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Vane pumps

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HYDRAULIC VANE PUMPS

Versión Corel 1.0: 01-06-06

BH*, V* & DT6 HYDRAULIC VANE PUMPS

INTRODUCTION

TDZ vane pumps are manufactured in a wide range of displacements, from 2 cc/r to 269 cc/rev. for single pumps, 460 cc/rev. for double pumps and 560 cc/rev. for triple pumps.

All **TDZ** pumps have a low power to weight ratio, high efficiency, low noise levels, optional inlet and outlet port positions and ease of maintenance.

Ease of maintenance is achieved by the pump design, where the working components are contained within a cartridge which can quickly and easily be replaced without disconnecting the pump from the prime mover or moving it away from the pipe work. **TDZ** vane pumps are hydraulically balanced, reducing wear and eliminating bearing loads from within the pump.

The option to rotate the outlet port 90 degrees in relation to the inlet port provides flexibility and easy installation.

Depending on the application, there are three versions of the larger single, double and triple vane pumps: low noise industrial models VS and BHS, mobile models VQ and BHQ and multi-purpose models DT6 (275 bar).

Models VS, VQ and DT6 have UNC threads for the port flanges whilst models BHS, BHQ have metric threads. On single pumps the outlet port is at the shaft end for models VS, VQ, DT6 on models BHS and BHQ the outlet port is at the cover end.

V* & BH* HYDRAULIC VANE PUMPS

INTRODUCTION

PUMP DRIVE
Direct coaxial drive is recommended via flexible coupling. For indirect drives imposing a radial load on the shaft, consult **TDZ HYDRAULICS S.A.** or your nearest distributor for advice.

ROTATION
The direction of rotation can be reversed by turning the ring, rotor and vanes through 180 degrees.
Direction of rotation is viewed from the shaft end.

STARTING
TDZ vane pumps are self priming, however, if possible, fill the pump with oil before starting or bleed the outlet port while the pump is running to remove any trapped air.

FILTRATION
For satisfactory service life, full flow filtration to provide fluid cleanliness conforming to ISO code 18/15 or better is recommended.

HYDRAULIC FLUIDS
Use antiwear industrial hydraulic oils with a viscosity of 25-49 cST. Automotive crankcase oils SAE10-SAE20 may also be used depending on the operating temperature.

The optimum operating temperature is 50 °C with a maximum of 70 °C. At higher temperatures service life is decreased with degradation of the wearing parts and seals.

For fire resistance fluids, the "F3" version with special seals must be used at reduced pressures and speeds as indicated below.

MAXIMUM SPEED RANGES
With antiwear fluids: 1800 to 2500 rpm (depending on model type. See performance chart).

With synthetic fluids, water glycols and water in oil emulsions, the maximum recommended speed is 1200 rpm. A special version of the BHP2 pump is available for speeds up to 5000 rpm

Speeds shown are given as a guide only based on the correct fluid and correct suction characteristics as recommended by our Technical Services department.

Long or restricted suction lines can cause cavitation, therefore the maximum running speed must be reduced. Avoid using 90 degree elbows in suction lines, use swept bends where possible. Too viscous fluids will also cause cavitation.

When using lower displacement pumps within a given pump frame size, speeds slightly higher than those shown in the charts are acceptable.

For antiwear hydraulic fluids and water glycols, the inlet pressure must not exceed 0.2 bar vacuum, for synthetic fluids and water in oil emulsions, the inlet pressure must not exceed 0.1 bar vacuum.

MINIMUM SPEED: 600 rpm

This data is for V*20, V*25,V* 35,V* 45, BH*4,BH* 6, BH*7, double and triple pumps. For other pumps see chart.

The intermittent pressures shown in the table can be maintained for 10% of the time, with a maximum duration of 6 seconds/minute.

V* & BH* HYDRAULIC VANE PUMPS

INTRODUCTION

MAXIMUM CONSTANT PRESSURE

Anti-wear Hydraulic Oil: **from 175 to 210 Bar**
Synthetic Oil: **from 175 to 210 Bar**
Water-Glycol emulsions: **160 Bar**
Water-in-oil emulsions: **70 Bar**

SOUND LEVEL

Single Pumps: :
VS25 and BHS4: 62 dB (A)
VS35 and BHS6: 65 dB (A)
VS45 and BHS7: 71 dB (A)

Double Pumps:
VS43: 68 dB (A)
VS63: 69 dB (A)
VS73: 71 dB (A)
VS64: 69 dB (A)
VS74: 71 dB (A)
VS76: 72 dB (A)

Sound levels measured with hydraulic oil at 140 Bar, 1500 rpm and a vacuum at pump inlet of 0,17 Bar.

ADMISSIBLE TORQUES FOR THE SHAFTS

All the shafts available for our single pumps and motors are sufficient for working at the maximum pressure specified for each model.

However, in the case of double pumps and thru drive pumps, if both cartridges/pumps work simultaneously under pressure, the sum of the torques absorbed for each of them may exceed the resistance of the shaft.

In practice, the absorbed torque for each cartridge/pump may be calculated with the formula:

$$T = \frac{P \times V}{59}$$

Where: T = Torque in Nm.
P = Working pressure in Bars.
V = Cubage in cm3/rev. or flow in lts/min at 1,000 R.P.M.

In order to choose the most appropriate type of shaft, calculate said torque sum under the most unfavourable working conditions and compare them with the torque values admitted for each shaft as indicated in table 1.

Analogically, in the thru drive pumps, the absorbed torque for the second pump will be calculated under the most unfavourable conditions, and it must be checked that it does not exceed the torque values admissible as indicated in table 2 for each connection.

Table 1

Pump Type	Shaft nº	Max.Torque Nm
V*42 V*43 V*4T	1 11 86	313 313 392
V*63 V*64 V*6T	1 11 86	392 568 588
V*73 V*74 V*76 V*7T	1 11 86	588 803 803

Table 2

Rear Flange (Conection)	Max. Torque Nm
A	130
B	315
C	440 (V*6TC) 700 (V*7TC)

DT6 HYDRAULIC VANE PUMPS

INTRODUCTION

DT series vane pumps are fixed displacement and high efficiency pumps. Designed under SAE J744c 2 bolt standards, (excluding T6EDC triple pumps), the complete range includes single, double and triple units with wide possibilities of flow combinations, porting configurations, possibilities of use of fluids other than petroleum-based oil and a vast number of different shafts.

The **DT series** is a hydraulically-balanced design. Quality and composition of materials have been checked and tested over millions of cycles on our experimental test benches. This fact, together with a rigid bearing and a high resistance to particle contamination thanks to the double lip vane, makes DT series pumps long -life hydraulic units.

Within 3 different cartridge kit sizes, flows available range from 3 to 31 GPM in C size, 14 to 61 GPM in D size and 42 to 85 GPM in D size. As in our earlier BH* and V* vane pump series, cartridge kit design allows easy service when replacement or conversion is needed, reducing the operation to just a few minutes. Cartridge kit design also offer possibilities of quick change of rotation by changing the position of cam ring .

Four different combinations of porting positions are possible in single pumps. In double pumps 32 combinations are possible and 128 for triple pumps.

The high pressure capability of 275 bar in the **DT6 series** reduces installation costs and provides long life at reduced pressure. The high mechanical and volumetric efficiency reduces heat generation and energy consumption. Lower noise levels than most of hydraulic pump designs suppose an advantage and safety for machine operators.

TDZ Hydraulics DT series vane pumps are unidirectional but they have been designed for an easy change of rotation. Instructions for change of rotation are included in this catalogue (Instructions for Use and Repair).

RECOMMENDED FLUIDS

Operating characteristics showed in this catalogue have been calculated considering the use of Antiwear petroleum base fluids.

Non Antiwear Petroleum Base Fluids, Synthetic Fluids, Water In Oil Emulsions or Water Glycols are also acceptable. In these cases, speed and pressure limits will be supplied directly by **TDZ** Hydraulics or your nearest distributor.

VISCOSITY

Optimum viscosity for maximum life is between 30 and 40 cSt.
Maximum viscosity is 2000 cSt at very low speed and pressure and 110 cSt at full speed and pressure.
Minimum viscosity is 10 cSt, (18 cSt for fluids other than Antiwear Petroleum Base fluids).

FLUID CONTAMINATION AND FILTRATION

Fluid must be clean during the entire working life of the pump in order to maintain a contamination level of ISO 18/14 or even better, if possible.

Filters with 25 microns are adequate but will not guarantee total cleanliness levels. Suction strainers should be of an adequate size to provide the recommended inlet pressure. For cold starts or fire-resistant fluids, oversize strainers must be used or omitted.

Higher levels of water than 0.10% in mineral oils or 0.05% in synthetic or biodegradable fluids are not acceptable. In these cases, water should be drained off the circuit.

FLUID TEMPERATURES

Fluid viscosity should be selected depending on the normal operating temperature of the unit. Cold starts pump should operate at low pressure and, if possible, low speeds until the fluid warms up to a convenient viscosity for full power application.

MINIMUM AND MAXIMUM SPEED

Minimum: 400 rpm.
Maximum: 2800 rpm in C series, 2500 rpm in D series and 2200 in E series.

Higher flows of C and D sizes also involves speed limitations, as indicated in the technical chart of this catalogue. Fluids other than Antiwear Petroleum Base fluids will also involve a speed limit, depending on the choice, (consult **TDZ** or your nearest distributor).

DT6 HYDRAULIC VANE PUMPS

INTRODUCTION

PRESSURE RATINGS

Maximum pressure in **DT6 vane pumps** is 275 bar intermittent for C series and 240 bar for D and E series. Nevertheless, exceptions are indicated in this catalogue when fluids other than Antiwear Petroleum Base are used or in the case of use of high flows of C and D pump sizes.

Both continuous and intermittent pressures are indicated in this catalogue. The maximum period of intermittent pressure may be considered acceptable when the average pressure time is less than or equal to the continuous recommended pressure, for that particular model during a complete cycle of work.

MINIMUM INLET PRESSURE

Minimum allowable inlet pressure is 0.95 bar for 1,800 rpm or less, 1.10 bar between 1,800 and 2,300 rpm and 1.30 bar when the speed is more than 2,300 rpm.

Multiply the above-mentioned values by 1.40 when fluids other than Antiwear Petroleum base fluids are used.

The difference between inlet pressure and atmospheric pressure should not exceed 0.2 bar to prevent aeration. Inlet Pressure is considered with petroleum base fluids at viscosities of between 10 and 65 cSt.

SINGLE VANE PUMPS

BH*, V* and DT6 single vane pumps

BH* SINGLE VANE PUMP ORDERING CODE

F3	BHQ	4	67	D	1	A	00
1	2	3	4	5	6	7	8

1 - "F3" means special seals for fire-resistant fluids. Omit if not required.

2 - Pump Type:

BHP = 10 vane pump, industrial and mobile use, BSP, NPT & SAE threads.
BHS = 12 vane pump, industrial use (very quiet), metric threads.
BHQ = 10 vane pump and bronze plates, mobile use, metric threads.

3 - Pump model: 1, 2 and 3 in BHP types; 4, 6 and 7 in BHS and BHQ types.

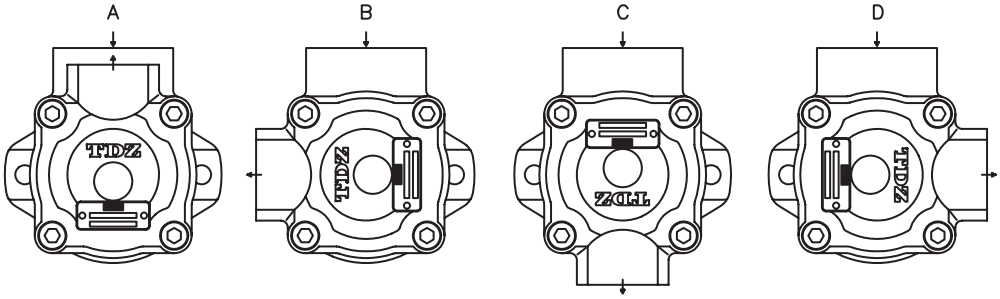
4 - Flow: BHP, BHS and BHQ in Litres per minute at 1000 rpm and 7 Bar.

5 - D = Right-hand direction of rotation (Clockwise).
Y = Left-hand direction of rotation.
(To check the direction of rotation view from the shaft end).

6 - Shaft type: See on each pump model.

7 - Oulet position, (viewed from shaft):
A: Outlet in line with inlet.
B: 90° on the right from inlet (Clockwise from inlet).
C: 180° from inlet.
D: 90° on the left from inlet (90° counterclockwise from inlet).

8- Special characteristics
Omit if not required.
Example: 02 : BSP
03 : UNF
04 : NPT



BH* SINGLE VANE PUMP CHARACTERISTICS

TDZ DESIGN VANE PUMPS

TYPE	FLOW			SPEED (rpm)		PRESSURE (Bar)		Nominal Power (3)	CONNECTION		WEIGHT (Kgs.)
	Lts.at 1000 rpm	Gal. At 1200 rpm	Reduction (2)	Mín.	Máx.	Contin.	Intermit.		Inlet	Outlet	
BHP1	2 3 4,5 5,5 6,5	0,6 0,9 1,2 1,7 2	0,18 0,18 0,36 0,36 0,36	600	2500	150	175	0,5 0,7 1 1,4 1,6	(4)	(4)	1
BHP2 *(1)*	7 8 10 12 15	2,2 2,5 3,2 3,8 4,7	0,7 1,1 1,1 1,1 1,1	600	2500	150	175	1,8 2 2,5 3 3,7	(4)	(4)	3,6
BHP3	6 16 18 25 27 35 38 44 50	2 5 6 8 9 11 12 14 16	0,9 1,7 2,8 4,5 4,8 4,8 5,4 6,6 7,8	600	2500 2000 1500	150 100	175 125	1,9 4,3 5,3 6,9 7,6 8,8 10,2 11,9 13,6	(4)	(4)	7,1
BHS4 **BHQ4**	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27*	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	600	2500 1800 (BHS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 14,6 16,8 20,3 22,4	Ø38	Ø26	14,5
BHS6 **BHQ6**	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	600	2400 1800 (BHS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	Ø60	Ø32	26,3
BHS7 **BHQ7**	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	600	2200 1800 (BHS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	Ø75	Ø38	38,3

*** 27 gallons (88 lts.) cartridge not mounted in BHQ4 vane pump model.**

(1) There is a version of this pump with built-in flow regulating and pressure limiter valves, ref. B2V. If a built-in tank with filter is required, the ref. Is **B2VC** (1.5 ltrs. tank) or **B2VA** (1 litre tank).

(2) Delivery flow reduction in Ltrs./min. at 100 Bar. 22 cST of oil viscosity at operating temperature. To calculate the approximate delivery flow at a given pressure and speed, use the following formula with flow reduction and theoretical flow values shown in the chart. Flow reduction values are independent of shaft speed.

$$\text{Approx. output flow (Ltrs./min.)} = \text{Theoretical flow} \times \frac{\text{R.P.M}}{1000} - \text{Reduction} \times \frac{\text{Pressure (Bar)}}{1000}$$

(3) Nominal power in H.P. at 100 Bar and 1000 RPM (to convert into Kw multiply by 0.735).
To obtain the real input power at different pressure and revolutions, use the formula as follows:

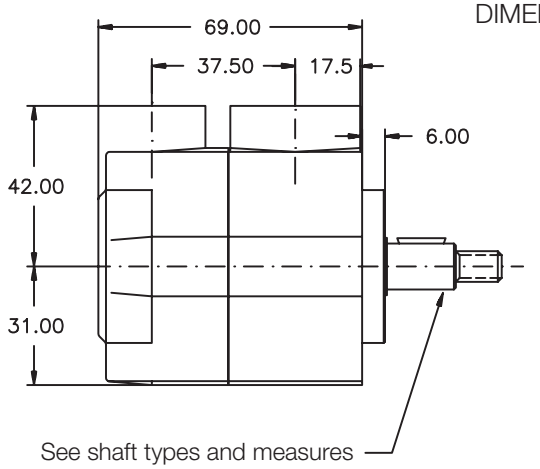
$$\text{Real input power} = \text{Input power} \times \frac{\text{R.P.M}}{1000} \times \frac{\text{Pressure (Bar)}}{1000}$$

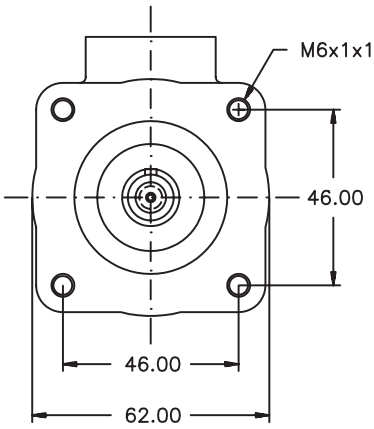
(4) See options on dimension pages.

SINGLE VANE PUMP TYPE BHP-1

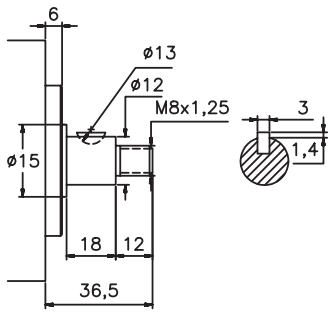
FLOW						SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts at 1000 rpm	2	3	4,5	5,5	6,5	Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal at 1200 rpm	0,6	0,9	1,2	1,7	2	600	2500	175	210	Ø38	Ø26	14,5

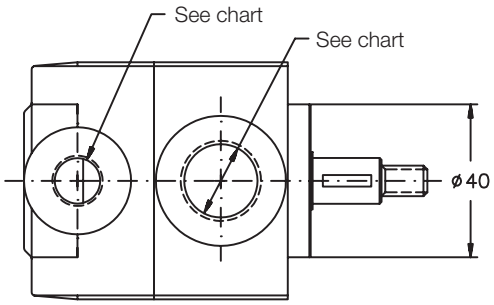
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



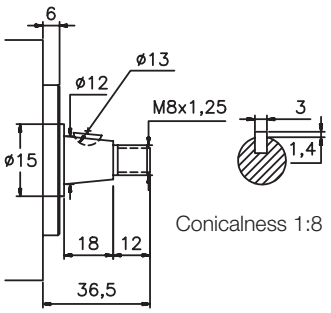


Nº1 Shaft





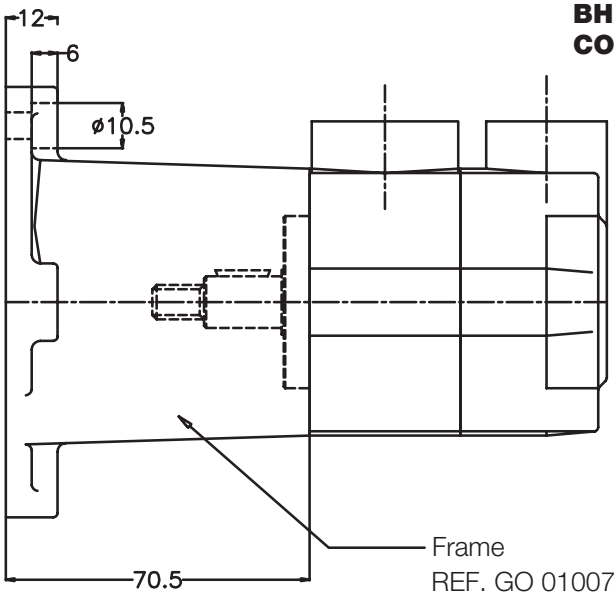
Nº2 Shaft

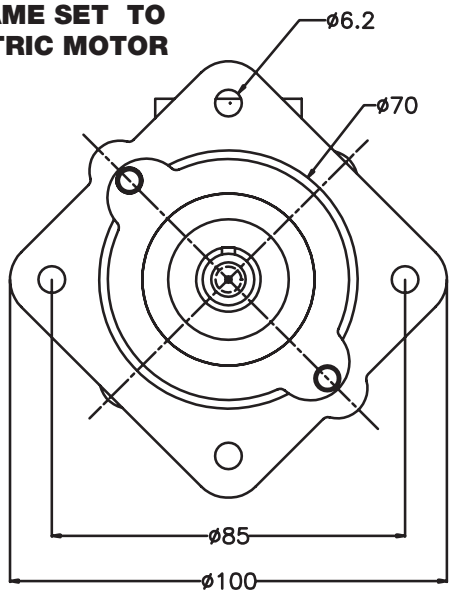


Conicalness 1:8

Num.	Inlet	Outlet
01	1/2" BSP	1/4" BSP
02	3/8" BSP	1/4" BSP

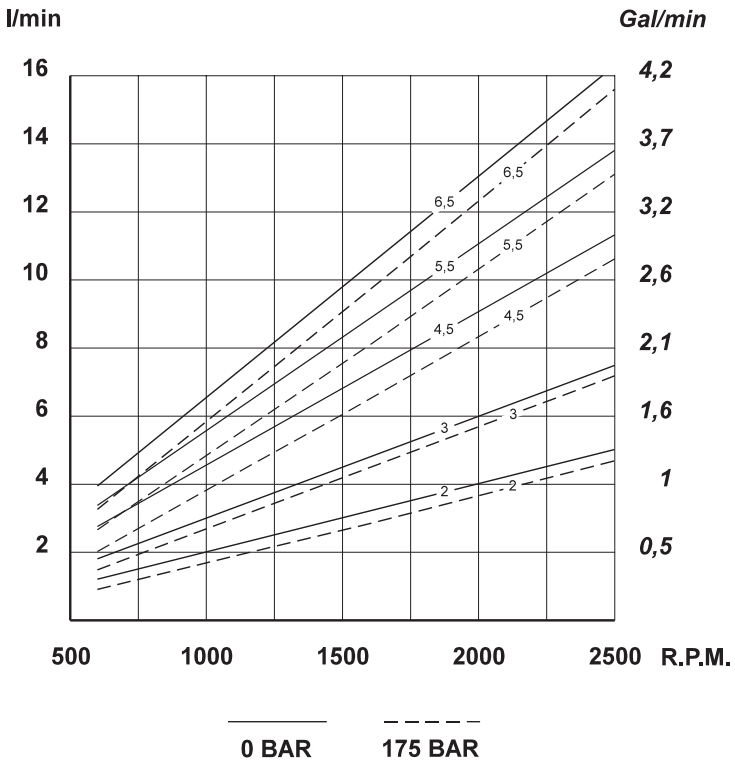
BHP1 PUMP AND FRAME SET TO CONNECT TO ELECTRIC MOTOR



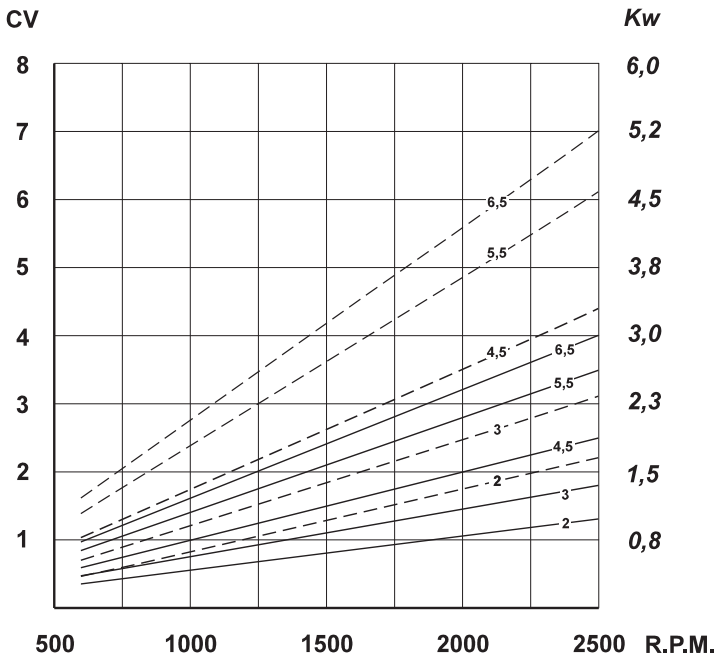


SINGLE VANE PUMP TYPE BHP-1

FLOW AND INPUT POWER DIAGRAMS



0 BAR 175 BAR



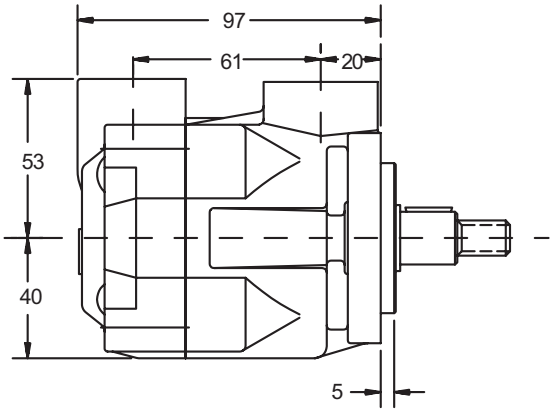
100 BAR 175 BAR

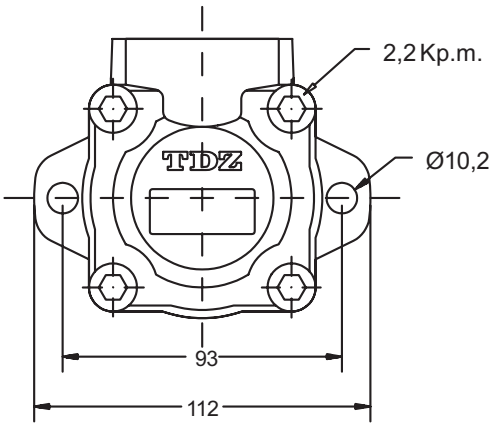
SINGLE VANE PUMP TYPE BHP-2

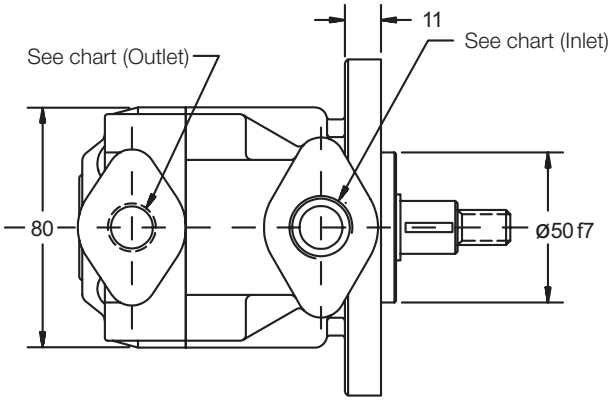
FLOW						SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts at 1000 rpm	7	8	10	12	15	Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal at 1200 rpm	2,2	2,5	3,2	3,8	4,7	600	2500*	150	175	3/4" BSP	1/2" BSP	3,6

* For further details see general chart

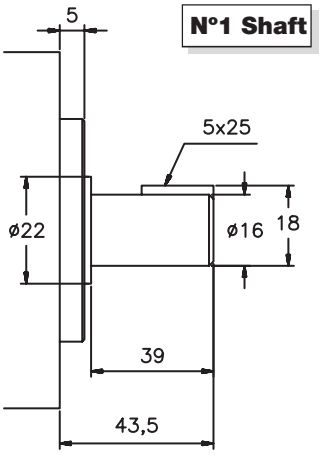
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres

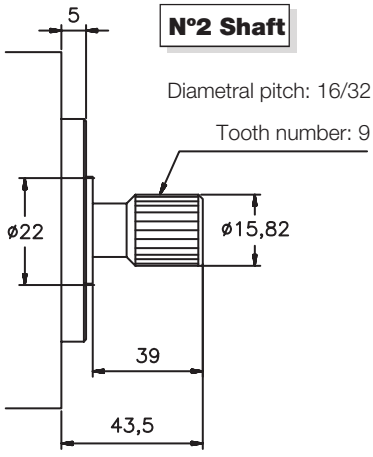


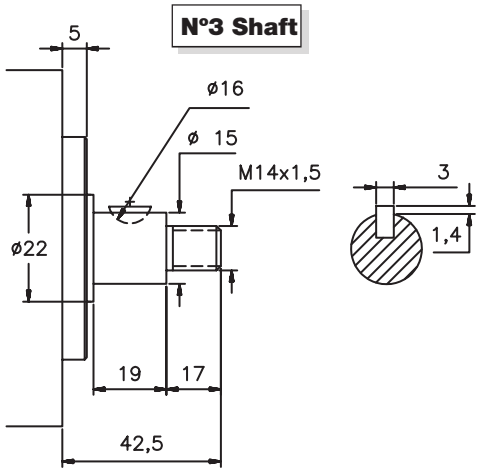




Num.	Inlet	Outlet
02	3/4" BSP	1/2" BSP



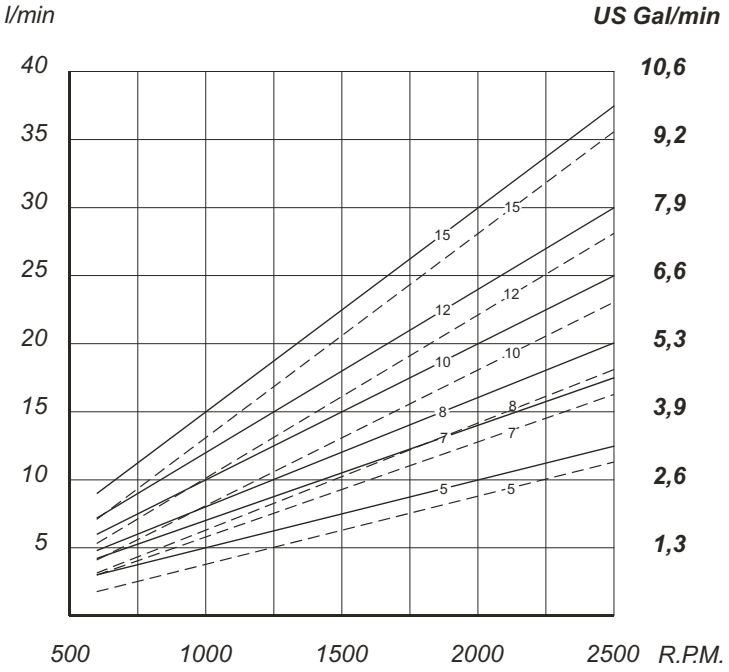


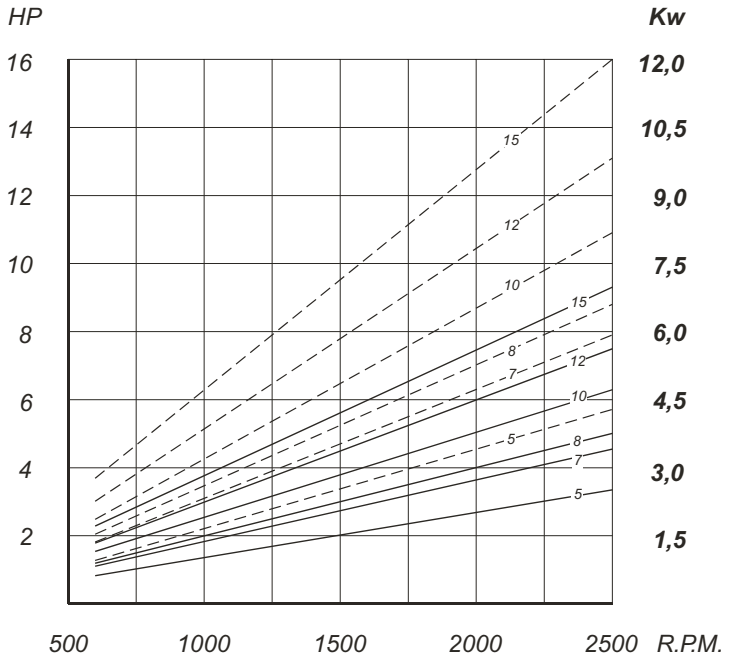


Enquire about other types of shafts

SINGLE VANE PUMP TYPE BHP-2

FLOW AND INPUT POWER DIAGRAMS





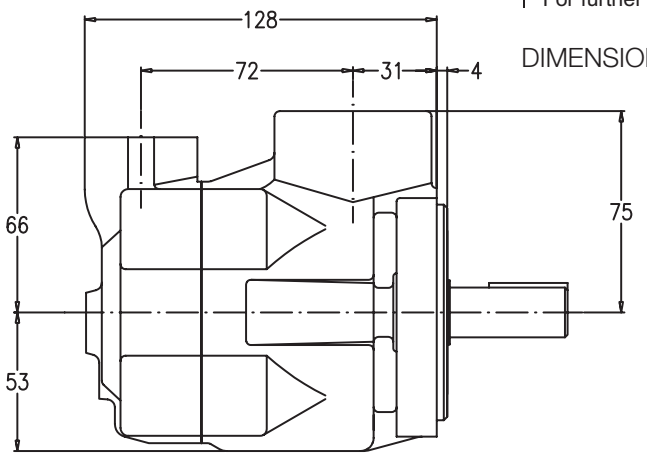
SINGLE VANE PUMP TYPE BHP-3

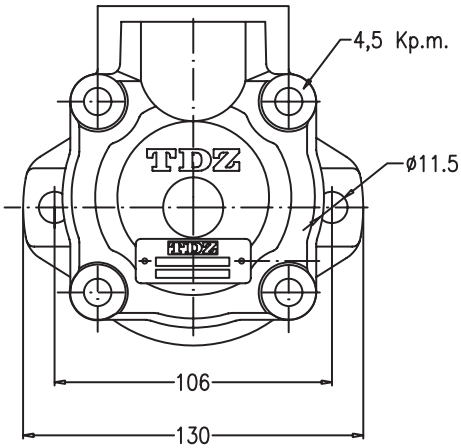
FLOW										SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT (Kgs.)
Lts at 1000 rpm	6	16	18	25	27	35	38	44	50	Min.	Max.	Contin.	Intermit.	Inlet	Outlet	
Gal at 1200 rpm	2	5	6	8	9	11	12	14	16	600	2500*	150	175	1" BSP	3/4" BSP	7,1

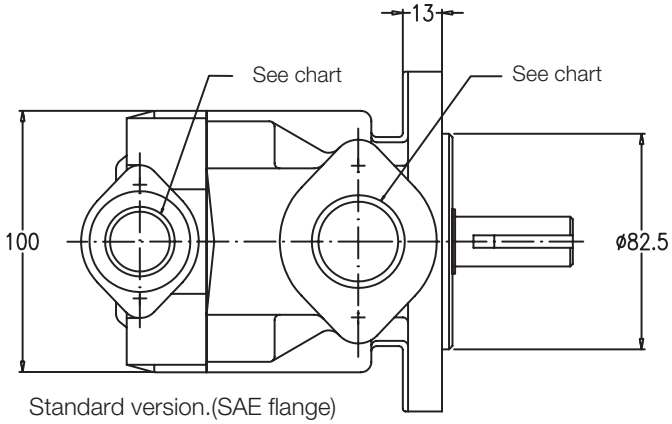
* For further details see general chart

See chart below for additional connections

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres

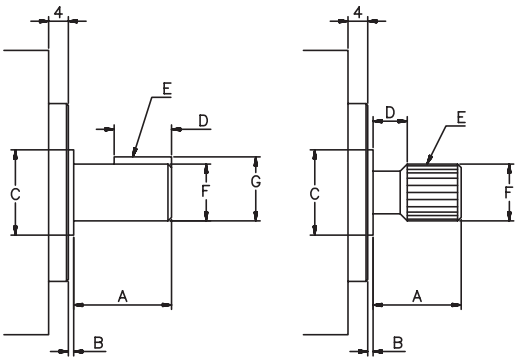


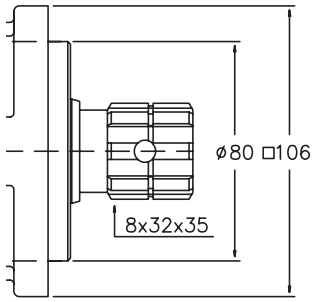




Standard version.(SAE flange)

Num.	Inlet	Outlet
01	1" BSP	3/4" BSP
02	1" 1/4 BSP	3/4" BSP
03	1" 5/8 UNF	1" 1/16 UNF
04	1" 1/4 NPT	3/4" NPT





Version for direct mounting in Power Take-Off (ISO flange)

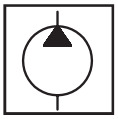
	Parallel shaft Nº 1	Nº 6
A	45	62.5
B	2	1
C	Ø25	Ø25
D	30	41
E	5	4,75
F	Ø19	Ø19
G	21,1	21,1

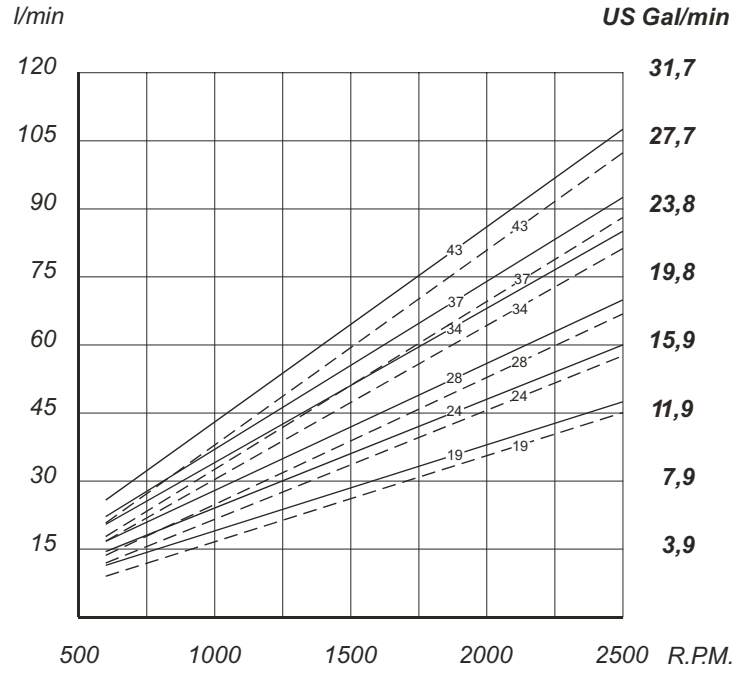
	Splined shaft Nº 2	Nº 4	Nº 5
A	47	30	24,5
B	1	1	1
C	Ø25	Ø25	Ø25
D	15	4	3,5
F	Ø21,80	Ø17,1	Ø15,82

Shaft	E
Nº 2	Diametral pitch 16/32 Teeth:13
Nº 4	DIN 5482 B18x15 Teeth:10
Nº 5	Diametral pitch 16/32 Teeth:9

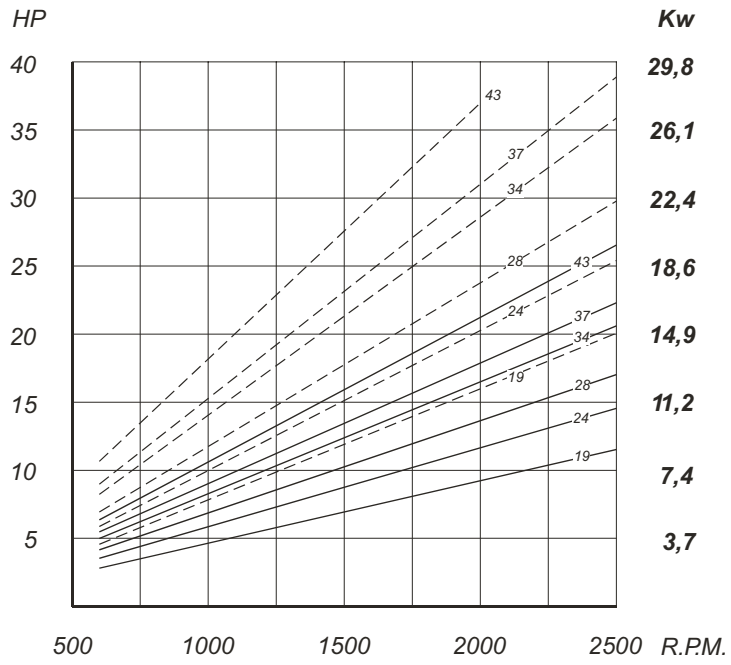
SINGLE VANE PUMP TYPE BHP-3

FLOW AND INPUT POWER DIAGRAMS





0 BAR — — — — 175 BAR



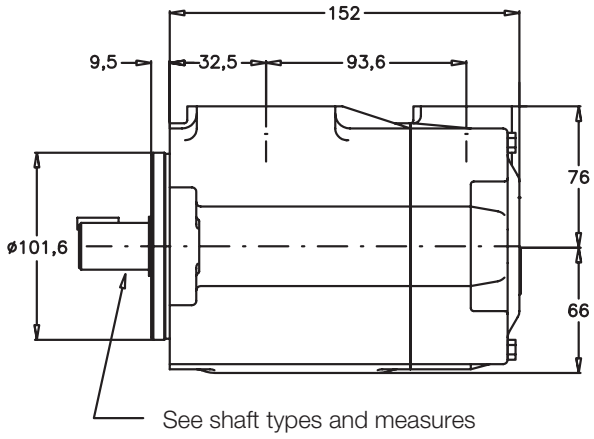
100 BAR — — — — 175 BAR

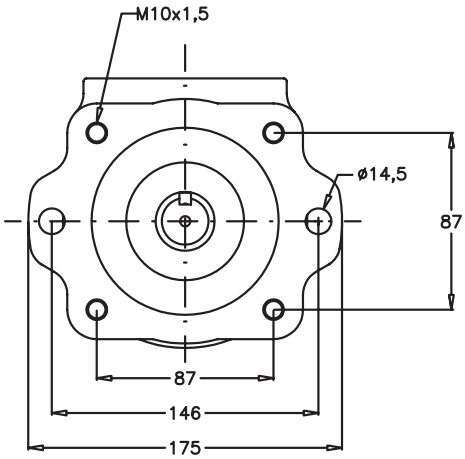
SINGLE VANE PUMP TYPE BHS-4 & BHQ-4

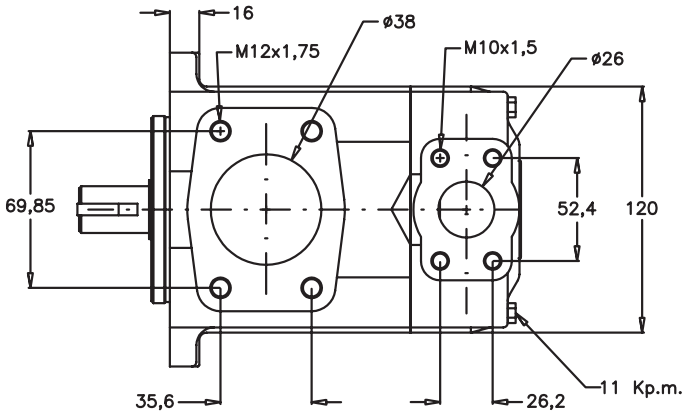
FLOW								SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts at 1000 rpm	26	39	44	54	60	66	80*	85*	Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal at 1200 rpm	8	12	14	17	19	21	24*	27*	600	2500*	175	210*	Ø38	Ø26	14,5

