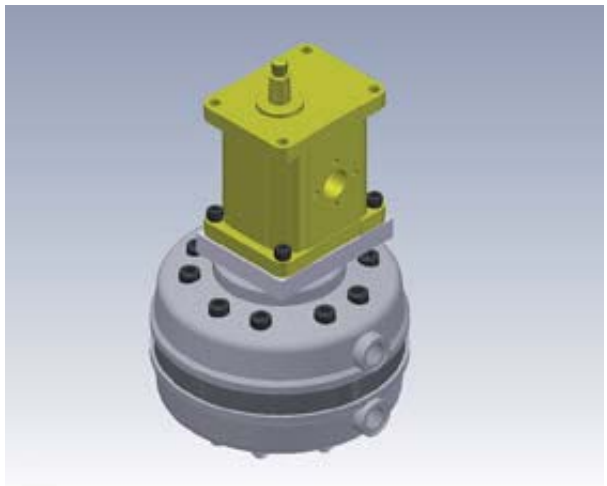
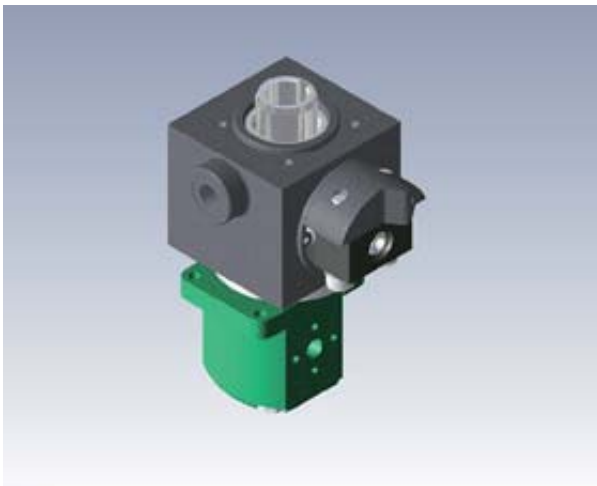


High-Pressure Fixed Displacement Radial Piston Pumps PR Series



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GENERAL INFORMATION

The High Pressure fixed-displacement radial piston pumps PR Series are designed to specifically satisfy the industrial machinery market where a high pressure or two stage high-low pressure pump is required.

In the PR pumps the pumping cylinders, with intake and delivery valves, are put in star-shape around a cam which, with the help of the plunger return springs, supply with the suction and pressing reciprocating motion.

The plungers measures are five for PR 1,2,3 and three for PR 5,7,10 and 14, therefore the smallest ones consent higher pressures and the biggest ones supply major flow rates.

The pumping cylinders (as the relative valves), are of modular conception, are easily replaceable and can be changed with others of different bore if necessary to modify the pump characteristics.

Being suitable for oil-submersed or external installation and with different types of shafts, the PR pumps allow many kinds of installation possibilities, even to be coupled with gear pumps.

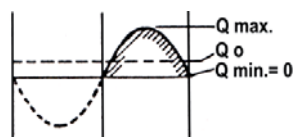
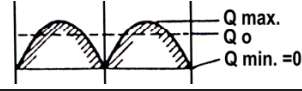
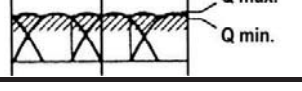
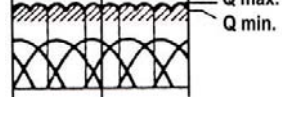
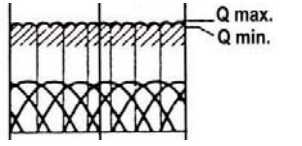
Thanks to the reliability and versatility of our radial piston pumps of PR series, we produce tandem high-low pressure pumps coupled with gear pumps or vane pumps.

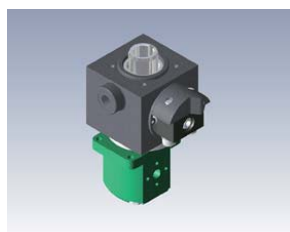
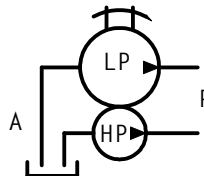
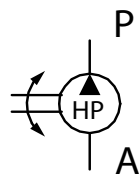
This kind of combination is ideal for presses, filter-presses and all the machinery that require a quick initial approach and a high work pressure, but limiting the size of the required drive motor.

Our tandem pumps are constituted by a gear pump (Low Pressure) connected by coupling to the motor and by a radial piston pump (High-Pressure) assembled in tandem.

Only for model with Gr1 gear pump, they are installed on the back of the radial pump.

Flow pulsation diagram

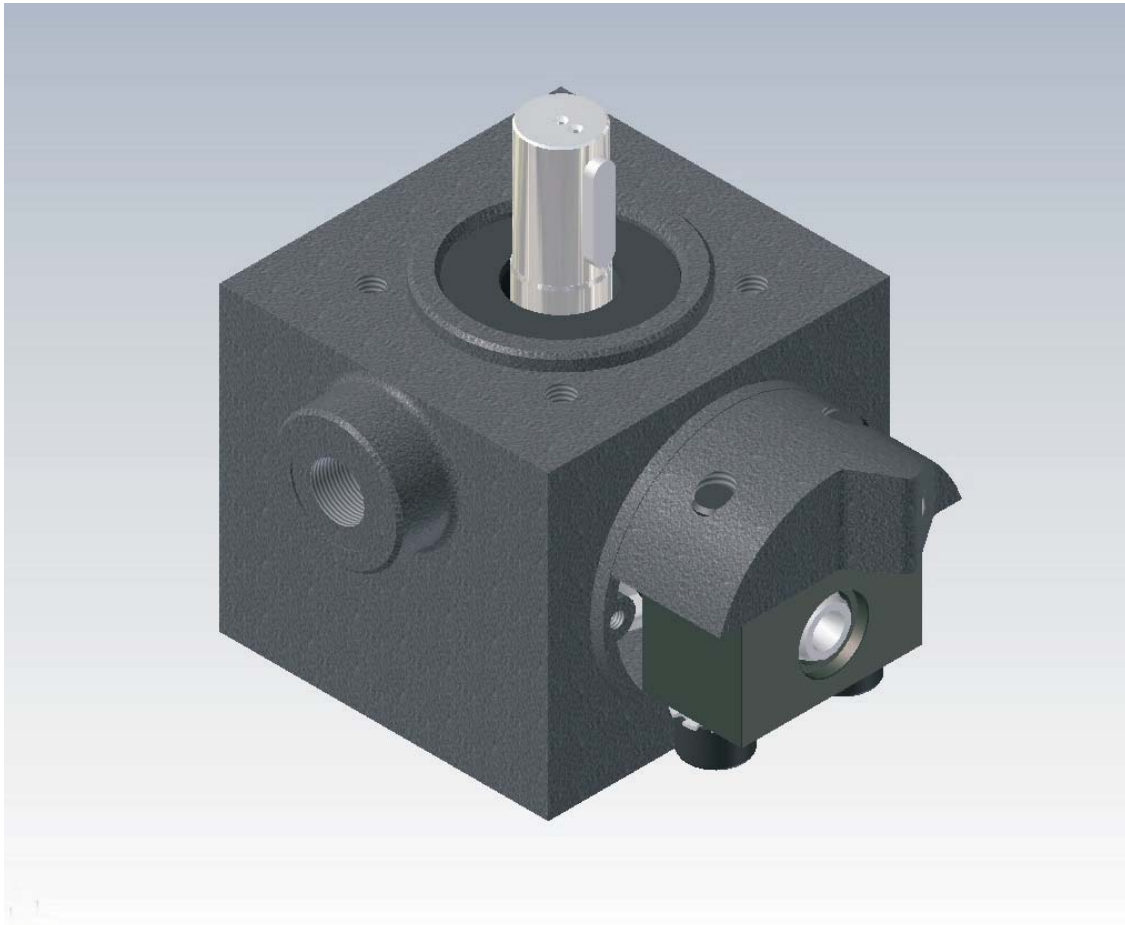
Pump type	Flow diagram	Flow pulsation %
PR 1		314
PR 2		157
PR 3		14
PR 5 PR 10		5
PR 7 PR 14		2,5



PRODUCT OVERVIEW

N° of Pistons	Pump Type	Displacement cm ³ / n	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
1	PR 1.07	0,30	800	850	1500	300 - 1800
	PR 1.08	0,40	600	650		
	PR 1.10	0,63	500	550		
	PR 1.12	0,91	350	390		
	PR 1.13	1,06	300	340		
2	PR 2.07	0,60	800	850		
	PR 2.08	0,80	600	650		
	PR 2.10	1,26	500	550		
	PR 2.12	1,81	350	390		
	PR 2.13	2,12	300	340		
3	PR 3.07	0,90	800	850		
	PR 3.08	1,20	600	650		
	PR 3.10	1,89	500	550		
	PR 3.12	2,72	350	390		
	PR 3.13	3,18	300	340		
5	PR 5.10	3,20	500	550		
	PR 5.12	4,50	350	390		
	PR 5.13	5,30	300	340		
7	PR 7.10	4,40	500	550		
	PR 7.12	6,40	350	390		
	PR 7.13	7,40	300	340		
10	PR 10.10	6,30	500	550		
	PR 10.12	8,90	350	390		
	PR 10.13	10,60	300	340		
14	PR 14.10	8,80	500	550		
	PR 14.12	12,70	350	390		
	PR 14.13	14,80	300	340		

PR 1..... - TECHNICAL SPECIFICATIONS



Rotation Direction: reversible with unchanged of flow direction.

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Flow Direction: from Suction port to Pressure port even at inverse rotation.

Environmental Temperature: from -20°C to +60°C.

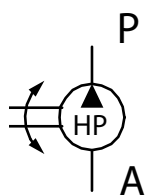
Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

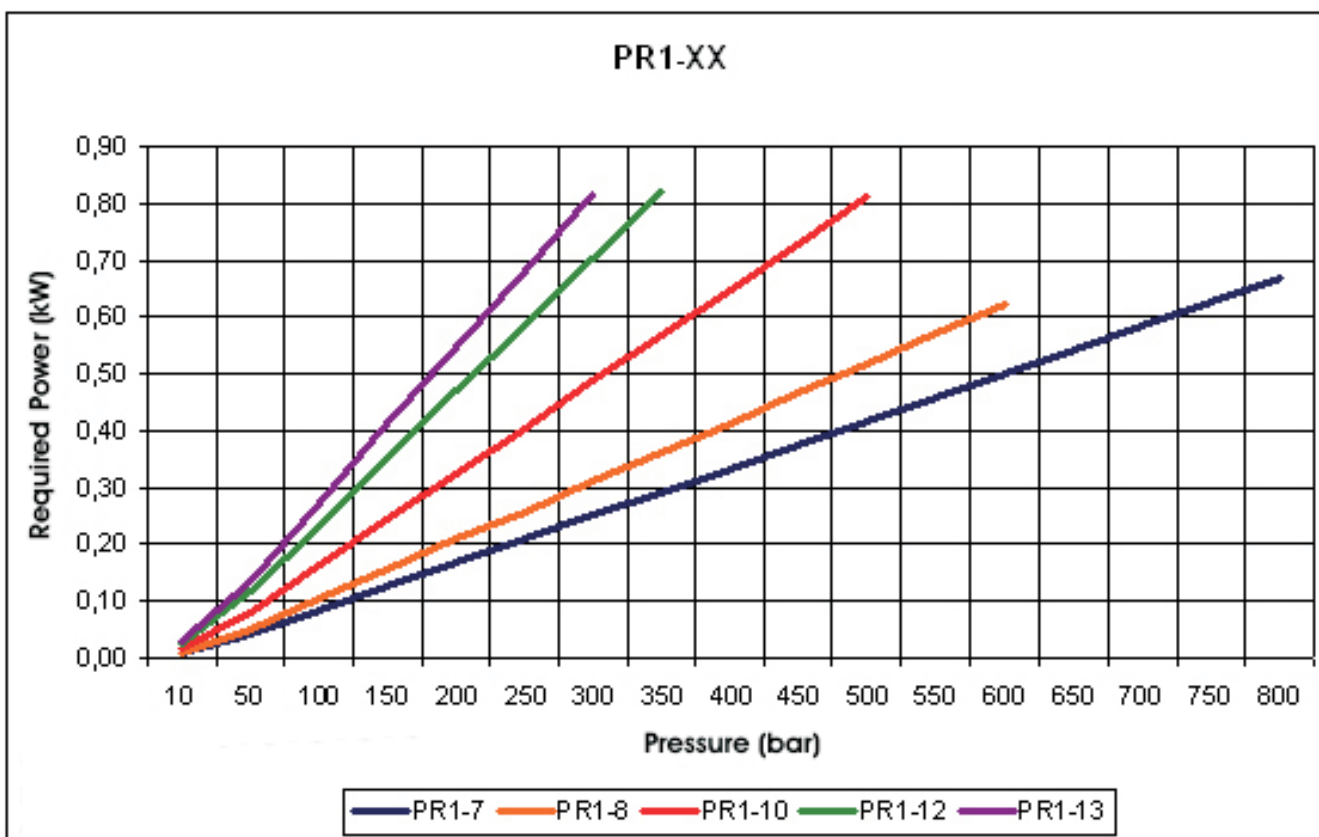


PR 1 - TECHNICAL SPECIFICATIONS

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ / n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
1	PR 1.07	0,30	0,46	0,40	800	850	1500	300 - 1800
	PR 1.08	0,40	0,57	0,45	600	650		
	PR 1.10	0,63	0,89	0,75	500	550		
	PR 1.12	0,91	1,29	1,20	350	390		
	PR 1.13	1,06	1,50	1,35	300	340		

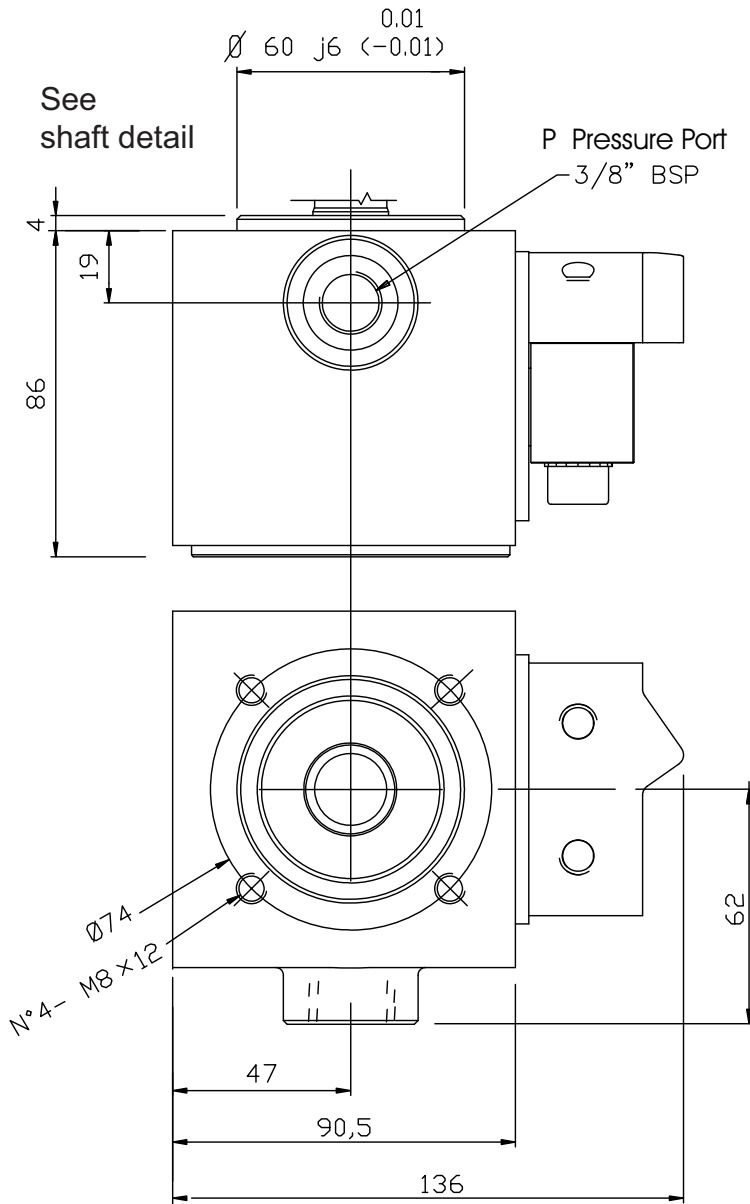
Pressure / Power diagram (at rated speed - 1500 n/min.)



