J9V018

AXIAL PISTON PUMP

ORDERING CODE:

J	9	V	018	CPR	/	R	-	N	1	A	M1

VELJAN

Axial piston pump

Variable displacement,
Swash plate design,
Working pressure 280 bar.
Peak pressure 350 bar.

Size
Displacement, Vgmax 18 cc/rev

Control devices
CP - Pressure control
CPR - Pressure control (Remote controlled)
CPF - Pressure and flow control
CPFR - Pressure and flow control - X port closed

Rotation
Viewed from shaft end
R – Clockwise
L - Counter clockwise

Seals
N: NBR- (Buna-N) gasket / Shaft seal FPM
F: FPM gasket / Shaft seal FPM

Shaft end
1 - Keyed shaft (DIN 6885) Ø18
2 - Keyed shaft 19-1(SAE) Ø19.05
3 - Splined shaft 19-4 (SAE A-B, 3/4", 11 T)
4 - Splined shaft 16-4 (SAE A, 5/8", 9 T)

Mounting flange
A-ISO (2 bolt)
B-SAE (2 bolt)

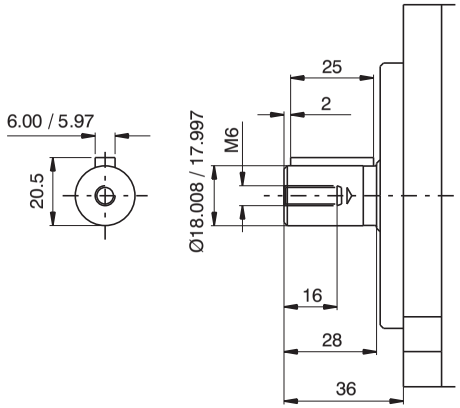
Port connections
M1 - SAE side ported, Metric threads
S1 - SAE side ported, UNC threads
M2 - SAE rear ported, Metric threads
S2 - SAE rear ported, UNC threads

UNIT DIMENSIONS OFJ9V018

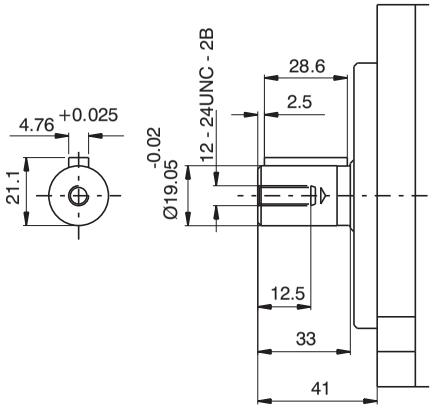
SIDE PORTED (ISO & SAE VERSIONS)

SHAFT END DETAILS :

SHAFT '1' :

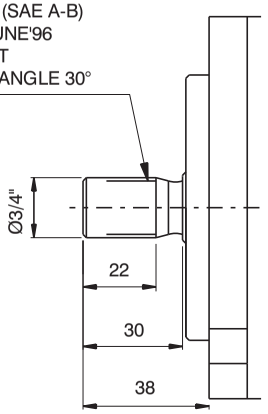


SHAFT '2' :



SHAFT '3' :

SHAFT 19-4 (SAE A-B)
SAE J744 JUNE'96
16/32 DP, 11T
PRESSURE ANGLE 30°



SHAFT '4' :

SHAFT 16-4 (SAE A)
SAE J744 JUNE'96
16/32 DP, 9T
PRESSURE ANGLE 30°

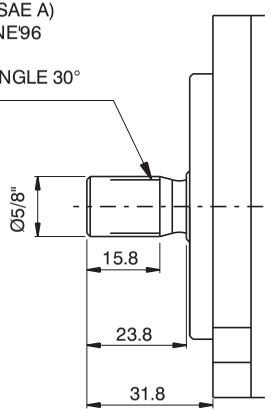


TABLE - 1 : OUTLET PORT

SIZE	OUTLET PORT	
	ISO	SAE
A	Ø20	Ø20
B	47.6	47.6
C	22.2	22.2
D	M10 X 17 depth	3/8 - 16 UNC - 2B 20 depth
PORT CONNECTIONS	SAE 3/4”	SAE 3/4”

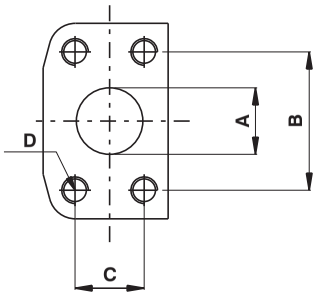


TABLE - 2 : INLET PORT

SIZE	INLET PORT	
	ISO	SAE
A	Ø25	Ø25
B	52.4	52.4
C	26.2	26.2
D	M10 X 17 depth	3/8 - 16 UNC - 2B 20 depth
PORT CONNECTIONS	SAE 1”	SAE 1”

TABLE - 3 : FLANGE DETAILS

VERSION	IDENTIFICATION CODE	SPIGOT DIAMETER	SPIGOT LENGTH	PCD. OF SLOTS
ISO	3019 / 2 2 BOLT FLANGE	Ø80.000 / Ø79.954	7.0	Ø109
SAE	82-2(A) SAE J 744 JUN 96 2 BOLT FLANGE	Ø82.550 / Ø82.496	6.3	Ø106.4