* For further details see general chart

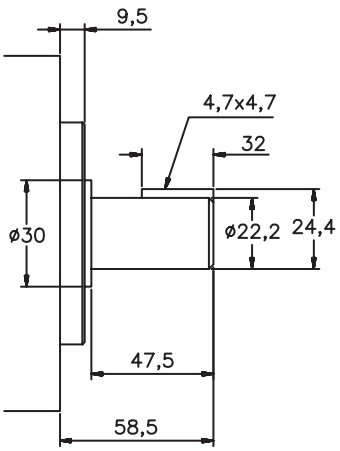
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



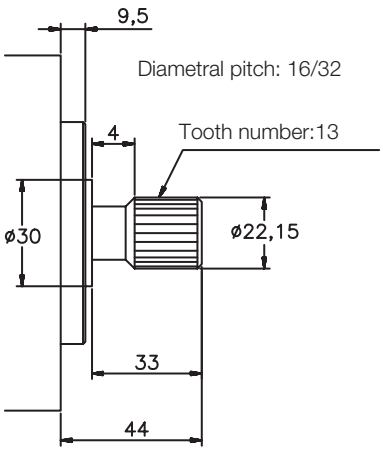




Nº1 Shaft



Nº2 Shaft

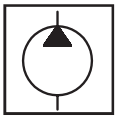


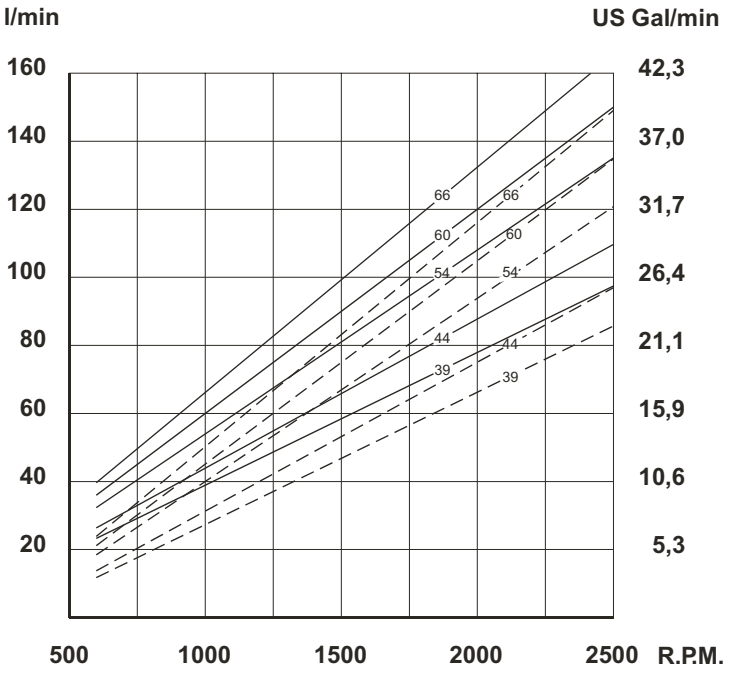
Enquire about other types of shafts

hydraulics

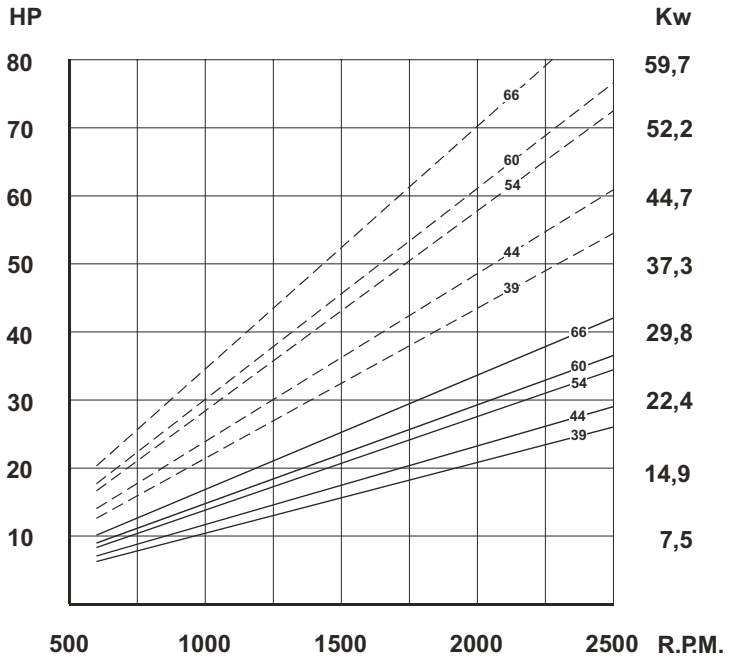
SINGLE VANE PUMP TYPE BHS-4 & BHQ-4

FLOW AND INPUT POWER DIAGRAMS





0 BAR — — — — — 210 BAR



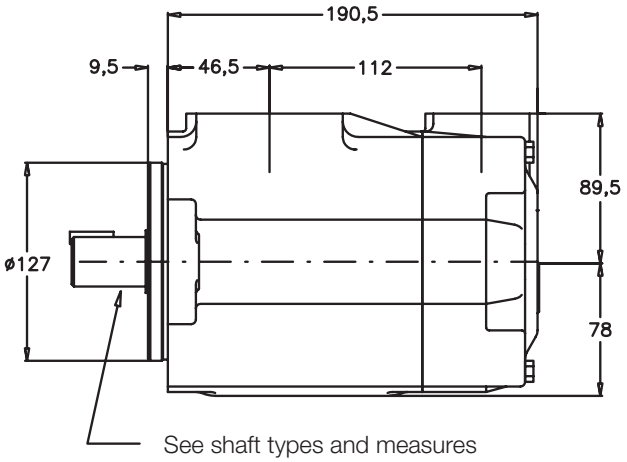
100 BAR — — — — — 210 BAR

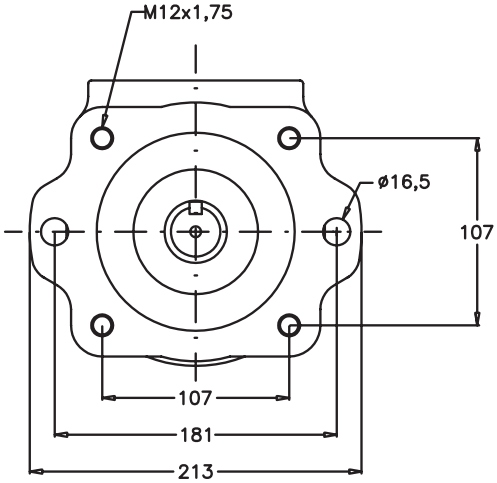
SINGLE VANE PUMP TYPE BHS-6 & BHQ-6

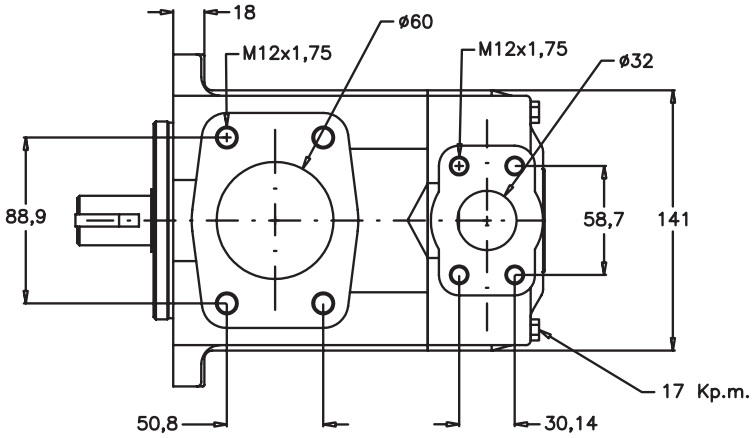
FLOW							SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
							Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Lts at 1000 rpm	66	81	97	112	121	142*	600	2400*	175	210*	Ø60	Ø32	26,3
Gal at 1200 rpm	21	25	30	35	38	45*							

* For further details see general chart

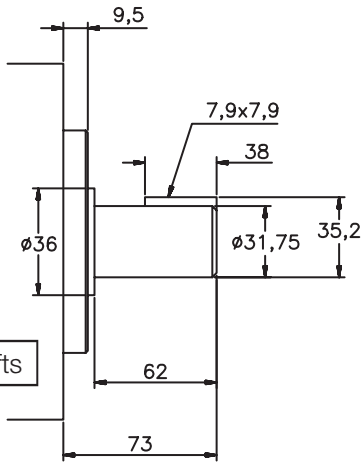
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



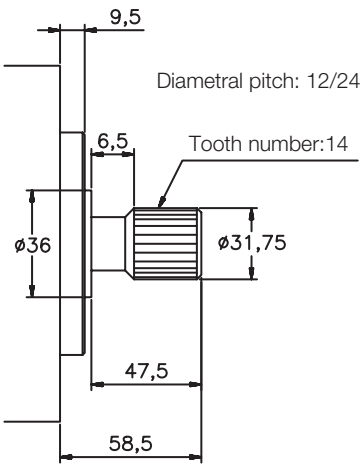




Nº1 Shaft



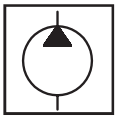
Nº2 Shaft

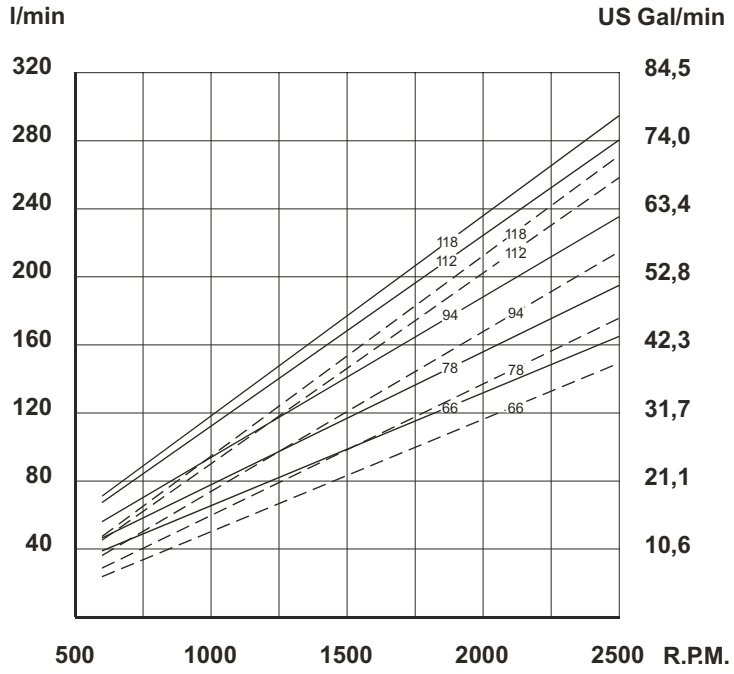


Enquire about other types of shafts

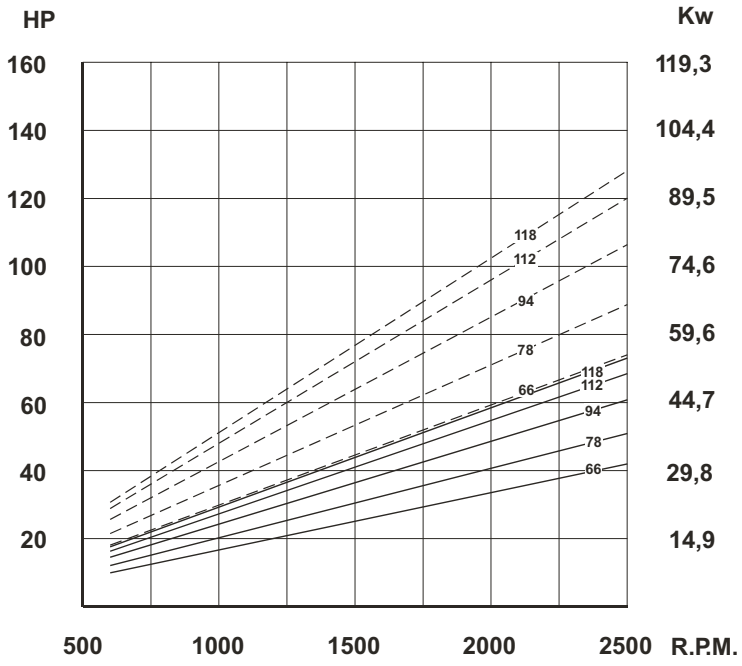
SINGLE VANE PUMP TYPE BHS-6 & BHQ-6

FLOW AND INPUT POWER DIAGRAMS





0 BAR — — — — 210 BAR



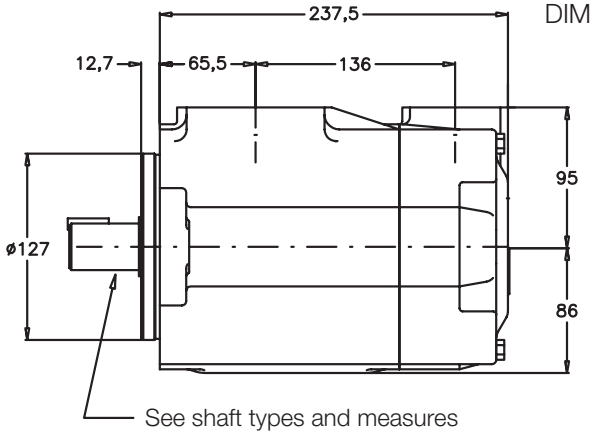
100 BAR — — — — 175 BAR

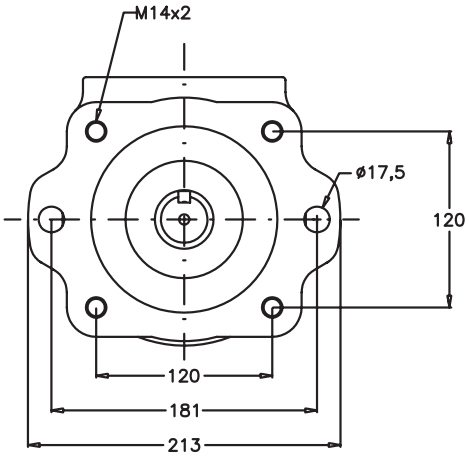
SINGLE VANE PUMP TYPE BHS-7 & BHQ-7

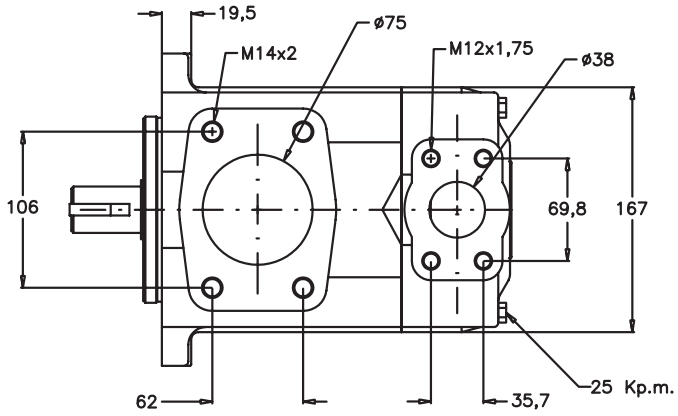
FLOW	SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT (Kgs.)
Lts at 1000 rpm 138 148 162 180 193 214 240 Gal at 1200 rpm 42 47 50 57 60 67 75	Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	
	600	2200*	155	175	Ø75	Ø38	38,3

* For further details see general chart

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres

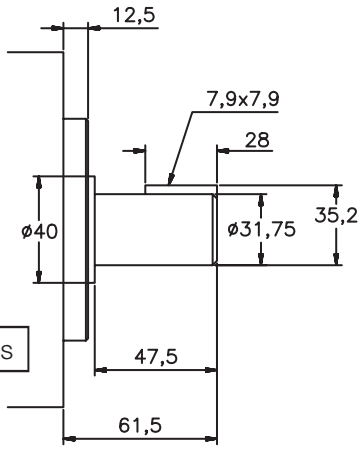




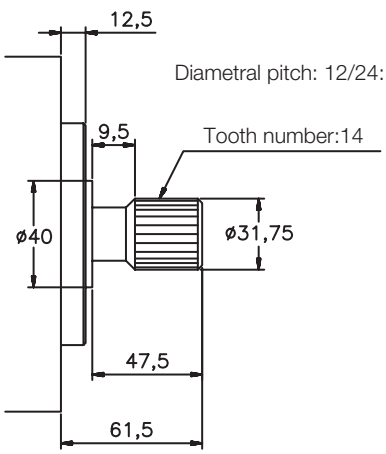


Enquire about other types of shafts

Nº1 Shaft

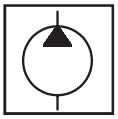


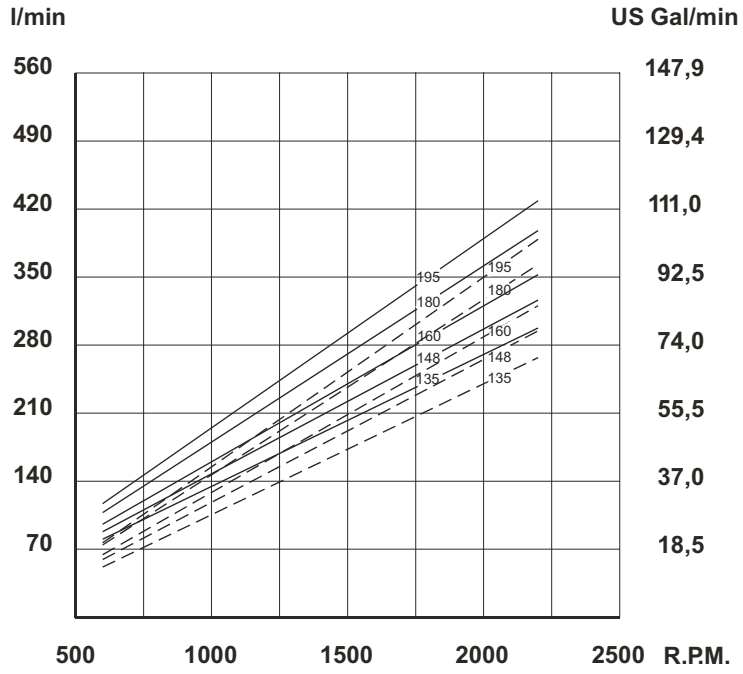
Nº2 Shaft



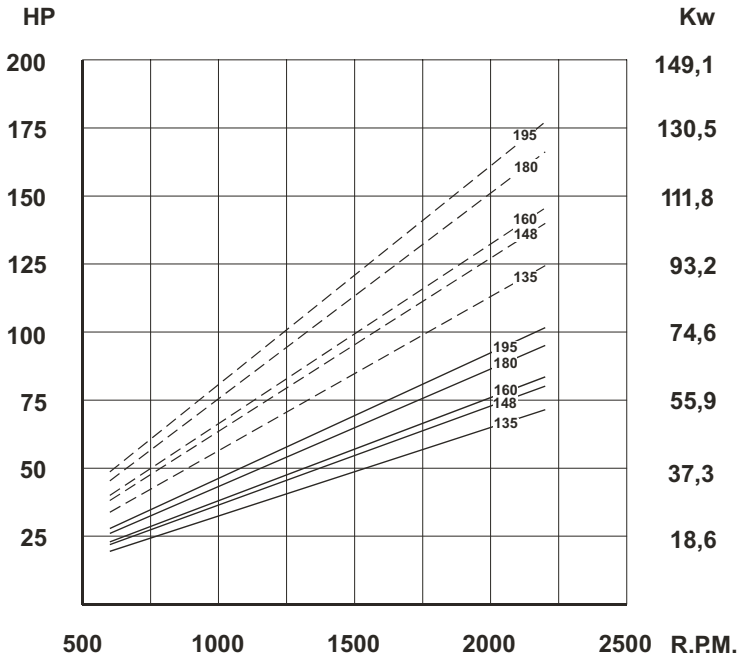
SINGLE VANE PUMP TYPE BHS-7 & BHQ-7

FLOW AND INPUT POWER DIAGRAMS





0 BAR 175 BAR



100 BAR 175 BAR

V* SINGLE VANE PUMP ORDERING CODE

F3	VS	25	67	D	1	A	00
1	2	3	4	5	6	7	8

1 - "F3" means special seals for fire-resistant fluids. Omit if not required.

2 - Pump Type:

VK = 10 vane pump, mobile and industrial use, UNC threads.
VS = 12 vane pump, industrial use (very quiet), UNC threads.
VQ = 10 vane pump and bronze plates, mobile use, UNC threads
.
3 - Pump model: VC10, VC20; 20, 25, 35 and 45 in VS and VQ types.

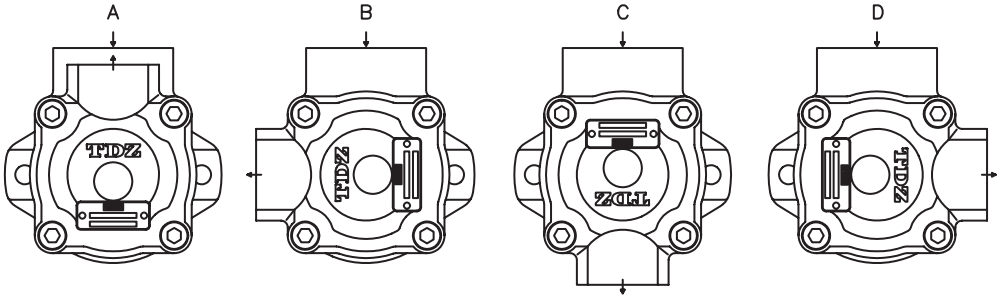
4 - Flow: VC, VS and VQ in US Gallons per minute at 1200 rpm and 7 Bar.

5 - D = Right-hand direction of rotation (Clockwise).
Y = Left-hand direction of rotation.
(To check the direction of rotation view from the shaft end).

6 - Shaft type: See on each pump model.

7 - Oulet position, (viewed from shaft):
A: Outlet in line with inlet.
B: 90° on the right from inlet (Clockwise from inlet).
C: 180° from inlet.
D: 90° on the left from inlet (90° counterclockwise from inlet).

8- Special characteristic
Omit if not required
Example: 02 : BSP
03 : UNF
04 : NPT



TDZ hydraulics

SINGLE VANE PUMP CHARACTERISTICS

VICKERS DESIGN VANE PUMPS

TYPE	FLOW			SPEED (rpm)		PRESSURE (Bar)		Nominal Power (3)	CONNECTION		WEIGHT (Kgs.)
	Lts.at 1000 rpm	Gal.at 1200 rpm	Reduction (2)	Mín.	Máx.	Contin.	Intermit.		Inlet	Outlet	
VC10	3 6 9 13 16 19 22	1 2 3 4 5 6 7	0,8 0,9 1,2 1,6 1,7 1,8 1,9	600	4800 4500 4000 3400 3200 3000 2800	155 140	180	0,7 1,4 2,1 2,7 3,2 3,7 4,2	(4)	(4)	4,5
VC20 (1)	19 22 26 29 36 39 42	6 7 8 9 11 12 13	2,8 4,2 4,5 4,8 4,8 5,4 6,0	600	3400 3000 2800 2800 2500 2400 2400	155 140	180	3,9 4,4 5,1 5,6 6,5 7,5 8,1	(4)	(4)	7,3
VK20 VQ20	8 18 27 29 36 39 46	2 5 8 9 11 12 14	0,9 2,1 2,8 3,5 4,3 4,3 5,3	600	1800	175 210	210	1,9 4 6,6 6,9 7,3 7,4 7,6	Ø1½"	Ø3/4"	12
VS25 VQ25	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	600	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 14,6 16,8 20,3 21,1	Ø1½"	Ø1"	15
VS35 VQ35	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	600	2400 1800 (VS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	Ø2"	Ø1¼"	23
VS45 VQ45	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	600	2200 1800 (VS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	Ø3"	Ø1½"	35,5

*** 27 gallons (88 lts.) cartridge not mounted in BQ25 vane pump model.**

(1) There is a version of this pump with built-in flow regulating and pressure limiter valves, ref. VC20F.

(2) Delivery flow reduction in Ltrs./min. at 100 Bar. 22 cST of oil viscosity at operating temperature. To calculate the approximate delivery flow at a given pressure and speed, use the following formula with flow reduction and theoretical flow values shown in the chart. Flow reduction values are independent of shaft speed.

$$\text{Approx. output flow (Ltrs./min.)} = \text{Theoretical flow} \times \frac{\text{R.P.M}}{1000} - \text{Reduction} \times \frac{\text{Pressure (Bar)}}{1000}$$

(3) Nominal power in H.P. at 100 Bar and 1000 RPM (to convert into Kw multiply by 0.735).
To obtain the real input power at different pressure and revolutions, use the formula as follows:

$$\text{Real input power} = \text{Input power} \times \frac{\text{R.P.M.}}{1000} \times \frac{\text{Pressure (Bar)}}{100}$$

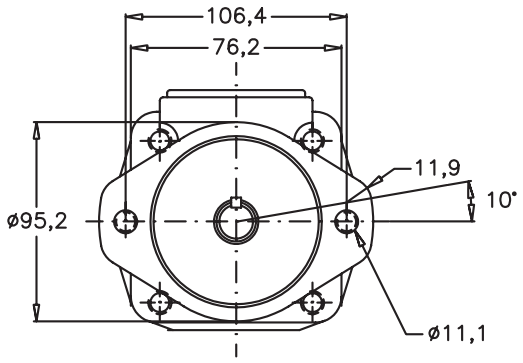
(4) See options on dimension pages.

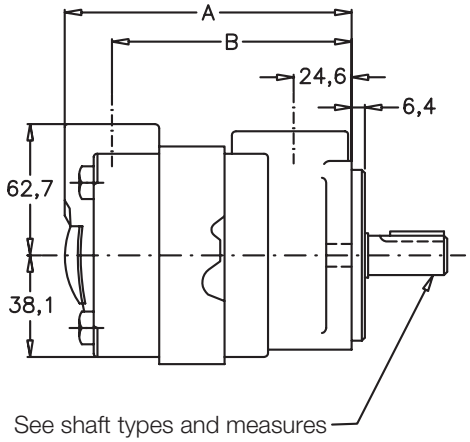
hydrauli

SINGLE VANE PUMP TYPE VC-10

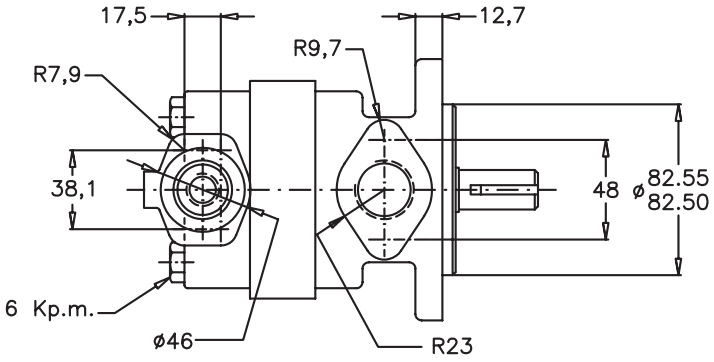
FLOW			SPEED (rpm) (rpm)		PRESSURE (Bar)		Nominal Power (3)	CONNECTION		WEIGHT (Kgs.)
Lts.at 1000 rpm	Gal.at 1200 rpm	Reduction (2)	Mín.	Máx.	Contin.	Intermit.		Inlet	Outlet	
3	1	0,8	600	4800	155	180	0,7	1" NPT 1" BSP	1/2" NPT 1/2" BSP	4,5
6	2	0,9		4500			1,4			
9	3	1,2		4000			2,1			
13	4	1,6		3400			2,7			
16	5	1,7		3200			3,2			
19	6	1,8		3000			3,7			
22	7	1,9		2800	140		4,2			

(2) & (3) see page 27.





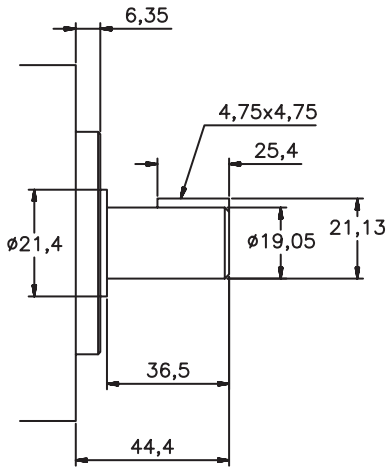
Gallons	Dimension	
	A	B
1, 2, 3	115,6	91,9
4, 5	121,9	98,3
6, 7	127	103,4



Num.	Inlet	Outlet
02	1" BSP	1/2 BSP
04	1" NPT	1/2" NPT

Contact **TDZ** or your nearest distributor for other shaft types

Nº1 Shaft



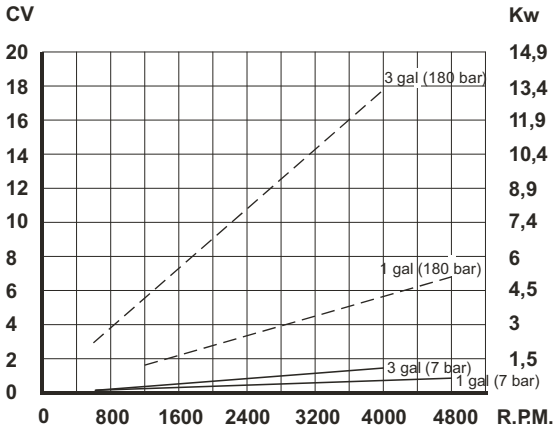
TDZ hydraulics

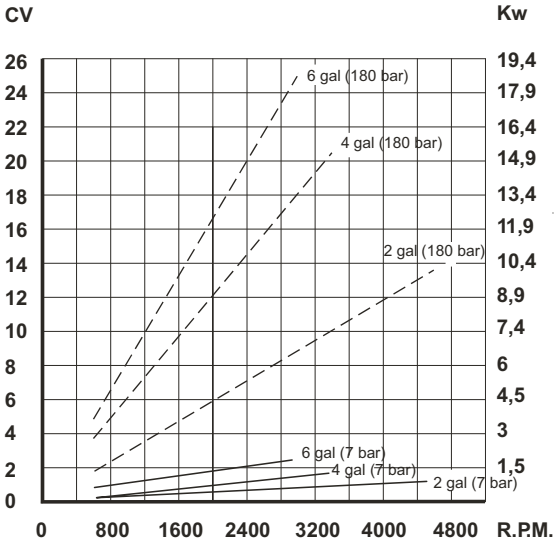
SINGLE VANE PUMP TYPE VC-10

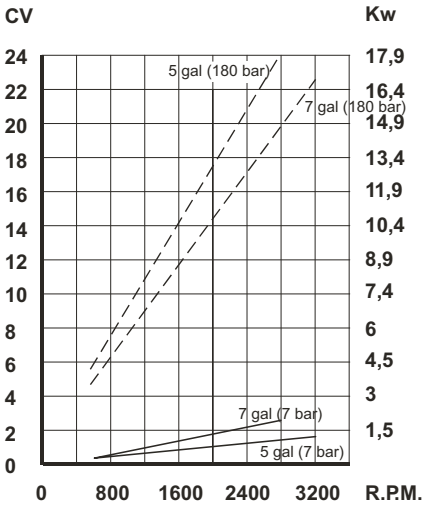
FLOW AND INPUT POWER DIAGRAMS

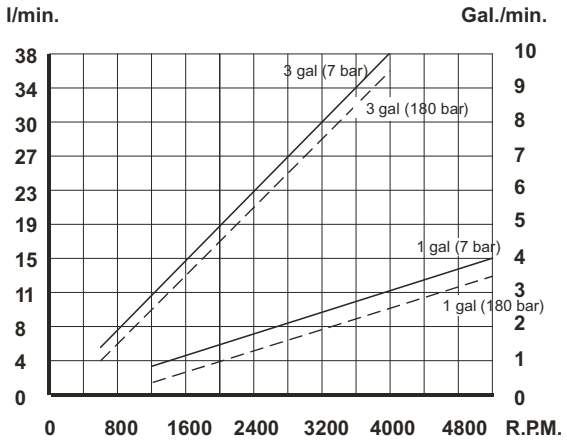
Max. pressure (180 bar)

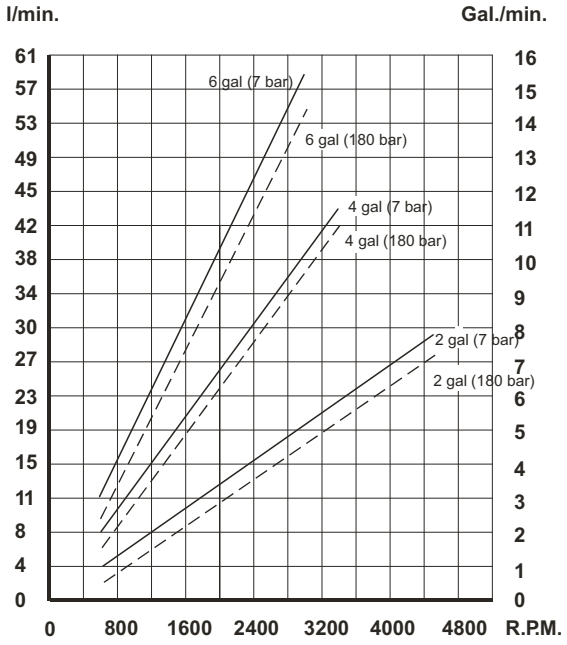
Pressure (7 bar)

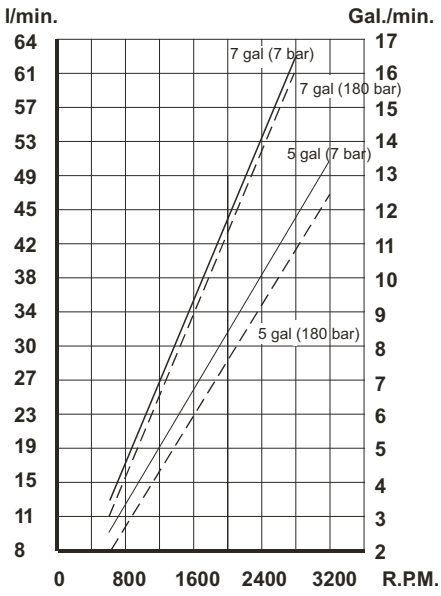








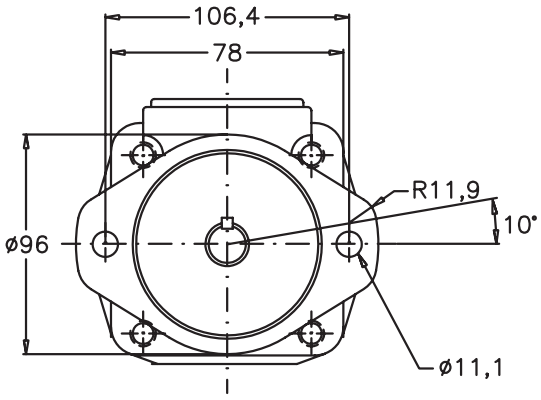


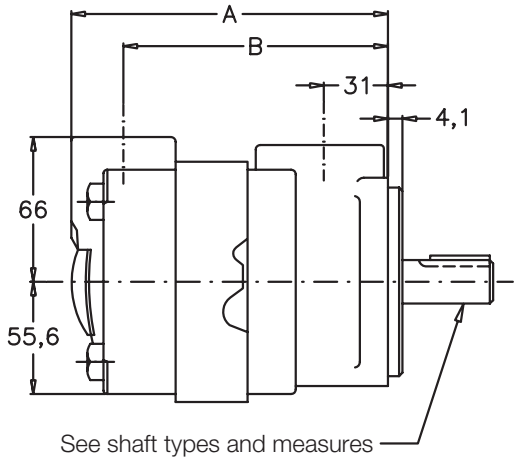


SINGLE VANE PUMP TYPE VC-20

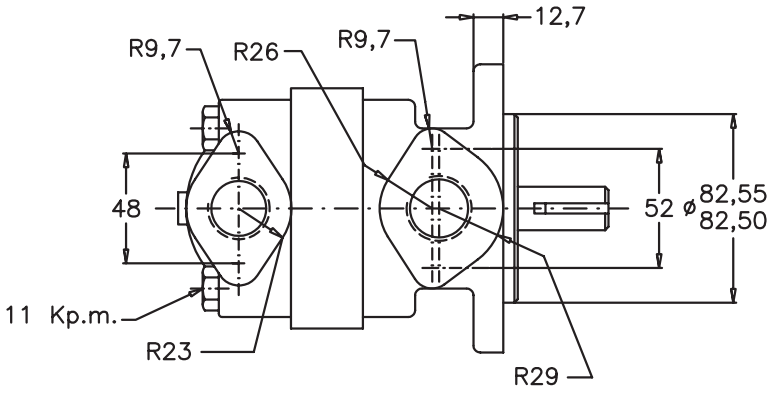
FLOW			SPEED (rpm)		PRES (BAR)		Nominal Power	CONNECTION		WEIGHT (Kgs.)
Lts.at 1000 rpm	Gal.at 1200 rpm	Reduction (2)	Min.	Max.	Contin.	Intermit.	(3)	Inlet	Outlet	
19	6	2,8	600	3400	155	180	3,9	1 1/4" NPT 1 1/4" BSP	3/4" NPT 3/4" BSP	7,3
22	7	4,2		3000			4,4			
26	8	4,5		2800			5,1			
29	9	4,8		2800			5,6			
36	11	4,8		2500			6,5			
39	12	5,4		2400			7,5			
42	13	6,0		2400	140		8,1			

(2) & (3) see page 27.

