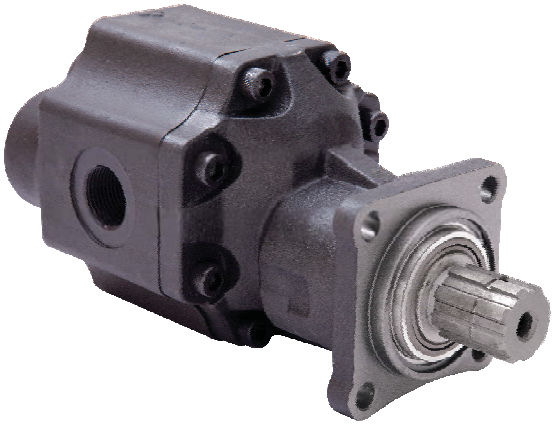
Truck Hydraulic External gear pumps



3V - Series
Displacement :- From 16 cc/rev to 80 cc/rev
Max.Speed :- 3000 rpm
Max.pressure :- 290bar

4V - Series
Displacement :- From 63 cc/rev to 83 cc/rev
Max.Speed :- 3000 rpm
Max.pressure :- 240bar

Features

- Veljan truck hydraulic gear pumps are ideal for truck applications.
- Two piece construction
- These are designed for applications requiring high pressure levels also at low speed.
- The 3V & 4V Series gear pumps are light and compact to suit most applications.
- They can be installed in both the ways either rear or side mounted.
- The 4V-Series is compact and built for heavy duty applications.
- Maintenance free ,Long service life
- These pumps are bi-directional for easy to install
- Italian (triangular) and ISO Mountings standards
- High performance at very low speed
- Designed to compact size for easy installation even in a small vehicles

Application

- Tripper trucks
- Truck - mounted cranes
- Lift - trucks etc.,

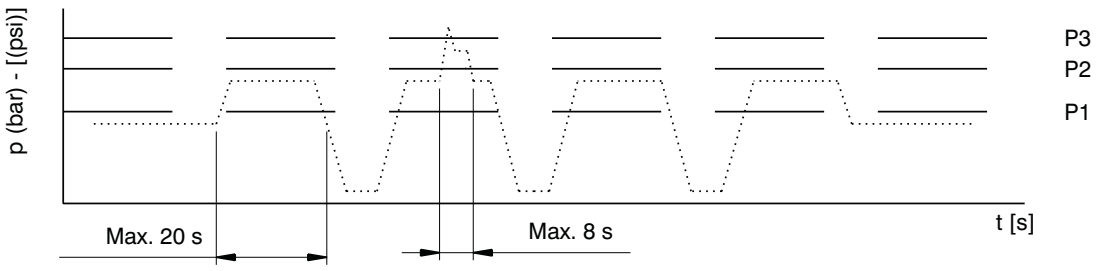
Product Features :

Features	Descriptions
Pump Type	Heay-duty cast iron , 2 piece construction , External gear pump.
Displacement	See Technical Characteristics
Speed	See Technical Characteristics
Pressure (Inlet)	0.8 to 2 bar abs. 13cm (5 in) Hg Maximum vacuum at operating temperature.
Pressure (Outlet)	See Technical Characteristics
Mounting	ISO Standard flanges , ITALIAN (triangular)
Ports	Threaded ports
Inlet pressure range	0.7 to 3bar (abs.)
Drive	Flexible coupling is recommended.Axial loading is not recommended.
Inlet flow velocity	**Mineral oil and HFD** • Inlet up to 2.5 m/s • Outlet up to 6.0 m/s **Fire resistant fliuds HFB , HFC** • Inlet up to 1.5 m/s • Outlet up to 4.0 m/s
Hydraulic fluids	Mineral oils (Petroleum base), Bio degradable oil, Fire resistant fluids such as: • Water - oil emulsions 60/40 , HFB • Phosphate - easters, HFD (FPM seals required) • Water - glycol , HFC
Fluid viscosity (Mineral oils)	50 SSU minimum @ Operating temperature 7500 SSU maximum @ starting temperature Viscosity range for cold start 1000 to 2000 mm^2/s
Fluid temperature	**Operating temperature :** Petroleum base oils with standard seals -20° C to +80°C (0 to 176°F). Temperature for cold start -20 to -15°c Fire resistant fluids HFB, HFC -20° C to + 65° C (0° to 150° F). • Maximum permissible operating pressure is dependant on fluid temperature.
Direction of Rotation	Clock wise , Counter clockwise , Bi-Directional. Viewed from the shaft end side.
Fluid Filteration	**According to ISO 4406 code :** • 19/16 at 140 bar (2000 psi) • 17/14 at 210 bar (3000 psi) • 15/12 at 275 bar (4000 psi) (For details see page no.8)

Technical characteristics :

Specification		Units	VGP - 3V	VGP - 4V
Displacement range		cm^3/rev	16 - 80	65 - 83
		in^3/rev	1.05 - 4.98	3.96 - 5.06
Max. speed		rpm	3000	2700
Max. flow at 1000 rpm		lpm	80.0	83
		gpm	21.13	22.06
Flow at 1000 rpm	3V.16	lpm	16.28	—
	3V.24		24.0	
	3V.34		34.0	
	3V.38		38.0	
	3V.43		43.0	
	3V.57		57.0	
	3V.65		65.0	
	3V.75		75.0	
	3V.80		80.0	
	4V.63	lpm	—	63.0
	4V.75			75.0
	4V.83			83.0
Maximum pressure		(bar)	240	240
		(psi)	3500	3500

Pressure definition



P1 Max. continuous pressure
P2 Max. intermittent pressure
P3 Max. peak pressure

3V - Series Ordering Code

V G P	3V	a	R	U	043	8	S1	P2	GB	FB	*	*	*
									IN	OUT			

Veljan Gear Pump

VGP-Series
3V - 3V Series

Pump type
a - Single Unit

Rotation
(Viewed from shaft end)

R - Clockwise rotation
L - Counter Clockwise rotation
B - BI-Directinal rotational

Mounting type
U- 3-bolt

Displacement
(Displacement cc/rev)

3V.16 - 16 cc/rev
3V.24 - 24 cc/rev
3V.34 - 34 cc/rev
3V.38 - 38 cc/rev
3V.43 - 43 cc/rev
3V.57 - 57 cc/rev
3V.65 - 65 cc/rev
3V.75 - 75 cc/rev
3V.80 - 80 cc/rev