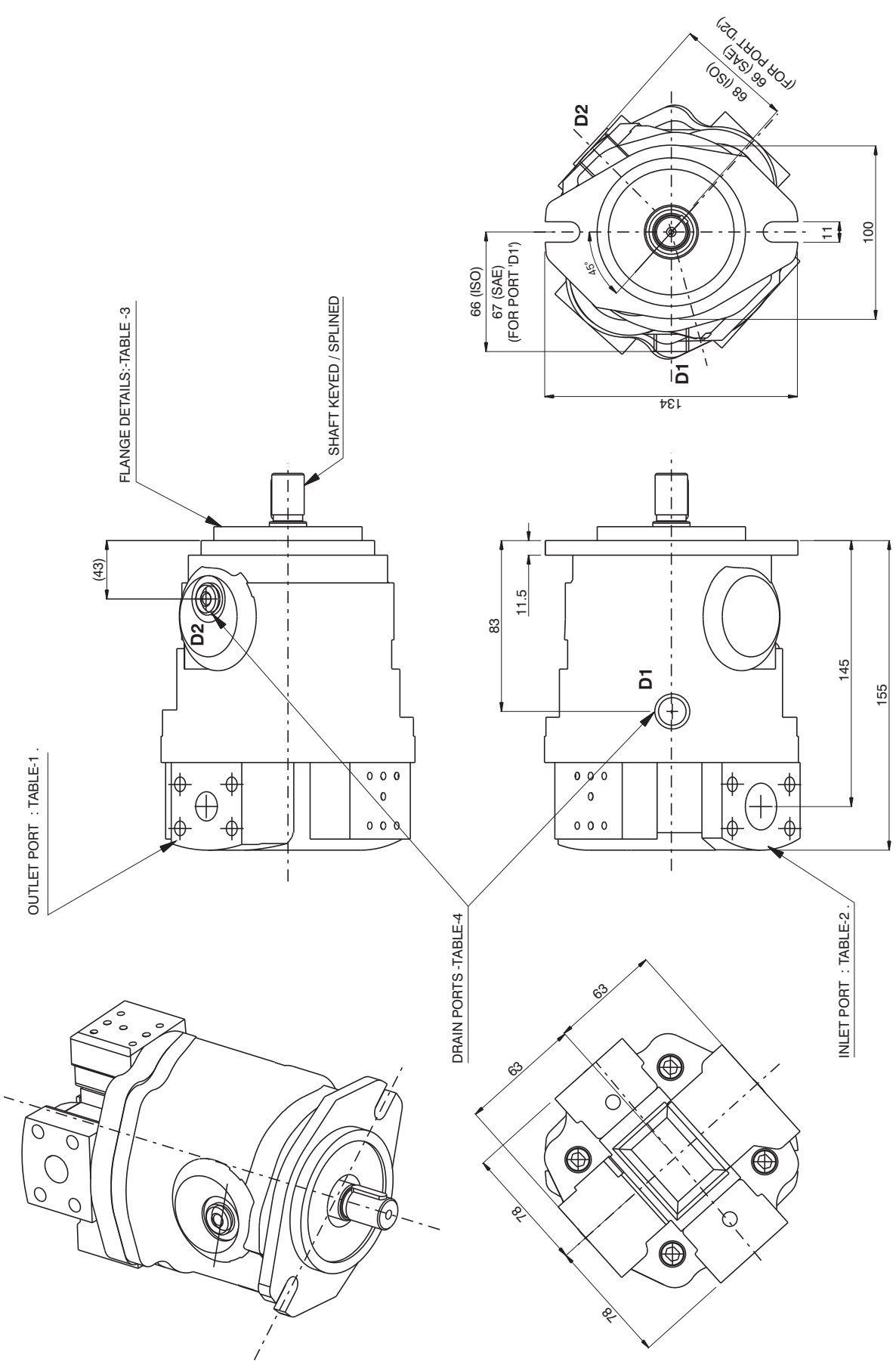
TABLE - 4 : DRAIN PORTS:-

VERSION	D1 CASE DRAIN PORT	D2 CASE DRAIN PORT (PLUGGED AT FACTORY)
ISO	M16 x 1.5	M16 x 1.5
SAE	9/16 - 18 UNF - 2B	9/16 - 18 UNF - 2B

UNIT DIMENSIONS OFJ9V018

SIDE PORTED (ISO & SAE VERSIONS)

(NOT INCLUDING VALVES) :



UNIT DIMENSIONS OFJ9V018

REAR PORTED (ISO & SAE VERSIONS)

SHAFT END DETAILS :

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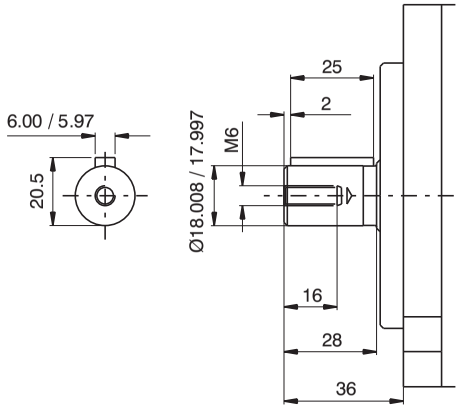
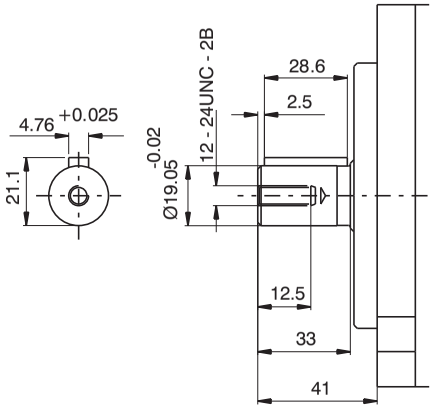


SHAFT '2' :



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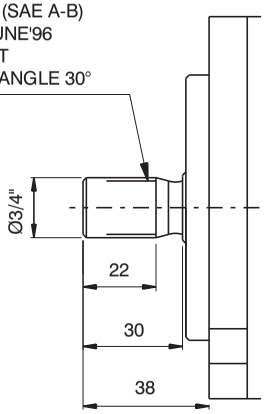
16/32 DP, 11T
PRESSURE ANGLE 30°



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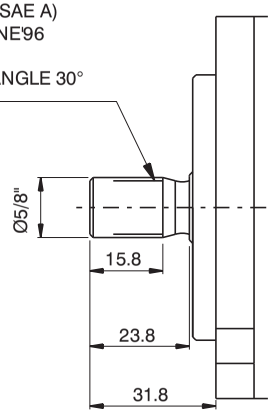

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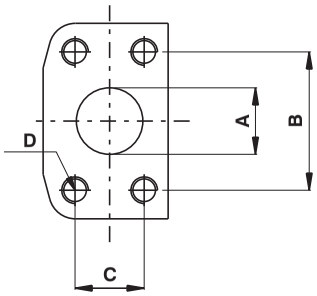

