General description

The gear pumps are designed for transforming the mechanical energy as energy of the working liquid (pressure and flow rate). They are simplified in construction and they have a relatively low cost. All these benefits ensure their wide application in the hydraulic systems.

Drive arangements

The pump drive may be direct or indirect (by gear, chains, or belt transmissions). Both drives should not impose axial or radial forces on the pump shaft. Oldham coupling serrated drive adapters are used with direct drive. For indirect drive refer to the manufacturer.

The gear pumps are designed to work at the conditions mentioned below:

- Working liquid: hydraulic oils with viscosity 16 ... 200 mm^2/s;
- Degree of filtration: 15 ... 25 ì m;
- Ambient temperature range: - 22 ... 55 °C;
- Fluid temperature range: - 25 ... 80 °C;
- Inlet pressure, absolute: 0.8 ... 2.2 bar;
- Fluid velocity (suctiun line) 0,5 ... 1 m/s
- Outlet pressure up to 250 bar.

The gear pumps made by "Caproni" are produced in 5 diferent groups: 00, 10, 20 and 20H, 30 and 40. The displacements of the pumps are in the range from 0.25 to 60 cm^3.

Group 00 q = 0.25 ... 2 cm^3;
Group 10 q = 1 ... 9.8 cm^3;
Group 20 q = 4.5 ... 25 cm^3;
Group 20H q = 15 ... 36 cm^3;
Group 30 q = 20 ... 60 cm^3;
Group 40 q = 46 ... 60 cm^3.

There are different variants of flanges, shafts and ports for each pump group (standard; Germany; USA ...).

We offer the next variants too:

- tandem pumps;
- pumps with build-in valves;
- reversible pumps;
- reversible gear motors.

Used symbols:

n - speed of rotation [min^{-1}];
p - pressure [bar];
q - displacement [cm^3];
η - total efficiency $\eta = \eta_q.\eta_{hm}$ [-];
η_{hm} - hydromechanical efficiency [-];
η_q - volumetric efficiency [-].

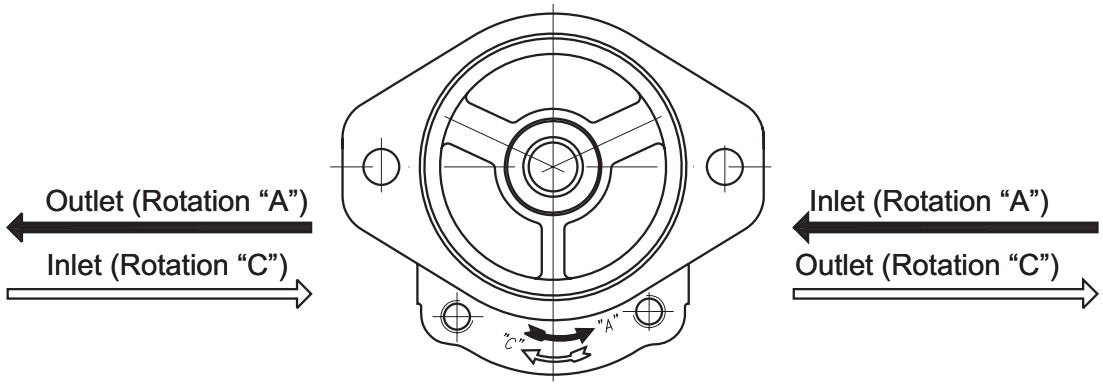
Commonly used formulas:

Flow: $Q = \frac{q.n.\eta}{1000}$ [l/min]

Torque: $M \cong \frac{q.p}{20.\pi}$ [N.m]

Drive power: $P = \frac{Q.p}{600}$ [kW]

A relationship between the direction of rotation and the place of the inlet and outlet ports of the pumps



How to order:

Group	Rotation	Displacement code	Drive shaft	Pump code	Ports
00 **10** **20** **30** **40**	**A** ↺ **C** ↻ **R** Ω		**X** - Through the front cover **Y** - Through the both covers	***(*)	- A flange with metric threads **P4**- A flange with UNC threads **M** - Metric **G** - GAS **U** - SAE J475

Group 00	
Code	cm^3
0,25	0,25
0,3	0,3
0,5	0,5
0,75	0,75
1	1
1,25	1,25
1,5	1,5
1,75	1,75
2	2

Group 10	
Code	cm^3
1	1
1,25	1,25
1,6	1,6
2	2
2,5	2,5
*2,65**	*2,65*
3,15	3,15
3,65	3,65
4,2	4,2
4,7*	*4,7*
5	5
5,7	5,7
6,1	6,1
7,4	7,4
8*	*8*
8,5	8,5
9,8	9,8

Group 20	
Code	cm^3
4,5	4,5
6,3	6,3
7*	7
8,2	8,2
10	10
11	11,3
12	12
14	14
15	15
16	16
17*	*17,3*
19	19
22	22
25	25
28	28
32	32
36	36