Shaft end details (Shaft type)
8 = 6 SPLINE UNI 8953(B 6x21x25)

Seal class
S 1 (for Mineral oil)
S 4 (for fire resistant fluids)
S 5 (for mineral oil and fire resistant fluids)

Port Block type
P0 - No ports
P1 - Pressure (1 Port) - side ported
P2 - Suction & Pressure (2 Ports) - side ported
R1 - Pressure (1 Port) - rear ported
R2 - Suction & Pressure (2 Port) - rear ported

Port connections
T - Threaded ported (OD tube porting)
1- UNF
2- BSPP
See Page 84

Port connections
T - Threaded ported (OD tube porting)
1- UNF
2- BSPP
See Page 84

'3V' Series Features :

- Sleeve bushing design in a small frame size
- Compact and light weight
- Bi-directional
- High strength cast iron construction (Robust & reliable)
- 100% factory tested
- High strength alloy steel gears and shaft sets
- Side & Rear mounting available.
- Pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
- Easy to install even on small vehicle
- Good suction characteristics
- Long seal life & high volumetric efficiency even at high operating temperatures

Performance Data :

The performance data shown below are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit.

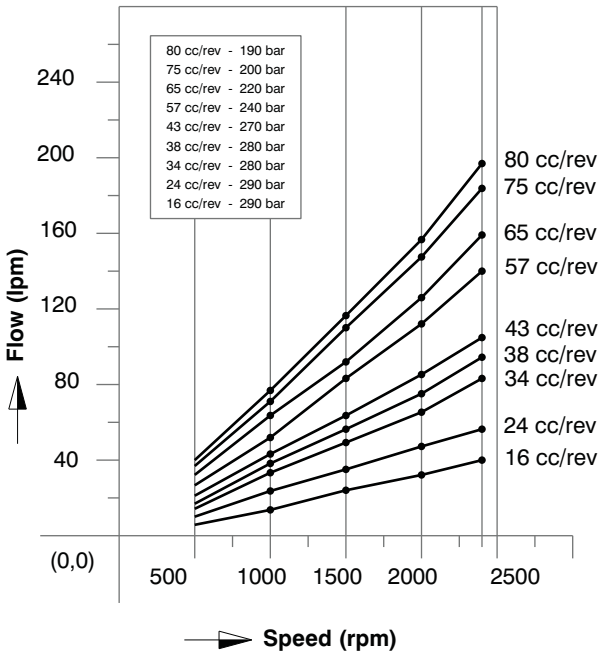
VGP - 3V Performance Data :

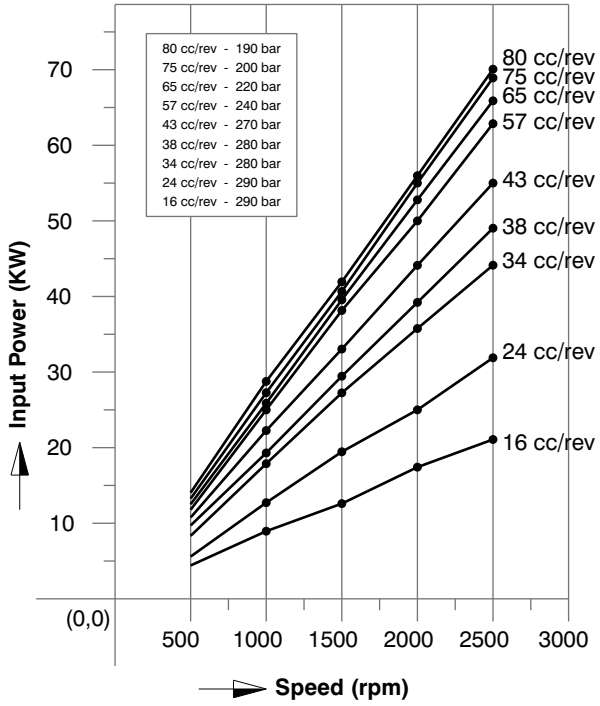
Pump type	Displacement	Max.pressure			Intermittent max. speed		Min.speed
		P1	P2	P3	At P_2 press.	Without load	At P_2 press.
	(cm^3/rev)	psi (bar)					
3V.16	(16.00)	4205 (290)	4568 (315)	4713 (325)	3000	4000	300
3V.24	(24.00)	4205 (290)	4568 (315)	4713 (325)	3000	4000	300
3V.34	(34.00)	4060 (280)	4350 (300)	4495 (310)	2800	4200	300
3V.38	(38.00)	4060 (280)	4350 (300)	4495 (310)	2800	3500	300
3V.43	(43.00)	3915 (270)	4205 (290)	4350 (300)	2500	3500	300
3V.57	(57.00)	3480 (240)	3770 (260)	4060 (280)	2500	3500	300
3V.65	(65.00)	3190 (220)	3480 (240)	3625 (250)	2000	3500	300
3V.75	(75.00)	2900 (200)	3190 (220)	3335 (230)	1800	3500	300
3V.80	(80.00)	2755 (190)	3045 (210)	3190 (220)	1800	3500	300

P1 = Max. continuous pressure **P2 = Max. intermittent pressure** **P3 = Max. peak pressure**

The valves in the table refer to unidirectional pumps.
Reversible pump max pressure are 15% lower than those shown in table.
For different working conditions please consult our sales department.

Performance curves for VGP-3V:-

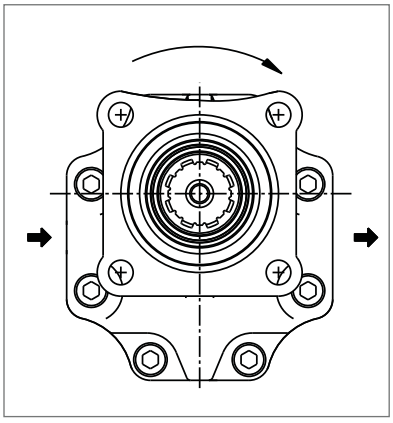


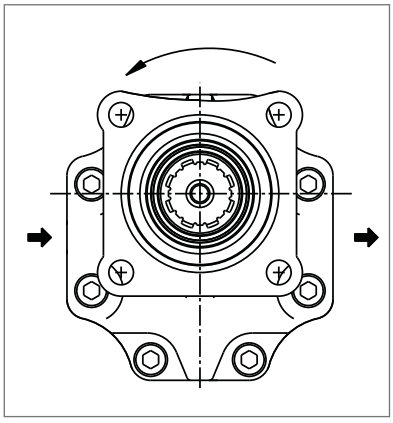


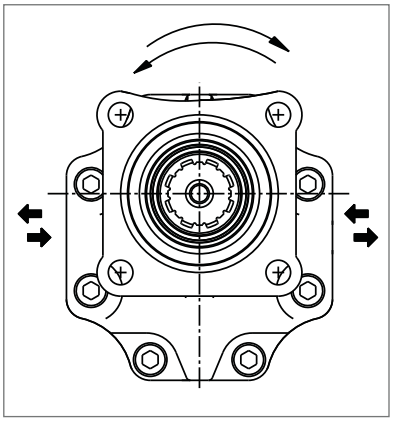
Each curve has been obtained at 122°F (50°C) using oil with viscosity 168 SSU (36 cst) at 104°F (40°C)