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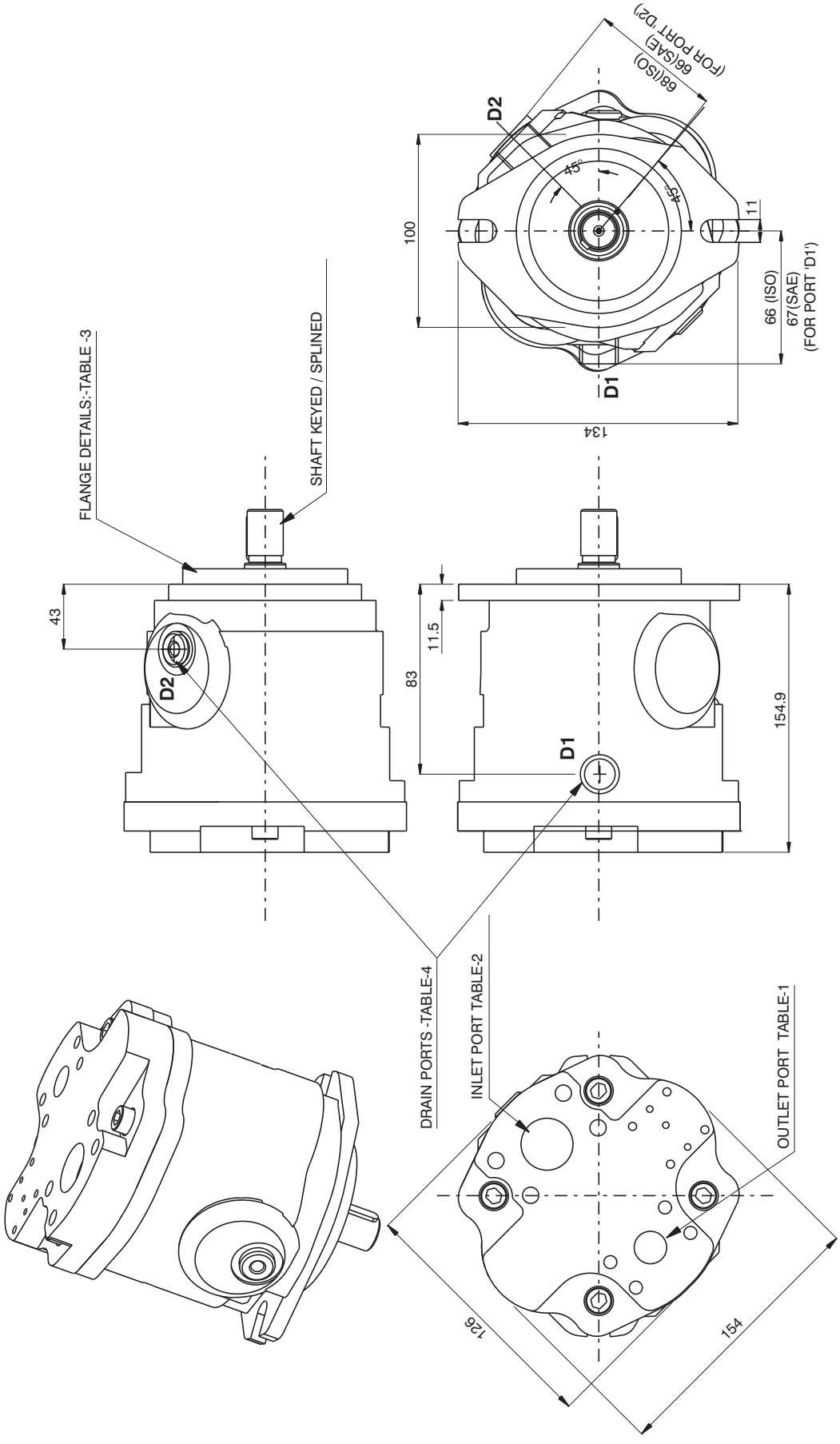
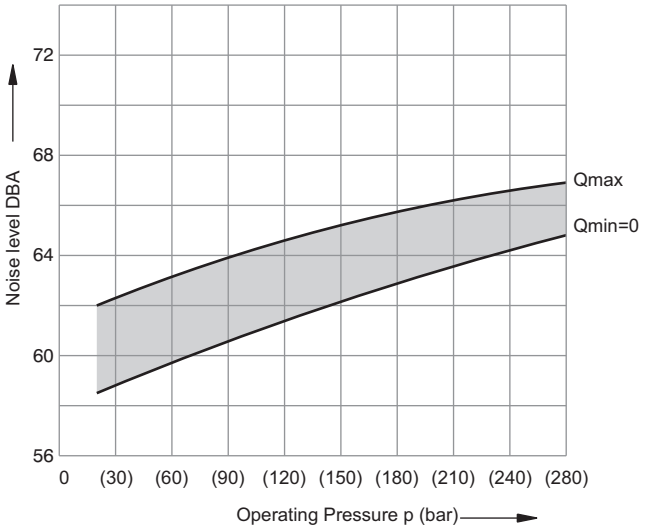
UNIT DIMENSIONS OFJ9V018
REAR PORTED (ISO & SAE VERSIONS)
(NOT INCLUDING VALVES) :



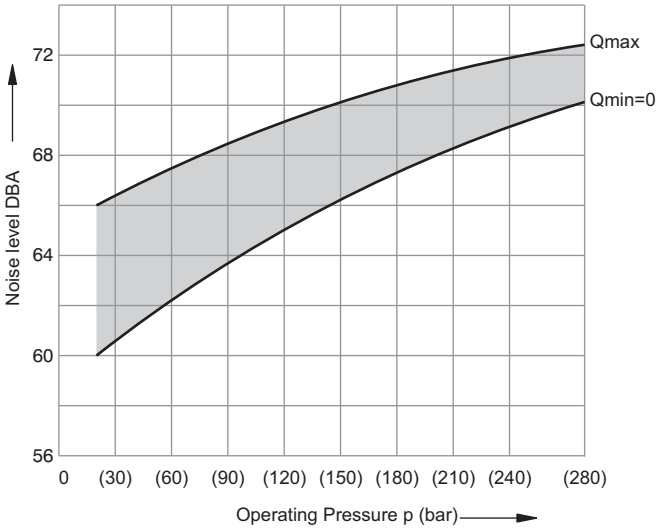
PERFORMANCE CURVES WITH PRESSURE CONTROL CP :

NOISE LEVEL VERSES OPERATING PRESSURE WITH FLUID ISO VG 46 DIN 51519 AT TEMP, t = 50ºC
Measuring error : ± 2dB (A)

