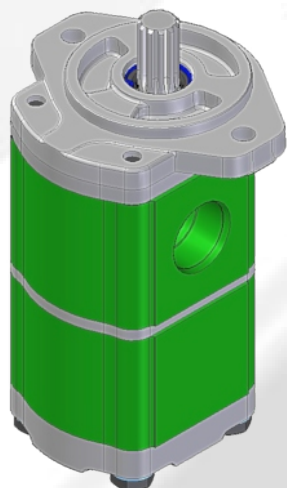
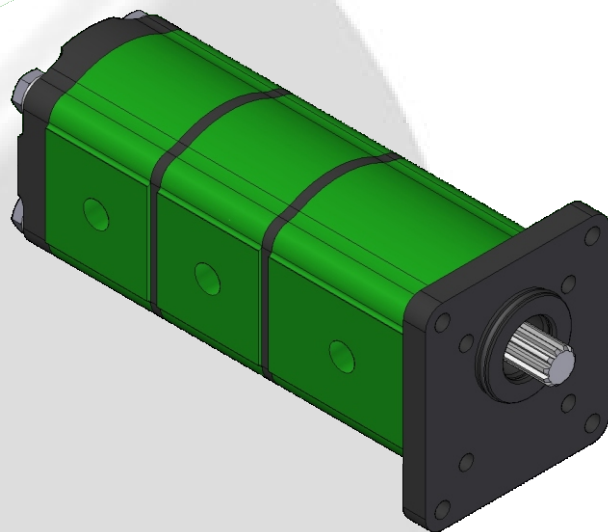
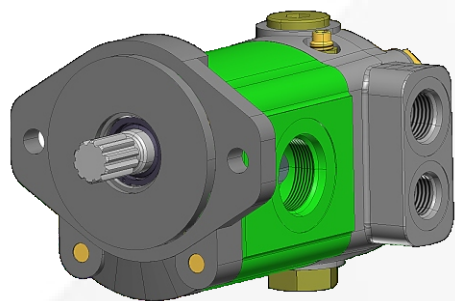


GEAR PUMPS “E” SERIES - GROUP 2

Technical catalogue



E0.23.0609.02.00

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=



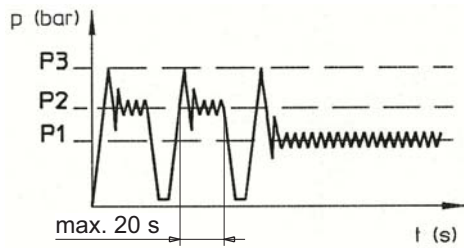
E0.23.0609.02.00

The data in this catalogue refers to the standard product.

The policy of Salami S.p.A. consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information.

If any doubts, please get in touch with our sales department.

DEFINITION OF PRESSURES



P3 = Peak pressure
 P2 = Intermittent operating pressure (1/3 of working time)
 P1 = Continuous operating pressure

GENERAL

SALAMI gear pumps are available with displacements from 3.2 cm³/rev to 26 cm³/rev (from 0.19 cu.in./rev to 1.59 cu.in./rev).

All pumps are available as multiple units either of the same or different series.

With all sizes of pumps and motors there are options of shafts, flanges and ports as for European, German and American standards.

SALAMI gear pumps and motors offer:

- High volumetric efficiency by innovative design and accurate control of machining tolerances.
- Axial compensation achieved by the use of floating bushes that allow high volumetric efficiency throughout the working pressure range.
- DU bearings ensure high pressure capability.
- 12 teeth integral gear and shaft.
- Extruded alluminum body.
- Die cast alluminum cover and flange - cast iron rear.
- Double shaft seals.
- Nitrile seals as standard and viton seals in high temperature applications.

All pumps and motors are hydraulic tested after assembly to ensure the high standard performance required by SALAMI'S engineering.

WORKING CONDITIONS

| | |
|--|--|
| - Pump inlet pressure (absolute pressure) | 0,7 to 2,5 bar 10 to 36 psi |
| - Minimum operating fluid viscosity | 12 mm² / sec |
| - Max starting viscosity | 800 mm² / sec |
| - Suggested fluid viscosity range | 17 - 65 mm² / sec |
| - Fluid operating temperature range | -15 to 85 °C |
| - Fluid operating temperature range with FPM seals(Viton) ... | -20 to 110°C |
| - Hydraulic fluid | mineral oil |

Important:

in case of assembling of pumps without shaft seals (eg. B2 - B3....), you have to keep the value of min. suction pressure (0.7 bar (abs)) in the vane between pump and coupling too.

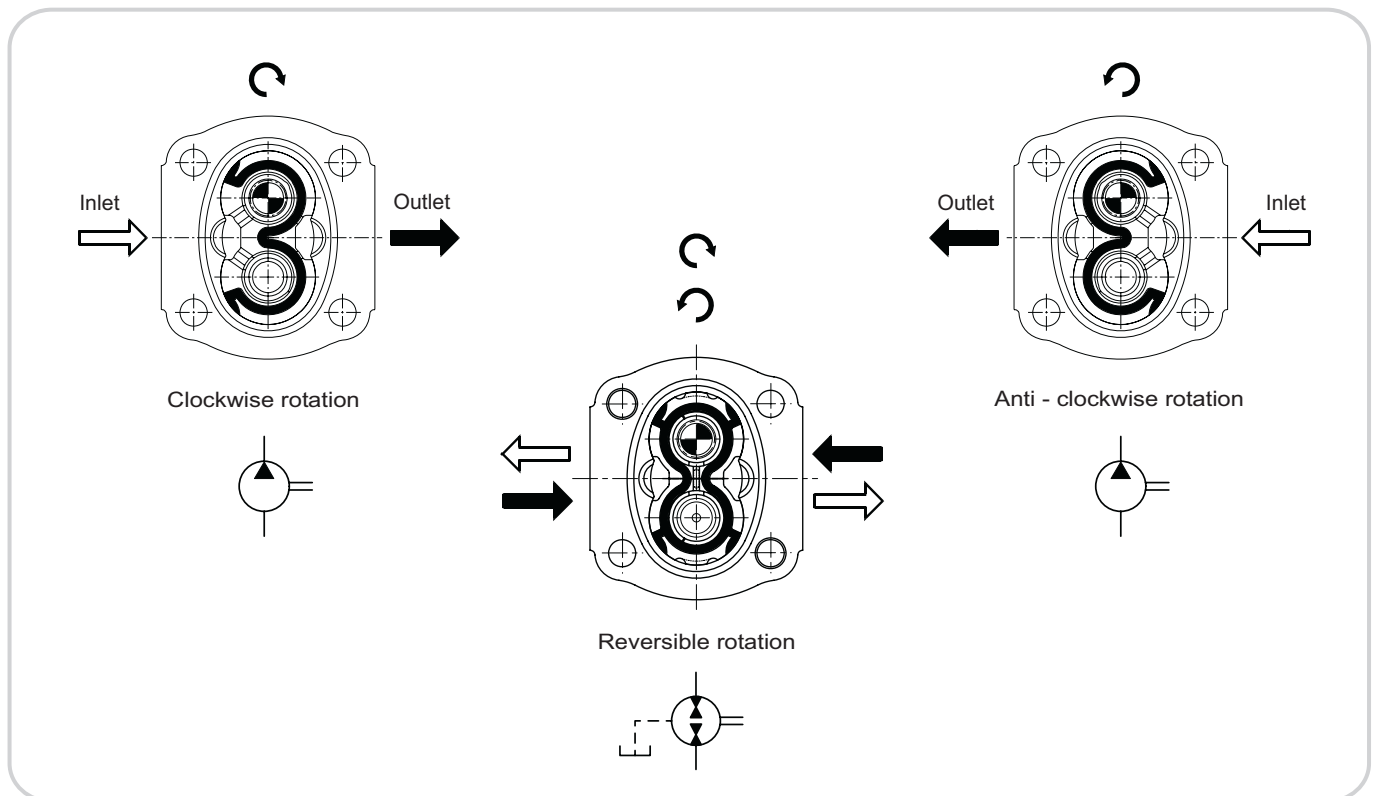
Lower pressure can lead to suction of oil through the front flange (seat of the shaft without seal); this can damage seriously the pump.

DRIVE SHAFT

Radial and axial loads on the shafts must be avoided since they reduce the life of the unit. Pumps driven by power take - off on engines must always be connected by placing an "Oldham" coupling or coupling having convex toothed hub.

This is to ensure that inevitable misalignment during assembly is reduced to minimum.

PUMP ROTATION DIRECTION VIEWED AT THE DRIVE SHAFT



HYDRAULIC PIPE LINE

To ensure favorable suction conditions it is important to keep pressure drop in suction pipe line to a minimum value (see WORKING CONDITIONS).

To calculate hydraulic pipe line size, the designer can use; as an approximate guide, the following fluid speed figures:

From 1 to 2 m/sec on suction pipe line
From 6 to 10 m/sec on pressure pipe line

From 3.28 to 6.36 ft/sec on suction pipe line
From 19.7 to 32.8 ft/sec on pressure pipe line

The lowest fluid speed values in pipe lines is recommended when the operating temperature range is high and/or for continuous duty.

The highest value is recommended when the temperature difference is low and/or for intermittent duty.

When tandem pumps are supplied by 2 different reservoirs with 2 different fluids it is necessary to specify "AS" version.

In case of reversible motor allowance must be made to ensure the motor is not drained, through the case drain, when stationary.

FILTRATION INDEX RECOMMENDED

| Working pressure | > 200 bar / 2900 psi | < 200 bar / 2900 psi |
|-------------------------------------|----------------------|----------------------|
| Contamination class NAS 1638 | 9 | 10 |
| Contamination class ISO 4406 | 18/15 | 19/16 |
| Achieved with filter $\beta_x = 75$ | 15 μm | 25 μm |

FIRE RESISTENT FLUID

| Type | Description | Max pressure | Max speed (rpm) | Temperature |
|------|-----------------------------|------------------|-----------------|-------------|
| HFB | oil emulsion with 40% water | 130 bar/1880 psi | 2500 | 3°C +65°C |
| HFC | Water glycol | 180 bar/2600 psi | 1500 | -20°C +65°C |
| HFD | Phosphate esters | | 1750 | -10°C +80°C |

COMMON FORMULAS

$$C = \text{Input torque} = \frac{q \cdot \Delta p}{62.8 \cdot \eta_m} \text{ (Nm)}$$

$$P = \text{Input power} = \frac{q \cdot n \cdot \Delta p \cdot 10^{-3}}{600 \eta_m} \text{ (kW)}$$

$$Q = \text{Outlet flow} = \frac{q \cdot n \cdot \eta_v}{1000} \text{ (l/min)}$$

LEGENDA

Δp = Working pressure (bar)

q = Displacement (cm^3/rev)

n = Speed (min^{-1})

η_m = Mechanical eff. (0.92)

η_v = Volumetric eff. (0.95)

DESCRIPTION OF THE NEW PRODUCT IDENTIFICATION LABEL

Based on the firm certification ISO 9001 - UNI EN 29001, section 4.8 (identification and traceability of the product), we have adopted a new identification label starting from the 1st march 1995. Pls, see following example:

| | | | |
|---|--------|---|---|
| A | | | |
| B | | | |
| C | | D | |
| E | salami | F | G |

A = Product short description (eg. VD8A/FDD/U4G).

B = Customer part number.

C = Salami part number (eg. 6235 0025 0).

D = Production code (for Salami management)

E = Rotation sense (only for pumps).

F = Production date (see data sheet here below)

G = Progressive number of assembling.

Only for pumps 2PB and 2PZ (except triple 2PB) the identification product is marked on the top of the pump body as shown here below:



SALAMI 09/02
MADE IN ITALY 4010998
612271211 nr. 13
2PB 19S B25 B5

Product short description. _____
Salami part number and progressive number of assembling. _____
Production code (for Salami management). _____
Month and year of made: maybe in the future you can find this
year of production date in the label beside too. _____
Rotation sense. _____

| ASSEMBLED | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| JANUARY | 7A | 8M | 9M | 0M | 1M | 2M | 3M | 4M | 5M | 6M | 7M | 08M | 09M | 10M | 11M | 12M |
| FEBRUARY | 7B | 8N | 9N | 0N | 1N | 2N | 3N | 4N | 5N | 6N | 7N | 08N | 09N | 10N | 11N | 12N |
| MARCH | 7C | 8P | 9P | 0P | 1P | 2P | 3P | 4P | 5P | 6P | 7P | 08P | 09P | 10P | 11P | 12P |
| APRIL | 7D | 8Q | 9Q | 0Q | 1Q | 2Q | 3Q | 4Q | 5Q | 6Q | 7Q | 08Q | 09Q | 10Q | 11Q | 12Q |
| MAY | 7E | 8R | 9R | 0R | 1R | 2R | 3R | 4R | 5R | 6R | 7R | 08R | 09R | 10R | 11R | 12R |
| JUNE | 7F | 8S | 9S | 0S | 1S | 2S | 3S | 4S | 5S | 6S | 7S | 08S | 09S | 10S | 11S | 12S |
| JULY | 7G | 8T | 9T | 0T | 1T | 2T | 3T | 4T | 5T | 6T | 7T | 08T | 09T | 10T | 11T | 12T |
| AUGUST | 7H | 8U | 9U | 0U | 1U | 2U | 3U | 4U | 5U | 6U | 7U | 08U | 09U | 10U | 11U | 12U |
| SEPTEMBER | 7I | 8V | 9V | 0V | 1V | 2V | 3V | 4V | 5V | 6V | 7V | 08V | 09V | 10V | 11V | 12V |
| OCTOBER | 7J | 8Z | 9Z | 0Z | 1Z | 2Z | 3Z | 4Z | 5Z | 6Z | 7Z | 08Z | 09Z | 10Z | 11Z | 12Z |
| NOVEMBER | 7K | 8X | 9X | 0X | 1X | 2X | 3X | 4X | 5X | 6X | 7X | 08X | 09X | 10X | 11X | 12X |
| DECEMBER | 7L | 8Y | 9Y | 0Y | 1Y | 2Y | 3Y | 4Y | 5Y | 6Y | 7Y | 08Y | 09Y | 10Y | 11Y | 12Y |



ROTATION CHANGING INSTRUCTIONS FOR PUMPS GROUP 2

Before starting, be sure that the pump is cleaned externally as well as the working area to avoid that particles dangerous for pump working can find their way into the pump.

Pump represented is aclockwise rotation pump.

To obtain an anti_clockwise rotation read carefully the following instructions.

Picture "A"

- 1 - Loosen and fully unscrew the screws.
- 2 - Lay the pump on the working area in order to have the mounting flange turned upside.
- 3 - Coat the shaft extension with grease to avoid damaging the shaft seal.
- 4 - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.

Picture "B"

- 1 - Mark the position of the bushing and eventually the thrust plate, relative to the body.
- 2 - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.

Picture "C"

- 1 - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.
- 2 - Re-locate the driven gear in the position previously occupied by the driving gear.

Picture "D"

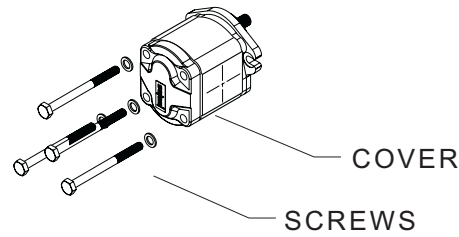
- 1 - Re-locate the driving gear in the position previously occupied by the driven gear.

Picture "E"

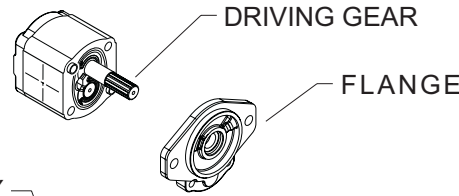
- 1 - Replace the bushing and thrust plate taking care that:
 - marks are located as on the picture
 - surface containing the seal is visible
 - seal and its protection are correctly located

Picture "F"

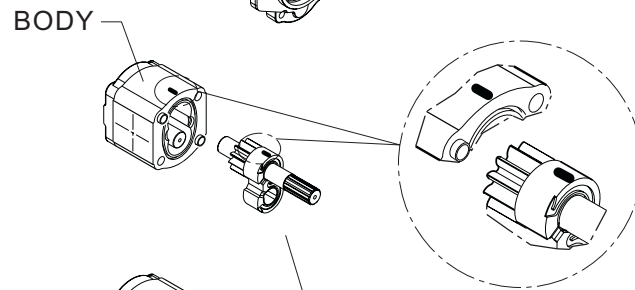
- 1 - Clean body and mounting flange refaced surfaces.
- 2 - Verify that the two plugs are located in the body.
- 3 - Refit the mounting flange, turned 180° from its original position.
- 4 - Replace the clamp bolts and tighten crosswise evenly to a torque you will find at page 2.
Check that the shaft rotates freely.
- 6 - Mark on the flange the new direction of rotation.