PR 1.....S - INSTALLATION DRAWINGS

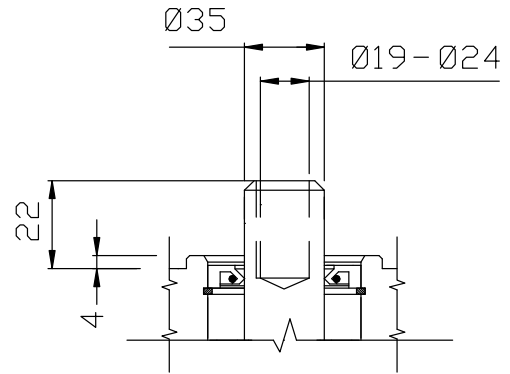
Version for oil-submersed installation

Overall dimensions

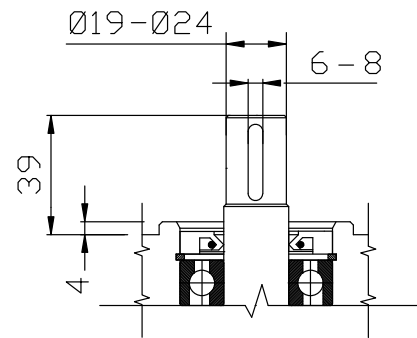


Shaft detail

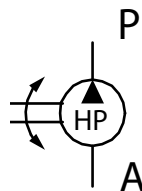
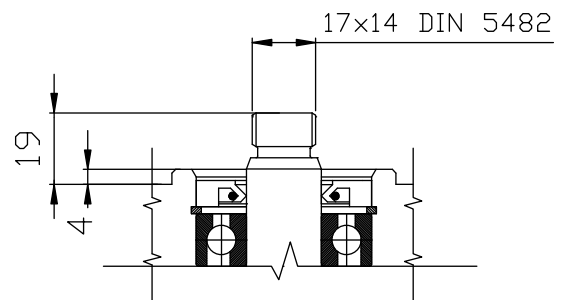
HOLLOW SHAFT F 19 - 24



PARALLEL SHAFT M 19 - 24



SPLINED SHAFT X

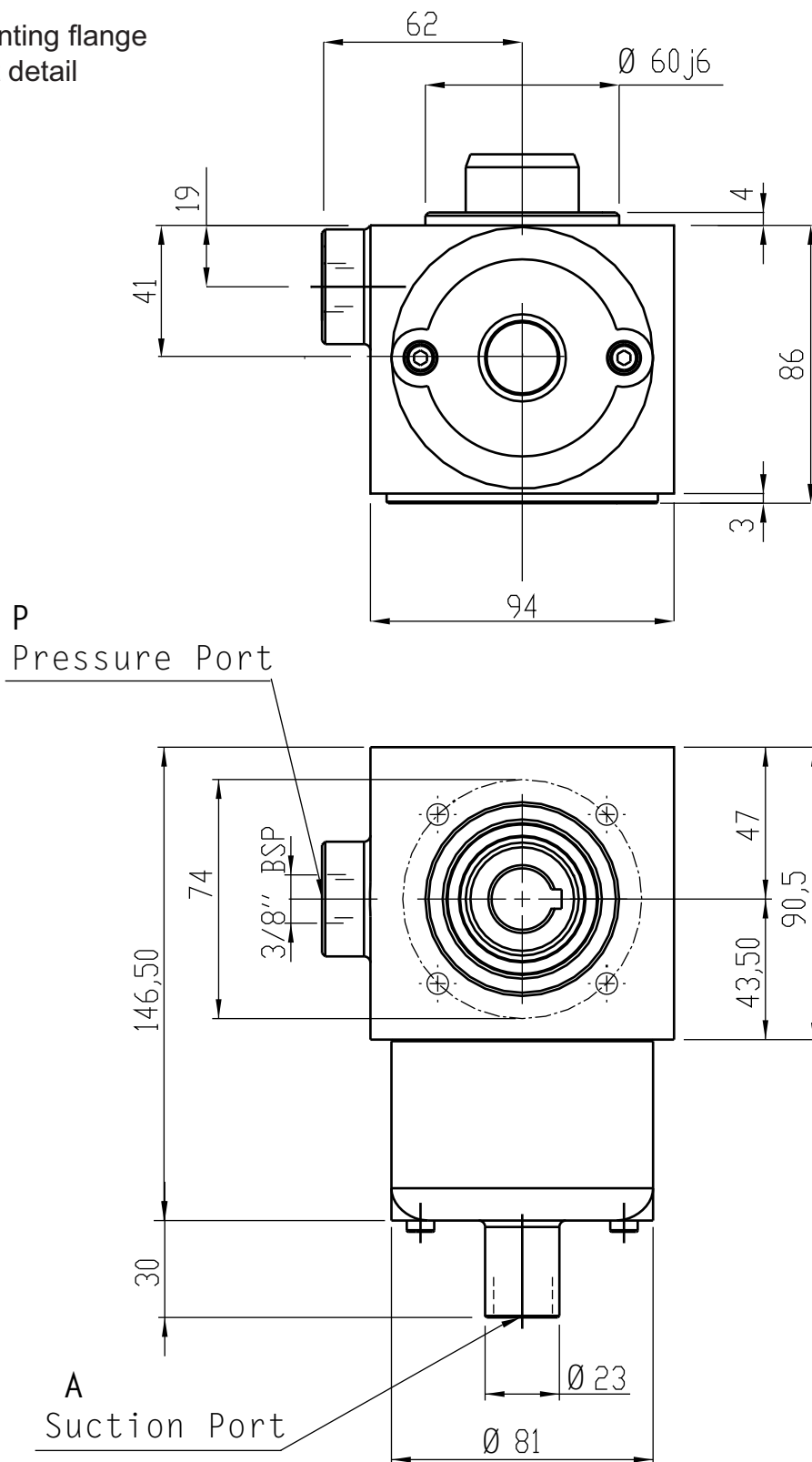


PR 1.....A - INSTALLATION DRAWINGS

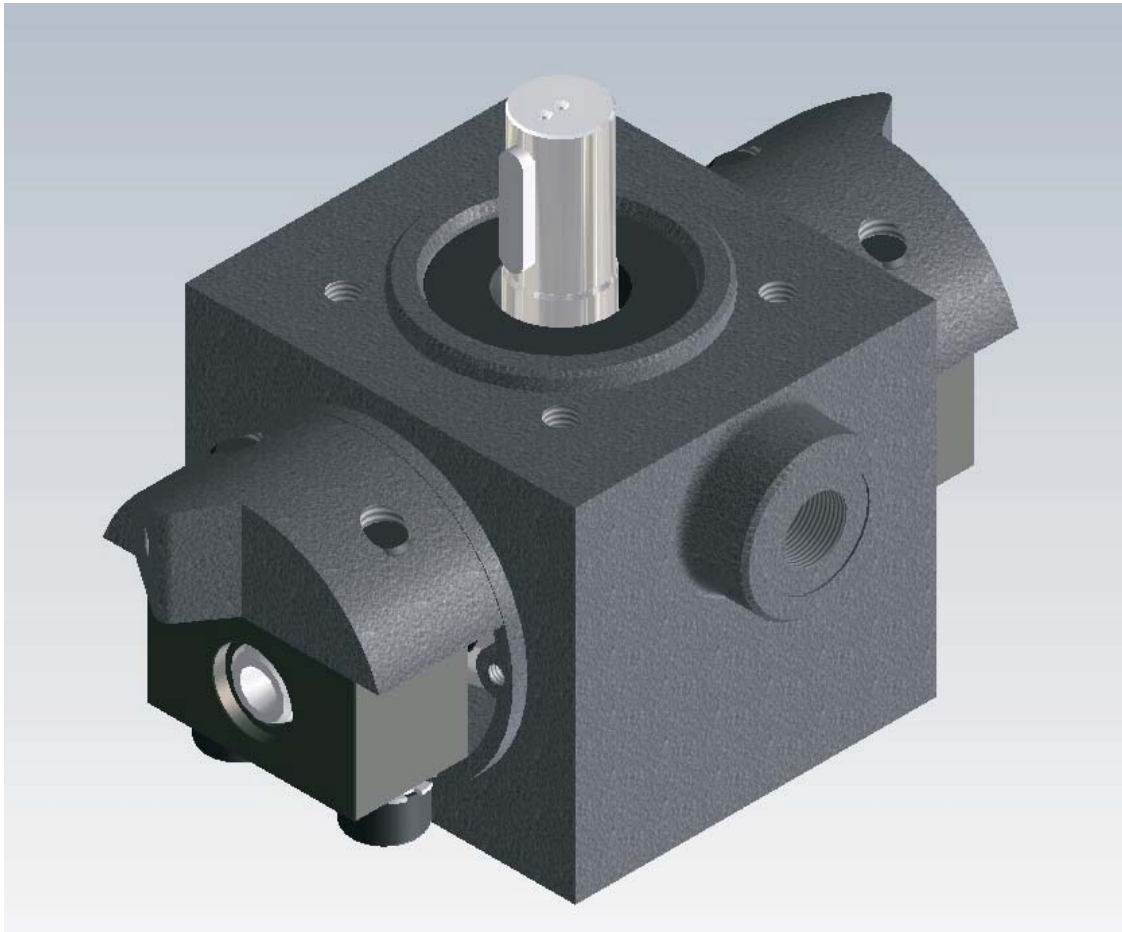
Version with cover for external installation with axial suction port

Overall dimensions

See mounting flange
and shaft detail



PR 2..... - TECHNICAL SPECIFICATIONS



Rotation Direction: reversible with unchanged of flow direction.

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Flow Direction: from Suction port to Pressure port even at inverse rotation.

Environmental Temperature: from -20°C to +60°C.

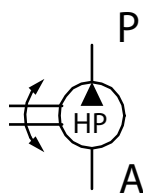
Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

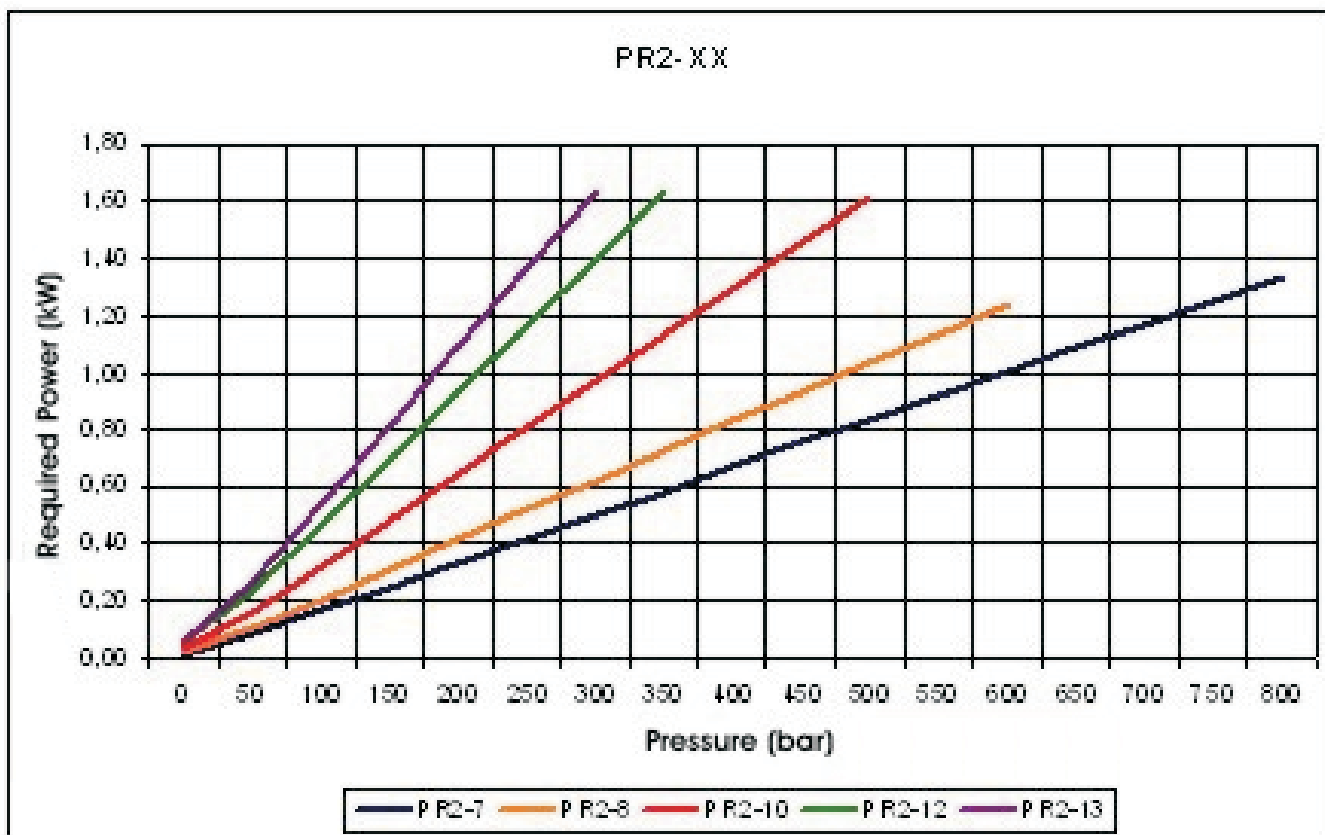


PR 2 - TECHNICAL SPECIFICATIONS

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ /n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
2	PR 2.07	0,60	0,92	0,80	800	850	1500	300 - 1800
	PR 2.08	0,80	1,14	0,95	600	650		
	PR 2.10	1,26	1,78	1,55	500	550		
	PR 2.12	1,81	2,57	2,40	350	390		
	PR 2.13	2,12	3,01	2,80	300	340		