AT n = 1500 rpm

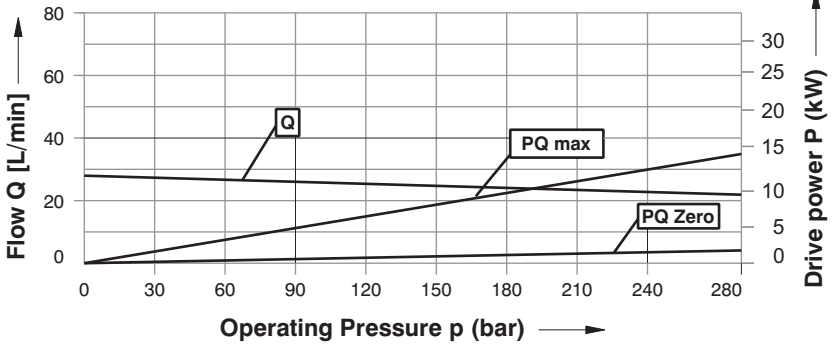


AT n = 3000 rpm

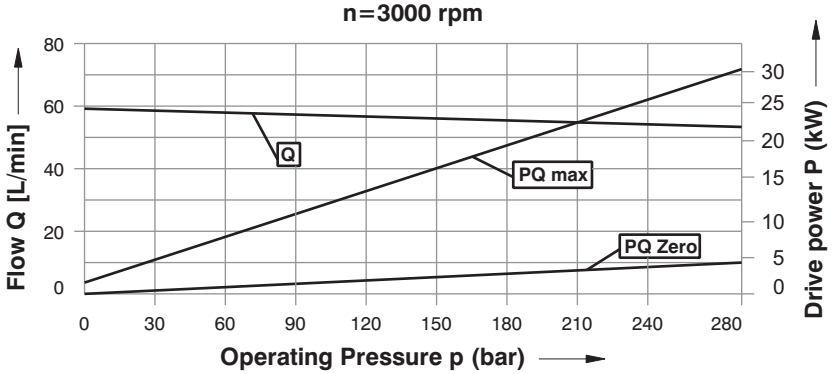


DRIVE POWER AND OUTPUT FLOW WITH HYDRAULIC FLUID ISO VG 46 DIN 51519 AT TEMP, t = 50º C

n=1500 rpm



n=3000 rpm



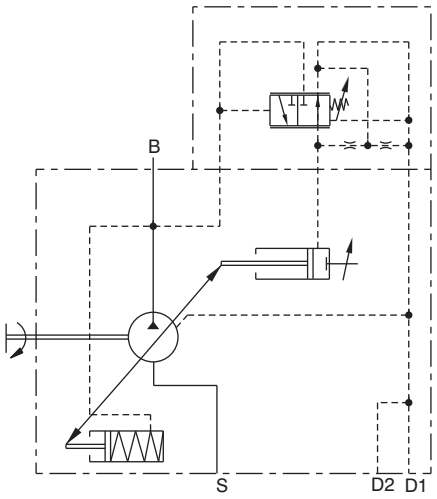
CONTROLS

The J9V018 model piston pump is offered with a variety of control options that are designed for optimum performance of the pump in different types of applications.

CONSTANT PRESSURE CONTROL (CP)

This control maintains the pressure in a hydraulic circuit at a constant set value within the control range during pump operation irrespective of changing flow demands of the load on the pump. The pump supplies only that much volume of oil as required by the load. If the pressure in the circuit tends to raise above the set value, then the pump swash plate angle is proportionally reduced which in turn reduces the flow of oil to the load and thus preventing the pressure raise. In the starting condition when supply pressure is zero the control spring positions the swash plate at its maximum angle allowing the pump to supply the maximum volume of oil to the load in the circuit. As the pressure in circuit raises, the swash plate angle is progressively reduced by the control piston resulting in lesser oil flow to the circuit. It is further possible to restrict the min. and max. angles of the swash plate by adjustable set screws for limiting the pump flow to 50% of it's max. rating. As it is possible to set the pressure control at a pressure higher than the maximum rated pressure of the pump it is recommended that an additional pressure relief valve (set to about 20 bar more than the maximum allowed control pressure) be used in the circuit.

Also to ensure that the pressure control is not set for higher than the permissible value, help of a pressure gauge mounted on the pump outlet side be considered



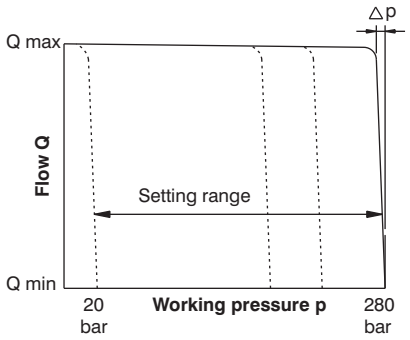
Ports

B	Outlet port
S	Inlet port
D1,D2	Drain ports (D2 Plugged)

Requirement of oil approx. 3 L/min (max)

STATIC CURVE

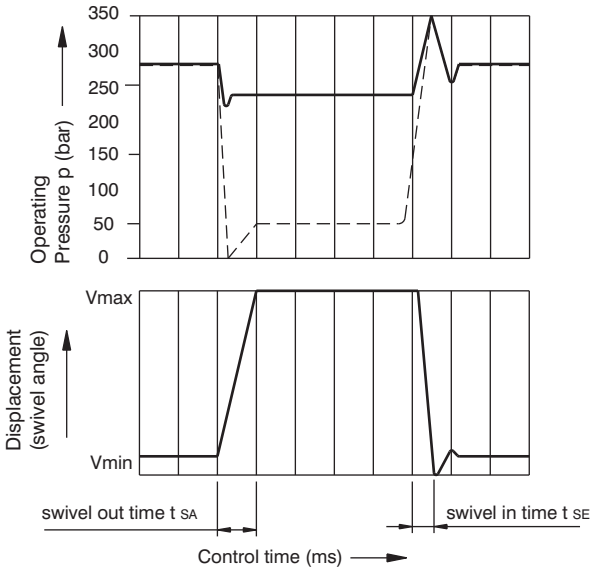
At Speed 1500 rpm and Temperature of oil at 50° C



△ p = 4 bar max

DYNAMIC OPERATING CURVES:

These curves are obtained under conditions with the unit mounted inside the tank. By opening and closing the pressure relief valve load steps can be obtained. At Speed = 1500 rpm and temperature of oil is 50°C the dynamic curves are:



Control time:

t SA at 50 bar (725 psi) is 50 ms

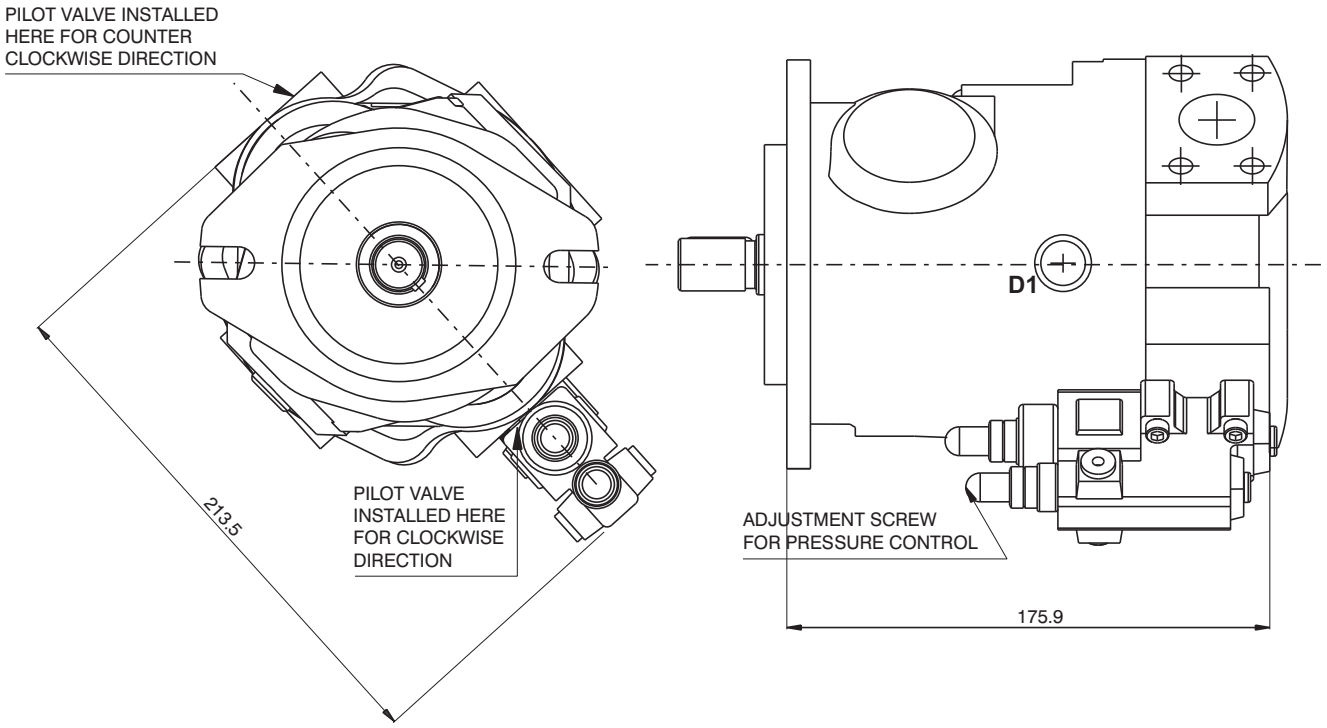
t SA at 220 bar (3200 psi) is 25 ms

t SE at 280 bar (zero stroke) is 20 ms

UNIT DIMENSIONS OF CP :

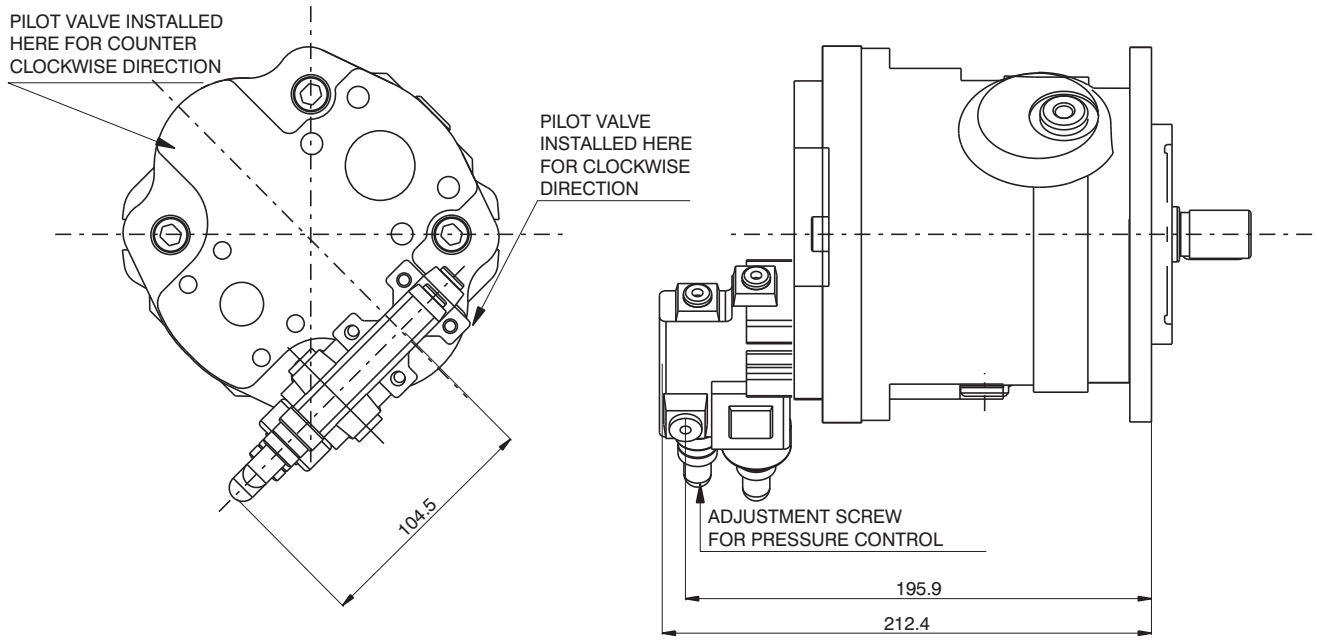
SIDE PORTED :

ISO & SAE VERSIONS :



REAR PORTED :

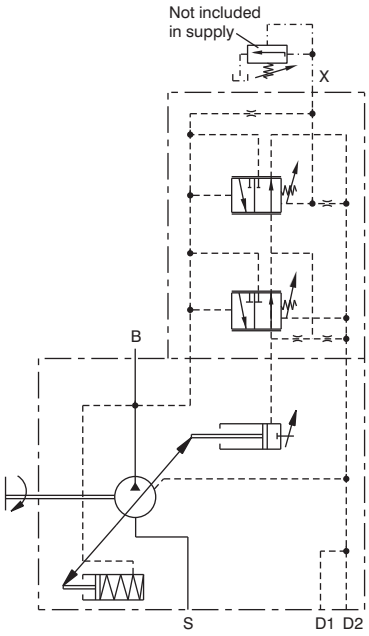
ISO & SAE VERSIONS :



CONTROLS

CONSTANT PRESSURE CONTROL –REMOTELY SET (CPR)

This is same as above Constant Pressure Control except that in this a remotely mounted pressure relief valve is used as shown in the circuit along side for pressure setting of the pump.