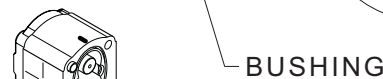
Picture "A"



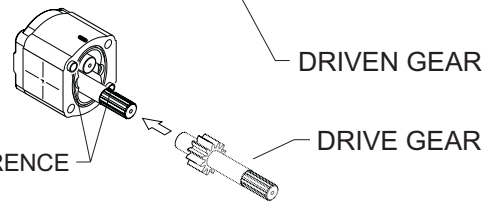
Picture "A"



Picture "B"



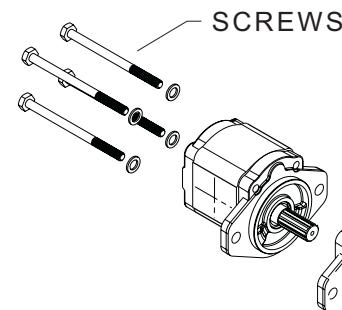
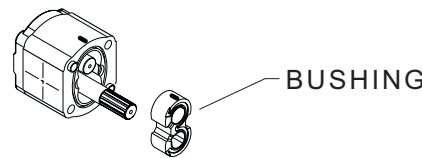
Picture "C"



Picture "D"

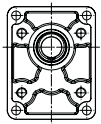
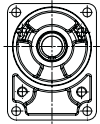





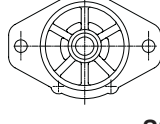













Pict. "E"



Pict. "F"

COMBINATION WITH TYPES OF FLANGES AND DRIVES SHAFTS AVAILABLE

| 2PE |  P1 |  B1 |  B4 B5 |  B2 B3 |  S2 S6 |  K1 |  C1 |  S3 |
|--|--|--|--|--|--|--|--|--|
|  25 | | 25 B1 | 25 B4 25 B5 | | | | | |
|  28 | 28 P1 | | | | | | | |
|  02 | | | | | | 02 K1 | | |
|  03 | | | | 03B2 03B3 | | | | |
|  04 | | | 04B4 04B5 | | | | | |
|  62 | 62 P1 | 62 B1 | 62 B4 62 B5 | | | | 62 C1 | |
|  52 | | | | | 52 S2 52 S6 | | | |
|  54 | | | | | 54 S2 54 S6 | | | |
|  55 | | | | | | | | 55 S3 |
|  85 | | | | | 85 S2 85 S6 | | | |
|  82 | 82 P1 | | | | 82 S2 82 S6 | | | |

Note: other versions available, see shafts and flanges information.

GEAR PUMPS "E" SERIES

2PE

Displacements up to 1.58 cu.in./rev
Pressure up to 4300 psi



Displacements up to 25.8 cm³/rev
Pressure up to 300 bar

ASSEMBLING DIMENSIONS AND VALUES OF PRESSURE AND SPEED

| Type | | 3.2* | 3.9* | 4.5 | 6.5 | 8.3 | 10.5 | 11.3 | 12.5 | 13.8 | 16 | 19 | 22.5 | 26 |
|-----------------------|------------------------------------|---------------|-------------|---------------|--------------|---------------|--------------|--------------|---------------|---------------|---------------|--------------|--------------|--------------|
| Displacement | cm ³ /rev cu.in./rev | 3.2 0.19 | 3.9 0.24 | 4.6 0.27 | 6.5 0.40 | 8.2 0.50 | 10.6 0.65 | 11.5 0.68 | 12.7 0.77 | 13.8 0.84 | 16.6 1.01 | 19.4 1.15 | 22.9 1.37 | 25.8 1.58 |
| Dimension A | mm in | 47.1 1.83 | | 49.95 1.97 | 52.8 2.07 | 56.35 2.22 | 59.6 2.35 | | 63.5 2.5 | 67.5 2.65 | 75.6 2.97 | 81 3.19 | 86.8 3.42 | |
| Dimension C | mm in | 23.55 0.93 | | 24.98 0.98 | 26.4 1.04 | 28.17 1.11 | 29.8 1.17 | | 31.75 1.25 | 33.75 1.33 | 37.80 1.49 | 40.5 1.59 | 43.4 1.71 | |
| Working pressure | p1 bar psi | 250 3600 | | | | | | | | | 220 3140 | 200 2900 | 180 2600 | |
| Intermittent pressure | p2 bar psi | 280 4000 | | | | | | | | | 240 3450 | 220 3140 | 200 2900 | |
| Peak pressure | p3 bar psi | 300 4300 | | | | | | | | | 260 3750 | 240 3450 | 220 3140 | |
| Max speed at | p2 rpm | 4000 | | | | 3500 | | | | 3000 | | 2750 | 2500 | |
| Min speed at | p1 rpm | 600 | | | | 500 | | | | 400 | | 400 | 300 | |
| Weight | kg lbs | 2.01 4.4 | 2.05 4.5 | 2.1 4.6 | | 2.25 5.0 | 2.3 5.1 | 2.37 5.2 | 2.4 5.3 | 2.5 5.5 | 2.8 6.2 | 2.95 6.5 | 3.1 6.8 | |

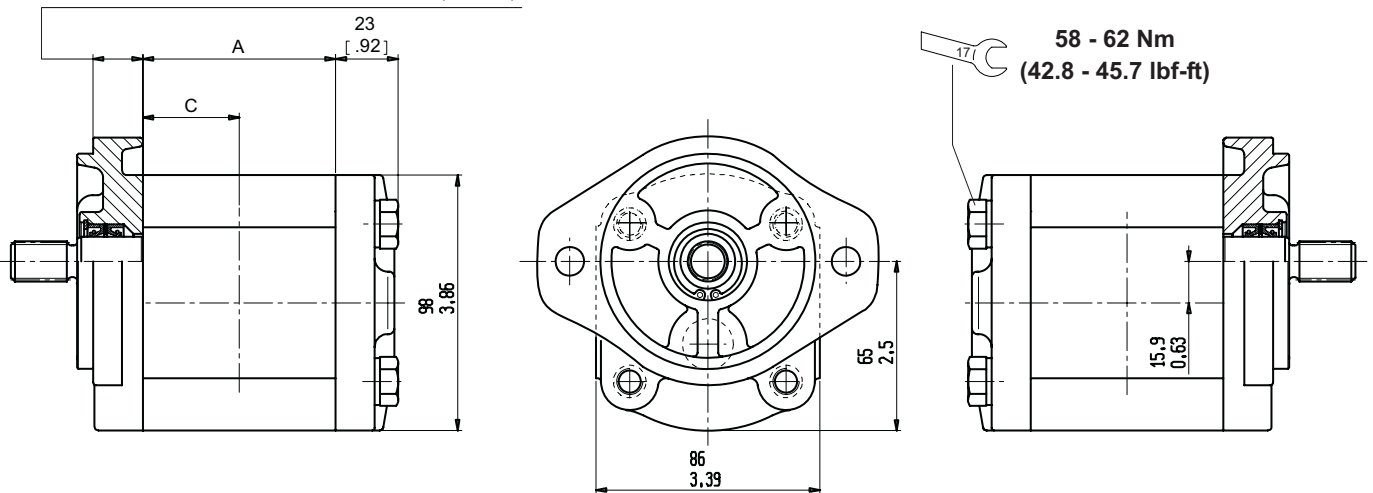
* Available only as rear pump

Performance curves carried out with oil viscosity at 16 cSt and oil temperature at 60°C

For flanges code:

P1 - B1 - S2 - S6, this dimension is 19 mm (0.75 in.)

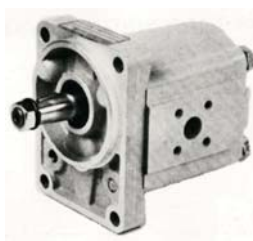
B2 - B3 - B4 - B5, this dimension is 16.5 mm (0.65 in.)



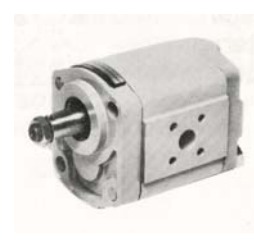
ASSEMBLING EXAMPLES



2PE - P28P1



2PE - B25B1

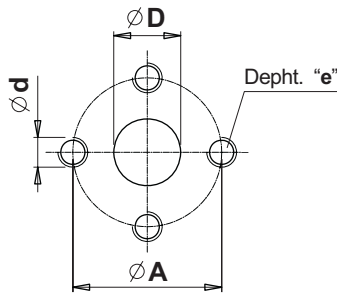


2PE - B25B4



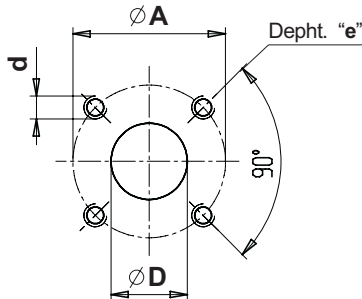
2PE - B62B1

FLANGED PORTS



| Type | INLET | | | | OUTLET | | | |
|-------------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|
| | ØD | ØA | d | e | ØD | ØA | d | e |
| From 3.2 to 8.3 | 13 (0.51") | 30 (1.19") | M6 | 13 (0.51") | 13 (0.51") | 30 (1.19") | M6 | 13 (0.51") |
| From 11.3 to 22.5 | 20 (0.78") | 40 (1.56") | M8 | | | | | |
| 26 | 22 (0.87") | | | | | | | |

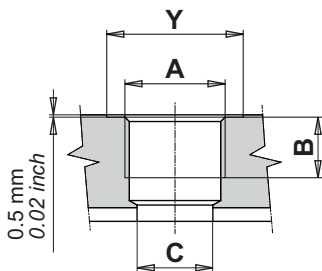
code P



| Type | INLET | | | | OUTLET | | | |
|------------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|
| | ØD | ØA | d | e | ØD | ØA | d | e |
| From 3.2 to 22.5 | 20 (0.78") | 40 (1.56") | M6 | 13 (0.51") | 15 (0.59") | 35 (1.38") | M6 | 13 (0.51") |
| 26 | 22 (0.87") | | | | | | | |

code B

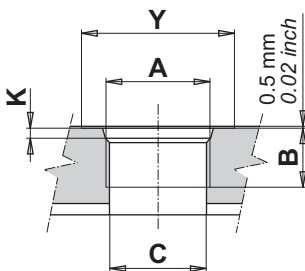
THREADED PORTS



| Type | INLET | | | OUTLET | | |
|----------------|-------|---------------|---------------|--------|---------------|---------------|
| | A | B | ØC | A | B | ØC |
| From 3.2 to 26 | G3/4 | 16 (0.62") | 20 (0.78") | G1/2 | 14 (0.54") | 13 (0.51") |

code G

British standard pipe parallel (BSPP)

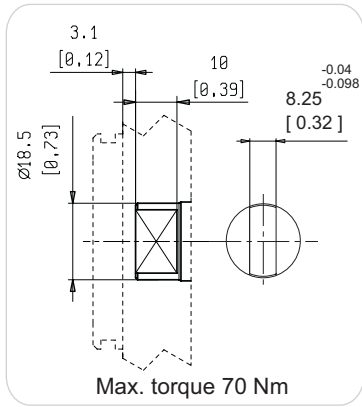


| Type | INLET | | | | | OUTLET | | | | |
|----------------|---------------------------|---------------|---------------|---------------|----------------|-----------------------------|---------------|---------------|---------------|----------------|
| | A | B | ØC | Y | K | A | B | ØC | Y | K |
| From 3.2 to 26 | 1-1/16 UNF (SAE 12) | 16 (0.62") | 20 (0.78") | 41 (1.61") | 3.3 (0.12") | 7/8 - 14 UNF (SAE 10) | 14 (0.54") | 13 (0.51") | 34 (1.32") | 2.5 (0.10") |

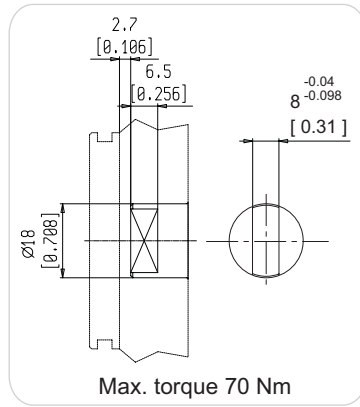
code R

SAE threaded (ODT)

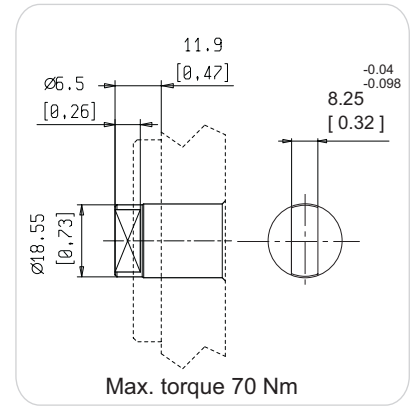
DRIVE SHAFTS



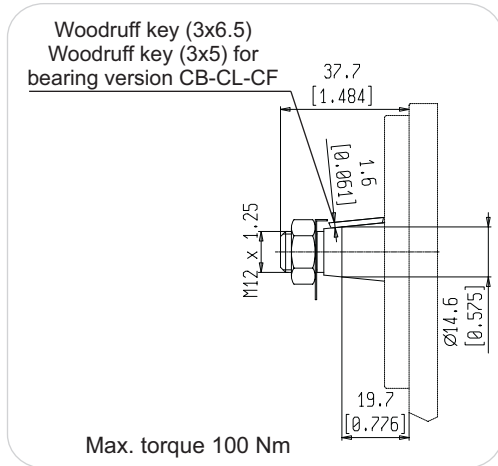
code 02 Tang drive for diesel engines. For flange K1 without shaft seal.



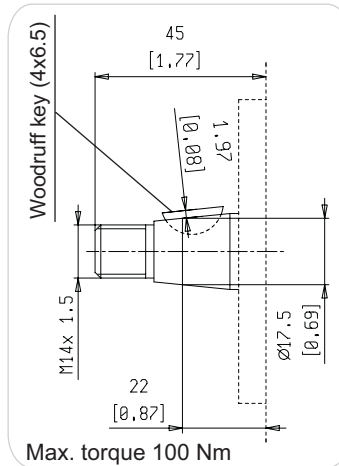
code 03 Tang drive for electric motors. Without shaft seal.



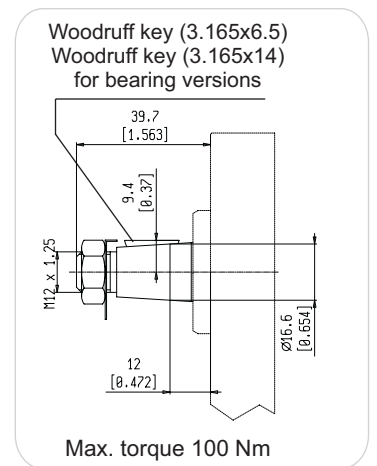
code 04 Tang drive.



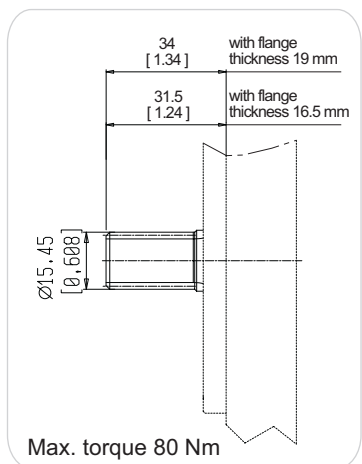
code 25 Tapered 1:5



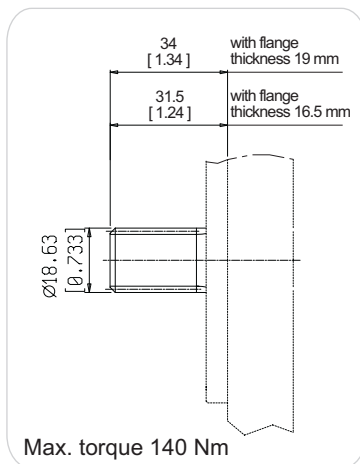
code 26 Tapered 1:5 (only for CB)