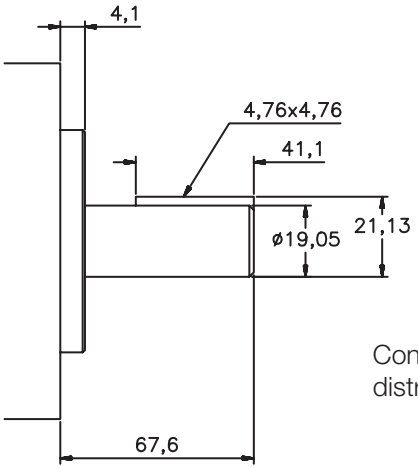




Galon	Dimension	
	A	B
6	125,2	102,1
7, 8, 9	131,6	108,4
11	136,7	113,5
12, 13	140,2	117,1



Num.	Inlet	Outlet
02	1" 1/4 BSP	3/4" BSP
04	1" 1/4 NPT	3/4" NPT



Nº1 Shaft

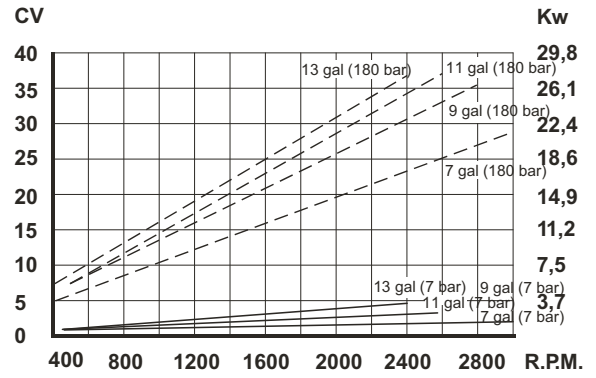
Contact **TDZ** or your nearest distributor for other shaft types

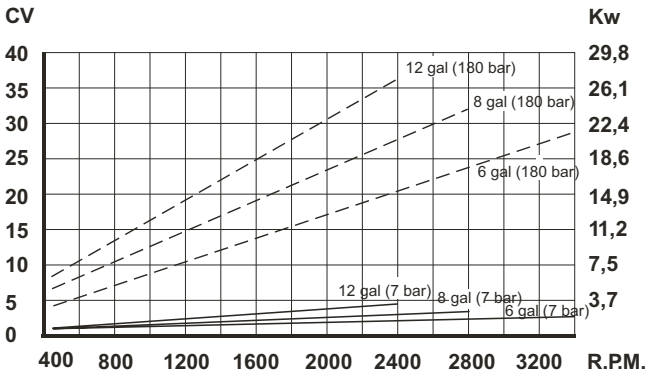
hydraulics

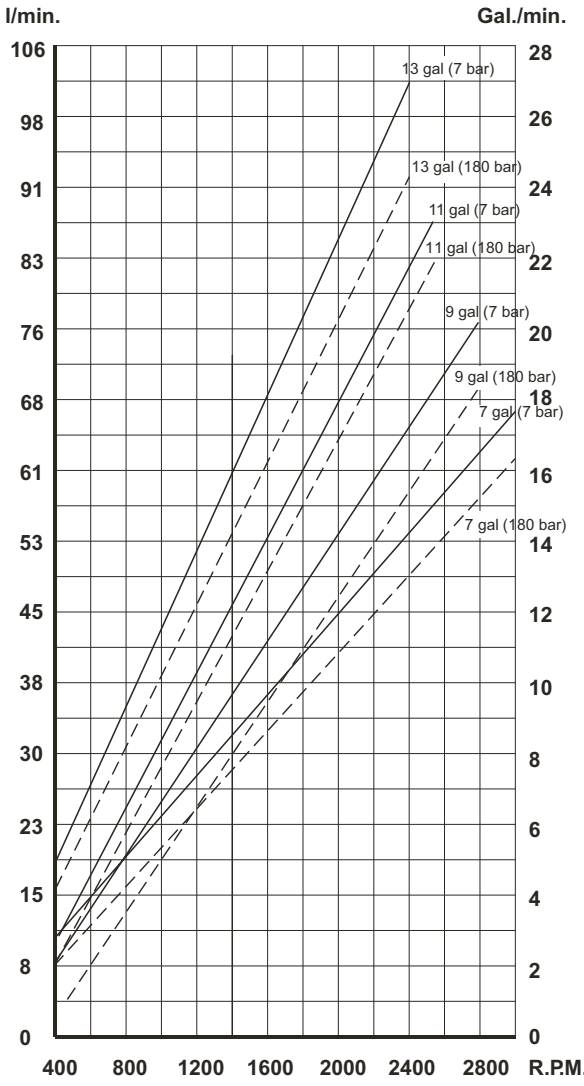
SINGLE VANE PUMP TYPE VC-20

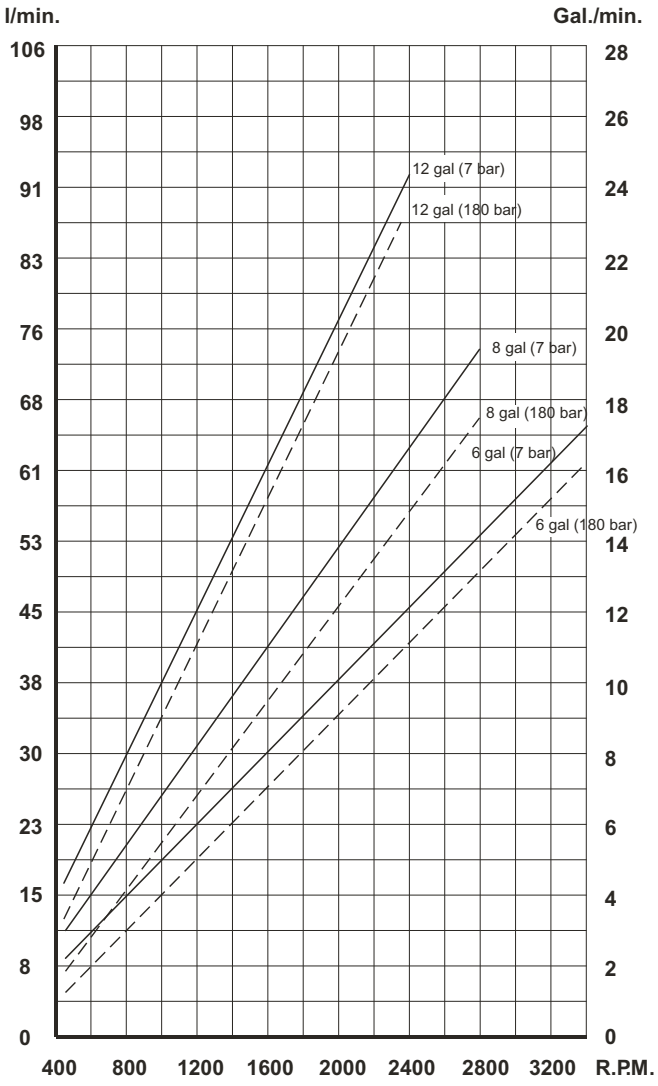
FLOW AND INPUT POWER DIAGRAMS

Max. pressure (180 bar) Min. Pressure (7 bar)



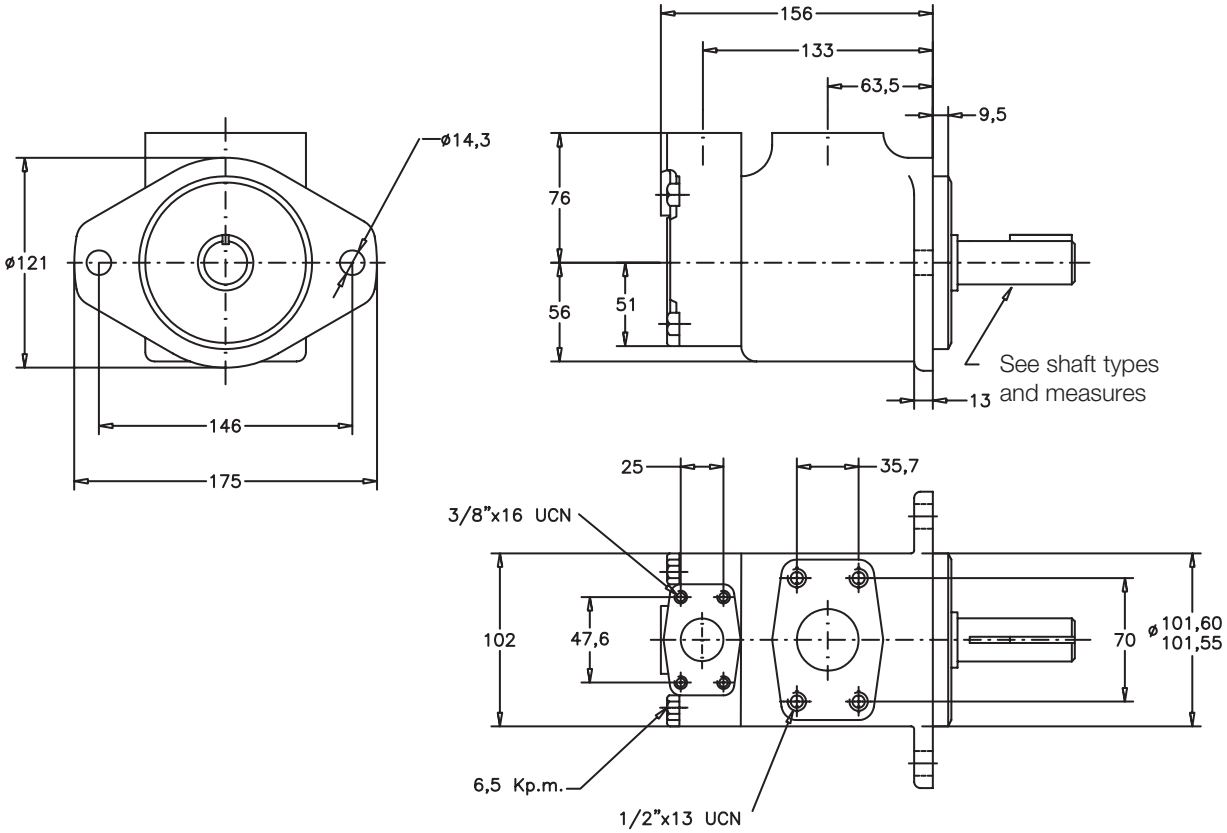




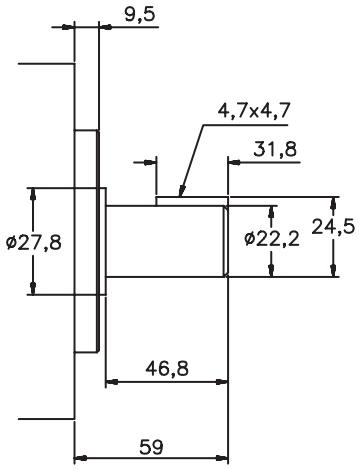


SINGLE VANE PUMP TYPE VK-20 Y VQ-20

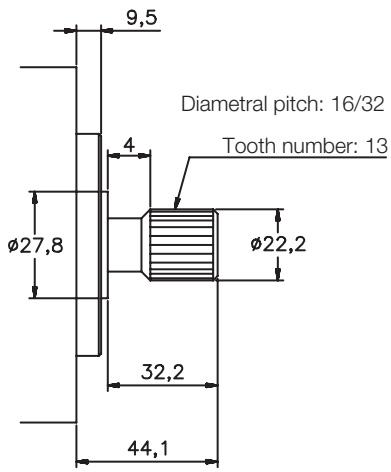
FLOW							SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts.at 1000 rpm	8	18	27	29	36	39	46	Min.	Max.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal.at 1200 rpm	2	5	8	9	11	12	14	600	2500	175	210	Ø 1 1/2"	Ø 3/4"	12



N°1 Shaft



N°151 Shaft

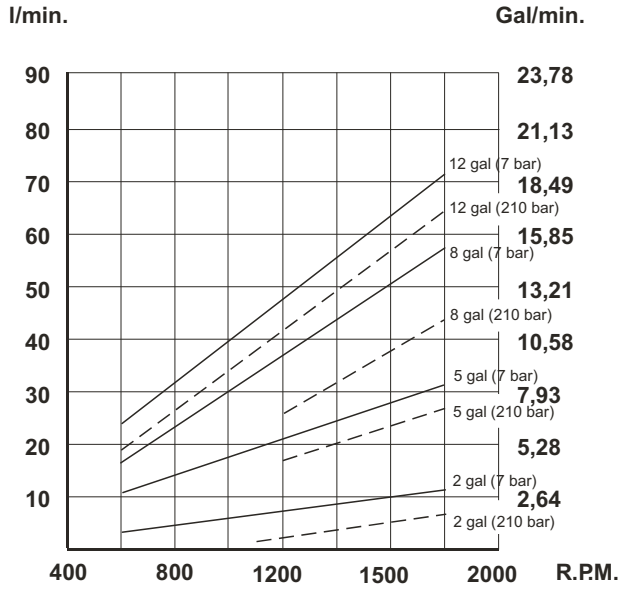


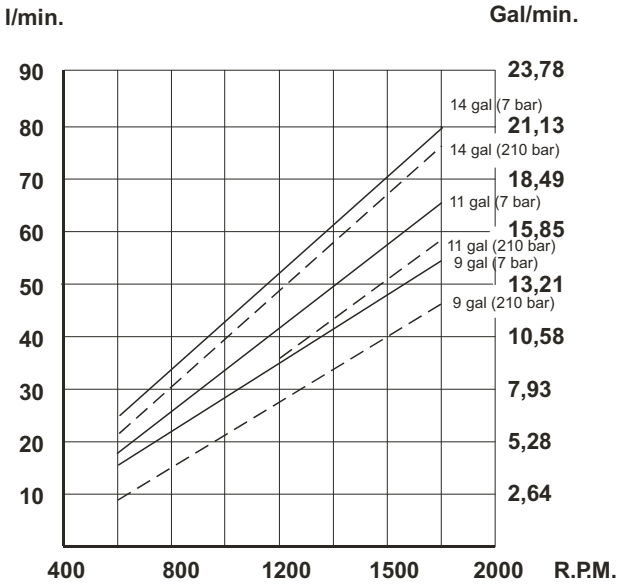
hydraulics

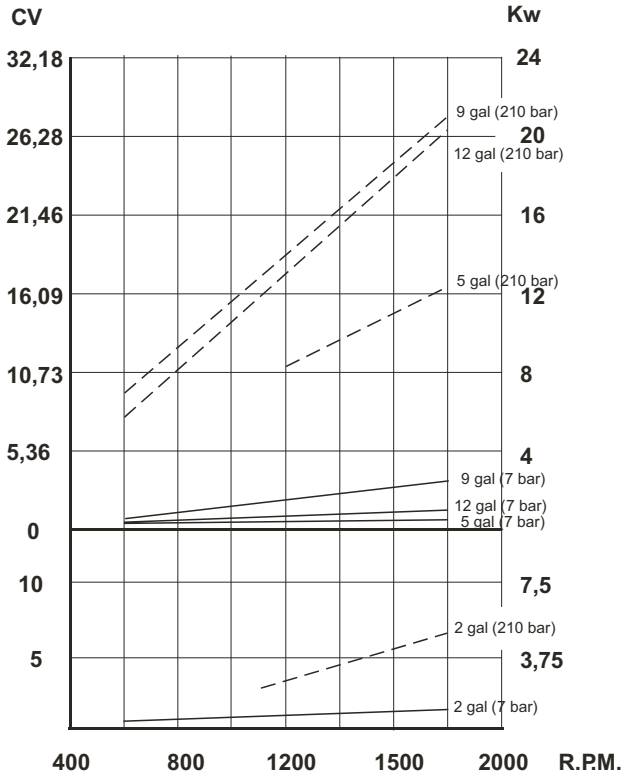
SINGLE VANE PUMP TYPE VK-20 Y VQ-20

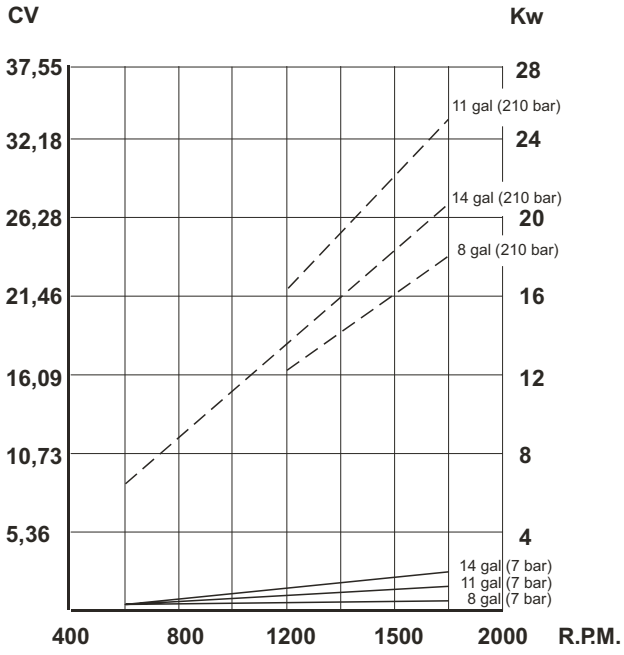
FLOW AND INPUT POWER DIAGRAMS

Max. pressure (210 bar) Min. Pressure (7 bar)







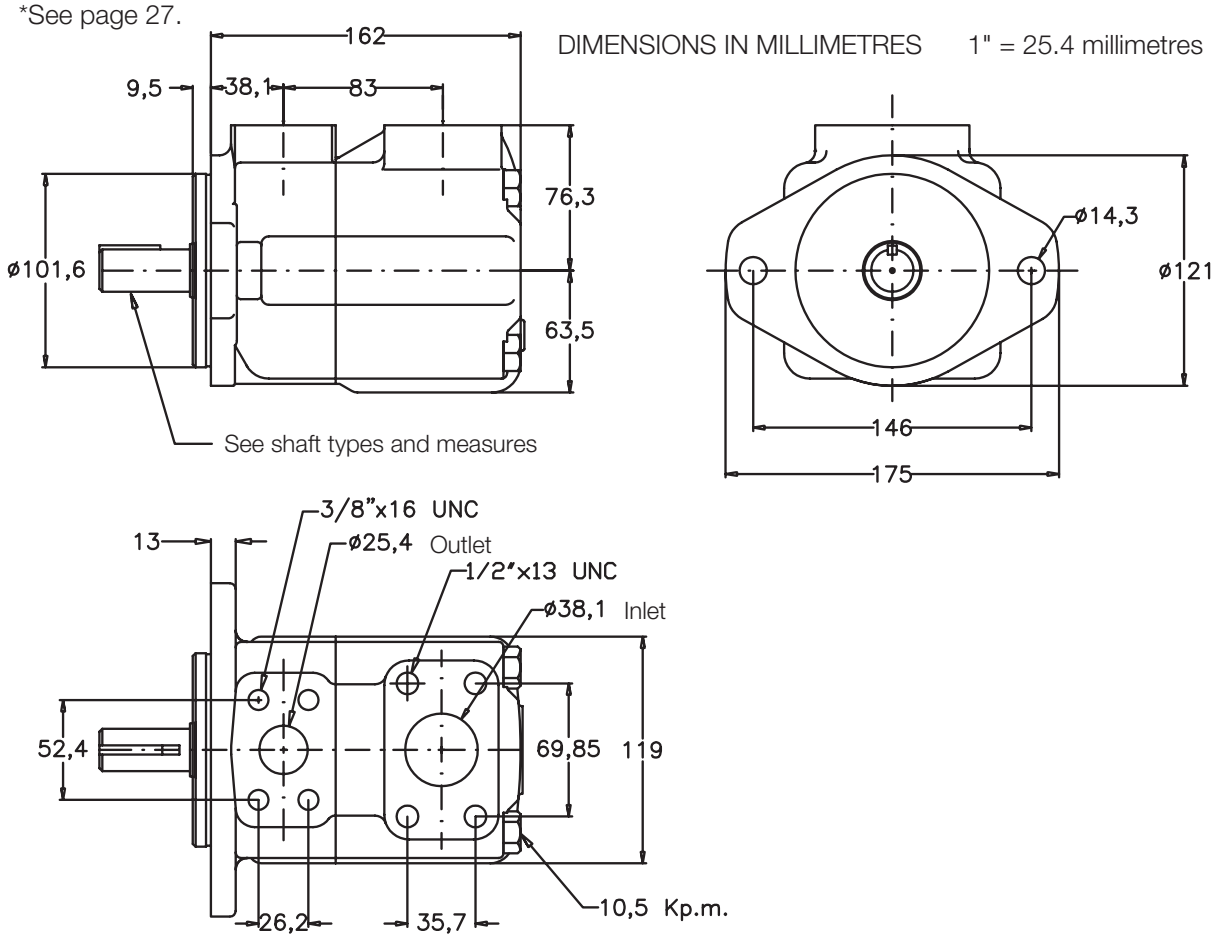


SINGLE VANE PUMP TYPE VS-25 & VQ-25

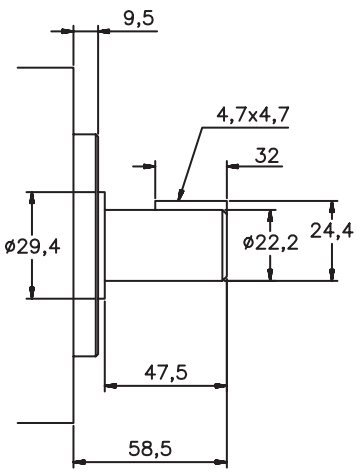
FLOW								SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts.at 1000 rpm	26	40	45	55	60	67	80*	88*	Min.	Max.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal.at 1200 rpm	8	12	14	17	19	21	24*	27*	600	2500*	175	210*	Ø1"1/2	Ø1"	15

*See page 27.

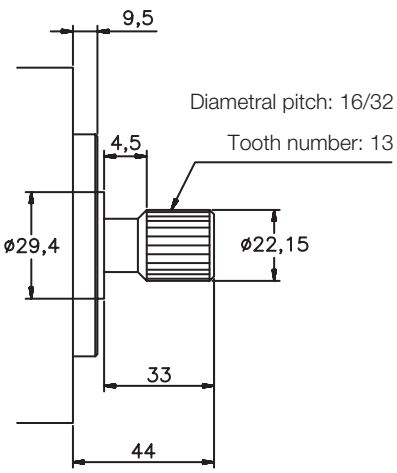
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



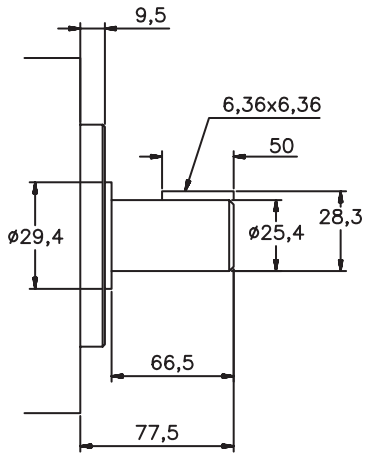
N°1 Shaft



N°11 Shaft



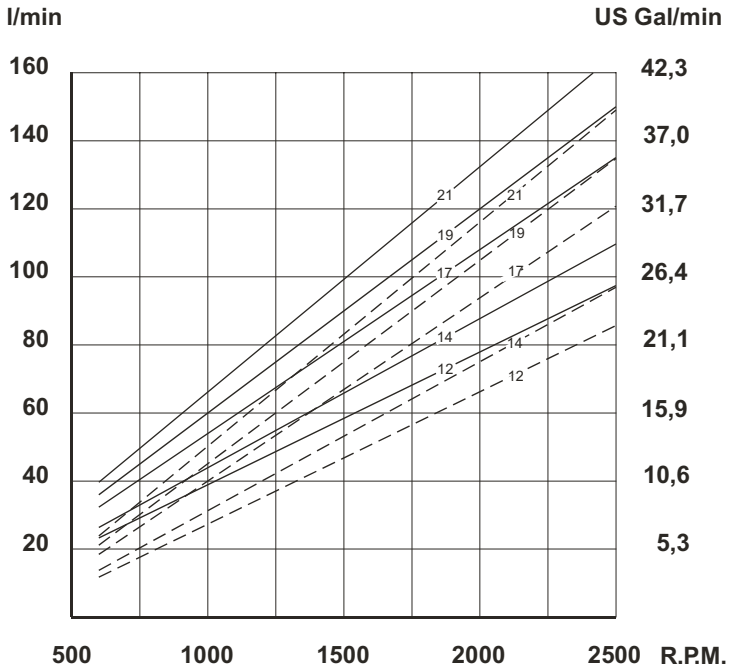
N°86 Shaft

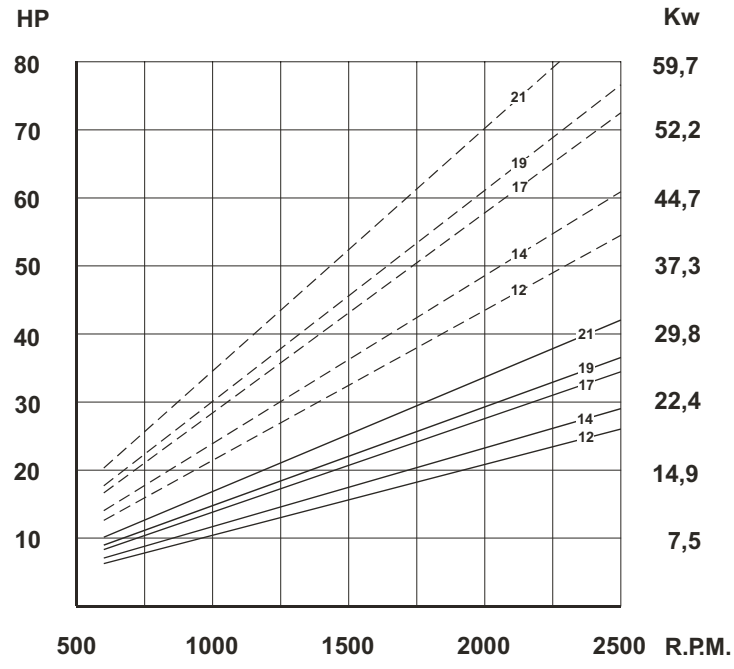


Enquire about other types of shafts

SINGLE VANE PUMP TYPE VS-25 & VQ-25

FLOW AND INPUT POWER DIAGRAMS





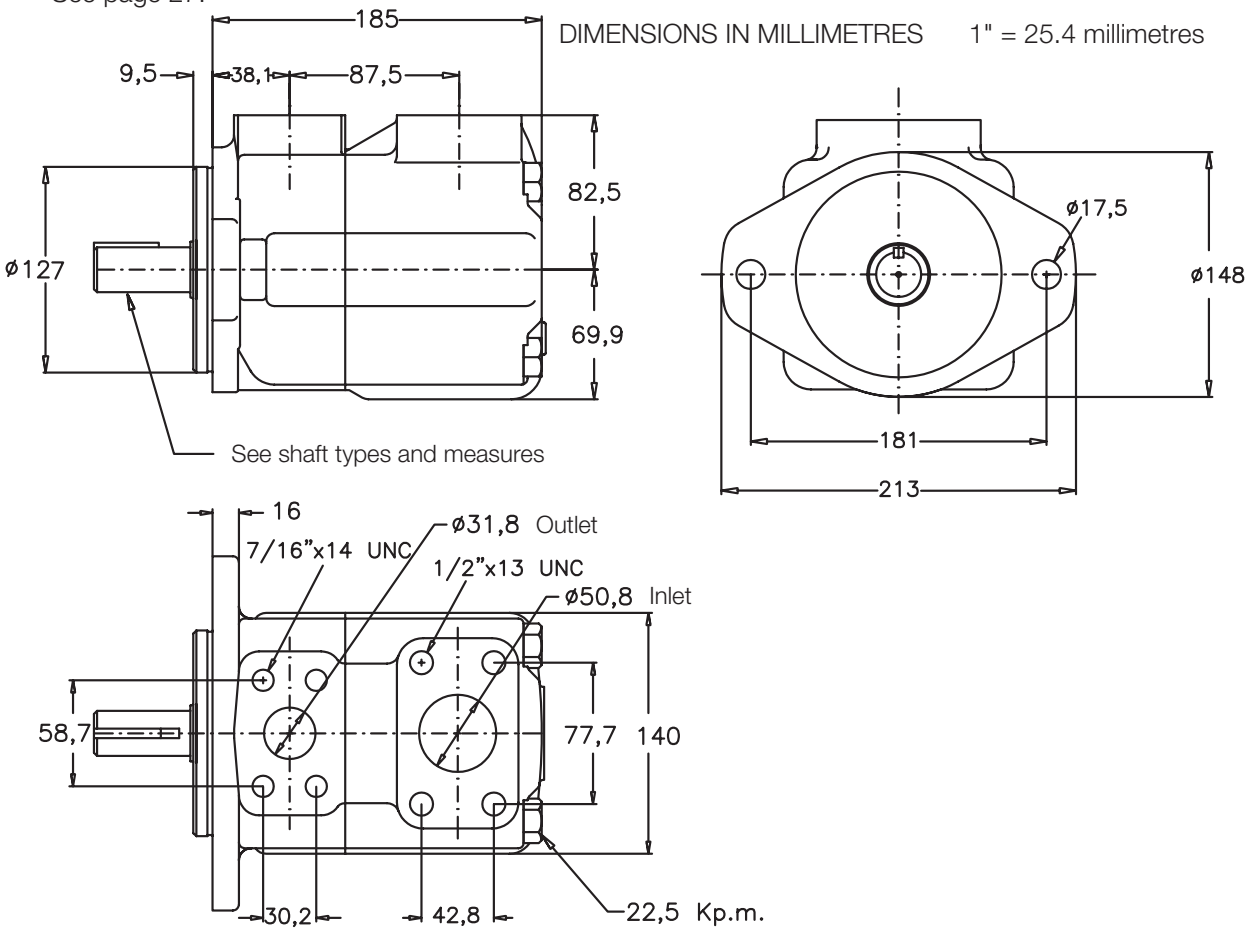
SINGLE VANE PUMP TYPE VS-35 & VQ-35

FLOW							SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts.at 1000 rpm	66	81	97	112	121	142*	Min.	Max.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal.at 1200 rpm	21	25	30	35	38	45*	600	2400*	175	210*	Ø2"	Ø1"1/4	23

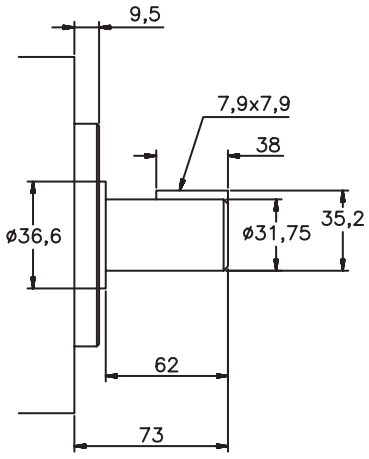
* For further details see general chart

*See page 27.

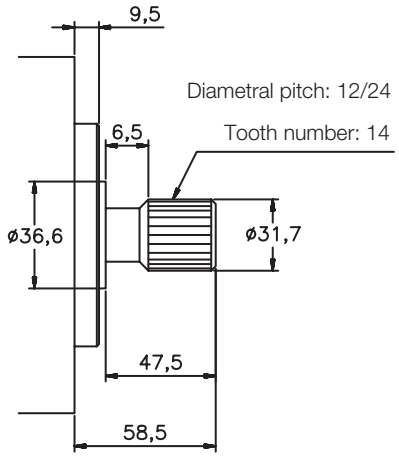
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



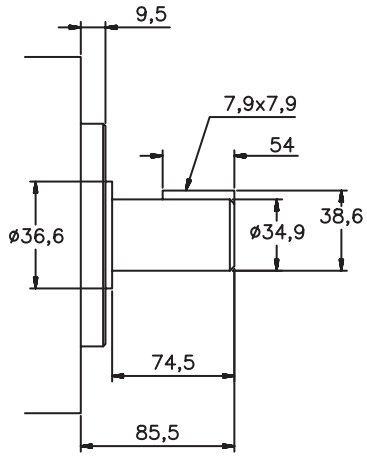
N°1 Shaft



N°11 Shaft



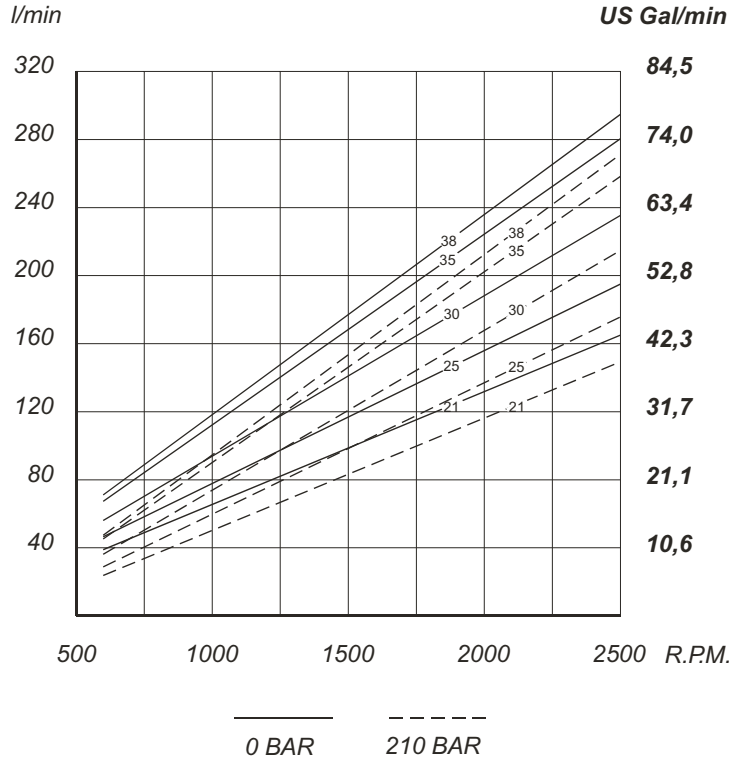
N°86 Shaft

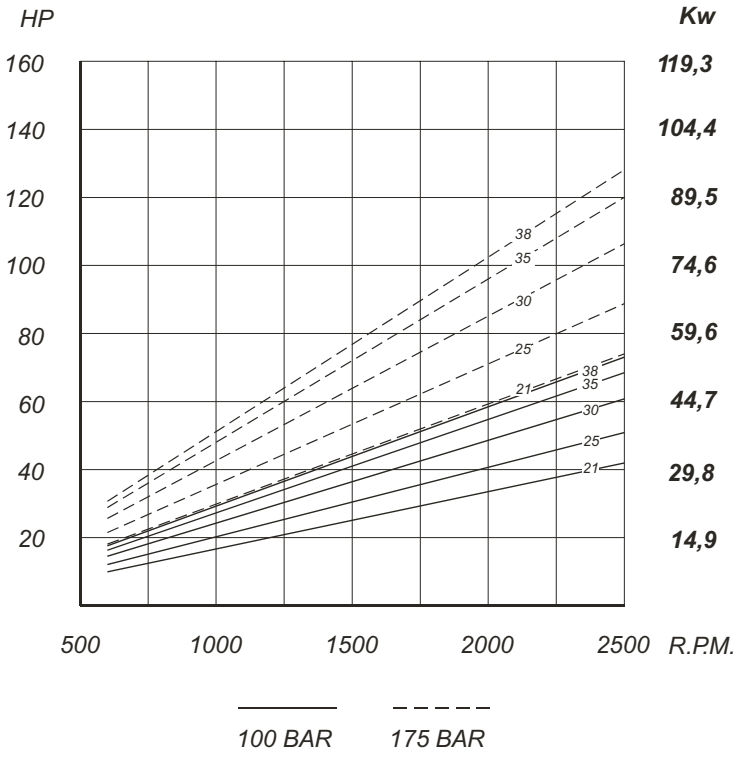


Enquire about other types of shafts

SINGLE VANE PUMP TYPE VS-35 & VQ-35

FLOW AND INPUT POWER DIAGRAMS



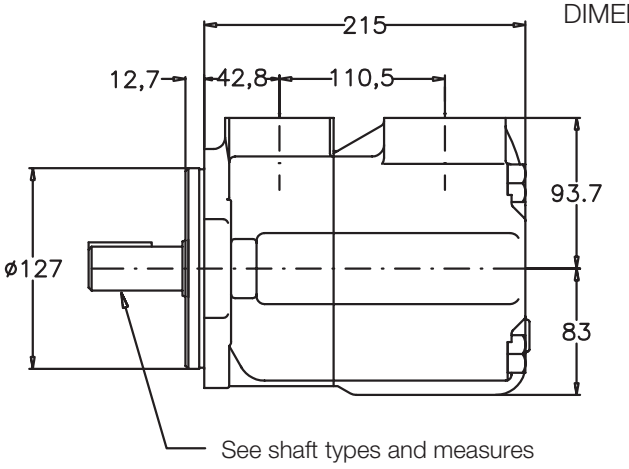


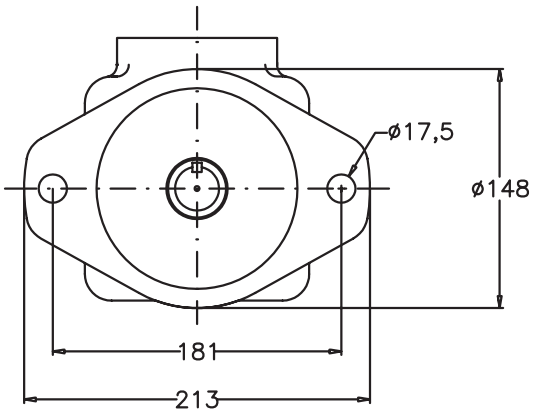
SINGLE VANE PUMP TYPE VS-45 & VQ-45

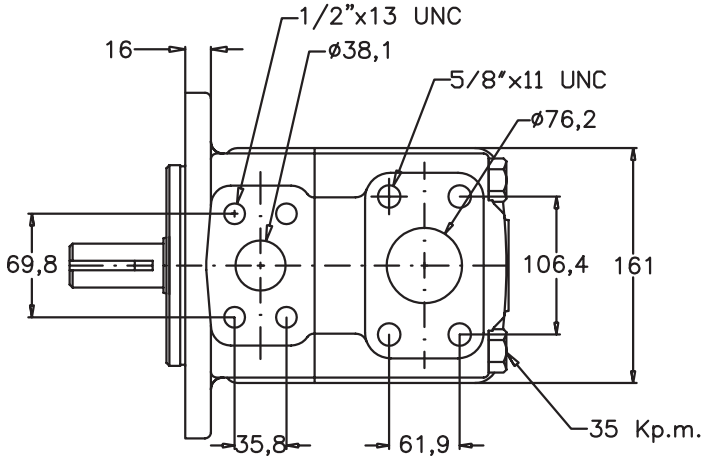
FLOW								SPEED (rpm)		PRES (BAR)		CONNECTION		WEIGHT
Lts.a 1000 rpm	138	148	162	180	193	214	240	Mín.	Máx.	Contin.	Intermit.	Inlet	Outlet	(Kgs.)
Gal. a 1200 rpm	**42**	**47**	**50**	**57**	**60**	**67**	**75**	600	2200*	155	175	Ø3"	Ø1"1/2	35,5

* For further details see general chart

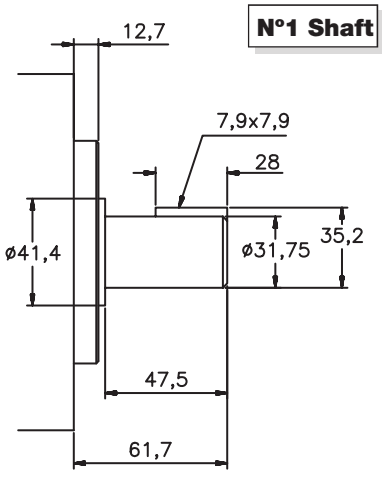
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



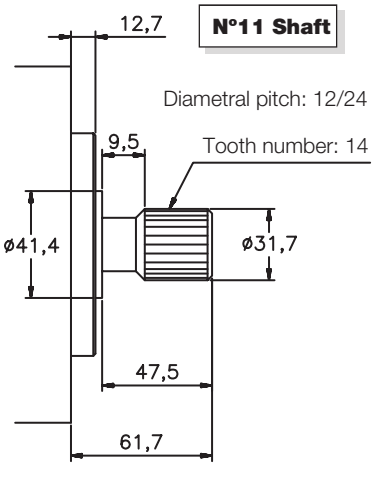




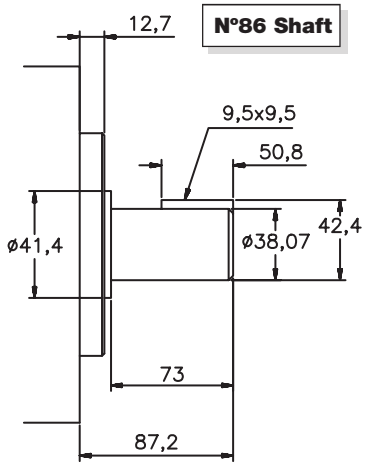
Nº1 Shaft



Nº11 Shaft



Nº86 Shaft

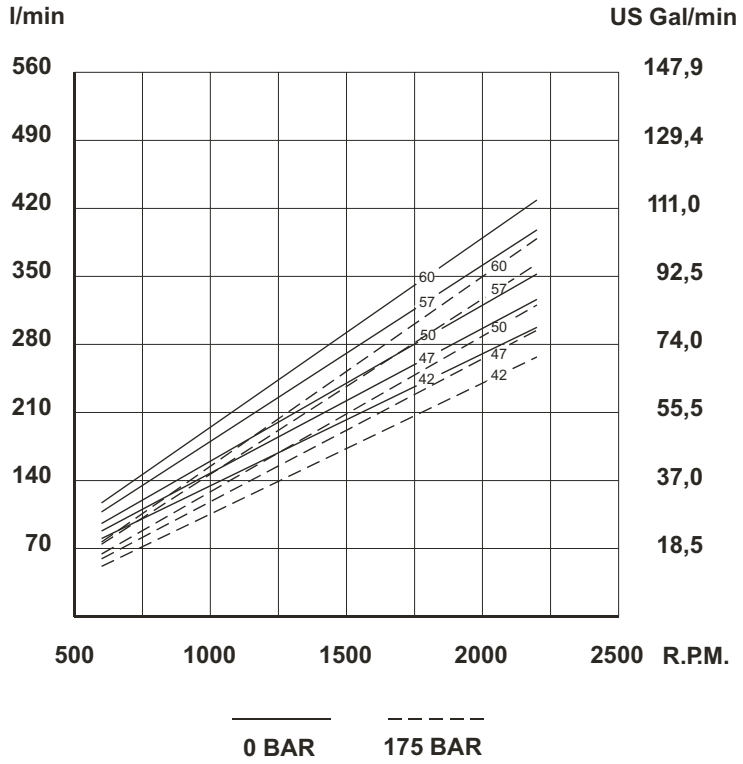


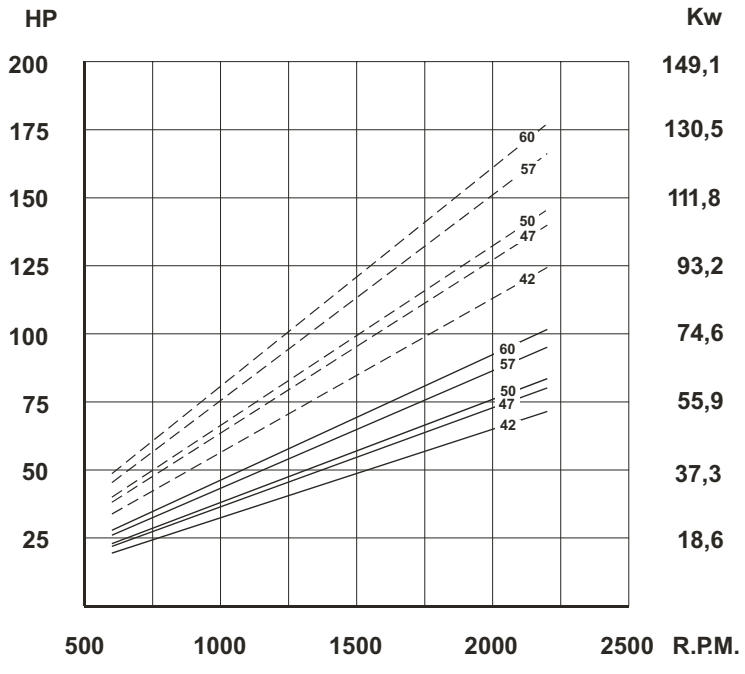
Enquire about other types of shafts

hydraulics

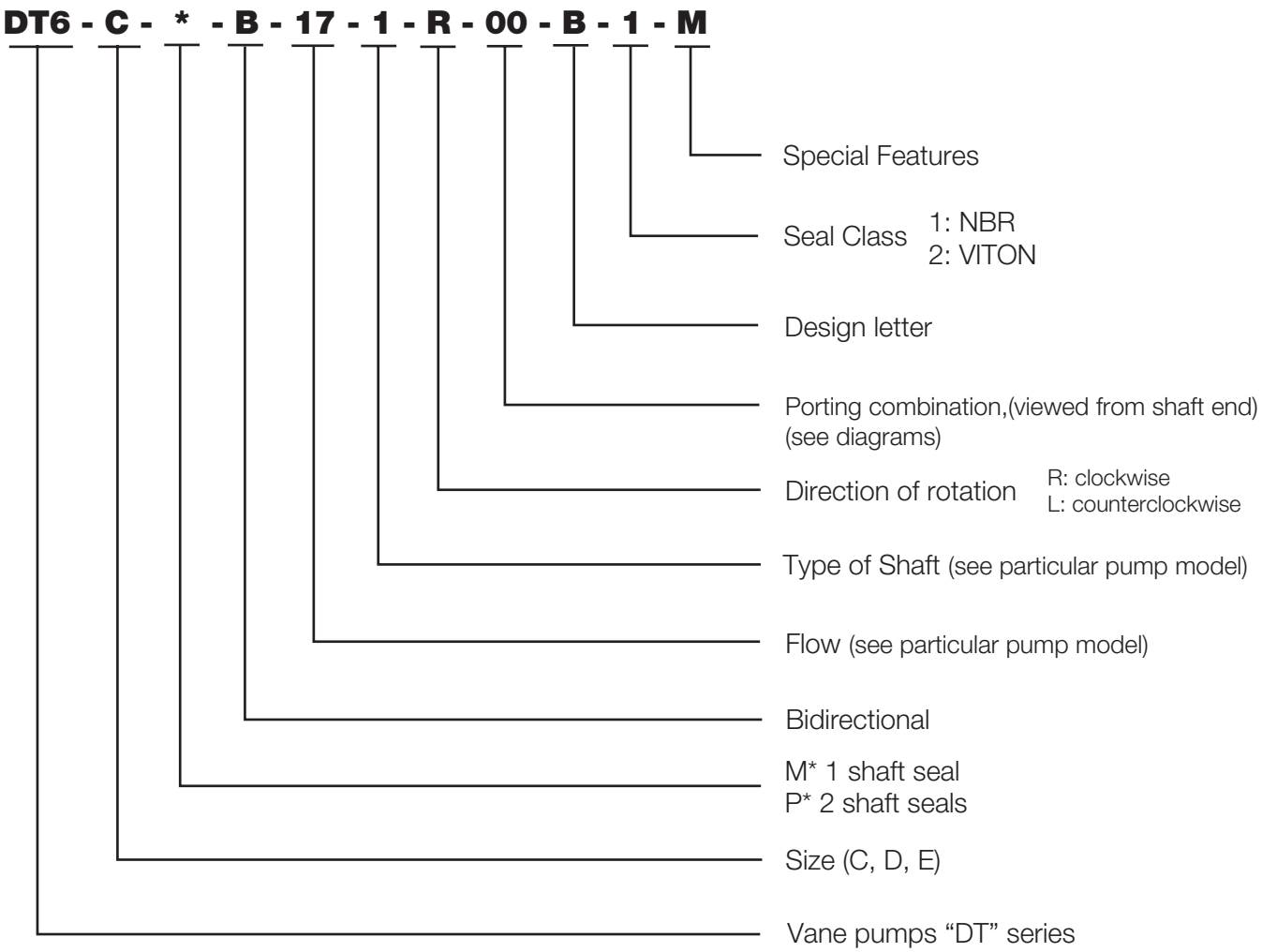
SINGLE VANE PUMP TYPE VS-45 & VQ-45

FLOW AND INPUT POWER DIAGRAMS



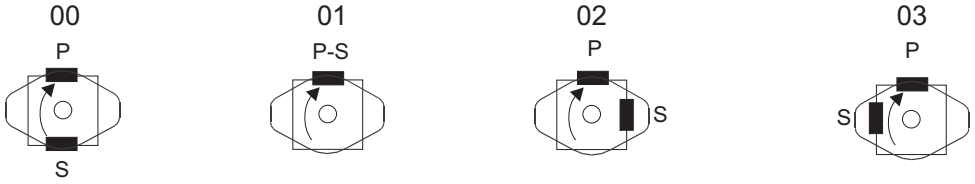


DT-6 SINGLE VANE PUMPS ORDERING CODE



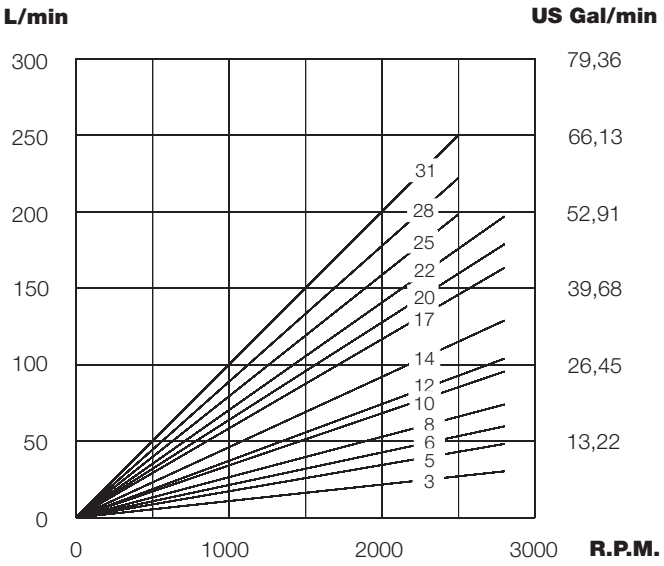
SINGLE PUMPS

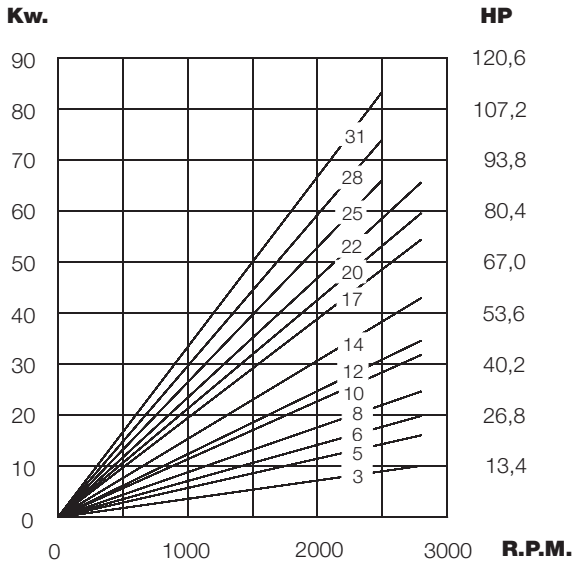
Pump Model	Cartridge model	Theoretical displacement Cm^3/rev	Maximum Pressure	Max. speed rpm	Min. speed rpm	Weight Kgs	Front flange Standard SAE j744c ISO 3019-1	SAE 4 holes flange	
								Suction	Pressure
DT6C	003	10.8	275	2800	400	15	SAE B	1 ½"	1"
	005	17.2							
	006	21.3							
	008	26.4							
	010	34.1							
	012	37.1							
	014	46.0							
	017	58.3							
	020	63.8							
	022	70.3							
	025	79.3		2500					
	028	88.8	210						
	031	100							
	DT6CP Pump model only mount B14 to B31 cartridges								
DT6D	014	47.6	240	2500	400	24	SAE C	2"	1 1/4"
	020	66.0							
	024	79.5							
	028	89.7							
	031	98.3							
	035	111.0							
	038	120.3							
	042	136.0		2200					
	045	145.7							
	050	158.0	210						
	061	190.5	120	1800					
DT6E	042	132.3	240	2200	400	44	SAE C	3"	1 ½"
	045	142.4							
	050	158.5							
	052	164.8							
	062	196.7							
	066	213.3							
	072	227.1							
	085	269.8	90	2000					



FLOW														SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	**(Kgs.)**
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.