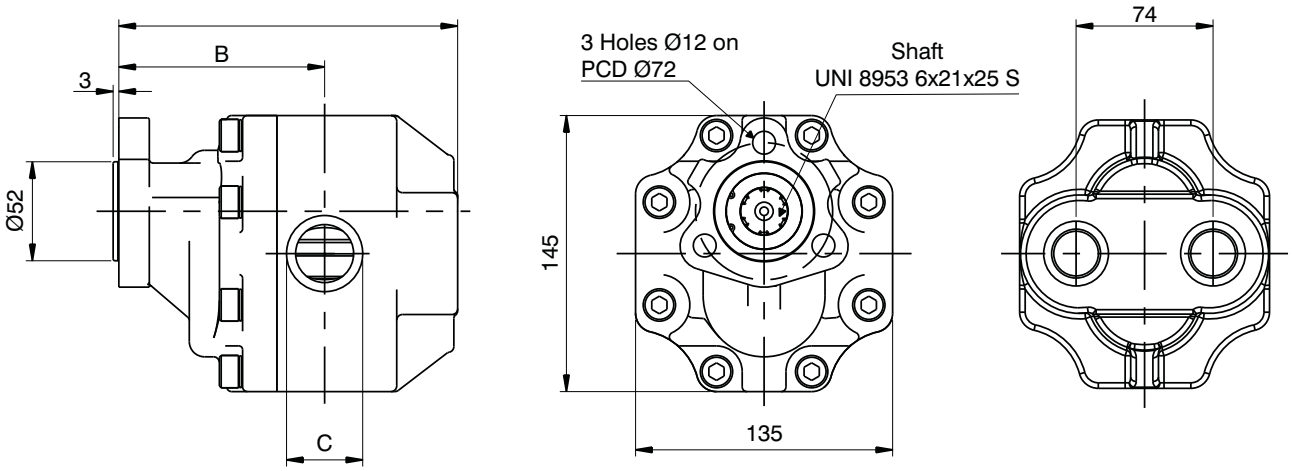
Pump Rotation:-

Clockwise (CW) rotation	Counter Clockwise (CCW)	Bi-Directional rotation (BI)





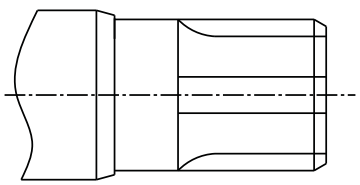




Pump type	Displacement	A	B	C	Suction Adaptor	Pressure Side	Pressure Adaptor
	(cm³/rev)	(mm)	(mm)	IN Suction Side		(OUT)	
3V.16	(16.00)	168.5	118.5	G 1/2	1 1/4"	G 1/2"	3/4"
3V.24	(24.00)	174.5	124.5	G 3/4	1 1/4"	G 3/4	3/4"
3V.34	(34.00)	179.5	124.5				
3V.38	(38.00)	182.5	127.5				
3V.43	(43.00)	185.5	130.5				
3V.56	(56.00)	190.5	128.5	G 1	1 3/4"	G 1	1"
3V.65	(65.00)	196.5	134.5				
3V.75	(75.00)	204.5	135.5				
3V.80	(80.00)	209.5	140.5	G 1 1/4			

Drive shaft configurations:

SHAFT CODE - 8



ITALIAN STANDARD
UNI 8953 (6x21x25 S)
MAX 360 Nm (3186 lbf in)

4V - Series Ordering Code

V G P	4V	a	R	I_4	083	9	S1	P2	GB	GB	*	*	*
									IN	OUT			

Veljan Gear Pump

VGP-Series
4V - 4V Series

Pump type
a - Single Unit

Rotation
(Viewed from shaft end)

R - Clockwise rotation
L - Counter Clockwise rotation
B - BI-Directinal rotational

Mounting type
I_4 - ISO 4-bolt

Displacement
(Displacement cc/rev)

4V.65 - 65 cc/rev
4V.73 - 73 cc/rev
4V.80 - 80 cc/rev
4V.83 - 83 cc/rev

Shaft end details (Shaft type)
9 = DIN 5482 (B 22x19xe9)

Seal class
S 1 (for Mineral oil)
S 4 (for fire resistant fluids)
S 5 (for mineral oil and fire resistant fluids)

Port Block type
P0 - No ports
P1 - Pressure (1 Port) - side ported
P2 - Suction & Pressure (2 Ports) - side ported
R1 - Pressure (1 Port) - rear ported
R2 - Suction & Pressure (2 Port) - rear ported

Port connections
T - Threaded ported (OD tube porting)
1 - UNF
2 - BSPP

See Page 84

'4V' Series Features:

- Heavy duty sleeve bushing design in a small frame size
- Compact and light weight
- Bi-directional
- High strength cast iron construction (Robust & reliable)
- 100% factory tested
- High strength alloy steel gears and shaft sets
- Side & Rear mounting available.
- Pressure balanced wear plates maintain high pump efficiency throughout all operating ranges
- Easy to install even on small vehicle
- Good suction characteristics
- Long seal life & high volumetric efficiency even at high operating temperatures

Performance Data:

The performance data shown below are the average results based on a series of laboratory tests of production units and are not necessarily representative of any one unit.

