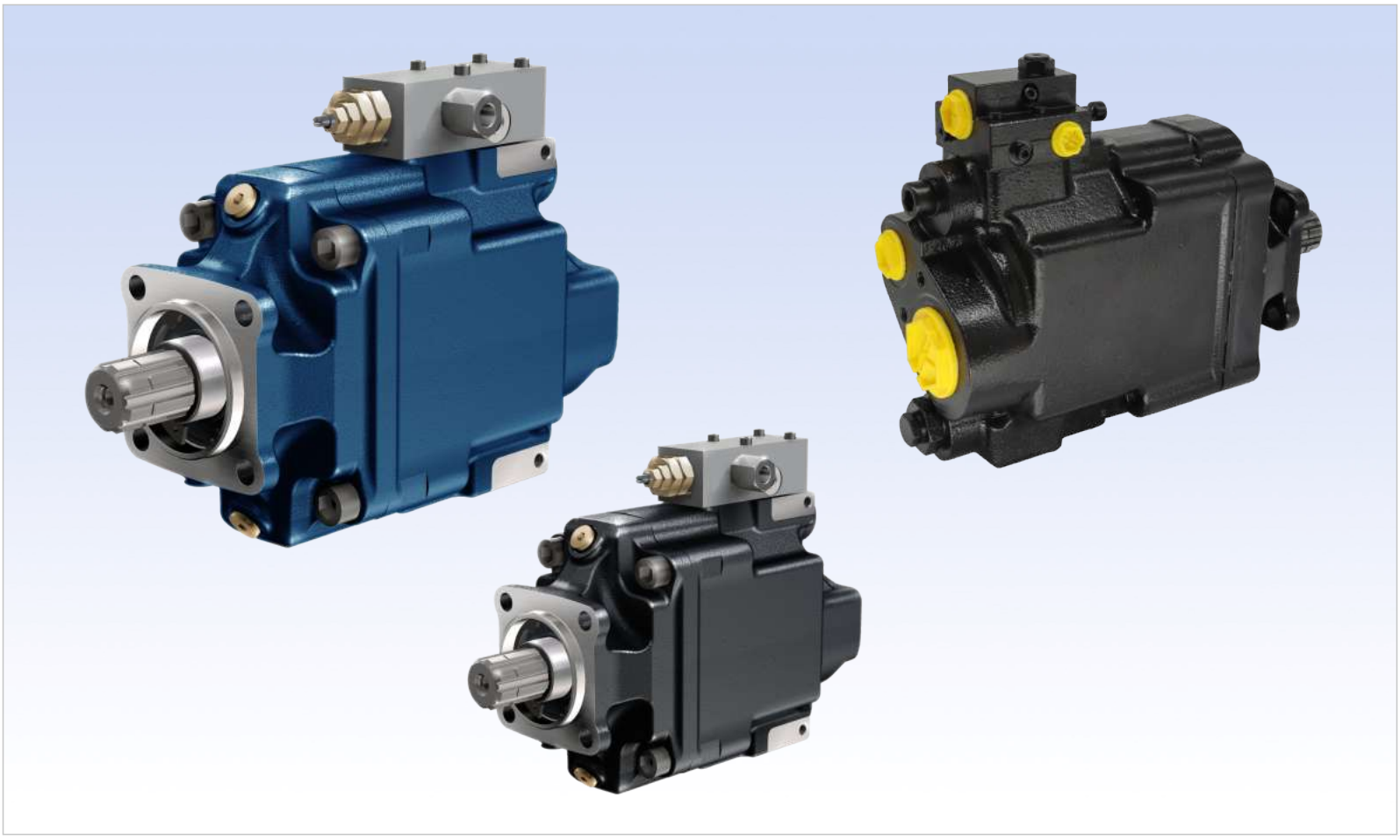
HAYNEKS
HYDRAULIC PUMPS & MOTORS

HAXV VARIABLE DISPLACEMENT HYDRAULIC PISTON PUMPS

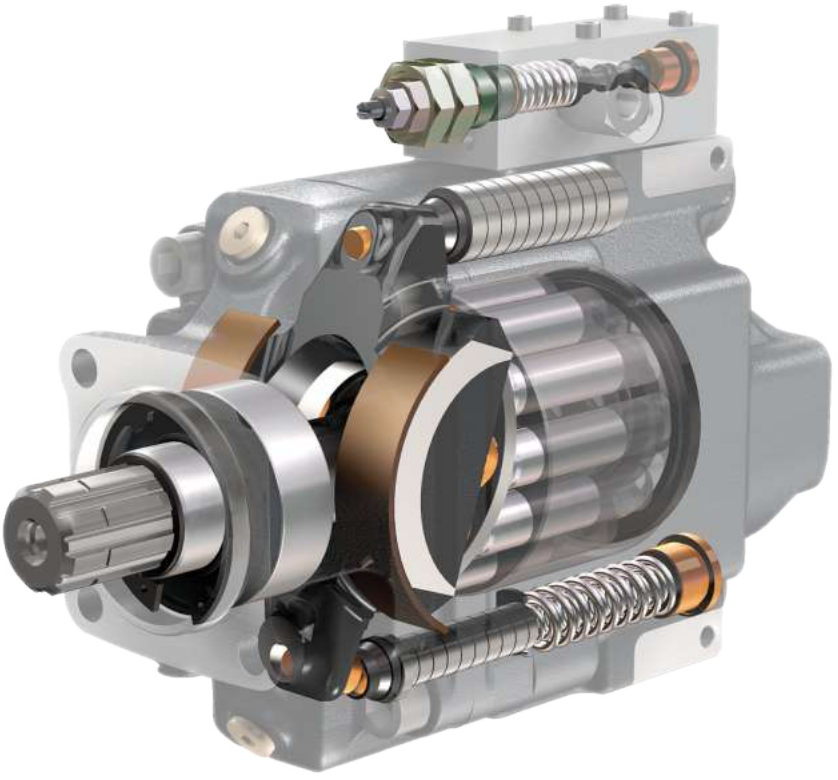
Designation;
40cc, 60cc, 75cc, 92cc, 120cc, 130cc, 150cc



www.hayneks.com

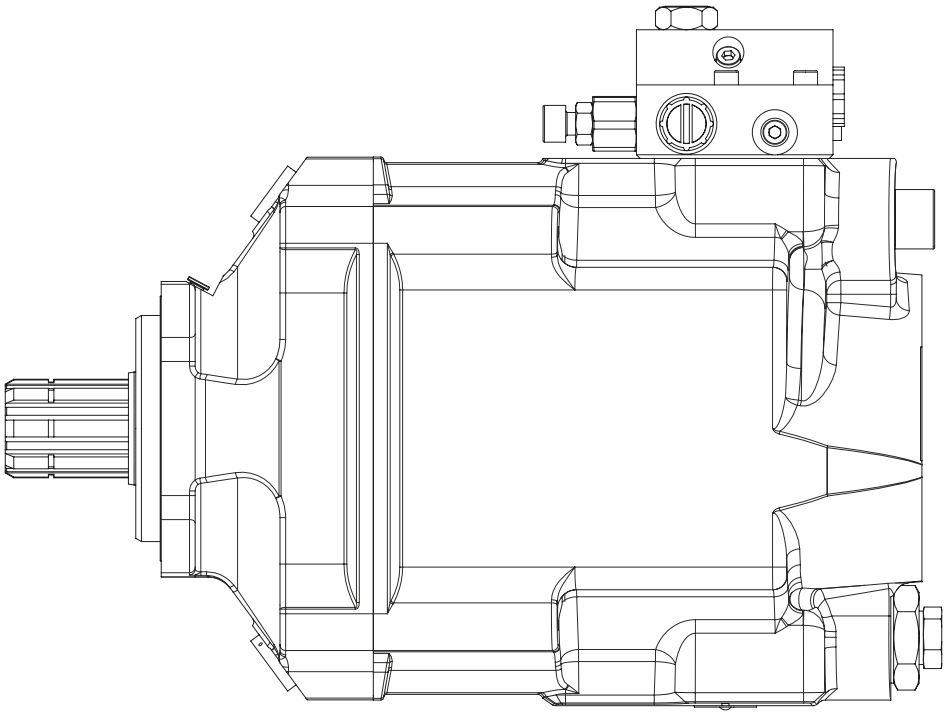
Characteristics of the HAXV Variable Displacement Piston Pumps

Pump MODEL	DISPL. (cc)	MAX. OPERATING PRESSURE (bar)	MAX. PEAK PRESSURE INTERMITTNT (bar)	TORQUE AT 300 BAR (N.m)	MAX.SPEED AT FULL DISPLACMNT (rpm)	MAX. SPEED IN STAND BY (rpm)	WEIGHT (kg)	OVERHANG TORQUE (N.m)
HAXV 40 (CW/CCW) new bi-directional	40	400	420	225	3000	3000	26	34
HAXV 60 (CW/CCW) new bi-directional	60	400	420	335	2600	3000	26	34
HAXV 75 (CW/CCW) new bi-directional	75	400	420	420	2000	3000	26	34
HAXV 92 (CW/CCW) new bi-directional	92	400	420	515	1900	3000	26	34
HAXV 120 (CW/CCW) new bi-directional	120	380	400	675	2100	3000	26	34
HAXV 130 (CW/CCW) new bi-directional	130	380	400	730	2100	3000	28	38
HAXV 150 (CW/CCW) new bi-directional	150	380	400	840	2000	3000	28	38