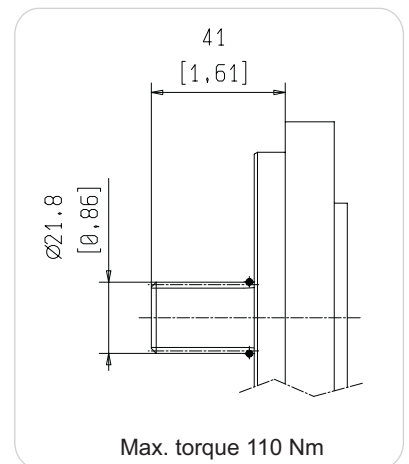
code 28 Tapered 1:8



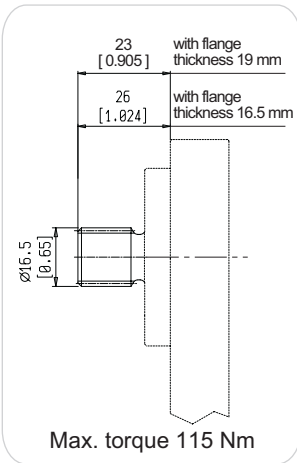
code 52 SAE A 9T-16/32DP
Ansi B92 1a 1976



code 54 SAE 11T-16/32DP
Ansi B92 1a 1976

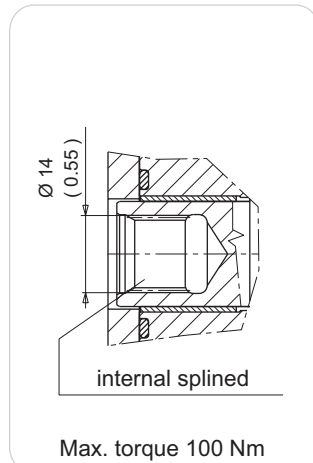


code 55 SAE B 13T-16/32DP
Ansi B92 1a 1976



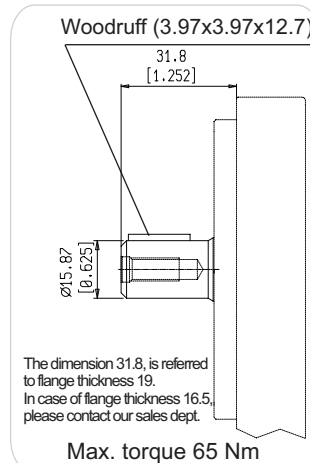
code 62

9 teeth DIN 5482 splined



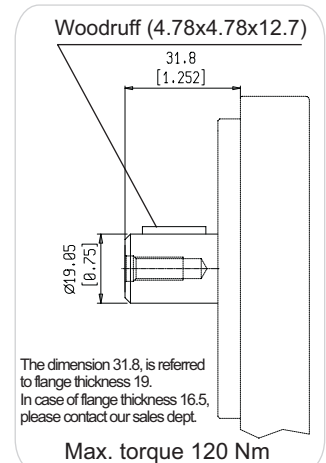
code 60

DIN 5480 internal splined
Only for rear pumps



code 82

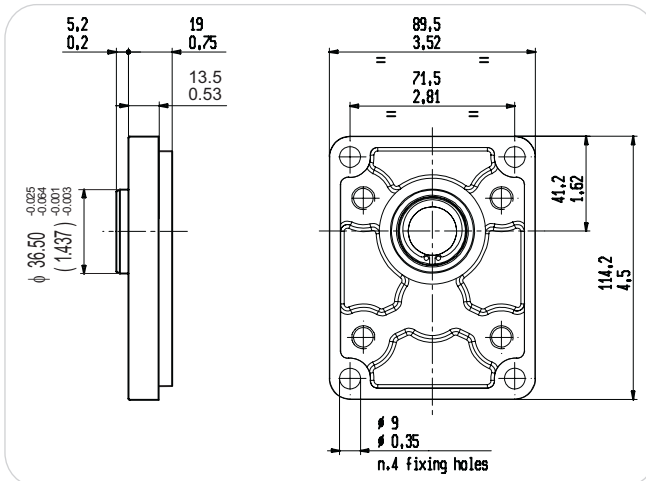
5/8" SAE A parallel



code 85

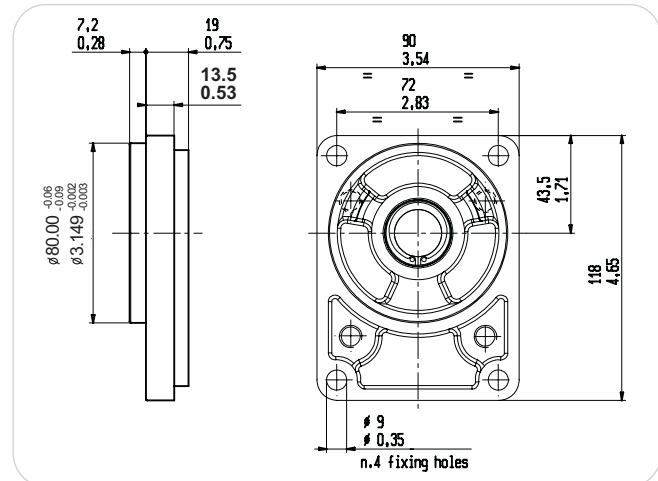
3/4" SAE A parallel

MOUNTING FLANGES



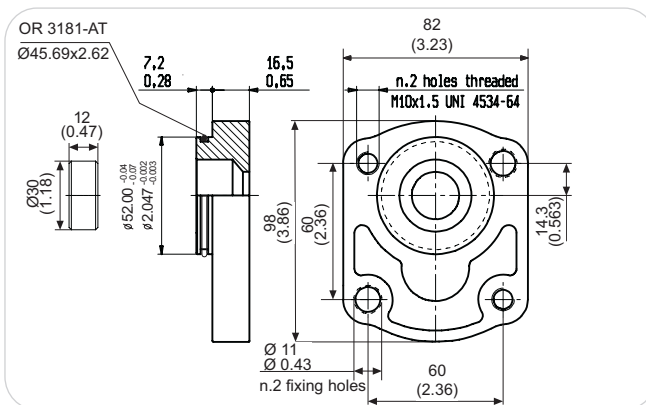
code P1

With shaft code 28 - 62 - 81 - 82 - 85



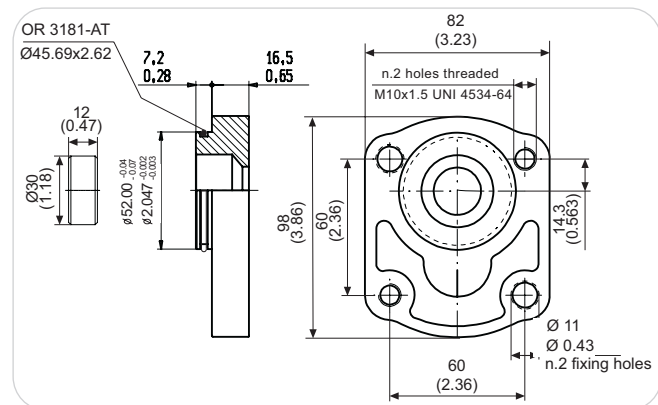
code B1

With shaft code 25-62



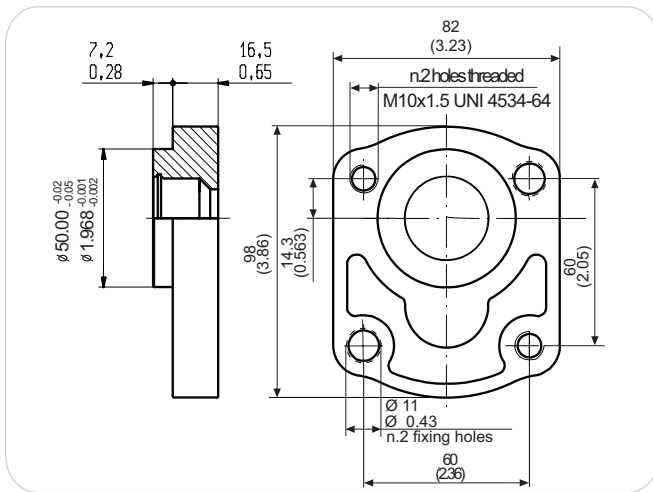
code B2

With shaft code 03-61

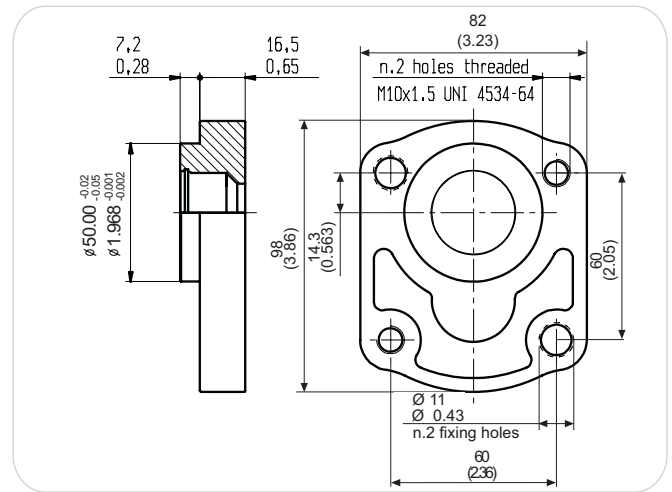


code B3

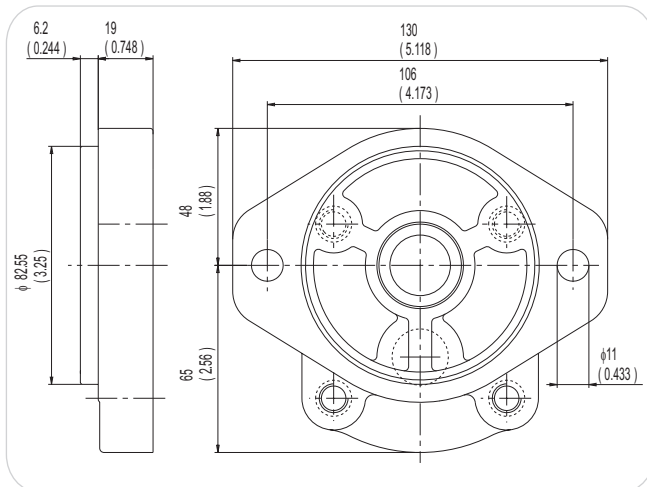
With shaft code 03-61



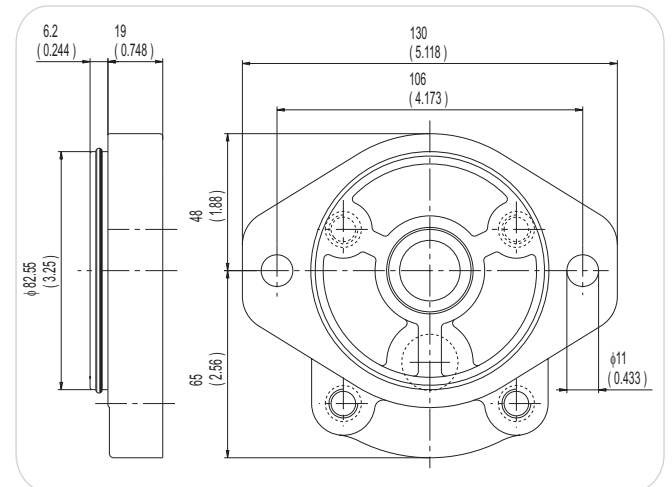
code B4 With shaft code 25-62



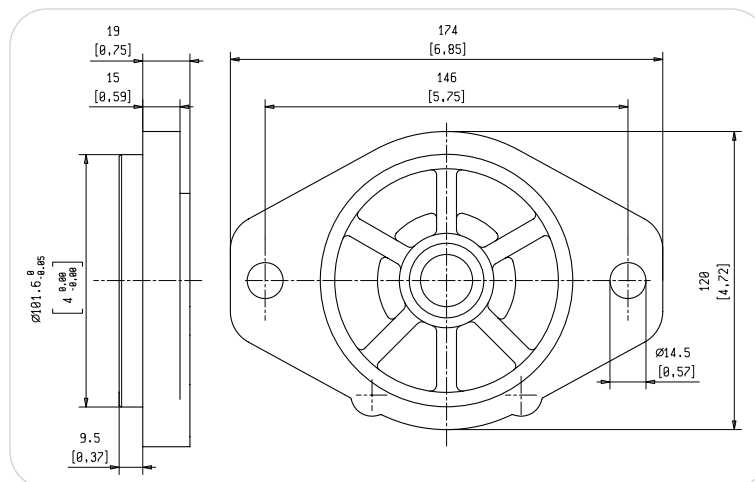
code B5 With shaft code 25-62



code S2 With shaft code 52-54-82-85.

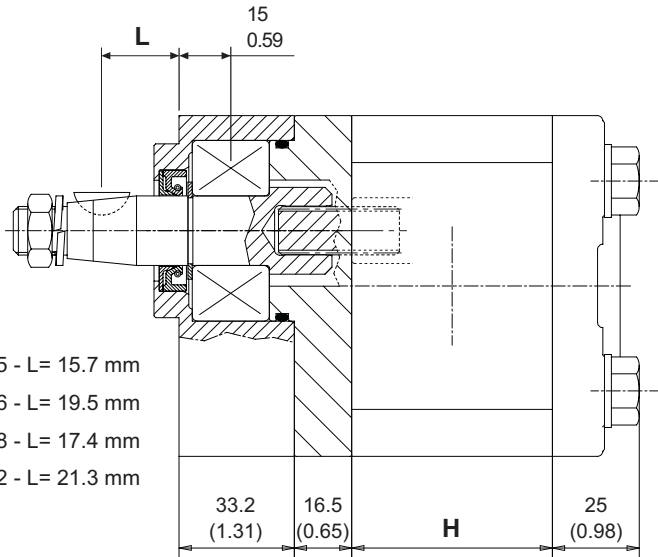


code S6 With shaft code 52-54-82-85

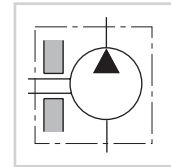


code S3 With shaft code 52-54-55-82-85

OUTRIGGER BEARING



- CODE 25 - L= 15.7 mm
- CODE 26 - L= 19.5 mm
- CODE 28 - L= 17.4 mm
- CODE 82 - L= 21.3 mm

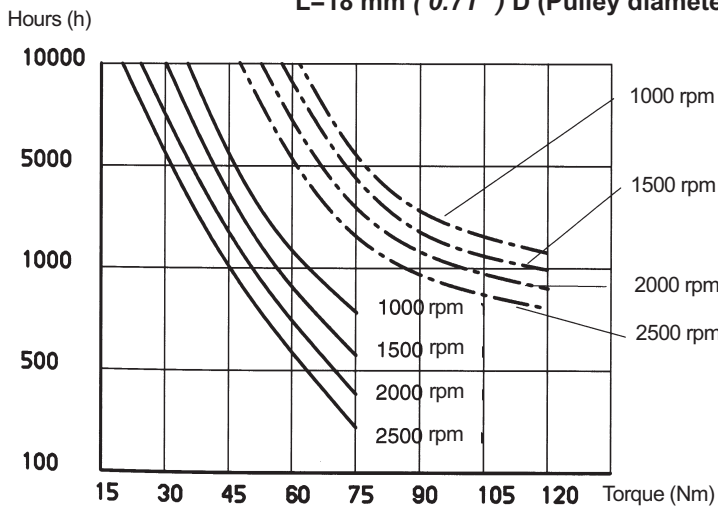


| Type | H |
|-------------|---------------|
| 4.5 | 47.1 (1.83") |
| 6.5 | 49.95 (1.97") |
| 8.3 | 52.8 (2.08") |
| 10.5 | 56.3 (2.22") |
| 11.3 - 12.5 | 59.6 (2.35") |
| 13.8 | 63.5 (2.5") |
| 16 | 67.5 (2.66") |
| 19 | 75.6 (2.97") |
| 22.5 | 81 (3.19") |
| 26 | 86.6 (3.42") |

Order example pump 2PE with bearing: **2PE16D - B25 B4 - CL**

Life of bearing under following condition:

L=18 mm (0.71") D (Pulley diameter)=90 mm (3.54")



To calculate the absorbed pump or motor torque, please use the following formula:

$$C \text{ (Nm)} = \frac{C_y \Delta p}{62.8 \eta_m}$$

C_y = Displacement (cm^3/rev)

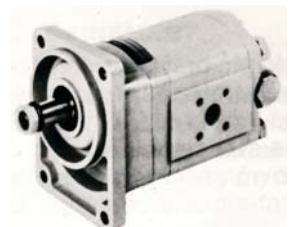
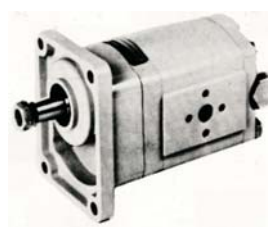
Δp = Pressure (bar)

For Code CP-CB-CL-CS

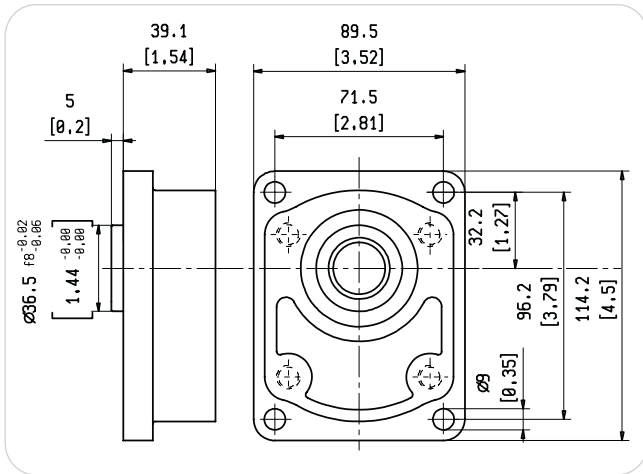


For Code CF

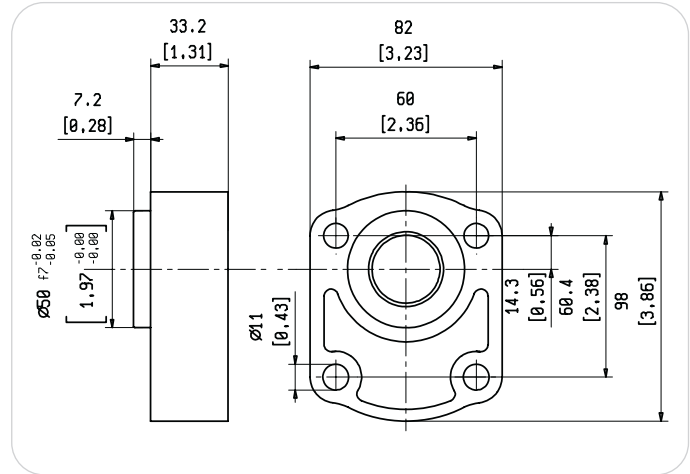
*Available for quantity, please contact our sales department.