VGP - 4V Performance Data :

Pump type	Displacement	Max. pressure			Intermittent max. speed		Min.speed
		P1	P2	P3	At P_2 press.	Without load	At P_2 press.
	(cm^3/rev)	psi (bar)					
4V.63	(63.00)	3190 (220)	3335 (230)	3480 (240)	2700	4200	300
4V.73	(73.00)	2900 (200)	3190 (220)	3335 (230)	2700	4200	300
4V.80	(80.00)	2755 (190)	3045 (210)	3190 (220)	1800	3500	300
4V.83	(83.00)	2755 (190)	3045 (210)	3190 (220)	1800	3500	300

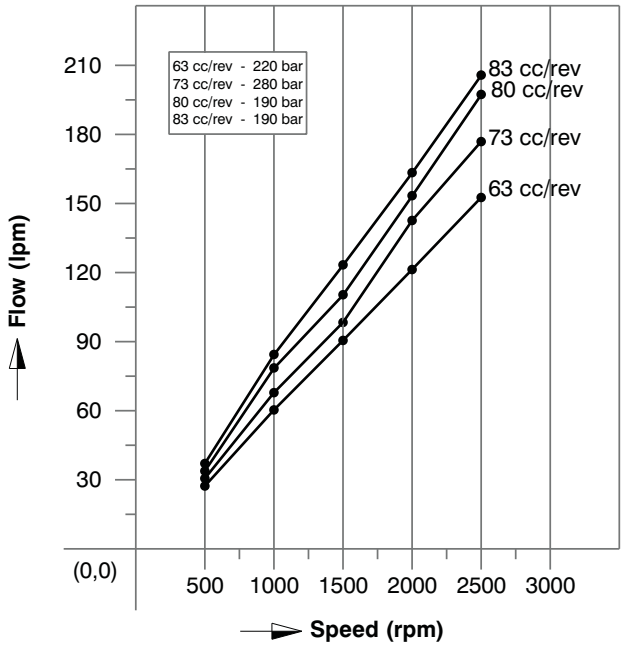
P1 = Max. continuous pressure **P2 = Max. intermittent pressure** **P3 = Max. peak pressure**

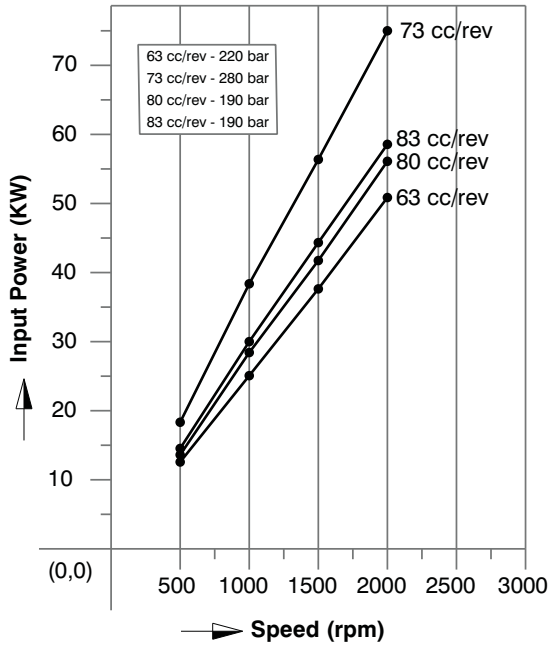
The values in the above table refer to unidirectional pumps.

Bidirectional pump maximum pressure are 15% lower than those shown in table.

For different working conditions please consult our sales department

Performance curves for VGP-4V:-



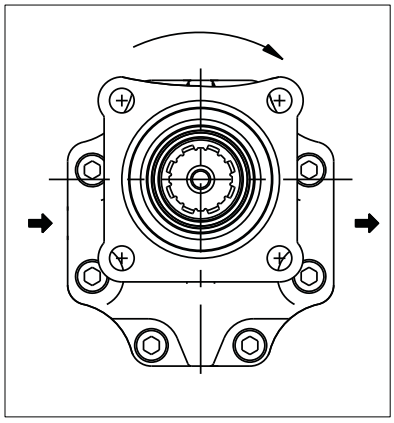


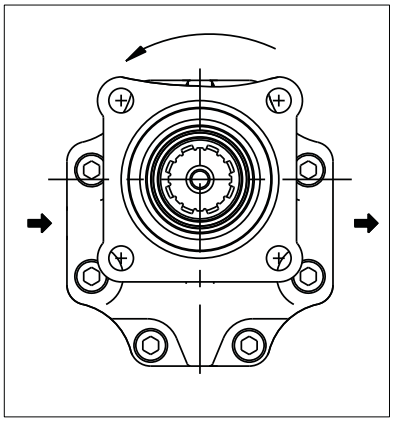
Each curve has been obtained at 122°F (50°C) using oil with viscosity 168 SSU (36 cst) at 104°F (40°C)

