limited weight variations are possible for pumps having a different code.

| Manufacturing month | Manufacturing year | | | | | |
|---------------------|--------------------|------|------|------|------|------|
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
| January | 4A | 5A | 6A | 7A | 8M | 9M |
| February | 4B | 5B | 6B | 7B | 8N | 9N |
| March | 4C | 5C | 6C | 7C | 8P | 9P |
| April | 4D | 5D | 6D | 7D | 8Q | 9Q |
| May | 4E | 5E | 6E | 7E | 8R | 9R |
| June | 4F | 5F | 6F | 7F | 8S | 9S |
| July | 4G | 5G | 6G | 7G | 8T | 9T |
| August | 4H | 5H | 6H | 7H | 8U | 9U |
| September | 4I | 5I | 6I | 7I | 8V | 9V |
| October | 4J | 5J | 6J | 7J | 8Z | 9Z |
| November | 4K | 5K | 6K | 7K | 8X | 9X |
| December | 4L | 5L | 6L | 7L | 8Y | 9Y |