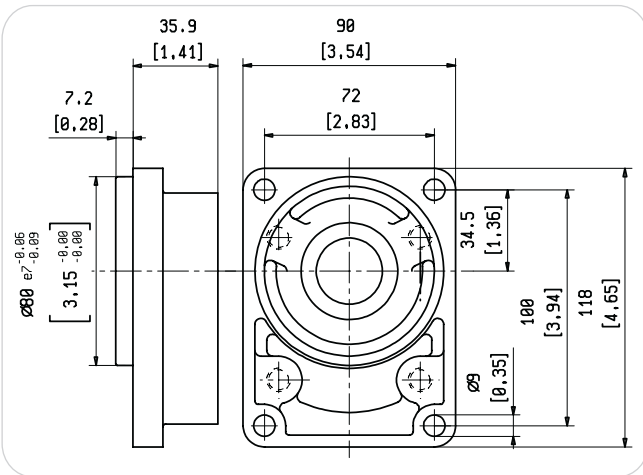
MOUNTING FLANGES WITH BEARING SUPPORT



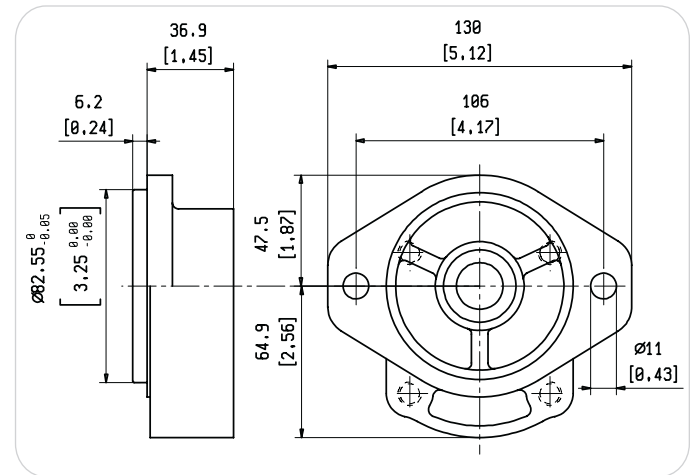
code CP With shaft code 28



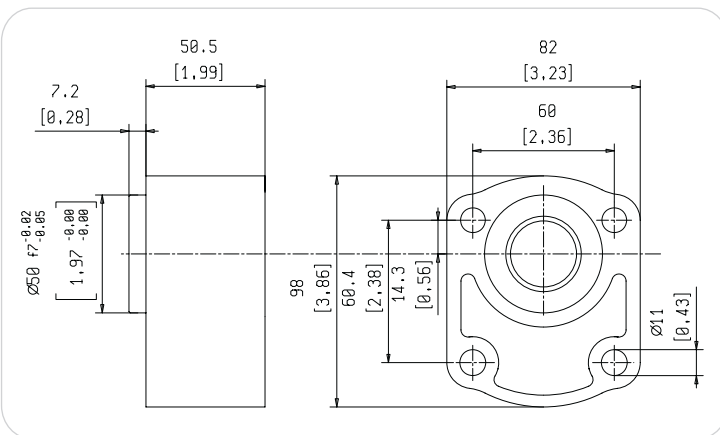
code CL With shaft code 25, 26



code CB With shaft codes 25-26

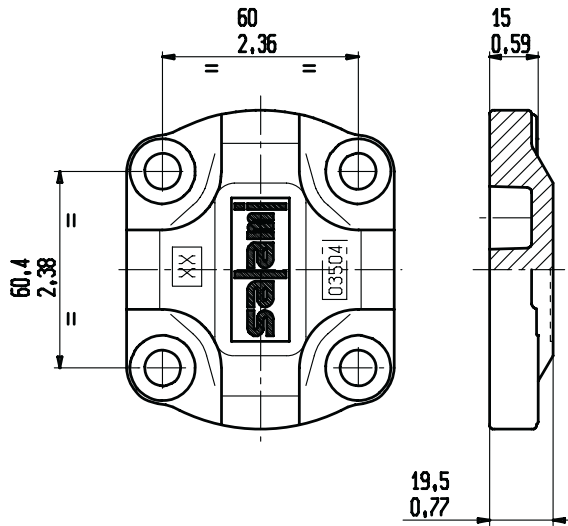


code CS SAE A with shaft codes 52-54-82

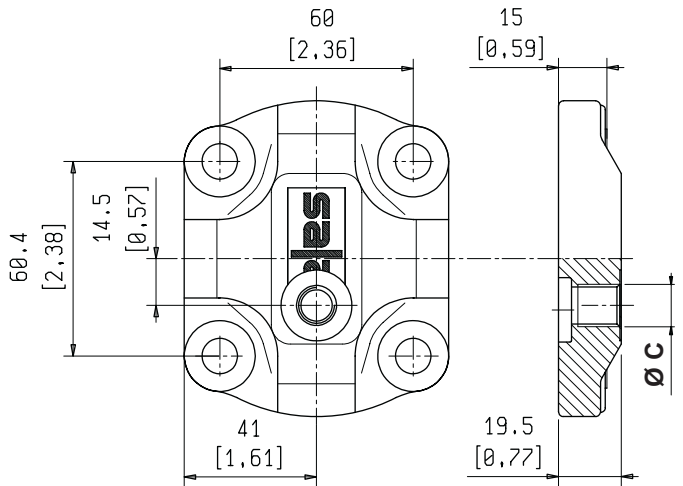


code CF SAE A with shaft codes 25-26

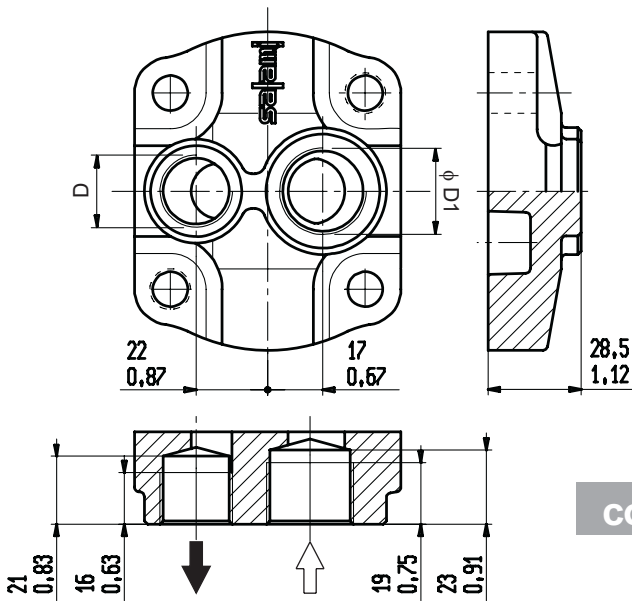
REAR COVERS



Standard rear cover for unidirectional pumps



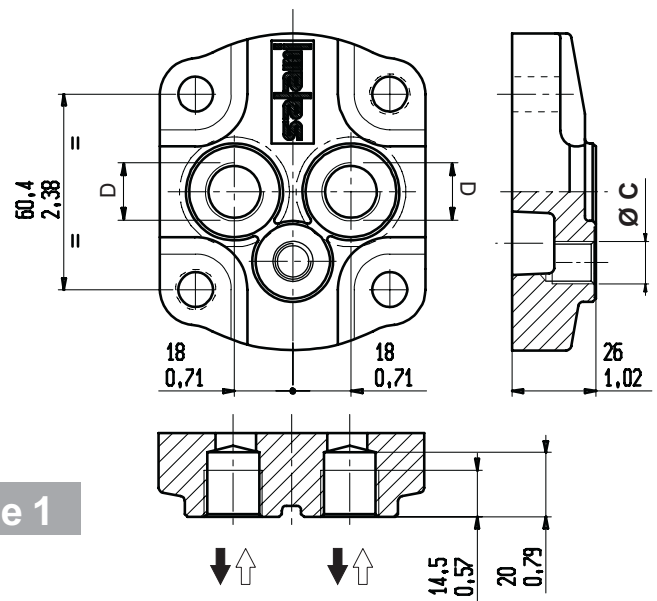
Standard cover for reversible pumps and motors, with external drain ΦC .
For the dimension ΦC please see the table here below.



UNIDIRECTIONAL PUMPS
On request outlet port only.

| D | D1 |
|------------------------|--------------------------|
| M 18x1.5 | M 26x1.5 |
| 7/8-14 UNF-2B (SAE 10) | 1-1/16-12 UN-2B (SAE 12) |
| G 1/2 | G 3/4 |

code 1



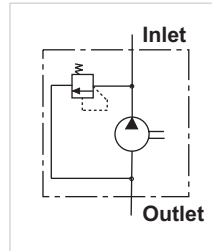
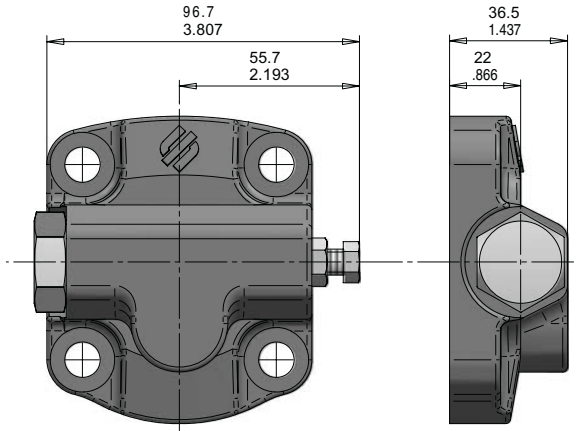
BIDIRECTIONAL PUMPS

For pumps with threaded rear ports until 25 l/min delivery.

| D | C |
|------------------------|------------------------|
| M 18x1.5 | G 1/4 |
| 7/8-14 UNF-2B (SAE 10) | 7/16-20 UNF-2B (SAE 4) |
| G 1/2 | G 1/4 |

For rear ports if requested please advise type using note.

REAR COVERS WITH MAIN RELIEF VALVES

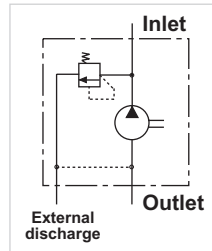
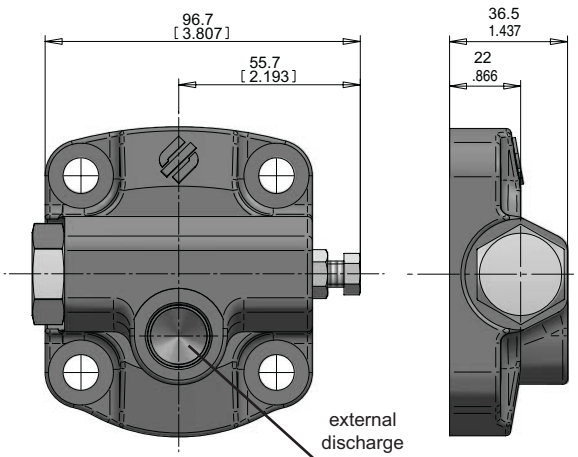


For this main relief valve you can choice four setting ranges:

- (20 - 50 bar)
- (51 - 75 bar)
- (76 - 150 bar)
- (151 - 220 bar)

code VS

With main relief valve with internal exhaust gallery



code VSE

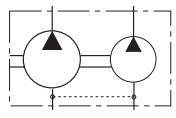
D (external discharge)

M 18 x 1.5 (METRIC)

3/4-16 UNF-2B (SAE 8)

G 3/8 (BSPP)

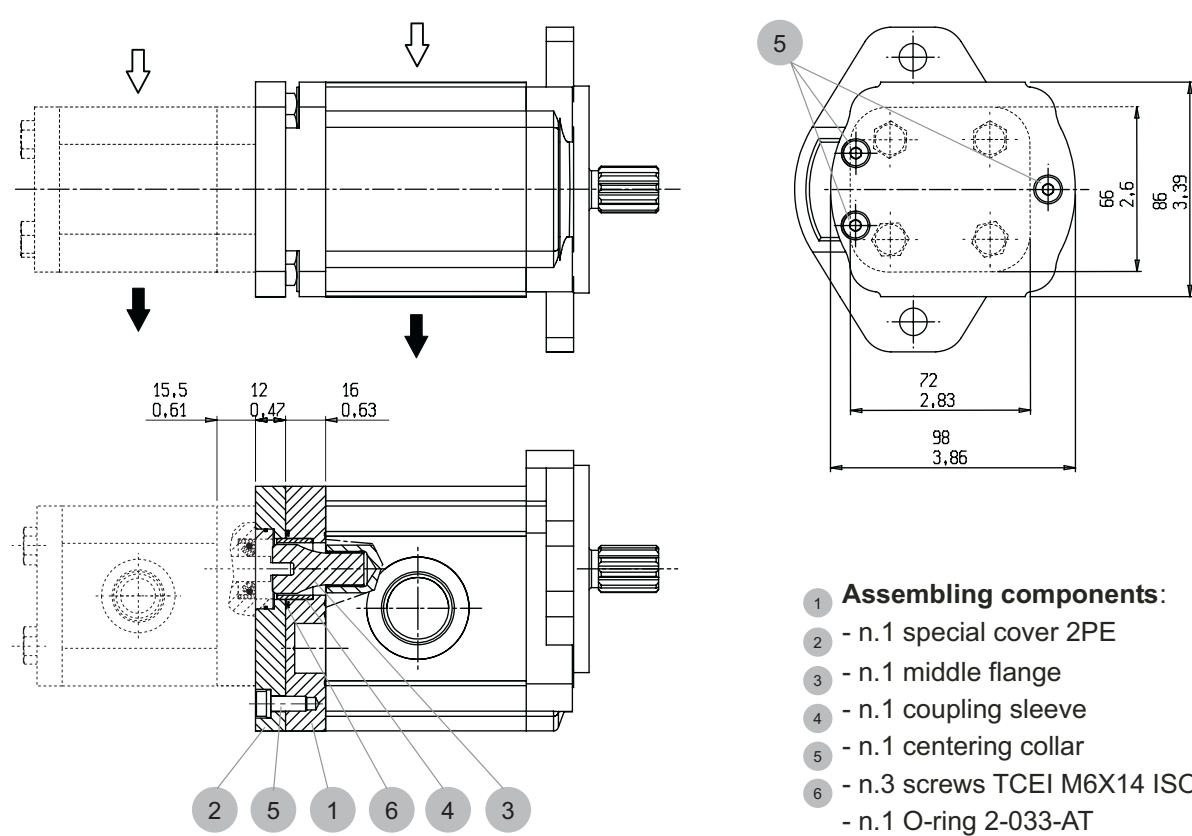
REAR COVER FOR MULTIPLE PUMP 2PE/1PE
(SEPARATED SUCTIONS)



MULTIPLE GEAR PUMPS
with inlet port
on each body

Assembling kit for multiple pump 2PE/1PE

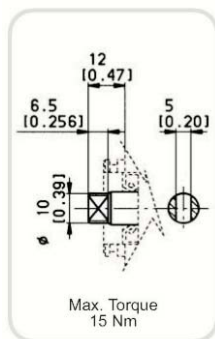
code PD1



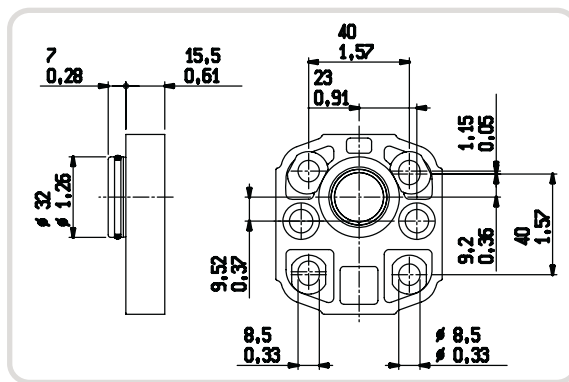
Assembling components:

- 1 - n.1 special cover 2PE
- 2 - n.1 middle flange
- 3 - n.1 coupling sleeve
- 4 - n.1 centering collar
- 5 - n.3 screws TCEI M6X14 ISO 262
- 6 - n.1 O-ring 2-033-AT