Theoretical Flow (0 Bar)

To calculate the real flow at a given operating pressure, substract the internal leakage value for this pressure (see diagram below) from the theoretical flow. (See diagram above).

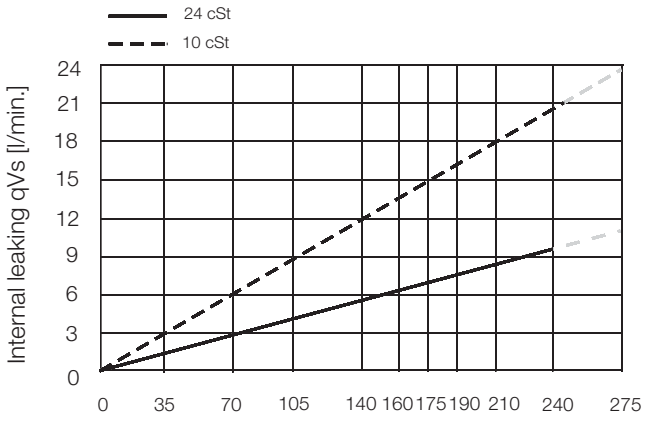
Theoretical Input Power at 200 Bar

To calculate the theoretical input power at other pressures and speeds, use the formula:

$$P(Kw) \quad \frac{Q(L/min.) \times P(Bar)}{600}$$

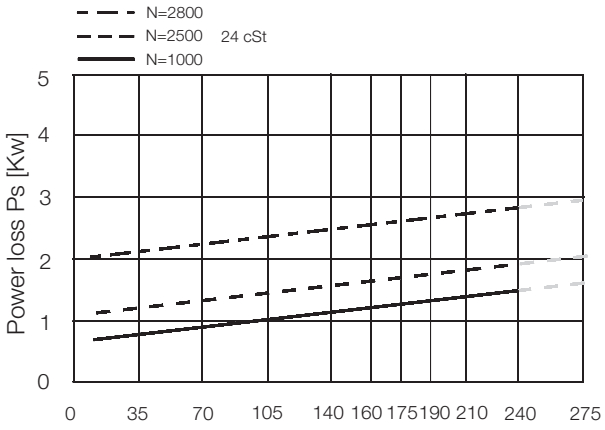
Where Q is the theoretical flow (upper left diagram) and P the operating pressure.

To calculate the real input power, add to the theoretical power the hydromechanical power losses**.** (see diagram below).

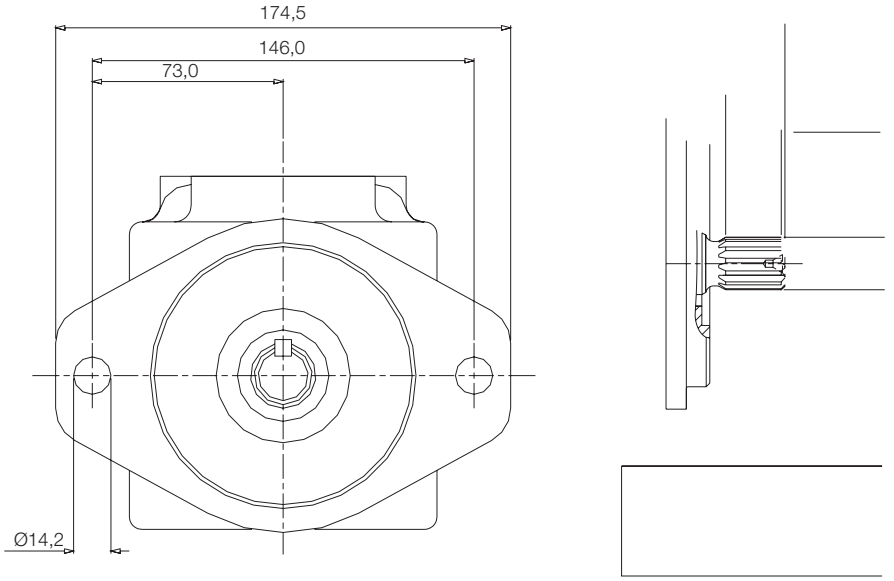


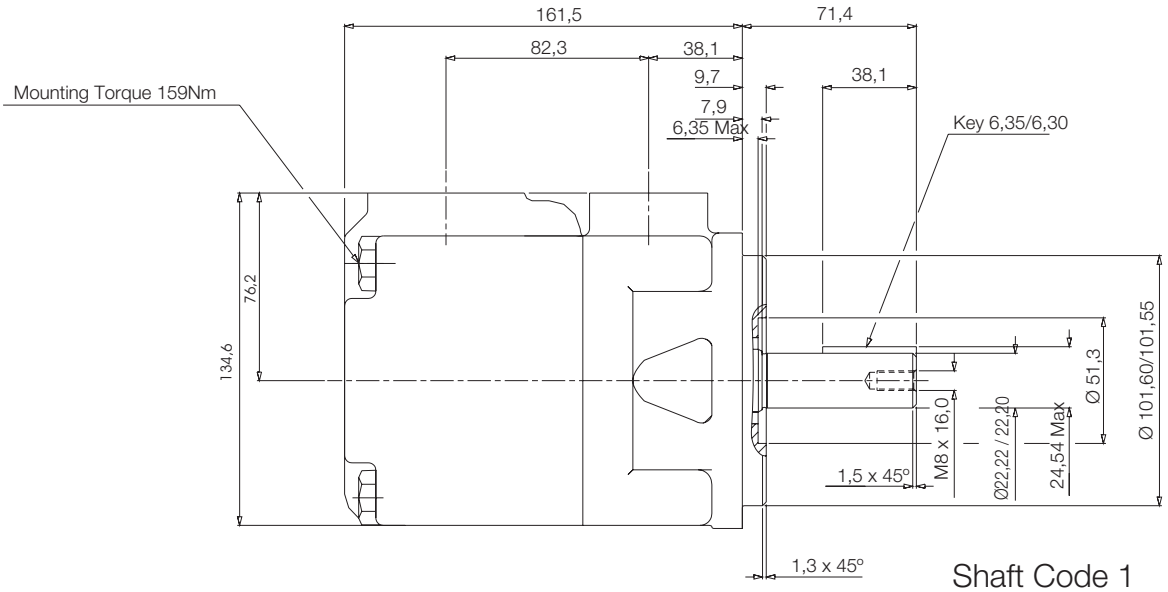
Pressure p [bar]

Do not operate pump more than 5 seconds at any speed or viscosity if internal leakage is more than 50 % of theoretical flow

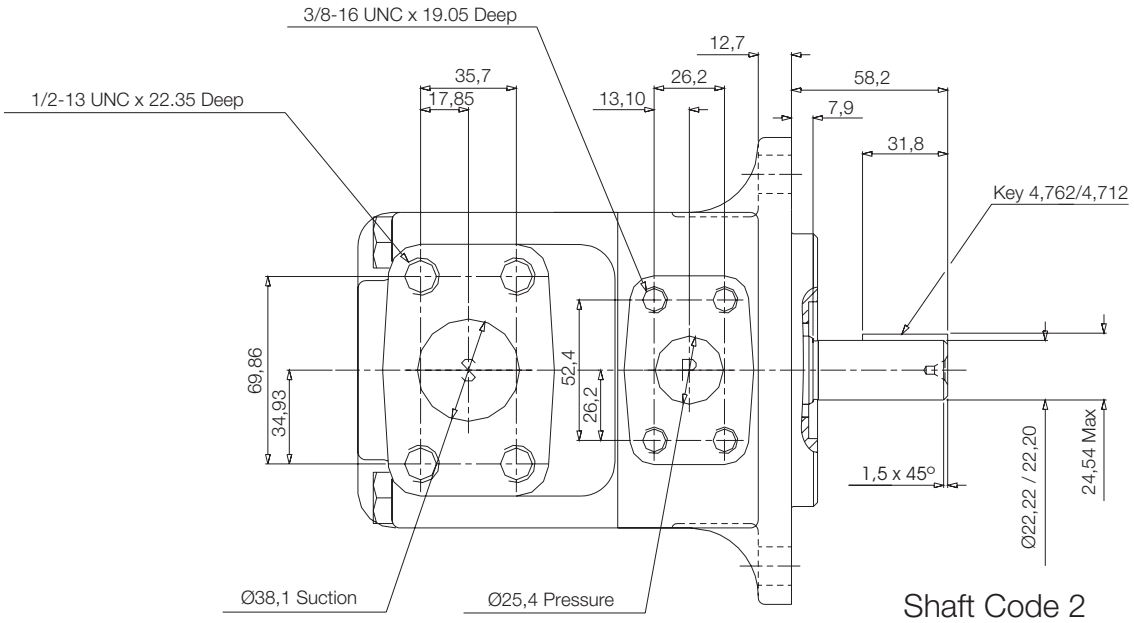


Pressure p [bar]





Shaft Code 1

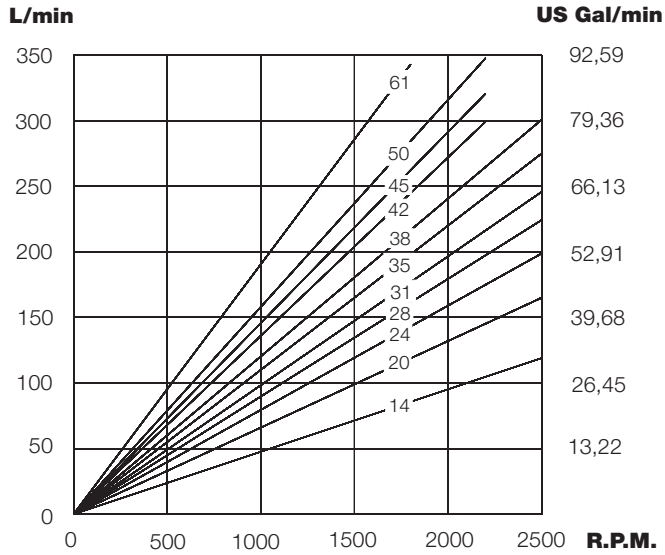


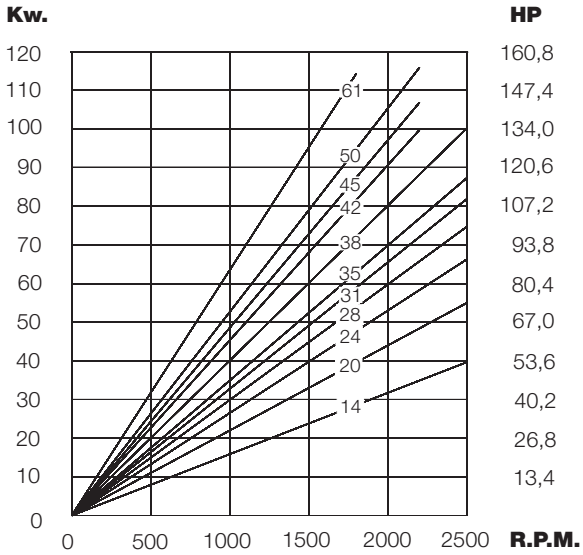
Shaft Code 2

DT6D OPERATING CHARACTERISTICS

FLOW												SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	48	66	80	90	98	111	120	136	146	158	191	Mín.	Máx.	Intermit.	Contin.	(Kgs.)
Gal/min.at 1200 rpm	14	20	24	28	31	35	38	42	45	50	61	400	2500*	240	210	24

* See page 41 for further information about speed & pressure.





Theoretical Flow (0 Bar)

To calculate the real flow at a given operating pressure, substract the internal leakage value for this pressure (see diagram below) from the theoretical flow. (See diagram above).

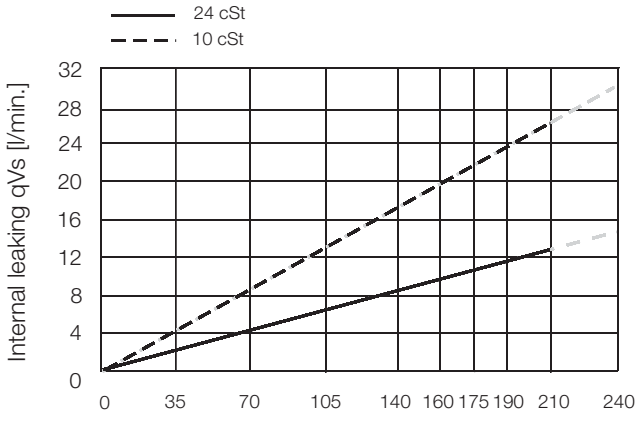
Theoretical Input Power at 200 Bar

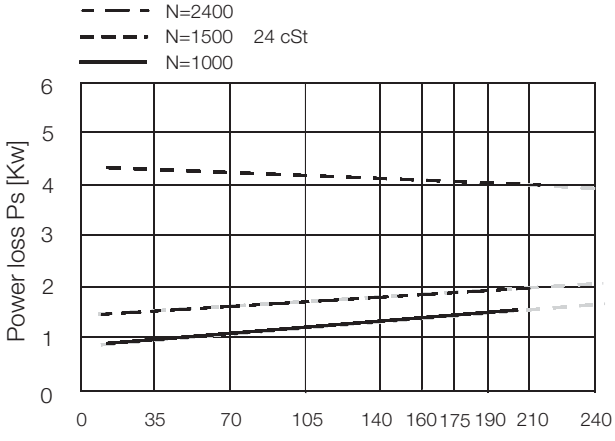
To calculate the theoretical input power at other pressures and speeds, use the formula:

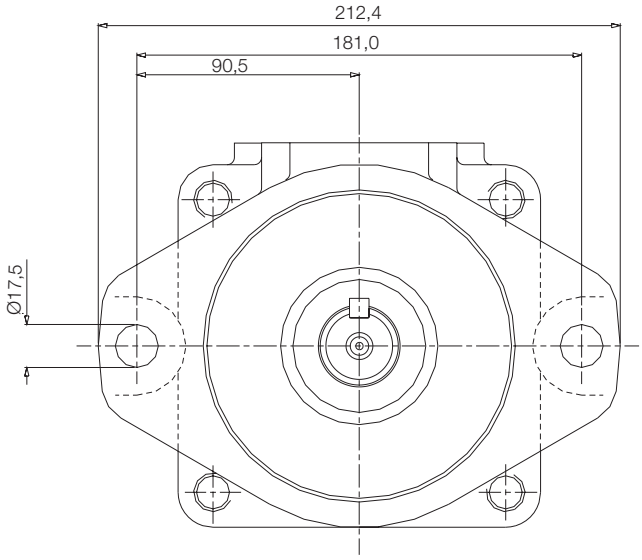
$$P(Kw) \quad \frac{Q(L/min.) \times P(Bar)}{600}$$

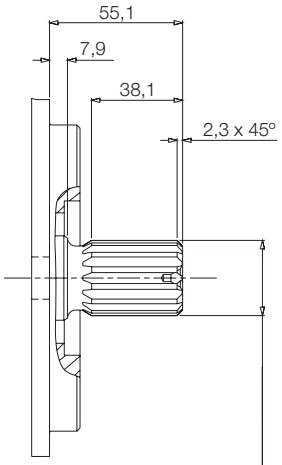
Where Q is the theoretical flow (upper left diagram) and P the operating pressure.

To calculate the real input power, add to the theoretical power the hydromechanical power losses**.** (see diagram below).



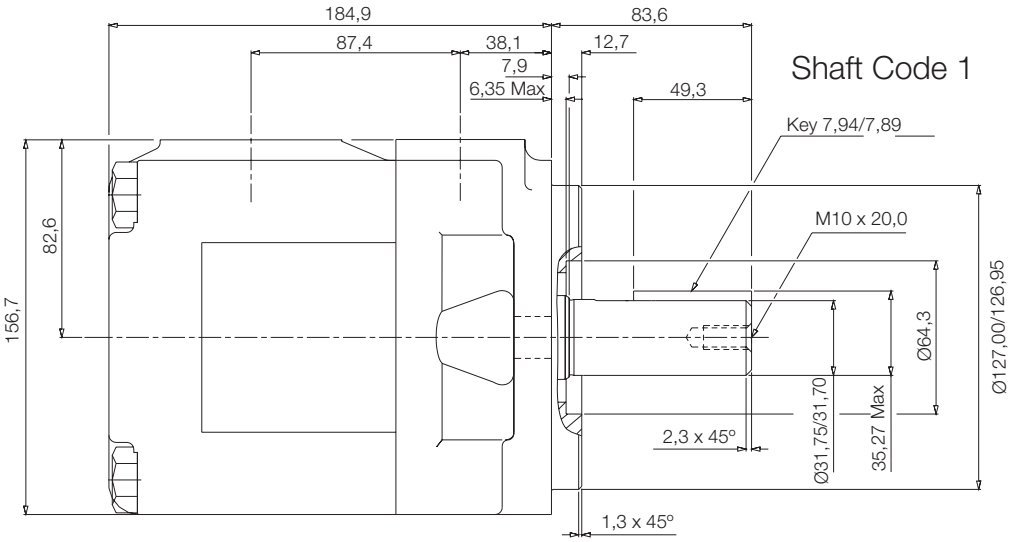




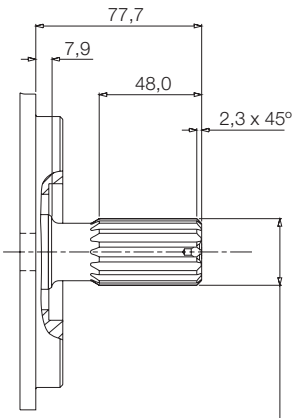


Shaft Code 3

SAE C Splined shaft 1-J498b
12/24 d.p. - 14 Teeth
30° Pressure angle

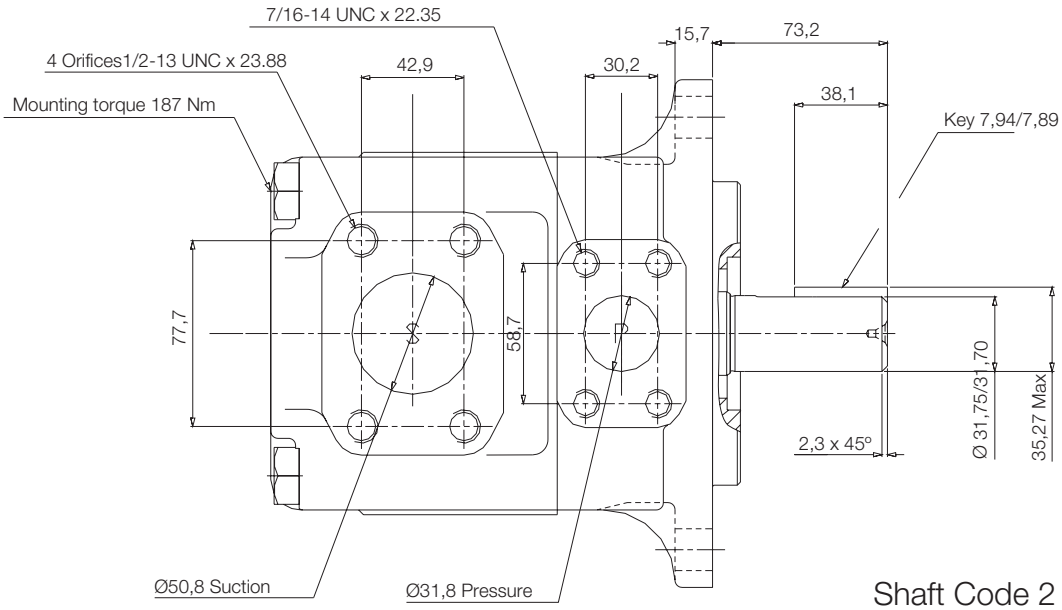


Shaft Code 1



Shaft Code 4

No SAE Splined shaft 1-J498b
12/24 d.p. - 14 Teeth
30° Pressure angle

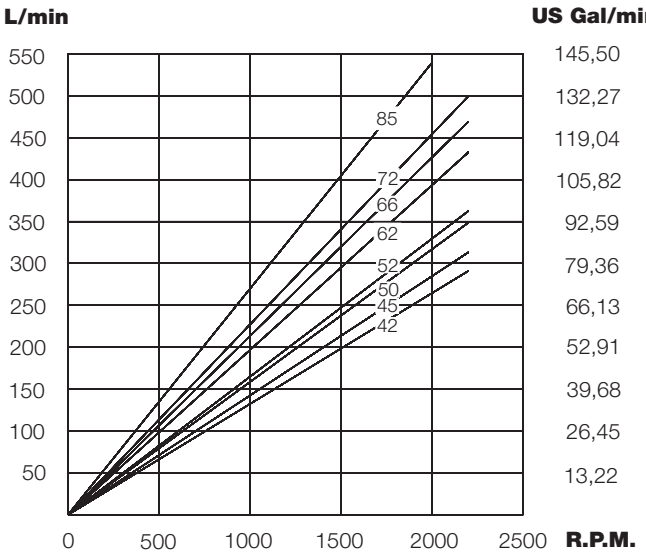


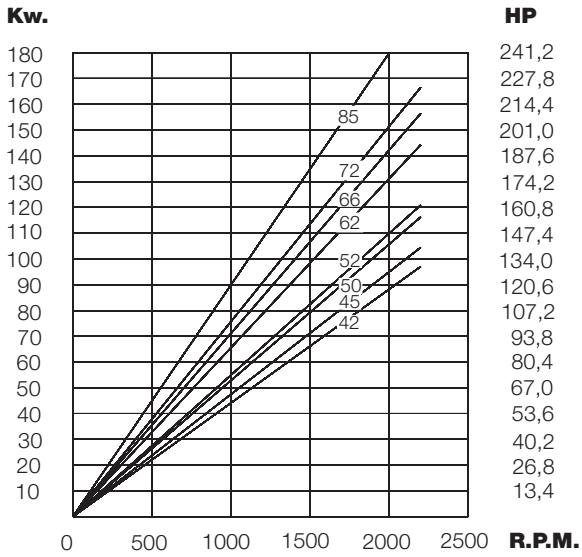
Shaft Code 2

DT6E OPERATING CHARACTERISTICS

FLOW									SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	132	142	156	165	197	213	227	270	Mín.	Máx.	Intermit.	Contin.	**(Kgs.)**
Gal/min.at 1200 rpm	42	45	50	52	62	66	72	85	400	2200*	240	210	44

* See page 41 for further information about speed & pressure.





Theoretical Flow (0 Bar)

To calculate the real flow at a given operating pressure, substract the internal leakage value for this pressure (see diagram below) from the theoretical flow. (See diagram above).

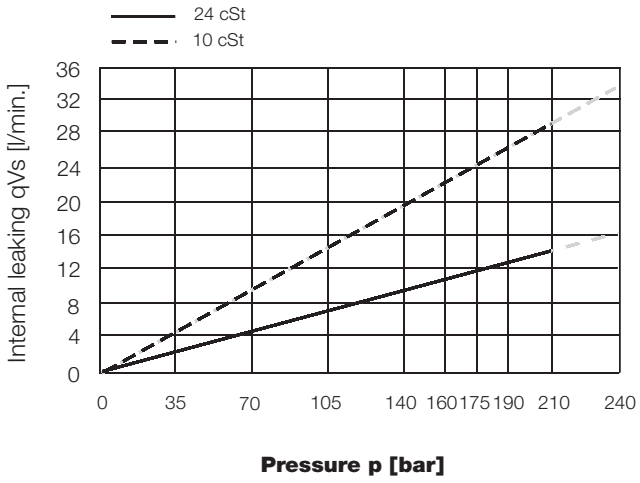
Theoretical Input Power at 200 Bar

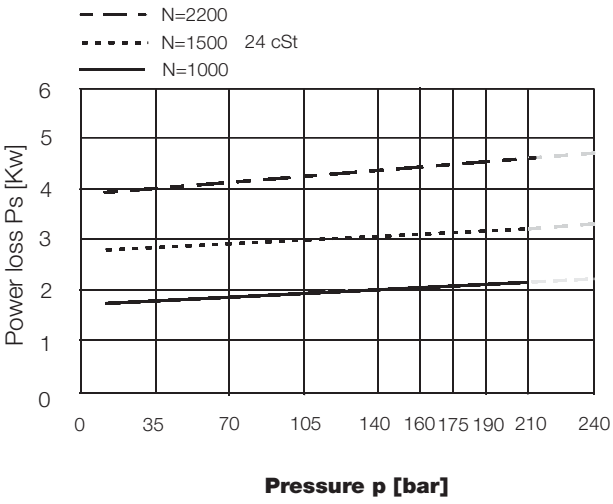
To calculate the theoretical input power at other pressures and speeds, use the formula:

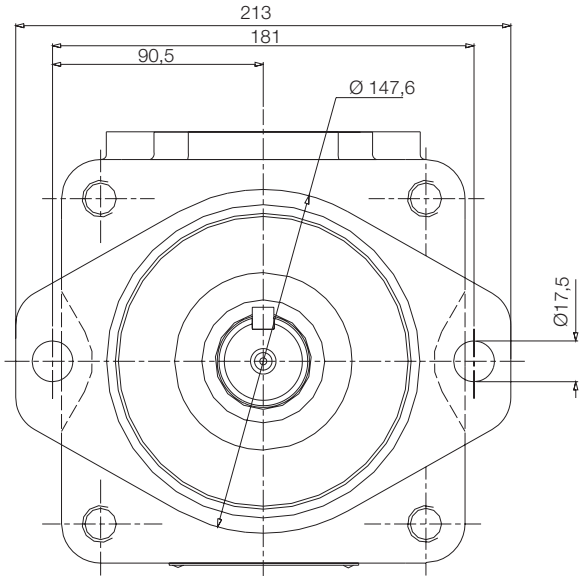
$$P(Kw) \quad \frac{Q(L/min.) \times P(Bar)}{600}$$

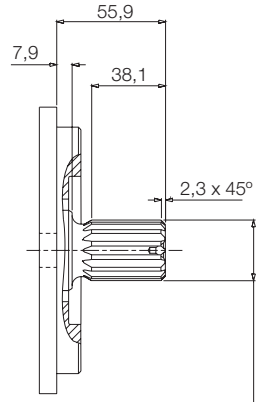
Where Q is the theoretical flow (upper left diagram) and P the operating pressure.

To calculate the real input power, add to the theoretical power the hydromechanical power losses**.** (see diagram below).



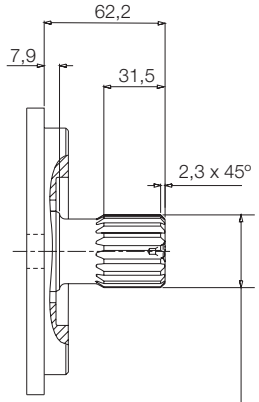






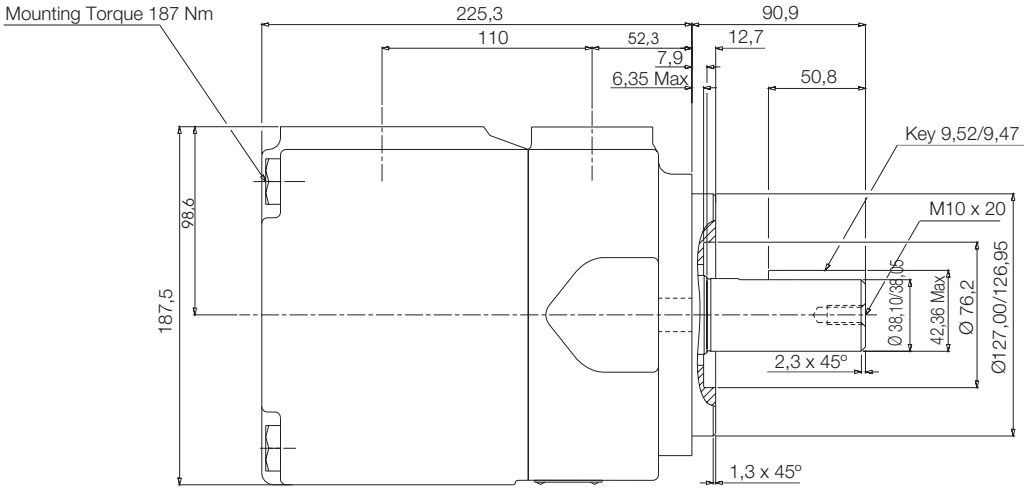
Shaft Code 3

SAE C Splined shaft 1-J498b
12/24 d.p. - 14 Teeth
30° Pressure angle

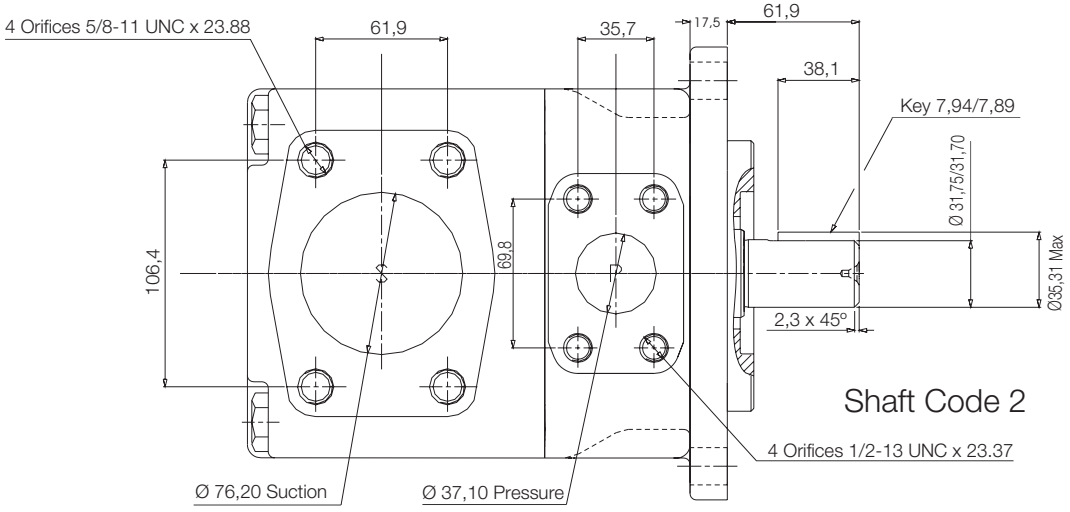


Shaft Code 4

SAE C-C Splined shaft
1-J498b 12/24 d.p. -
17 Teeth
30° Pressure angle



Shaft Code 1
SAE C-C

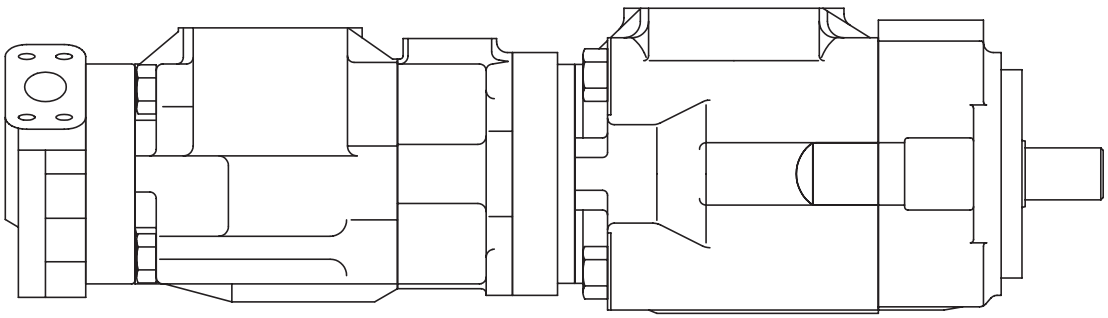


Shaft Code 2

THRU DRIVE SINGLE VANE PUMPS

V**T thru drive single vane pumps

See single V* pumps for displacement & power diagrams (Pages 35, 37.39)



V*7TC thru drive pump with V*64 double pump

V* THRU DRIVE SINGLE VANE PUMPS ORDERING CODE

F3	VS	7T	C	60	D	86	A	A
1	2	3	4	5	6	7	8	9

1 - "F3" means special seals for fire-resistant fluids. Omit if not required

2 - Pump Type:

VS = **12 vane pump**, industrial use (very quiet), UNC threads
VQ = **10 vanes and bronze plates pump**, mobile use, UNC threads

3 - Pump model: 4T, 6T and 7T.

4 - Rear pump mounting: With SAE mounting flange, 2-bolts.
A: SAE-A mounting flange
B: SAE-B mounting flange
C: SAE-C mounting flange

5 - Flow: In US Gallons per minute at 1200 rpm and 7 bar.

6 - D = Right-hand direction of rotation (Clockwise)
Y = Left-hand direction of rotation.
(To check the direction of rotation view from the shaft end).

7 - Shaft type:
1: Parallel keyed
11: Splined
86: Heavy duty parallel keyed

8 - Outlet position, (viewed from shaft):
A: In line with inlet
B: 90° on the right from inlet (Clockwise from inlet)
C: 180° from inlet
D: 90° on the left from inlet (Counterclockwise from inlet)

9- Rear flange positions, (viewed from the flange):
SAE A flanges:
A: 45º on the right (Clockwise)
B: 45º on the left (Counterclockwise)

SAE-B and SAE-C flanges:
A: In line with in-front flange
B: 90° rotated

TDZ hydraulics

THRU DRIVE SINGLE VANE PUMPS CHARACTERISTICS

TYPE	FLOW			SPEED (rpm)		PRESSURE (Bar)		Nominal Power (2)	CONNECTION		WEIGHT (Kgs.)
	Lts.at 1000 rpm	Gal. At 1200 rpm	Reduction (1)	Mín.	Máx.	Contin.	Intermit.		Inlet	Outlet	
VS4T VQ4T	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	600	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 14,6 16,8 20,3 23,8	Ø64	Ø25,4	19,5
VS6T VQ6T	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	600	2400 1800 (VS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	Ø76	Ø31,8	29,5
VS7T VQ7T	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	600	2200 1800 (VS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	Ø89	Ø38,1	38

(1) Delivery flow reduction in Ltrs./min. at 100 Bar. 22 cST of oil viscosity at operating temperature. To calculate the approximate delivery flow at a given pressure and speed, use the following formula with flow reduction and theoretical flow values shown in the chart. Flow reduction values are independent of shaft speed.

$$\text{Approx. outpout flow (Ltrs./min.)} = \text{Theoretical flow} \times \frac{\text{R.P.M}}{1000} - \text{Reduction} \frac{\text{Pressure (bar)}}{100}$$

(2) Nominal power in H.P. at 100 Bar and 1000 RPM (to convert into Kw multiply by 0.735).
To obtain the real input power at different pressure and revolutions, use the formula as follows:

$$\text{Real input power} = \text{Input power} \times \frac{\text{R.P.M}}{1000} \times \frac{\text{Pressure (bar)}}{100}$$

REAR PUMP MOUNTING

The mounted pump to the V**T* should have the shaft shown below:

Model	Mounted pump shaft			
	DP splined	Teeth	Press angle	Flange
V**TA	16/32	9	30º	SAE-A
V**TB	16/32	13	30º	SAE-B
V**TC	12/24	14	30º	SAE-C

TRANSMISSIBLE MAXIMUM TORQUE

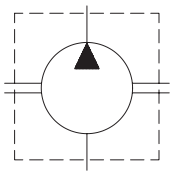
The torque of the V**T plus the torque of the rear pump, in pressure, shall be equal to or less than the below torques:

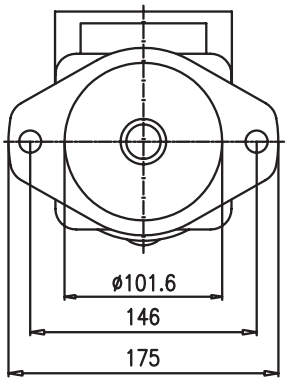
V*4T		V*6T		V*7T	
Shaft	Max. Torque Nm	Shaft	Max. Torque Nm	Shaft	Max. Torque Nm
1	313	1	392	1	588
11	313	11	568	11	803
86	392	86	588	86	803

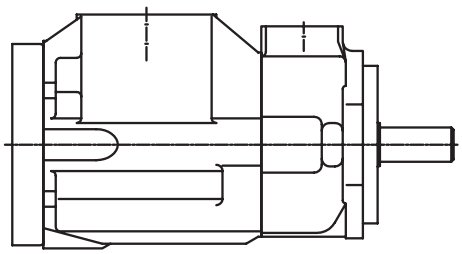
MAXIMUM TORQUE OF THE MOUNTED REAR PUMP

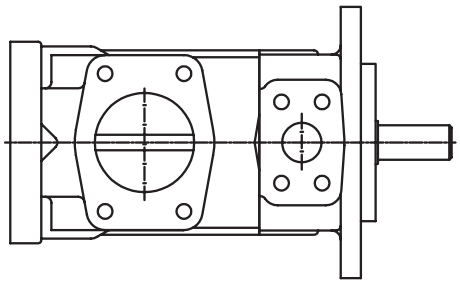
The torque of the mounted pump to the V**T rear pump, in pressure, shall be equal to or less than the indicated torques on next page.