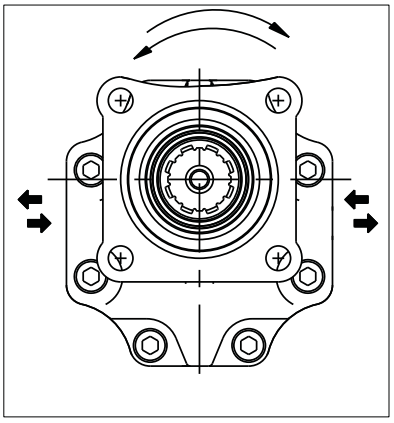
Pump Rotation:-

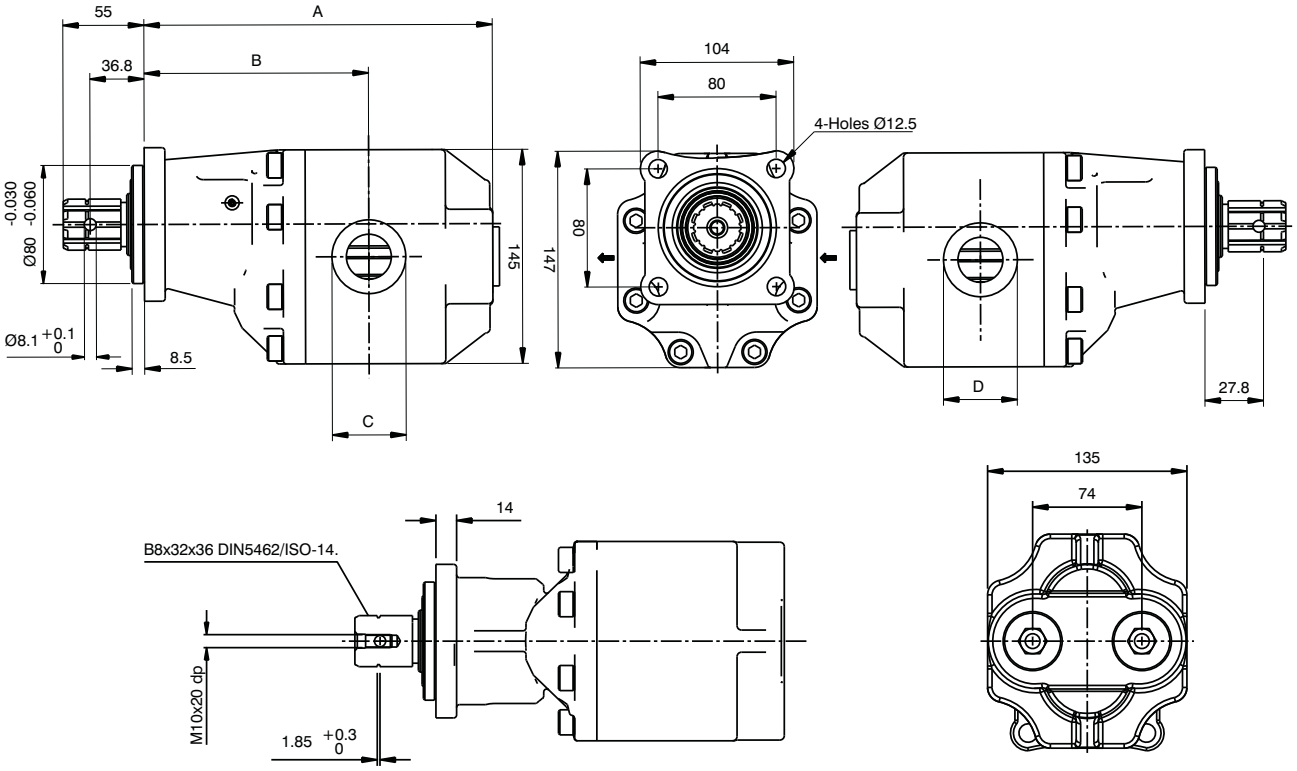
- To determine rotation view pump as shown. Look at shaft end cover of pump with the drive shaft at the top. Note the location of the ports
- Pump rotation as viewed from the shaft end.

Clockwise (CW) rotation	Counter Clockwise (CCW)	Bi-Directional rotation (BI)





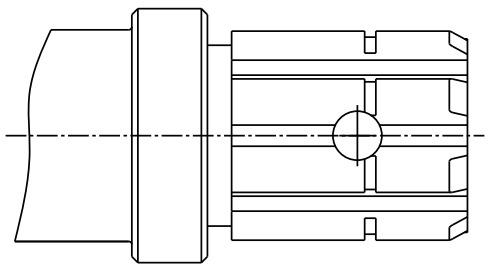




Pump type	Displacement	A	B	C	Suction Adaptor	D	Pressure Adaptor
	(cm³/rev)	(mm)	(mm)	IN Suction Side		OUT (Pressure Side)	
4V.63	(63.0)	219	137	G 1"	1¾"	G 1"	3/4"
4V.73	(73.0)	226	144	G 1"	1¾"	G 1"	1"
4V.80	(80.00)	230	300	G 1"	1¾"	G 1"	1"
4V.83	(83.00)	234	148	G 1 1/4	1¾"	G 1 1/4	1"

Drive shaft configurations:-

SHAFT CODE - 9



ISO STANDARD
DIN 5482 (B 22x19xe9)
MAX 290 Nm (2566 lbf in)

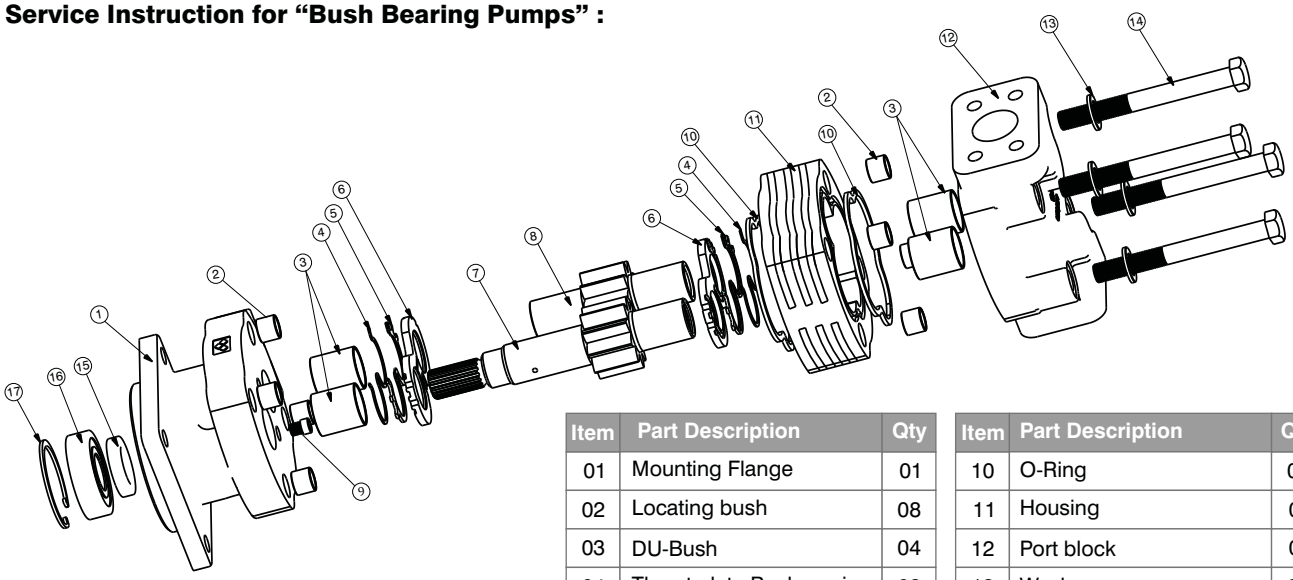
IdentificationandTroubleShootsin HydraulicInstallations:-

Thefollowingtabulationsshouldbeofassistanceinthelocationandmodification-repairofsourcesoftrouble.Anycontamination reducesthelife-timeofhydraulicinstallation.