THE 1PE PUMP HAS THE SHAFT CODE "06" AND THE FLANGE CODE "B0"
(as per our gear pumps and motors catalogue group 1)



code 06

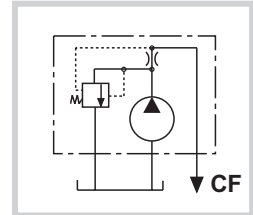


code B0

REAR COVER WITH PRESSURE COMPENSATED FLOW CONTROL VALVE REAR PORTS

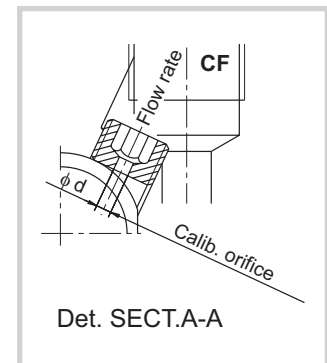
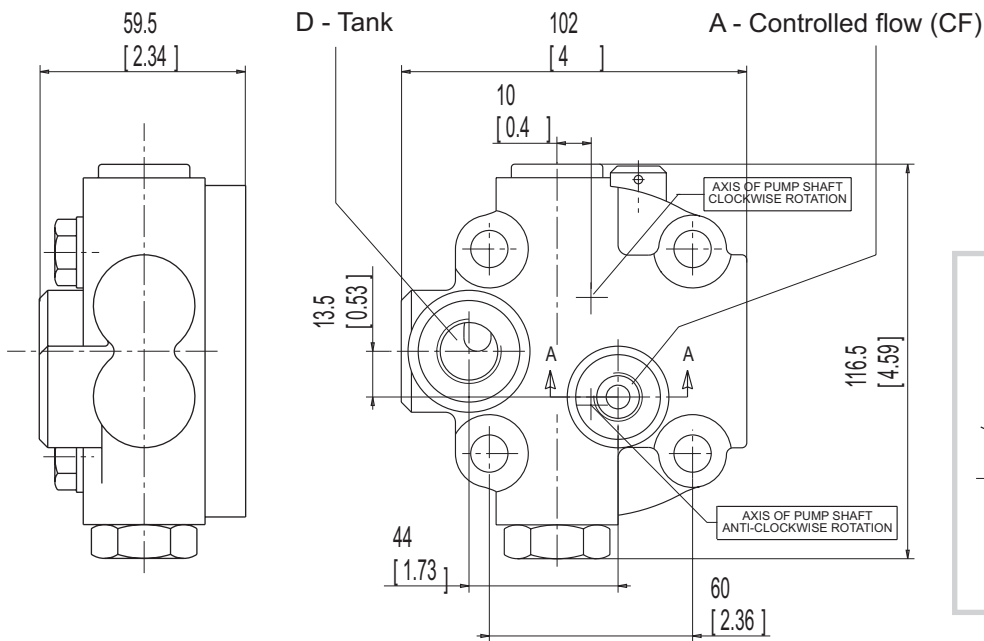
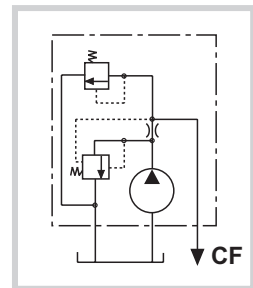
code VR

Pressure compensated flow control valve with excess flow to tank



code VRS

Pressure compensated flow control valve with excess flow to tank, with main relief valve on controlled flow line.



| A | D |
|------------------------|-----------------------|
| G 3/8 | G 1/2 |
| 9/16-18 UNF-2B (SAE 6) | 3/4-16 UNF-2B (SAE 8) |

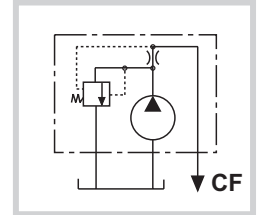
FLOW CONTROL VALVE (VR - VRS)

3 - way flow control valve housed in a special cast iron cover which ensures constant flow regardless pump speed and system pressure variations. It can also be supplied with adjustable pressure relief valve whose relieved flow goes into excess pump flow line. In this way the max fluid temperature is lower than obtained if the excess flow returned directly to pump inlet. The flow regulated is determined by the diameter of hole on the threaded dowel (see table).

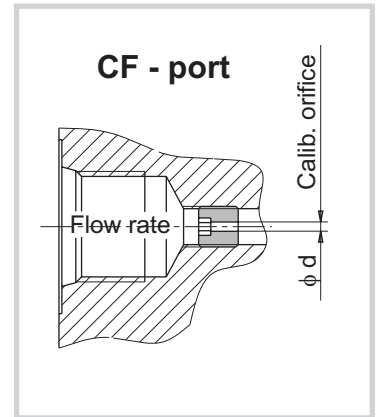
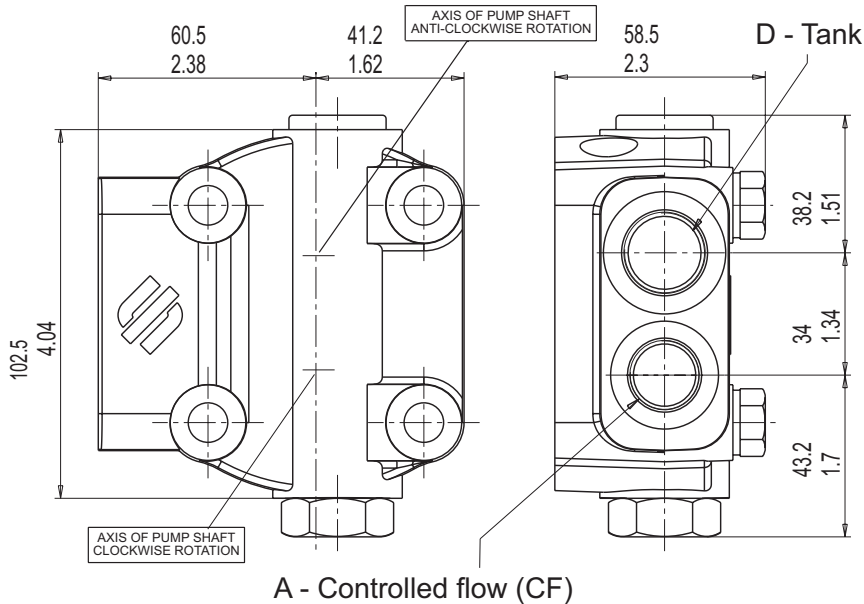
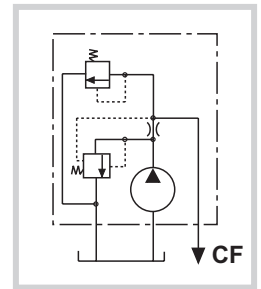
| CALIBRATED ORIFICE Ø d(mm/inch) | FLOW RATE (l/min - gpm) ± 10% |
|---------------------------------|-------------------------------|
| 1.5 (0.06") | 2.5 (0.66) |
| 2 (0.08") | 4 (1.06) |
| 2.4 (0.09") | 6 (1.59) |
| 2.8 (0.11") | 8 (2.11) |
| 3.1 (0.12") | 10 (2.64) |
| 3.5 (0.14") | 12.5 (3.30) |
| 4 (0.16") | 16 (4.23) |
| 4.4 (0.17") | 20 (5.28) |
| 4.9 (0.19") | 25 (6.61) |

**REAR COVER WITH PRESSURE COMPENSATED FLOW CONTROL VALVE
SIDE PORTS**

code VR1 Pressure compensated flow control valve with excess flow to tank



code VRS1 Pressure compensated flow control valve with excess flow to tank, with main relief valve on controlled flow line.



| A | D |
|-----------------------|------------------------|
| G 3/8 | G 1/2 |
| 3/4-16 UNF-2B (SAE 8) | 7/8-14 UNF-2B (SAE 10) |

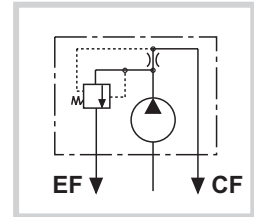
FLOW CONTROL VALVE (VR - VRS)

3 - way flow control valve housed in a special cast iron cover which ensures constant flow regardless pump speed and system pressure variations. It can also be supplied with adjustable pressure relief valve whose relieved flow goes into excess pump flow line. In this way the max fluid temperature is lower than obtained if the excess flow returned directly to pump inlet. The flow regulated is determined by the diameter of hole on the threaded dowel (see table).

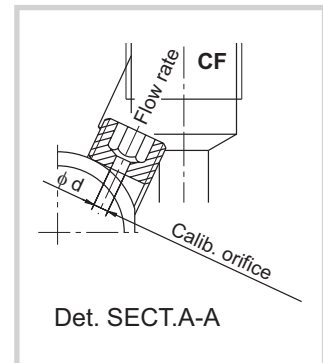
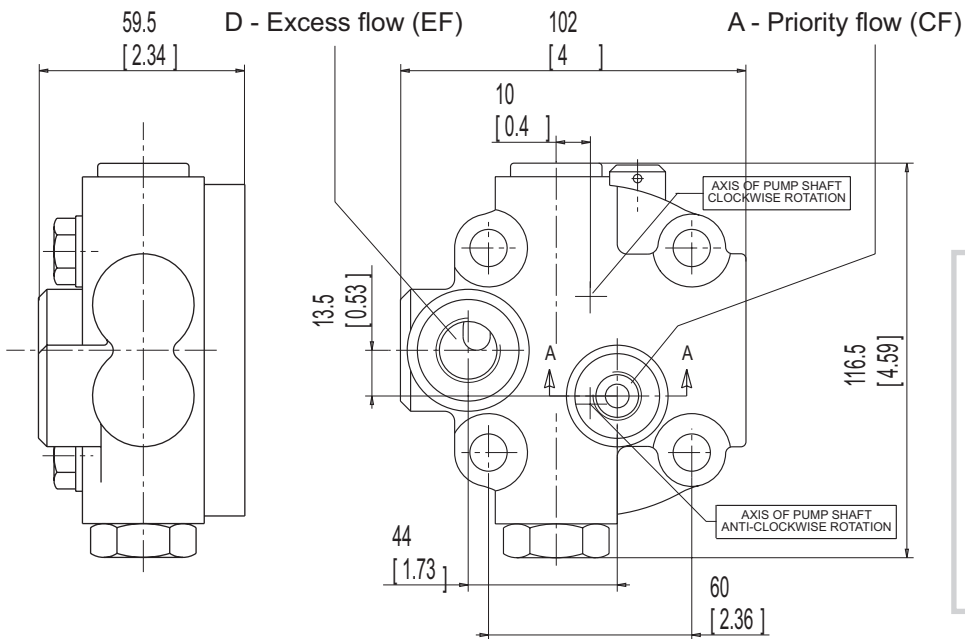
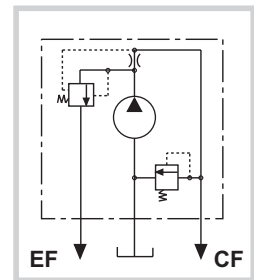
| CALIBRATED ORIFICE Ø d(mm/inch) | FLOW RATE (l/min - gpm) ± 10% |
|---------------------------------|-------------------------------|
| 1.5 (0.06") | 2.5 (0.66) |
| 2 (0.08") | 4 (1.06) |
| 2.4 (0.09") | 6 (1.59) |
| 2.8 (0.11") | 8 (2.11) |
| 3.1 (0.12") | 10 (2.64) |
| 3.5 (0.14") | 12.5 (3.30) |
| 4 (0.16") | 16 (4.23) |
| 4.4 (0.17") | 20 (5.28) |
| 4.9 (0.19") | 25 (6.61) |

REAR COVER WITH PRESSURE COMPENSATED PRIORITY FLOW VALVE REAR PORTS

code VP Priority flow valve, excess flow to second actuator.



code VPS Priority flow valve, excess flow to second actuator with pressure relief valve on priority flow line.



| A | D |
|------------------------|-----------------------|
| G 3/8 | G 1/2 |
| 9/16-18 UNF-2B (SAE 6) | 3/4-16 UNF-2B (SAE 8) |

| CALIBRATED ORIFICE Ø d(mm/inch) | FLOW RATE (l/min - gpm) ± 10% |
|---------------------------------|-------------------------------|
| 1.5 (0.06") | 2.5 (0.66) |
| 2 (0.08") | 4 (1.06) |
| 2.4 (0.09") | 6 (1.59) |
| 2.8 (0.11") | 8 (2.11) |
| 3.1 (0.12") | 10 (2.64) |
| 3.5 (0.14") | 12.5 (3.30) |
| 4 (0.16") | 16 (4.23) |
| 4.4 (0.17") | 20 (5.28) |
| 4.9 (0.19") | 25 (6.61) |

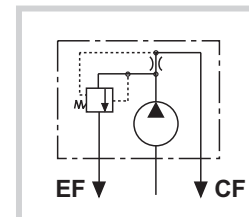
PRIORITY FLOW DIVIDERS (VP - VPS)

These are basically the same as VR valves differing only because the two flows can be loaded at the same time for supplying two separate circuits defined priority flow remains constant regardless of pump speed and system pressure variations. The second defined excess flow is directly proportional to pump speed. Priority flow is determined by diameter of hole on threaded dowel (see table). The max. pressure of the priority circuit can be limited by valve which relieves into pump suction.

**REAR COVER WITH PRESSURE COMPENSATED PRIORITY FLOW VALVE
SIDE PORTS**

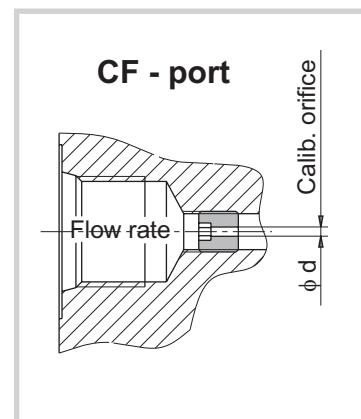
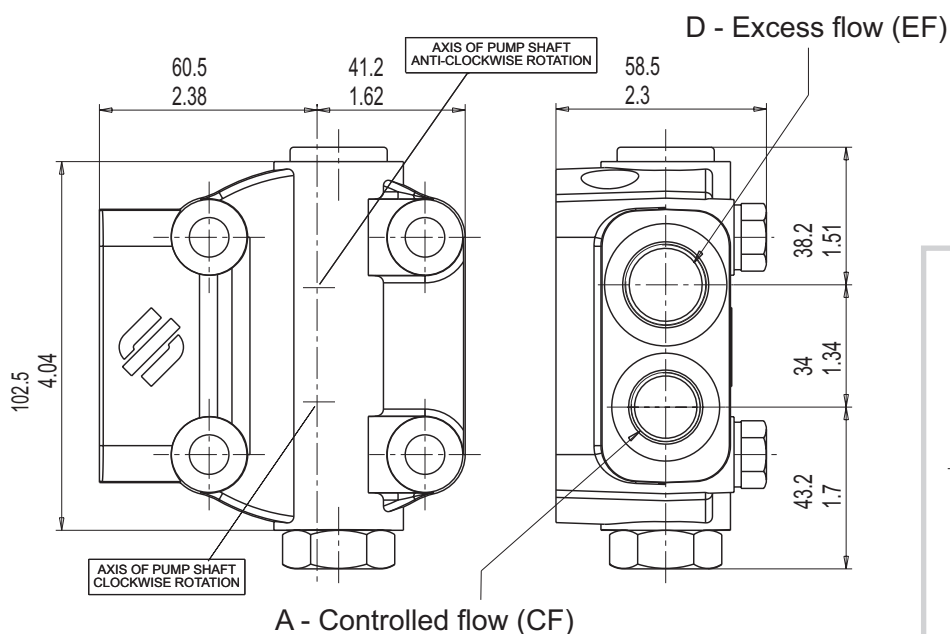
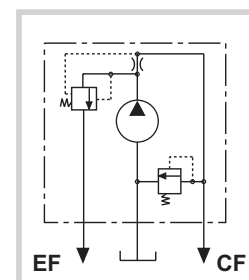
code VP1

Priority flow valve, excess flow to second actuator.



code VPS1

Priority flow valve, excess flow to second actuator with pressure relief valve on priority flow line.



| A | D |
|-----------------------|------------------------|
| G 3/8 | G 1/2 |
| 3/4-16 UNF-2B (SAE 8) | 7/8-14 UNF-2B (SAE 10) |

PRIORITY FLOW DIVIDERS (VP - VPS)

These are basically the same as VR valves differing only because the two flows can be loaded at the same time for supplying two separate circuits defined priority flow remains constant regardless of pump speed and system pressure variations. The second defined excess flow is directly proportional to pump speed. Priority flow is determined by diameter of hole on threaded dowel (see table). The max. pressure of the priority circuit can be limited by valve which relieves into pump suction.

| CALIBRATED ORIFICE Ø d(mm/inch) | FLOW RATE (l/min - gpm) ± 10% |
|---------------------------------|-------------------------------|
| 1.5 (0.06") | 2.5 (0.66) |
| 2 (0.08") | 4 (1.06) |
| 2.4 (0.09") | 6 (1.59) |
| 2.8 (0.11") | 8 (2.11) |
| 3.1 (0.12") | 10 (2.64) |
| 3.5 (0.14") | 12.5 (3.30) |
| 4 (0.16") | 16 (4.23) |
| 4.4 (0.17") | 20 (5.28) |
| 4.9 (0.19") | 25 (6.61) |

REAR COVER WITH LOAD-SENSING PRIORITY VALVES REAR PORTS

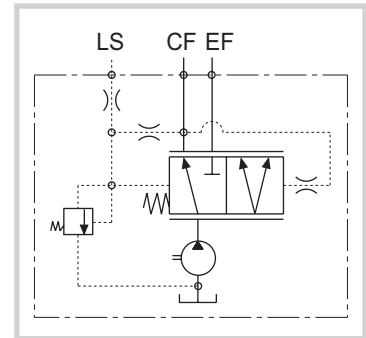
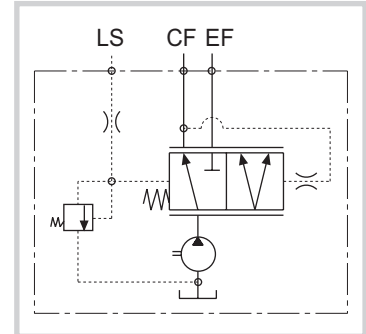
code VPL