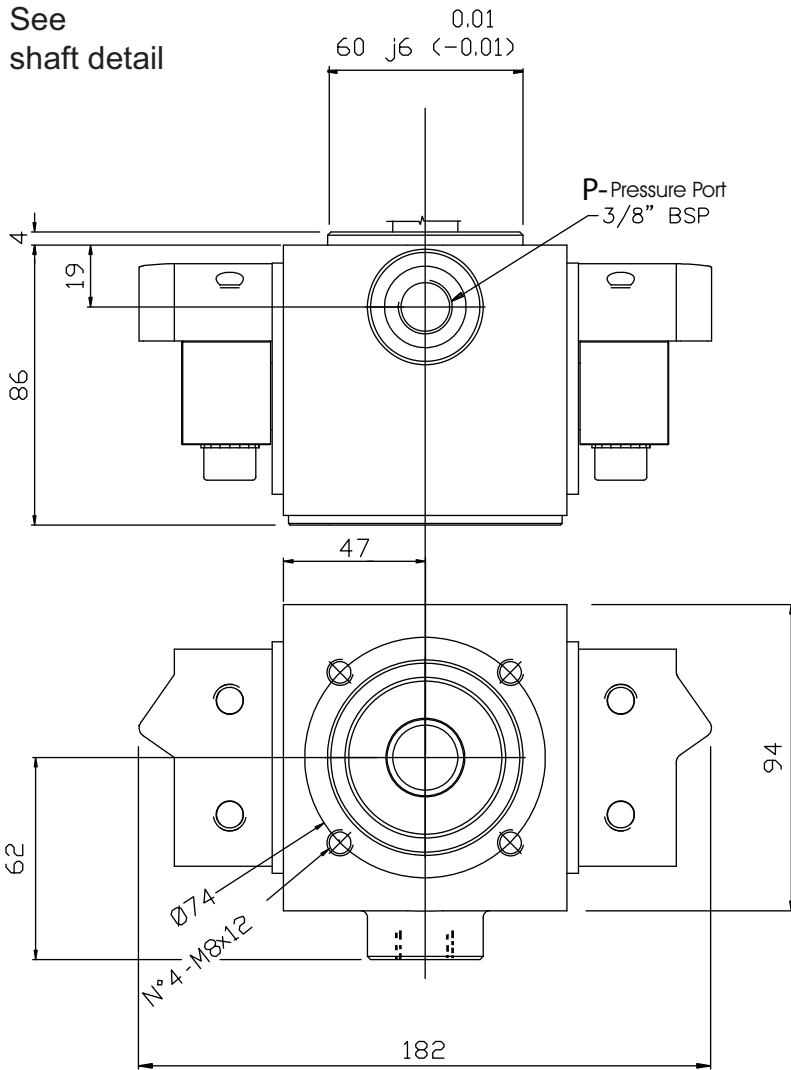
Pressure / Power diagram (at rated speed - 1500 n/min.)



PR 2.....S - INSTALLATION DRAWINGS

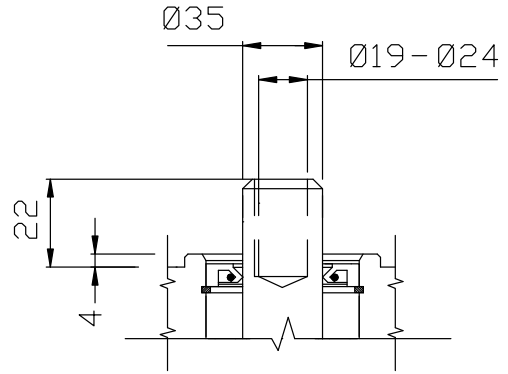
Version for oil-submersed installation

Overall dimensions

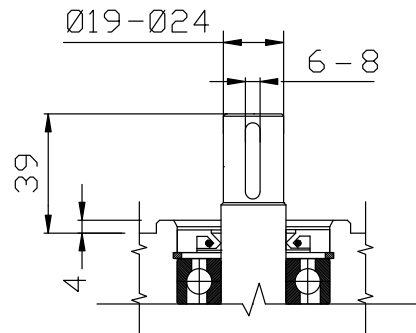


Shaft detail

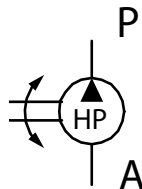
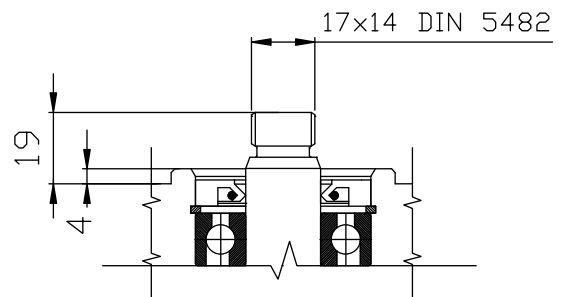
HOLLOW SHAFT F 19 - 24



PARALLEL SHAFT M 19 - 24



SPLINED SHAFT X

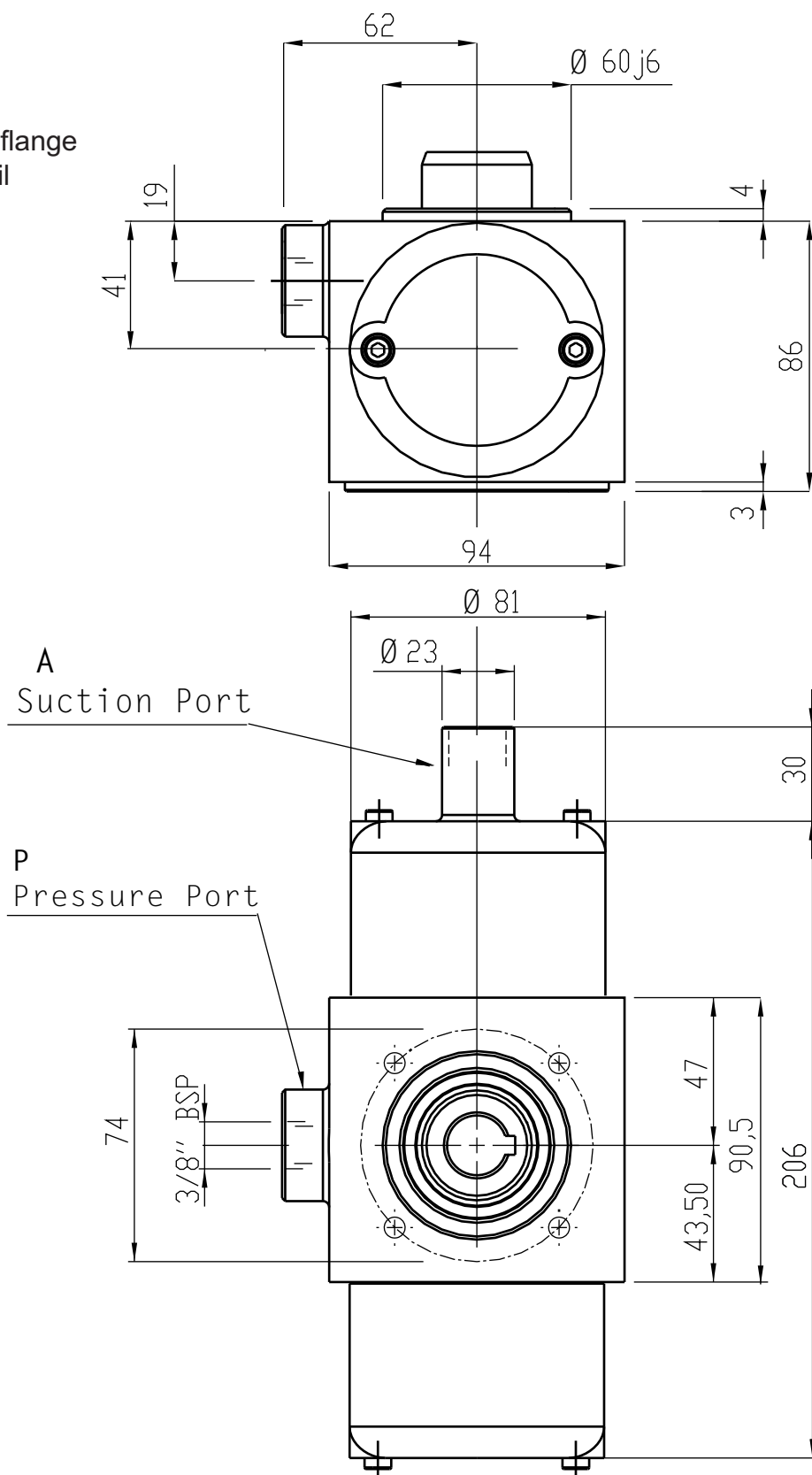


PR 2...A - INSTALLATION DRAWINGS

Version with cover for external installation with axial suction port

Overall dimensions

See mounting flange
and shaft detail



PR 3..... - TECHNICAL SPECIFICATIONS



Rotation Direction: reversible with unchanged of flow direction.

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Flow Direction: from Suction port to Pressure port even at inverse rotation.

Environmental Temperature: from -20°C to +60°C.

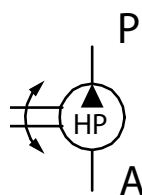
Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

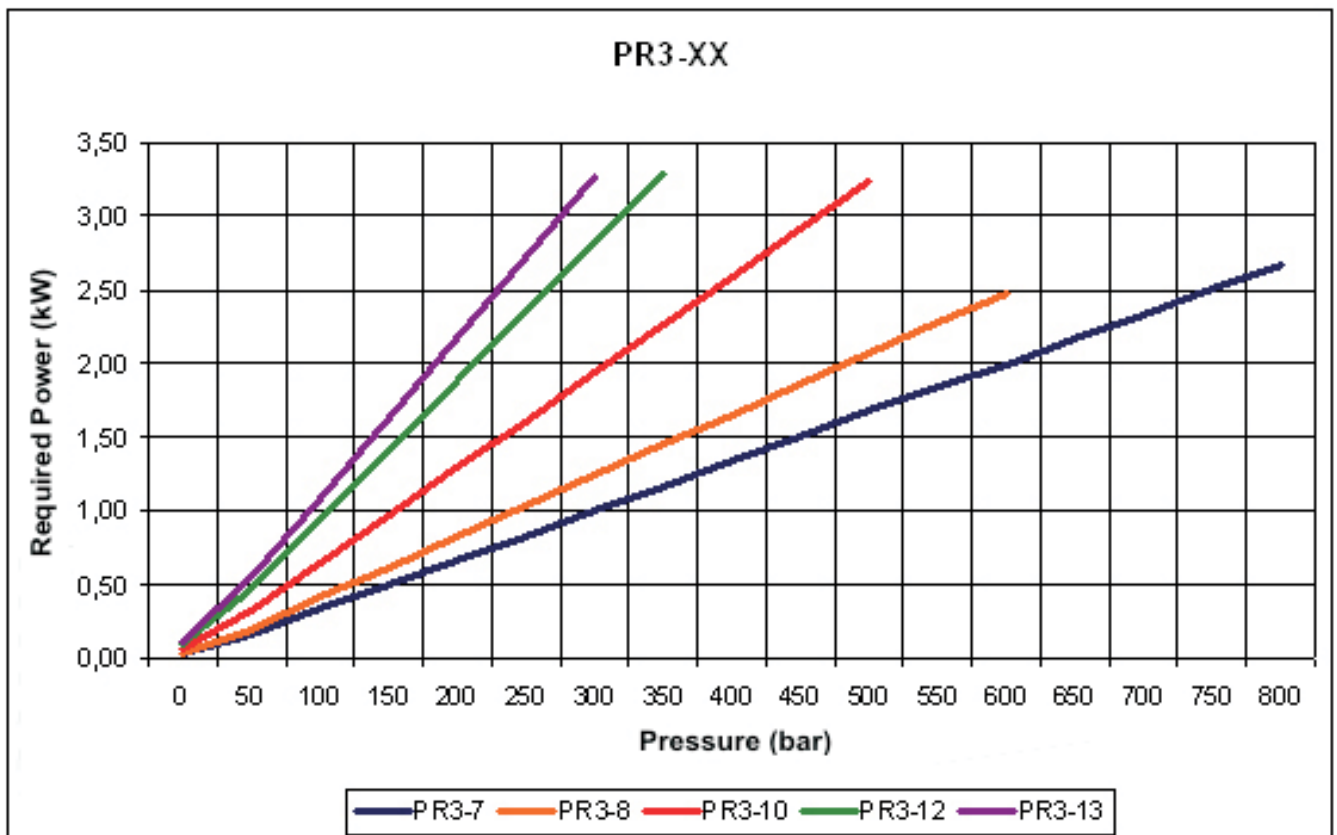


PR 3..... - TECHNICAL SPECIFICATIONS

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ /n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
3	PR 3.07	0,90	1,38	1,20	800	850	1500	300 - 1800
	PR 3.08	1,20	1,71	1,40	600	650		
	PR 3.10	1,89	2,67	2,30	500	550		
	PR 3.12	2,72	3,85	3,55	350	390		
	PR 3.13	3,18	4,52	4,20	300	340		

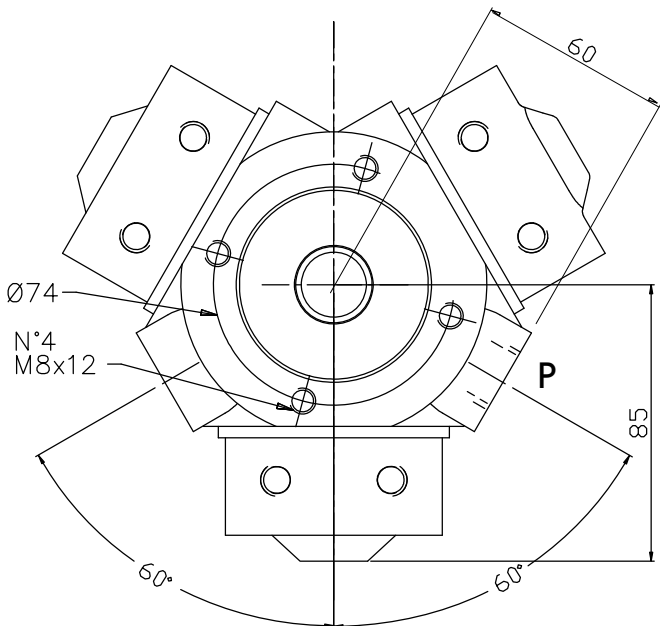
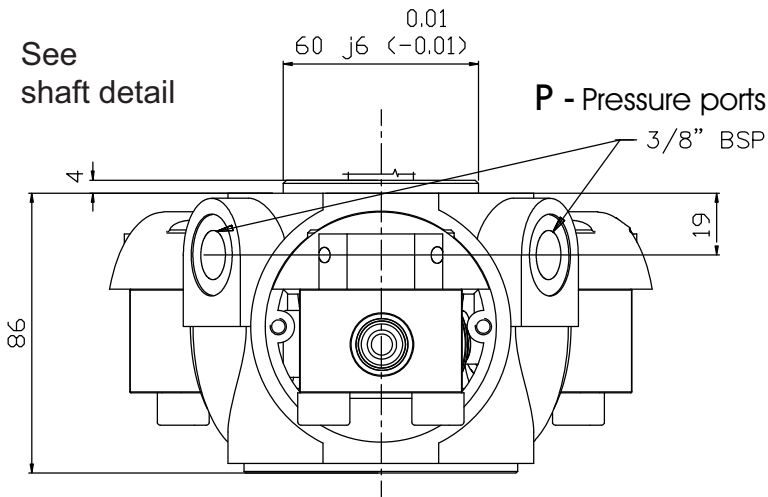
Pressure / Power diagram (at rated speed - 1500 n/min.)