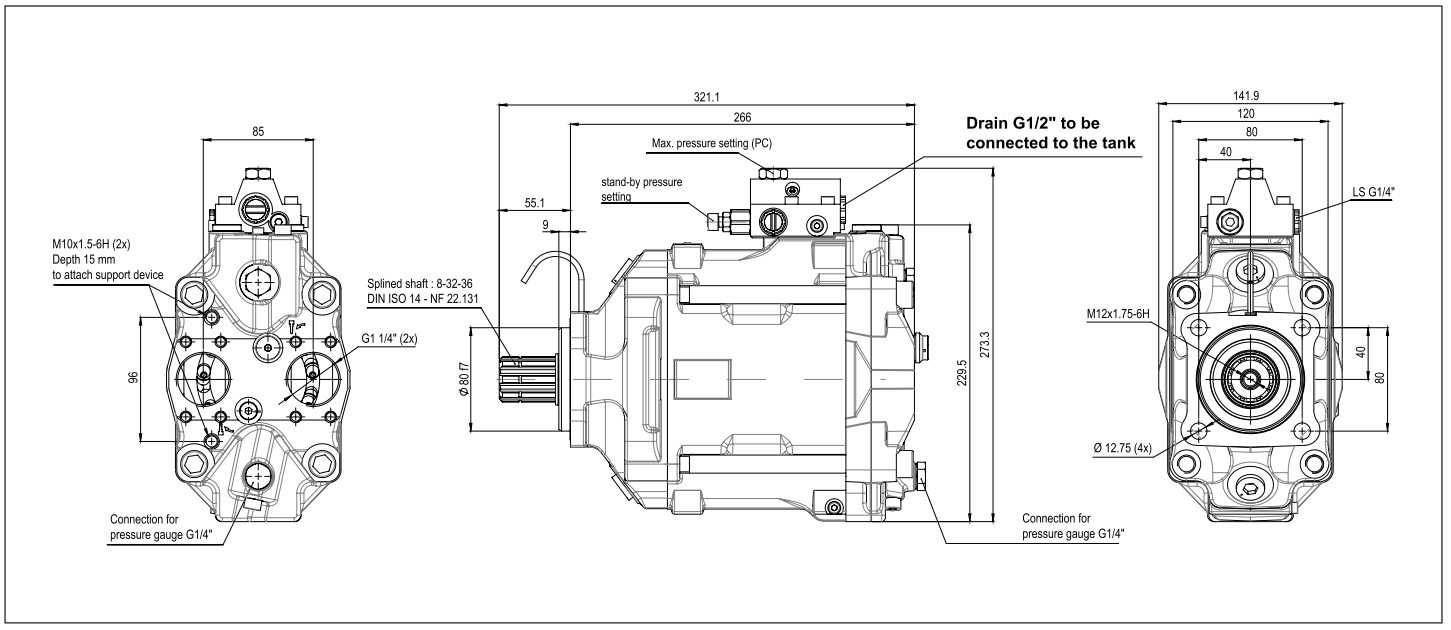
Ordering Code; HAXV Variable Displacement Piston Pumps

Model Code	Displacement	Shaft Type	Flange Type	Rotation	Sealing
HAXV	**92**	**S**	**H4**	**BD**	**V**
HAXV Variable Displacement Hydraulic Piston Pump DIN Flge	**40** **60** **75** **92** **120** **130** **150**	**S** Splined Shaft (default) 8x32x36 DIN ISO 14NF **K** Parallel Keyed Shaft (special) DIN 6885	**H4** ISO 7653 Ø80 4 Bolt Flange	**BD** Bi-Directional **CW** RIGHT Direction of Rotation **CCW** LEFT Direction of Rotation	**V** Viton High Pressure Seal **N** Nitrile Seal 5/10 Bar

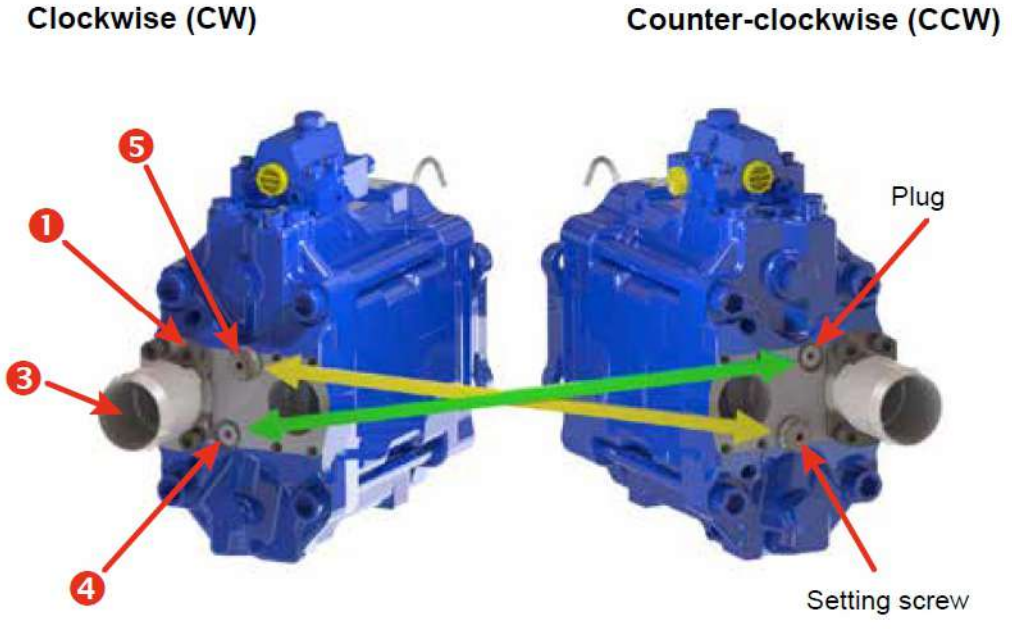


HAXV - all Size Bi-directional Version

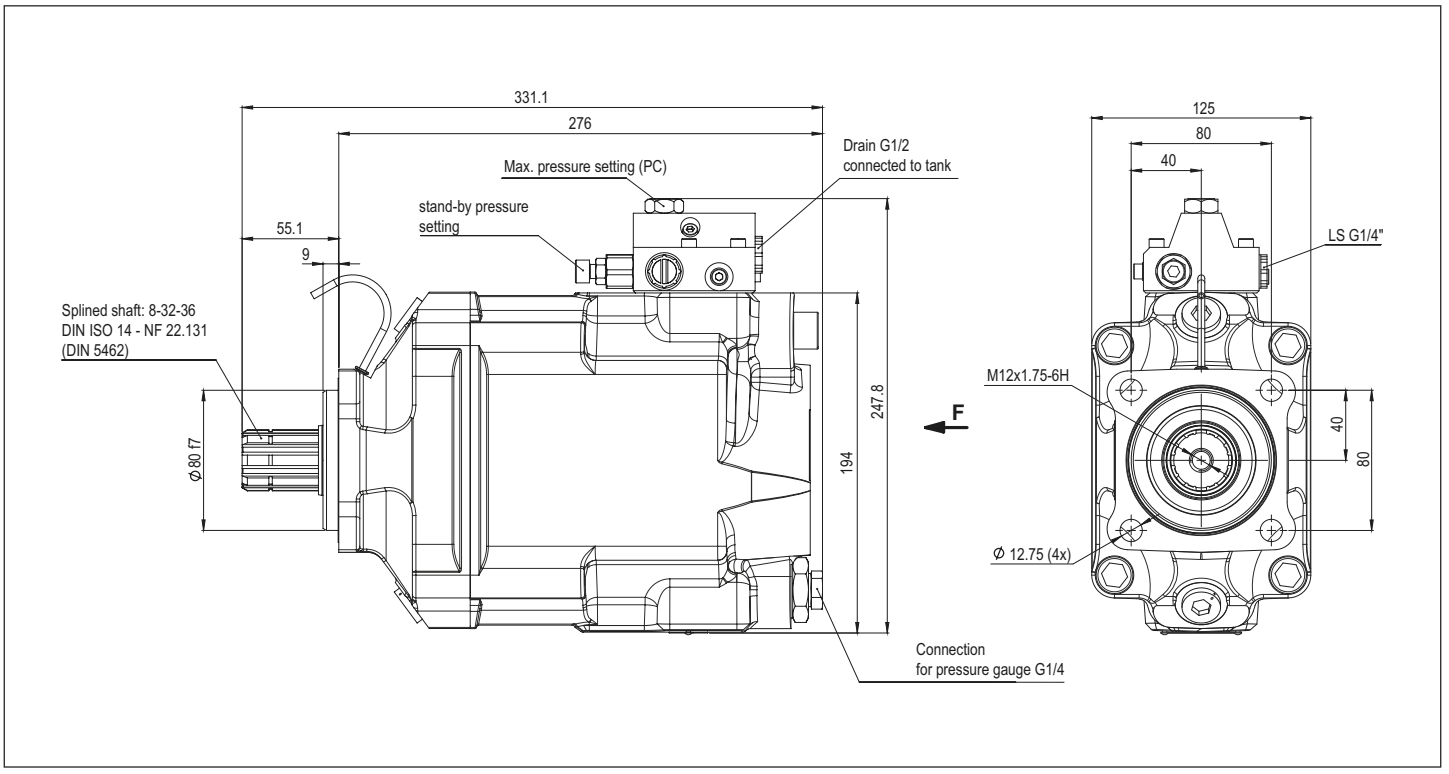
40cc, 60cc, 75cc, 92cc, 110cc, 120cc, 130cc, 150cc



