

## Gear Pumps - AP05



motion and progress

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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.

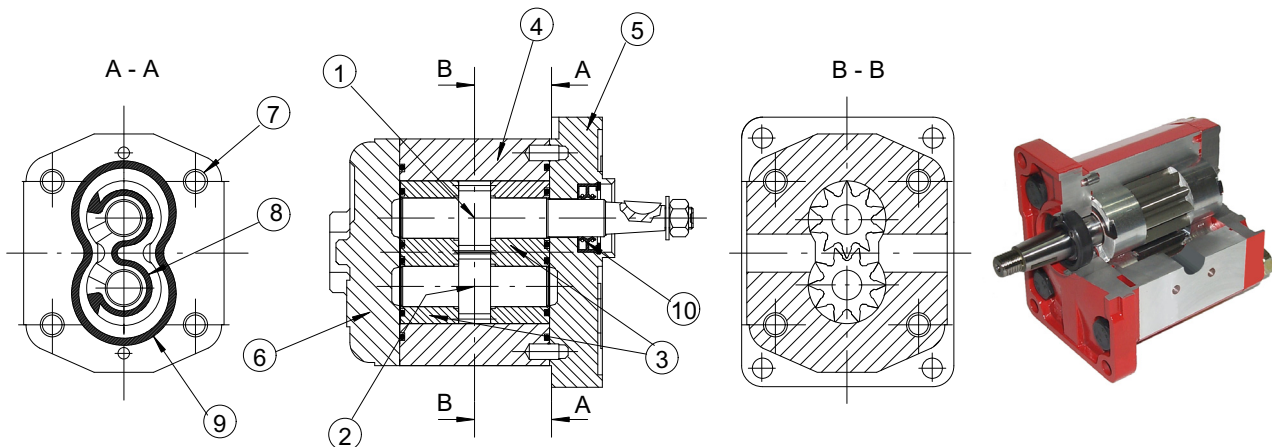
Product development has made it possible to achieve high operating pressures, excellent volumetric and mechanical efficiency, and lower noise levels, in operation, by means of:

- 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



- 5. Drive gear
- 6. Driven gear
- 7. Balancing
- 8. Pump body
- 9. Front cover

- 10. Rear cover
- 11. Mounting tie rod
- 12. Balancing seal
- 13. Oil seal
- 14. 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).

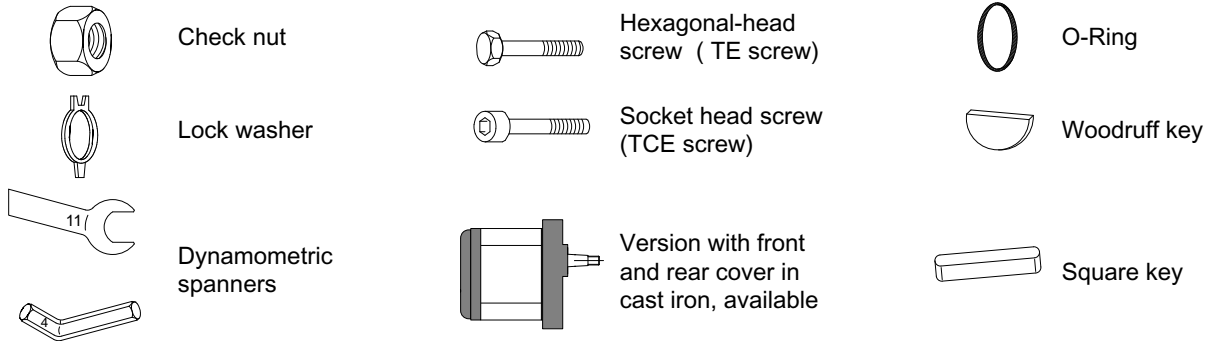
### Versions available

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.

As regards reversible pumps (R), the ports are alternatively for suction and pressure.

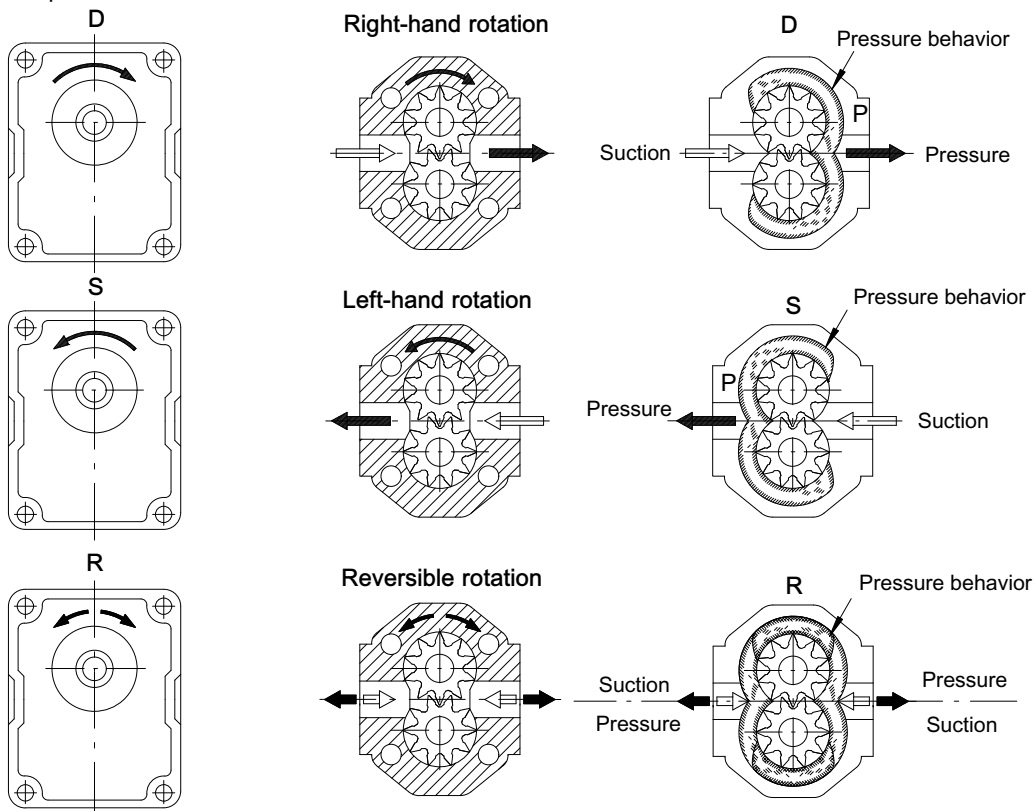
Pumps with a unidirectional rotation (D or S) have the denomination AP.

Pumps with reversible rotation have the denomination APR.

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
	AP05-APR05
Buna N	$-15 \div 65 \text{ }^\circ\text{C}$
Viton*	$-10 \div 80 \text{ }^\circ\text{C}$



Attention: Use of pumps at temperatures above  $80^\circ\text{C}$  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)

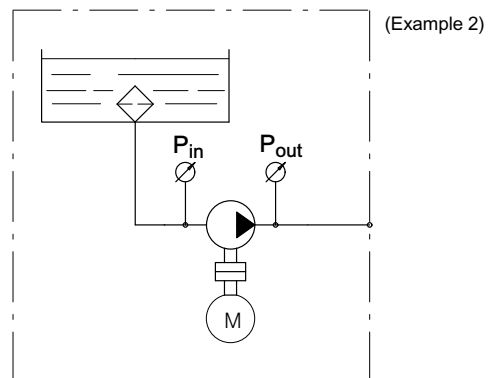
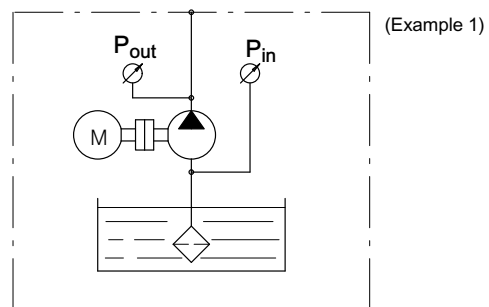
In certain cases, the suction pressure can exceed 1 bar (14.3 PSI), or atmospheric pressure.

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.

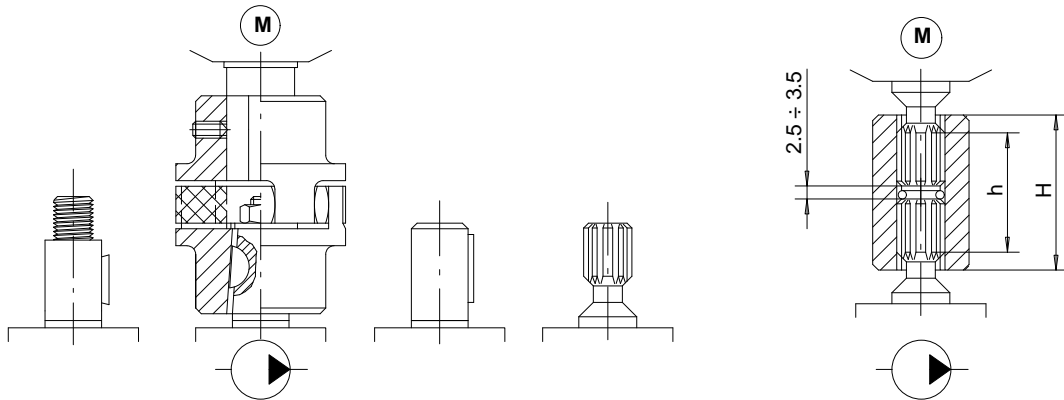
When possible and compatible with the hydraulic circuit installed, Bucher Hydraulics S.p.A. recommends that the system have total filtration (suction, pressure, return).