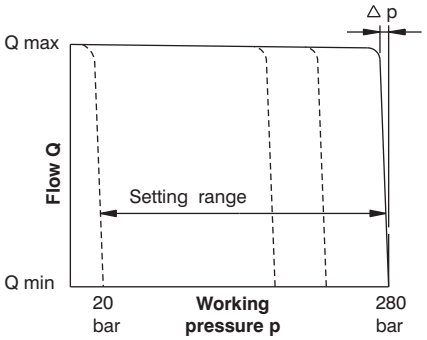
Ports

B	Outlet port
S	Inlet port
D1,D2	Drain ports (D2 Plugged)
X	Pilot port

Requirement of pilot oil approx. 4.5 L/min (max) at 20 bar

STATIC CURVE

At Speed 1500 rpm and Temperature of oil at 50° C

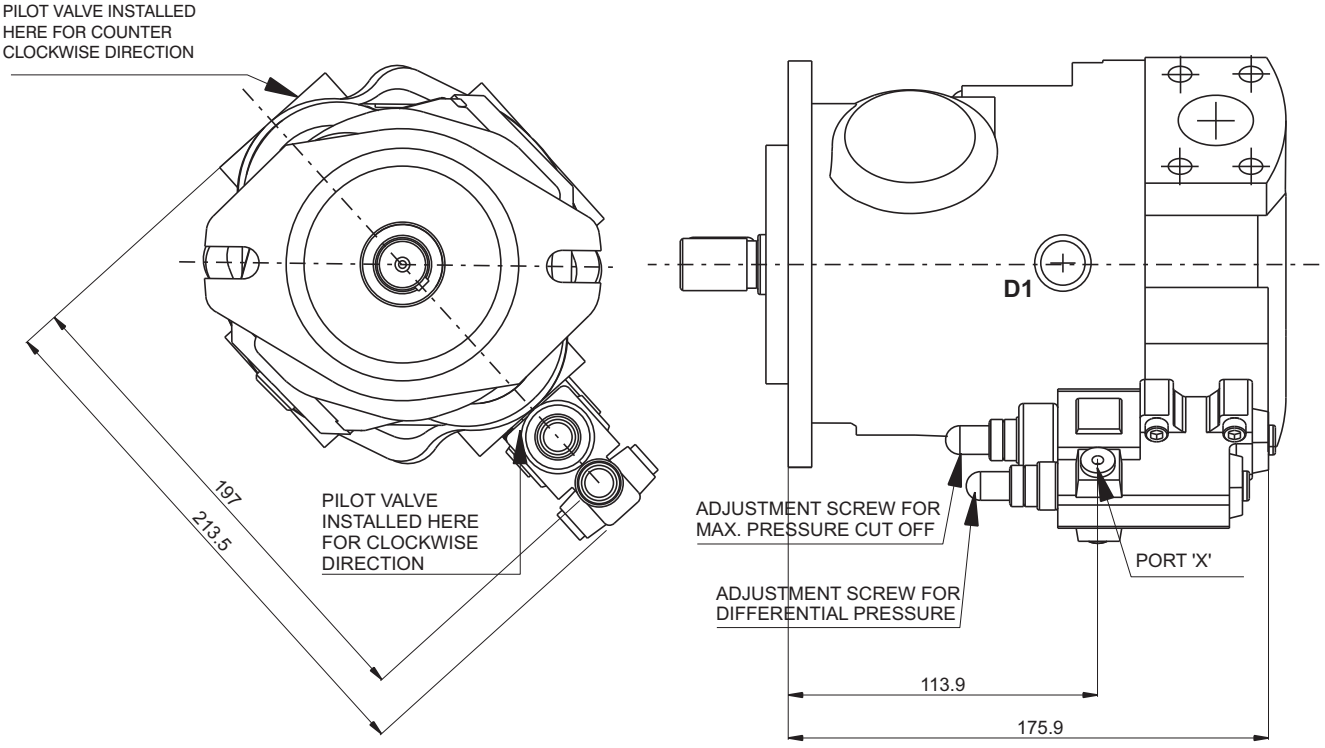


△ p = 4 bar max

UNIT DIMENSIONS OF CPR :

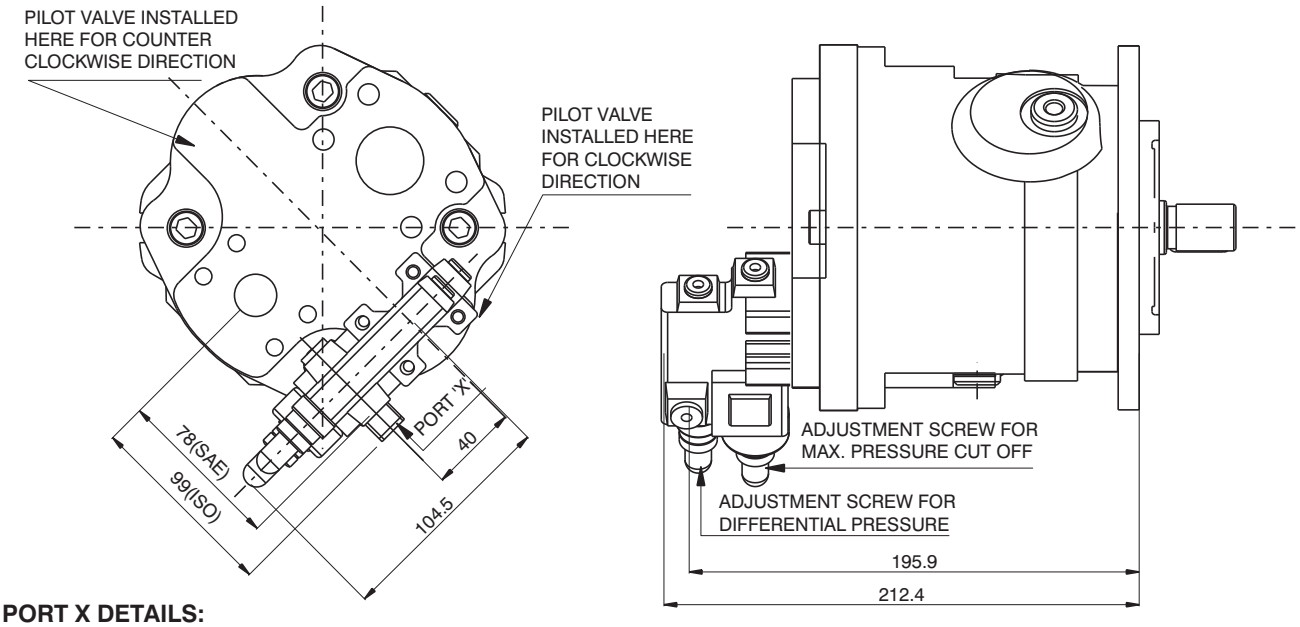
SIDE PORTED :