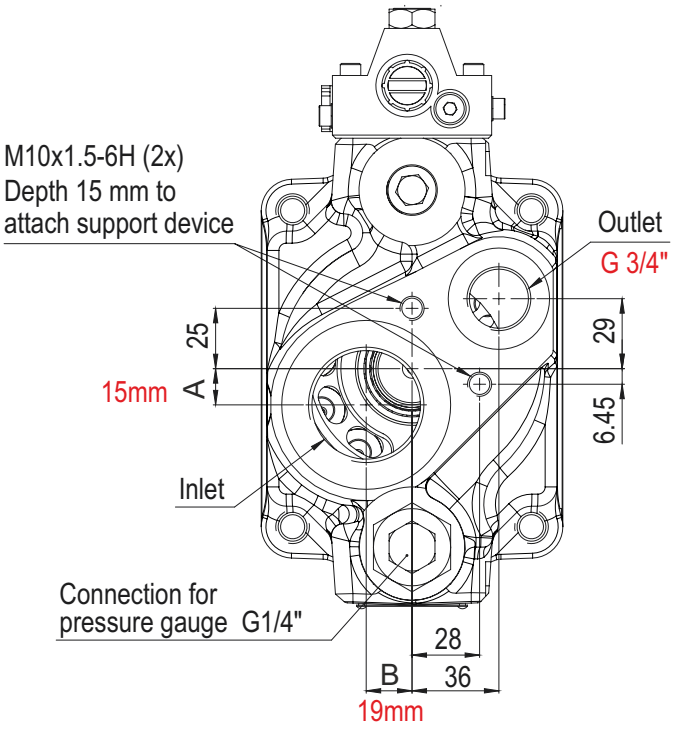
Bi-Directional Rotation



HAXV - 40 cc Variable Piston Pump

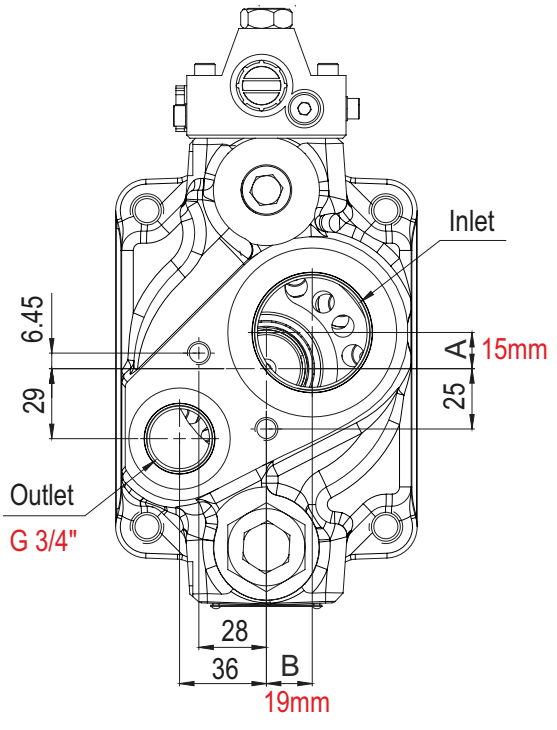


View from F



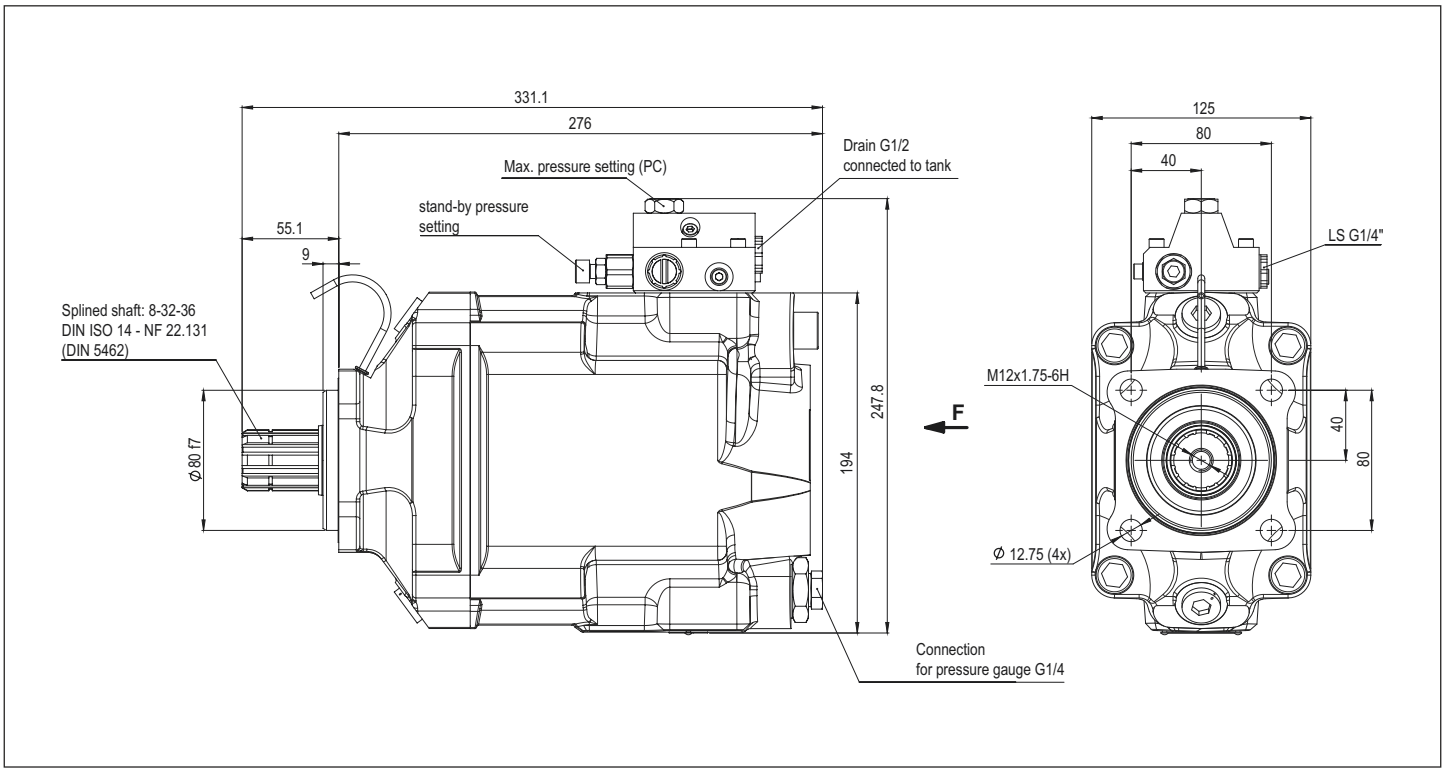
CW

View from F

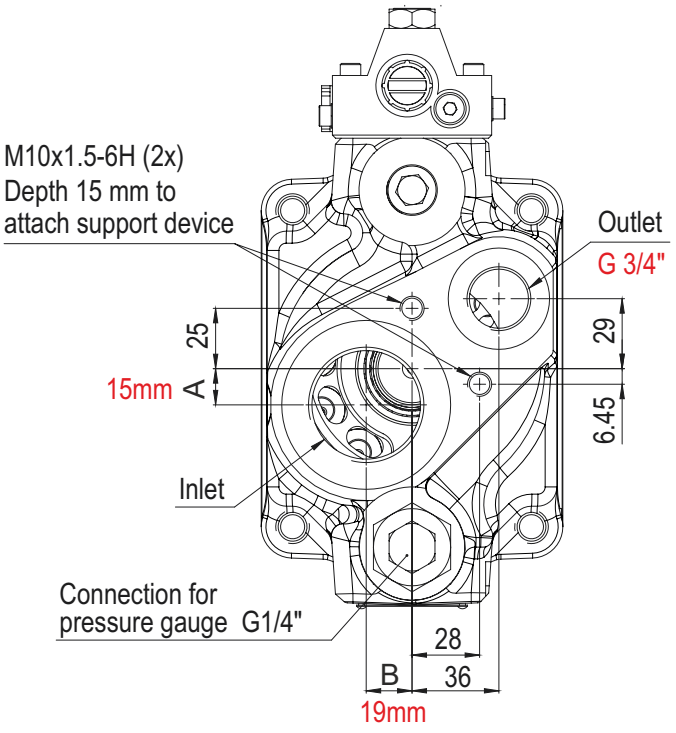


CCW

HAXV - 60 cc Variable Piston Pump

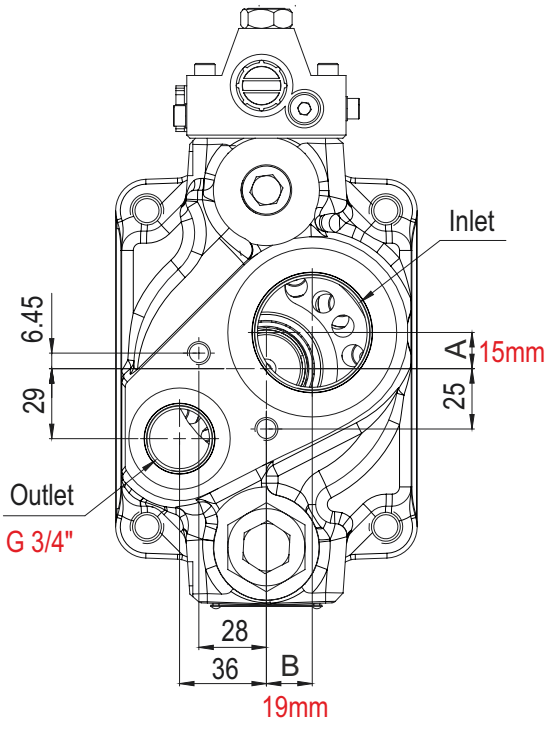


View from F



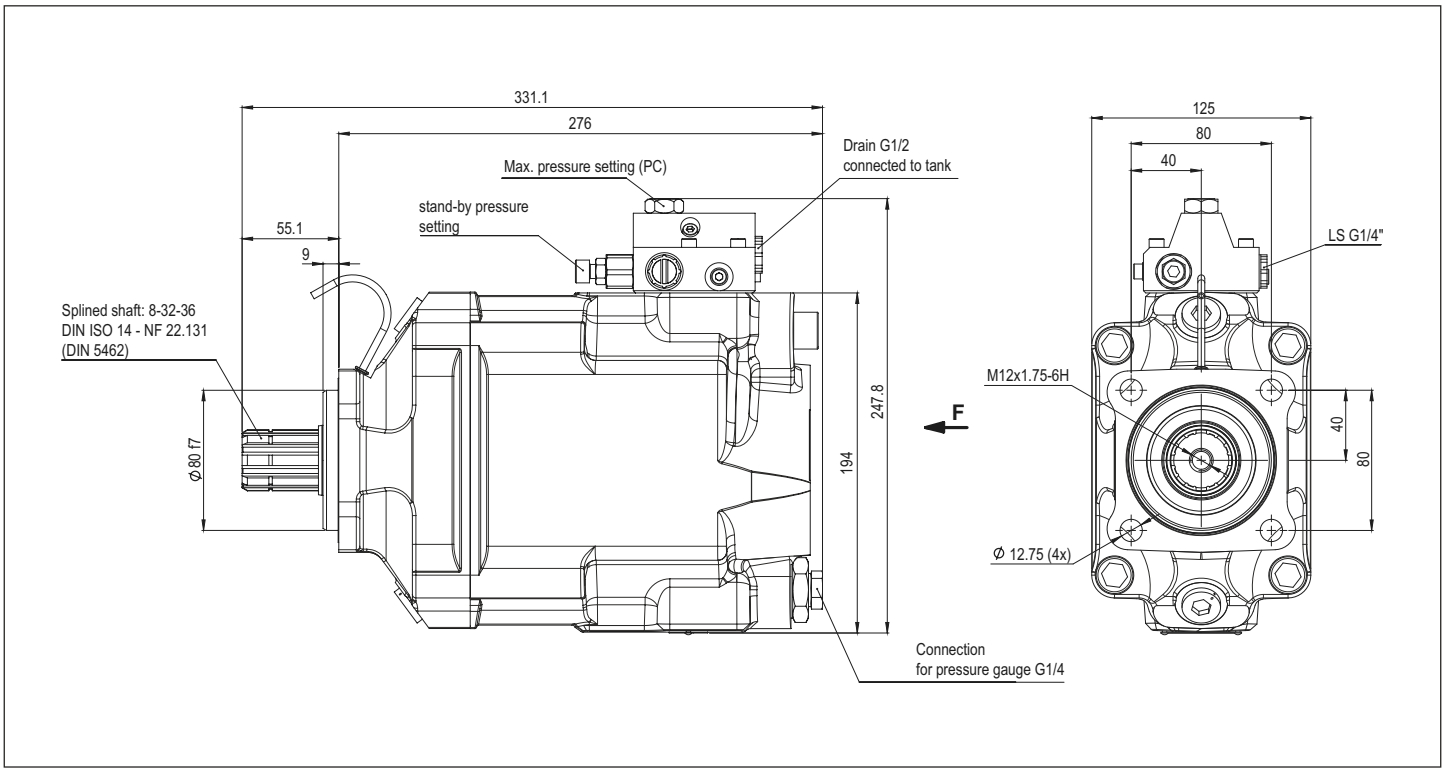
CW

View from F

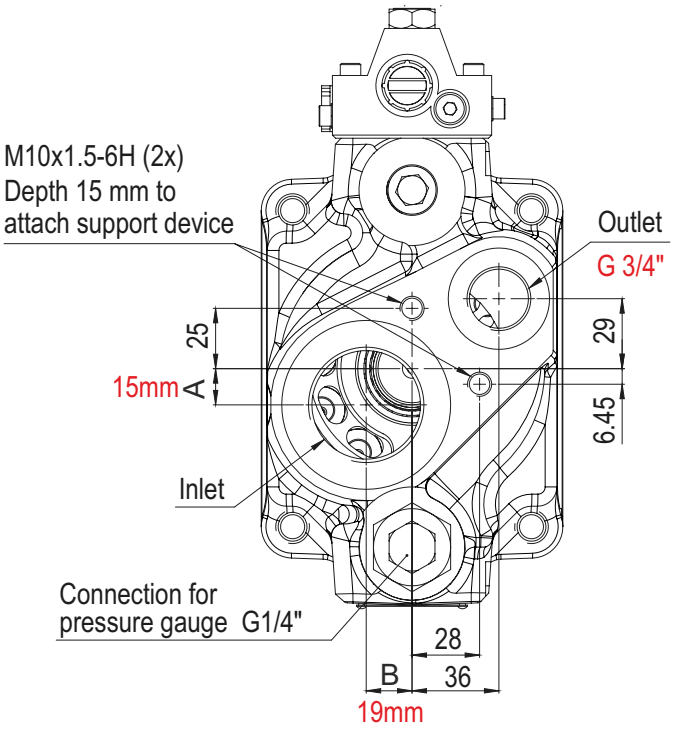


CCW

HAXV - 75 cc Variable Piston Pump

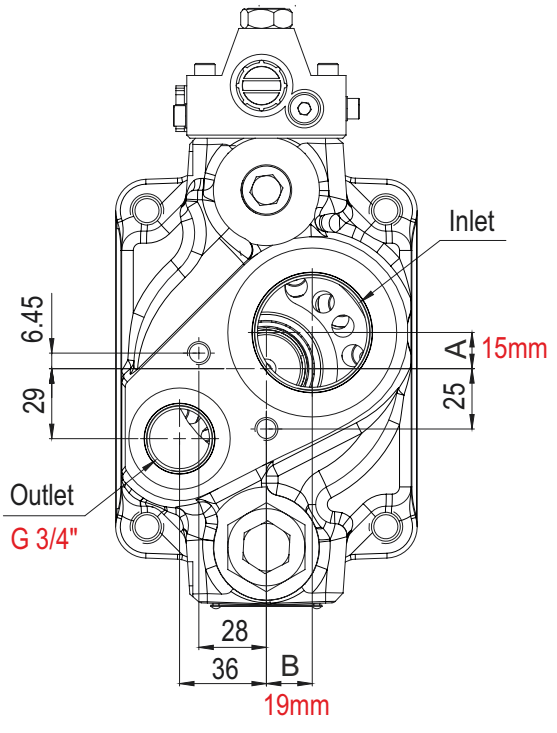


View from F



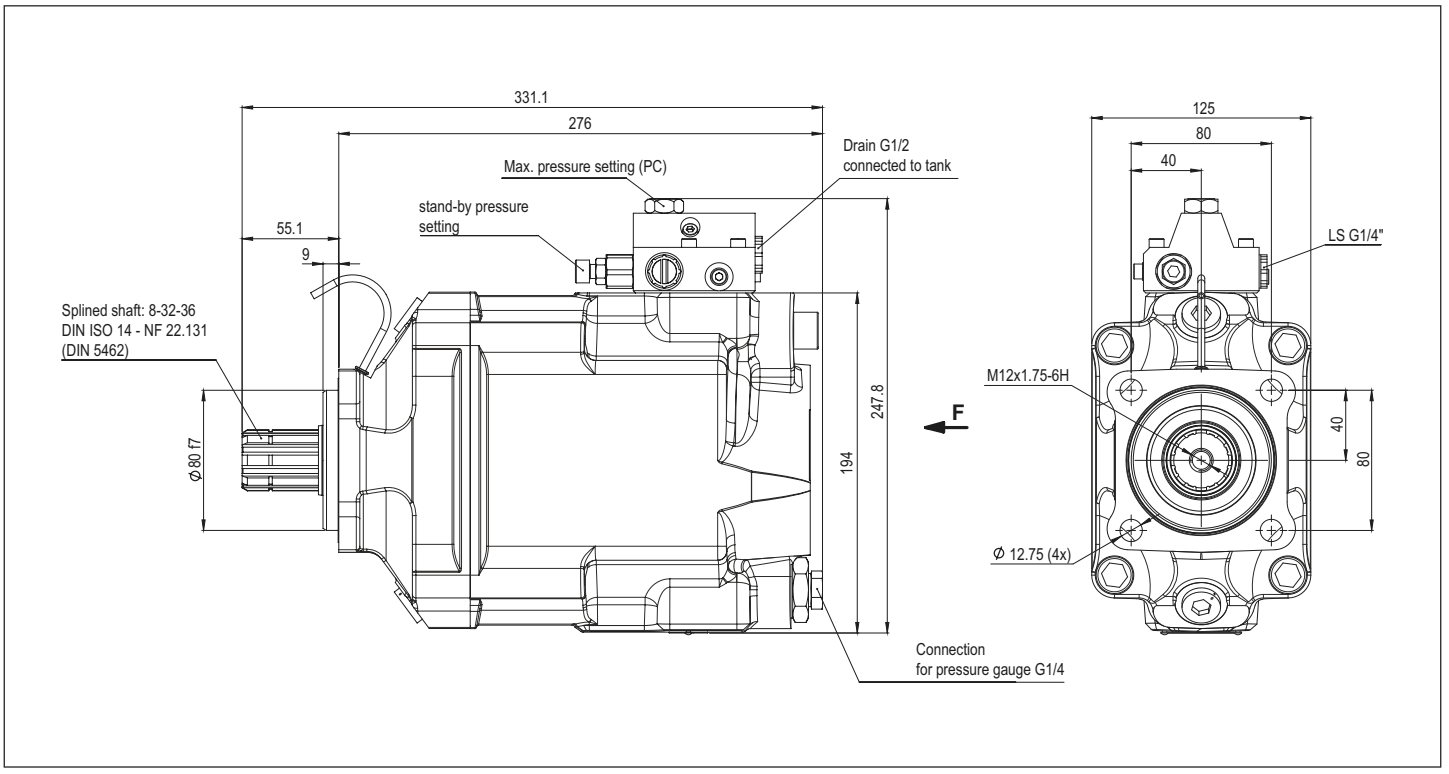
CW

View from F

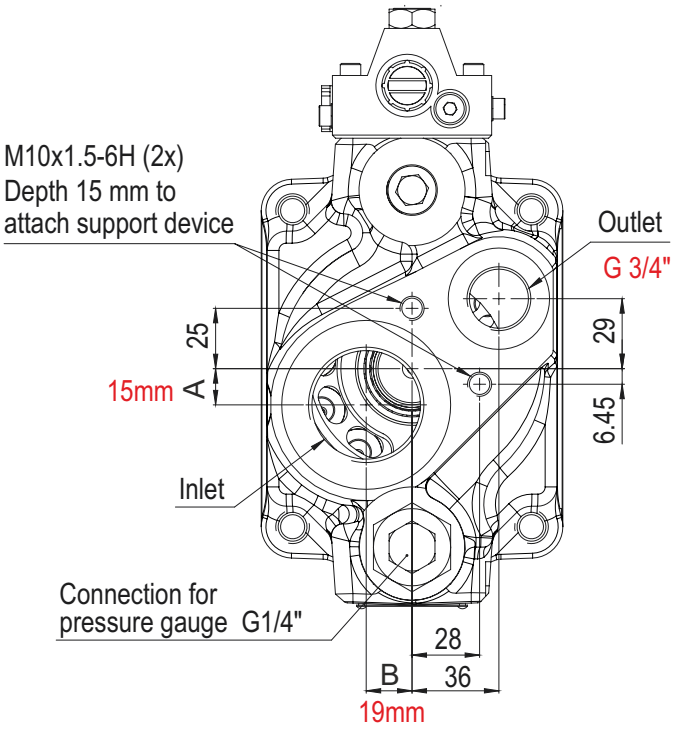