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 with 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  $2.5 \div 3.5$  mm (.10" ÷ .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

#### 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.

## 2.7 Pressure

Pressure levels:

P1 = continuous pressure

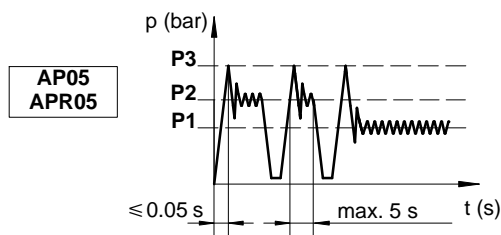
P2 = intermittent pressure

P3 = peak pressure

The recommended oil speed in the pressure pipes is:

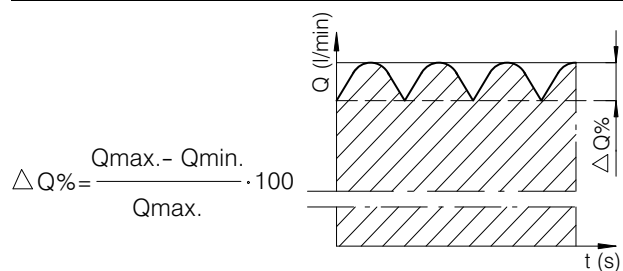
$v = 2$  to  $5$  m/s

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



Pressure flow rate surging

Pump	z	$\Delta Q\%$
AP05 - APR05	13	13



## 2.8 Calculating the specification of a gear pump

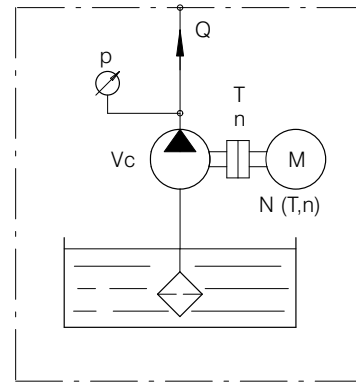
The following parameters are defined:

- V<sub>c</sub>** = (cm<sup>3</sup>/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<sub>v</sub>** = (%) volumetric efficiency;
- η<sub>m</sub>** = (%) mechanical efficiency;
- η<sub>t</sub>** = (%) 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

AP05/0.9 V<sub>c</sub>= 0.9 cm<sup>3</sup>/r n= 1500 r/min p=200 bar η<sub>v</sub>= 94% η<sub>m</sub>= 90% η<sub>t</sub>= 84.6%

$$Q = \frac{0.9 \cdot 1500}{100000} \cdot 94 = 1.27 \text{ l/min.}$$

$$T = 1.59 \cdot \frac{200 \cdot 0.9}{90} = 3.18 \text{ Nm}$$

$$N = \frac{1.27 \cdot 200}{6.12 \cdot 84.6} = 0.49 \text{ kW}$$



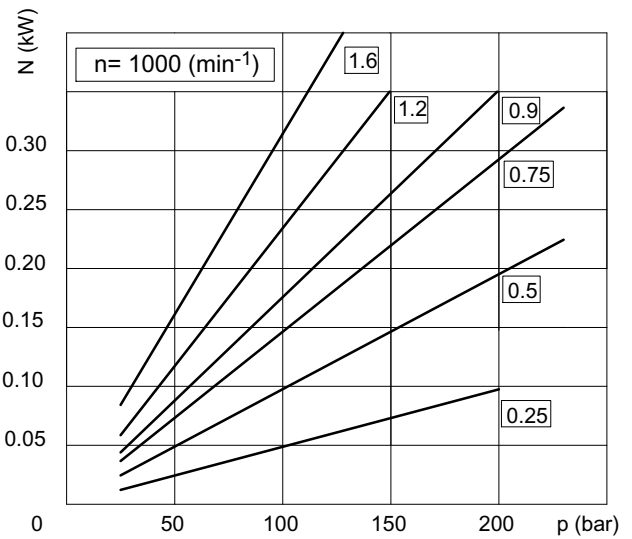
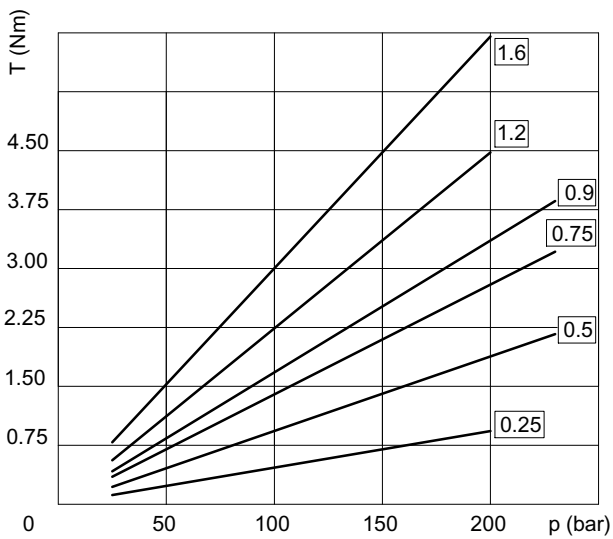
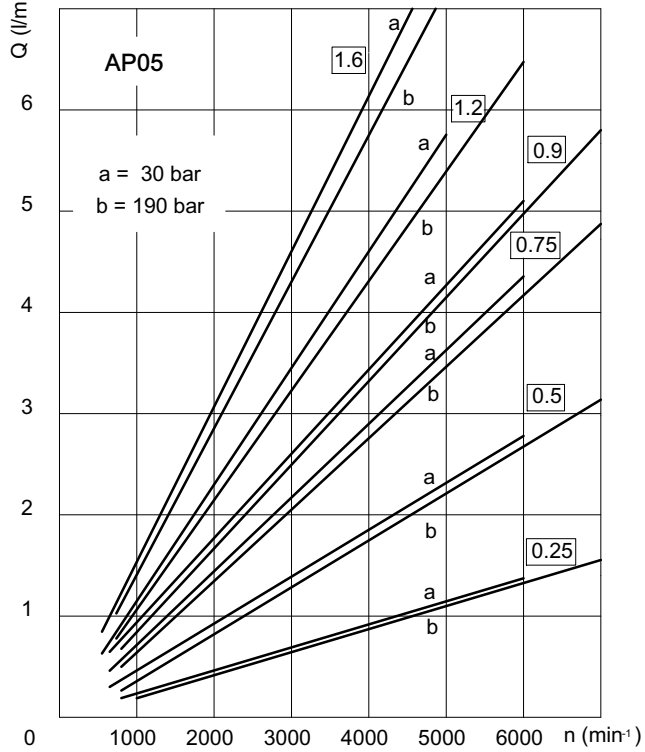
Important: Please contact our Sales Department if even one of the operating limits indicated in the tables below (temperature, pressure, rpm) is exceeded, as well as in the case of two or more maximum values at the same time, or for applications with particularly heavy-duty cycles.