Load sensing priority valve with main relief valve

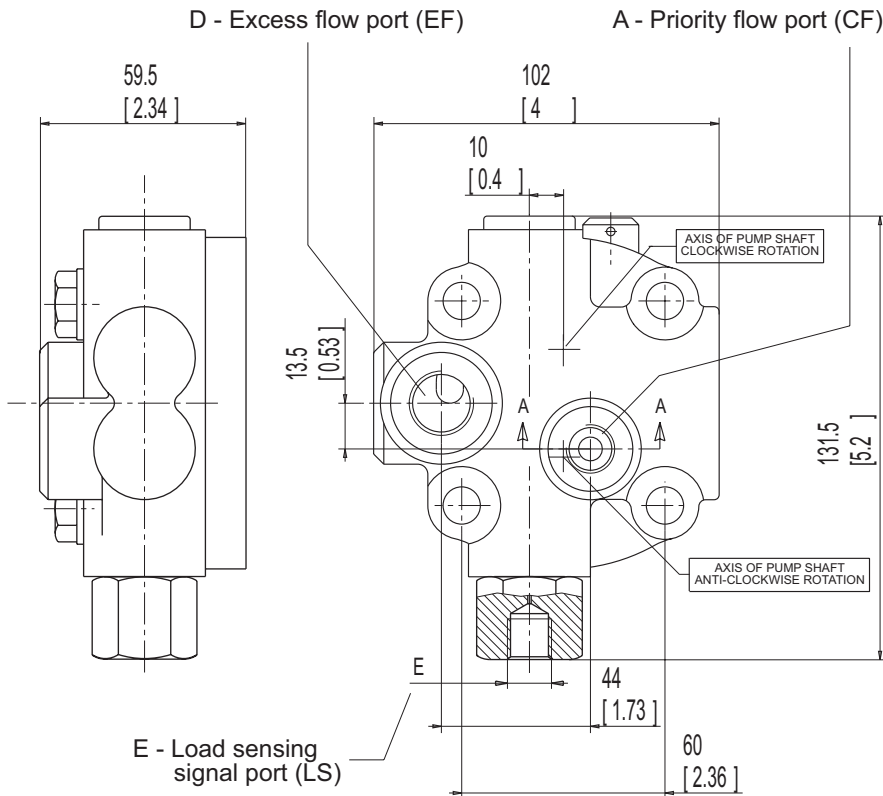


code VPD

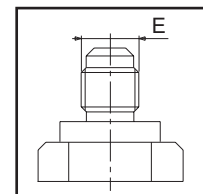
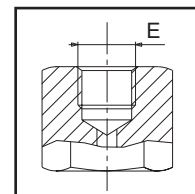
Load sensing priority valve with dynamic signal and main relief valve



LS = Load sensing signal port
CF = Priority flow port
EF = Excess flow port



| PRIORITY FLOW RATE | |
|--------------------|-----------|
| l / min ± 10% | gpm ± 10% |
| 8 | 2.10 |
| 10.5 | 2.61 |
| 12.5 | 3.78 |
| 16 | 4.17 |
| 20 | 5.22 |



Minimum load sensing signal (LS) = 4 bar (28 psi)

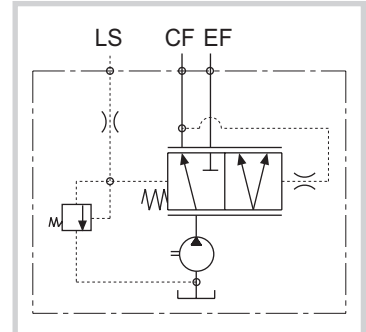
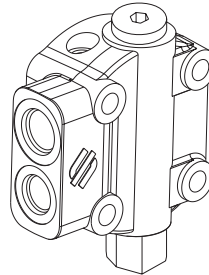
| A | D | E |
|------------------------|-----------------------|------------------------|
| G 3/8 | G 1/2 | G 1/4 |
| 9/16-18 UNF-2B (SAE 6) | 3/4-16 UNF-2B (SAE 8) | 7/16-20 UNF-2B (SAE 4) |

Side ports also availables. Please specify with note.

REAR COVER WITH LOAD-SENSING PRIORITY VALVES
SIDE PORTS

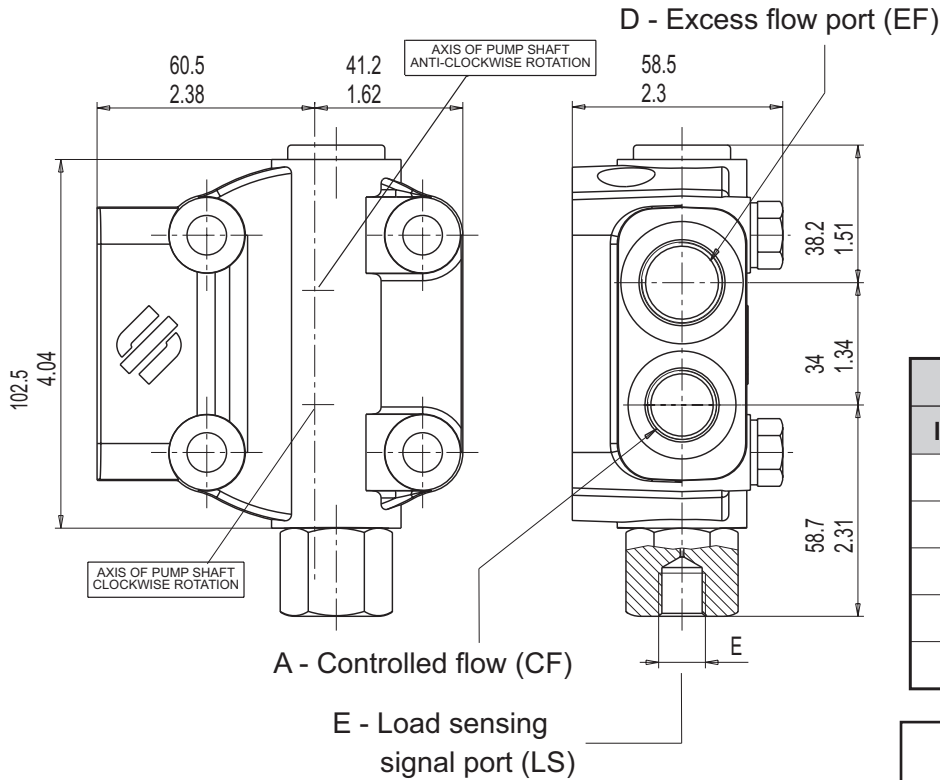
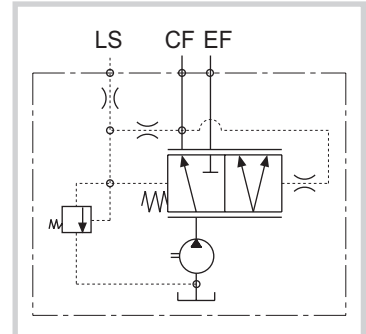
code VPL1

Load sensing priority valve with main relief valve



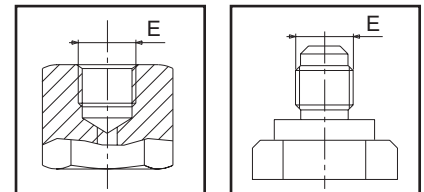
code VPD1

Load sensing priority valve with dynamic signal and main relief valve



LS = Load sensing signal port
CF = Priority flow port
EF = Excess flow port

| PRIORITY FLOW RATE | |
|--------------------|-----------|
| l / min ± 10% | gpm ± 10% |
| 8 | 2.10 |
| 10.5 | 2.61 |
| 12.5 | 3.78 |
| 16 | 4.17 |
| 20 | 5.22 |



Minimum load sensing signal (LS) = 4 bar (28 psi)

| A | D | E |
|-----------------------|------------------------|------------------------|
| G 3/8 | G 1/2 | G 1/4 |
| 3/4-16 UNF-2B (SAE 8) | 7/8-14 UNF-2B (SAE 10) | 7/16-20 UNF-2B (SAE 4) |

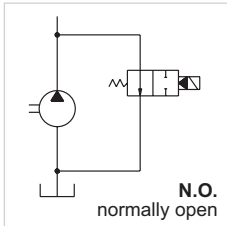
Side ports also available. Please specify with note.

REAR COVER WITH ELECTRIC UNLOADING VALVE

code EV

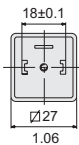
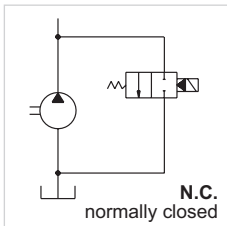
EV1 - 12 Vcc

EV2 - 24 Vcc

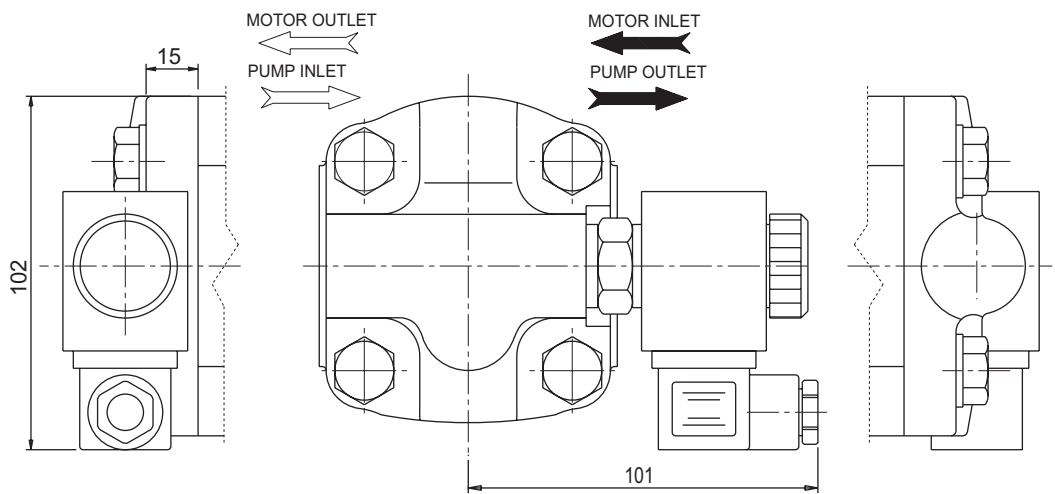
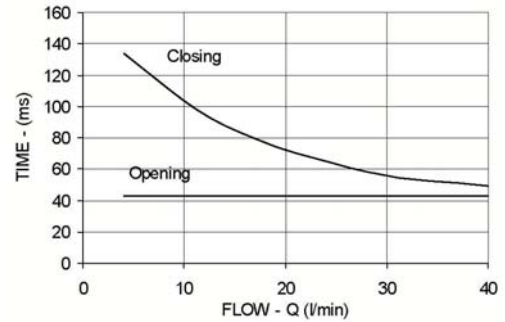
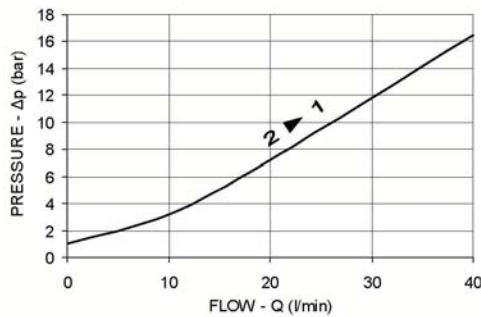


EV3 - 12 Vcc

EV4 - 24 Vcc



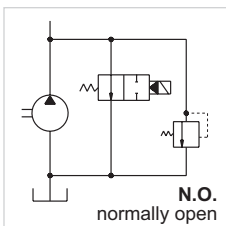
CONNECTOR
DIN 43650
A/ISO 4400



code EVS

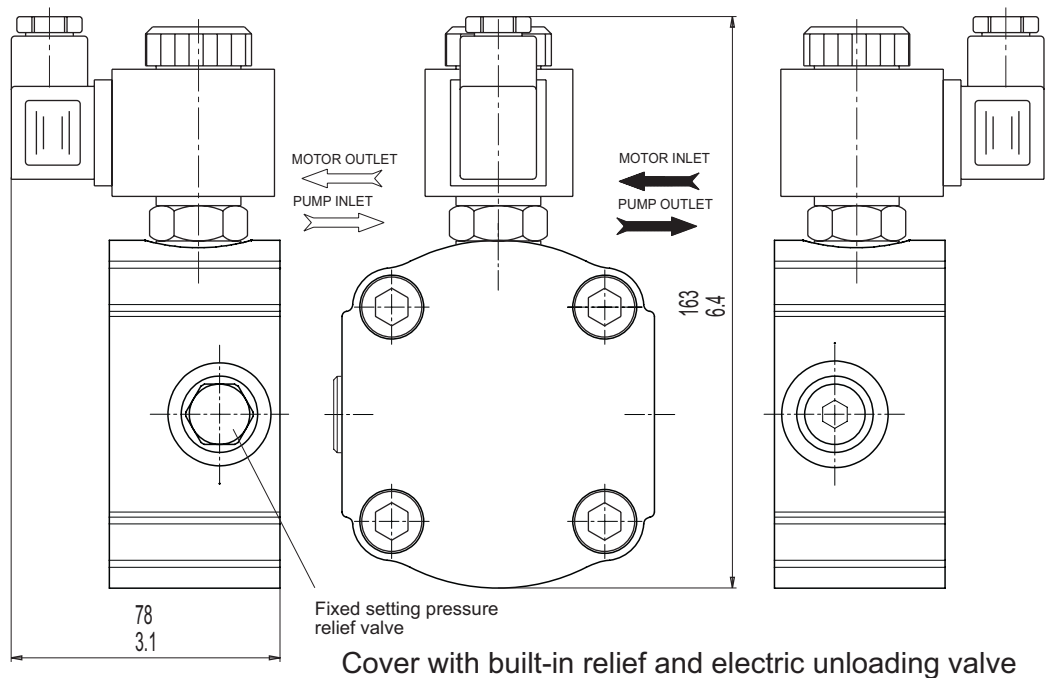
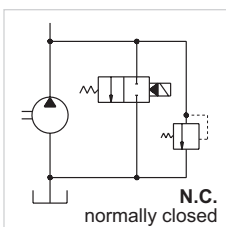
EVS1 - 12 Vcc

EVS2 - 24 Vcc



EVS3 - 12 Vcc

EVS4 - 24 Vcc



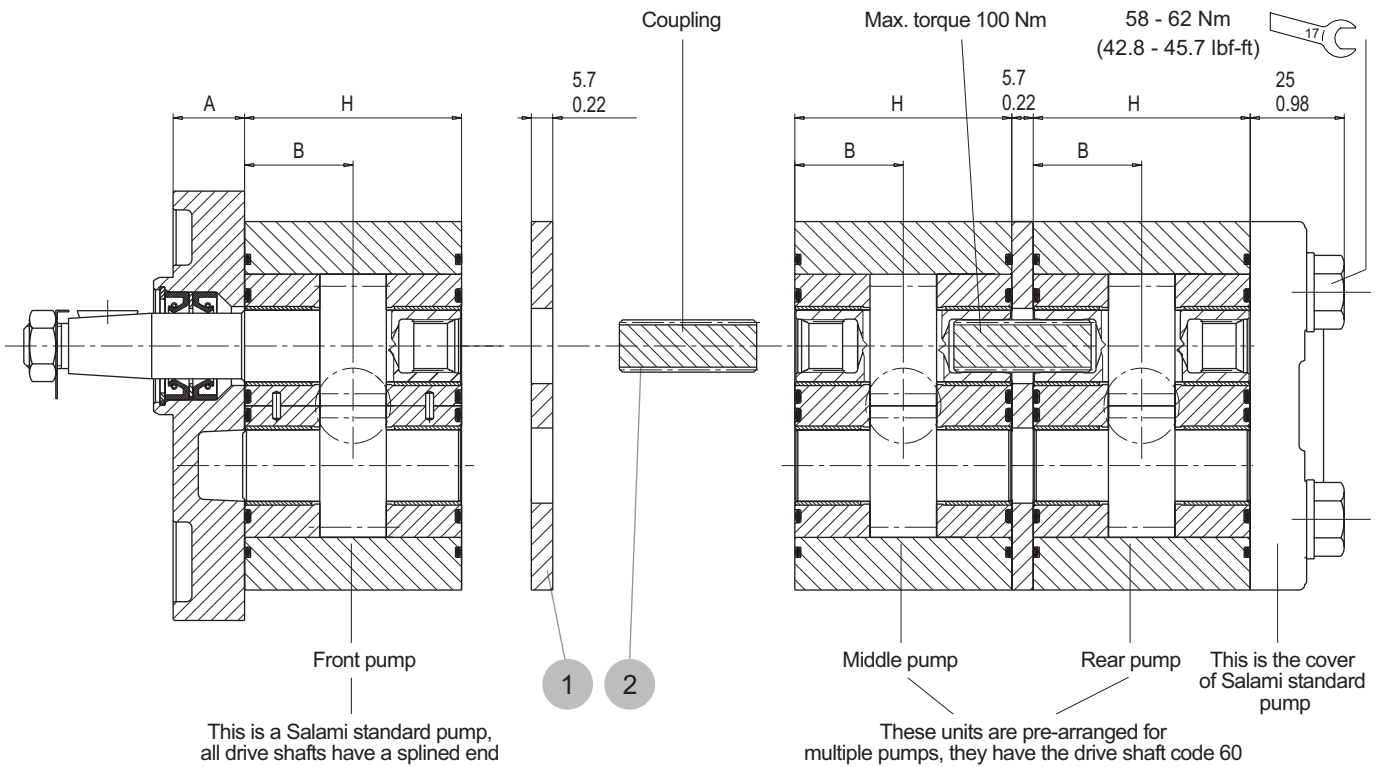
ASSEMBLING DIMENSIONS



In case of common inlet port, special bodies are required.