CCW

HAXV - 92 cc Variable Piston Pump

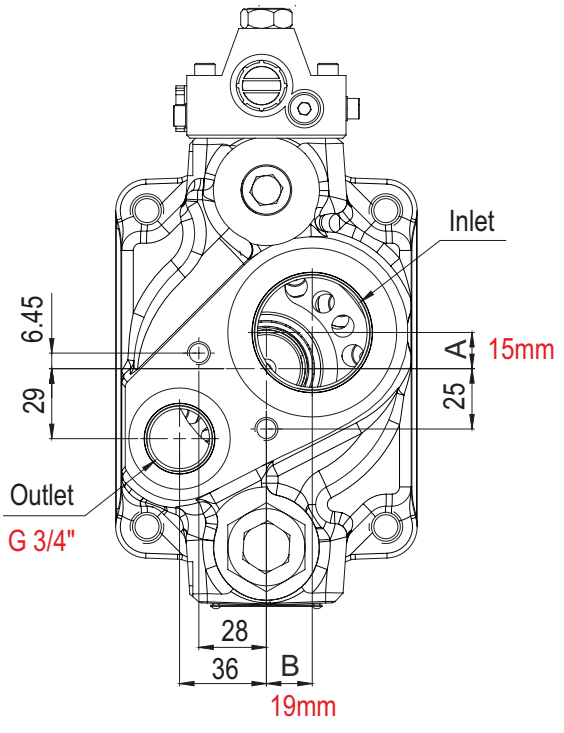


View from F



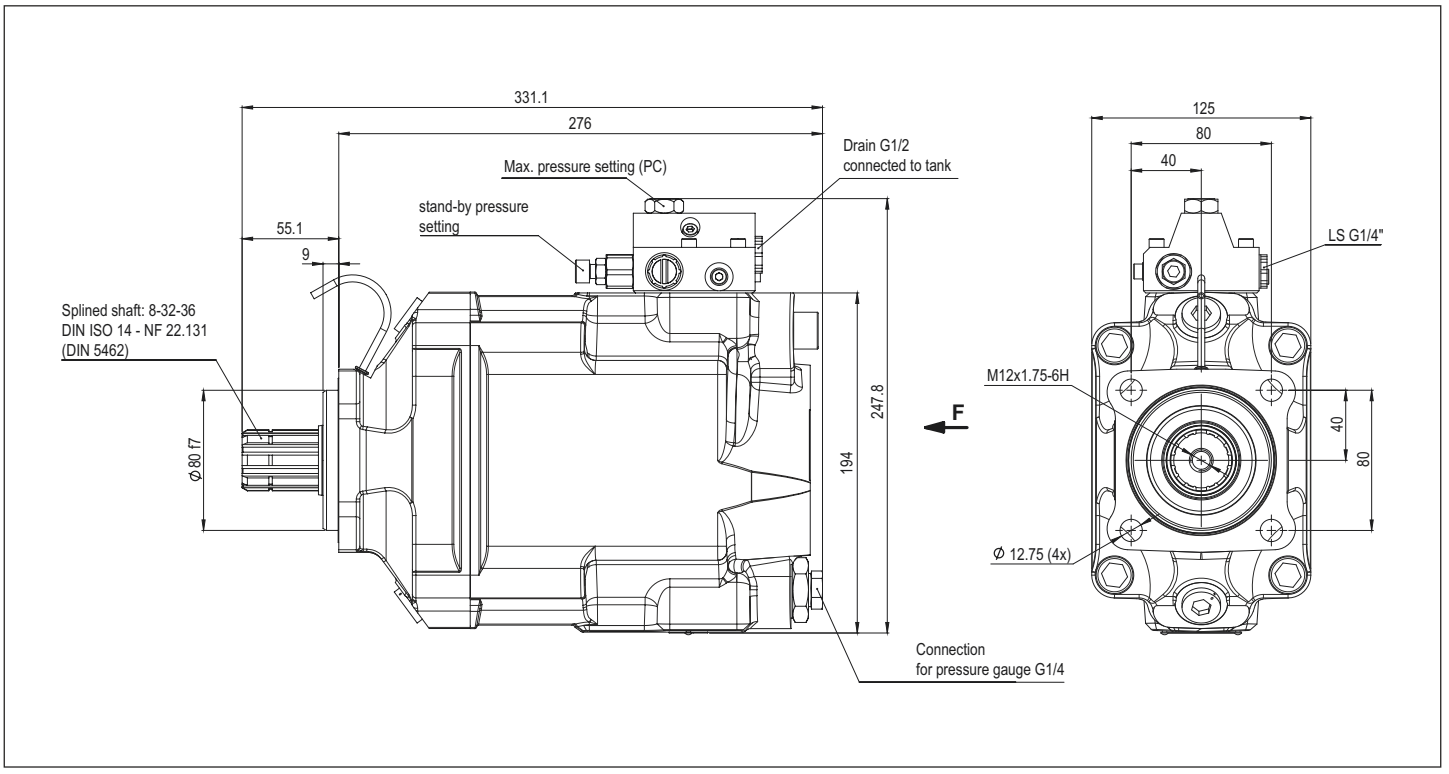
CW

View from F

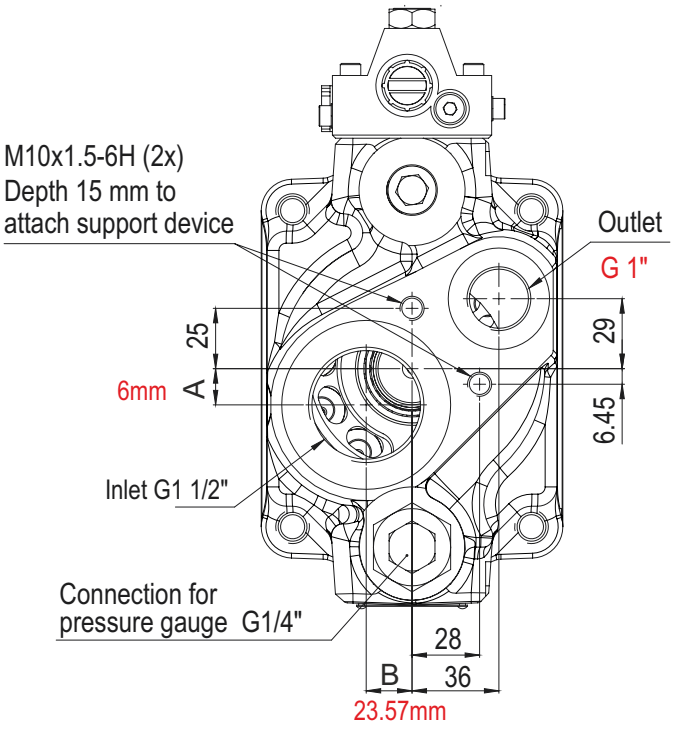


CCW

HAXV - 120 cc Variable Piston Pump

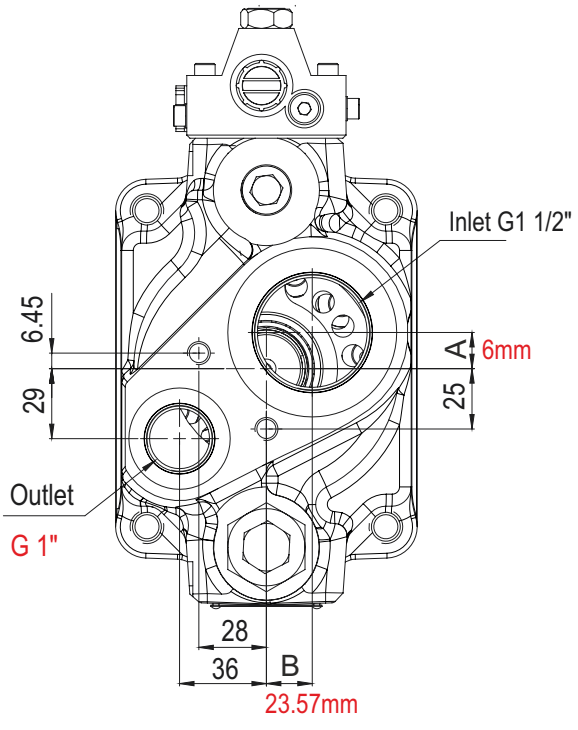


View from F



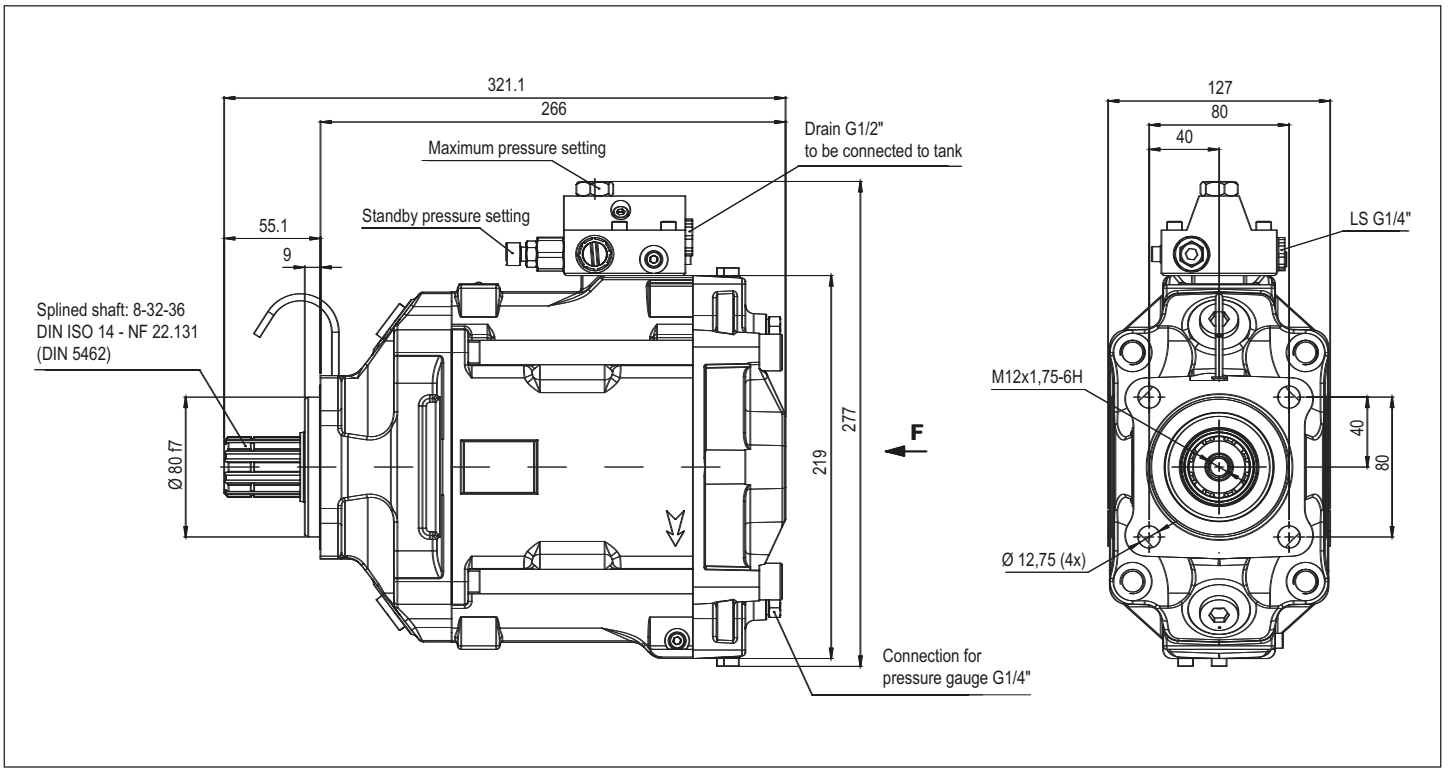
CW

View from F

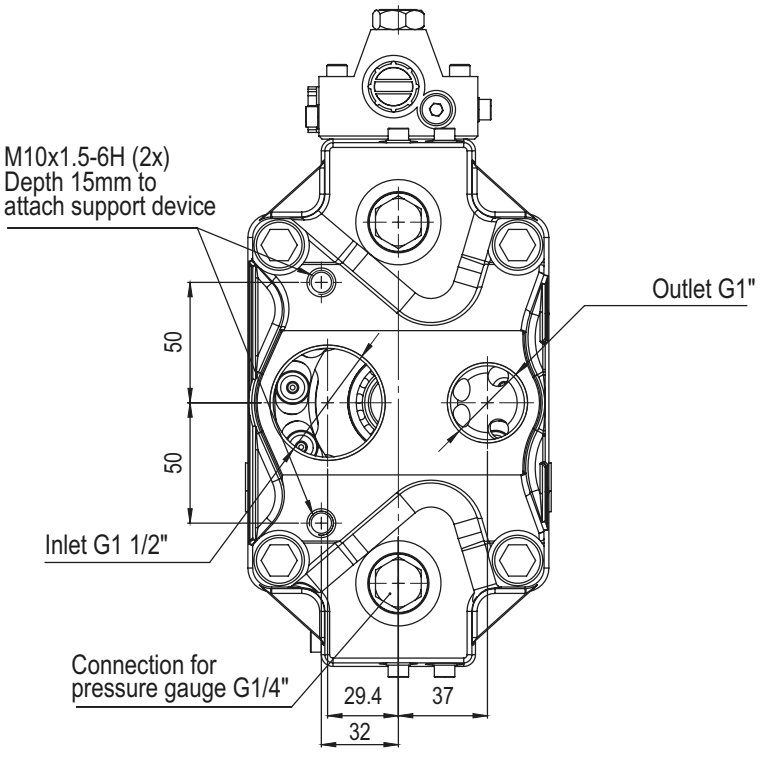


CCW

HAXV - 130 cc Variable Piston Pump

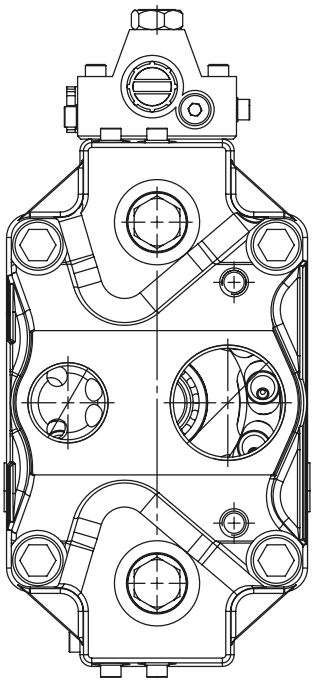


View from F



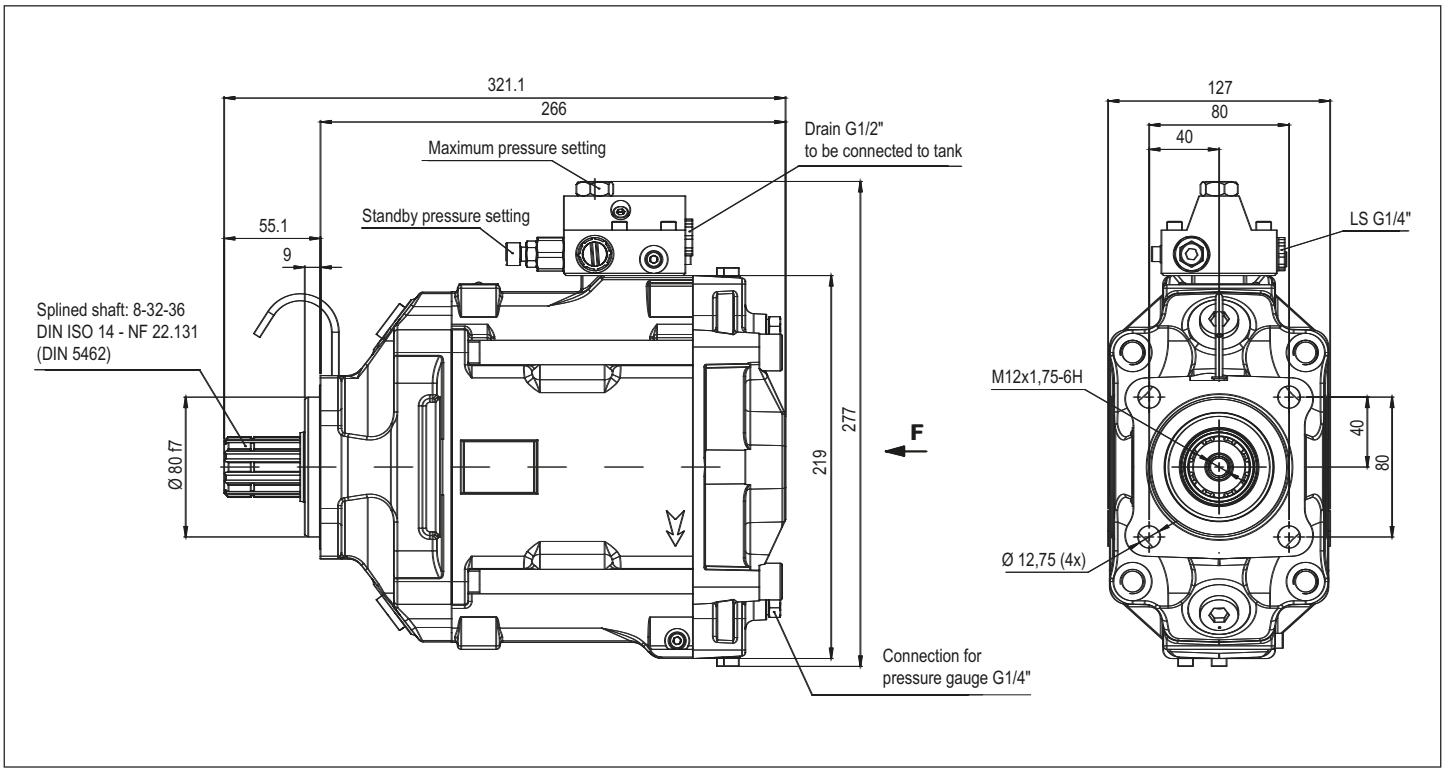
CW

View from F

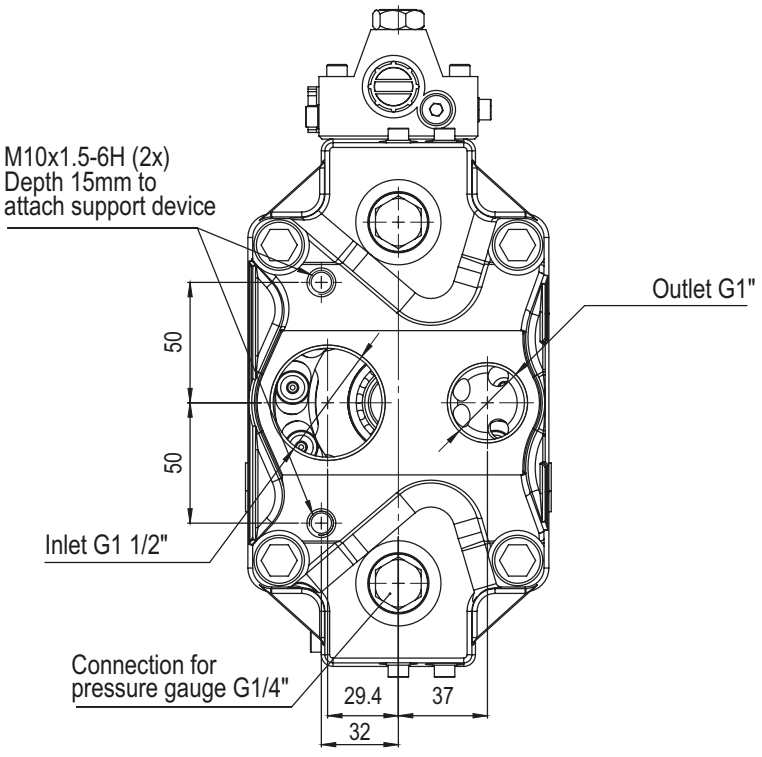


CCW

HAXV - 150 cc Variable Piston Pump