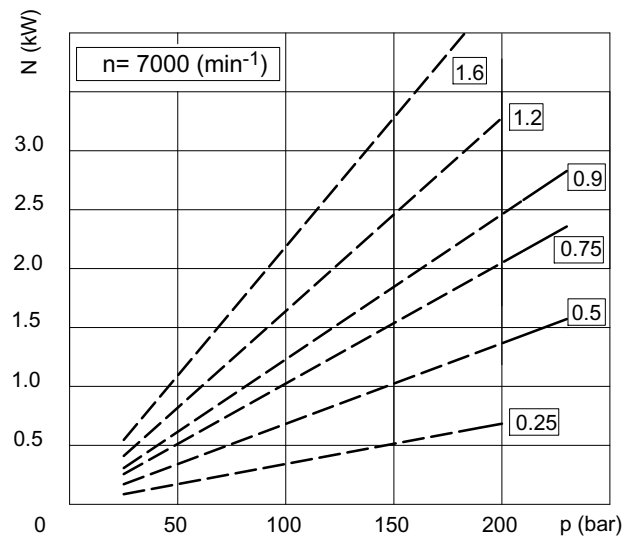
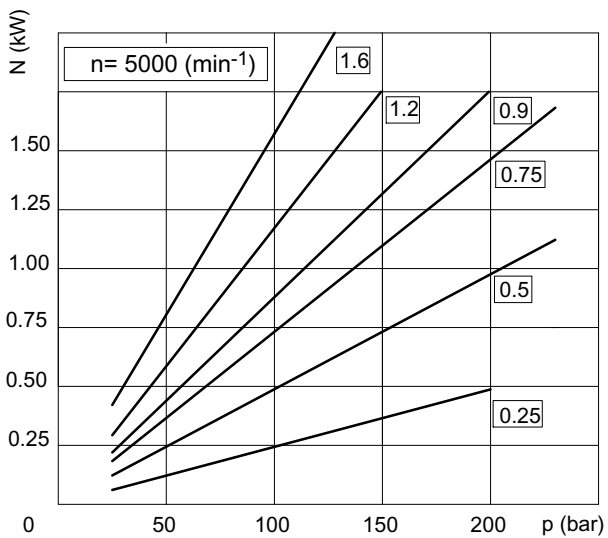
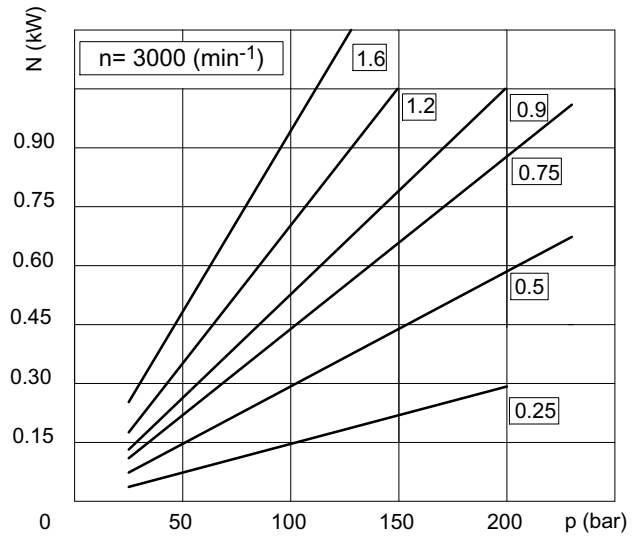
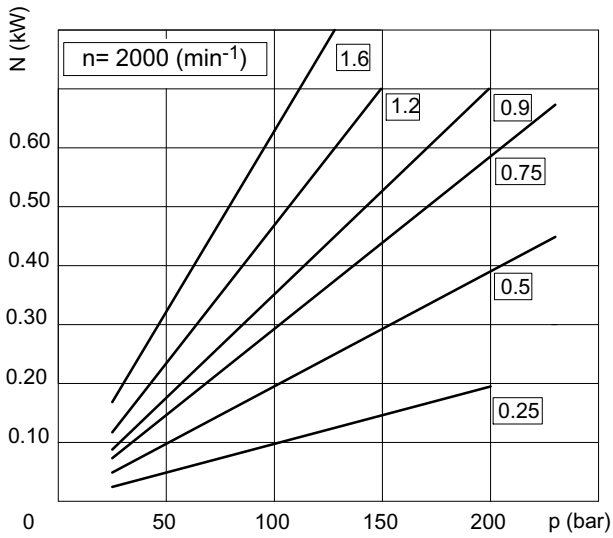
AP/APR05 Type	Displacement		Max. pressure						n.min.		n.max.
	cm <sup>3</sup> /rev	Cu.In.P.R.	P1		P2		P3		P < 100	P > 100	
			bar	P.S.I.	bar	P.S.I.	bar	P.S.I.	bar	bar	
AP05/0.25	0.25	.015	170	2400	180	2600	200	2900	800	3000	7000
AP05/0.5	0.5	.030	190	2700	210	3000	230	3300	650	3000	7000
AP05/0.75	0.75	.045	190	2700	210	3000	230	3300	650	1500	7000
AP05/0.9	0.9	.055	190	2700	210	3000	230	3300	650	1500	7000
AP05/1.2	1.2	.073	170	2400	180	2600	200	2900	550	1500	6000
AP05/1.6	1.6	.097	170	2400	180	2600	200	2900	550	1500	6000
AP05/2.3	2.3	.139	150	2150	160	2300	180	2600	550	1500	4500
APR05/0.25	0.25	.015	150	2200	160	2300	180	2600	800	3000	7000
APR05/0.5	0.5	.030	170	2400	190	2700	210	3000	650	3000	7000
APR05/0.75	0.75	.045	170	2400	190	2700	210	3000	650	1500	7000
APR0.5/0.9	0.9	.055	170	2400	190	2700	210	3000	650	1500	7000
APR05/1.2	1.2	.073	150	2200	160	2300	180	2600	550	1500	6000



## 2.9 Diagrams

Oil viscosity: 37 mm<sup>2</sup>/s  
Oil temperature: 40° C

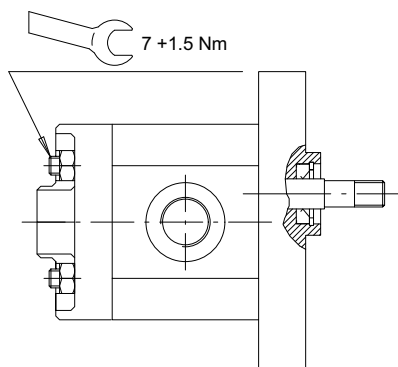




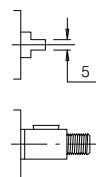
### 3 Gear pump group AP05



AP/APR05 Type	Displacement		Max. pressure						n.min.		n.max.
	cm <sup>3</sup> /rev	Cu.In.P.R.	P1		P2		P3		P < 100	P > 100	
			bar	P.S.I.	bar	P.S.I.	bar	P.S.I.	bar	bar	
AP05/0.25	0.25	.015	170	2400	180	2600	200	2900	800	3000	7000
AP05/0.5	0.5	.030	190	2700	210	3000	230	3300	650	3000	7000
AP05/0.75	0.75	.045	190	2700	210	3000	230	3300	650	1500	7000
AP05/0.9	0.9	.055	190	2700	210	3000	230	3300	650	1500	7000
AP05/1.2	1.2	.073	170	2400	180	2600	200	2900	550	1500	6000
AP05/1.6	1.6	.097	170	2400	180	2600	200	2900	550	1500	6000
AP05/2.3	2.3	.139	150	2150	160	2300	180	2600	550	1500	4500
APR05/0.25	0.25	.015	150	2200	160	2300	180	2600	800	3000	7000
APR05/0.5	0.5	.030	170	2400	190	2700	210	3000	650	3000	7000
APR05/0.75	0.75	.045	170	2400	190	2700	210	3000	650	1500	7000
APR0.5/0.9	0.9	.055	170	2400	190	2700	210	3000	650	1500	7000
APR05/1.2	1.2	.073	150	2200	160	2300	180	2600	550	1500	6000



Max torque allowed to the shaft



T max = 13 Nm

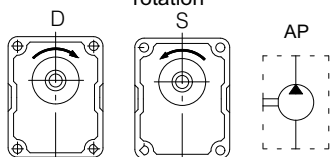
T max = 5 Nm

\*\*9

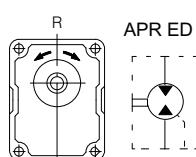
\*\*0

Last number of pump code

Clockwise (D) Counter-clockwise (S)  
rotation



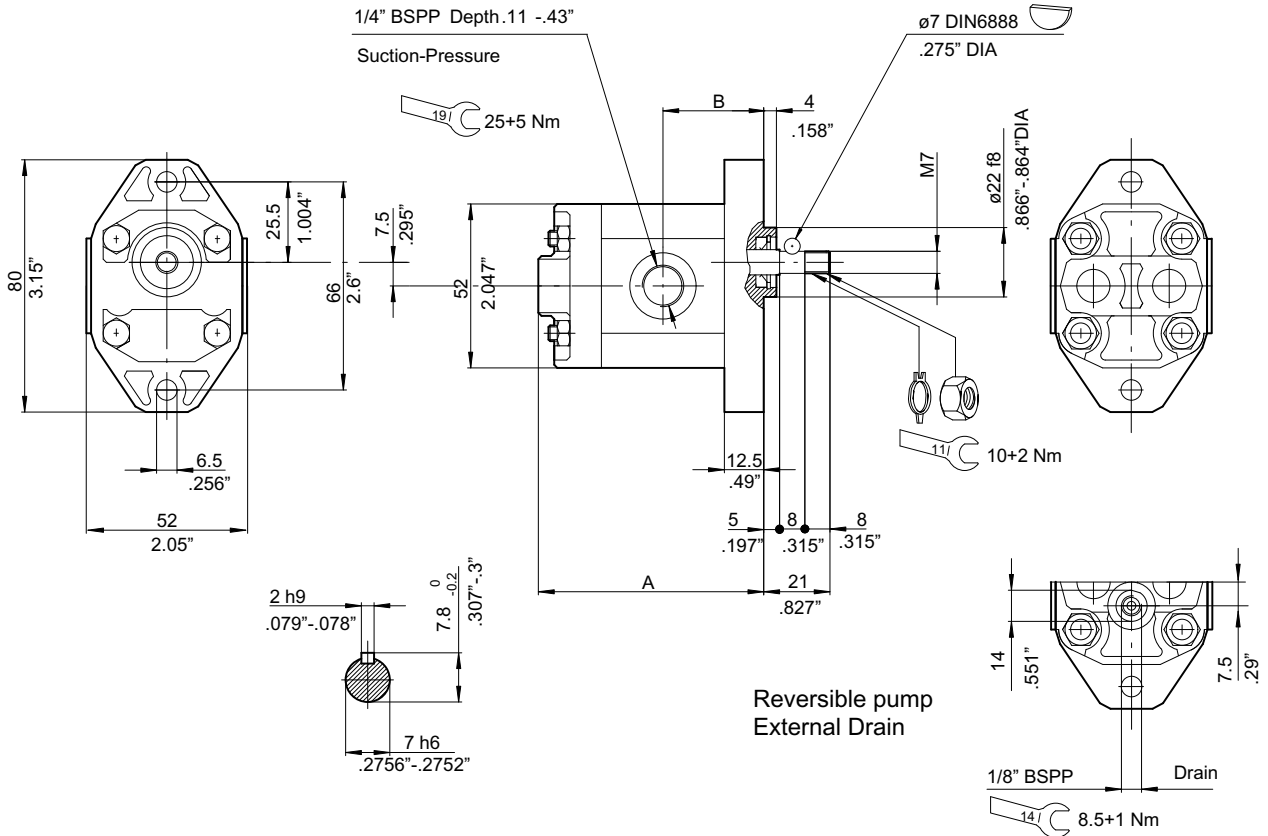
Reversible rotation



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.