Commercial code "UA", in case of common inlet port .See page 34.

| Type | | 3.2 | 3.9 | 4.5 | 6.5 | 8.3 | 10.5 | 11.3 | 12.5 | 13.8 | 16 | 19 | 22.5 | 26 |
|------------------------------------|----------|--------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|--------------|--------------|------|----|
| Dimension A (flanges B2 - B3) | mm in | 16,5 0.65 | | | | | | | | | | | | |
| Dimension A (flanges P1 - S2 - B1) | mm in | 19 0.75 | | | | | | | | | | | | |
| Dimension B | mm in | | 23.55 0.91 | 24.98 0.98 | 26.4 1.04 | 28.17 1.11 | 29.8 1.17 | 31.75 1.25 | 33.75 1.33 | 37.8 1.49 | 40.5 1.59 | 43.4 1.71 | | |
| Dimension H | mm in | | 47,1 1.83 | 49.95 1.97 | 52.8 2.07 | 56.35 2.22 | 59.6 2.35 | 63.5 2.5 | 67.5 2.66 | 75.6 2.97 | 81 3.19 | 86.8 3.42 | | |



Finally to assembly the multiple pump you need to order bolts of the right length

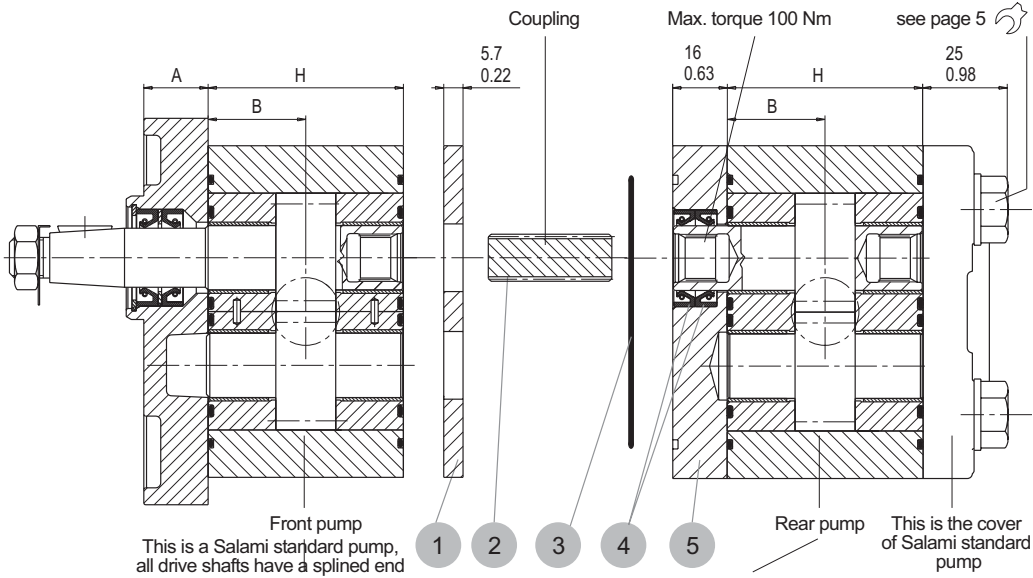
1 2 = kit multiple pumps

The **2PE** pumps can be easily transformed into front pump in the multiple units. All drive shafts are pre-arranged and have a splined end according DIN 5480. The first unit must always be the same size or bigger than following units. The features and performances are the same of the corresponding single units: only in the case of simultaneous operating you have to verify that the inlet torque is lower than the max. transmissible by the drive shaft.

MULTIPLE PUMP WITH SEPARATED STAGES

Finally to assembly the multiple pump you need to order bolts of the right length

For dimension (A - B - H) see page 26



Multiple pump with separated stages components kit:

1 2 3 4 5 the drive shaft 60* is longer than standard code 60

These units are pre-arranged for multiple pumps, they have the drive shaft code 60*

code AS

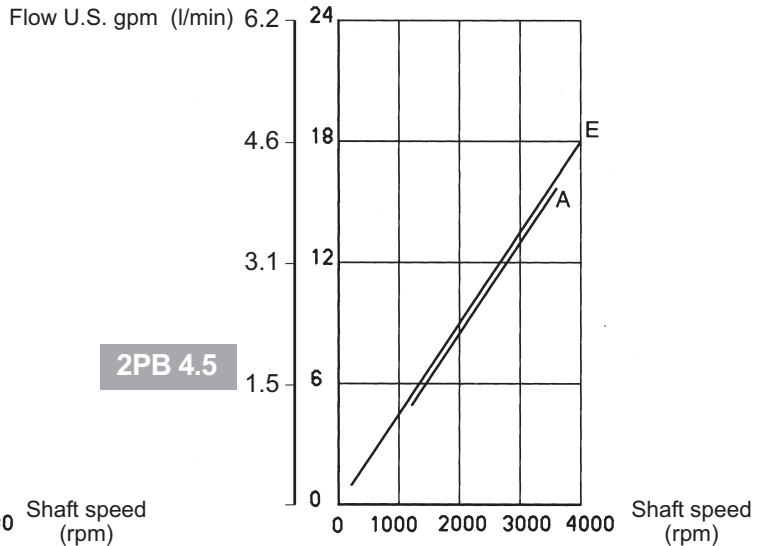
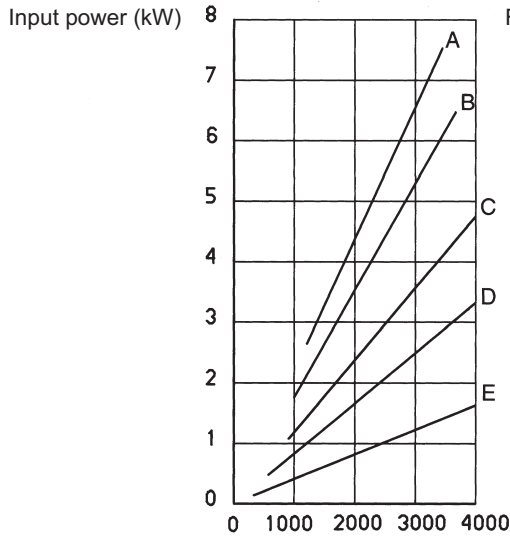
Order example:

2PB 11.3/2PB 8.3D - P28 P1 - AS

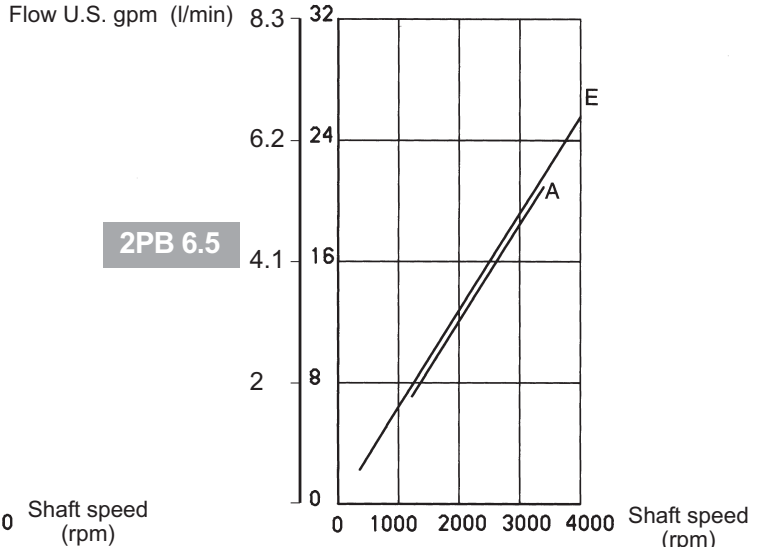
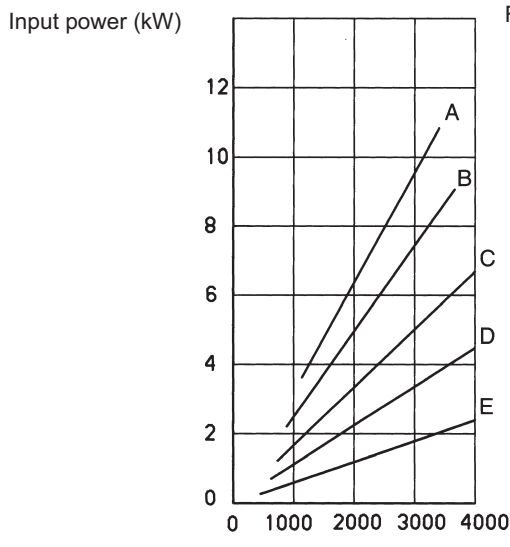
A=250 bar - (3600 psi)
 B=225 bar - (3250 psi)
 C=200 bar - (2900 psi)
 D=150 bar - (2175 psi)
 E=100 bar - (1450 psi)
 F= 50 bar - (725 psi)

Performance curves carried out with oil viscosity at 16 cSt and oil temperature at 60°C

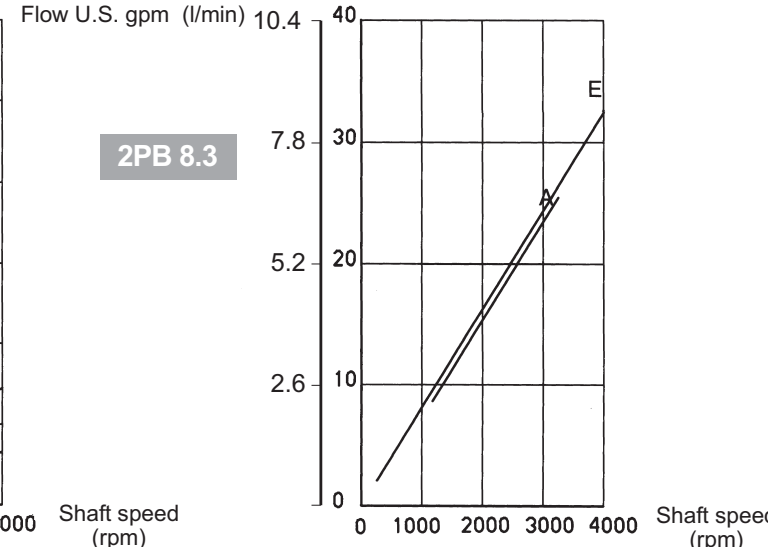
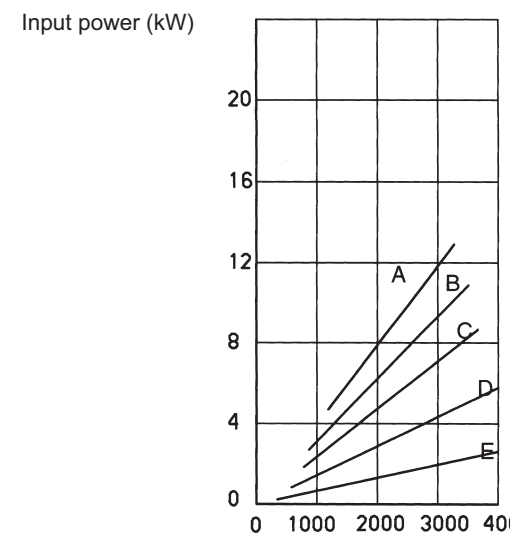
PUMP PERFORMANCE CURVES



2PB 4.5

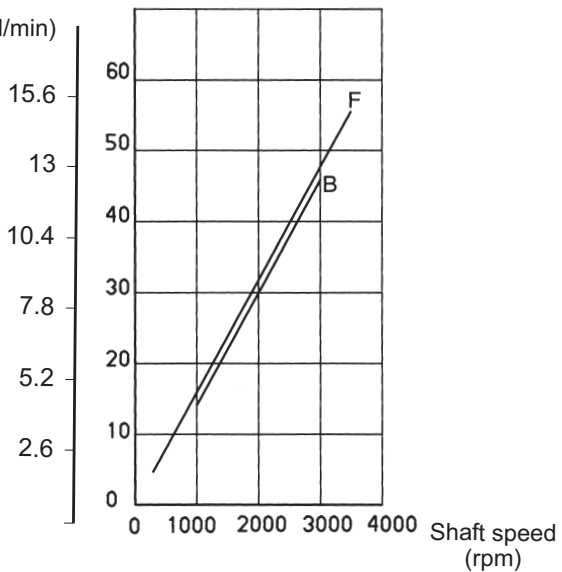
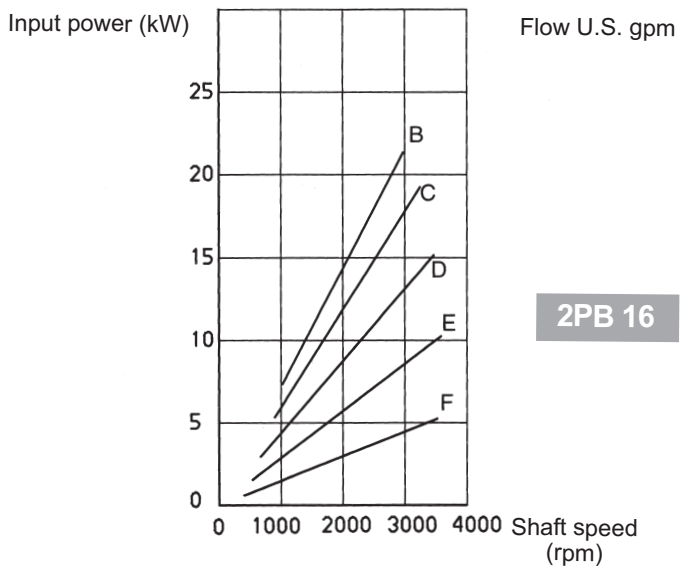
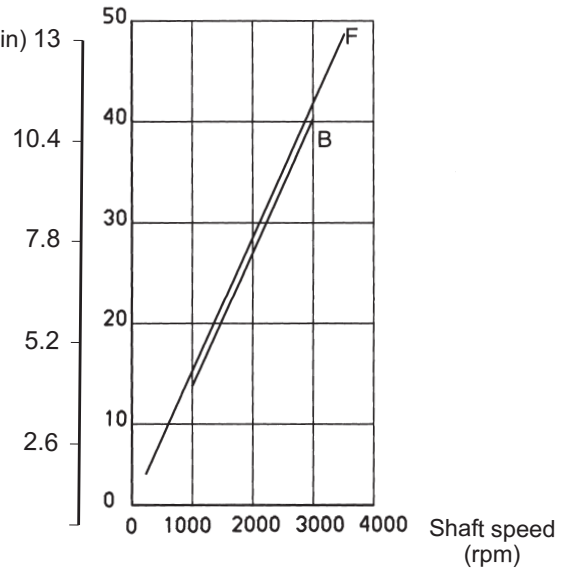
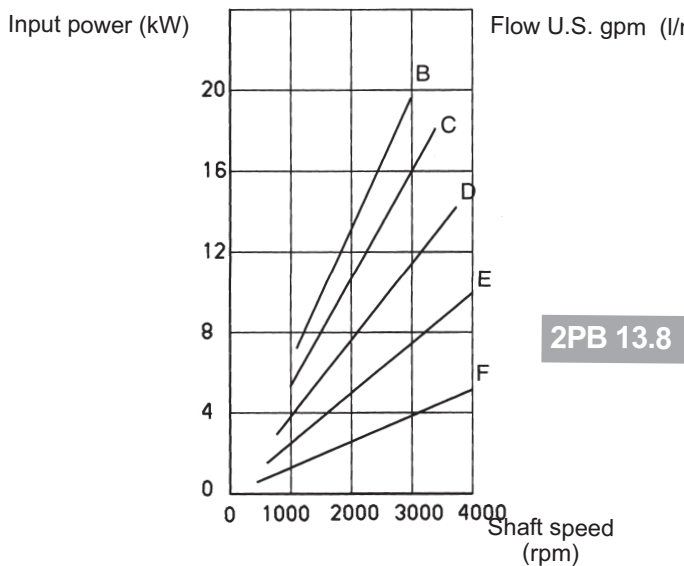
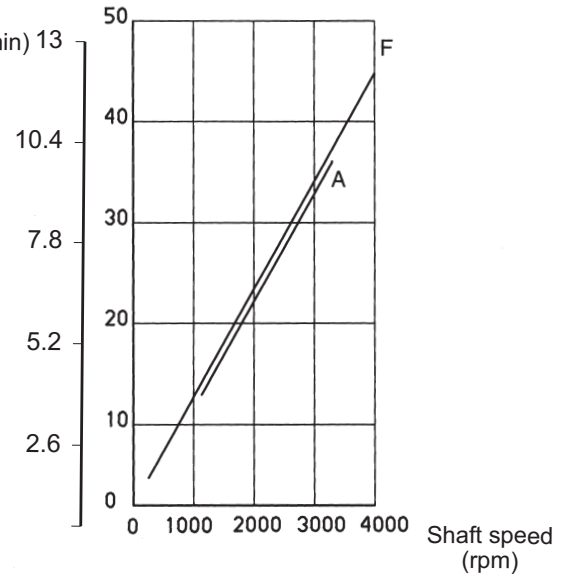
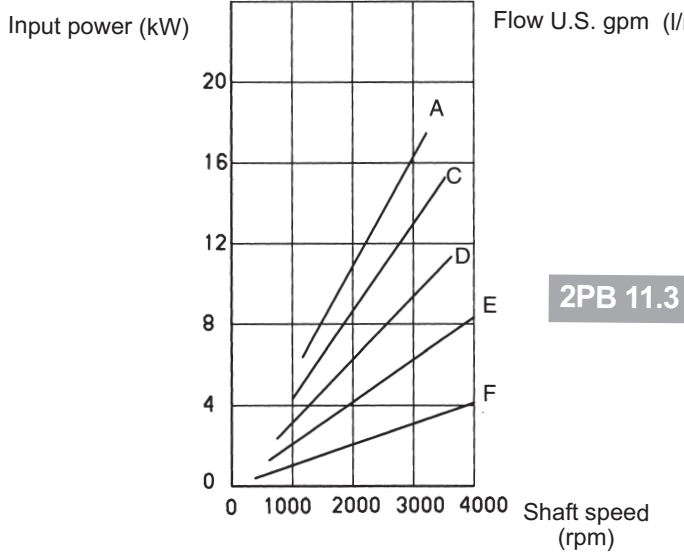