Source of Trouble	Effects							Modification - repair
	1	2	3	4	5	6	7	
Wrong detection of rotation	✓							Reverse motor poles or reverse rotation of pump
Oil level too low	✓	✓	✓					Top up with oil
Dirty filter	✓							Clean filter or replace element
Faulty suction valve	✓	✓						Repair or change the valve
Air in system	✓							Vent system
Suction pipe leaks	✓							Replace jointing or seal
Pump shaft broken	✓			✓				Establish cause(pump over loaded?) and replace shaft
Wrong oil grade	✓	✓	✓	✓				Respect oil recommendations (For special fluids take VELJAN advice)
Oil too cold	✓							Let pump warm up at low pressure, or install a heating system
Suction height too great	✓							Reduce suction height or install boost pump, or pressurize the tank
Pump speed too high	✓							Reduce running speed
Dirty vent or no vent reservoir	✓							Clean or install vent
Cavitation		✓						Vent system and seal
Suction pipe leaks		✓						Replace joint or seal
Shaft seal leaks		✓					✓	Replace shaft seal
Filter too small or is dirty		✓						Install larger filter or clean filter
Suction pipe bore too small		✓						Fit pipe of larger nominal size
Casing leaks		✓						First tighten bolts, then check for cracks and sealing
Pump or motor part defective		✓						Replace defective parts
Pump or motor stressed		✓						Check mounting alignment tighten bolts uniformity
Foreign bodies in suction side		✓						Remove foreign bodies, if needed flush system
Pipe bends in suction side		✓	✓					Eliminate or at least reduce the bends
Oil temperature too high		✓						Check circuit for cause(cooling?)
Boost pump failed		✓						Establish cause and repair defect
Resonance through tank		✓						Change deposition of tanker install sound damping means
Porous suction hose		✓						Change disposition of tanker install sound damping means
Vibration in system		✓						Establish source and repair defect
Other defect of pump or motor		✓						Disassemble pump/motor,check parts,test run on test-bench
Oil speed in system too high			✓					Install pipes of greater nominal size
Radial or axial loading too high			✓					Limit to acceptable amount, check alignment
Initial speed rises			✓					Check max. pressure; if needed increase pump size
Inadequate cooling			✓					Increase cooling capacity
Cooling system is dirty			✓					Establish cause and repair defect
Differential pressure too low			✓					Increase pressure setting or feed pressure
Pressure too high			✓					Reduce pressure setting
Wrong type pressure valve			✓					Replace by appropriate type of valve
Faulty operation in system			✓	✓				Check circuit and modify system
Wrong seals			✓					Replace by suitable seals
Pump running speed high			✓					Reduce speed
System contaminated		✓	✓					Flush system or if needed pickle and flush out
Other defects of the pump			✓					Disassemble pump or motor, check parts or run on test bench
Wrong pressure setting				✓				Modify pressure setting and increase pressure
Pressure valve sticks				✓				Repair defect
Leakage in system				✓				Seal system - replace defective parts
Faulty electric circuit				✓				Check electric circuit
Drive machine defective				✓				Repair machine
Wrong gaskets and seals				✓				Replace by seals prescribed
Switched to pressure less return				✓				Modify switching
Torque too low					✓			Increase pressure setting
Oil spill at motor					✓			Check ball valve. Check if stroke defective
Inadequate pump delivery					✓			Repair pump or change for larger type
Too much play in the shaft					✓			Replace bearing
Defective bearing						✓		Exchange bearing
Radial or axial loading too high						✓		Limit to permitted amount
Coupling out of balance						✓		Balance or replace coupling
Connection leaking							✓	Check seals
Casting leaks							✓	Check for cracks and if necessary replace
Damage to plane faces							✓	Machine plane faces flat
No safety valve in motor circuit							✓	Install a safety valve

1 - Pump does not deliver
2 - Pump / motor make loud noise
3 - Pump / motor overheats
4 - Pump develops low pressure
5 - Motor does not work
6 - Shaft clearance too great
7 - Leakage at pump or motor

Service Instruction for "Bush Bearing Pumps" :



Item	Part Description	Qty
01	Mounting Flange	01
02	Locating bush	08
03	DU-Bush	04
04	Thrust plate Back up ring	02
05	Thrust plate seal	02
06	Thrust plate	02
07	Drive gear shaft	01
08	Driven gear	01
09	Plug	01

Item	Part Description	Qty
10	O-Ring	02
11	Housing	01
12	Port block	01
13	Washer	04
14	Hex.Bolts	04
15	Shaft seal	01
16	Deep groove ball Bearing	01
17	Internal Circlip	01

Cautions:

During assembly, use extreme caution when prying apart castings. The marring of machined surfaces could cause leakage. Excessive use of force can result in misalignment and seriously damage parts.

Installation Instruction :

1. Check the direction of rotation as per the arrow mark indicated on the pump body.

2. Check Inlet conditions of the pump. Intake conditions for all pumps should be suitable for easy flow of oil.

   As far as possible, try to avoid bends and use large size pipes as recommended.

3. Ensure proper coupling connection to the driven shaft to minimize pump shaft load.

4. Check the shaft suitability for supporting operating torque.

5. Check the filter suitability for lowest contamination level.

Start-up Procedure :

- Back off the main relief valve until the spring tension on the adjusting screw is relieved to avoid the immediate damage to the pump.

- Check all the ports filled with clean oil to provide initial lubrication in the case of the unit is located above the oil reservoir.

- Run the pump at least 2min. at no load and at low rpm. During this break-in period, the unit should run free & not develop an excessive amount of heat. If the unit operates properly speed & pressure can then be increased to normal operating settings.

- Reset the main relief valve to its proper setting.

Disassembly Instructions :

1) Clamp the pump in a vise, with the drive shaft pointing down, on the mounting flange.

2) Scribe a line across each casting in the assembly. This ensures proper alignment during reassembly.

3) If the pump has a key type shaft, remove the key from the drive gear. Lightly stone any burrs that may be on the shaft to prevent any damage to the seal during disassembly.

4) Remove all the bolts & washers from the assembly.

5) Remove the rear port end cover.

6) Remove the thrust plate by hand. The channel seals can remain in the thrust plate groove.

7) Carefully remove the gears from the gear housing. Keep gears together because they are a matched set

8) Carefully remove the thrust plate by hand from the shaft end cover surface. Keep the channel seals in the thrust plate groove.

9) Lift the gear housing from the shaft end cover. Keep the gasket seals in the gear housing groove.

Service Instructions:

These instructions are intended for use in changing the rotation of a single section VGP series gear pump.