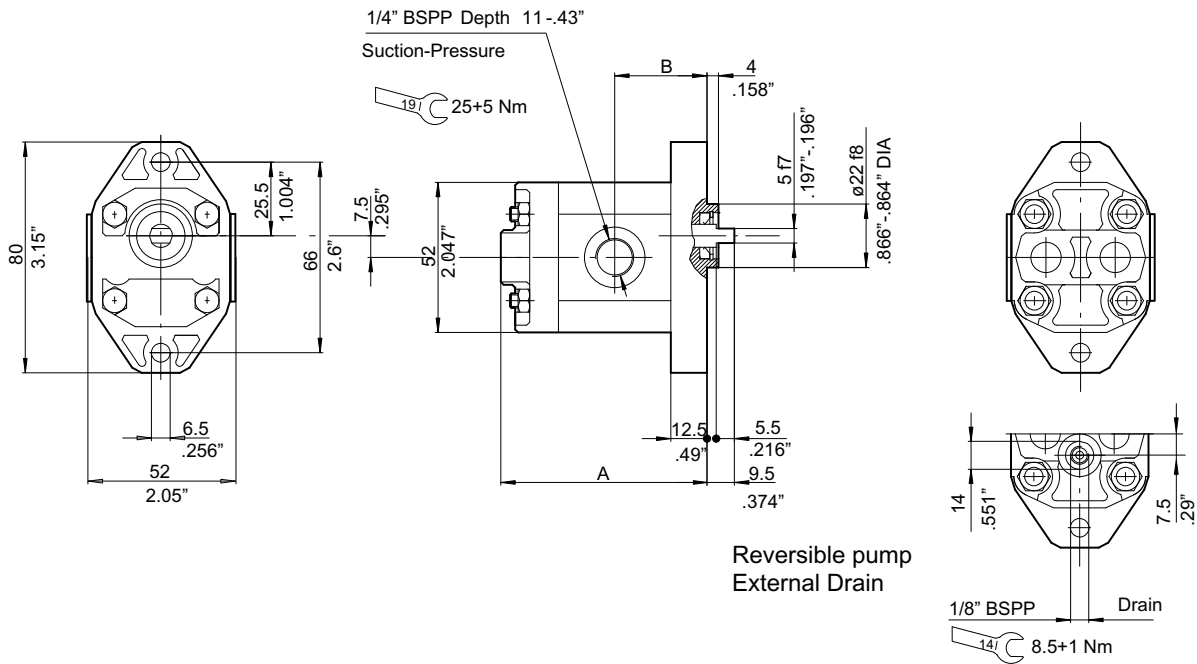
Group AP05  
APR05 Code 810



Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	29	1.41
AP05/0.5	0.5	67	2.64	30.5	1.2
AP05/0.75	0.75	69	2.72	31.5	1.24
AP05/0.9	0.9	70.5	2.77	32	1.26
AP05/1.2	1.2	73	2.87	33.5	1.32

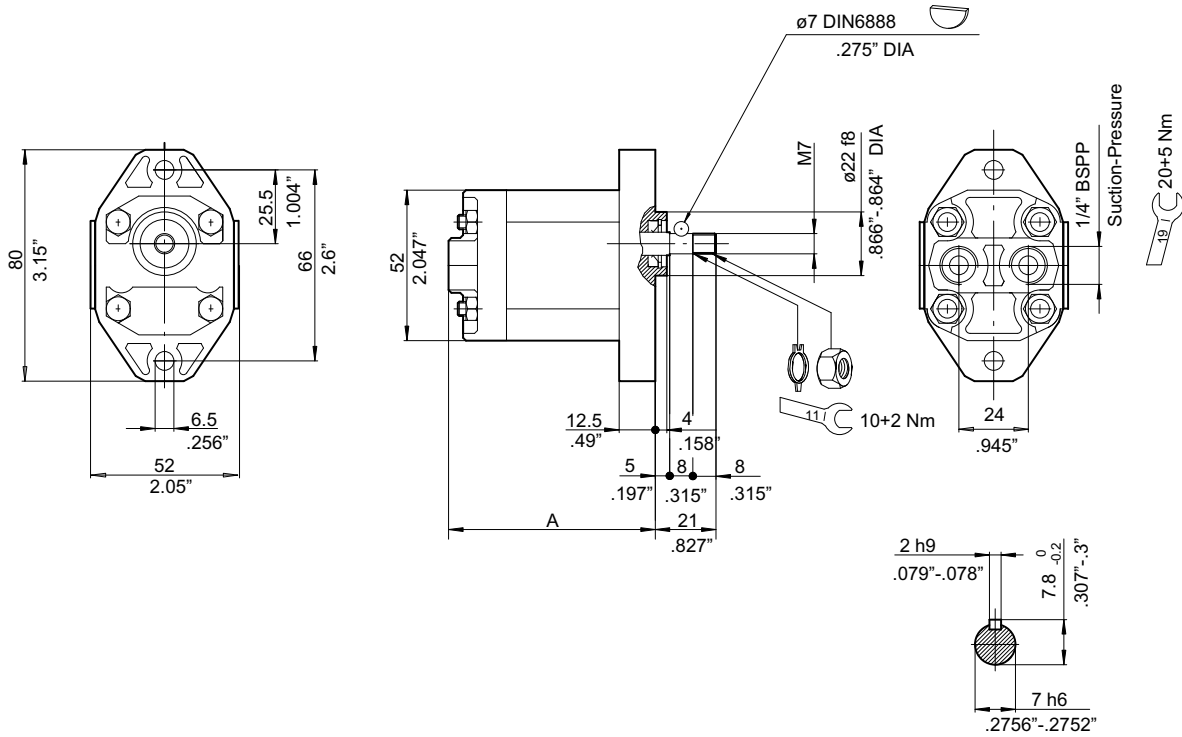
Clockwise rotation: D		Counter-clockwise rotation: S		Reversible pump - External Drain	
Type	Order Code	Type	Order Code	Type	Order Code
AP05/0.25 D 810	200100261204	AP05/0.25 S 810	200100261302	APR05/0.25 810	200100261101
AP05/0.5 D 810	200100361202	AP05/0.5 S 810	200100361302	APR05/0.5 810	200100361101
AP05/0.75 D 810	200100461202	AP05/0.75 S 810	200100461302	APR05/0.75 810	200100461101
AP05/0.9 D 810	200100561202	AP05/0.9 S 810	200100561302	APR05/0.9 810	200100561101
AP05/1.2 D 810	200100661202	AP05/1.2 S 810	200100661302	APR05/1.2 810	200100661101

Group AP05 Code 819  
APR05



Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	29	1.41
AP05/0.5	0.5	67	2.64	30.5	1.2
AP05/0.75	0.75	69	2.72	31.5	1.24
AP05/0.9	0.9	70.5	2.77	32.3	1.26
AP05/1.2	1.2	73	2.87	33.5	1.32
AP05/1.6	1.6	77	3.03	35.5	1.40