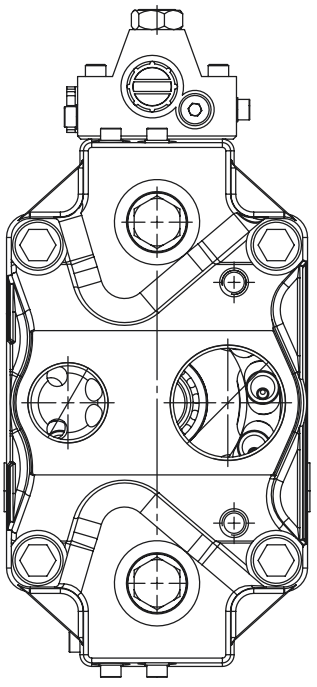


View from F



CW

View from F

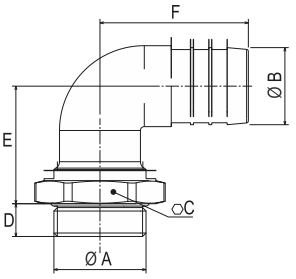


CCW

Suction Fittings for HXV Hydraulic Piston Pumps

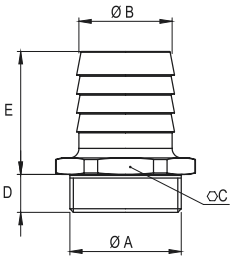
90º elbow fitings, swivel

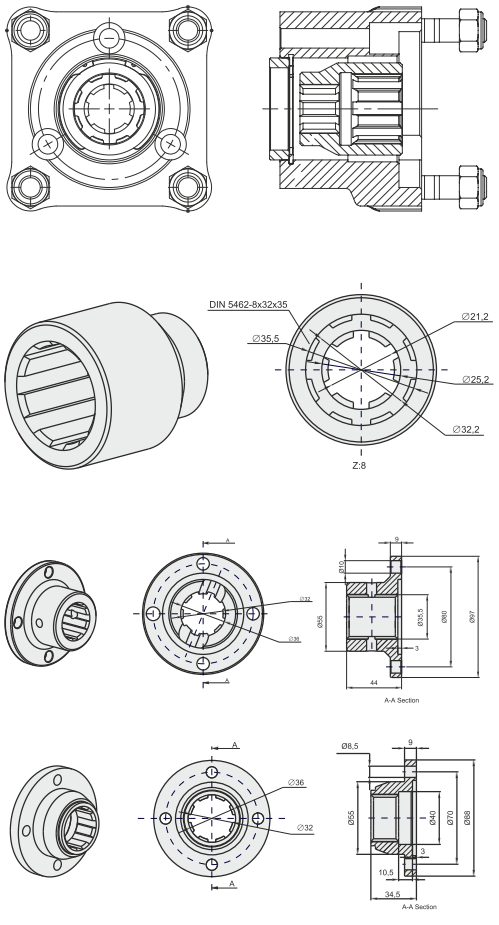
Reference	A	Ø B	C	D	E	F	Pump type
90001	G 1 1/2"	40	60	17	61	77	variable
90002	G 1 1/2"	50	60	17	65	82	variable



Straight Fittings

Reference	A	Ø B	C	D	E	Pump type
50001	G 1 1/2"	40	55	16	52	variable
50002	G 1 1/2"	48	55	16	64	variable
50003	G 1 1/2"	60	65	16	67	variable
50004	G 1 1/2"	63.5	65	16	67	variable
50005	G 1 1/2"	76.2	80	16	87	variable





Inlet Fittings & Installation Parts
- Split Flange