PR 3.....S - INSTALLATION DRAWINGS

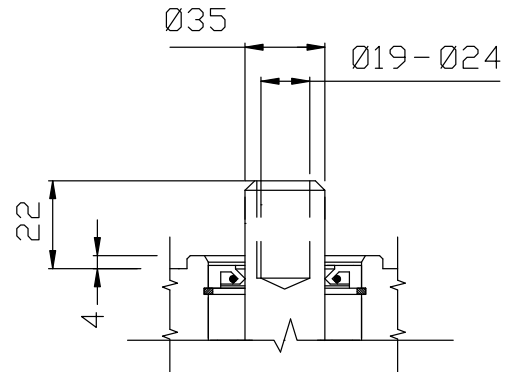
Version for oil-submersed installation

Overall dimensions

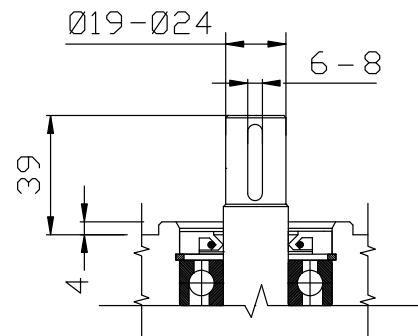


Shaft detail

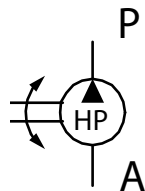
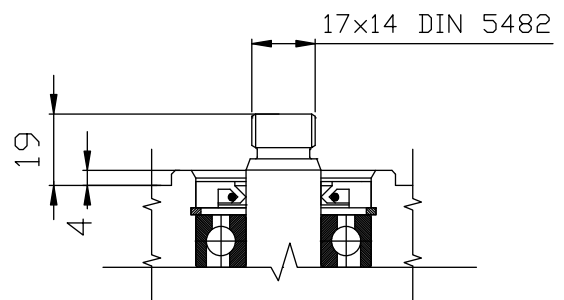
HOLLOW SHAFT F 19 - 24



PARALLEL SHAFT M 19 - 24



SPLINED SHAFT X

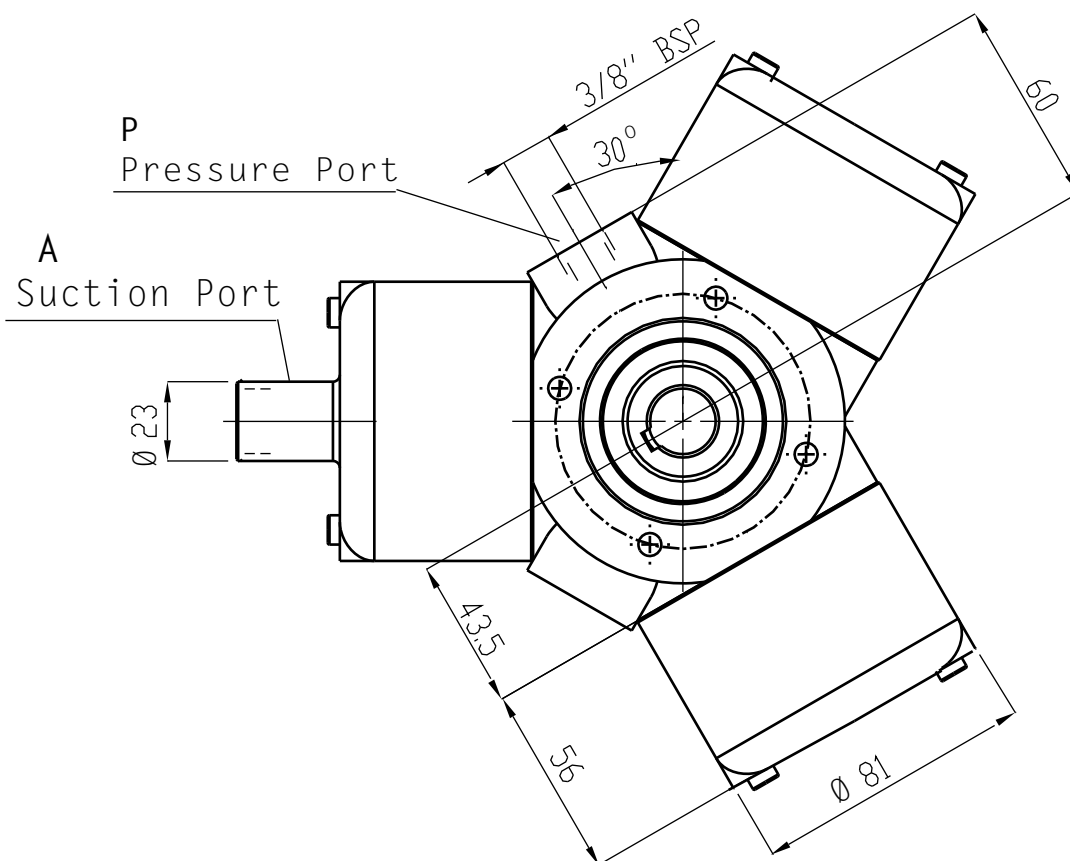
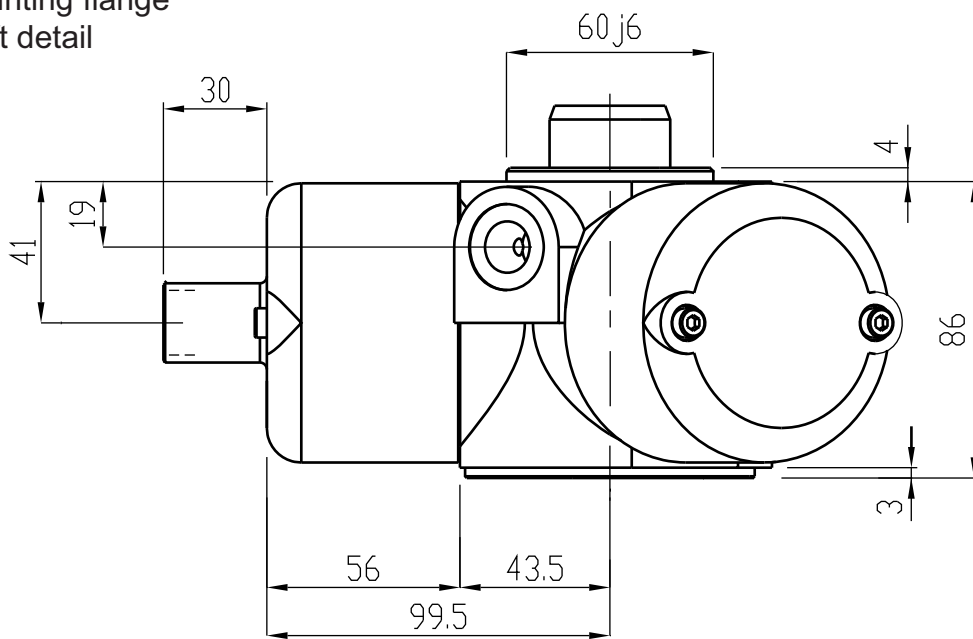


PR 3...A - INSTALLATION DRAWINGS

Version with cover for external installation with axial suction port

Overall dimensions

See mounting flange
and shaft detail



PR 5..... PR7..... - TECHNICAL SPECIFICATIONS



PR 5.....

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ / n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
5	PR 5.10	3,20	4,50	3,90	500	550	1500	300 - 1.800
	PR 5.12	4,50	6,40	5,90	350	390		
	PR 5.13	5,30	7,50	6,90	300	340		

PR7.....

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ / n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
7	PR 7.10	4,40	6,20	5,40	500	550	1500	300 - 1.800
	PR 7.12	6,40	9,00	8,30	350	390		
	PR 7.13	7,40	10,50	9,60	300	340		

Rotation Direction: reversible with unchanged of flow direction.

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Flow Direction: from Suction port to Pressure port even at inverse rotation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

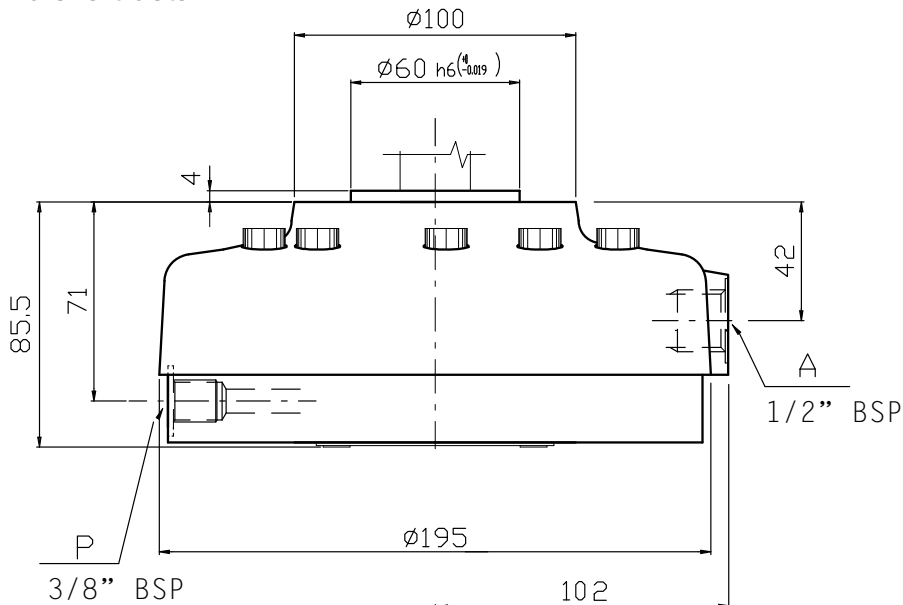
Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

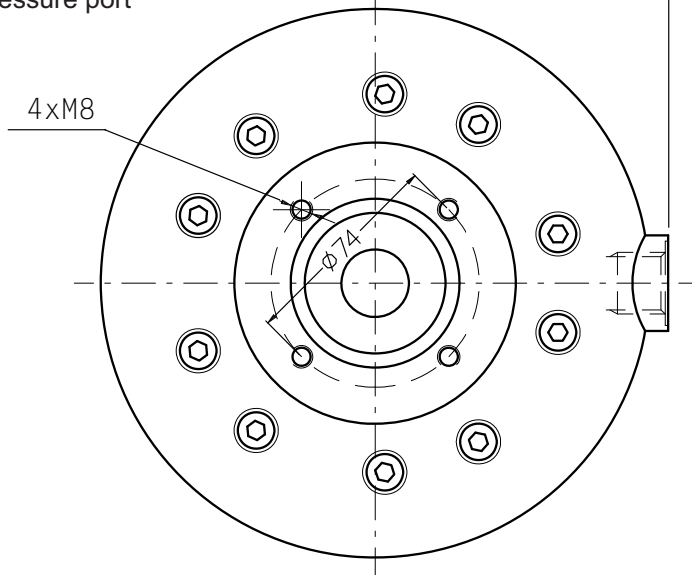
PR 5..... PR7..... - INSTALLATION DRAWINGS

Overall dimensions

See mounting flange
and shaft detail

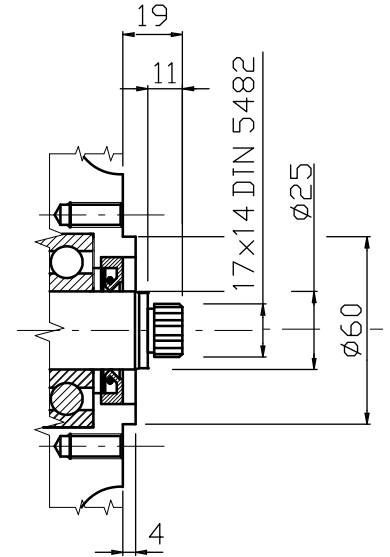


A - Suction port
P - Pressure port

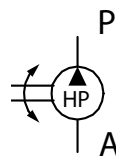
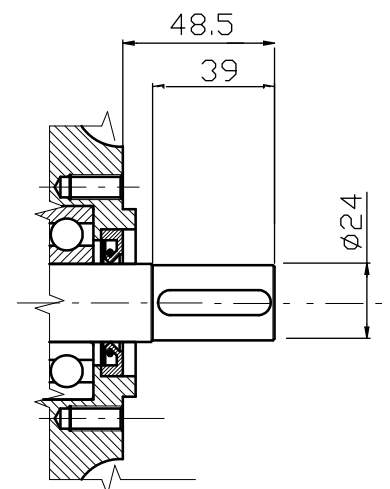


Shaft detail

SPLINED SHAFT X



PARALLEL SHAFT M 24



PR 10..... PR 14..... - TECHNICAL SPECIFICATIONS



PR 10.....

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ / n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
10	PR 10.10	6,30	8,90	7,70	500	550	1500	300 - 1.800
	PR 10.12	8,90	12,80	11,80	350	390		
	PR 10.13	10,60	15,00	13,80	300	340		

PR 14.....

Application characteristics

N° of Pistons	Pump Type	Displacement cm ³ / n	Flow at rated speed lt/min.	Flow at P max. lt/min.	Rated Pressure bar	Peak Pressure bar	Rated Speed n/min.	Speed Range n/min.
14	PR 14.10	8,80	12,50	10,80	500	550	1500	300 - 1.800
	PR 14.12	12,70	17,90	16,50	350	390		
	PR 14.13	14,80	21,00	19,30	300	340		

Rotation Direction: reversible with unchanged of flow direction.