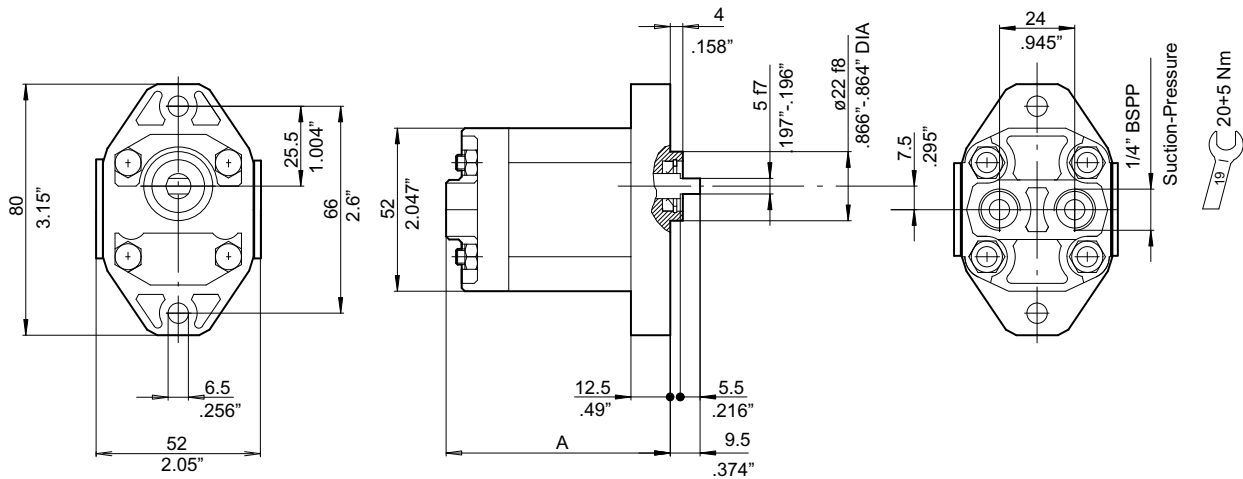
Clockwise rotation: D		Counter-clockwise rotation: S		Reversible pump - External Drain	
Type	Order Code	Type	Order Code	Type	Order Code
AP05/0.25 D 819	200100264208	AP05/0.25 S 819	200100264304	APR05/0.25 819	
AP05/0.5 D 819	200100364202	AP05/0.5 S 819	200100364302	APR05/0.5 819	200100364101
AP05/0.75 D 819	200100464202	AP05/0.75 S 819	200100464302	APR05/0.75 819	
AP05/0.9 D 819	200100564204	AP05/0.9 S 819	200100564304	APR05/0.9 819	200100564101
AP05/1.2 D 819	200100664202	AP05/1.2 S 819	200100664302	APR05/1.2 819	200100664101
AP05/1.6 D 819	200100864202	AP05/1.6 S 819	200100864301	APR05/1.6 819	



Type	Displacement cm <sup>3</sup> /rev	Dimensions	
		A	
		mm	inch.
AP05/0.25	0.25	64.5	2.54
AP05/0.5	0.5	67	2.64
AP05/0.75	0.75	69	2.72
AP05/0.9	0.9	70.5	2.77
AP05/1.2	1.2	73	2.87

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 310	200100261201	AP05/0.25 S 310	200100261301
AP05/0.5 D 310	200100361201	AP05/0.5 S 310	200100361301
AP05/0.75 D 310	200100461201	AP05/0.75 S 310	200100461301
AP05/0.9 D 310	200100561201	AP05/0.9 S 310	200100561301
AP05/1.2 D 310	200100661201	AP05/1.2 S 310	200100661301

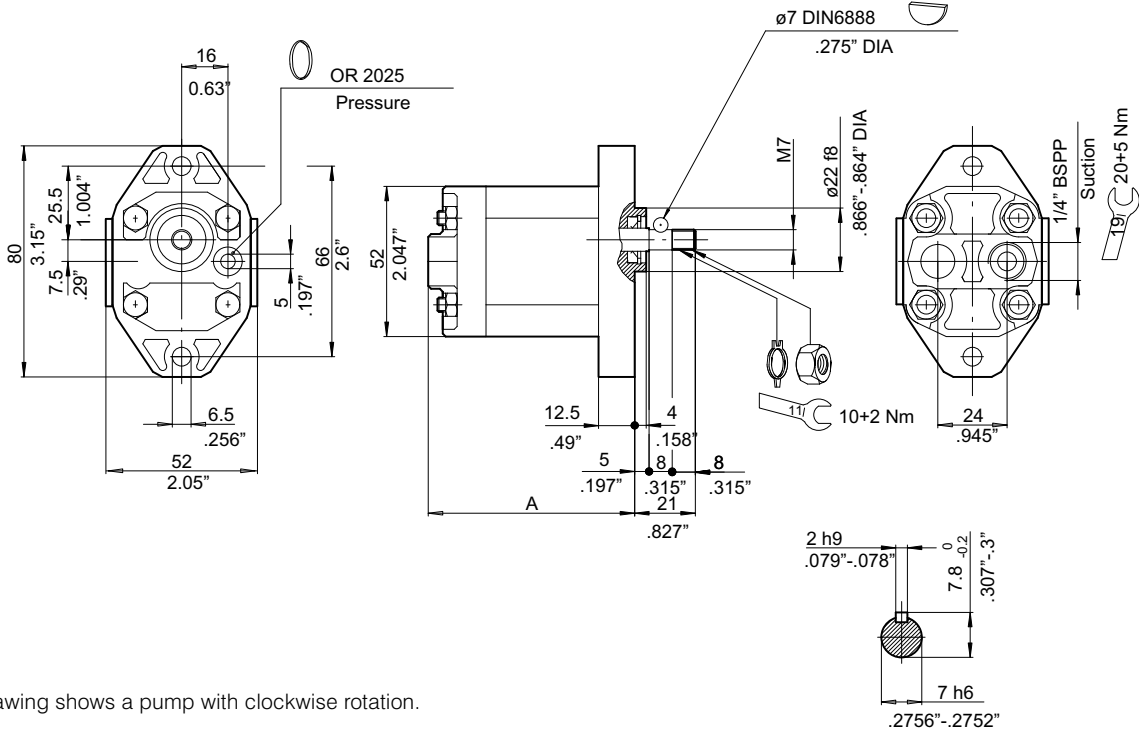
Group AP05 Code 319



Type	Displacement cm <sup>3</sup> /rev	Dimensions	
		A	
		mm	inch.
AP05/0.25	0.25	64.5	2.54
AP05/0.5	0.5	67	2.64
AP05/0.75	0.75	69	2.72
AP05/0.9	0.9	70.5	2.77
AP05/1.2	1.2	73	2.87

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 319	200100214202	AP05/0.25 S 319	200100214301
AP05/0.5 D 319	200100314201	AP05/0.5 S 319	200100314301
AP05/0.75 D 319	200100414201	AP05/0.75 S 319	200100414301
AP05/0.9 D 319	200100514201	AP05/0.9 S 319	200100514301
AP05/1.2 D 319	200100614201	AP05/1.2 S 319	200100614301
AP05/1.6 D 319	200100814201	AP05/1.6 S 319	200100814301

Group **AP05** Code **410**



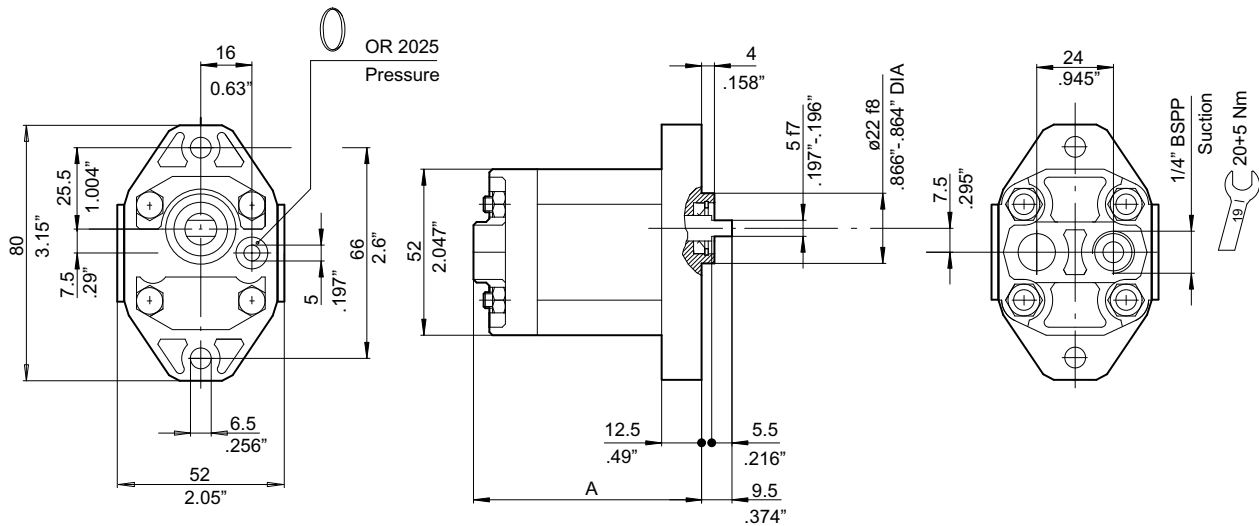
The drawing shows a pump with clockwise rotation.