- Seal
- Screw

By-Pass Valves
- 12 V
- 24 V

Hydraulic Adapters
- PTO Piston Pump Adapter
- PTO Gear Pump Adapter
- Long / Short Adapter

Flanges
- 1120 (6 Spline)
- 1120 (8 Spline)
- 1300 (6 Spline)
- 1300 (8 Spline)

Couplars
- 6 x 8 Couplar
- 6 x 8 Couplar (Long)
- 8 x 8 Couplar
- 8 x 8 Couplar (Long)

Calculation of power to be supplied to the shaft as a function of flow and pressure

$$\mathcal{P} = \frac{\Delta P \times Q}{600 \times \eta_{global}}$$

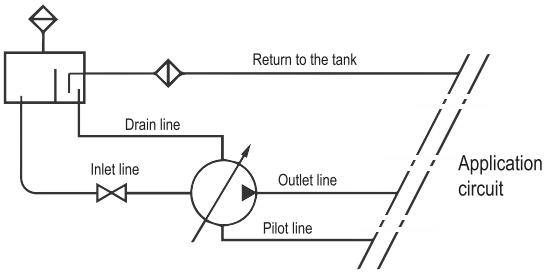
Calculation of torque to determine PTO,
as a function of the displacement and the pressure

$$C = \frac{Cyl \times \Delta P}{62.8 \times \eta_{meca}}$$