Reassembly Instructions:

1) If unit has two holes in the face of the shaft end cover, move the plug to the open hole that was marked. Inlet side will be open, outlet side will be plugged. Apply lock tight to threads and stake plug in hole.

2) Rotate Gear housing 180° from original position and place over shaft end cover. Make sure gasket seals are in the grooves, a light coat of grease will hold them in.

3) It may be necessary to reposition the locating bushes.

4) Gently slip the thrust plate into the gear housing bore with the channel seals towards the shaft end cover. The relief groove in the plate must face the outlet side of the pump.

5) Slide the drive shaft gear through the gear housing, bushing and shaft seal. Be careful not to damage the shaft seal.

6) Slip the second thrust plate over the gear journals and into the gear housing. The channel seals will be facing up. The relief groove in the plate must face the outlet side of the pump.

7) From its original position rotate the port end cover 180° around the shaft axis & position over the gear housing. Lightly tap the port end cover down until it rests against the gear housing.

8) Replace the washers and bolts into the unit. Torque bolts in a cross corner pattern.

9) Rotate drive shaft with a small wrench to check for any binding.

Anticlock Wise Rotation

Clock Wise Rotation

Service Instructions:

Seal replacement Instructions

Important: Note the shape and orientation of all seals before and during removal.

The first requirement for good maintenance of hydraulic Pump or equipment is cleanliness. extreme cleanliness is most important in hydraulic system.

MAKE SURE THE MAINTENANCE OF YOUR HYDRAULIC EQUIPMENT IN A CLEAN AREA

Shaft seal:

1) If shaft end cover has circlip (or) smalley ring and outboard bearing, carefully remove. Insert small diameter punch from inside cover into shaft seal opening. Gently tap to drive out the lip seal.

2) Apply a light coat of non-hardening gasket sealant in the outer edge of the replacement seal. Press the seal flush with the seal recess in the shaft end cover.

Gear Housing Gasket Seals:

1) Carefully remove seals in groove.

2) Insert new seals in grooves. Apply a light coat of grease to seals to hold it in place during reassembly of pump.

Thrust plate Seals:

1) Remove the back-up seal and channel seal from groove in back of thrust plate.

2) Place the soft black Buna-N seal into the seal groove with the flat side down. Place the hard white nylon back-up seal, flat side up, into the groove on top of the Buna-N seal.

Shaft , Couplings and Female Splines :

1. The coupling spline must be lubricated with a lithium molydi - sulfide grease or a similar lubricant.

2. The mating female spline should be free to float and find its own center. The members are rigidly supported, they must be aligned within 0.15 mm TIR or less ,to reduce fretting. The angular alignment of two splines axes must be less than ±0.05 mm per 25.4 mm radius.

3. The coupling must be hardened to a hardness between 27 and 45 RC.

4. The female spline must be conform to the class 1 fit as described in SAE - J498b.This is described as Flat root side fit.

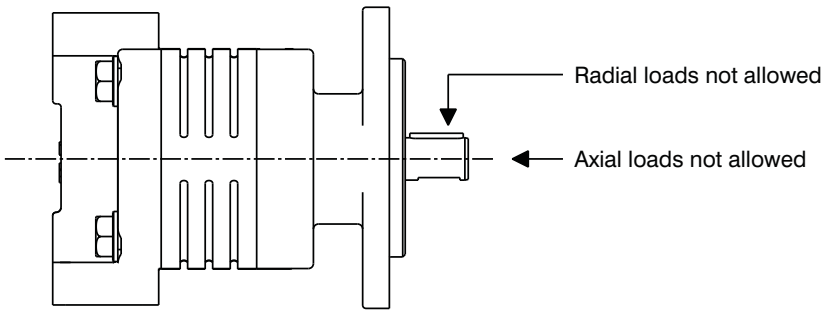
5. Flexible coupling alignment is preferred and the usage of these couplings should be as per the recommendations of manufacturers.

External shaft loads are not allowed

1. External Radial and axial shafts loads are not allowed on the pump shaft.

2. Bearing supported coupling must be used in case of (to avoid) radial and axial shaft loads on external.

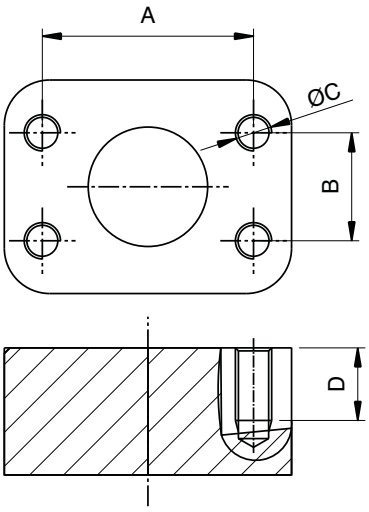
3. The pumps are designed for in-line-drive only and no side loading on the shaft is permissible beyond the specific limits.



& - Tightening torque for low pressure side port

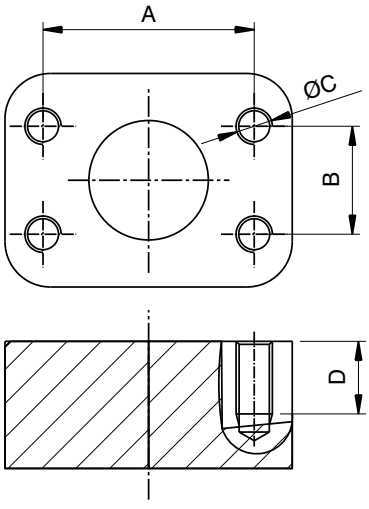
@ - Tightening torque for high pressure side port

SAE FLANGE PORTS J518 - Metric thread



CODE	SAE Flange Size in.	A	B	Thread (C)			D
		mm (in)	mm (in)	Metric	Torque Nm & (lbf in)	Torque Nm @ (lbf in)	mm (in)
DM	1/2"	38.10 (1.5)	17.48 (0.69)	M8	------	------	24 (0.98)
FM	3/4"	47.63 (1.88)	22.23 (0.88)	M10	20^{+1} 177÷186	$35^{+2.5}$ 310÷332	22 (0.86)
GM	1"	52.37 (2.06)	26.19 (1.03)	M10	20^{+1} 177÷186	$35^{+2.5}$ 310÷332	22 (0.86)
HM	1 1/4"	58.72 (2.31)	30.18 (1.19)	M10	20^{+1} 221÷230	$35^{+2.5}$ 310÷332	22 (0.86)
IM	1 1/2"	69.85 (2.75)	35.71 (1.41)	M12	$30^{+2.5}$ 266÷288	65^{+5} 575÷620	27 (1.06)
JM	2"	77.77 (3.06)	42.88 (1.69)	M12	$30^{+2.5}$ 266÷288	65^{+5} 575÷620	27 (1.06)
KM	2 1/2"	88.90 (3.50)	50.80 (2.00)	M12	$30^{+2.5}$ 266÷288	65^{+5} 575÷620	30 (1.18)
LM	3"	106.38 (4.19)	61.93 (2.44)	M16	-------	-------	30 (1.18)