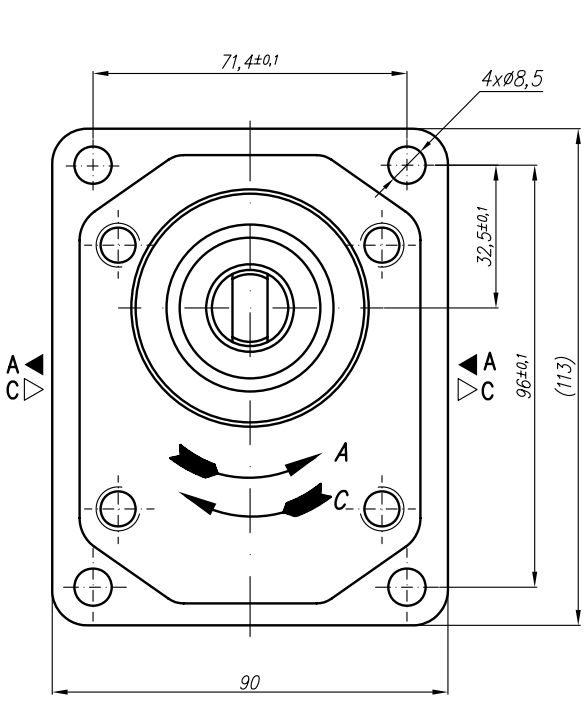
Group 20H	
Code	cm^3
15	15
16	16
19	19
22	22
25	25
28	28
32	32
36	36

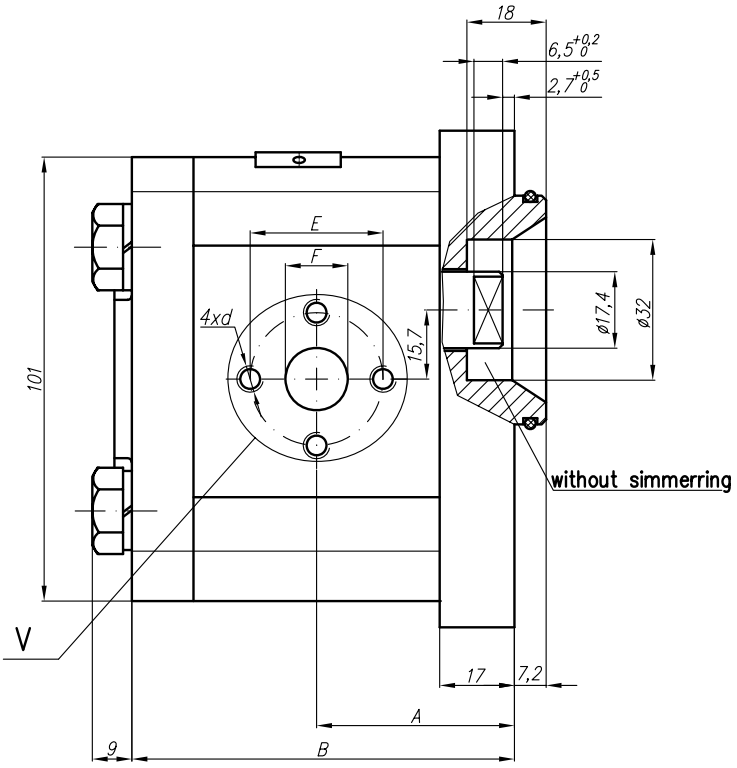
Group 30	
Code	cm^3
20	20
22,5	22,5
25	25
28	28
32	32
36	36
42	42
46	46
50	50
55	55
60	60

Group 40	
Code	cm^3
36	36
42	42
46	46
50	50
55	55
60	60

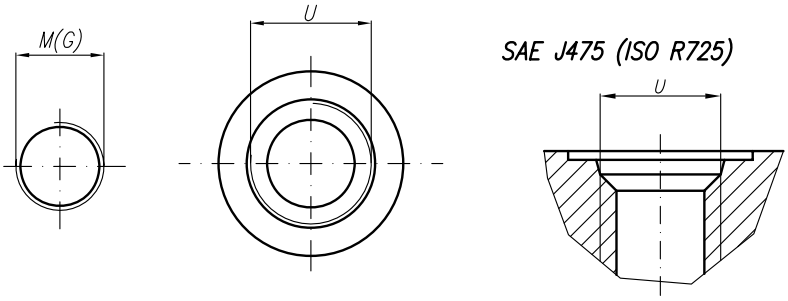
Example: 20A14X073 - Hydraulic gear pump, 20 group, direction of rotation - counter clockwise, displacement 14 cm^3, modification 073.

* - These pumps - only under a special order





V
Variants for ports – M;G;U



Designations:

...X201 – Normal version (flanges);
...X201M – Metric threads;
...X201G – GAS threads;
...X201U – SAE threads;

Type	Displacement	Flow		Pressure	max Speed	Dimension													
		at 1500 rpm	at max rpm	P_{nom}	n	A	B	Inlet						Outlet					
	cm^3/rev	l/min	l/min	bar	rpm	mm	mm	E	F	d	M	G	U	E	F	d	M	G	U
20A(C)4,5X201...	4,5	6,14	14,33	250	3500	40,5	78	30,2	13,1	M6-6H	M20x1,5	G1/2	1 1/16"-12UNF	30,2	13,1	M6-6H	M16x1,5	G1/2	7/8"-14UNF
20A(C)6,3X201...	6,3	8,69	20,29	250	3500	42	81												
20A(C)8,2X201...	8,2	11,32	26,40	250	3500	43,5	83,9												
20A(C)10X201...	10	13,95	32,55	250	3500	45	87	39,7	19	M8-6H		G3/4		14,2					
20A(C)11X201...	11,3	15,76	36,78	250	3500	46	89,1												
20A(C)12X201...	12	16,92	39,48	250	3500	46,6	90,3												
20A(C)14X201...	14	19,95	46,55	250	3500	48	93,4												
20A(C)15X201...	15	21,60	36,00	250	2500	49	95												
20A(C)16X201...	16	23,04	38,40	250	2500	50	96,6												
20A(C)19X201...	19	27,36	45,60	200	2500	52	101,5												
20A(C)22X201...	22	31,68	42,24	180	2000	55	106,5												
20A(C)25X201...	25	36,00	48,00	160	2000	57,2	111,4							39,7	19	M8	M20x1,5		