Type	Displacement cm <sup>3</sup> /rev	Dimensions	
		A	
		mm	inch.
AP05/0.25	0.25	64.5	2.54
AP05/0.5	0.5	67	2.64
AP05/0.75	0.75	69	2.72
AP05/0.9	0.9	70.5	2.77
AP05/1.2	1.2	73	2.87

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 410	200100261204	AP05/0.25 S 410	200100261304
AP05/0.5 D 410	200100361202	AP05/0.5 S 410	200100361304
AP05/0.75 D 410	200100461202	AP05/0.75 S 410	200100461302
AP05/0.9 D 410	200100561204	AP05/0.9 S 410	200100561302
AP05/1.2 D 410	200100661202	AP05/1.2 S 410	200100661302



Group AP05 Code 419

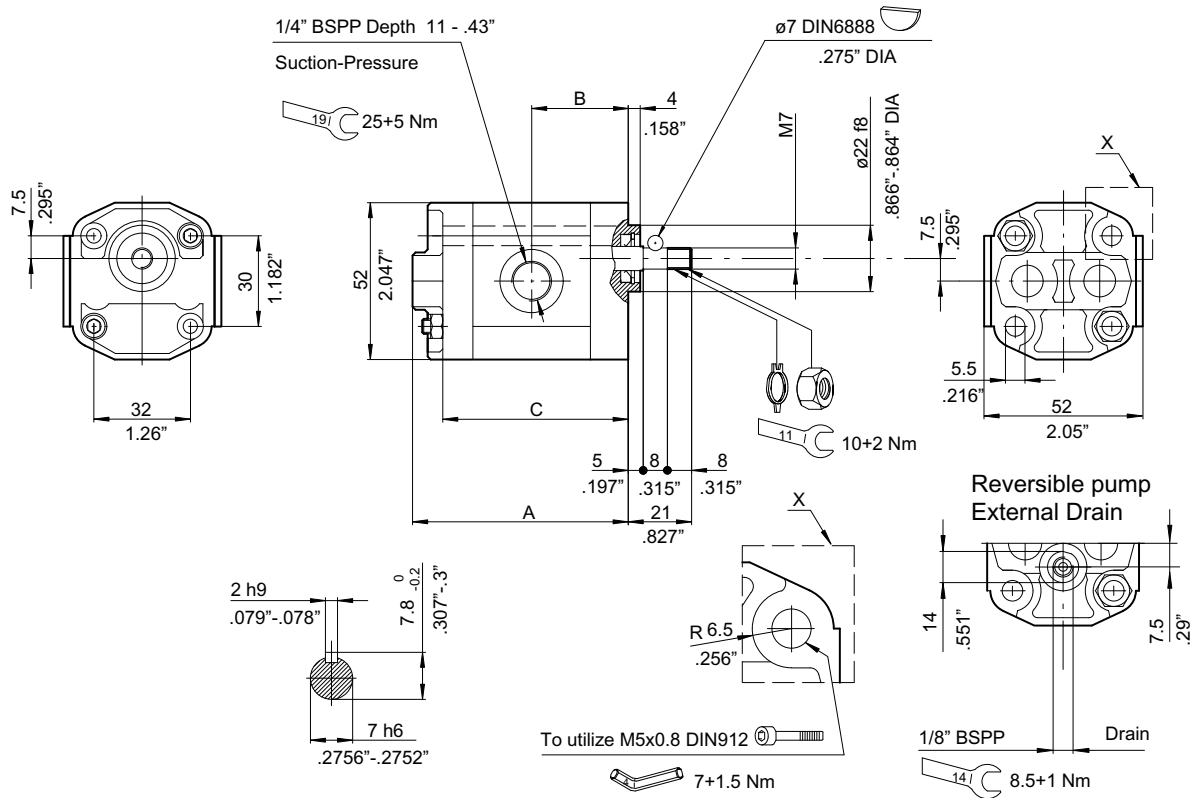


The drawing shows a pump with clockwise rotation.

Type	Displacement cm <sup>3</sup> /rev	Dimensions	
		A	
		mm	inch.
AP05/0.25	0.25	64.5	2.54
AP05/0.5	0.5	67	2.64
AP05/0.75	0.75	69	2.72
AP05/0.9	0.9	70.5	2.77
AP05/1.2	1.2	73	2.87
AP05/1.6	1.6	77	3.03

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 419		AP05/0.25 S 419	
AP05/0.5 D 419	200100364203	AP05/0.5 S 419	200100364304
AP05/0.75 D 419		AP05/0.75 S 419	200100464303
AP05/0.9 D 419		AP05/0.9 S 419	
AP05/1.2 D 419		AP05/1.2 S 419	
AP05/1.6 D 419		AP05/1.6 S 419	200100864302

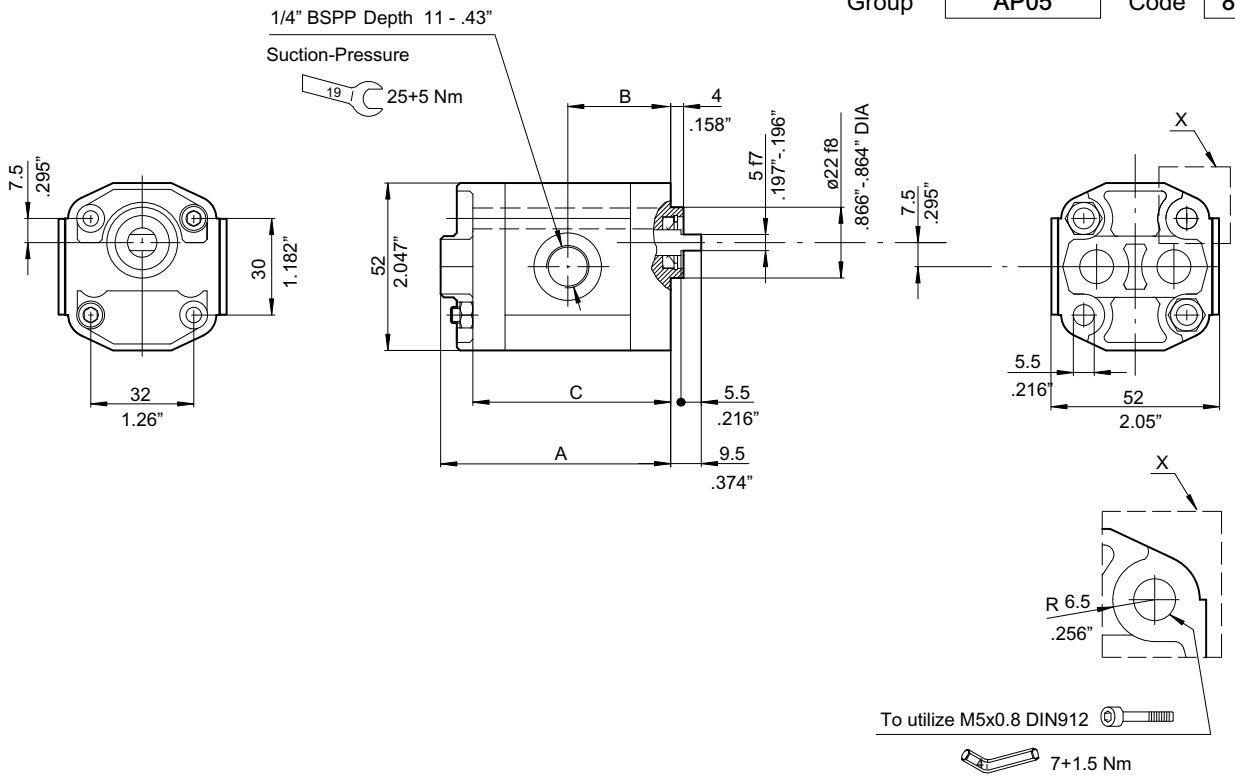
Group AP05 Code 830  
APR05



Type	Displacement cm <sup>3</sup> /rev	Dimensions					
		A		B		C	
		mm	inch.	mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	29	1.41	53.5	2.11
AP05/0.5	0.5	67	2.64	30.5	1.2	56	2.20
AP05/0.75	0.75	69	2.72	31.5	1.24	58	2.28
AP05/0.9	0.9	70.5	2.77	32	1.26	59.5	2.34
AP05/1.2	1.2	73	2.87	33.5	1.32	62	2.44