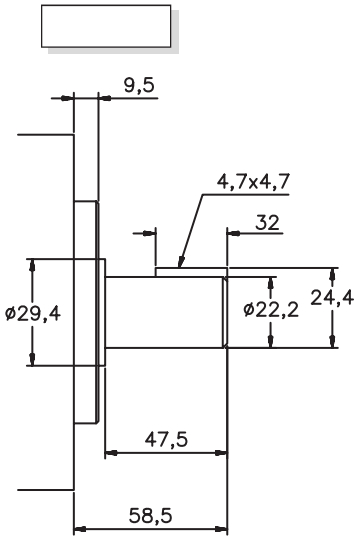
THRU DRIVE PUMPS VS4T & VQ4T

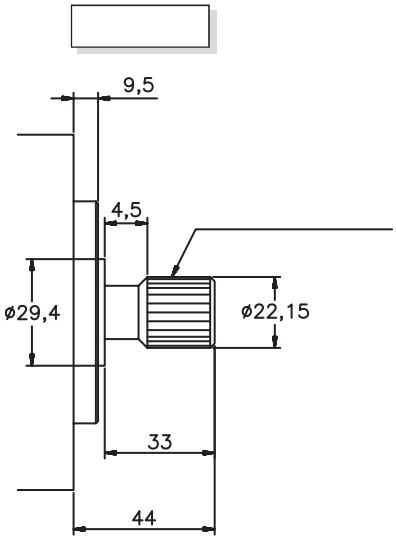


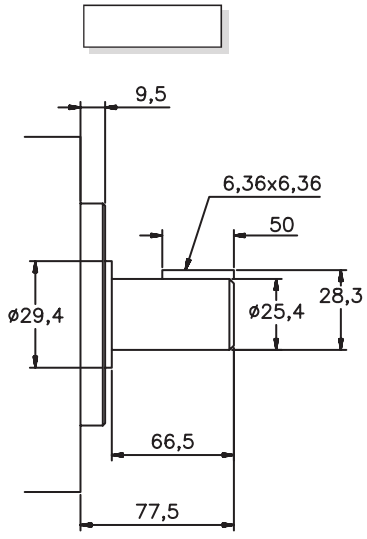






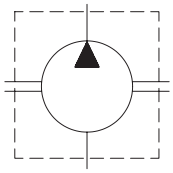


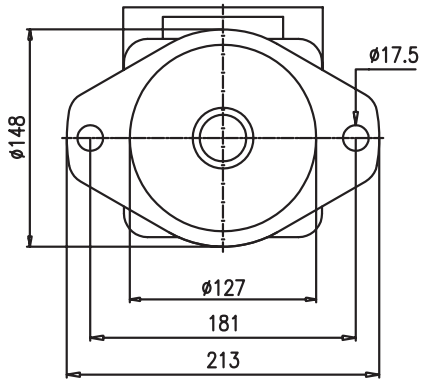


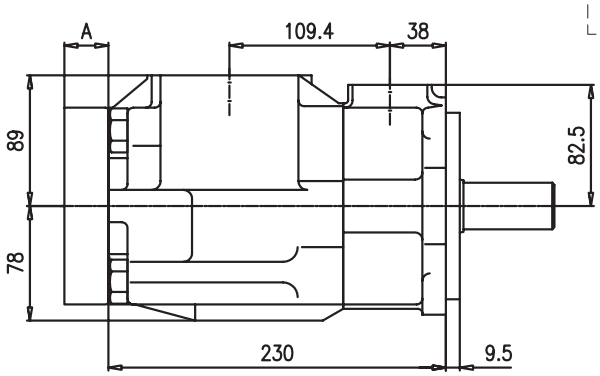


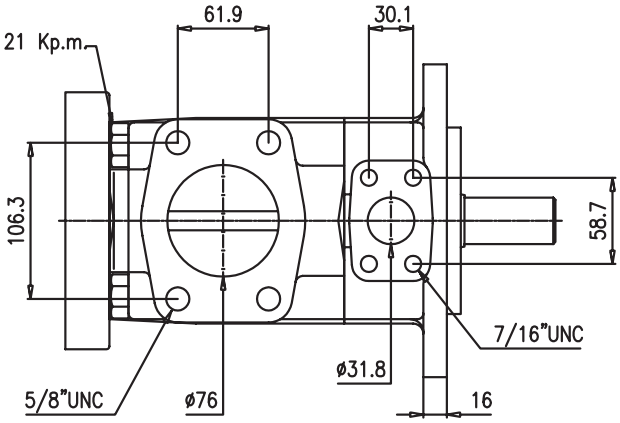
THRU DRIVE PUMPS VS6T & VQ6T

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



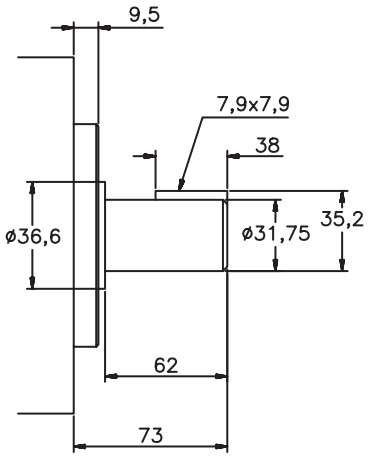




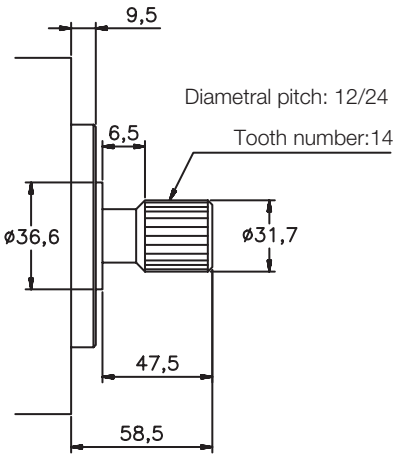


Model	A
V*6TA	20
V*6TB	30
V*6TC	38

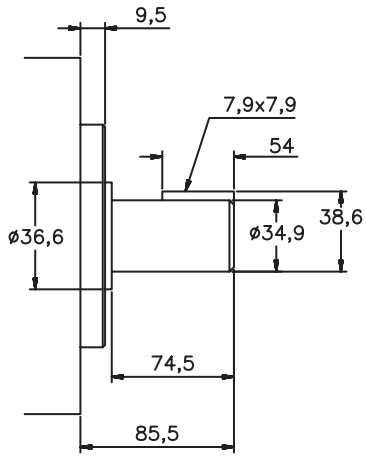
N°1 Shaft



N°11 Shaft



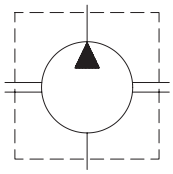
N°86 Shaft

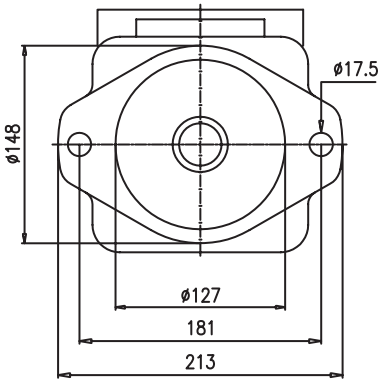


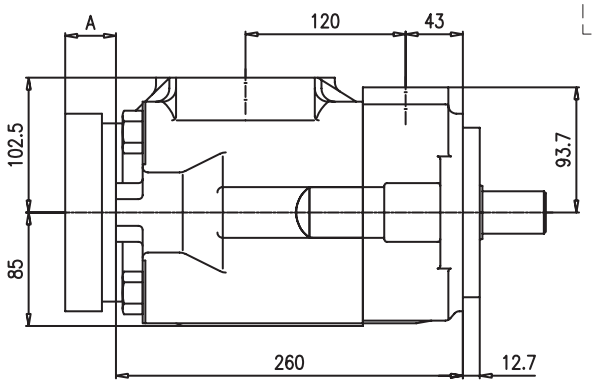
Enquire about other types of shafts

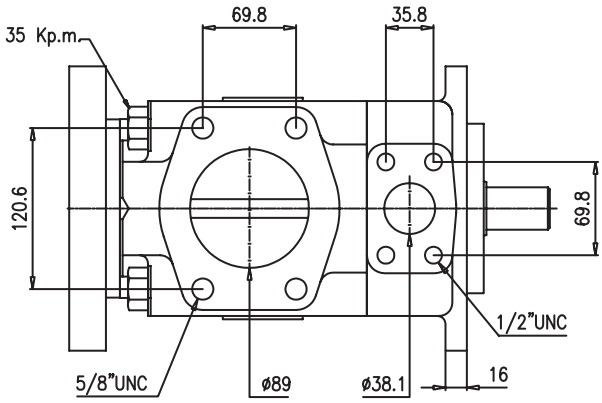
THRU DRIVE PUMPS VS7T & VQ7T

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



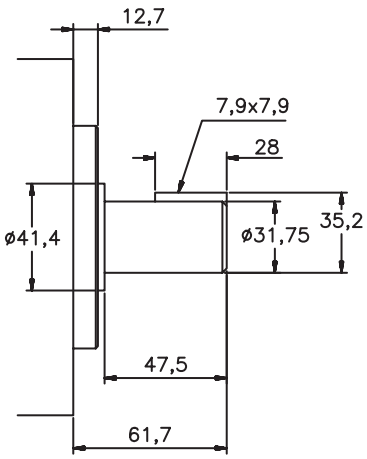




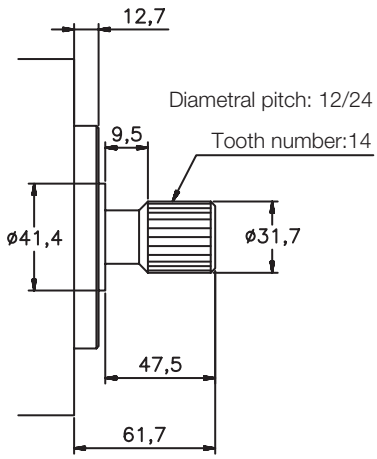


Model	A
V*7TA	20
V*7TB	30
V*7TC	38

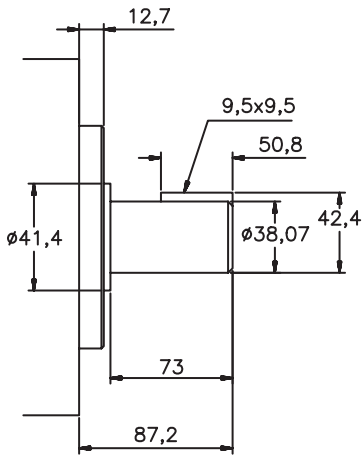
N°1 Shaft



N°11 Shaft



N°86 Shaft



Enquire about other types of shafts

DOUBLE VANE PUMPS

BHP, VQ, VS and DT6 Double vane pumps
(mobile and industrial applications)

(See single pumps for displacement & power diagrams)

BHP & V* DOUBLE VANE PUMPS ORDERING CODE

F3	VS	43	21	8	D	1	A	A
1	2	3	4	5	6	7	8	9

1 - "F3" means special seals for fire-resistant fluids. Omit if not required

2 - Pump Type:

BHP = 10 vane pump, mobile and industrial uses, metrics threads.
VS = 12 vane pump, (except the cover end cartridge of the VS*3 pump), industrial uses (very quiet), UNC threads.
VQ = 10 vane pump, bronze plates, mobile uses, UNC threads.

3 - Model of pump: 33,42,42V,43,63,64,73,74 y 76.
V*****42 pump may include in the rear cartridge a cover with flow regulating and pressure limiter valves. If so, add one "V": VS42V.

4 - Pump flow at shaft side: BHP33 model in litres per minute at 1000 rpm and 7 Bar. All the other models in US gallons per minute at 1200 rpm and 7 Bar.
(See flow chart).

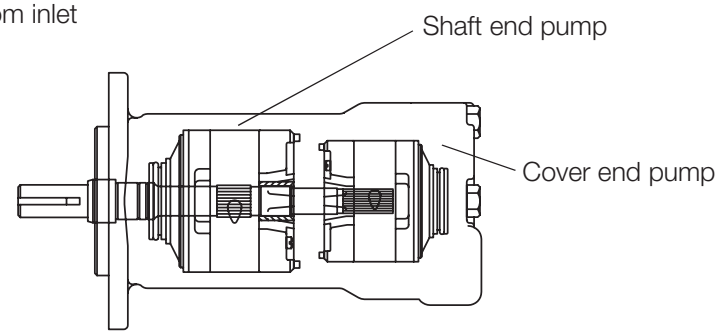
5 - Pump flow at cover side: BHP33 and VS42-VQ42 models in litres per minute at 1000 rpm and 7 Bar. All the other models in gallons per minute at 1200 rpm and 7 Bar.
(See flow chart).

6 - D = Right-hand direction of rotation (Clockwise)
Y = Left-hand direction of rotation.
(To check the direction of rotation view from the shaft end).

7 - Shaft type:
1: Parallel keyed
2: Splined, (only mounted in BHP 33 model)
11: Splined
86: Heavy duty parallel keyed

8 - Shaft end outlet position, (viewed from shaft):
A: Outlet in line with inlet
B: 90° clockwise from inlet
C: 180° from inlet
D: 90° counterclockwise from inlet (Viewed from shaft)

9- Cover end outlet position, (viewed from shaft):
A: 45º clockwise from inlet
B: 135º clockwise from inlet
C: 135° counterclockwise from inlet
D: 45° counterclockwise from inlet
(Viewed from shaft)



TDZ hydraulics

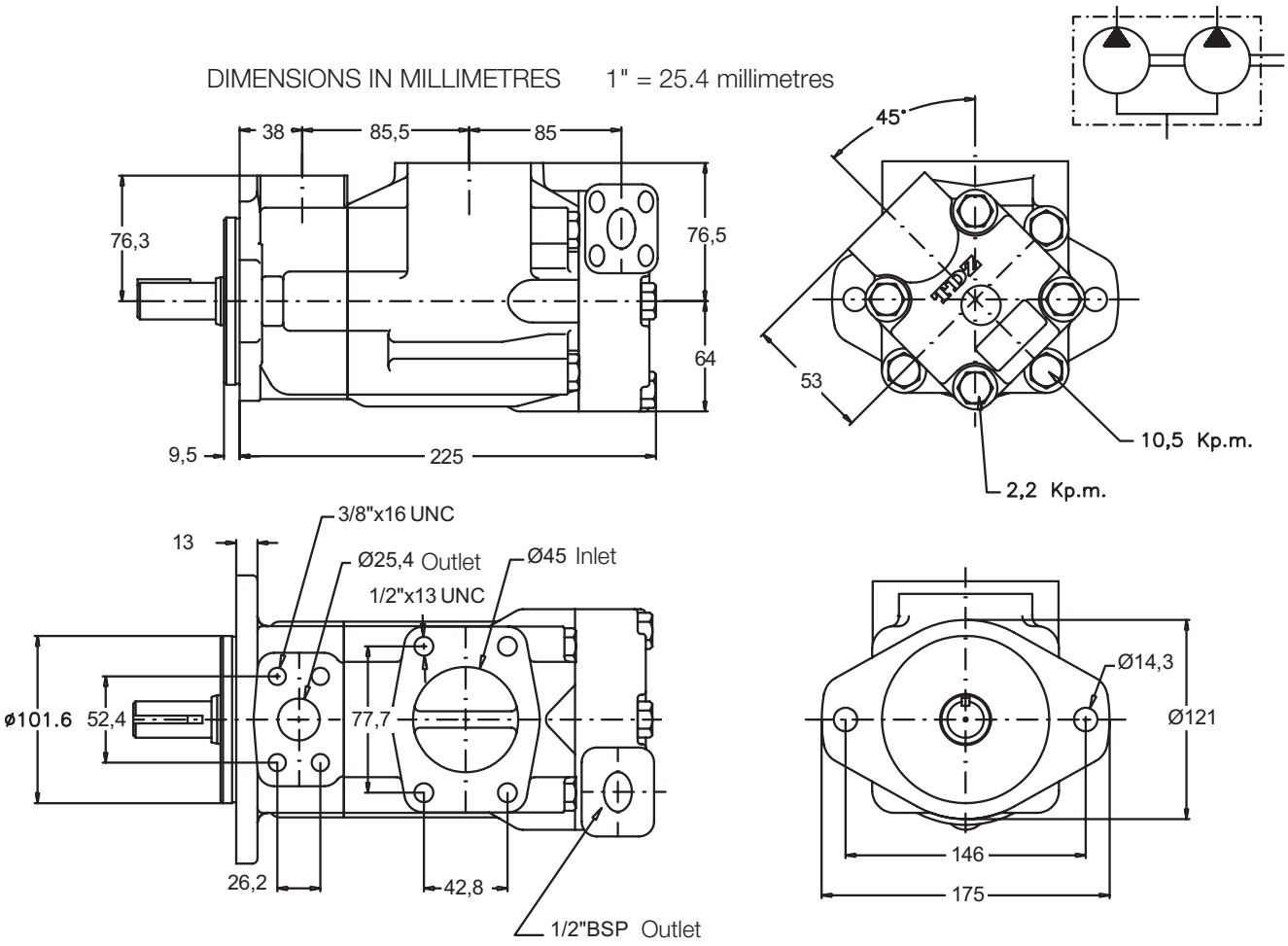
BHP AND V* DOUBLE VANE PUMP CHARACTERISTICS

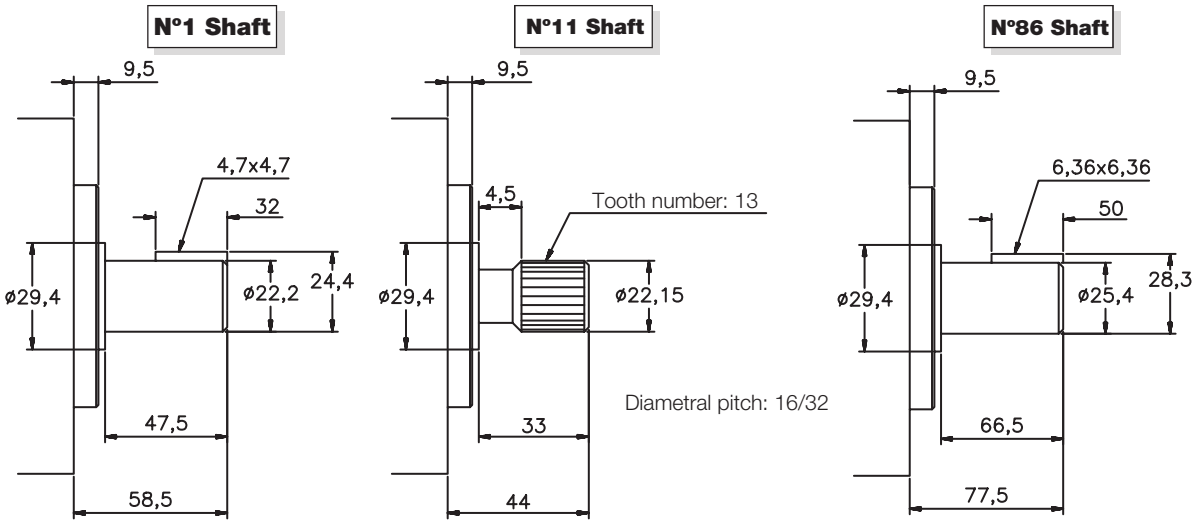
TYPE	SHAFT END							COVER END							WEIGHT (Kgs.)
	FLOW			MAX. rpm	PRESSURE (Bar)		Nominal Power (3)	FLOW			MAX. rpm	PRESSURE (Bar)		Nominal Power (3)	
	Lts.at 1000 rpm	Gal. At 1200 rpm	Reducc. (2)		Contin.	Interm.		Lts.a 1000 rpm	Gal. a 1200 rpm	Reducc. (2)		Contin.	Interm.		
BHP33	6 16 18 25 27 35 38 44 50	2 5 6 8 9 11 12 14 16	0,9 1,7 2,8 4,5 4,8 4,8 5,4 6,6 7,8	2500 2000 1500	150 100	175 125	1,9 4,3 5,3 6,9 7,6 8,8 10,2 11,9 13,6	6 16 18 25 27 35 38 44 50	2 5 6 8 9 11 12 14 16	0,9 1,7 2,8 4,5 4,8 4,8 5,4 6,6 7,8	2500 2000 1500	150 100	175 125	1,9 4,3 5,3 6,9 7,6 8,8 10,2 11,9 13,6	15
VS42 **VQ42** **(1)**	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 15,2 16,8 20,3 22,4	7 8 10 12 15	2,2 2,5 3,2 3,8 4,7	0,7 1,1 1,1 1,1 1,1	2500	150	175	1,8 2 2,5 3 3,7	16
VS43 **VQ43**	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 15,2 16,8 20,3 22,4	8 18 27 29 36 39 46	2 5 8 9 11 12 14	0,9 2,1 2,8 3,5 4,3 4,3 4,3	2500	175	210	1,9 4 6,6 6,9 7,3 7,4 7,6	21
VS63 **VQ63**	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	2400 1800 (VS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	8 18 27 29 36 39 46	2 5 8 9 11 12 14	0,9 2,1 2,8 3,5 4,3 4,3 4,3	2500	175	210	1,9 4 6,6 6,9 7,3 7,4 7,6	31
VS64 **VQ64**	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	2400 1800 (VS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 15,2 16,8 20,3 22,4	33
VS73 **VQ73**	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	2200 1800 (VS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	8 18 27 29 36 39 46	2 5 8 9 11 12 14	0,9 2,1 2,8 3,5 4,3 4,3 4,3	2500 1800 (VS)	175	210	1,9 4 6,6 6,9 7,3 7,4 7,6	46
VS74 **VQ74**	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	2200 1800 (VS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	26 40 45 55 60 67 80 88*	8 12 14 17 19 21 24 27	4,5 5,7 5,7 5,8 5,8 6 6,2 6,5	2500 1800 (VS) 1500	175 125	210 150	6,9 10,4 11,6 13,8 15,2 16,8 20,3 22,4	45
VS76 **VQ76**	138 148 162 180 193 214 240	42 47 50 57 60 67 75	15 15,7 14,3 17,9 18,6 22 26	2200 1800 (VS)	155	175	32,3 36,3 37,9 43,2 46,1 51,2 57,4	66 81 97 112 121 142	21 25 30 35 38 45	8,6 9 10 11,4 11,4 13,1	2400 1800 (VS) 1500	175 125	210 150	16,8 20,3 24,3 27,4 29,3 33,3	55

* 27 gallons (88lts.) cartridge not mounted in **VQ**42, **VQ**43, **VQ**64, **VQ**74 vane pump model.
(1), (2) & (3) Please turn to next page

DOUBLE VANE PUMPS VS-42 Y VQ-42

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



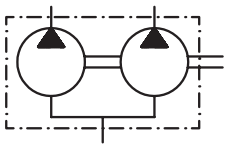


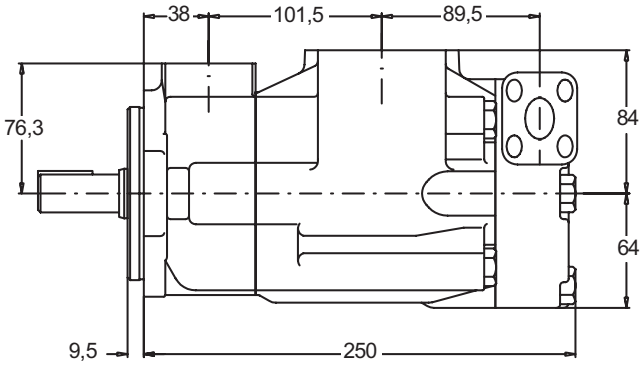
Enquire about other types of shafts

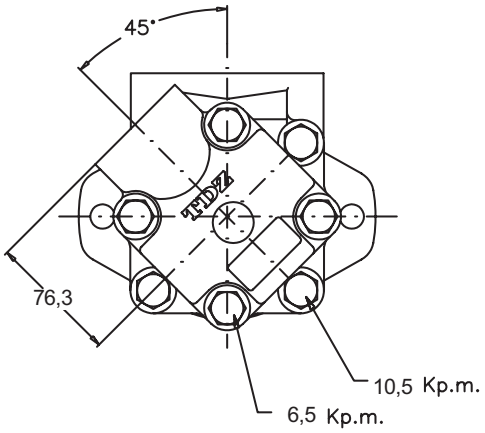
There is a version for the pump of the cover end with flow regulating and pressure limiter valves whose reference V*42V

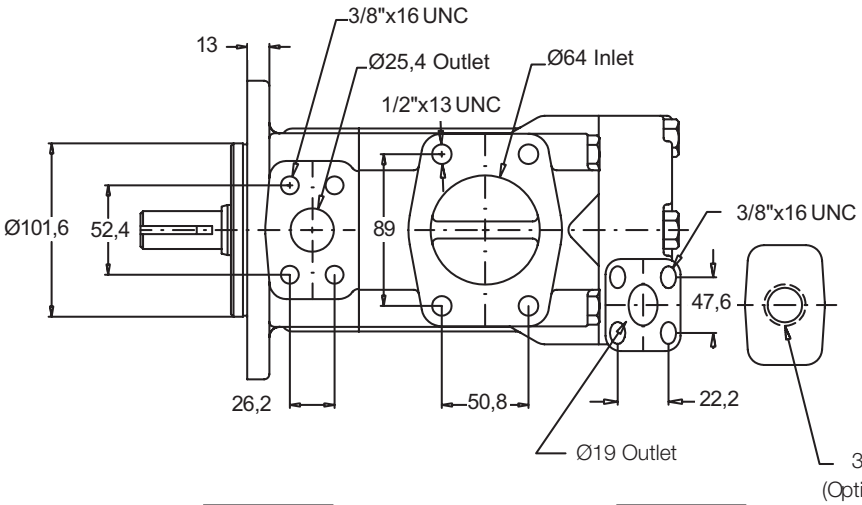
DOUBLE VANE PUMPS VS-43 Y VQ-43

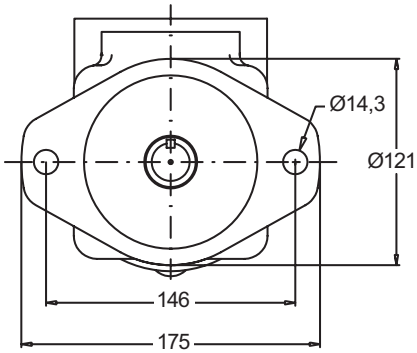
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres





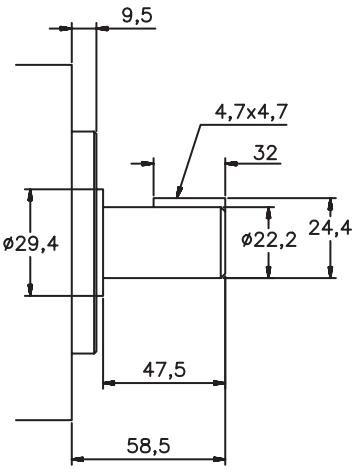




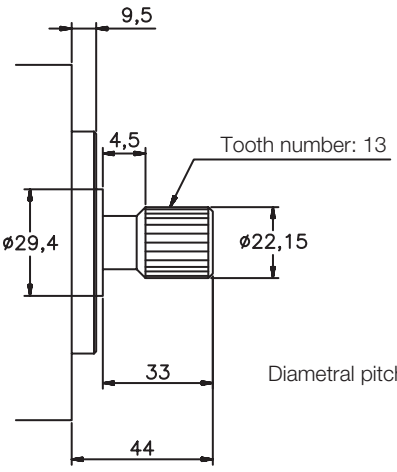


3/4"BSP
(Optional outlet)

N°1 Shaft

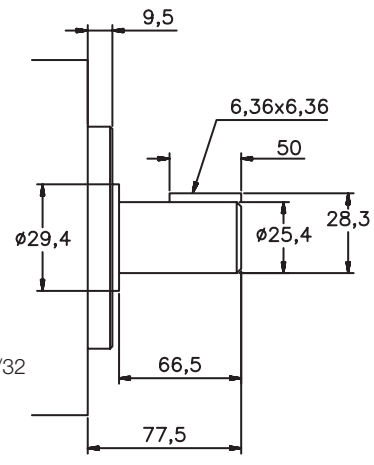


N°11 Shaft



Diametral pitch: 16/32

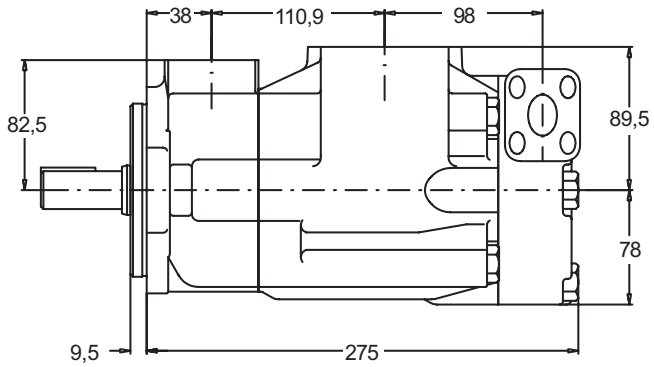
N°86 Shaft

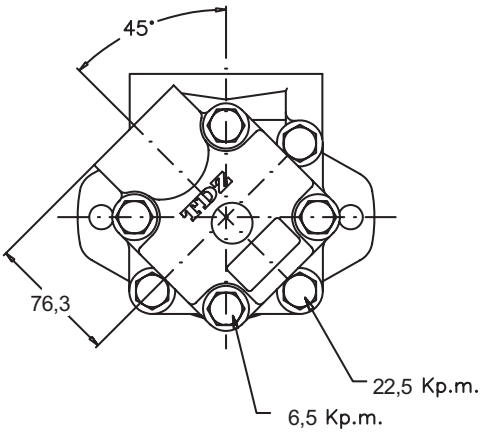


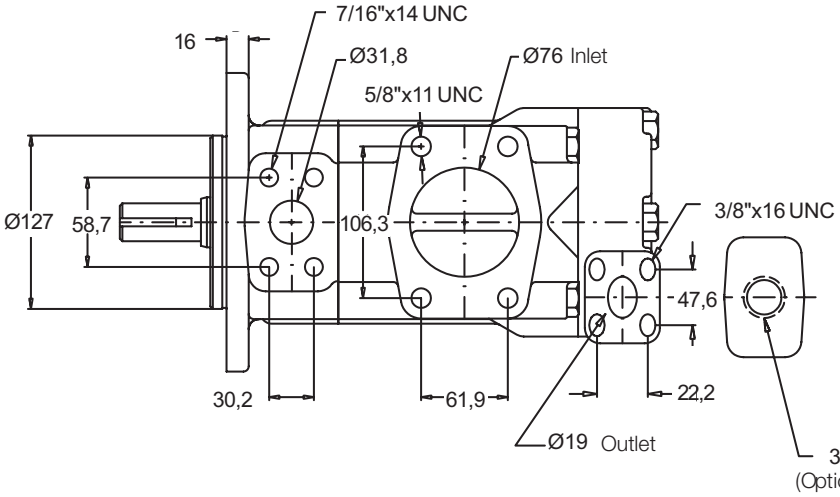
Enquire about other types of shafts

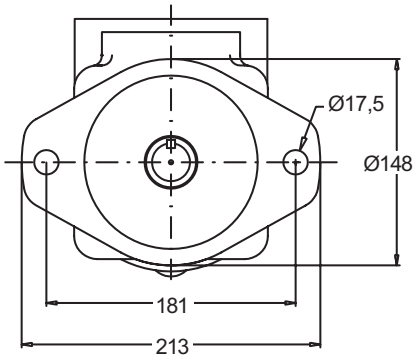
DOUBLE VANE PUMPS VS-63 Y VQ-63

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres

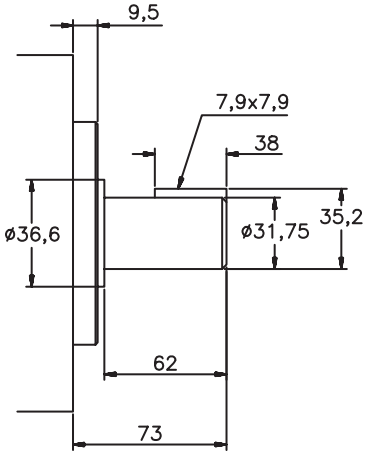




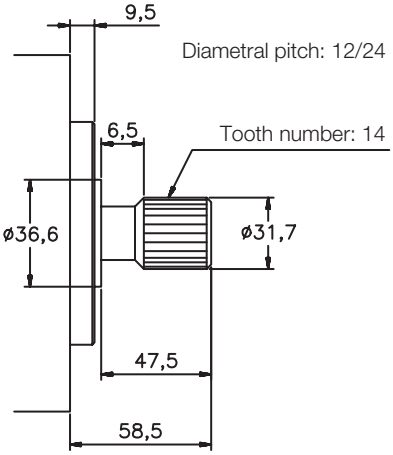




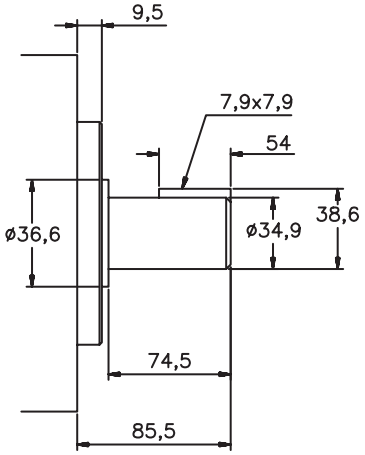
N°1 Shaft



N°11 Shaft



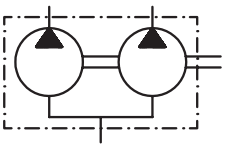
N°86 Shaft

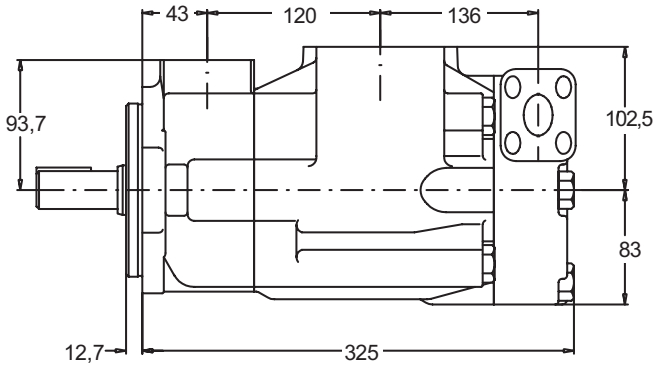


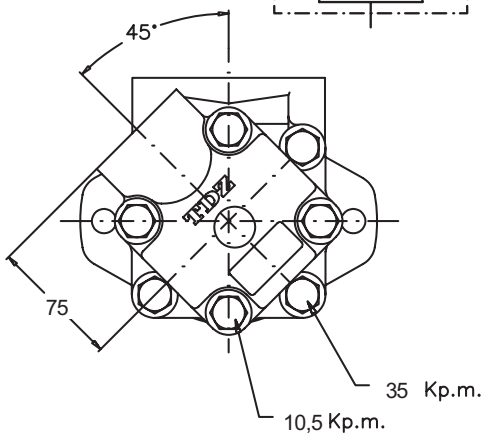
Enquire about other types of shafts

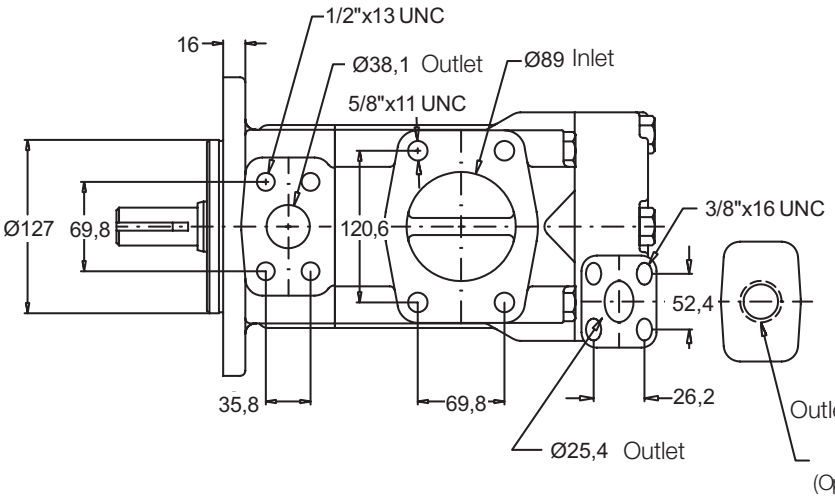
DOUBLE VANE PUMPS VS-74 Y VQ-74

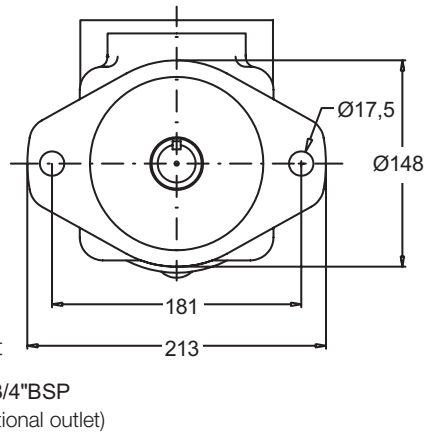
DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres



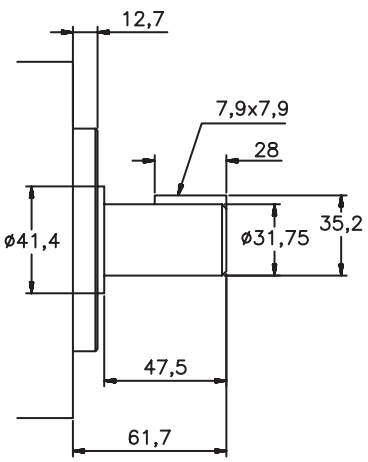




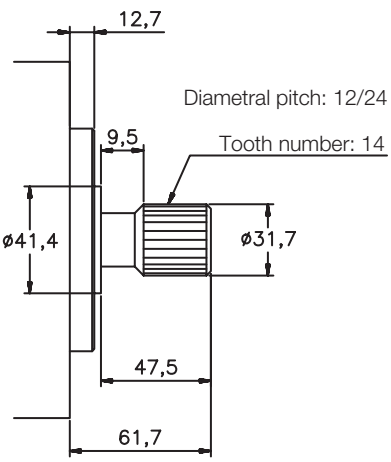




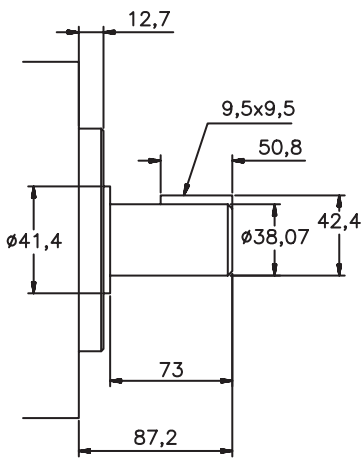
N°1 Shaft



N°11 Shaft



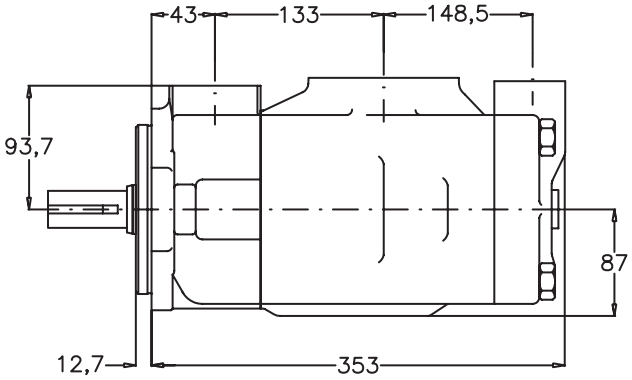
N°86 Shaft

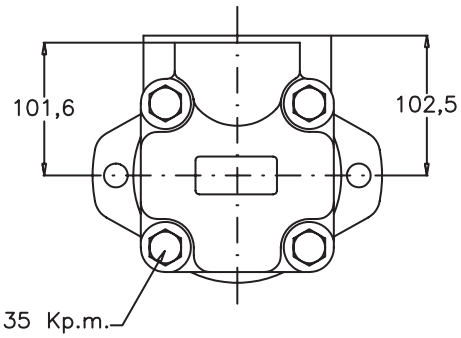


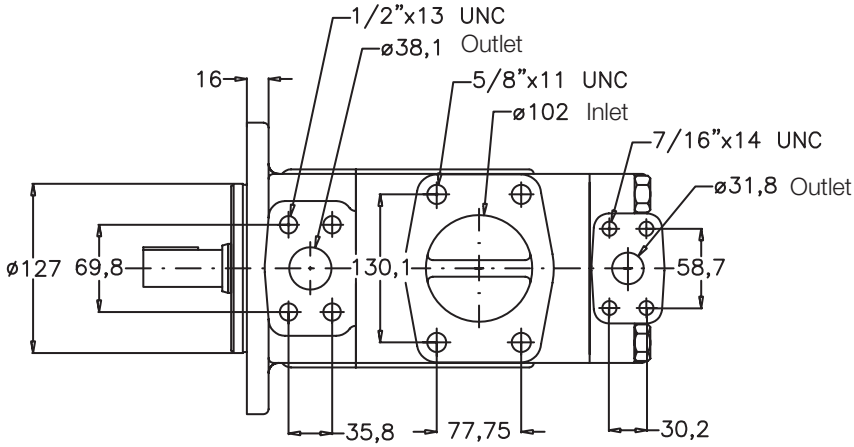
Enquire about other types of shafts

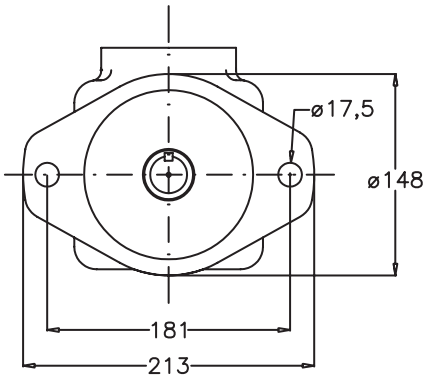
DOUBLE VANE PUMPS VS-76 Y VQ-76

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres

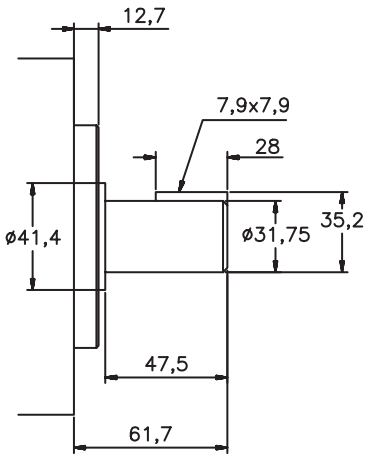




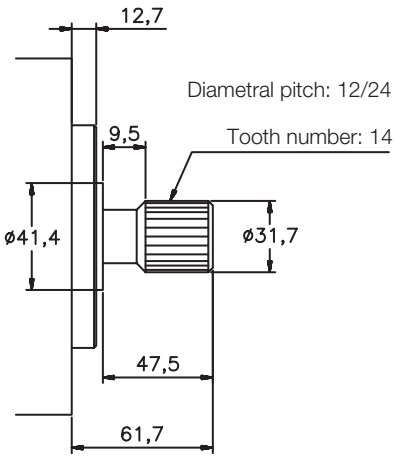




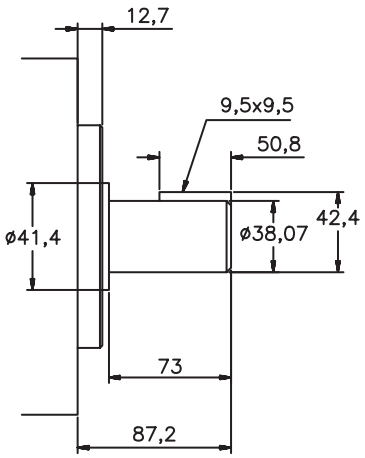
N°1 Shaft



N°11 Shaft

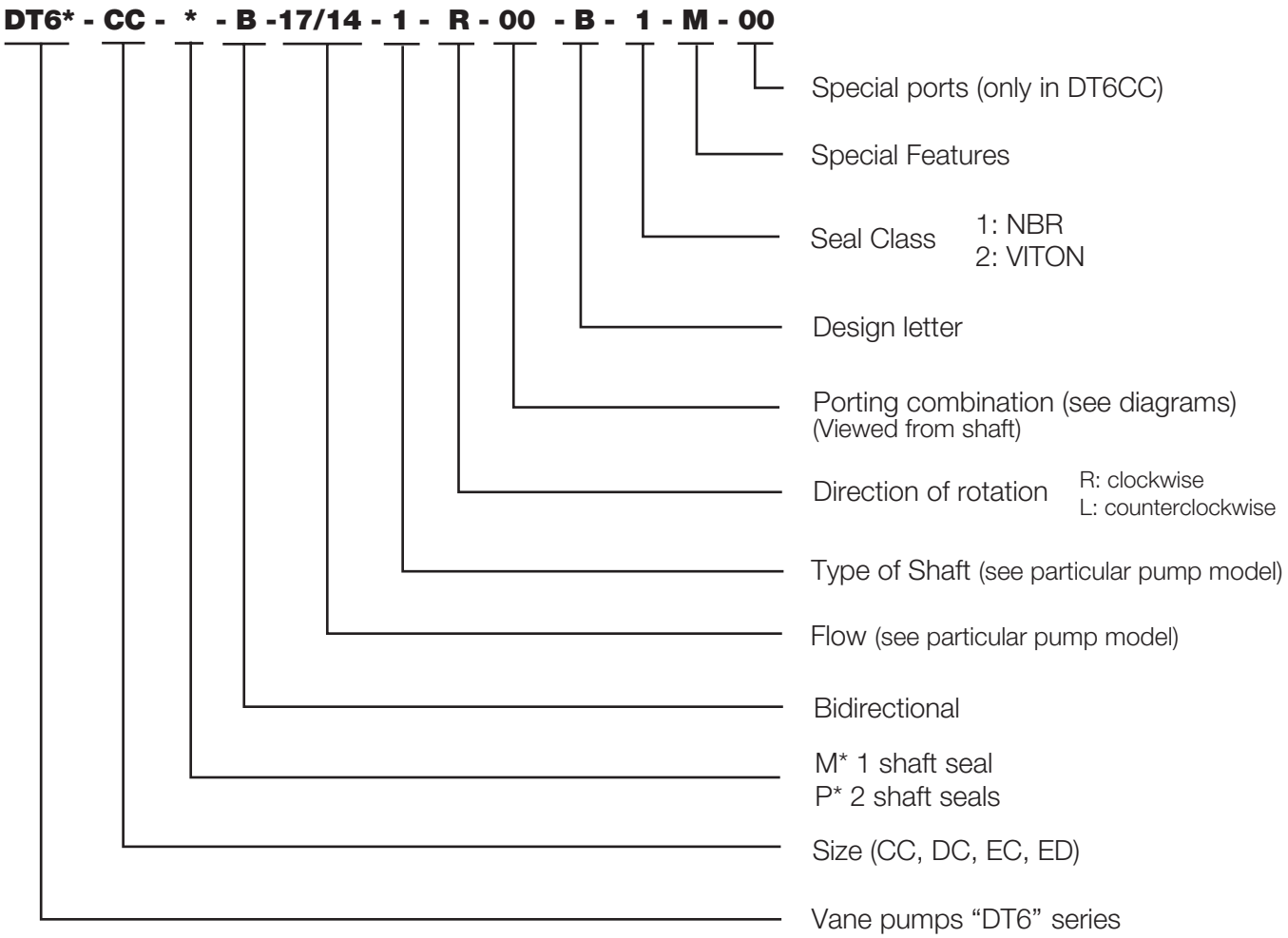


N°86 Shaft



Enquire about other types of shafts

DT6 DOUBLE VANE PUMPS ORDERING CODE



DT6

DOUBLE

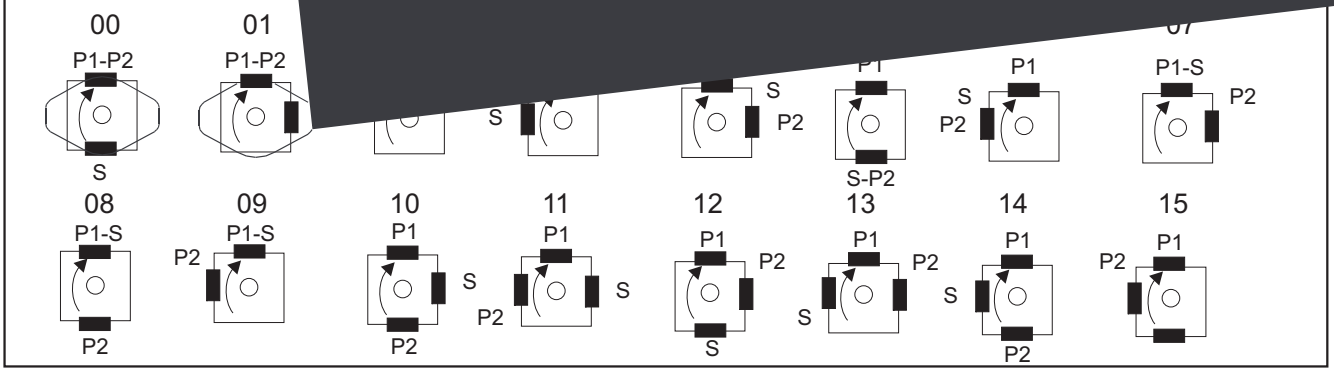
Pump Model	
DT6CC/M	0
DT6DC/M	0
DT6EC/M	04
DT6ED/M	04