SAE FLANGE PORTS J518 - American straight thread UNC



CODE	SAE Flange Size in.	A	B	Thread (C)			D
		mm (in)	mm (in)	unc	Torque Nm & (lbf in)	Torque Nm @ (lbf in)	mm (in)
DS	1/2"	38.10 (1.5)	17.48 (0.69)	5/16"-18	------	------	24 (0.98)
FS	3/4"	47.63 (1.88)	22.23 (0.88)	3/8"-16	20^{+1} 177÷186	$30^{+2.5}$ 266÷288	22 (0.86)
GS	1"	52.37 (2.06)	26.19 (1.03)	3/8"-16	20^{+1} 177÷186	$30^{+2.5}$ 266÷288	22 (0.86)
HS	1 1/4"	58.72 (2.31)	30.18 (1.19)	7/16"-14	25^{+1} 221÷230	55^{+5} 487÷531	22 (0.86)
IS	1 1/2"	69.85 (2.75)	35.71 (1.41)	1/2"-13	$30^{+2.5}$ 266÷288	70^{+5} 620÷664	27 (1.06)
JS	2"	77.77 (3.06)	42.88 (1.69)	1/2"-13	$30^{+2.5}$ 266÷288	70^{+5} 620÷664	27 (1.06)
KS	2 1/2"	88.90 (3.50)	50.80 (2.00)	1/2"-13	$30^{+2.5}$ 266÷288	70^{+5} 620÷664	30 (1.18)
LS	3"	106.38 (4.19)	61.93 (2.44)	5/8"-11	-------	-------	30 (1.18)

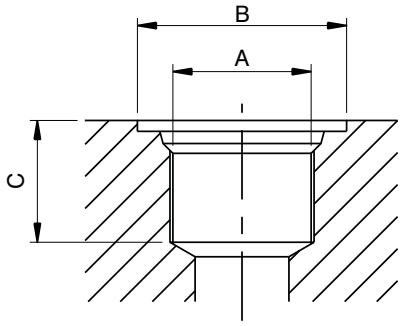
& - Tightening torque for low pressure side port

@ - Tightening torque for high pressure side port

SAE STRAIGHT THREAD PORTS - J514 (American straight thread UNF 60°)

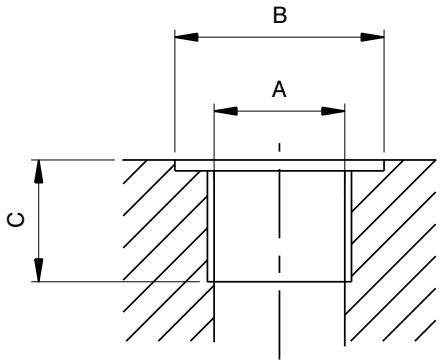
Port Details:-

SAE Straight threaded ports (ODT)



CODE	Port Size	UNF (ODT)		Spot Face dia, B (mm)	Min. Depth, C (mm)	Torque Nm (lbf in) &	Torque Nm (lbf in) @
		Port ID, A (mm)	Thread (UNF)				
AU	1/8"	6.85 (0.27)	5/16"-24	17.06	16.66	------	------
BU	1/4"	10.00 (0.39)	7/16"-20	21.03	19.43	------	------
CU	3/8"	13.00 (0.51)	9/16"-18	24.61	21.41	------	------
DU	1/2"	17.60 (0.69)	3/4"-16	30.17	23.79	------	------
EU	5/8"	20.50 (0.81)	7/8"-14	34.13	26.18	------	------
FU	3/4"	25.00 (0.98)	1 1/16"-12	41.27	31.75	$40^{+2.5}$ 354÷376	120^{+10} 1062÷1151
GU	1"	31.30 (1.23)	1 5/16"-12	48.51	31.75	60^{+5} 531÷575	170^{+10} 1505÷1593
HU	1 1/4"	39.20 (1.54)	1 5/8"-12	57.66	31.75	70^{+5} 620÷664	200^{+10} 1770÷1859
IU	1 1/2"	45.60 (1.79)	1 7/8"-12	65.02	31.75	100^{+5} 885÷929	------
JU	2"	61.50 (2.42)	2 1/2"-12	88.39	36.52	------	------

GAS STRAIGHT THREAD PORTS - BSPP (British standard pipe parallel-55°)



CODE	Port Size	BSPP		Spot Face dia, ØB mm (inch)	Min. Th Depth, C mm(inch)	Torque Nm (lbf in) &	Torque Nm (lbf in) @
		Port ID, A (inch) mm	Thread (BSPP)				
AB	1/8"	8.60 (0.34)	1/8"-28	25 (0.98)	14 (0.98)	------	------
BB	1/4"	11.50 (0.45)	1/4"-19		14 (0.98)	------	------
CB	3/8"	14.92 (0.59)	3/8"-19		14 (0.98)	15^{+1} 133÷142	------
DB	1/2"	18.52 (0.73)	1/2"-14		14 (0.98)	------	------
FB	3/4"	24.10 (0.95)	3/4"-14		22 (0.86)	$30^{+2.5}$ 266÷288	90^{+5} 797÷841
GB	1"	30.20 (1.19)	1"-11		25 (0.98)	$50^{+2.5}$ 443÷465	130^{+10} 1151÷1293
HB	1 1/4"	38.67 (1.53)	1 1/4"-11		26 (1.02)	60^{+5} 531÷575	170^{+10} 1505÷1593
IB	1 1/2"	44.75 (1.77)	1 1/2"-11		28 (1.10)	70^{+5} 620÷664	210^{+10} 1859÷1947
JB	2"	56.52 (2.23)	2"-11		32 (1.25)	150^{+10} 1328÷1416	------