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Flow Direction: from Suction port to Pressure port even at inverse rotation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

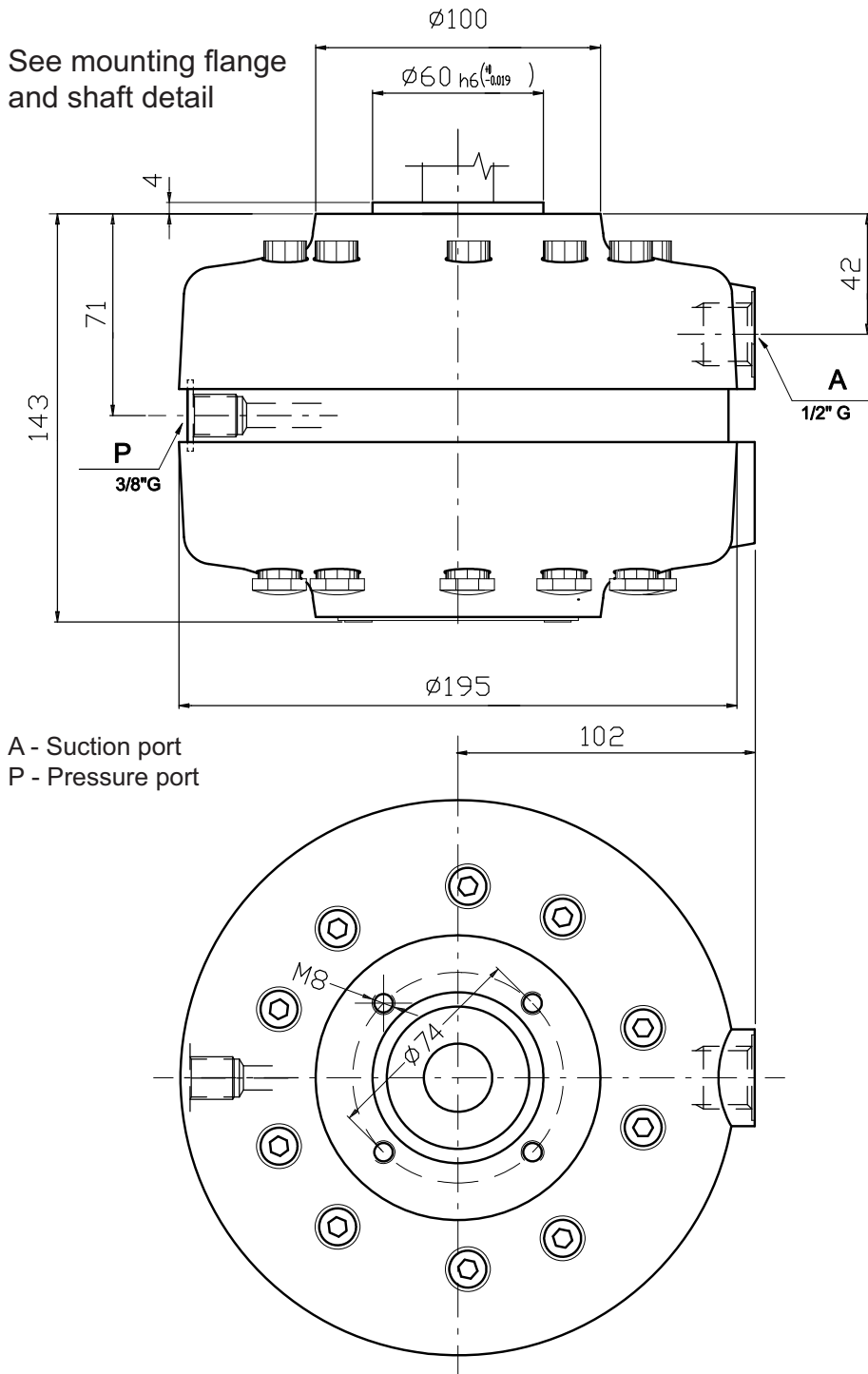
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

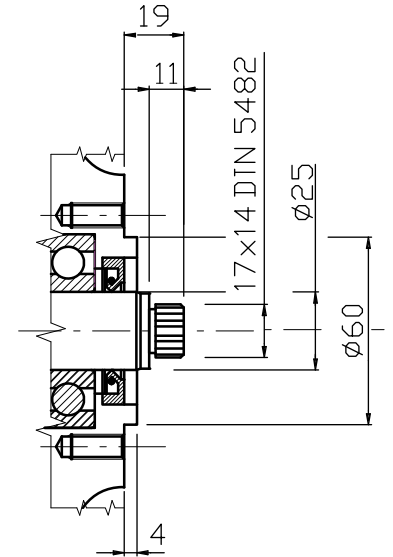
PR 10..... PR 14..... - INSTALLATION DRAWING

Overall dimensions

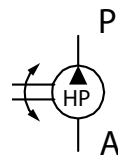
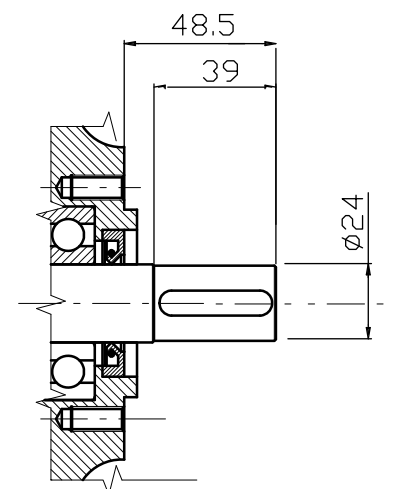


Shaft detail

SPLINED SHAFT X

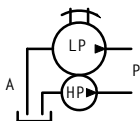
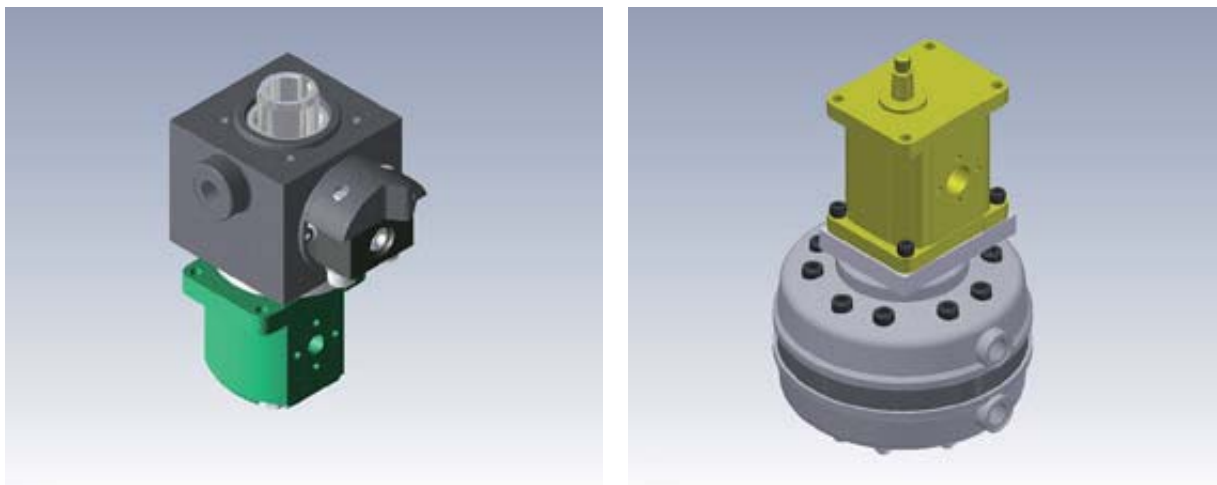


PARALLEL SHAFT M 24



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TANDEM PUMP - GENERAL INFORMATION



The high pressure fixed-displacement radial piston pumps PR Series are designed to specifically satisfy the industrial machinery market where a high pressure or two stage high-low pressure pump is required.

In the PR pumps the pumping cylinders, with intake and delivery valves, are put in star-shape around a cam which, with the help of the plunger return springs, supply with the suction and pressing reciprocating motion.

The plungers measures are five, therefore the smallest ones consent higher pressures and the biggest ones supply major flow rates.

The pumping cylinders (as the relative valves), are of modular conception, are easily replaceable and can be changed with others of different bore if necessary to modify the pump characteristics.

Being suitable for oil-submersed or external installation and with different types of shafts, the pumps PR allow many kinds of installation possibilities, even to be coupled with gear pumps.

Thanks to the reliability and versatility of our radial piston pumps of PR series, we produce tandem high-low pressure pumps coupled with gear pumps or vane pumps.

This kind of combination is ideal for presses, filter-presses and all the machinery that require a quick initial approach and a high work pressure, but limiting the size of the required drive motor.

Our tandem pumps are constituted by a gear pump (Low Pressure) connected by coupling to the motor and by a radial piston pump (High-Pressure) assembled in tandem.

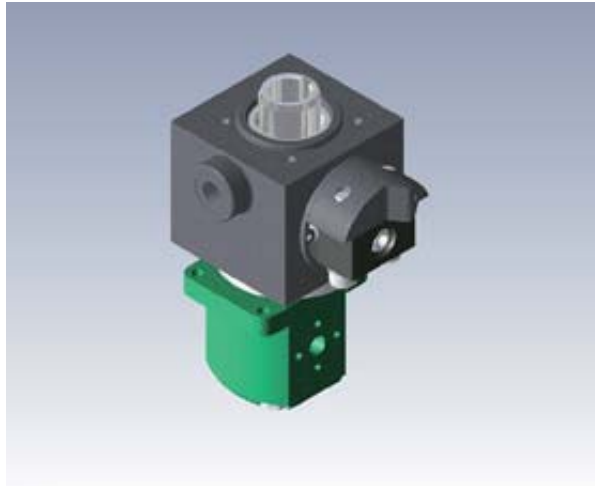
Only for model with Gr1 gear pump, they are installed on the back of the radial pump.

It is possible to obtain special combinations on request and according to the customer's specific requests.

Always make sure that the torque applied is less than or equal to the admissible torque of the shaft.

TANDEM PUMP PR 1.... - PR 2.... + Gear Pump Gr 1

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 1		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ /n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ /n	Pressure Range bar		
1	PR 1.07	0,30	800	850	0,91 - 9,88	250 - 190	1500	900 - 1800
	PR 1.08	0,40	600	650				
	PR 1.10	0,63	500	550				
	PR 1.12	0,91	350	390				
	PR 1.13	1,06	300	340				
2	PR2.07	0,60	800	850	0,91 - 9,88	250 - 190	1500	900 - 1800
	PR 2.08	0,80	600	650				
	PR 2.10	1,26	500	550				
	PR 2.12	1,81	350	390				
	PR 2.13	2,12	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 1

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

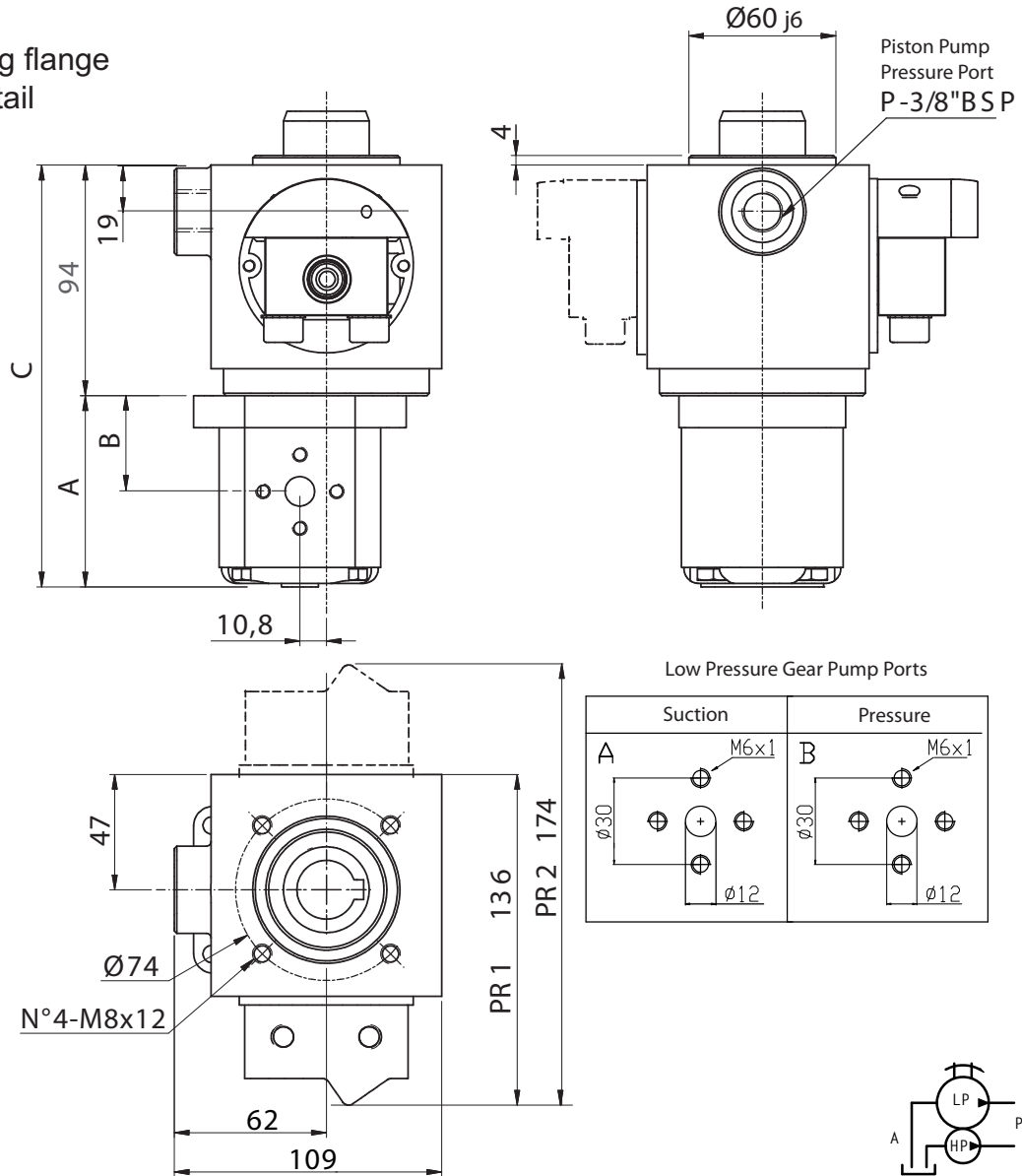
Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

TANDEM PUMP PR 1.... - PR 2.... + Gear Pump Gr 1 INSTALLATION DRAWINGS

See mounting flange
and shaft detail



Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ / n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PV1-0,9	0,91	1,32	240	77,1	37,3	171,1	Type A	Type B
PV1-1,2	1,17	1,70	250	78	37,8	172	Type A	Type B
PV1-1,7	1,56	2,20	250	79,5	38,5	173,5	Type A	Type B
PV1-2,2	2,08	3,00	250	81,5	39,5	175,5	Type A	Type B
PV1-2,6	2,60	3,77	250	83,5	40,5	177,5	Type A	Type B
PV1-3,2	3,12	4,52	250	85,5	41,5	179,5	Type A	Type B
PV1-3,8	3,64	5,27	250	87,5	42,5	181,5	Type A	Type B
PV1-4,3	4,16	6,00	250	89,5	43,5	183,5	Type A	Type B
PV1-4,9	4,94	7,16	250	92,5	45	186,5	Type A	Type B
PV1-5,9	5,85	8,48	250	96	46,8	190	Type A	Type B
PV1-6,5	6,50	9,42	250	98,5	48	192,5	Type A	Type B
PV1-7,8	7,54	10,90	220	102,5	50	196,5	Type A	Type B
PV1-9,8	9,88	14,30	190	111,5	54,5	205,5	Type A	Type B

TANDEM PUMP PR 1... - PR 2.... - PR 3.... + Gear Pump Gr 2

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 2		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ /n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ /n	Pressure Range bar		
1	PR 1.07	0,30	800	850	4 - 40	260 - 140	1500	900 - 1800
	PR 1.08	0,40	600	650				
	PR 1.10	0,63	500	550				
	PR 1.12	0,91	350	390				
	PR 1.13	1,06	300	340				
2	PR 2.07	0,60	800	850				
	PR 2.08	0,80	600	650				
	PR 2.10	1,26	500	550				
	PR 2.12	1,81	350	390				
	PR 2.13	2,12	300	340				
3	PR 3.07	0,90	800	850				
	PR 3.08	1,20	600	650				
	PR 3.10	1,89	500	550				
	PR 3.12	2,72	350	390				
	PR 3.13	3,18	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 2