C - 025,028,03
D - 042,045,050
E - 085 - 2000 r

Above mentione
Please contact **T**
water glycol, etce

DOUBLE VA

DOUBLE VANE PU



S= Suction port | P1= Shaft end pressure port | P2= Cover end pressure port

DOUBLE PUMPS DT6CC - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW														SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW														SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

DT6CC - FLOW & INPUT POWER DIAGRAMS

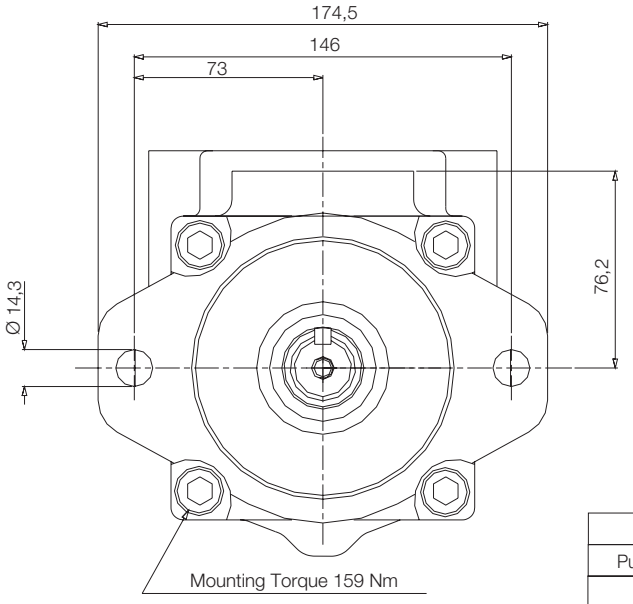
SHAFT END

See **DT6C** Single Pumps for flow and input power diagrams (page 42)

COVER END

See **DT6C** Single Pumps for flow and input power diagrams (page 42)

DOUBLE PUMPS DT6CC - DIMENSIONS



Suction and pressure Port dimenssion variables.

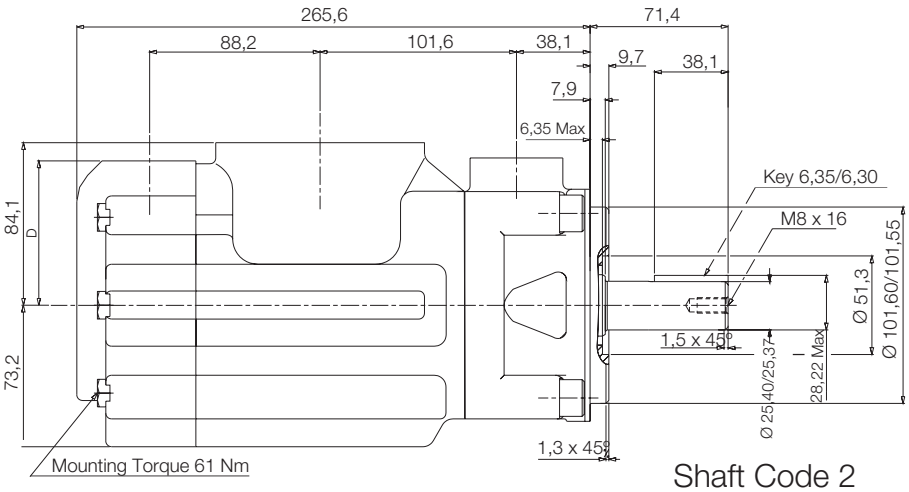
Thread	Port	A	B	C	D	E
S	3"	106,4	61,9	76,2		5/8"-11UNC x 28,4
S	2 ½"	88,9	50,8	63,5		1/2"-13UNC x 23,9
P1	1"	52,4	26,2	25,4	76,2	
P2	3/4"	47,7	22,4	19,0	76,2	
P2	1"	52,4	26,2	25,4	74,7	

***Add the following numbers at the end of the DT6CC reference depending your option.**

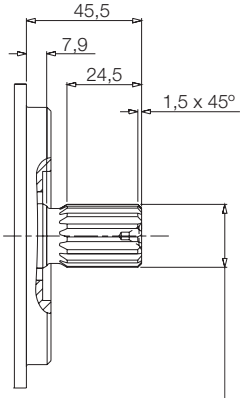
	Code **00***	Code **01***	Code **10***	Code **11***
S	3"	3"	2 ½"	2 ½"
P1	1"	1"	1"	1"
P2	1"	3/4"	1"	3/4"

You may use suction "S" of 2 ½" for 126 cc/rev. maximum
You may use pressure port "P2" of 3/4" for 46 cc/rev. maximum

Shaft torque limits cc/rev x bar		
Pump	Shaft code	V x P max (P1+P2)
DT6CC	1	14300
	3	32670
	5	20600
DT6CCW	2	21470

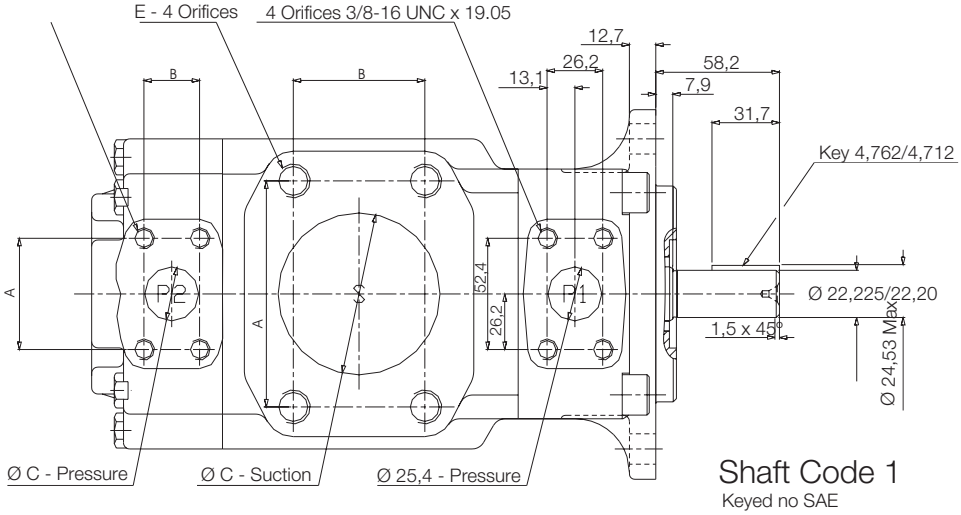


Shaft Code 2
SAE BB

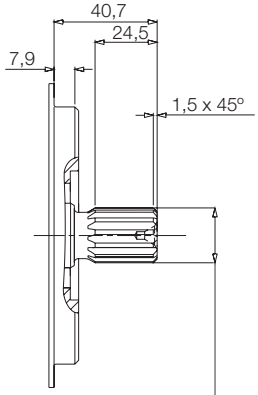


Shaft Code 3

SAE BB Splined shaft
1-J498b 16/32 d.p. -
15 Teeth
30° Pressure angle



Shaft Code 1
Keyed no SAE



Shaft Code 5

SAE B Splined shaft
1-J498b 16/32 d.p. -
13 Teeth
30° Pressure angle

DT6DC - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW												SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	48	66	80	90	98	111	120	136	146	158	191	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	14	20	24	28	31	35	38	42	45	50	61	400	2500*	240	210	24

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW													SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

DT6DC - FLOW & INPUT POWER DIAGRAMS

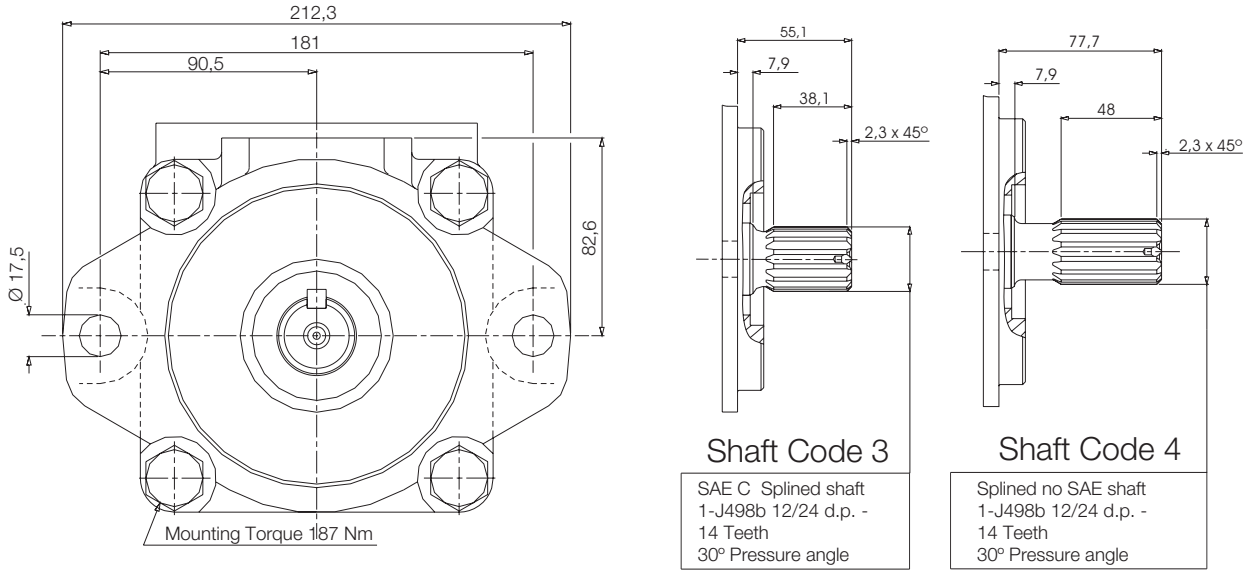
SHAFT END

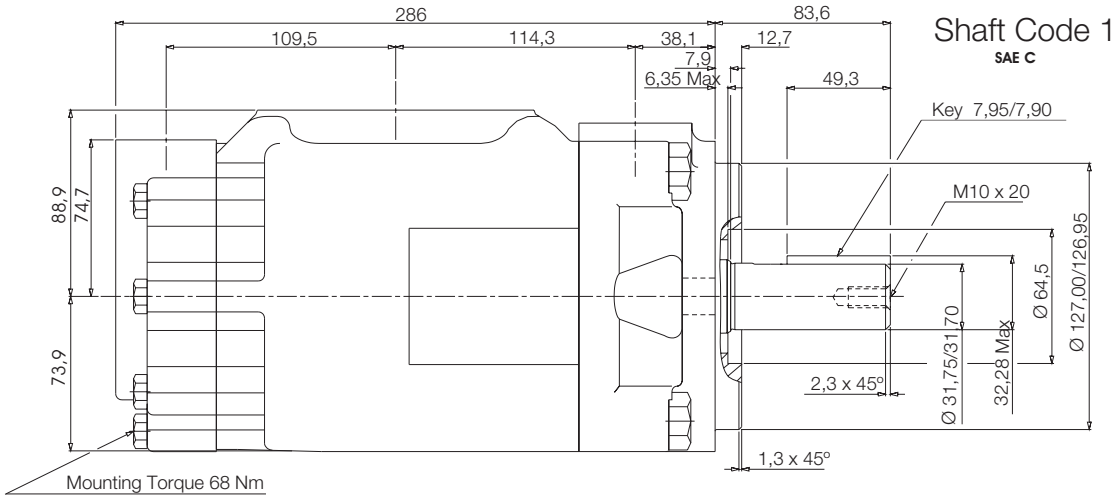
See **DT6D** Single Pumps for flow and input power diagrams (page 44)

COVER END

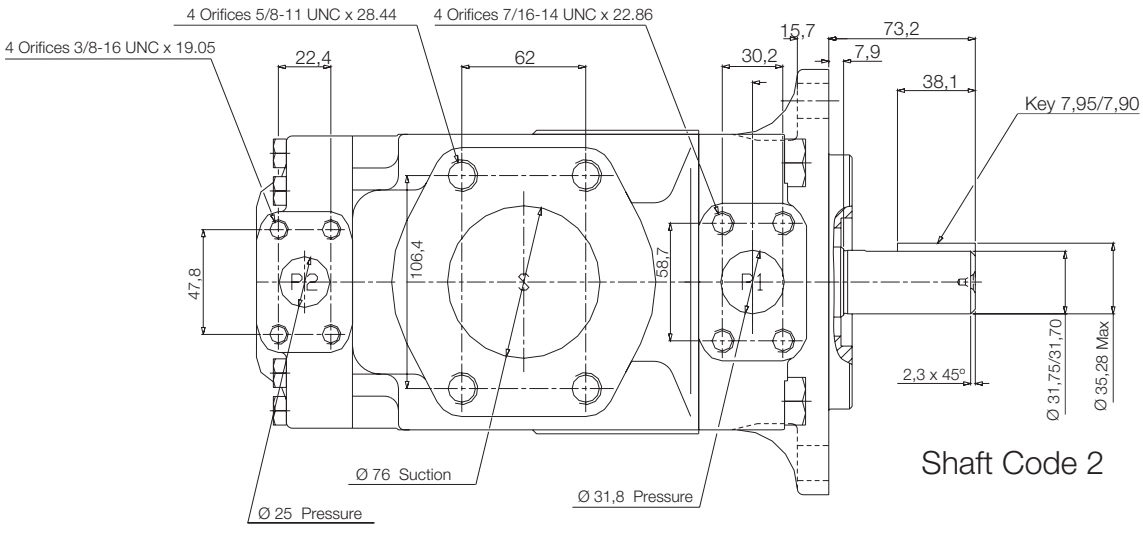
See **DT6C** Single Pumps for flow and input power diagrams (page 42)

DOUBLE PUMPS DT6DC - DIMENSIONS





Shaft Torque Limits (cc/rev x bar)		
Pumps	Shaft code	V x P max (P1+P2)
DT6DC	1	43240
	2	38996



DT6EC - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW									SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	132	142	156	165	197	213	227	270	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	42	45	50	52	62	66	72	85	400	2200*	240	210	44

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW													SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

DT6EC - FLOW & INPUT POWER DIAGRAMS

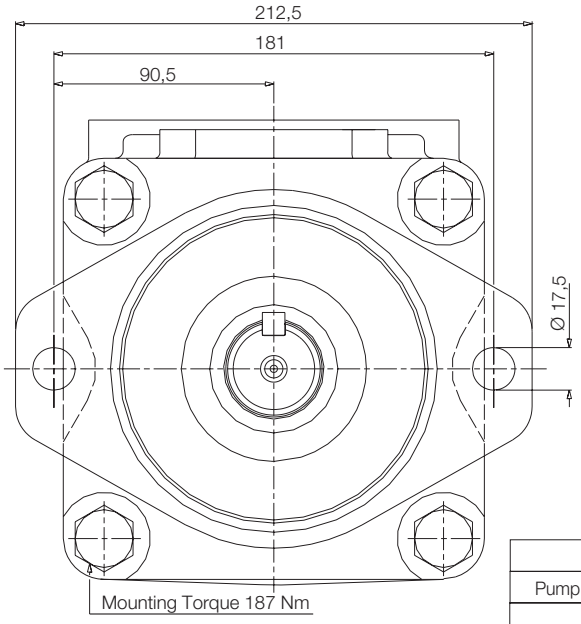
SHAFT END

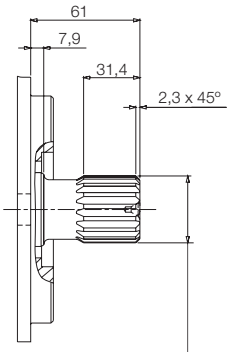
See **DT6E** Single Pumps for flow and input power diagrams (page 46)

COVER END

See **DT6C** Single Pumps for flow and input power diagrams (page 42)

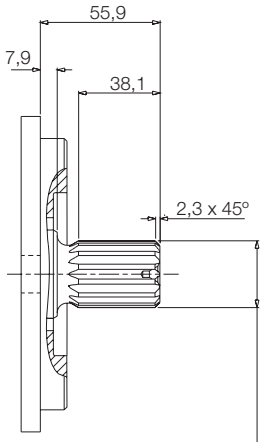
DOUBLE PUMPS DT6EC - DIMENSIONS





Shaft Code 4

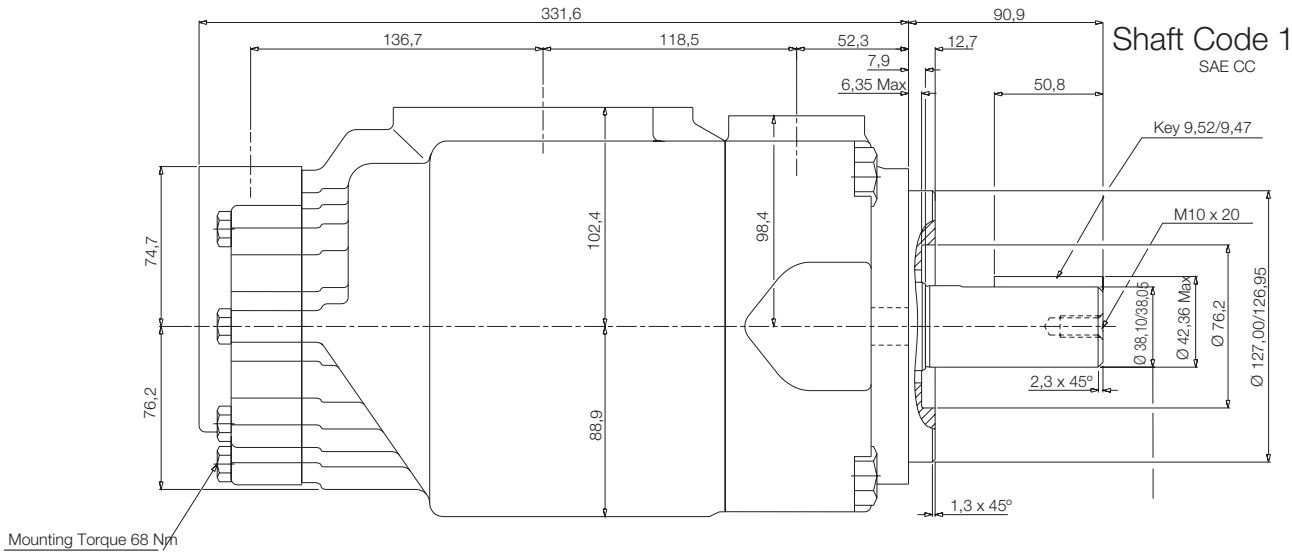
SAE CC Splined shaft
1-J498b 12/24 d.p. -
17 Teeth
30° Pressure angle



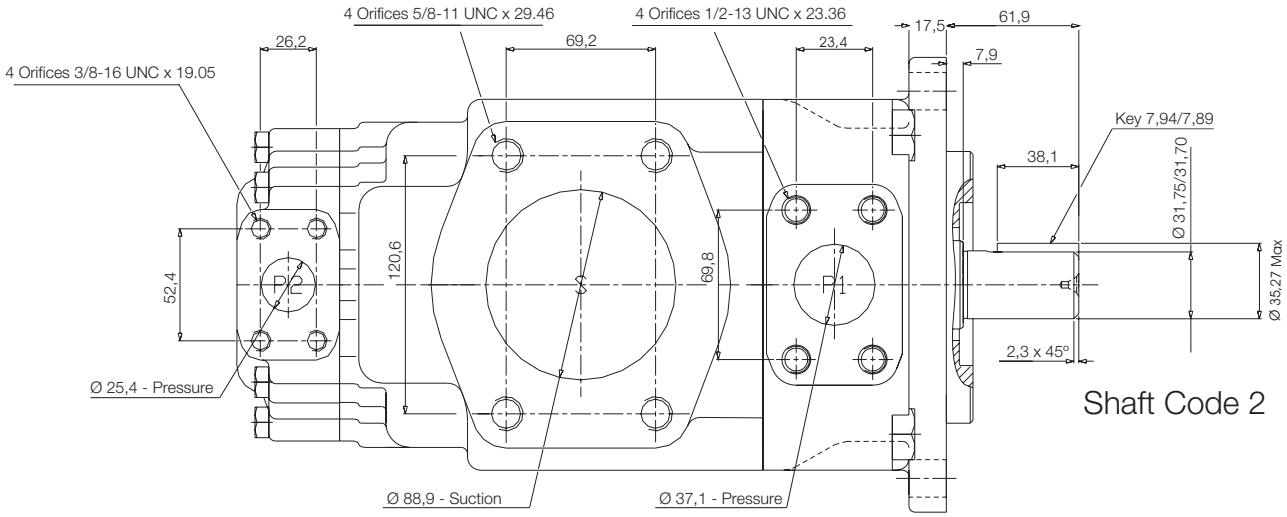
Shaft Code 3

SAE C Splined shaft
1-J498b 12/24 d.p. -
14 Teeth
30° Pressure angle

Shaft Torque Limits (cc/rev x bar)		
Pump	Shaft Code	V x P max (P1+P2)
DT6EC	1	72306
	2	34590
	3	61200



Shaft Code 1
SAE CC



Shaft Code 2

DT6ED - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW									SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	132	142	156	165	197	213	227	270	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	42	45	50	52	62	66	72	85	400	2200*	240	210	44

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW												SPEED (rpm)		PRESSURE (bar)		WEIGHT (Kgs.)
Lts/min.at 1000 rpm	48	66	80	90	98	111	120	136	146	158	191	Mín.	Máx.	Intermit.	Contin.	
Gal/min.at 1200 rpm	14	20	24	28	31	35	38	42	45	50	61	400	2500*	240	210	24

* See page 41 for further information about speed & pressure.

DT6ED - FLOW & INPUT POWER DIAGRAMS

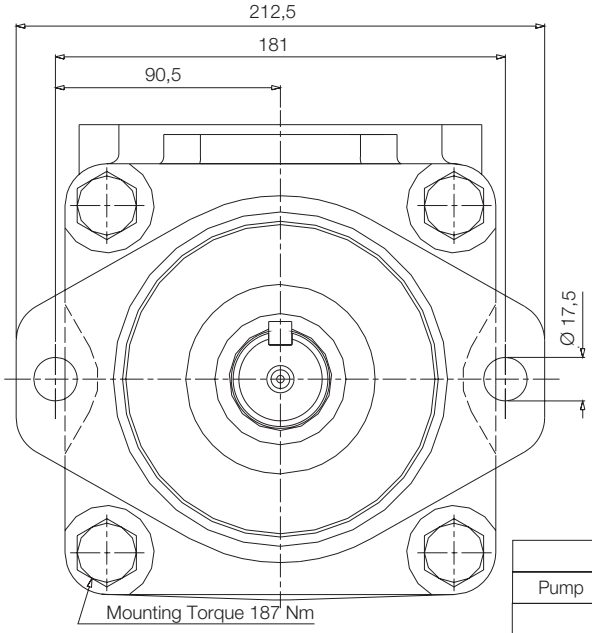
SHAFT END

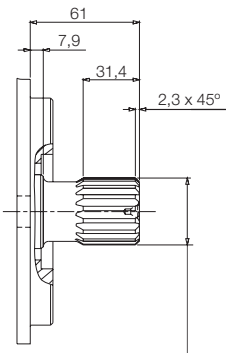
See **DT6E** Single Pumps for flow and input power diagrams (page 46)

COVER END

See **DT6D** Single Pumps for flow and input power diagrams (page 44)

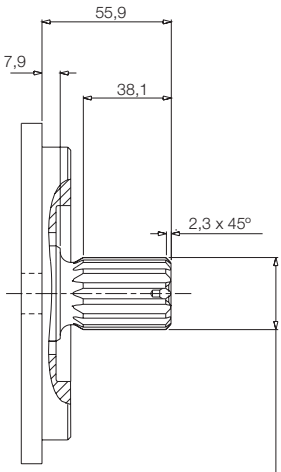
DOUBLE PUMPS DT6ED - DIMENSIONS





Shaft Code 4

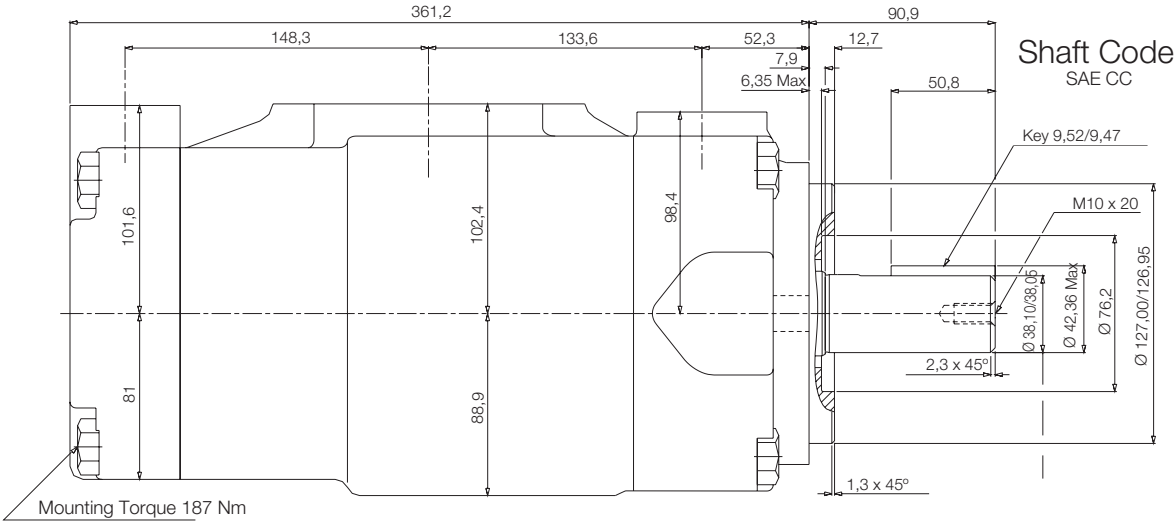
SAE CC Splined shaft
1-J498b 12/24 d.p. -
17 Teeth
30° Pressure angle



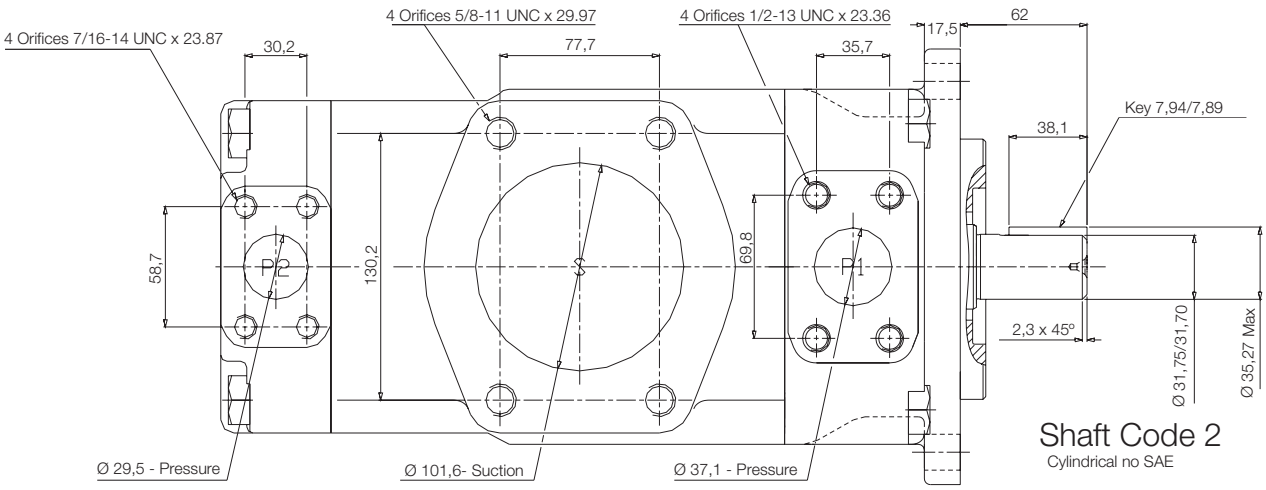
Shaft Code 3

SAE C Splined shaft
1-J498b 12/24 d.p. -
14 Teeth
30° Pressure angle

Shaft Torque Limits (cc/rev x bar)		
Pump	Shaft Code	V x P max (P1+P2)
DT6ED	1	72306
	2	34590
	3	61200



Shaft Code 1
SAE CC

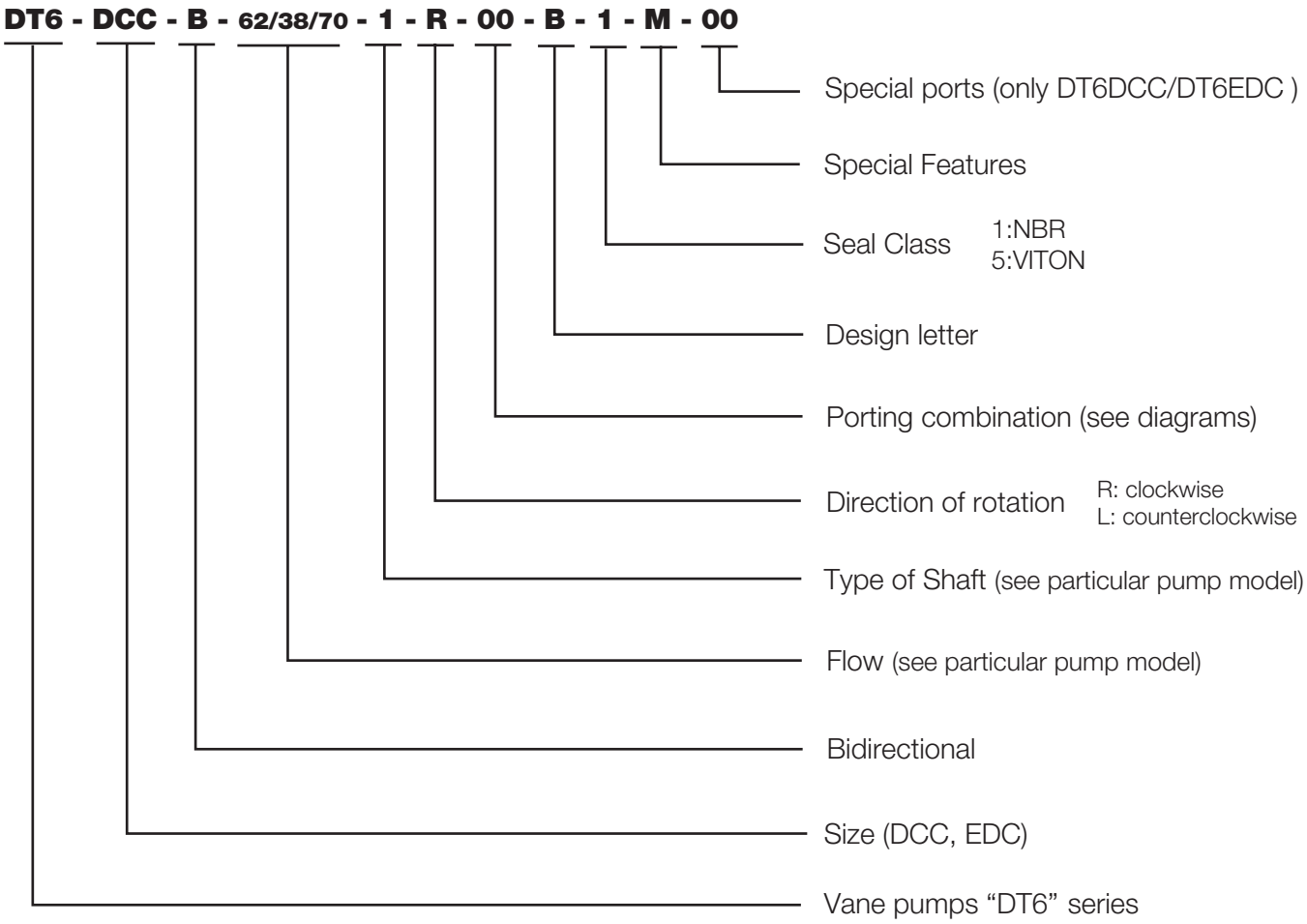


Shaft Code 2
Cylindrical no SAE

TRIPLE VANE PUMPS

DT6 Triple vane pumps

DT6 TRIPLE VANE PUMPS ORDERING CODE



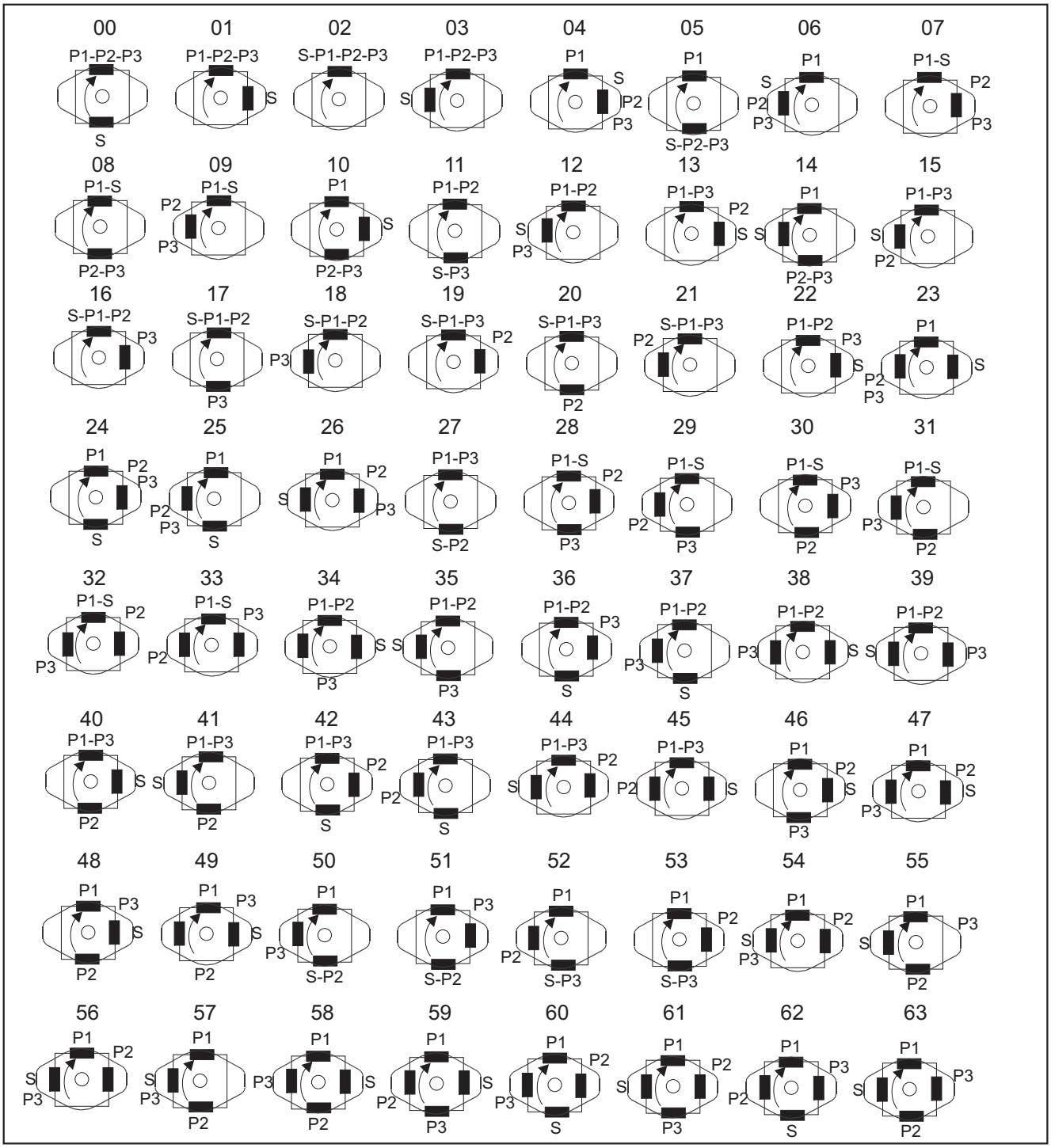
TRIPLE VANE PUMPS

Series	P1			P2			P3			Maximum speed	Front Flange Standard SAE j744c ISO 3019-1	Weight Kgs	SAE 4 holes flange			
	Cartridge model	Theoretical displacem. Cm^3/rev	Maximum Pressure	Cartridge model	Theoretical displacem. Cm^3/rev	Maximum Pressure	Cartridge model	Theoretical displacem. Cm^3/rev	Maximum Pressure				Suction S	Pressure P1	Pressure P2	Pressure P3
DT6DCC	014 a 061	47.6 a 190.5	240	003 a 031	10.8 a 100	275	003 a 031	10.8 a 100	275	2500	SAE C	61	4"	1 1/4"	1"	1" ó 3/4"
DT6EDC	042 a 085	132.3 a 269.8	240	014 a 061	47.6 a 190.5	240	003 a 031	10.8 a 100	275	2200	ISO 3019-2	100	4"	1 ½"	1 1/4"	1" ó 3/4"

C - 025,028,031 - 2500 rpm maximum, 028,031 - 210 bar maximum intermitent
D - 042,045,050 - 2200 rpm maximum, 050 - 210 bar maximum intermitent - 061 - 120 bar max intermitente
E - 085 - 2000 rpm max - 90 bar maximum intermitent

TRIPLE VANE PUMPS - PORTING COMBINATION

DT6DCC-DT6EDC



S= Suction port | P1= Shaft end pressure port | P2= Middle pressure port | P3= Cover end pressure port

DT6DCC - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW												SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	48	66	80	90	98	111	120	136	146	158	191	Mín.	Máx.	Intermit.	Contin.	**(Kgs.)**
Gal/min.at 1200 rpm	14	20	24	28	31	35	38	42	45	50	61	400	2500*	240	210	24

* See page 41 for further information about speed & pressure.