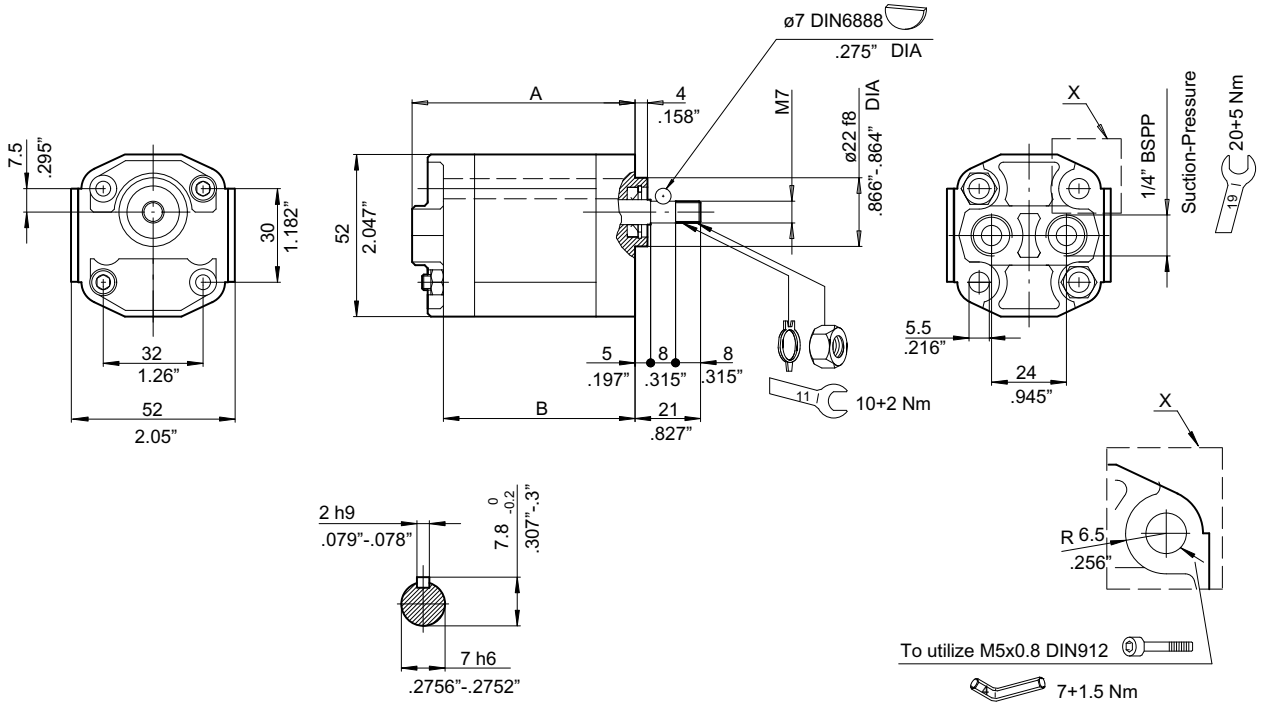
Clockwise rotation: D		Counter-clockwise rotation: S		Reversible pump - External Drain	
Type	Order Code	Type	Order Code	Type	Order Code
AP05/0.25 D 830	200100230201	AP05/0.25 S 830	200100230301	APR05/0.25 830	
AP05/0.5 D 830		AP05/0.5 S 830	200100330301	APR05/0.5 830	200100330101
AP05/0.75 D 830		AP05/0.75 S 830	200100430301	APR05/0.75 830	
AP05/0.9 D 830		AP05/0.9 S 830	200100530301	APR05/0.9 830	200100530101
AP05/1.2 D 830		AP05/1.2 S 830	200100631301	APR05/1.2 830	

Group **AP05** Code **839**



Type	Displacement cm <sup>3</sup> /rev	Dimensions					
		A		B		C	
		mm	inch.	mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	29	1.41	53.5	2.11
AP05/0.5	0.5	67	2.64	30.5	1.2	56	2.20
AP05/0.75	0.75	69	2.72	31.5	1.24	58	2.28
AP05/0.9	0.9	70.5	2.77	32	1.26	59.5	2.34
AP05/1.2	1.2	73	2.87	33.5	1.32	62	2.44
AP05/1.6	1.6	77	3.03	35.5	1.40	66	2.60

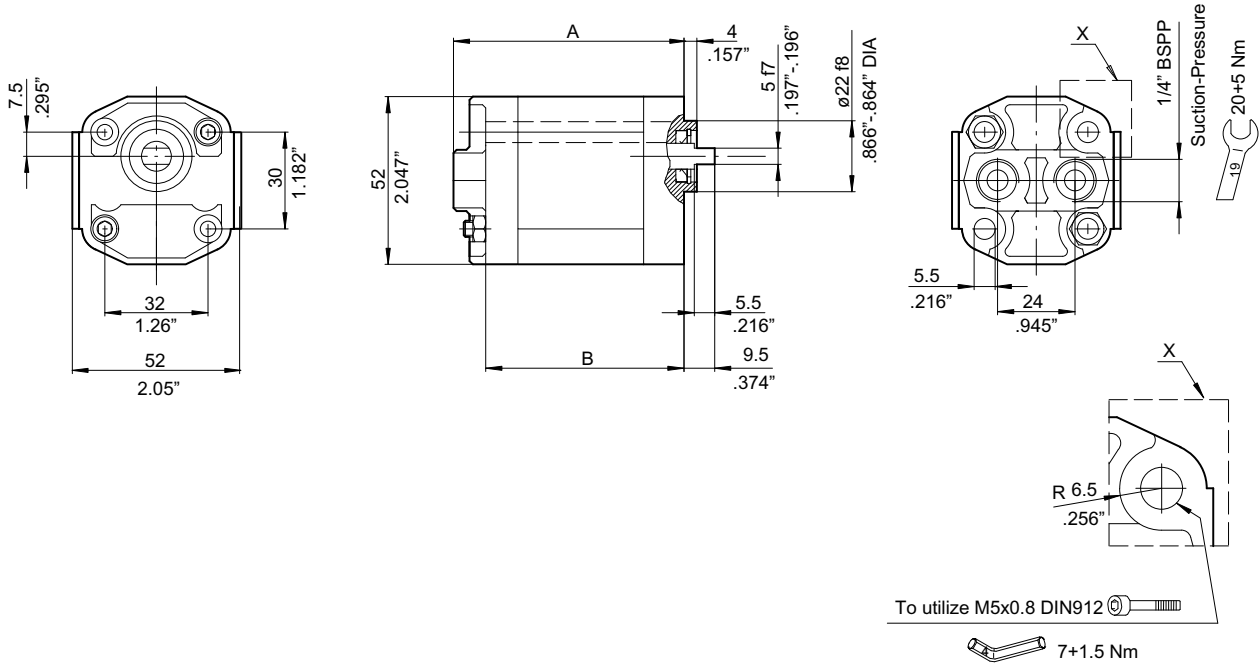
Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 839		AP05/0.25 S 839	
AP05/0.5 D 839	200100334201	AP05/0.5 S 839	
AP05/0.75 D 839	200100434201	AP05/0.75 S 839	200100434304
AP05/0.9 D 839	200100534201	AP05/0.9 S 839	200100534302
AP05/1.2 D 839	200100634204	AP05/1.2 S 839	200100634301
AP05/1.6 D 839	200100834201	AP05/1.6 S 839	200100834301



Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	53.5	2.11
AP05/0.5	0.5	67	2.64	56	2.20
AP05/0.75	0.75	69	2.72	58	2.28
AP05/0.9	0.9	70.5	2.77	59.5	2.34
AP05/1.2	1.2	73	2.87	62	2.44

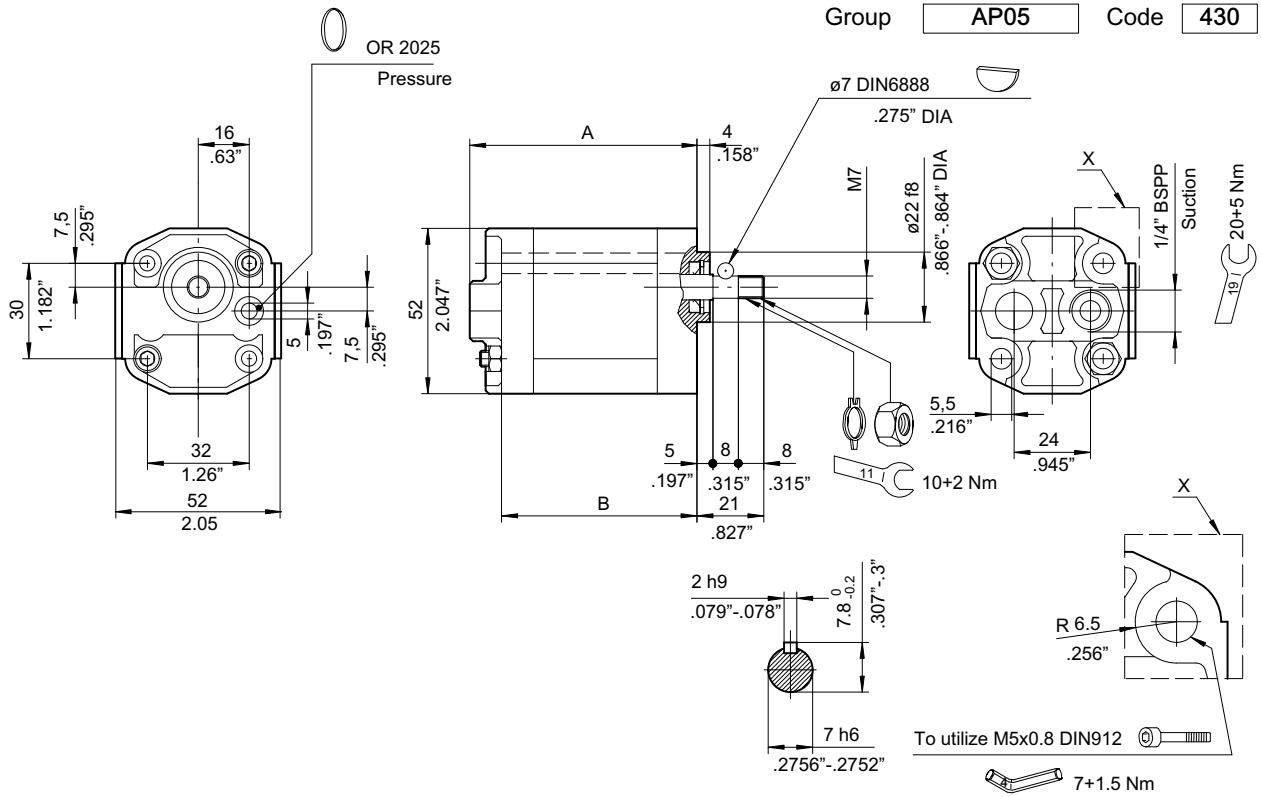
Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 330		AP05/0.25 S 330	
AP05/0.5 D 330		AP05/0.5 S 330	
AP05/0.75 D 330		AP05/0.75 S 330	
AP05/0.9 D 330	200100531201	AP05/0.9 S 330	
AP05/1.2 D 330		AP05/1.2 S 330	