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

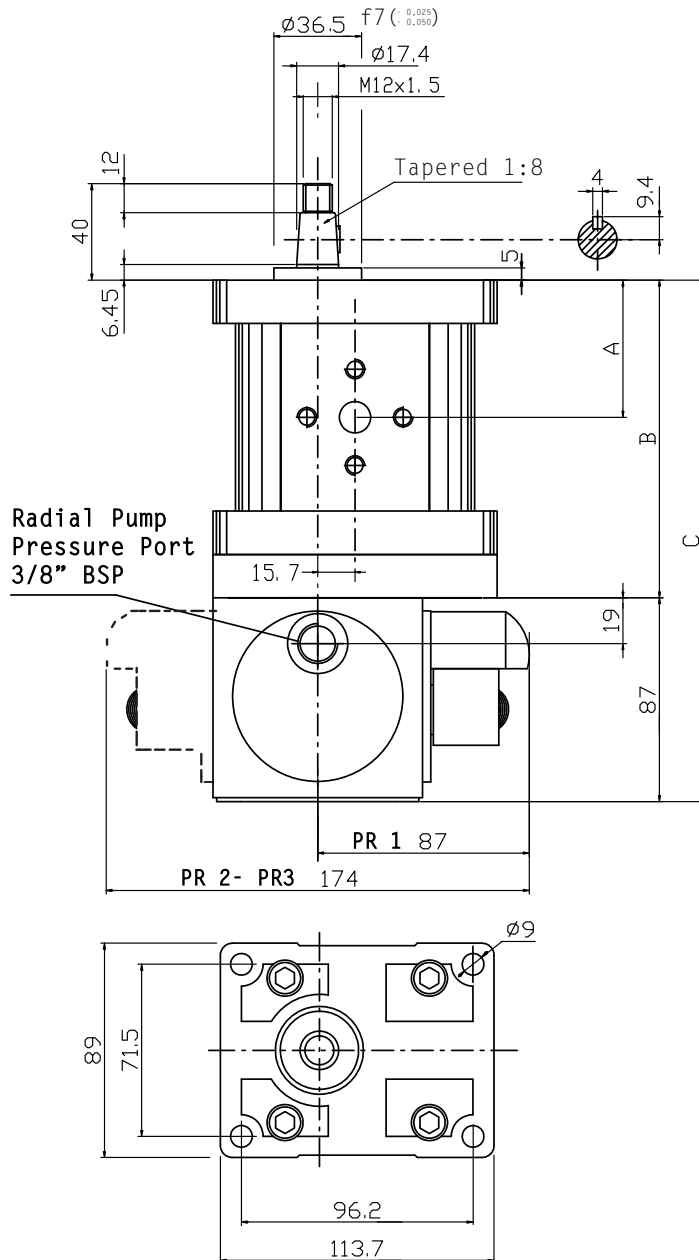
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

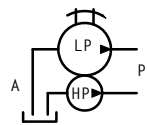
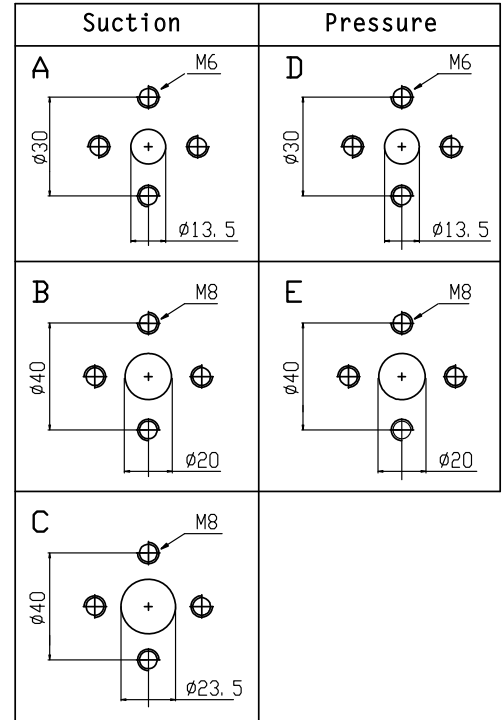
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

TANDEM PUMP PR 1.... - PR 2.... - PR 3.... + Gear Pump Gr 2 INSTALLATION DRAWING



Low Pressure Gear Pump Ports



Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm^3/n	Flow at rated speed $\text{lt}/\text{min.}$	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PV2-4	4,20	6,10	260	41,7	101,4	188,4	Type A	Type D
PV2-6	6,00	8,70	260	43,2	104,4	191,4	Type A	Type D
PV2-9	8,40	12,10	260	45,2	108,4	195,4	Type A	Type D
PV2-11	10,80	15,60	260	47,2	112,4	199,4	Type A	Type D
PV2-14	14,40	20,90	250	50,2	118,4	205,4	Type B	Type D
PV2-17	16,80	24,30	230	52,2	122,4	209,4	Type B	Type D
PV2-19	19,20	27,80	210	54,2	126,4	213,4	Type B	Type D
PV2-22	22,80	33,00	200	57,2	132,4	219,4	Type B	Type D
PV2-26	26,20	37,90	170	59,2	136,4	223,4	Type C	Type E
PV2-30	30,00	43,50	160	63,2	144,4	231,4	Type C	Type E
PV2-34	34,20	49,50	150	66,7	151,4	238,4	Type C	Type E
PV2-40	39,60	57,40	140	71,2	160,4	247,4	Type C	Type E

TANDEM PUMP PR 1.... - PR 2.... - PR 3.... + Gear Pump Gr 3

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 3		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ /n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ /n	Pressure Range bar		
1	PR 1.07	0,30	800	850	22 - 90	250 - 150	1500	900 - 1800
	PR 1.08	0,40	600	650				
	PR 1.10	0,63	500	550				
	PR 1.12	0,91	350	390				
	PR 1.13	1,06	300	340				
2	PR 2.07	0,60	800	850				
	PR 2.08	0,80	600	650				
	PR 2.10	1,26	500	550				
	PR 2.12	1,81	350	390				
	PR 2.13	2,12	300	340				
3	PR 3.07	0,90	800	850				
	PR 3.08	1,20	600	650				
	PR 3.10	1,89	500	550				
	PR 3.12	2,72	350	390				
	PR 3.13	3,18	300	340				
	PR 3.14	3,69	250	280				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 3

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: with cover for external installation or without cover for oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

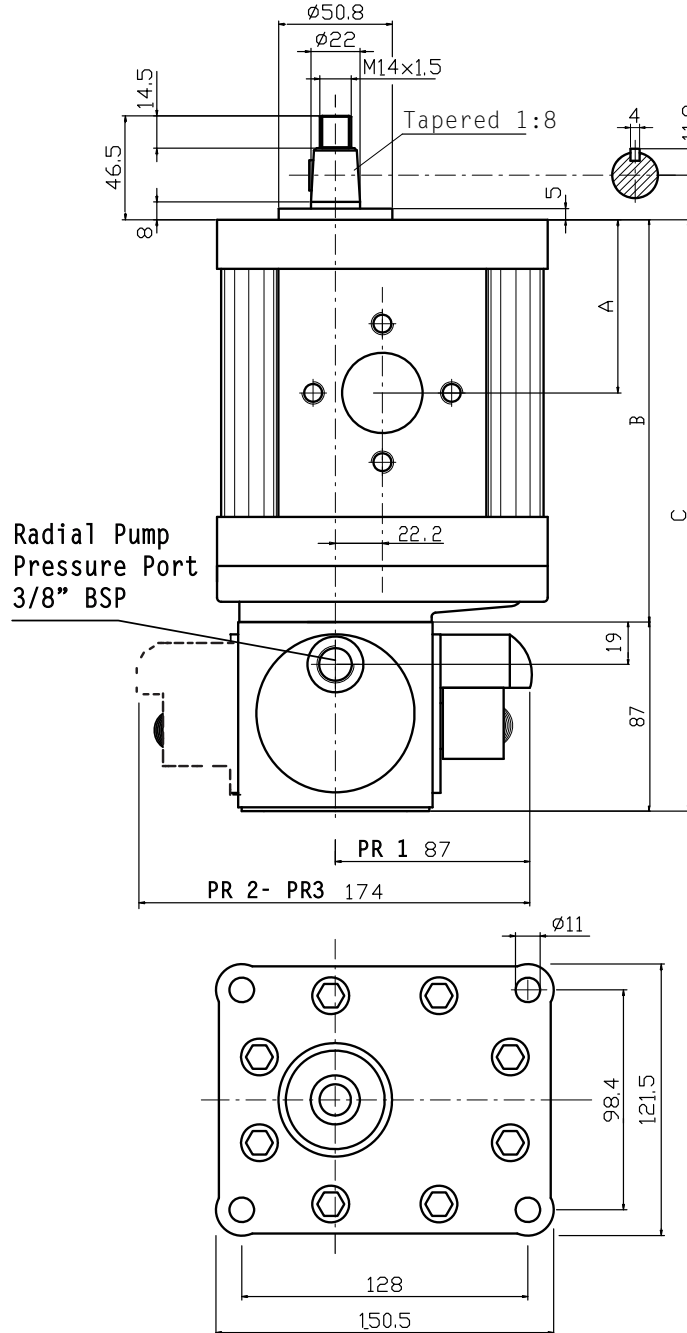
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

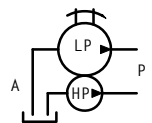
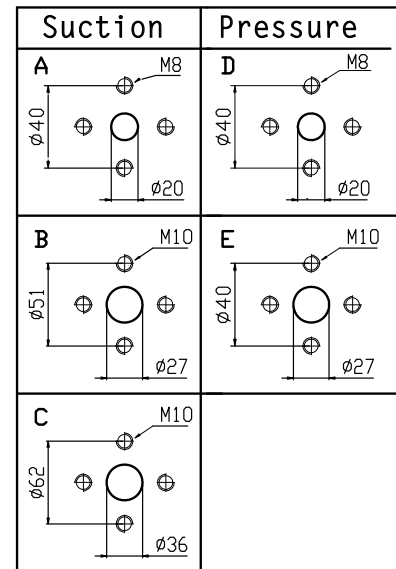
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

TANDEM PUMP PR 1....- PR 2.... - PR 3... + Gear Pump Gr 3 INSTALLATION DRAWINGS



Low Pressure Gear Pump Ports



Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ / n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PT3-22	22,10	32,00	250	63	151	238	Type A	Type D
PT3-26	26,20	38,00	250	64,5	154	241	Type A	Type D
PT3-33	33,10	48,00	250	67	159	246	Type B	Type D
PT3-38	37,90	54,90	250	68,8	162,6	249,9	Type B	Type D
PT3-44	44,10	63,90	250	71	167	254	Type B	Type E
PT3-48	48,30	70,00	230	72,5	170	257	Type B	Type E
PT3-55	55,10	80,00	230	75	175	262	Type B	Type E
PT3-63	63,40	91,90	210	78	181	268	Type C	Type E
PT3-75	74,40	107,80	180	82	189	276	Type C	Type E
PT3-90	88,20	127,90	150	87	199	286	Type C	Type E

TANDEM PUMP PR 5.... - PR 7.... + Gear Pump Gr 2

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 2		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ / n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ / n	Pressure Range bar		
5	PR 5.10	3,20	500	550	4 - 40	260 - 140	1500	900 - 1800
	PR 5.12	4,50	350	390				
	PR 5.13	5,30	300	340				
7	PR 7.10	4,40	500	550				
	PR 7.12	6,40	350	390				
	PR 7.13	7,40	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 2

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

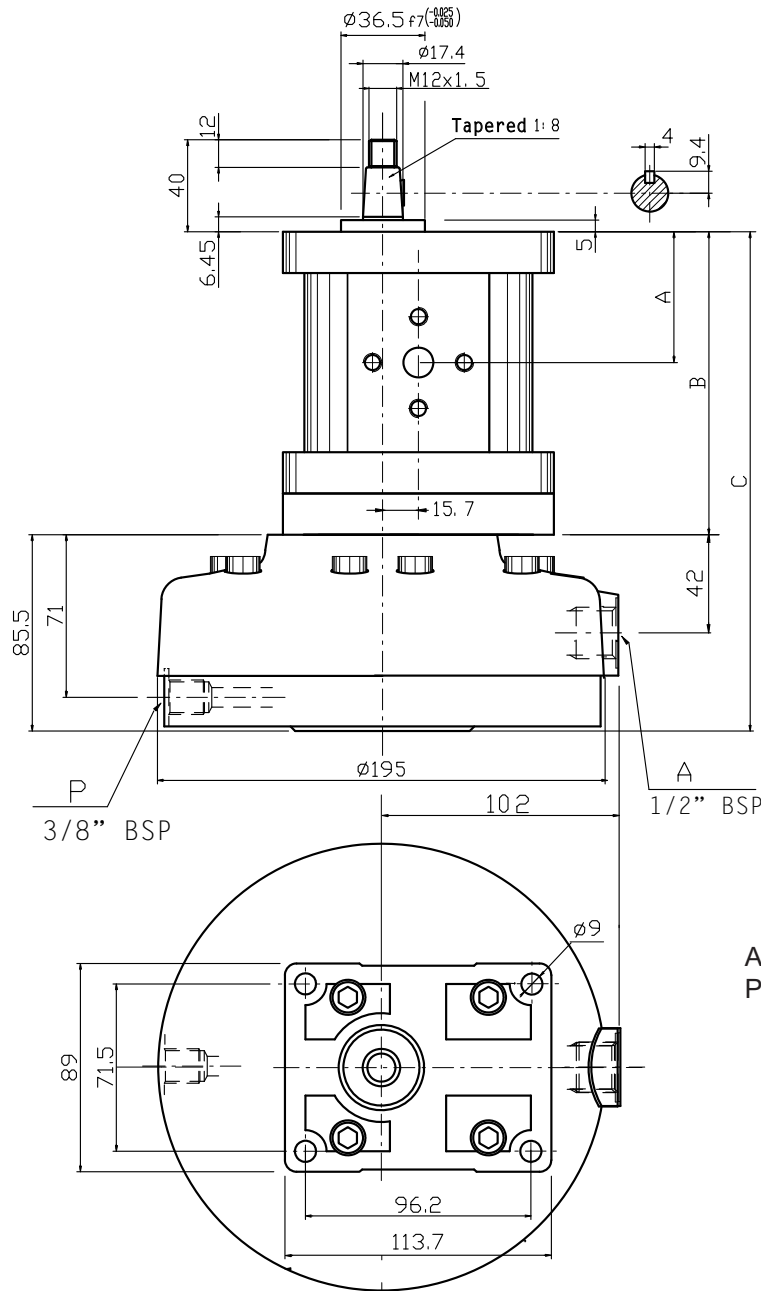
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

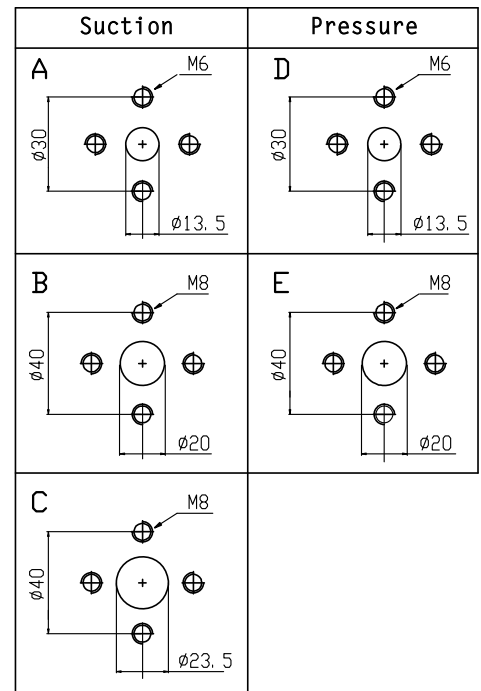
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