With:

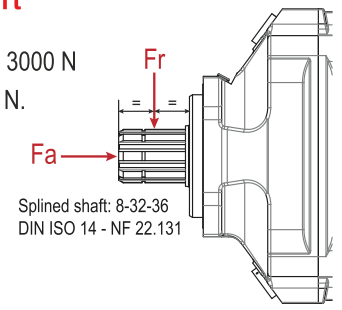
$\mathcal{P}$	=	Hydraulic power in kW
ΔP	=	Differential pressure in bar
Q	=	Flow in l/min
C	=	Torque in N.m
Cyl	=	Displacement in cc/rev
η_{meca}	=	Mechanical efficiency
η_{global}	=	Mechanical efficiency + volumetric efficiency

Ideal installation

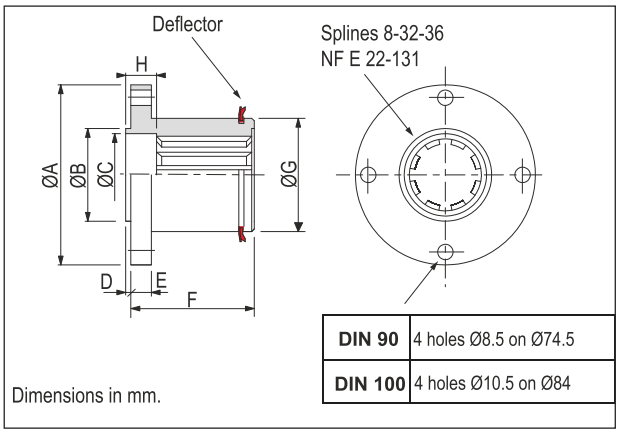


Force on pump shaft

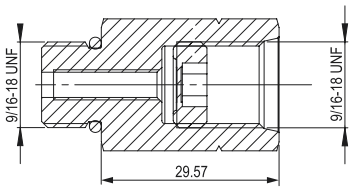
Fr : Acceptable max. radial force = 3000 N
Fa : Acceptable axial force = 1600 N.

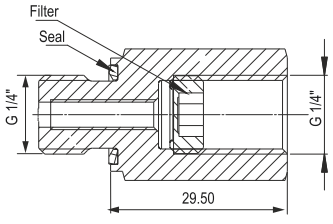


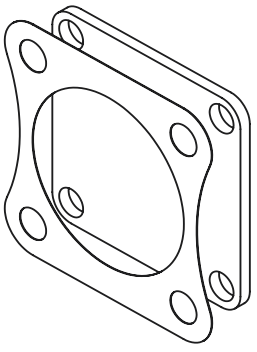
Type		ØA	ØB	C	D	E	F	ØG	H
DIN 90		90	47	43	2	10	62	55	15
DIN 100		100	57	43	2	10	64	55	15