ISO & SAE VERSIONS :



REAR PORTED :

ISO & SAE VERSIONS :



PORT X DETAILS:

ISO : M14x1.5, 12 DEPTH

SAE : 7/16 -20 UNF – 2B, 10 DEPTH

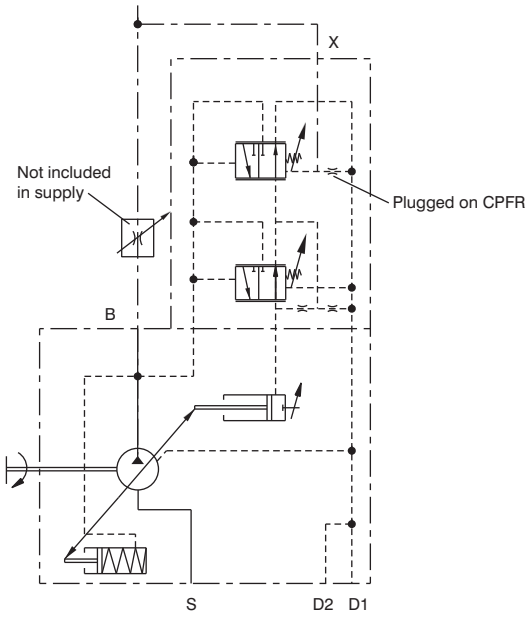
PRESSURE & FLOW CONTROL (CPF / CPFR)

PRESSURE & FLOW CONTROL (CPF) – LOAD SENSING :

In addition to the constant pressure control this also maintains constant flow to the load. The pump flow is determined by an external orifice (not part of pump control block) fitted in the circuit between the pump and the load as long as the load pressure is less than the set pressure. The differential pressure at the external orifice is used to regulate the pump displacement to match the load requirement .The pressure drop across the orifice is maintained constant and there by achieving constant flow to the load. If the differential pressure across the orifice tends to increase then the swash plate is swivelled to minimum angle reducing the pump flow and if the pressure differential is reducing then the swash plate is swivelled to the maximum angle increasing the pump flow to load. These corrections go on continuously until a balance is restored in at the flow control orifice. A bleed down orifice is provided at the control valve to vent the trapped pressure in the load sense line.

PRESSURE & FLOW CONTROL - X PORT CLOSED (CPFR)

This is same as above valve (CPF) except that it has no bleed orifice connecting the load sense line to tank



PORTS:

B : Outlet port

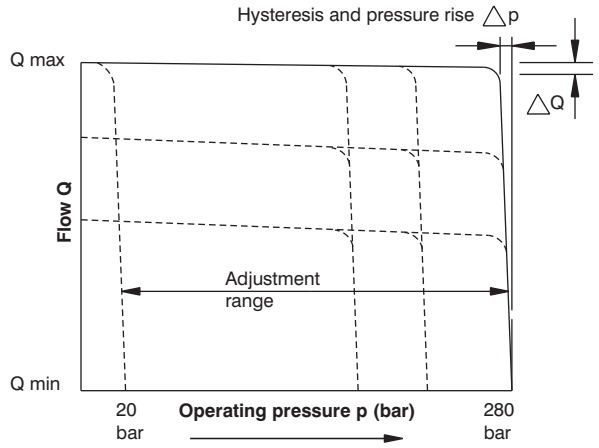
S: Inlet port

D1,D2 : Drain ports (D2 plugged)

X : Pilot port

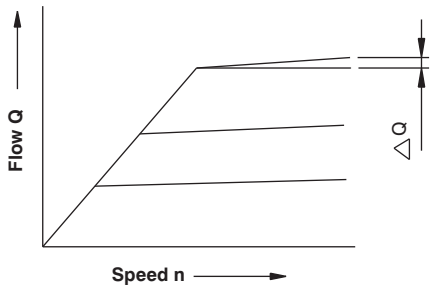
STATIC CURVE

At Speed 1500 rpm and Temperature of oil at 50° C



STATIC CURVE

At different Speeds



p = 5 bar max.

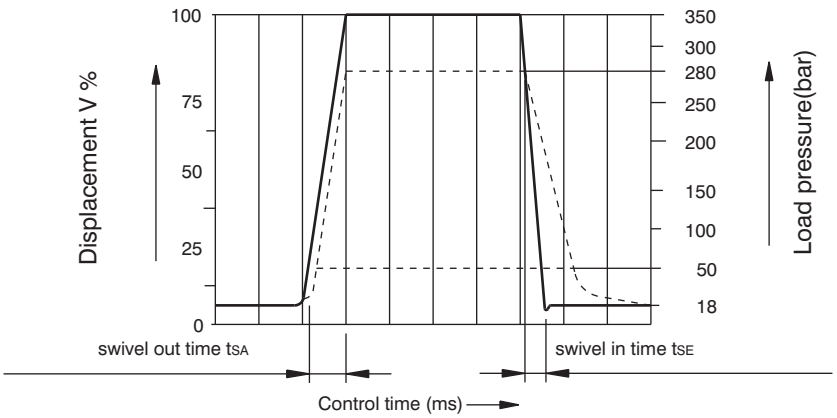
Max. flow deviation, Q max is 0.9 L/min

Requirement of pilot oil for CPF ~ 4.5 L/min. (max)

Requirement of pilot oil for CPFR ~3 L/min. (max)

DYNAMIC OPERATING CURVE:

This curve is obtained under conditions with the unit mounted inside the tank.