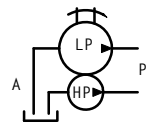
TANDEM PUMP PR 5... - PR 7... + Gear Pump Gr 2 INSTALLATION DRAWINGS



Low Pressure Gear Pump Ports



A - HP Pump Suction port
P - HP Pump Pressure port

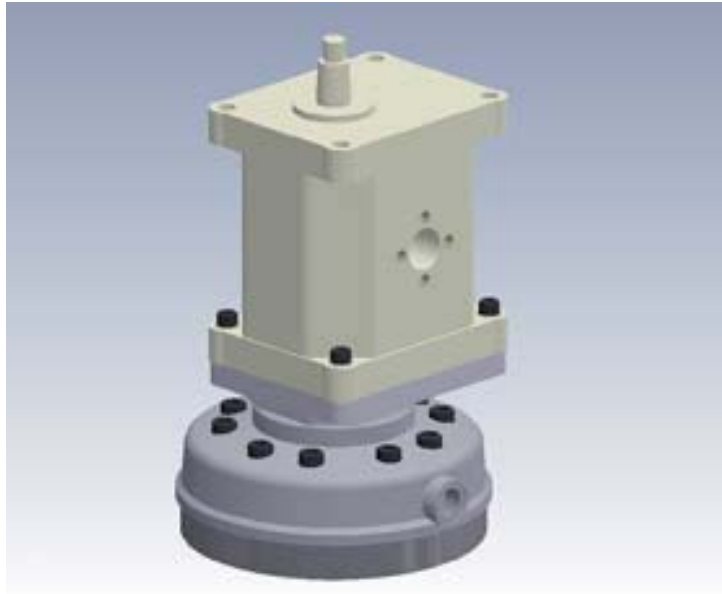


Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ /n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PV2-4	4,20	6,10	260	41,7	101,4	186,9	Type A	Type D
PV2-6	6,00	8,70	260	43,2	104,4	189,9	Type A	Type D
PV2-9	8,40	12,10	260	45,2	108,4	193,9	Type A	Type D
PV2-11	10,80	15,60	260	47,2	112,4	197,9	Type A	Type D
PV2-14	14,40	20,90	250	50,2	118,4	203,9	Type B	Type D
PV2-17	16,80	24,30	230	52,2	122,4	207,9	Type B	Type D
PV2-19	19,20	27,80	210	54,2	126,4	211,9	Type B	Type D
PV2-22	22,80	33,00	200	57,2	132,4	217,9	Type B	Type D
PV2-26	26,20	37,90	170	59,2	136,4	221,9	Type C	Type E
PV2-30	30,00	43,50	160	63,2	144,4	229,9	Type C	Type E
PV2-34	34,20	49,50	150	66,7	151,4	236,9	Type C	Type E
PV2-40	39,60	57,40	140	71,2	160,4	245,9	Type C	Type E

TANDEM PUMP PR 5.... - PR 7.... + Gear Pump Gr 3

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 3		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ /n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ /n	Pressure Range bar		
5	PR 5.10	3,20	500	550	22 - 90	250 - 150	1500	900 - 1800
	PR 5.12	4,50	350	390				
	PR 5.13	5,30	300	340				
7	PR 7.10	4,40	500	550				
	PR 7.12	6,40	350	390				
	PR 7.13	7,40	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 3

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level

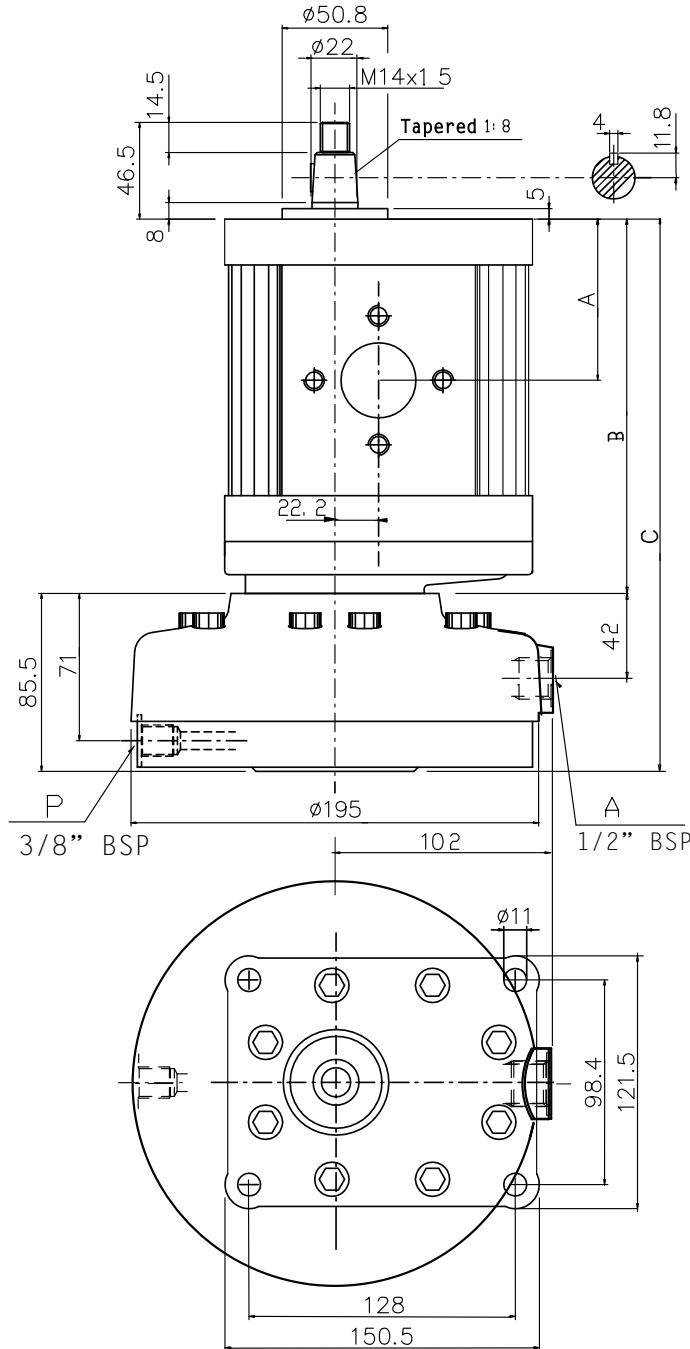
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

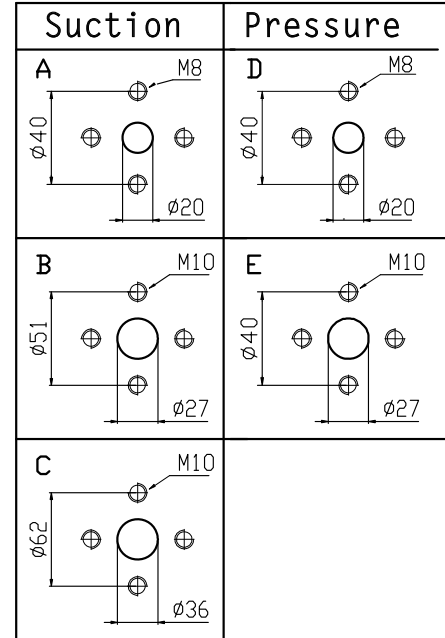
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

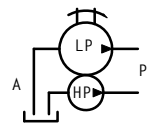
TANDEM PUMP PR 5... - PR 7... + Gear Pump Gr 3 INSTALLATION DRAWINGS



Low Pressure Gear Pump Ports



A - HP Pump Suction port
P - HP Pump Pressure port



Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ /n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PT3-22	22,10	32,00	250	63	151	236,5	Type A	Type D
PT3-26	26,20	38,00	250	64,5	154	239,5	Type A	Type D
PT3-33	33,10	48,00	250	67	159	244,4	Type B	Type D
PT3-38	37,90	54,90	250	68,8	162,6	248,1	Type B	Type D
PT3-44	44,10	63,90	250	71	167	252,5	Type B	Type E
PT3-48	48,30	70,00	230	72,5	170	255,5	Type B	Type E
PT3-55	55,10	80,00	230	75	175	260,5	Type B	Type E
PT3-63	63,40	91,90	210	78	181	266,5	Type C	Type E
PT3-75	74,40	107,80	180	82	189	274,5	Type C	Type E
PT3-90	88,20	127,90	150	87	199	284,5	Type C	Type E

TANDEM PUMP PR 10.... - PR 14.... + Gear Pump Gr 2

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 2		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ / n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ / n	Pressure Range bar		
10	PR 10.10	6,30	500	550	4 - 40	260 - 140	1500	900 - 1800
	PR 10.12	8,90	350	390				
	PR 10.13	10,60	300	340				
14	PR 14.10	8,80	500	550				
	PR 14.12	12,70	350	390				
	PR 14.13	14,80	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 2

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level.

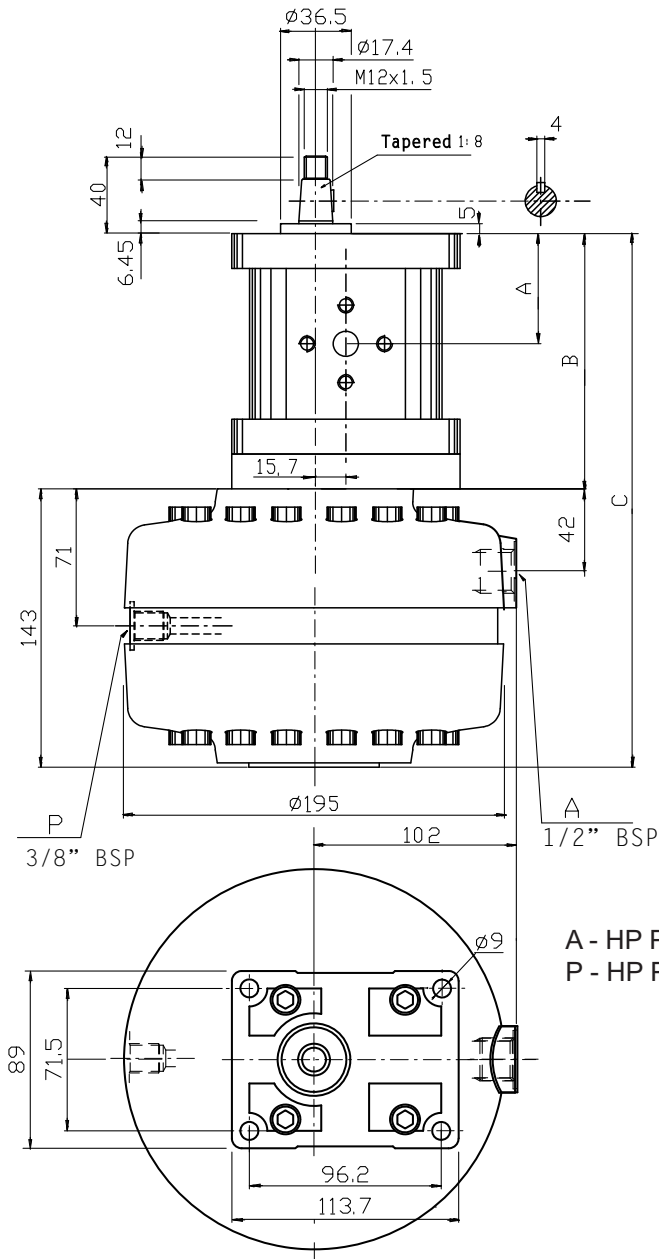
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

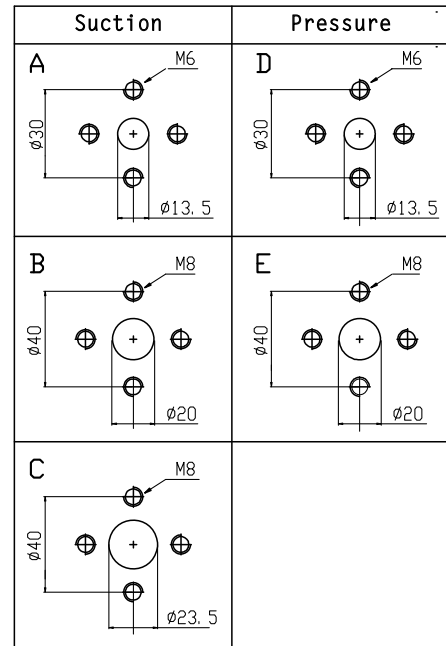
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

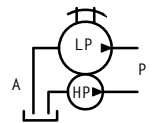
TANDEM PUMP PR 10... - PR 14... + Gear Pump Gr 2 INSTALLATION DRAWINGS



Low Pressure Gear Pump Ports



A - HP Pump Suction port
P - HP Pump Pressure port

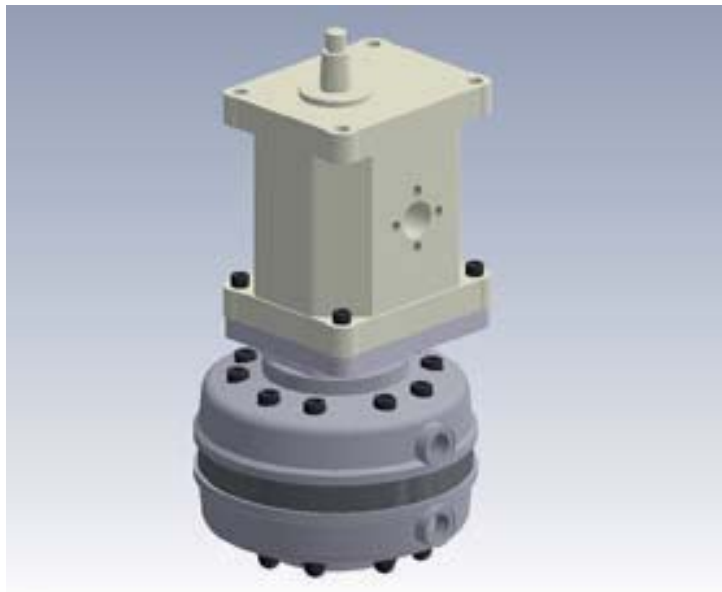


Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ /n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PV2-4	4,20	6,10	260	41,7	101,4	244,4	Type A	Type D
PV2-6	6,00	8,70	260	43,2	104,4	247,4	Type A	Type D
PV2-9	8,40	12,10	260	45,2	108,4	251,4	Type A	Type D
PV2-11	10,80	15,60	260	47,2	112,4	255,4	Type A	Type D
PV2-14	14,40	20,90	250	50,2	118,4	261,4	Type B	Type D
PV2-17	16,80	24,30	230	52,2	122,4	265,4	Type B	Type D
PV2-19	19,20	27,80	210	54,2	126,4	269,4	Type B	Type D
PV2-22	22,80	33,00	200	57,2	132,4	275,4	Type B	Type D
PV2-26	26,20	37,90	170	59,2	136,4	279,4	Type C	Type E
PV2-30	30,00	43,50	160	63,2	144,4	287,4	Type C	Type E
PV2-34	34,20	49,50	150	66,7	151,4	294,4	Type C	Type E
PV2-40	39,60	57,40	140	71,2	160,4	303,4	Type C	Type E

TANDEM PUMP PR 10.... - PR 14.... + Gear Pump Gr 3

TECHNICAL SPECIFICATIONS



High Pressure Radial Piston Pumps Characteristics

N° of Pistons	Pump Type	Piston Pump			Gear Pump Gr 3		Rated Speed n/min.	Speed Range n/min. (*)
		Displacement cm ³ / n	Rated Pressure bar	Peak Pressure bar	Displacement cm ³ / n	Pressure Range bar		
10	PR 10.10	6,30	500	550	22 - 90	250 - 150	1500	900 - 1800
	PR 10.12	8,90	350	390				
	PR 10.13	10,60	300	340				
14	PR 14.10	8,80	500	550				
	PR 14.12	12,70	350	390				
	PR 14.13	14,80	300	340				

Construction: High - Low Pressure Fixed Displacement Tandem Pump

High Pressure Pump: Fixed Displacement Radial piston pump

Low Pressure Pump: Gear Pump GR 3

Rotation Direction: Clockwise or Counterclockwise. (specify in case of order)

Assembly Position: to be chosen between the ones which ensure correct suction.