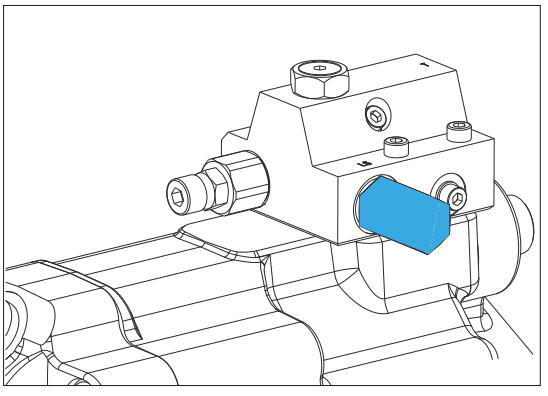


DIN 90	4 holes Ø8.5 on Ø74.5
DIN 100	4 holes Ø10.5 on Ø84

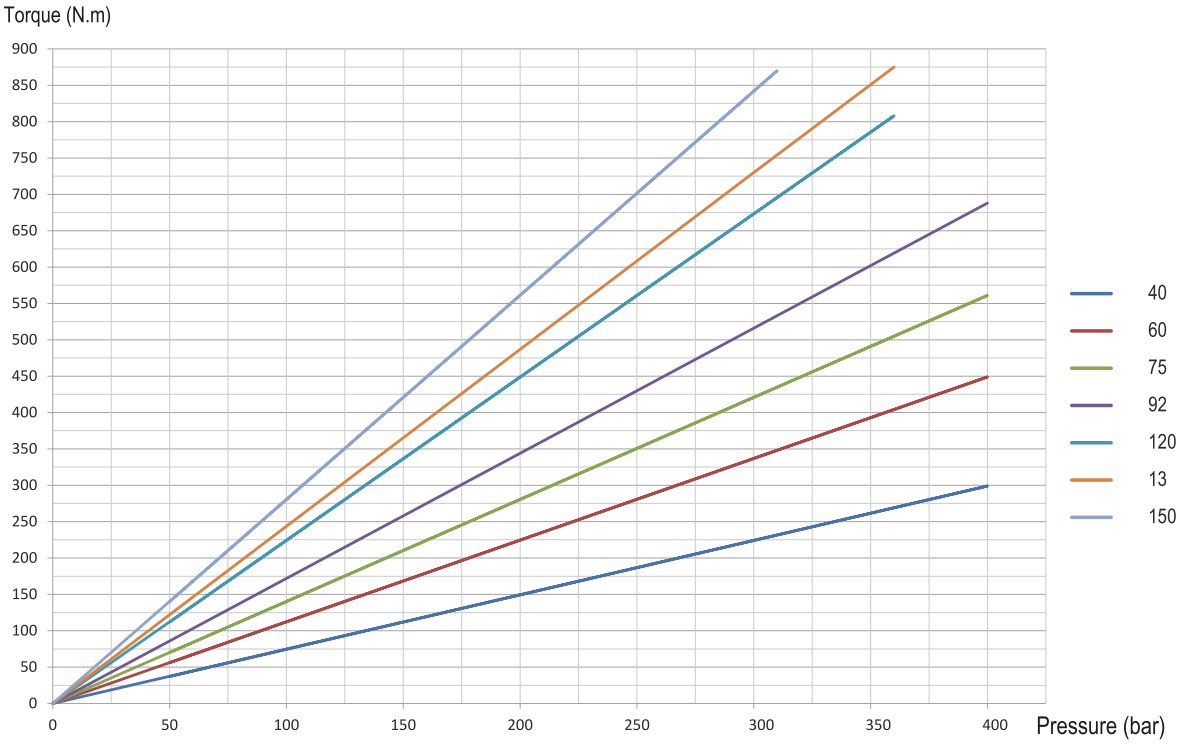


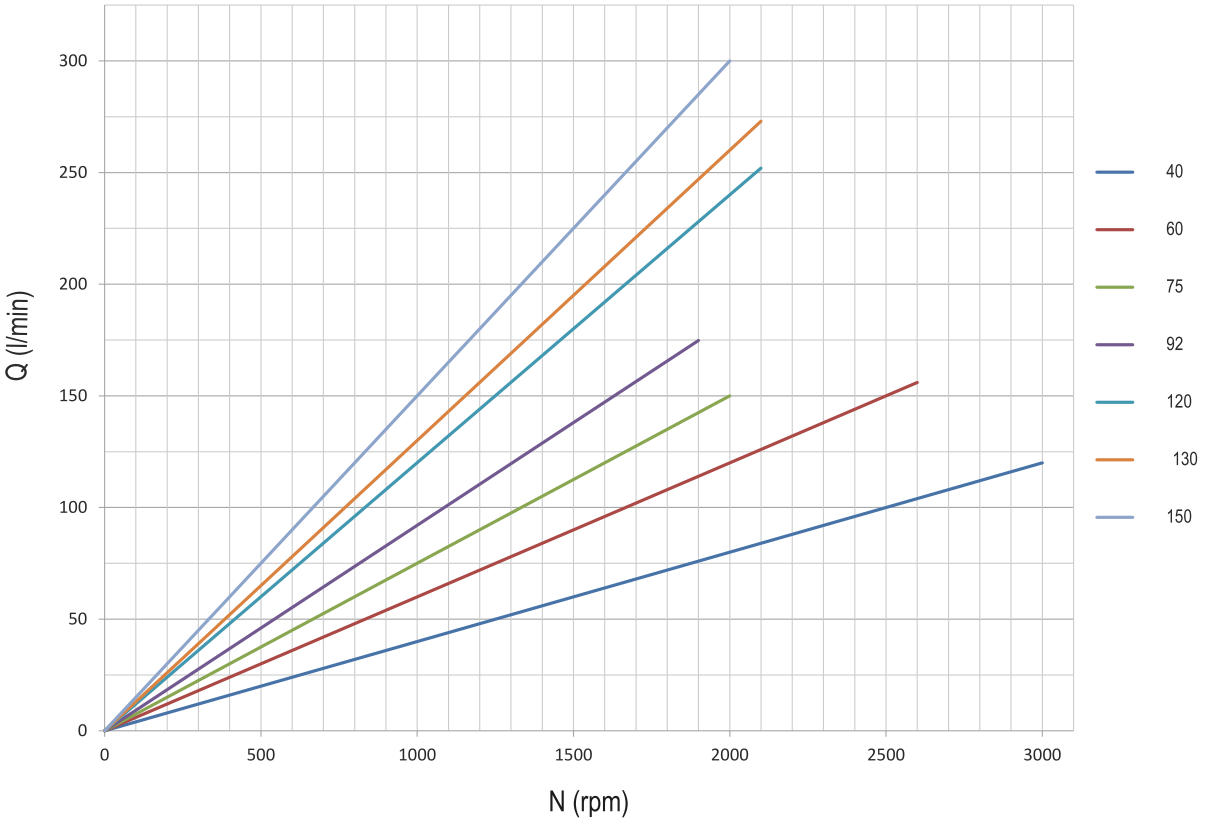






Torque and Flow

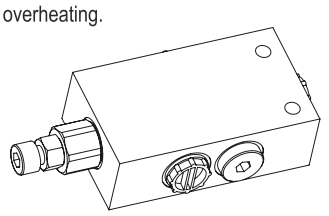




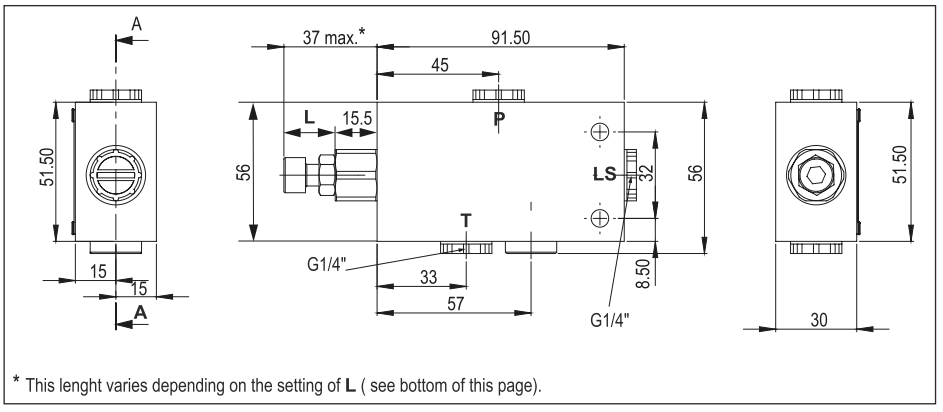
Accessories

FCV - FLUID VALVE CIRCULATION

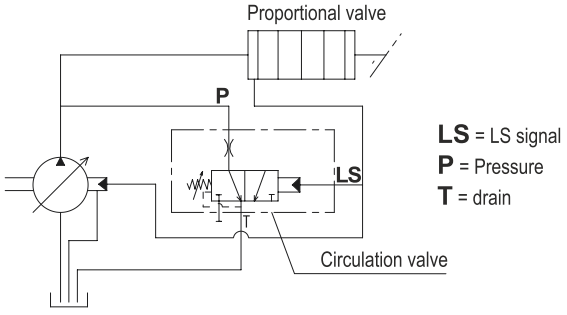
The fluid circulation (FCV) is designed for applications where the hydraulic variable displacement pump is used in standby mode for a long period of time, for example engine PTO, to protect the pump against overheating.



- The valve flow varies between 20 and 22 l/min for a ΔP at 30 bar.
- Maximum pressure is 420 bar.
- The closing pressure is 2 bar min. and 7 bar max.

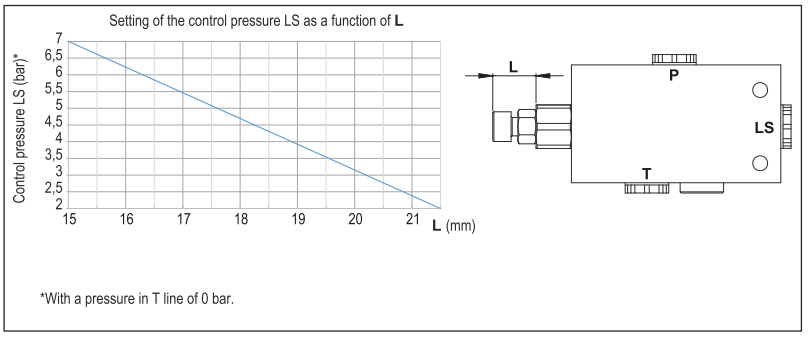


* This lenght varies depending on the setting of **L** (see bottom of this page).



LS = LS signal
P = Pressure
T = drain

Setting of the control pressure



*With a pressure in T line of 0 bar.

40° bent axis design giving high power, small overall dimensions, optimum efficiency and economic design. Flange and shaft designed for direct mounting on truck gearbox PTO's. The fixed displacement bent axis pumps generates a hydraulic fluid flow. It is designed for use in trucks, commercial vehicles and all stationary hydraulic applications. The Pump a fixed pump with rotary group in bent-axis design open circuits. Flow is proportional to drive speed and displacement.

For axial piston units with bent-axis design, the Pistons are arranged diagonally with respect to the drive shaft. The pump covers the whole displacement range 5 to 130 cm3/rev. The pump has been developed with modern styling and design to satisfy market demand as to designed new generation plate and pistons with give high flow performance, high pressures with high efficiency and very small dimensions.

The pump is available both to DIN and SAE world standards and can be mounted either directly at the gear box or via a drive shaft. If necessary it can also be augmented with a by-pass valve.Other brand bent axis pumps compatible and interchangeable with DIN Hydraulic Piston Pumps. Refer to the data sheet and confirmation for the technical data,operating conditions and operating limits of the bent axis piston pumps.

Formulas			
Pump Output Flow	GPM	GPM = (Speed (rpm) × disp. (cu. in.)) / 231	GPM = (n ×d) / 231
Pump Input Horsepower	HP	HP = GPM × Pressure (psi) / 1714 × Efficiency	HP = (Q ×P) / 1714 × E
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	Eoverall = HPOut / HPIn X 100
		Overall Efficiency = Volumetric Eff. × Mechanical Eff.	EOverall = EffVol. × EffMech.
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) × 100	EffVol. = QAct. / QTheo. X 100
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive × 100	EffMech = TTheo. / TAct. × 100
Pump Displacement	CIPR	Dsplcmnt ($In.^3$ / rev.) = Flow Rate (GPM) × 231 / Pump RPM	CIPR = GPM × 231 / RPM
Pump Torque	T	Torque = Horsepower × 63025 / RPM	T = 63025 × HP / RPM
		Torque = Pressure (PSIG) × Pump Displacement (CIPR) / 2π	T = P × CIPR / 6.28

Horsepower for driving a pump : For every 1 hp of drive, the equivalent of 1 gpm @ 1500 psi can be produced.

Horsepower for idling a pump : To idle a pump when it is unloaded will require about 5% of it's full rated power

Wattage for heating hydraulic oil : Each watt will raise the temperature of 1 gallon of oil by 1° F. per hour.

Flow velocity in hydraulic lines : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 to 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

Hydraulic Pumps, Motors

Bent Axis Hydraulic Piston Motors, Bent Axis Hydraulic Piston Pumps, Piston Pumps, Variable Displacement Piston Pumps, Variable Displacement Piston Motors, Axial Piston Pumps, High Pressure Piston Pumps, Gear Pumps, Gear Motors, Hydraulic Valve.

www.hayneks.com

Address;

HAYNEKS HYDRAULIC GEAR MAKINA A.S.

Address;

Hardoks Industrial Site Fevzi Çakmak Mahallesi Ahmet Petekçi Caddesi 15B Karatay 42050 Konya TURKIYE

Mobile: +90 532 678 06 42 **Office Phone; +90 332 501 25 26**

sales@hayneks.com