Control time:

t SA at 280 bar (4000 psi) is 40 ms

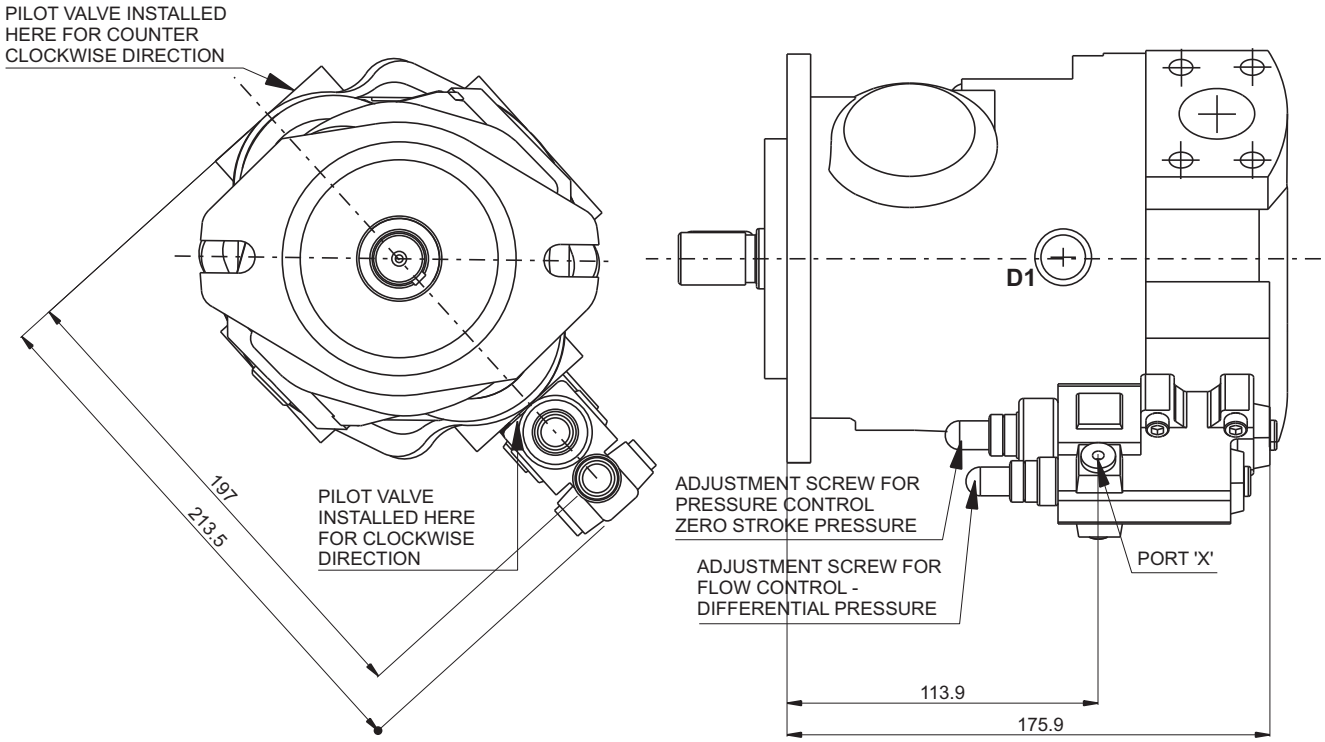
t SE at 280 bar stand by (4000 psi stand by) is 15 ms

t SE at 50 bar stand by (725 psi stand by) is 40 ms

UNIT DIMENSIONS OF CPF / CPFR :

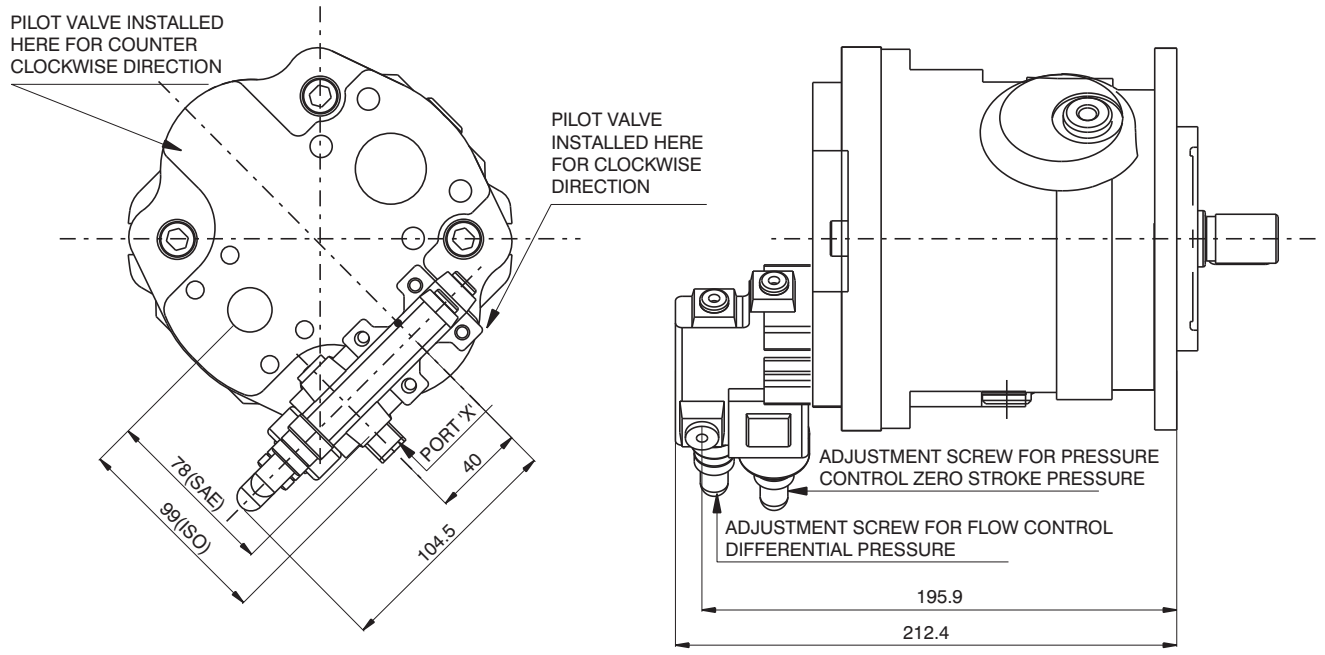
SIDE PORTED :

ISO & SAE VERSIONS :



REAR PORTED :

ISO & SAE VERSIONS :



PORT 'X' DETAILS:-

ISO : M14x1.5 ; 12 DEPTH

SAE : 7/16 -20 UNF - 2B ; 10 DEPTH