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 [-].

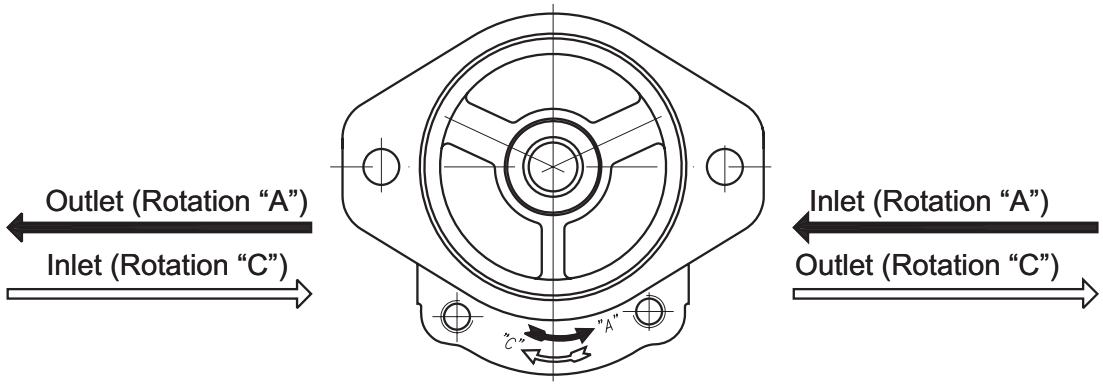
Commonly used formulas:

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

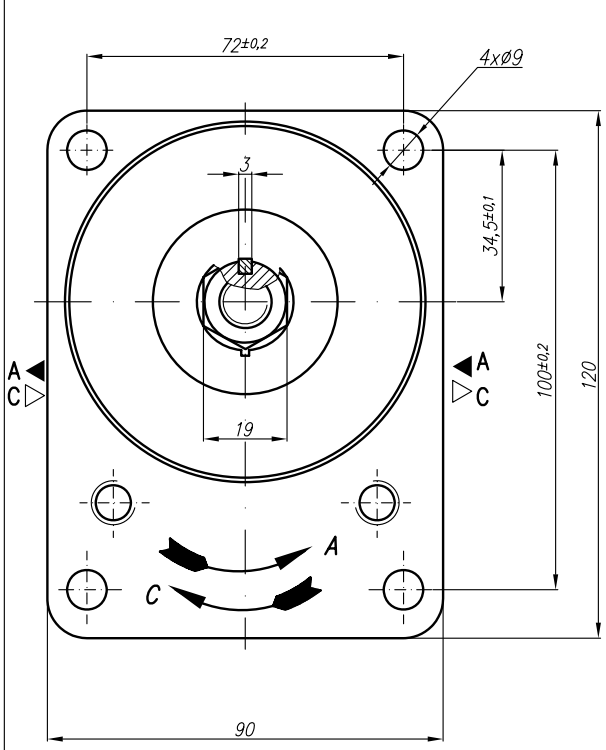
Group 20H	
Code	cm^3
15	15
16	16
19	19
22	22
25	25
28	28
32	32
36	36

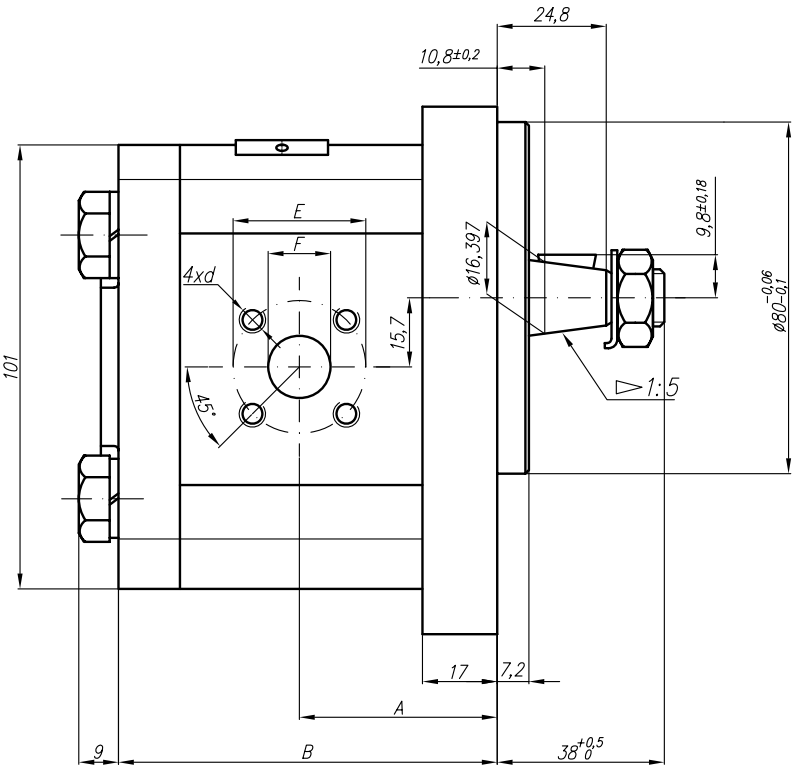
Group 30	
Code	cm^3
20	20
22,5	22,5
25	25
28	28
32	32
36	36
42	42
46	46
50	50
55	55
60	60

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





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	E	F	d
20A(C)4,5X086	4,5	6,14	14,33	250	3500	39,8	78	40	15	M6-6H	35	15	M6-6H
20A(C)6,3X086	6,3	8,69	20,29	250	3500	41	81						
20A(C)8,2X086	8,2	11,32	26,40	250	3500	43,1	83,9		20				
20A(C)10X086	10	13,95	32,55	250	3500	47,5	87						
20A(C)11X086	11,3	15,76	36,78	250	3500	47,5	89						
20A(C)12X086	12	16,92	39,48	250	3500	47,5	90,3						
20A(C)14X086	14	19,95	46,55	250	3500	47,5	93,4						
20A(C)15X086	15	21,60	36,00	250	2500	47,5	95						
20A(C)16X086	16	23,04	38,40	250	2500	47,5	96,5						
20A(C)19X086	19	27,36	45,60	200	2500	47,5	101,5						
20A(C)22X086	22	31,68	42,24	180	2000	55	106,5						
20A(C)25X086	25	36,00	48,00	160	2000	57,2	111,4						
20A(C)14X086H	14	20,16	47,04	250	3500	47,5	103,7	40	20	M6-6H	35	15	M6-6H
20A(C)15X086H	15	21,60	43,20	250	3000	47,5	105,2						
20A(C)16X086H	16	23,04	46,08	250	3000	47,5	106,8						
20A(C)17,3X086H	17,3	24,91	49,82	230	3000	47,5	108,9						
20A(C)18,2X086H	18,2	26,21	52,42	210	3000	47,5	110,5						
20A(C)19X086H	19	27,36	54,72	200	3000	47,5	111,8						
20A(C)22X086H	22	31,68	52,80	180	2500	55	116,8						
20A(C)25X086H	25	36,00	60,00	160	2500	57,2	121,7						
20A(C)28X086H	28	40,32	67,20	130	2500	64,8	126,5				40	20	
20A(C)32X086H	32	46,08	61,44	120	2000	68	132,8						
20A(C)36X086H	36	51,84	69,12	100	2000	71,2	139,4						