MIDDLE SECTION

FLOW													SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	**(Kgs.)**
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW													SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	**(Kgs.)**
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

DT6DCC - FLOW & INPUT POWER DIAGRAMS

SHAFT END

See **DT6D** Single Pumps for flow and input power diagrams (page 44)

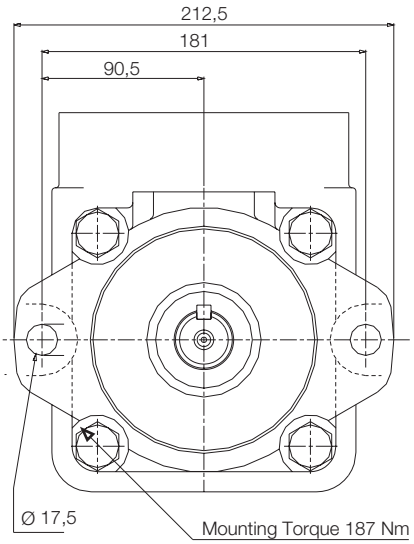
MIDDLE BODY

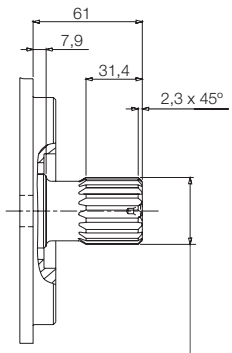
See **DT6C** Single Pumps for flow and input power diagrams (page 42)

COVER END

See **DT6C** Single Pumps for flow and input power diagrams (page 42)

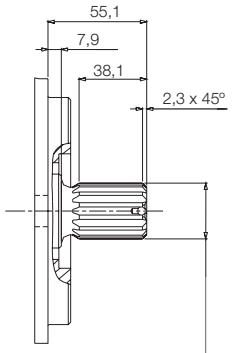
TRIPLE PUMPS DT6DCC - DIMENSIONS





Shaft Code 4

SAE CC Splined shaft
1-J498b 12/24 d.p. -
17 Teeth
30° Pressure angle



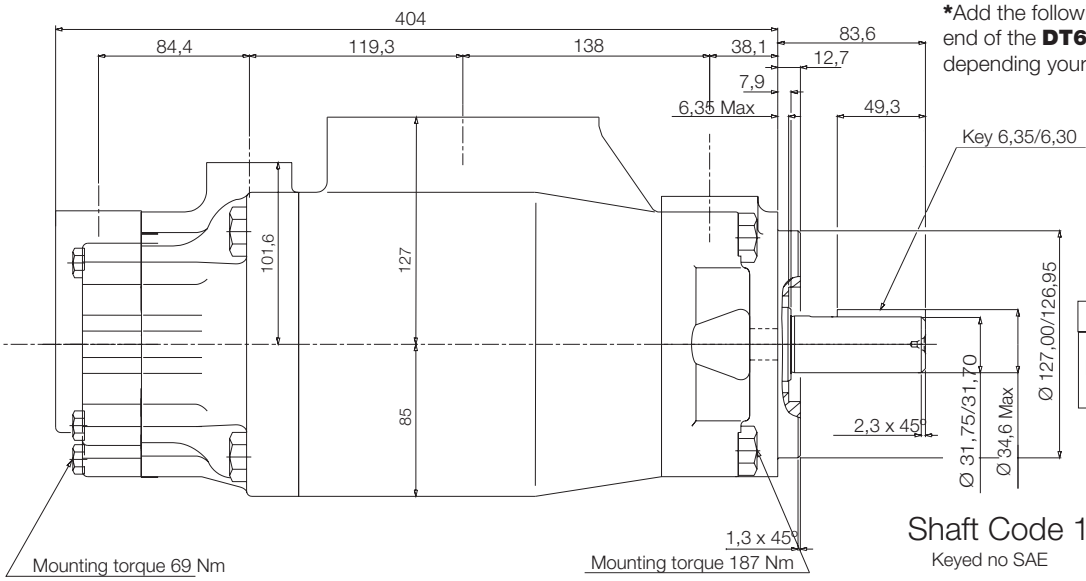
Shaft Code 3

SAE C Splined shaft
1-J498b 12/24 d.p. -
14 Teeth
30° Pressure angle

Shaft Torque limits (cc/rev x bar)				
Pump	Shaft Code	V x P max (P1+P2+P3)	Shaft Code	V x P max (P1+P2+P3)
DT6DCC **DT6DCCM**	1 2	43240 66500	3 4	61200 66500

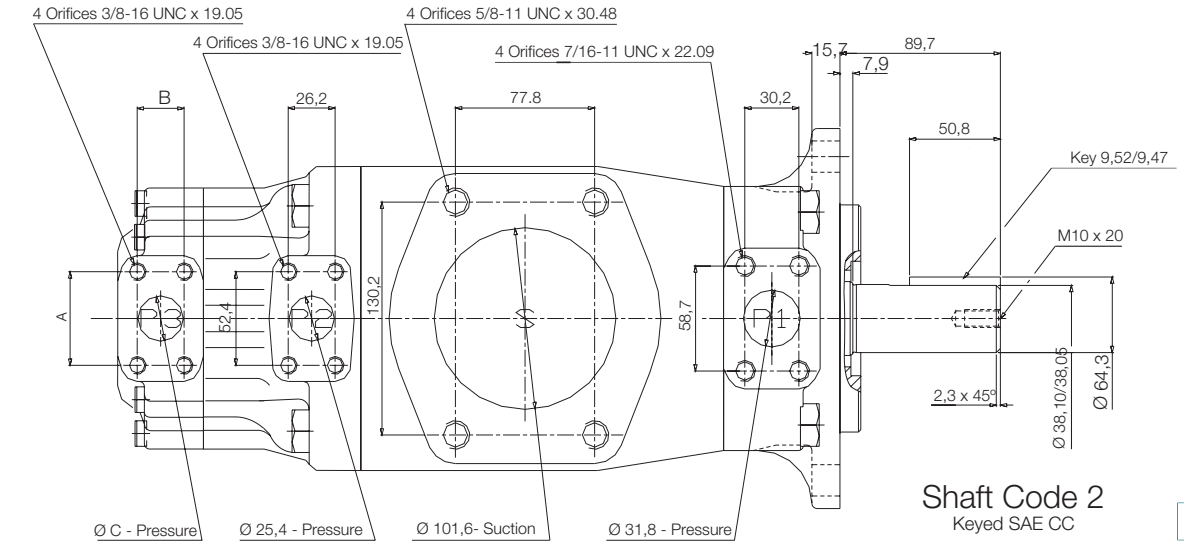
Alternate Ports				
Orifice	Code	A	B	C
P3	**00***	52,4	26,2	25,4
P3	**01***	47,6	22,1	19,0

***Add the following numbers at the end of the **DT6DCC** reference depending your option.



	Code 00	Code01
P3	1"	3/4"

Shaft Code 1
Keyed no SAE



Shaft Code 2
Keyed SAE CC

DT6EDC - OPERATING CHARACTERISTICS

SHAFT END SECTION

FLOW									SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	132	142	156	165	197	213	227	270	Mín.	Máx.	Intermit.	Contin.	(Kgs.)
Gal/min.at 1200 rpm	42	45	50	52	62	66	72	85	400	2200*	240	210	44

* See page 41 for further information about speed & pressure.

MIDDLE SECTION

FLOW												SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	48	66	80	90	98	111	120	136	146	158	191	Mín.	Máx.	Intermit.	Contin.	(Kgs.)
Gal/min.at 1200 rpm	14	20	24	28	31	35	38	42	45	50	61	400	2500*	240	210	24

* See page 41 for further information about speed & pressure.

COVER END SECTION

FLOW													SPEED (rpm)		PRESSURE (bar)		WEIGHT
Lts/min.at 1000 rpm	11	17	21	26	34	37	46	58	64	70	79	89	100	Mín.	Máx.	Intermit.	Contin.	(Kgs.)
Gal/min.at 1200 rpm	3	5	6	8	10	12	14	17	20	22	25	28	31	400	2800*	275	240*	15

* See page 41 for further information about speed & pressure.

DT6EDC - FLOW & INPUT POWER DIAGRAMS

SHAFT END

See **DT6E** Single Pumps for flow and input power diagrams (page 46)

MIDDLE BODY

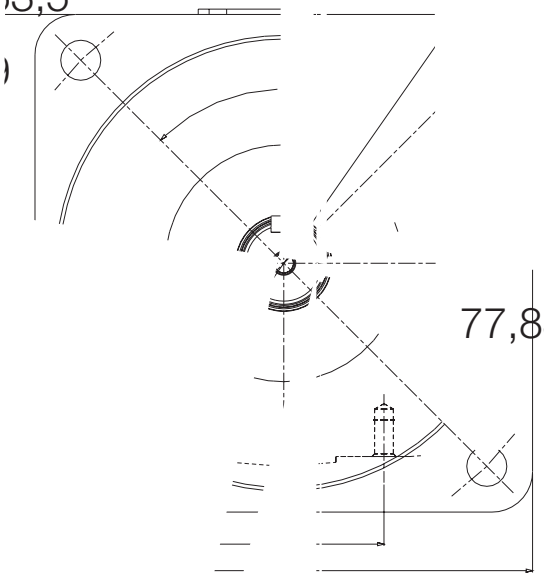
See **DT6D** Single Pumps for flow and input power diagrams (page 44)

COVER END

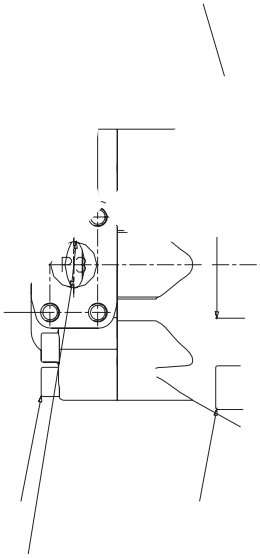
See **DT6C** Single Pumps for flow and input power diagrams (page 42)

PLE PUMPS **T6ED** **NS**Ø 22

0,7120,1
3,5



77,83 ,8Ø 31,8 - Pres



SPECIAL VANE PUMPS

- CH25 Compact power pack

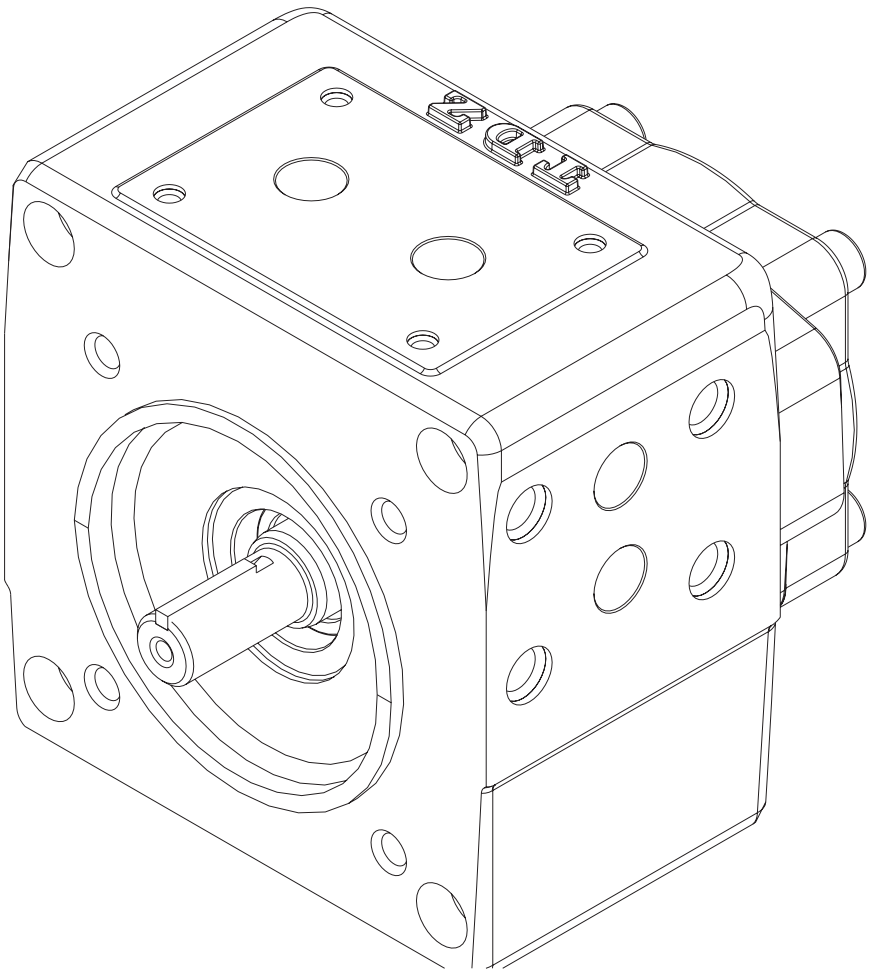
- Pumps with flow regulating and pressure limiting valves

- Pumps with valves and tank of 1,5 Ltrs. or 1 Lt. with built-in filter
- Pumps with valves and manual flow regulating key
- 1.5 litres and 1 litre oil tanks with built-in filter

These pumps include in a compact set, one BHP2 vane pump, one pressure limiter valve and one flow regulating pilot valve; being also possible to add an oil tank with paper filter cartridge.
So, in a very small place and at an economical cost almost all necessary elements are available for many simple hydraulic circuits.
Flow regulating valve gives constant delivery flow, even with changes in pump rotation speed and load.

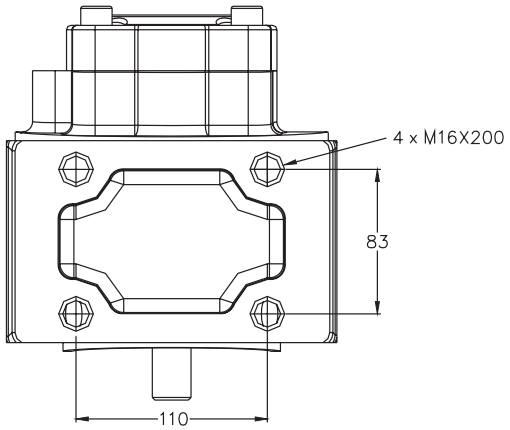
CH25 PRODUCT INFORMATION

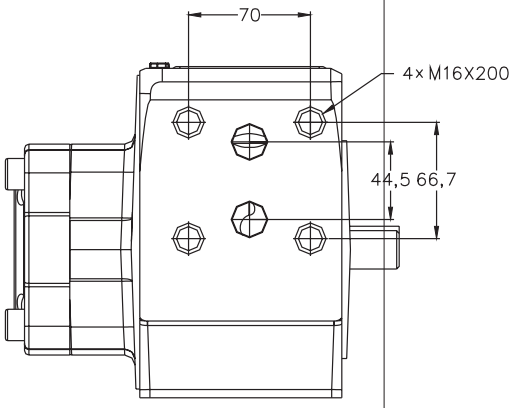
The CH-25 contributes a definitive solution of the problems that appear in the installation of a hydraulic system, such as the assembly and the design. It is a set formed by a simple o multiple vane pump, a veried group of valves to be able to make easily tipical schemes, a built-in high pressure filter and support to be able to be connected a electric standard B5 motor of diverse powers, all integrated it in an extremely compact equipment. The reason that it mounts a vane pump must to the requirements of the industry today, then facility and flexibility of handling and spare parts, high capacity of flow (to 80 GPM), high work pressure (to 270 bar), very high efficiency (94%), and all it with a highly quiet operation due to its compact design.



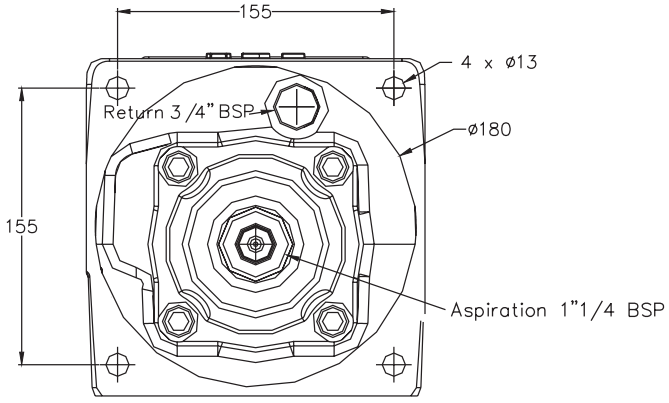
CH25 MAIN DIMENSIONS

Available pump displacements:
26, 40, 45, 55, 60, 67, 80 and 88 Cm3/rev.
Maximum Pressure: 210 bar.

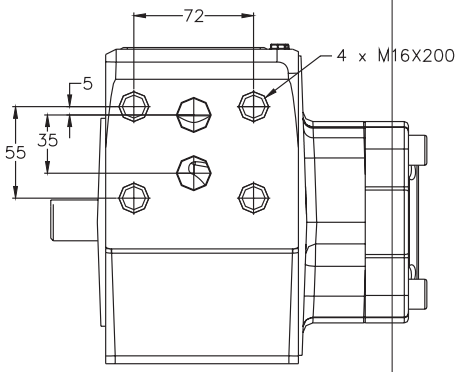




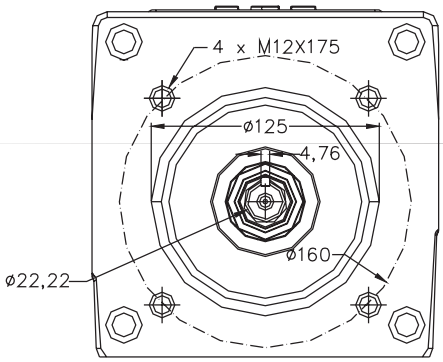
G06 Pressure control valve mounting side



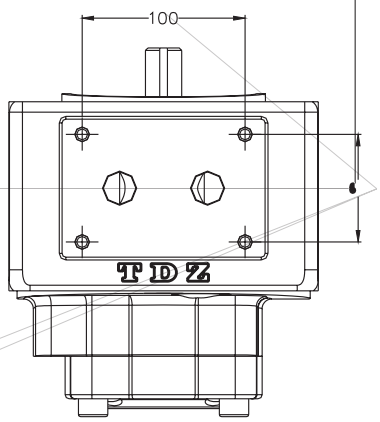
Tank vertical mounting dimensions



Pressure filter mounting side.

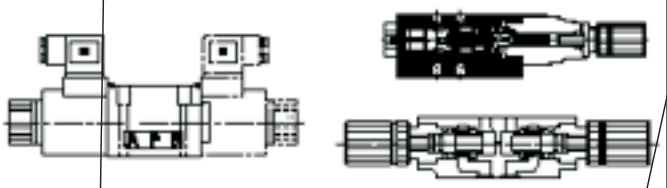


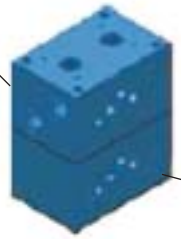
Electrical motor coupling bell acording ISO 4

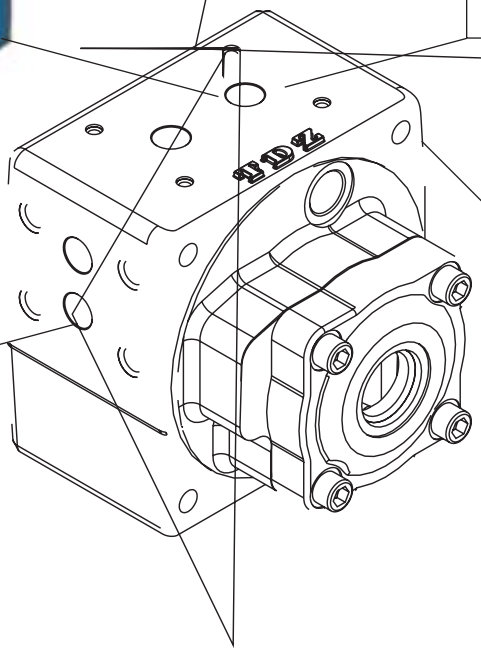


CH25 ASSEMBLY SCHEME

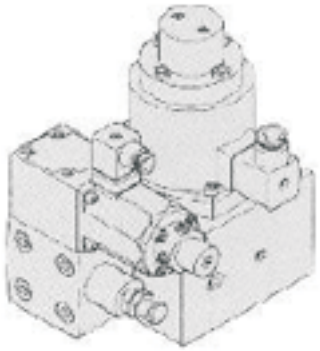
Modular elements on CETOP manifold



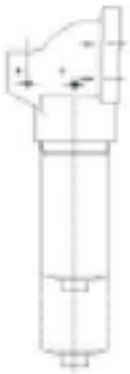




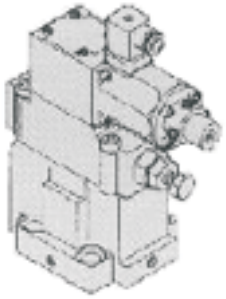
Proportional control of Pressure and Flow.

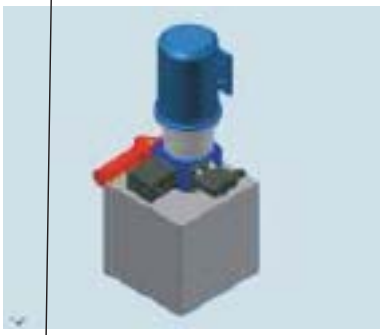


Pressure filter on board



Electrohydraulic pressure control or remote pressure control



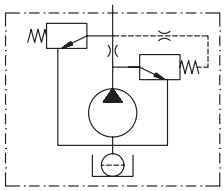


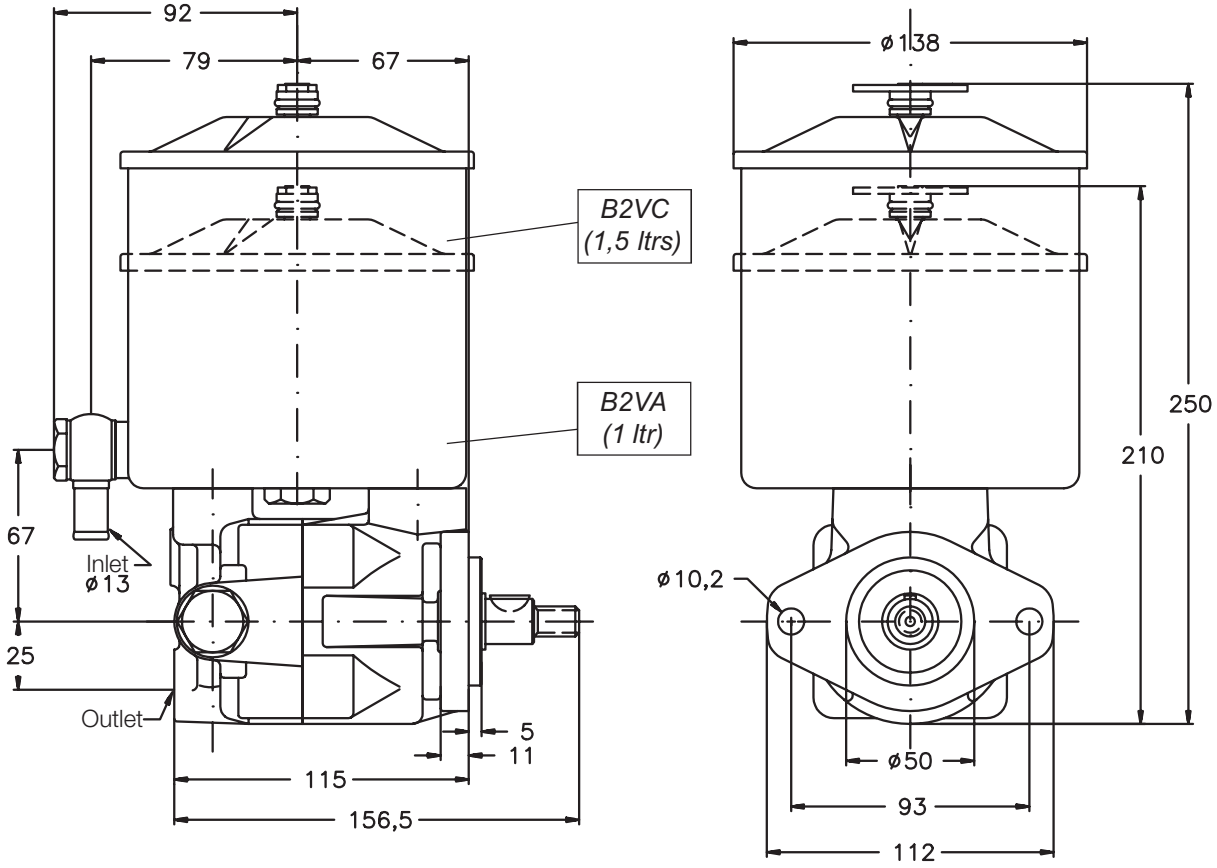
Assembly examples

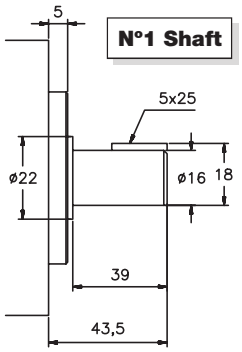
B2VA & B2VC SINGLE VANE PUMP WITH VALVE, TANK AND FILTER

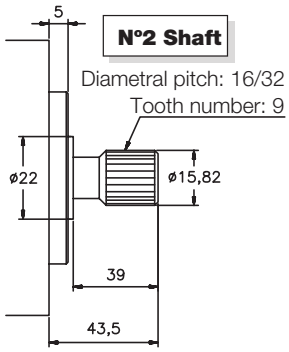
Valves can be adjustable, made to order, as follows:
- Flow: Up to the limit of the pump cartridge.
- Pressure: 15 to 150 Kgs./cm².

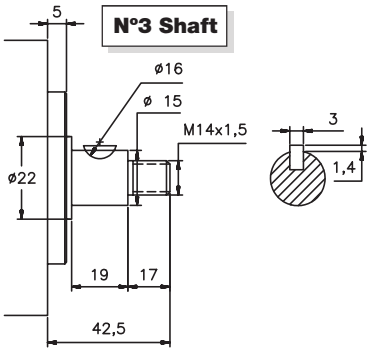
Tank includes inside one paper filter cartridge of 25µ



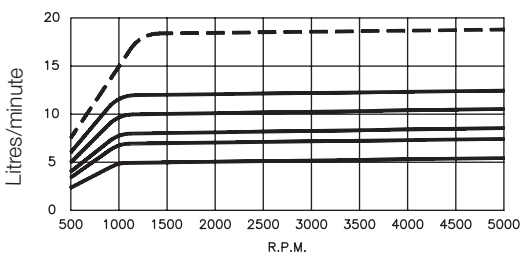








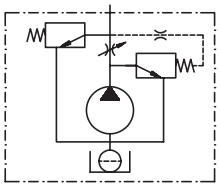
Continuous line shows those of pumps with outlet port sized to give as maximum the cartridge rated flow.
Broken line is, for instance, of one pump with hole sized to give as maximum flow 18 Ltrs. (In this case cartridge rated flow is 12 ltrs. at 1000 rpm.)



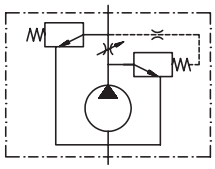
OUTLET	INLET	CARTRIDGES Ltrs./min a 1000 rpm
M12x1,5	Ø 13	7
M14x1,5		8
M16x1,5		10
3/8" BSP		12
		15

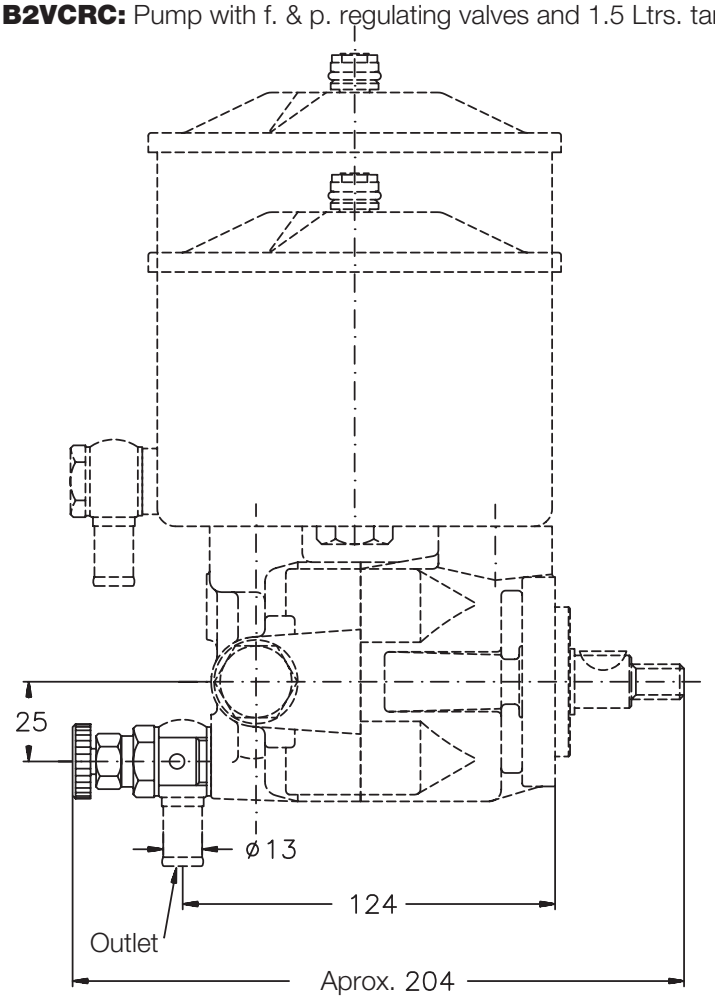
Port sizes are optional. Any combination can be supplied.

SINGLE PUMP WITH VALVES AND MANUAL FLOW REGULATOR

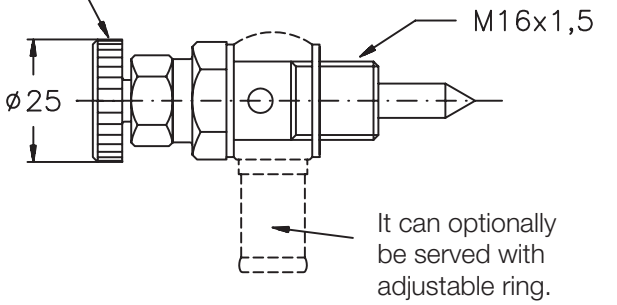


TYPES
B2VRC: Pump with manual flow & pressure regulating valves
B2VARC: Pump with f. & p. valves and 1 Ltr. tank
B2VCRC: Pump with f. & p. regulating valves and 1.5 Ltrs. tank





Delivery flow may be varied with this regulator in any of the a.m. B2V pumps. Flow keeps constant even with changes in pump speed and load.

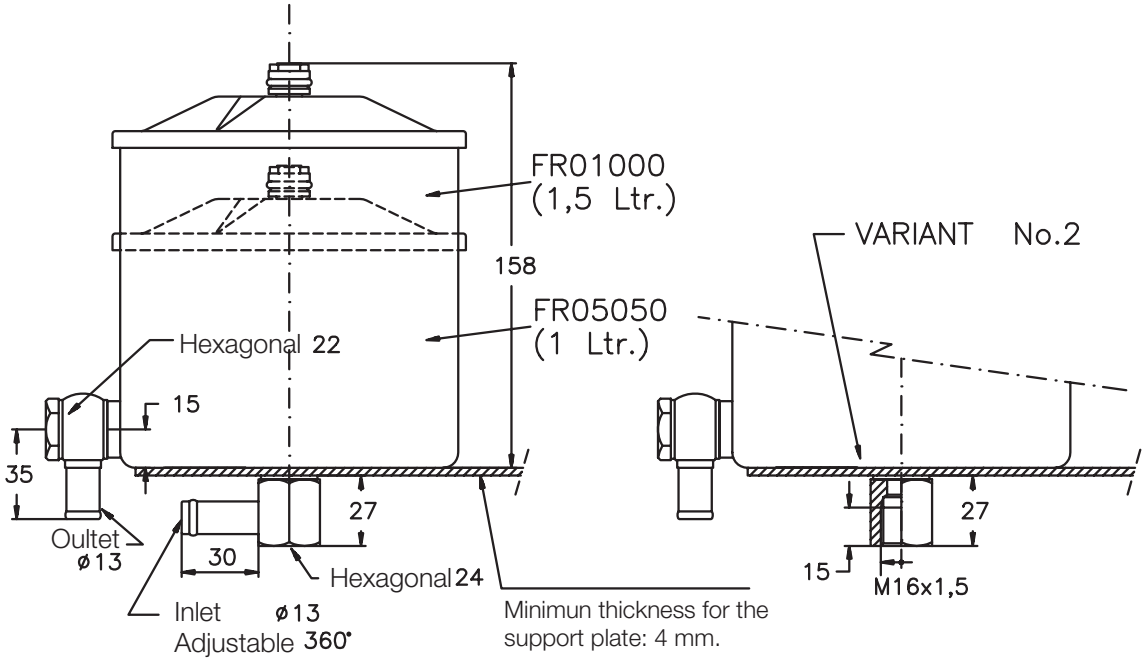


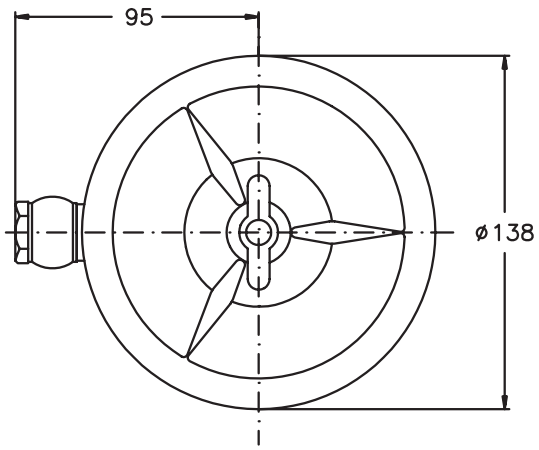
The complete regulator kit can be assembled in any pump with flow regulating valve and outlet of M16 x 1,5.
Order ref.: BV 02401

FR01000 (1.5 LTRS) AND FR05050 (1 LTR) TANK TYPES WITH PAPER FILTER

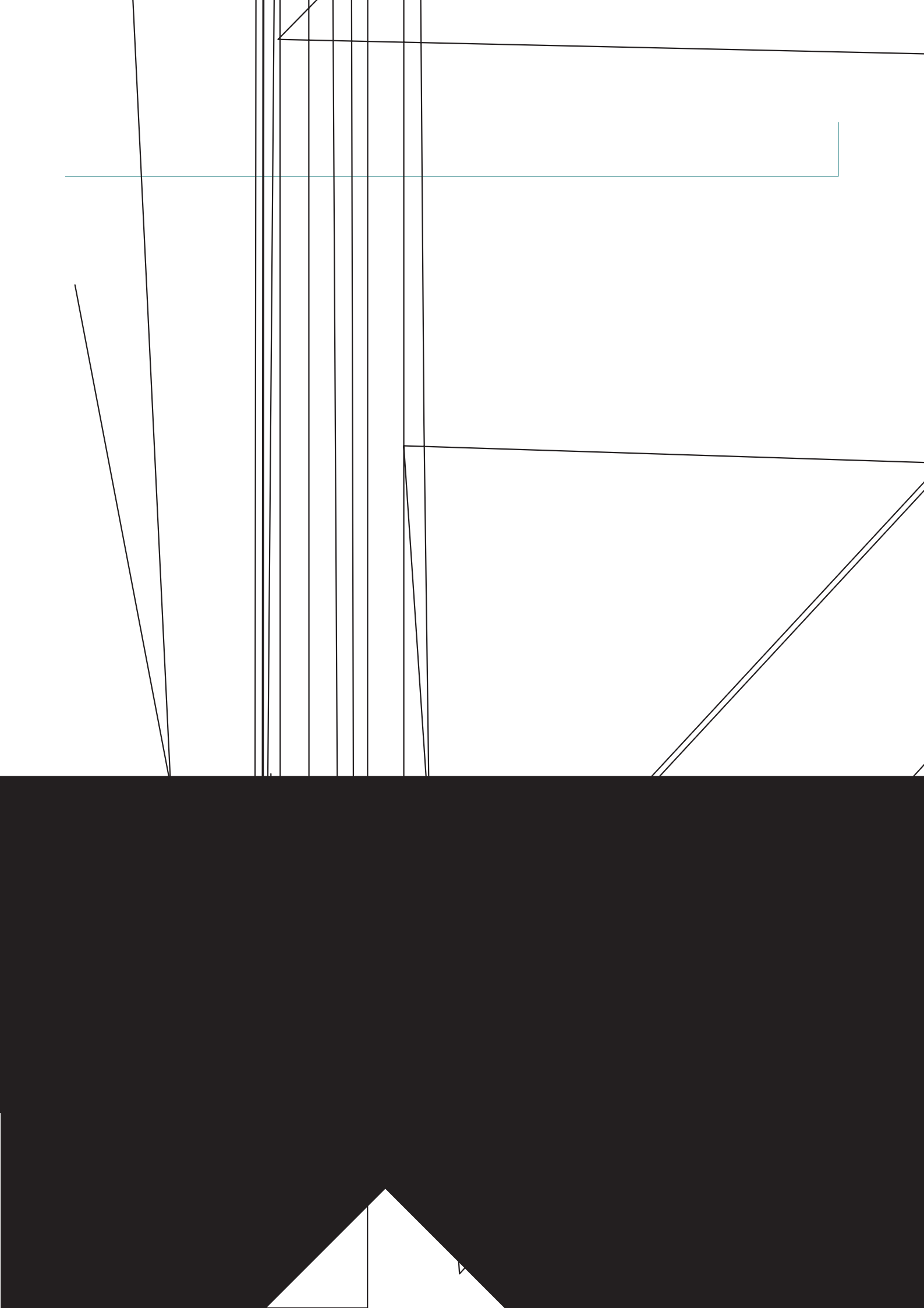
WITHOUT SUPPORT

DIMENSIONS IN MILLIMETRES 1" = 25.4 millimetres





Tank includes one inlet paper filter cartridge of 25µ



VANE MOTORS

MHP & MD4C

VANE MOTORS CODE

F3	MHP	2	10	D	1	A
1	2	3	4	5	6	7

1 - "F3" means special seals for fire-resistant fluids. Omit if not required

2 - Motor Type:

MHP = 10 vanes motor, mobile and industrial use, metric threads.

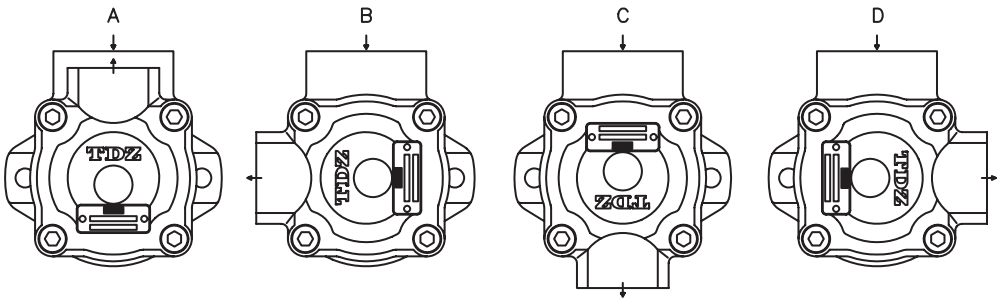
3 - Motor Model:
Models 2

4 - Flow: In litres per minute at 1000 rpm and 7 bar.

5 - D = Right-hand direction of rotation, (Clockwise)
Y = Left-hand direction of rotatio, (Counterclockwise)
(To check the direction of rotation view from the shaft end).

6 - Shaft type: See on each motor model information.

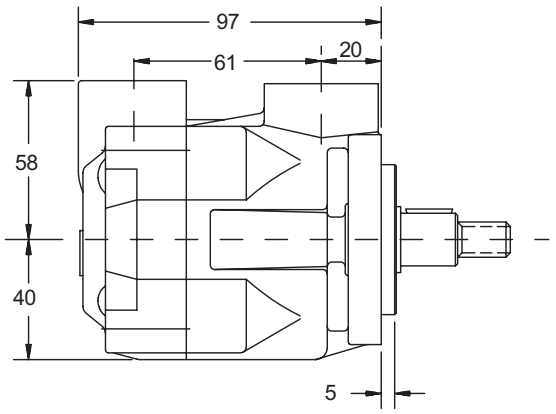
7 - Oulet position (Viewed from shaft):
A: Outlet in line with inlet
B: 90° clockwise from inlet
C: 180° from inlet
D: 90° counterclockwise from inlet

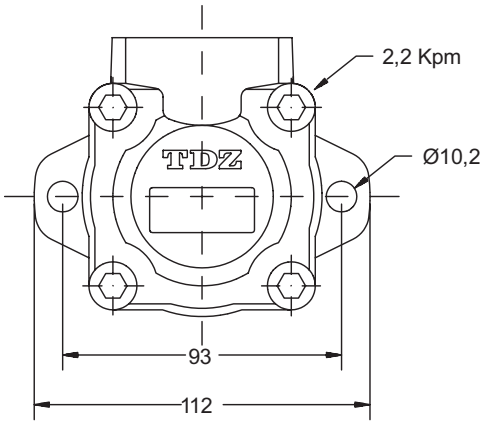


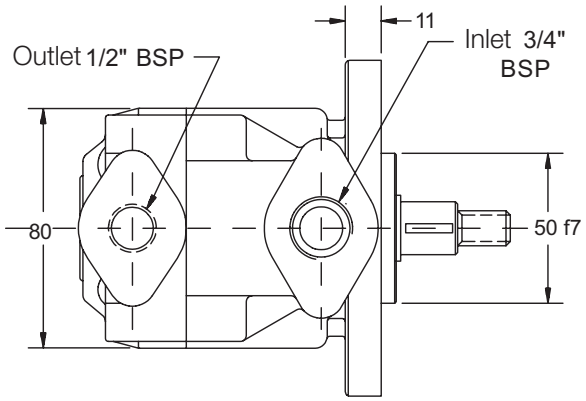
MHP VANE MOTORS

FLOW						SPEED (rpm) (3)			PRES (BAR)		CONNECTION		WEIGHT
Lts.at 1000 rpm	*7*	*8*	*10*	*12*	*15*	Mín.	Max. Contin	Máx. Intermit.	Contin.	Interm.	Entrada	Salida	(Kgs.)
Gal. At 1200 rpm	2,2	2,5	3,2	3,8	4,7								
Torque (N.m) (1)	11	13	16	19	24	300	3000	3500	150	175	1/2" BSP	1/2" BSP	3,6
No.m Powerl(CV)(2)	1.5	1.7	2.1	2.5	3.1								

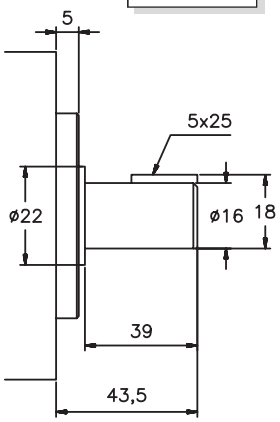
(1) Theoretical Torque in N.m at 100 Bar.
(2) Nominal Power in H.P. at 100 Bar and 1000 r.p.m.
(3) For pressures lower of 100 bar, the maximum speed can increase until 20%
Flow and power diagrams, see corresponding pump



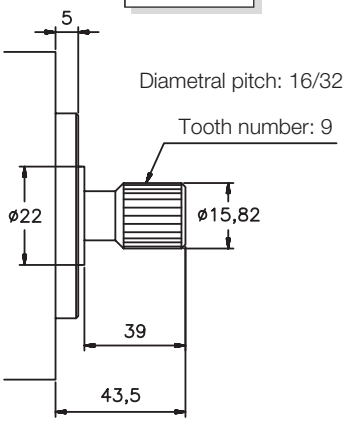




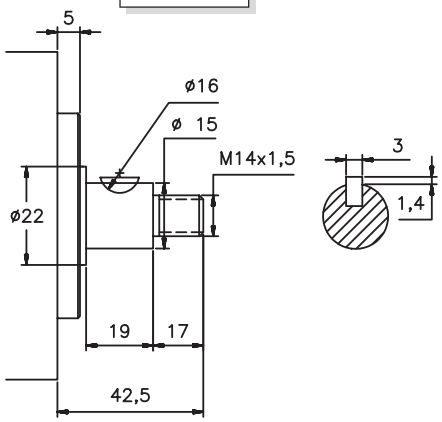
Nº1 Shaft



Nº2 Shaft



Nº3 Shaft



Enquire about other types of shafts

MD4C - ORDERING CODE & OPERATING CHARACTERISTICS

MD4C 075 1 N 00 C 1 02 ..