Versions: for external installation or oil-submersed installation.

Environmental Temperature: from -20°C to +60°C.

Fluid Temperature: from -10°C to +70°C (suggested 30 - 50°C).

Suction Pressure: 0,01 - 0,3 bar, not self priming pump, must be installed below oil level

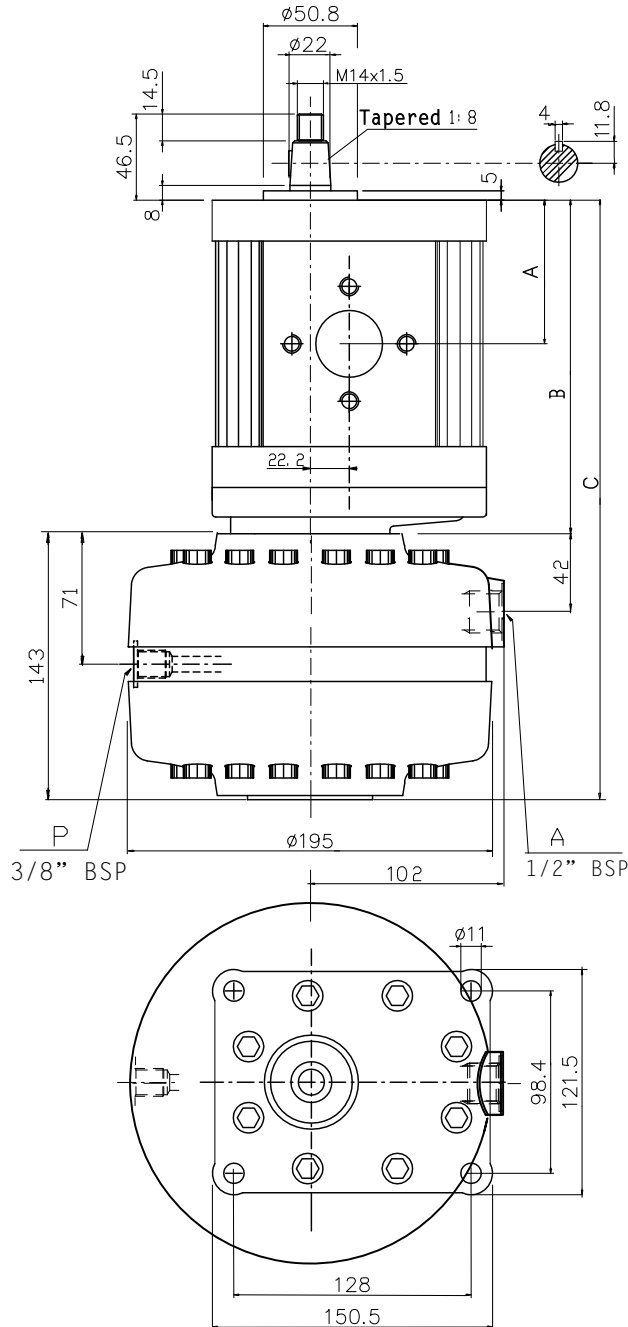
Hydraulic Fluid: Mineral Oil according to DIN 51524 - 51525.

Fluid Viscosity: 4 - 300 cSt. (suggested 10 - 300 cSt.)

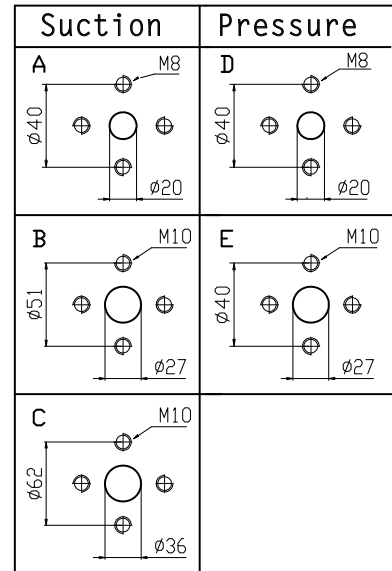
Oil Contamination Level: Class 18/15/12 - ISO 4406 (NAS Class 9).

(*) For good performances, the minimum speed of the gear pump should not be less than 900 n/min.

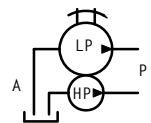
TANDEM PUMP PR 10... - PR 14... + Gear Pump Gr 3 INSTALLATION DRAWINGS



Low Pressure Gear Pump Ports



A - HP Pump Suction port
P - HP Pump Pressure port



Low Pressure Gear Pumps Characteristics

Gear Pump model	Displacement cm ³ /n	Flow at rated speed lt/min.	Max Pressure bar	A mm.	B mm.	C mm.	Suction Port	Pressure Port
PT3-22	22,10	32,00	250	63	151	294	Type A	Type D
PT3-26	26,20	38,00	250	64,5	154	297	Type A	Type D
PT3-33	33,10	48,00	250	67	159	302	Type B	Type D
PT3-38	37,90	54,90	250	68,8	162,6	305,6	Type B	Type D
PT3-44	44,10	63,90	250	71	167	310	Type B	Type E
PT3-48	48,30	70,00	230	72,5	170	313	Type B	Type E
PT3-55	55,10	80,00	230	75	175	318	Type B	Type E
PT3-63	63,40	91,90	210	78	181	324	Type C	Type E
PT3-75	74,40	107,80	180	82	189	332	Type C	Type E
PT3-90	88,20	127,90	150	87	199	342	Type C	Type E

INSTALLATION INSTRUCTIONS

INSTALLATION

PR pumps are suitable for oil-submersed or external mounting and must be installed in proper position their feeding.

When installed outside the tank, these pumps should be positioned below the minimum fluid level as this ensures that a sufficient amount of fluid can flow in automatically via a steadily downwards feed line. This is valid even for eventual external filter in the suction line, which internal diam. must not be less than 15 mm.

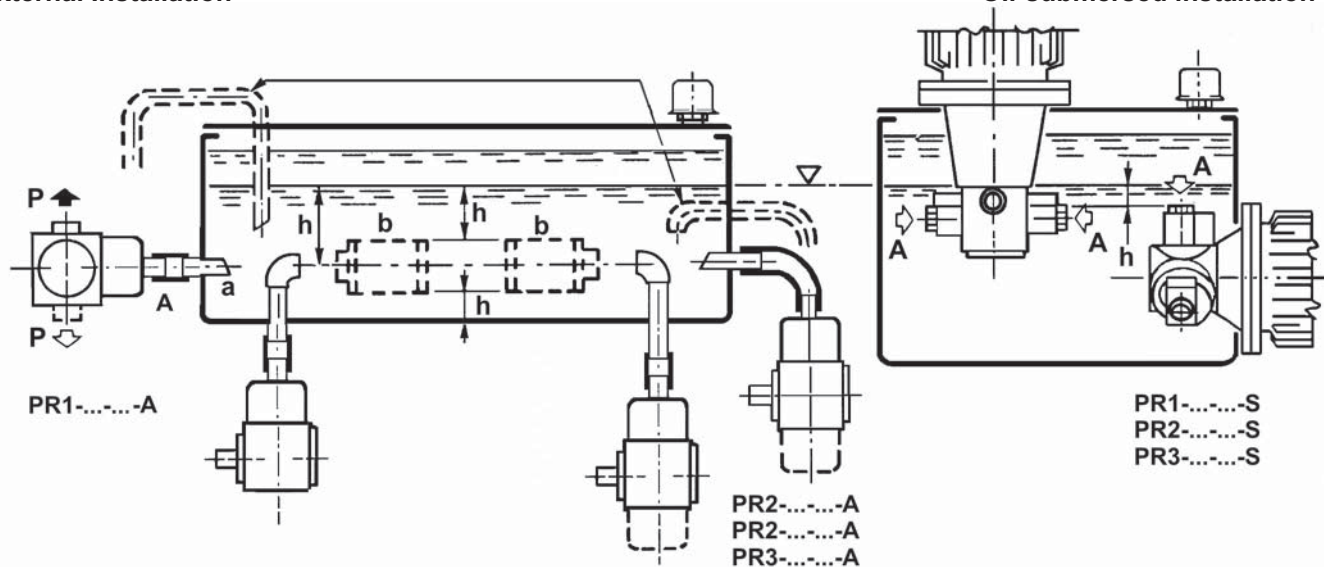
For head more than 3 meters, ask for the pump with special shaft seal.

In submersed installations, they must be used only with no piston caps and with the orifices of suction under the minimal level of the oil during the functioning.

The figure below indicates the most correct installation positions:

External Installation

Oil-submersed installation



a) Suction pipe internal diameter not less than 15 mm.

b) Suction filter, see filtering paragraph.

h) Distance of suction elements to minimum oil level and tank bottom not less than 50 mm.

STARTING AND USE PRECAUTION

Fill with oil and air well purged, the pump gets into action with impulses, first without putting it under pressure. Excessive rumbles and/or irregular pulsations indicate an incomplete primer: insist with the impulses rotation and pressurizing step by step.

Rarely there would be the need of filling the little cylinders through the orifices of the little suction valves.

- In the first hours of work check the filter many times, above all if it is positioned on the suction.
- When cold started, begin the exercise only after several minutes of running at regular pressure.
- Specially if used with heavy or continuous service, we advise to:

- 1 - Check monthly the cleaning of oil and air filters, the grade of ageing and pollution of the fluid, and its level;
- 2 - Replace oil after about 2000 hours of service or once or twice a year, previous cleaning of the tank;
- 3 - Periodically check that, during operation, the oil temperature does not exceed the 60-70°C.

FILTERING

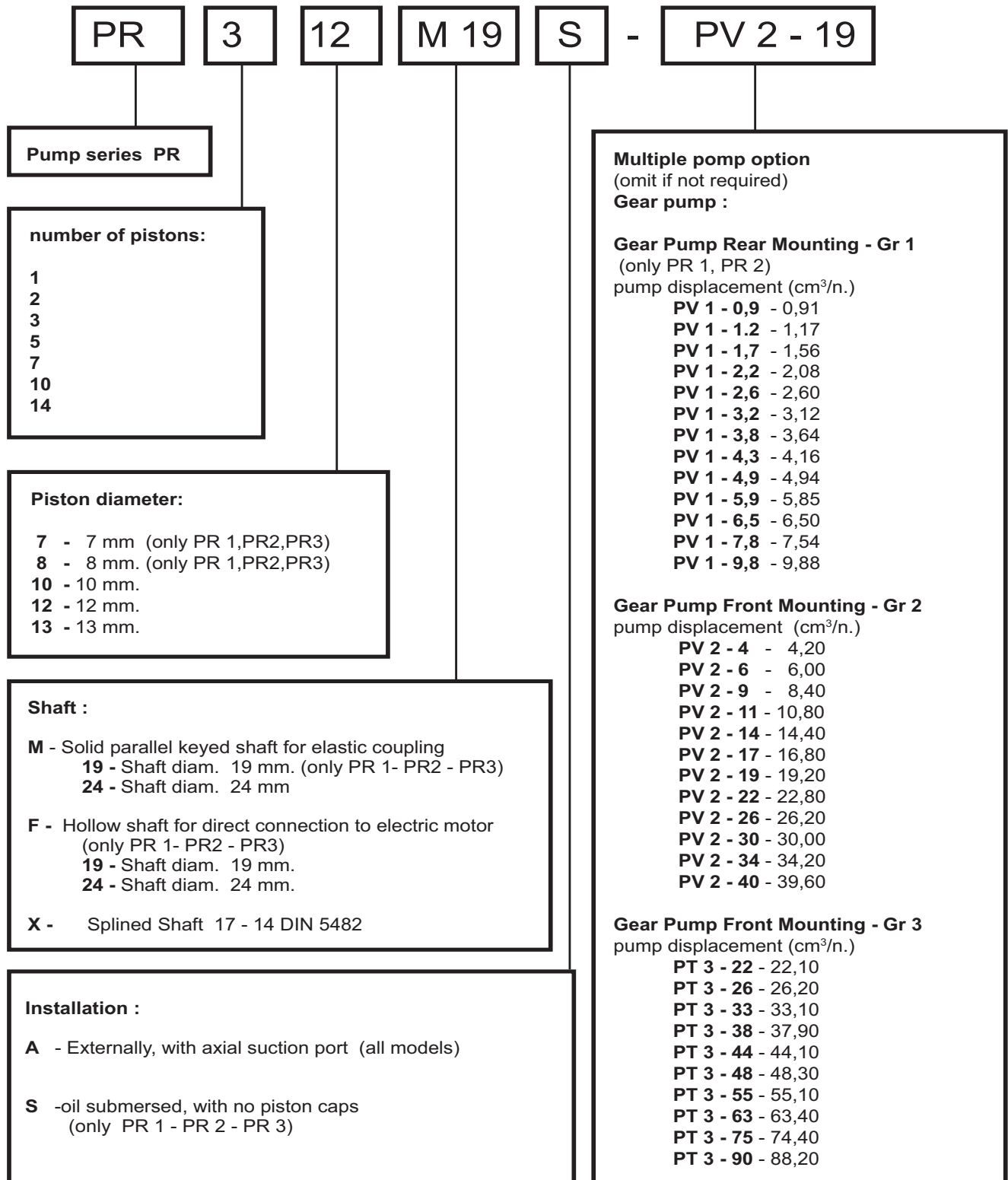
We advise oil contamination level: Class 18/15/12 - ISO 4406 (NAS Class 9).

Otherwise:

- for discontinuous and/or less heavy operation: 90-60 micron
- for continue and/or heavy operation: 60- 25 micron

Exceptionally it is possible to use a suction filter, which can not be applied for the pumps with no piston caps. Limit the use of these filters to the plants with discontinue and/or light service, checking them frequently. Install an air filter on the tank, proportioned to the grade of environmental pollution.

ORDER CODE



As HANSA-TMP has a very extensive range of products and some products have a variety of applications, the information supplied may often only apply to specific situations.

If the catalogue does not supply all the information required, please contact HANSA-TMP.

In order to provide a comprehensive reply to queries we may require specific data regarding the proposed application.

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