Group AP05 Code 339



Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25	0.25	64.5	2.54	53.5	2.11
AP05/0.5	0.5	67	2.64	56	2.20
AP05/0.75	0.75	69	2.72	58	2.28
AP05/0.9	0.9	70.5	2.77	59.5	2.34
AP05/1.2	1.2	73	2.87	62	2.44
AP05/1.6	1.6	77	3.03	66	2.60

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 339	200100234201	AP05/0.25 S 339	200100234303
AP05/0.5 D 339	200100334203	AP05/0.5 S 339	200100334303
AP05/0.75 D 339	200100434202	AP05/0.75 S 339	200100434302
AP05/0.9 D 339	200100534203	AP05/0.9 S 339	200100534303
AP05/1.2 D 339	200100634203	AP05/1.2 S 339	200100634303
AP05/1.6 D 339	200100834202	AP05/1.6 S 339	200100834302

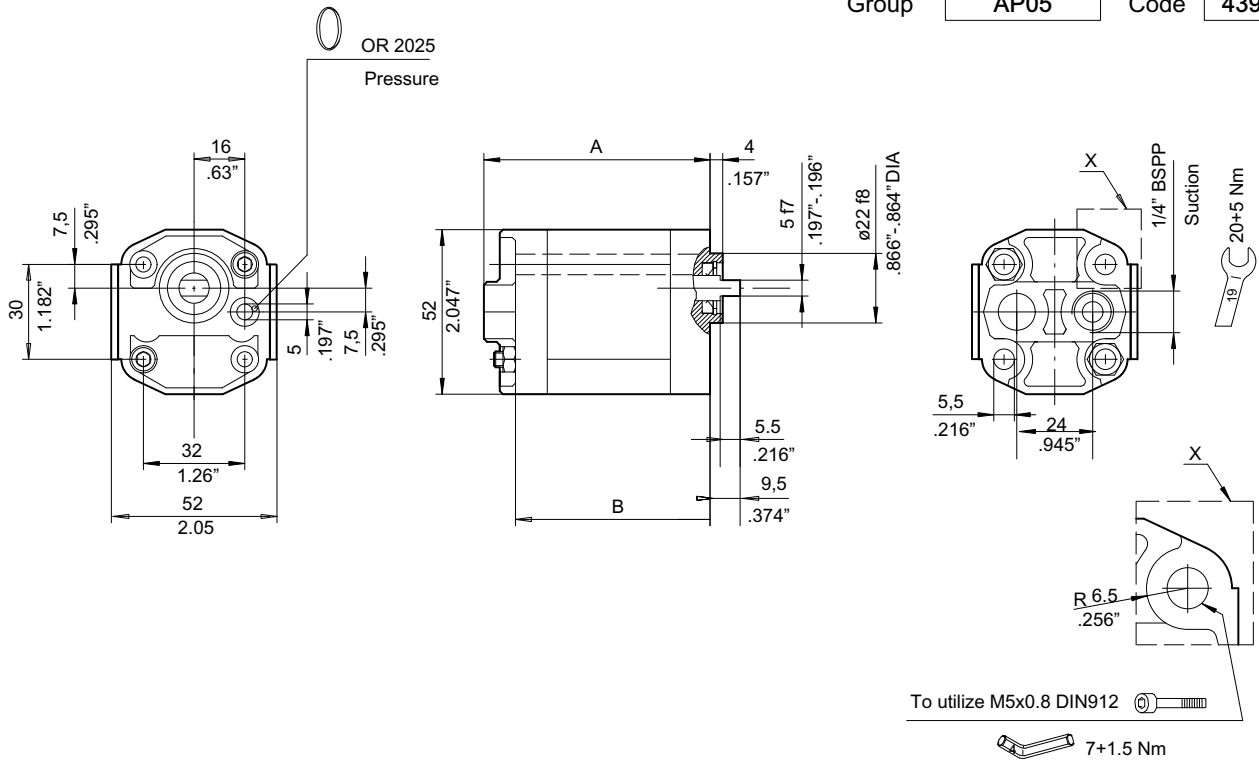


The drawing shows a pump with clockwise rotation.

Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25 D	0.25	64.5	2.54	53.5	2.11
AP05/0.5 D	0.5	67	2.64	56	2.20
AP05/0.75 D	0.75	69	2.72	58	2.28
AP05/0.9 D	0.9	70.5	2.77	59.5	2.34
AP05/1.2 D	1.2	73	2.87	62	2.44

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 430	200100231201	AP05/0.25 S 430	
AP05/0.5 D 430	200100331201	AP05/0.5 S 430	
AP05/0.75 D 430		AP05/0.75 S 430	
AP05/0.9 D 430		AP05/0.9 S 430	
AP05/1.2 D 430		AP05/1.2 S 430	

Group AP05 Code 439



The drawing shows a pump with clockwise rotation.

Type	Displacement cm <sup>3</sup> /rev	Dimensions			
		A		B	
		mm	inch.	mm	inch.
AP05/0.25 D	0.25	64.5	2.54	53.5	2.11
AP05/0.5 D	0.5	67	2.64	56	2.20
AP05/0.75 D	0.75	69	2.72	58	2.28
AP05/0.9 D	0.9	70.5	2.77	59.5	2.34
AP05/1.2 D	1.2	73	2.87	62	2.44
AP05/1.6 D	1.6	77	3.03	66	2.60

Clockwise rotation: D		Counter-clockwise rotation: S	
Type	Order Code	Type	Order Code
AP05/0.25 D 439	200100234202	AP05/0.25 S 439	200100234302
AP05/0.5 D 439	200100334202	AP05/0.5 S 439	200100334302
AP05/0.75 D 439	200100434204	AP05/0.75 S 439	200100434303
AP05/0.9 D 439	200100534202	AP05/0.9 S 439	
AP05/1.2 D 439	200100634202	AP05/1.2 S 439	200100634305
AP05/1.6 D 439		AP05/1.6 S 439	

### 3.1 Pumps seal kit NBR standard type

AP05	
Pump code	Seal kit
AP05/810	200974000180
AP05/819	
AP05/310	
AP05/319	
AP05/830	
AP05/839	

AP05/839	200974000180
AP05/330	
AP05/339	
AP05/410	200974000280
AP05/419	
AP05/430	
AP05/439	
AP05/439	

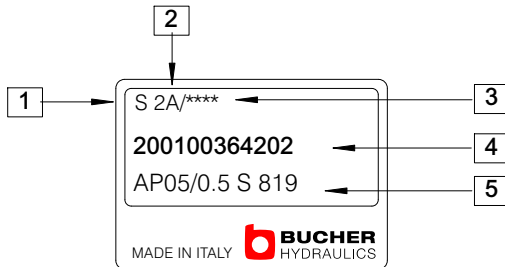
## 4 Composition of product code

### 4.1 Single pumps

Type	Rotation	Code
AP05/**	*	****
APR05/**	*	****

Examples	Order Code
AP05/0.75 D 819	200100464202
APR05/0.5 810	200100361101

### 4.2 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

### 4.3 Single pump weight

AP-APR05	
Pump	Weight Kg
AP-APR05/0.25	0.45
AP-APR05/0.5	0.45
AP-APR05/0.75	0.45
AP-APR05/0.9	0.48
AP-APR05/1.2	0.50
AP-APR05/1.6	0.50

N.B.: The weight refers to pumps with version code 810 (AP05)  
Limited weight variations are possible for pumps having a different code.

Manufacturing month	Manufacturing year							
	2010	2011	2012	2013	2014	2015	2016	2017
January	0A	1A	2A	3A	4A	5A	6A	7A
February	0B	1B	2B	3B	4B	5B	6B	7B
March	0C	1C	2C	3C	4C	5C	6C	7C
April	0D	1D	2D	3D	4D	5D	6D	7D
May	0E	1E	2E	3E	4E	5E	6E	7E
June	0F	1F	2F	3F	4F	5F	6F	7F
July	0G	1G	2G	3G	4G	5G	6G	7G
August	0H	1H	2H	3H	4H	5H	6H	7H
September	0I	1I	2I	3I	4I	5I	6I	7I
October	0J	1J	2J	3J	4J	5J	6J	7J
November	0K	1K	2K	3K	4K	5K	6K	7K
December	0L	1L	2L	3L	4L	5L	6L	7L





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Classification: 410.110.000