Series external drain

Nominal flow (nominal torque)

024	(0,39 Nm/bar)
027	(0,45 Nm/bar)
031	(0,55 Nm/bar)
043	(0,74 Nm/bar)
055	(0,93 Nm/bar)
067	(1,13 Nm/bar)
075	(1,27 Nm/bar)
100	(1,56 Nm/bar)

Type of shaft

1= Keyed (SAE B)
2= Keyed (no SAE)
3= Splined (SAE B)
9= Special (non SAE)

Rotation

N = Bi-direccional

View from shaft end:

CW Rotation: A= INLET B= OUTLET

CCW Rotation: A= OUTLET B= INLET

Modification

Port connections

01 = Threaded Port
1" 5/16 UNF
9/16"-18 UNF Drain

02 = 4 Bolt Flange
3/8''-16 UNC Threaded
9/16"-18 UNF Drain

03 = Threaded Port 3/4'' BSP
3/8" BSP Drain

04 = 4 Bolt Flange
3/8-16 UNC Threaded
3/8'' BSP Drain

M4 = 4 Bolt Flange
Metric Threaded M10x20
3/8'' BSP Drain

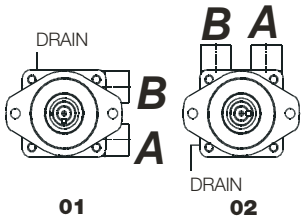
Seal Class

1 = NBR 5= Viton

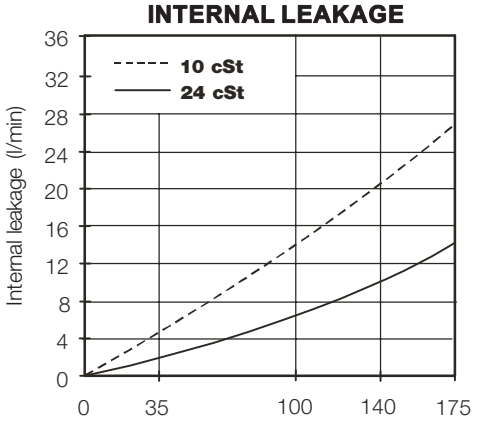
Desing letter

Porting combination

01 = Side ports (right/left)
02 = Side ports (up/down)



INTERNAL LEAKAGE

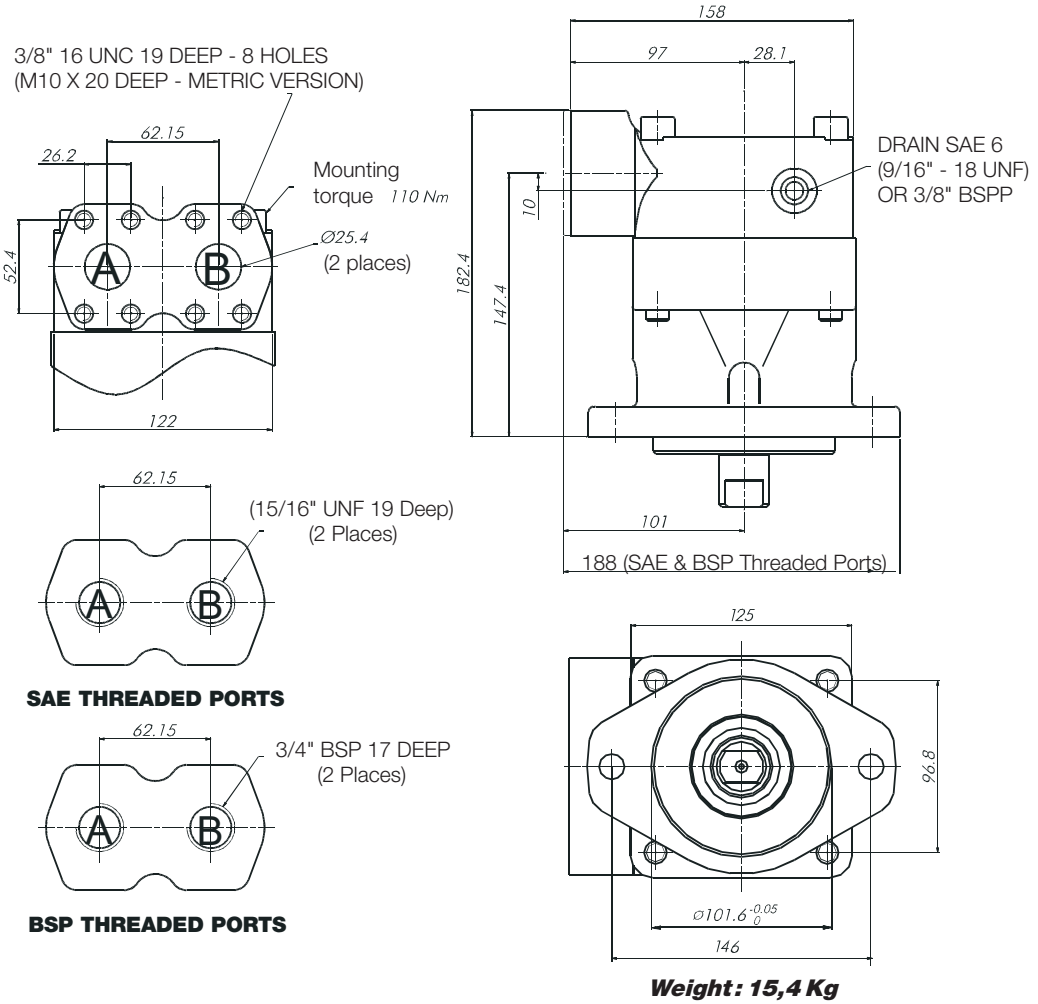


OPERATING CHARATERISTICS (24 cSt)

Model	Volumetric displacement (Vi)	Input flow at n = 2000 RPM		Torque T At n = 2000 RPM	Poweroutput At n = 2000 RPM
		Teórico	a 175 bar p	a 175 bar p	a 175 bar p
	cc/rev	l/min	l/min	Nm	kW
MD4C-024	24.4	49.0	63.0	60.5	12.7
MD4C-027	28.2	56.0	70.0	70.0	14.7
MD4C-031	34.5	69.0	83.0	86.8	18.0
MD4C-043	45.5	93.0	107.0	120.0	25.1
MD4C-055	58.8	118.0	132.0	149.0	31.2
MD4C-067	71.1	142.0	156.0	170.0	35.6
MD4C-075	80.1	160.0	174.0	198.0	41.5
MD4C-100	100.0	200	217.5	247.5	51.2

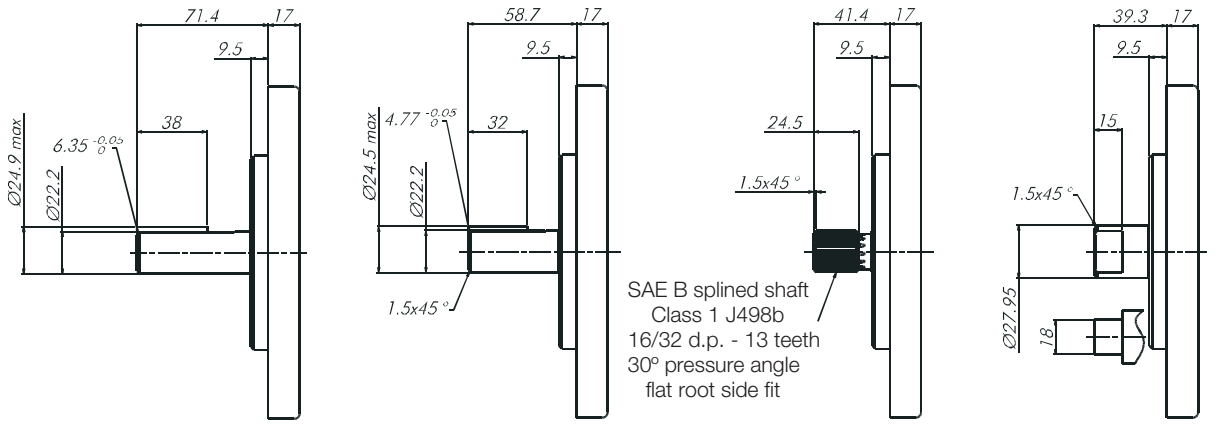
DIMENSIONS, SHAFTS & PORT CONNECTIONS - MD4C

PORT CONNECTIONS



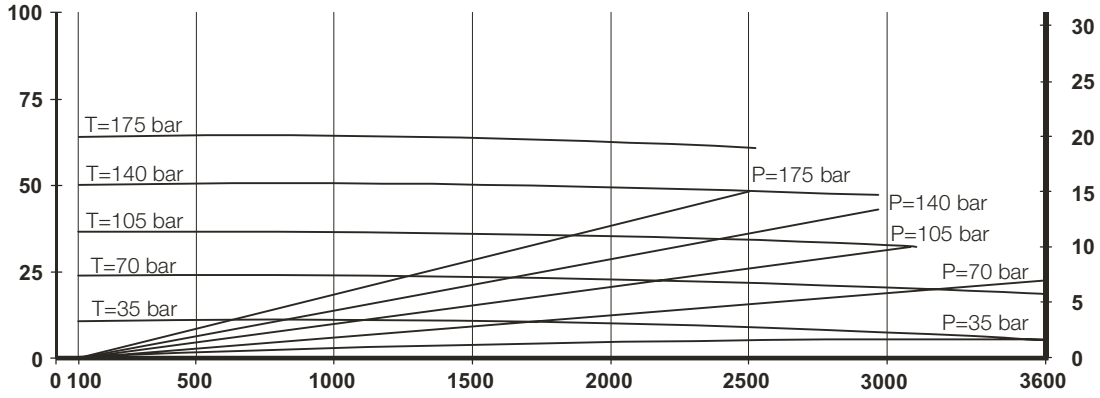
Weight: 15,4 Kg

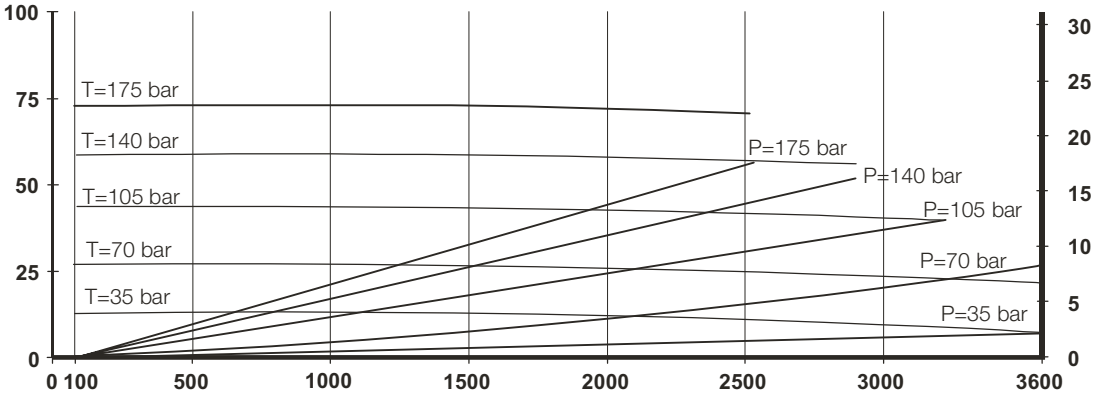
SHAFT TYPE

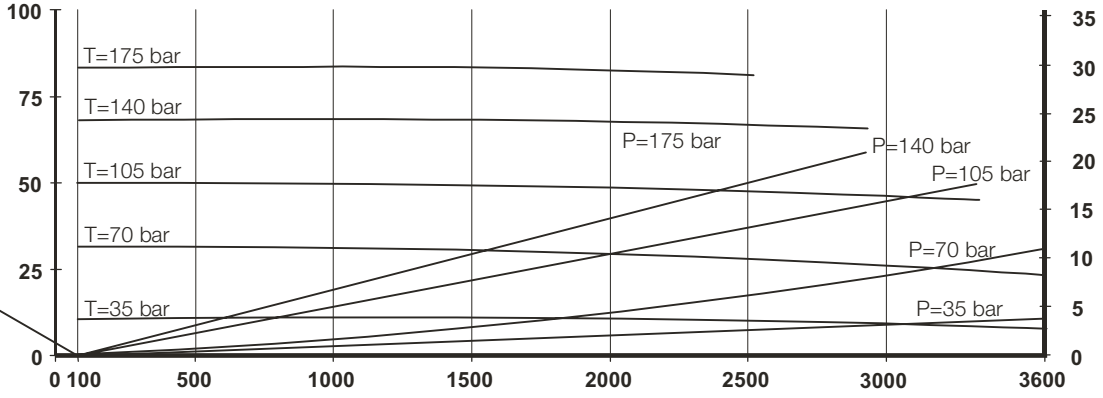


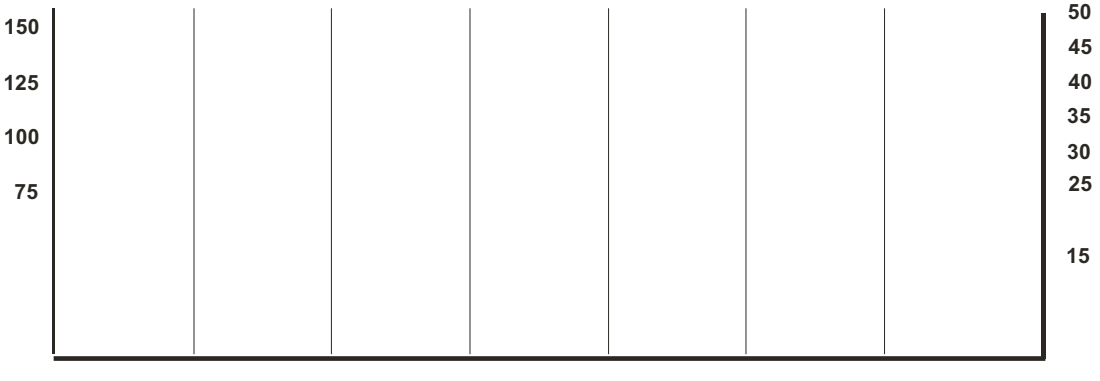
SHAFT CODE 1 **SHAFT CODE 2** **SHAFT CODE 3** **SHAFT CODE 9**

Enquire about other types of shafts





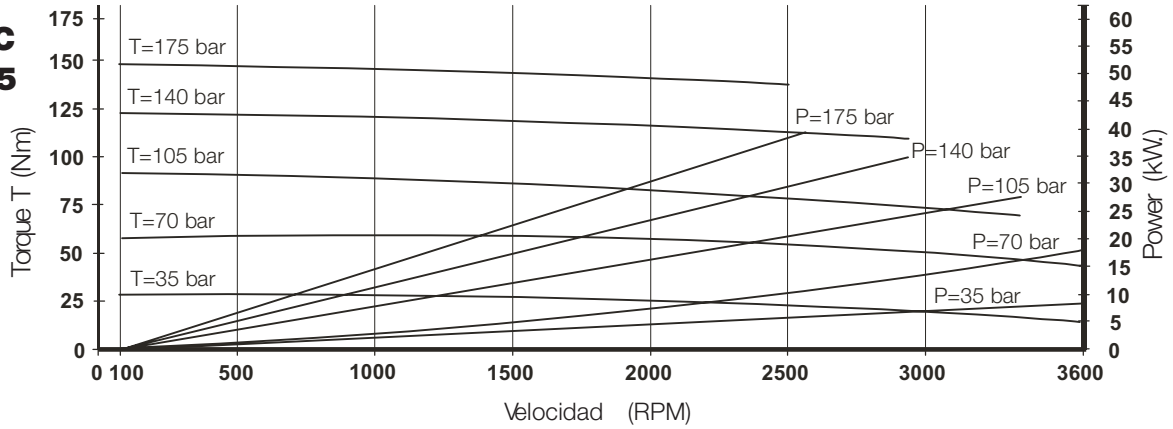




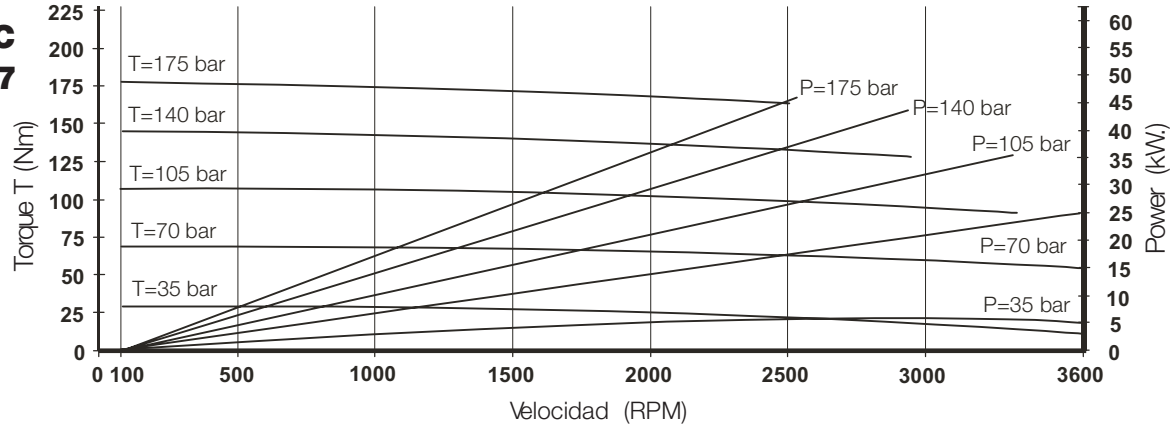
Velocidad (RPM)

PERFORMANCE CURVES - OIL VISCOSITY : 24 CST (45º) - MD4C

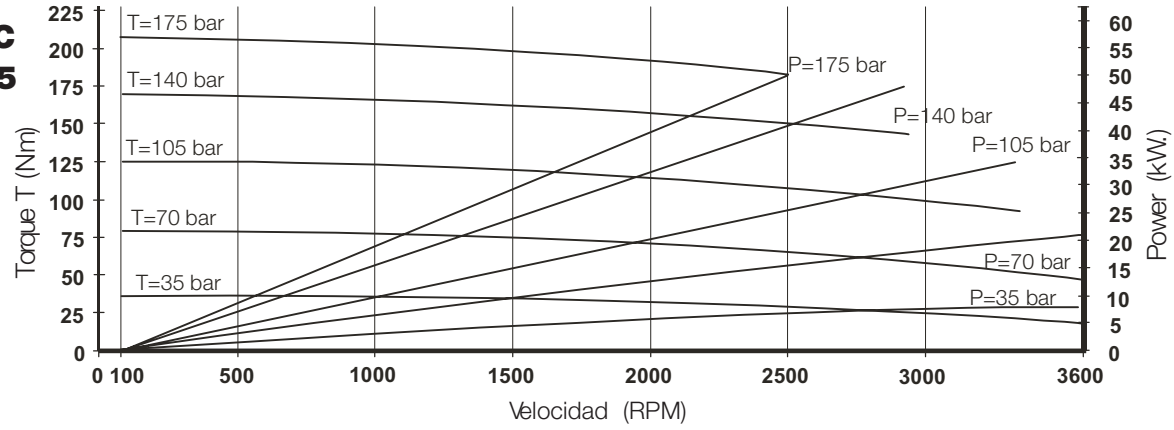
MD4C 055



MD4C 067



MD4C 075



INSTRUCTIONS FOR USE AND REPAIRS

Cartridge identification, change of rotation, guidelines for repairs.

V* series

IDENTIFICATION

Due to the difficulty in finding out spare cartridge references, either for the loss of the pump feature plate, or for the lack of the machine spare part catalogue, it is most convenient to include some sheets to identify the sample accurately and to give some advice for a correct assembly.

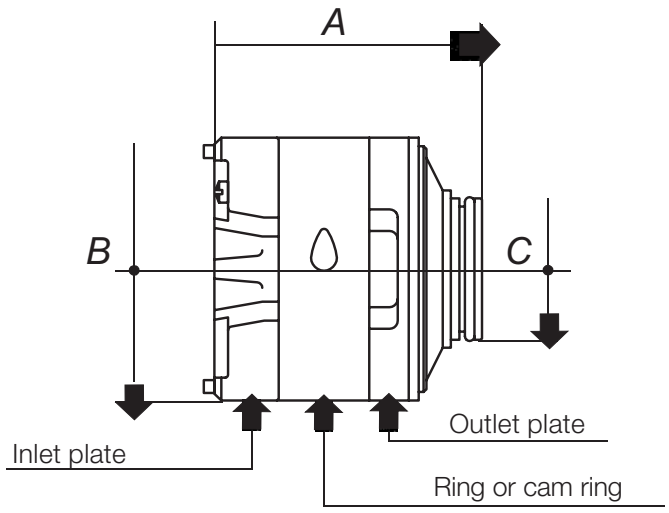
To identify properly cartridge and pump, use the 3 following pages as follows:

- DIMENSIONS AND FLOW
Find out pump type and flow in the dimensions chart, look at the figure engraved on the ring as shown (gallons/min. at 1200 rpm).

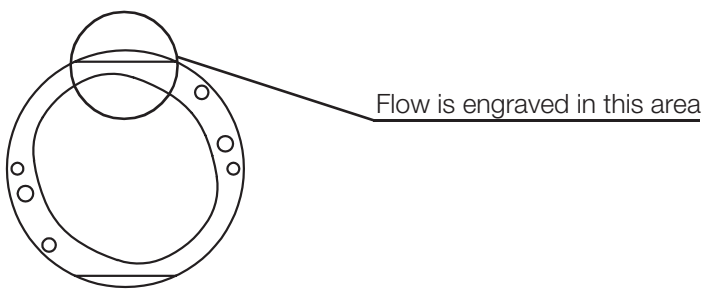
- SUPPORT BUSHING AND SHAFT ROTATION
Locate support bushing to know whether the cartridge belongs to a single or double pump. On this page there are also some clues to identify shaft rotation.

IDENTIFICATION

DIMENSIONS AND FLOW



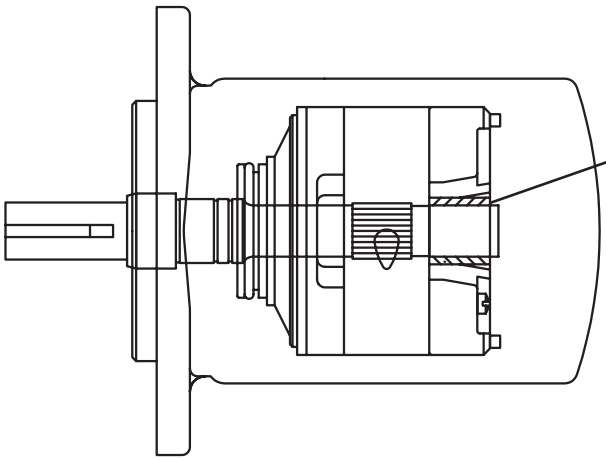
DIMENSIONS In mm.	PUMP TYPE				
	20V	25V	30V	35V	45V
A	81,8	99,5	110,5	118,4	140,5
B	82,6	96,8	96,8	114,25	133,3
C	47,15	52,15	52,15	72,15	80,15
WEIGHT aprox. in Kg.	2,300	3,800	4,100	6,400	10,200
FLOW in Gal. at 1.200 rpm	2 5 8 9 11 12 14	8 12 14 17 19 21 24 27	24 28	21 25 30 35 38 45	42 47 50 57 60 67 75

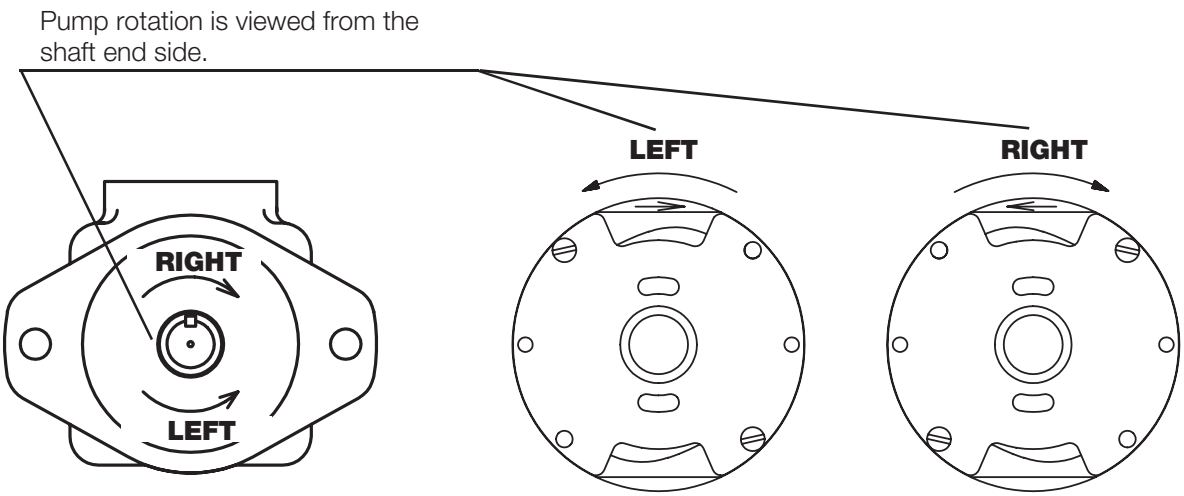


PUMP ROTATION

To determine pump rotation look at it from the shaft end side. If clockwise it is right hand rotation, on the contrary, it is left hand rotation.

When taking out cartridge and putting it on to the outlet plate take into account that rotation is seen the other way round; anyway, an arrow engraved in the ring or cam ring shows the real turning sense. (See pictures.)





RECOMMENDATIONS FOR PUMP AND CARTRIDGE MANIPULATIONS

Since this is a high precision kit (mechanized in tolerances within thousandth of millimeter), any abrasive impurity can damage it in a few minutes or damage it to shorten its performance, before disassembling it is necessary that working place, tools and worker handsare completely clean and neat.

Please avoid any blow, however insignificant, taking special care with all edge sides, ring seat points and inlet and outlet plates.

All these preventive measures taken, proceed as follows:

1º Lean the cartridge, holding it tightly, at the work bench on the outlet plate. Loosen the 2 screws which fix the kit, take them out as well as the pins (if there are any).
Take out inlet plate shifting it laterally, as due to the protective oil it may be gummed up. Place it at the bench on a clean paper, white preferably.

2º Do the same with vanes, rotor and ring.
Place the rotor, once disassembled, onto the outlet plate with arrow showing the required turning sense (see detail in the circle, fig. 3), afterwards, put inserts into vanes (fig. 4), and finally, introduce them in the slots, well at the bottom, with vane closing edge in forward rotation, as arrow shows in the corresponding picture.

3º Be sure there is no small dirty particles on the leaning surface, put ring on to the outlet plate, placing it in the required turning sense. Make chamfer edge coincide, in which flow and arrow are engraved, with inlet or admission port.

4º Set inlet plate, pins and the 2 screws as shown in the pictures, taking into account that the lattes must be in opposite position to the ones they had before disassembling. (To do so, just turn ring, rotor and vanes 180°). Fasten the screws moderately and dip the whole cartridge kit into clean hydraulic oil for a while. After these steps it is ready to be assembled.

Please pay good attention to the cartridge and pump rotation, as they do not always coincide.
Be very careful to identify them properly. (See previous pages.)

CHANGE OF CARTRIDGE ROTATION

RIGHT HAND
rotation
(clockwise)

LEFT HAND
rotation
(counterclockwise)

Fig. 1

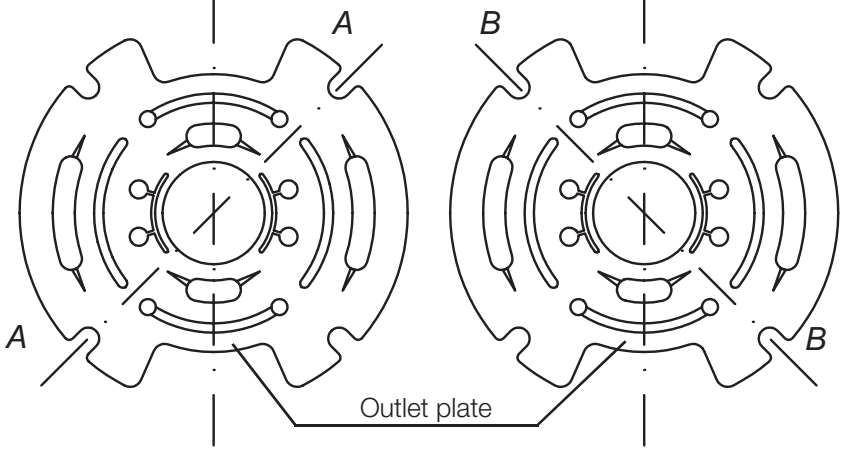


Fig. 2

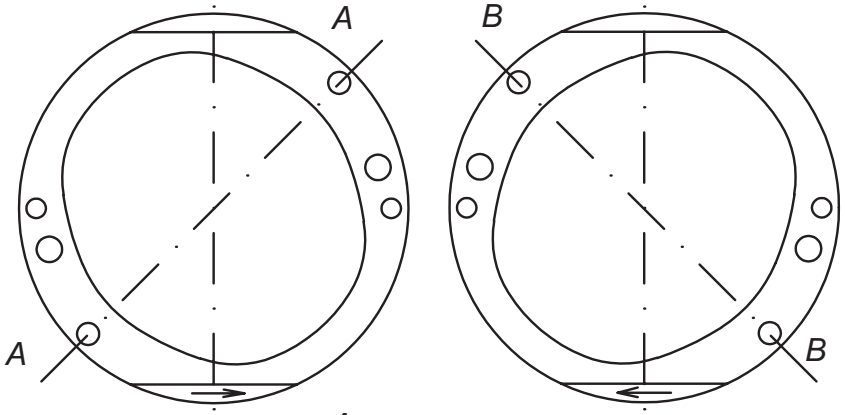


Fig. 3

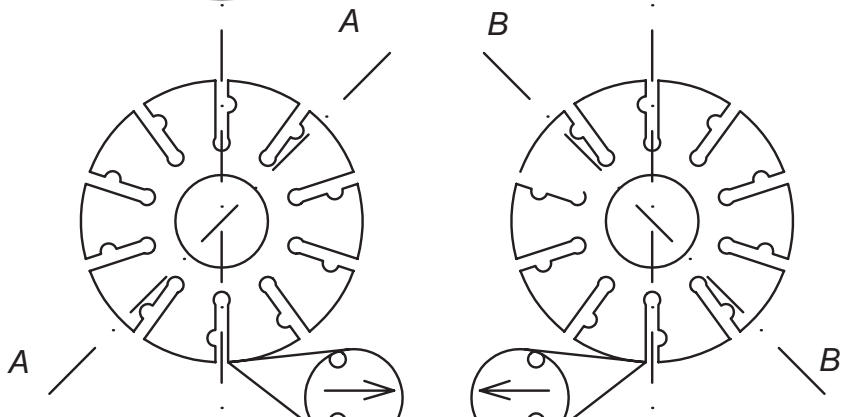


Fig. 4

Rotation

Arrow engraved on the rotor outside diameter.

180°

Fig. 4

Rotation

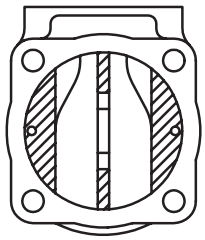
180°

RECOMMENDATIONS FOR PUMP AND CARTRIDGE REPAIRS

CARTRIDGE REPLACEMENT

To successfully replace cartridge, be sure to follow these warnings:

1º - Check if due to use there is tread on the cartridge seat zone (dark area in the picture).
If so, deepness must not be higher than 0,01 mm. (This could be observed even with a fingernail), being most convenient in such cases grinding or changing the pump body with this fault, as otherwise noise and performance values will not be the right ones. (In case you can not grind the seat, TDZ has -avaible for sale- a simple machine specially designed for this purpose).



2º - Look at the cartridge to be replaced, if wear is normal just change oil in tank circuit and change or clean filters.

3º - Should the used cartridge shows seizure in rotor, outlet & inlet plates, disassemble the pump completely. Check that the key is in good condition (it could be cut out). Then, put the shaft between points to make sure it is not twisted or crooked. Change it in case of any fault. Take all the oil out of the circuit and other parts. Clean the tank carefully. If there is available any used cartridge mount it and start the machine for at least 15 minutes, driving all controls. To do so, spend the least possible amount of oil, since it will have to be replaced after this operation, although it could be reused again, after being filtrated in a filter no bigger than 5 microns, as it still keeps additives).
Replace or clean all filters, mount the new cartridge and fill the tank to the level with new oil.

CARTRIDGE REPAIRS
MINIMAL CLEARANCE BETWEEN CAM RING AND ROTOR

MODEL	Inches	Millimetres
20V	0.0007	0,018
25V	0.0012	0,030
30V	0.0014	0,035
35V	0.0015	0,038
45V	0.0016	0,040

* Vane length must be from 0,005 to 0,010 mm. (0,0002 to 0,0004 inches) less than rotor thickness.

To rebuild cartridges it is necessary to use grinding & lapping machines, as well as measurement tools able to work in microns.

RECOMMENDATIONS FOR PUMP AND CARTRIDGE REPAIRS

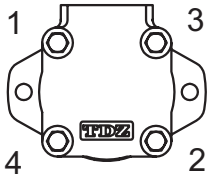
TIGHTEN TORQUE FOR PUMP SCREWS

	Reference	Tighten torque in Kp.m.	
SINGLE PUMPS	20V	6,5	
	25V	10,5	
	35V	22,5	
	45V	35	
		Inletbody	**Cover**
DOUBLE PUMPS	25-20V	10,5	6,5
	35-20V	22,5	6,5
	35-25V	22,5	10,5
	45-20V	35	6,5
	45-25V	35	10,5
	45-35V	35	

Rear flange mountings of the V**T* thru drive pumps.

Tighten torque for pump screws: 6,5 Kp.m.

Tighten the screws, with a torque no bigger than 0,5 to 1 Kp.m before beginning the last or final tighten.
Follow the order shown in the picture.



INSTRUCTIONS FOR USE AND REPAIRS

Cartridge identification, change of rotation, guidelines for repairs.

DT6 series

INSTRUCTIONS FOR USE AND REPAIRS

PRIMING AT STARTING

Before starting the operation of **TDZ** hydraulics vane pumps, the following aspects should be always carefully checked:

- Speed range, pressure, temperature, fluid characteristics and pump rotation.
- Inlet conditions considering the application.
- Coupling must be chosen to minimize shaft loads, (misalignment, weight, etc..)
- Shaft must support operating torque.
- Filtration should be adequate for the lowest possible contamination level.

At first, start operation at lowest possible speed and pressure until regular operating fluid temperature is reached. If a relief valve is used at the outlet, it should be backed off to minimize return pressure.
An air bleed off should be provided to purging of system air.

MODIFICATION OF INLET OUTLET PORTS POSITION

Vane pumps may present different external configurations depending on the inlet port position (located in the back cover) in relation to the outlet port (located at the front flange or shaft end).

The inlet port may be in line with the outlet port, 90º to the right, 90º to the left or totally opposite to the outlet port (180º).

These are the following steps that should be followed in order to modify the porting positions:

- Fix the pump in a working bench and loosen the 4 bolts that fix the back cover with the front body, (flange side or shaft end part).
- Do not remove the 4 bolts totally. Remove approximately half of their total length them from the pump body.
- Separate the back cover from the front body by only 1mm 2mm maximum, turning the cover slightly to the right and to the left, pushing it outwards.
- Using a sufficiently-long metal bar.

CHANGING THE POSITION OF THE PUMP PORTS

Vane pumps have a different external configuration, depending on the position of the suction flange (located on the pump cover) in relation to the pressure flange (located on the coupling flange or shaft side).

The suction flange may be in line with the pressure flange, (o°), 90° to the right, 90° to the left or totally opposite it (180º in relation to the pressure flange).
The steps to modify the position of the suction flange in relation to the pressure flange are as follows:

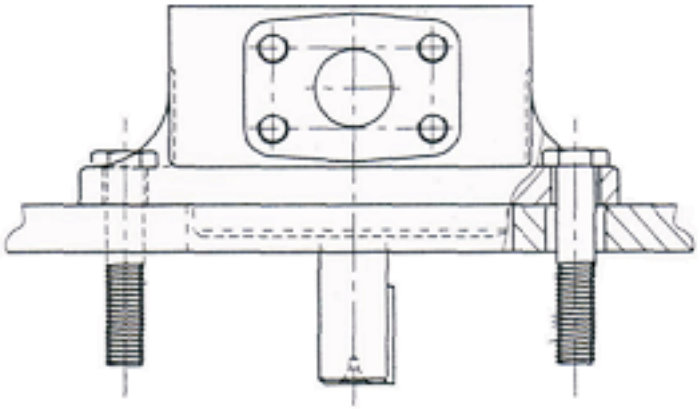
1– Secure the pump to a workbench and loosen the four bolts joining the pump cover to the front body (or shaft-side body).

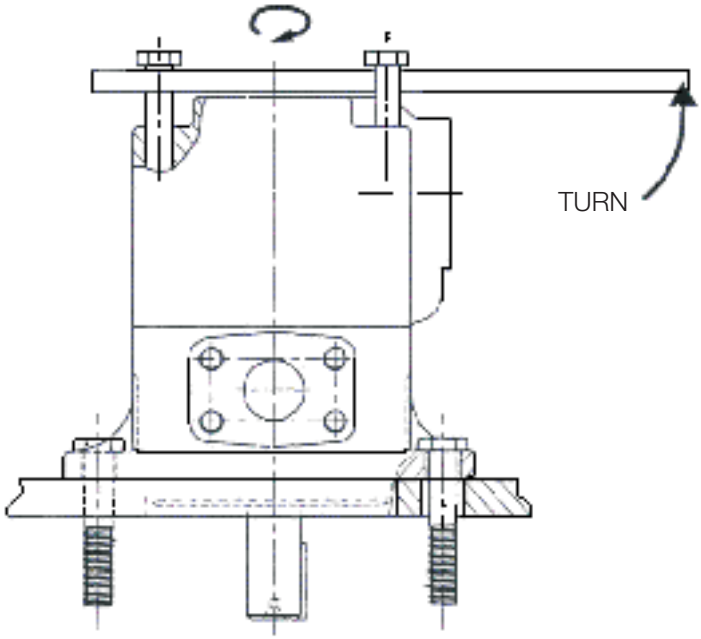
2- Do not fully remove the bolts. Remove approximately half their total length from the pump body.

3- Remove the front body cover just 1 mm - 2mm, (maximum) by slightly turning the cover and pushing it outwards.

4- Using a sufficiently long, resistant metal bar, support it obliquely on two diagonally opposite screws and lever, making the cover turn until the suction flange is in one of the four aforementioned positions.

5- Readjust the cover and the 4 bolts with the appropriate torque. Make sure that no particles of paint or other material are between the body and the cover and that the o-ring housed between these two parts is not pinched when tightened.





CHANGE OF CARTRIDGE ROTATION

The cartridges on this type of pump available worldwide can be unidirectional or bidirectional. Rotation on unidirectional cartridges cannot be modified, except where the cartridge pressure plates are replaced for others with an opposite turning direction or for bidirectional plates.

TDZ cartridges are bidirectional. This means that rotation can be modified by means of a simple operation using exactly the same cartridge components that are to be modified.

The steps to follow are as indicated:

1.- Remove the 2 set screws from the cartridge.

2.- Remove the cartridge suction cover. Of the two cartridge covers, the suction cover is the flattest and may be fitted with a bronze bearing, depending on the position of the cartridge on the pump (P1, P2 or P3).
Next to the cover is a position pin that should also be removed.

3.- Remove the cam ring or stator and turn 180º so that side "A" of the stator that was previously in contact with the surface of the suction cover is now touching the pressure cover and side “B” of the stator that was previously in contact with the pressure cover is now touching the suction cover.

4.- Change the positioning pin on the pressure cover from hole "A" to hole "B" and re-insert the stator so that the stator hole matches the new position of the pin.

5.- Also change the position pin on the suction cover and readjust the cover using the two screws. Turn the rotor and the blades manually before tightening the screws.

Attentions: The screws are basically for alignment purposes. They must not be too tight. If the three parts of the cartridge (stator, suction cover and pressure cover) are not perfectly concentric, it will be impossible to insert the cartridge into the pump housing.

In this case, loosen the screws slightly and insert the entire cartridge into the body of the pump. When it is fully inserted is when the cartridge parts are fully aligned and the screws can be readjusted.