2PB 6.5



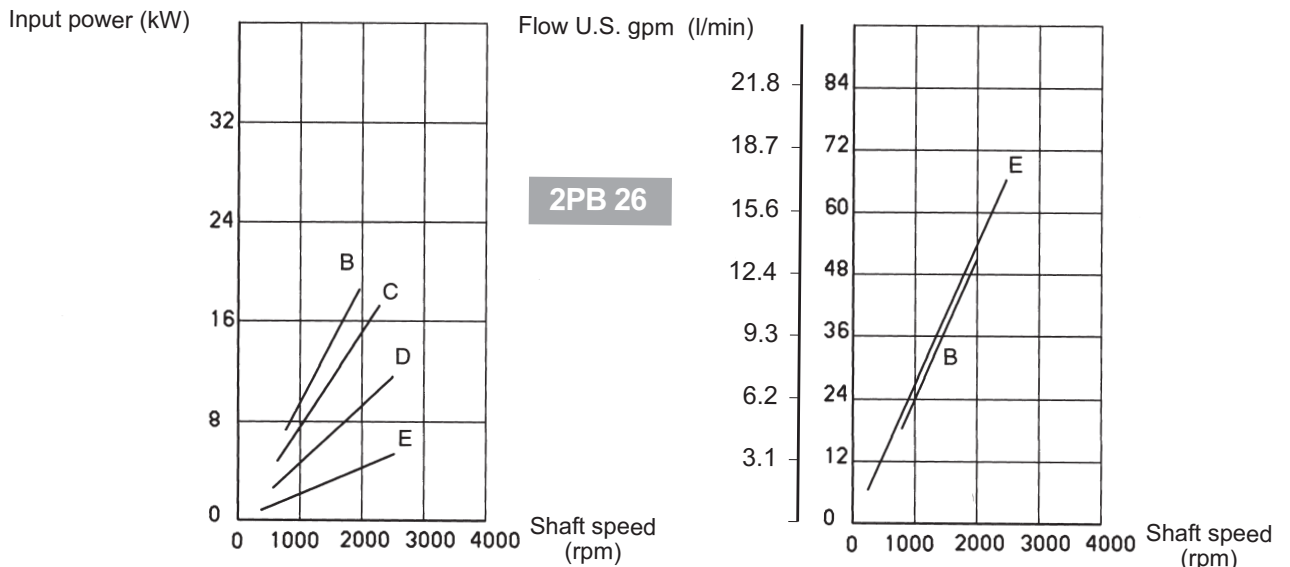
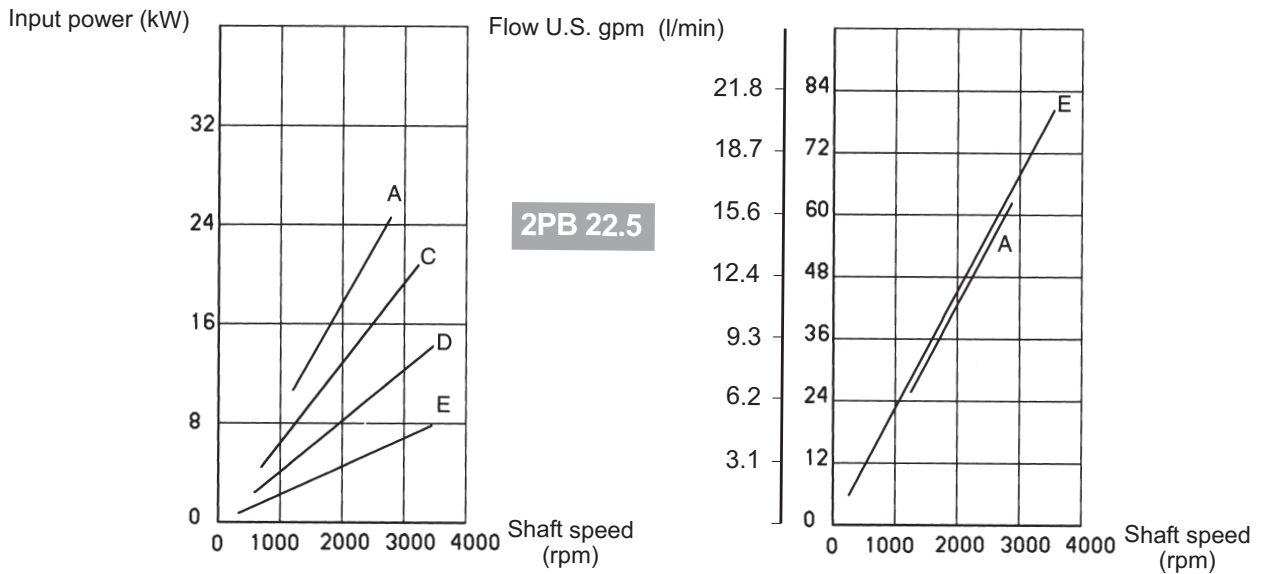
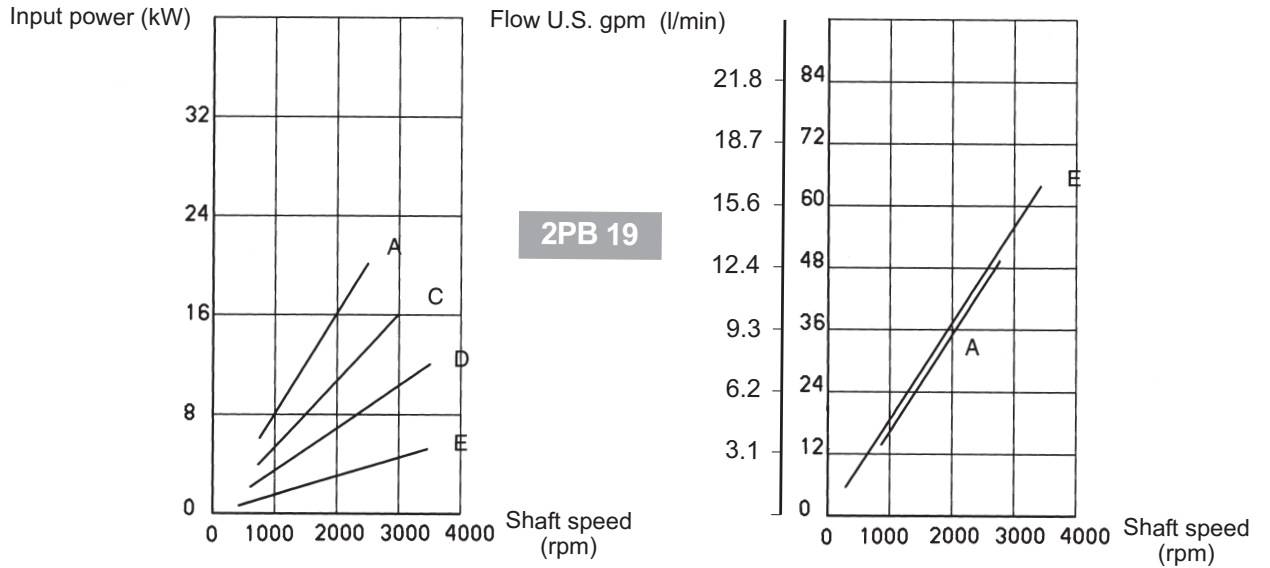
2PB 8.3

Performance curves carried out with oil viscosity at 16 cSt and oil temperature at 60°C

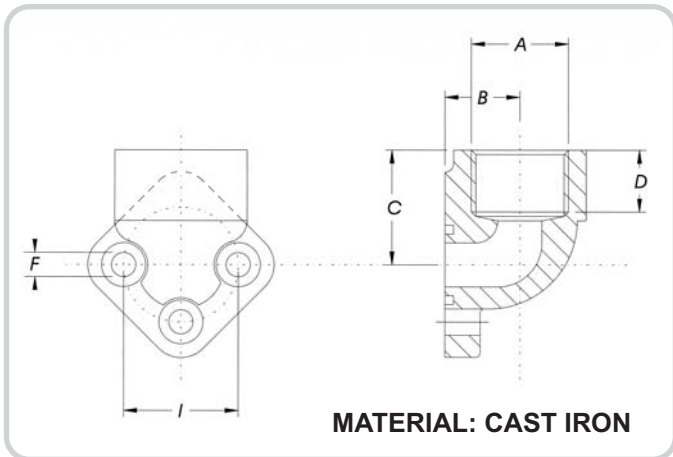


A=250 bar - (3600 psi)
 B=225 bar - (3250 psi)
 C=200 bar - (2900 psi)
 D=150 bar - (2175 psi)
 E=100 bar - (1450 psi)
 F= 50 bar - (725 psi)

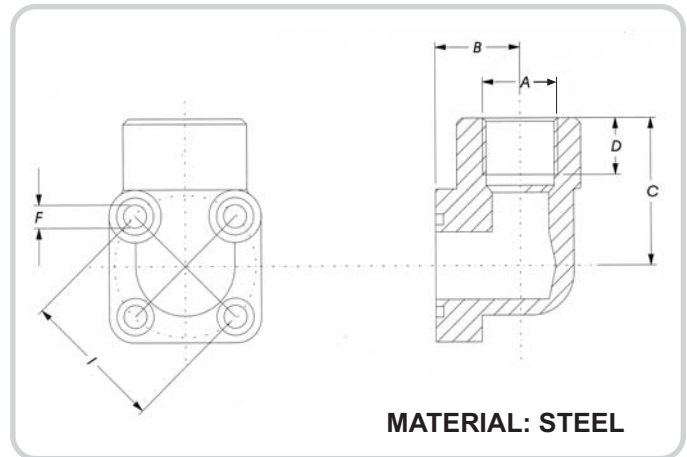
Performance curves carried out with oil viscosity at 16 cSt and oil temperature at 60°C



PORT CONNECTORS



Type G



Type GB

AVAILABLE CONNECTORS - DIMENSIONS AND CODE

| Type | C | B | I | D | Ø F | Ø A | ORDERING CODE COMPLETE OF SCREW - SPRING WASHER - O RING |
|--------|------|------|----|----|-----|---------|---|
| 1 G/1 | 26 | 17.5 | 30 | 14 | 6.5 | M18x1.5 | 4352 7004 0 |
| 1 G/2 | 26 | 17.5 | 30 | 14 | 6.5 | G 3/8 | 4352 7005 0 |
| 1 G/3 | 26 | 17.5 | 30 | 14 | 6.5 | G 1/2 | 4352 7006 0 |
| 2 G | 36 | 21 | 40 | 16 | 8.5 | G 3/4 | 4352 7011 0 |
| 1 GB/1 | 40 | 18 | 35 | 16 | 6.5 | M18x1.5 | 4352 7008 1 |
| 1 GB/2 | 40 | 18 | 35 | 16 | 6.5 | G 3/8 | 4352 7009 1 |
| 1 GB/3 | 40 | 18 | 35 | 16 | 6.5 | G 1/2 | 4352 7010 1 |
| 2 GB | 41.5 | 24 | 40 | 16 | 6.5 | G 3/4 | 4352 7012 1 |

SINGLE PUMPS/MOTORS

2 P E 16 D - P 28 P1 - V 1 - CP - PD1 - VS / - - - -

DIMENSION

| FUNCTION | CODE |
|----------|------|
| Pump | P |

SERIES

| TYPE | DISPLACEMENTS | |
|------|----------------------------|-----------------|
| 4.5 | 4.6 cm ³ /rev. | 0,27 cu.in/rev. |
| 6.5 | 6.5 cm ³ /rev. | 0,40 cu.in/rev. |
| 8.3 | 8.2 cm ³ /rev. | 0,50 cu.in/rev. |
| 10.5 | 10.6 cm ³ /rev. | 0.65 cu.in/rev. |
| 11.3 | 11.5 cm ³ /rev. | 0,68 cu.in/rev. |
| 12.5 | 12.5 cm ³ /rev. | 0.77 cu.in/rev. |
| 13.8 | 13.8 cm ³ /rev. | 0,84 cu.in/rev. |
| 16 | 16.6 cm ³ /rev. | 1.01 cu.in/rev. |
| 19 | 19.4 cm ³ /rev. | 1.15 cu.in/rev. |
| 22.5 | 22.9 cm ³ /rev. | 1.37 cu.in/rev. |
| 26 | 25.8 cm ³ /rev. | 1.58 cu.in/rev. |

| ROTATION | CODES |
|----------------|-------|
| Clockwise | D |
| Anti-clockwise | S |
| Reversible | R |

| PORTS (pag. 8) | CODES |
|---------------------------------|-------|
| Flanged ports european standard | P |
| Flanged ports german standard | B |
| GAS threaded ports (BSPP) | G |
| SAE Threaded ports (ODT) | R |

| DRIVE SHAFTS (pag. 9 - 10) | CODES |
|--------------------------------|-------|
| Tang drive for engine driven | 02 |
| Tang drive for electric motors | 03 |
| Tang drive | 04 |
| Tapered 1:5 | 25 |
| Tapered 1:5 (only for CB) | 26 |
| Tapered 1:8 | 28 |
| SAE A splined 9 T | 52 |
| SAE A splined 11 T | 54 |
| SAE A splined 13 T | 55 |
| DIN 5482 splined shaft 9 T | 62 |
| SAE A parallel shaft Ø 15,87 | 82 |
| SAE A parallel shaft Ø 19,05 | 85 |

*The assembling is the same of that of page 16.

Setting main relief valve (bar)

Adjusted flow l/min

PD1 = pre-arranged for 1PE (pag. 17)

| VALVES IN THE COVER | CODES |
|--|------------|
| Adjustable main relief valve (pag.16) | VS |
| Fixed setting main relief valve* | VSF |
| Like VS with external discharge (pag.16) | VSE |
| Like VSF with external discharge* | VSEF |
| Flow regulator with excess flow to tank(pag.17 - 18) | VR - VR1 |
| Like VR with main relief valve (pag. 17 - 18) | VRS - VRS1 |
| Priority flow divider with excess flow to 2 nd actuator(pag.19 - 20) | VP - VP1 |
| Like VP with main relief valve(pag.19 - 20) | VPS - VPS1 |
| Priority flow divider with Load-sensing(pag.21 - 22) | VPL - VPL1 |
| Like VPL with dinamic signal(pag.21 - 22) | VPD - VPD1 |
| Electric unloading valve (12 V) (pag.23) | EV1 |
| Electric unloading valve (24 V) (pag.23) | EV2 |
| Main relief and electric unloading valves (12V) (pag.23) | EVS1 |
| Main relief and electric unloading valves (24 V) (pag.23) | EVS2 |

| OUTRIGGER BEARINGS (pag. 13 - 14) | CODES |
|--|-------|
| European standard | CP |
| German standard | CB |
| For engine endothermic motors | CL |
| For endothermic motors with axial and radial loads | CF |
| SAE A | CS |

| PORTS POSITION | CODE |
|------------------------|------|
| Lateral ports standard | |
| Rear ports (pag. 15) | 1 |

| SEAL | CODE |
|---------------|------|
| Buna Standard | |
| Viton | V |

| MOUNTING FLANGES (pag. 10 - 11 - 12) | CODES |
|---|-------|
| European standard | P1 |
| German standard Ø 80 | B1 |
| German standard Ø 52 | B2-B3 |
| German standard Ø 50 | B4-B5 |
| SAE A 2 bolts | S2 |
| SAE A 2 bolts (with O-ring on the centering collar) | S6 |
| SAE B 2 bolts | S3 |
| 4 bolts for Iveco motor | C1 |
| 4 bolts for Perkins Motor | K1 |
| 2 threaded holes flange for Perkins motor | MF |

Order example: Pump 2PE 19D, ports SAE (R), drive shaft (52), mounting flange (S2) with valve in the cover (VPS 12,5 l/min) and pressure relief valve setting 180 bar: 2PE 19D-R52 S2-VPS12,5/180

MULTIPLE PUMPS

2PE 16 / 16 13.8 D - P 28 P1 - V AS 1 - CP - PD1 - 1PE.....

| TYPE | DISPLACEMENTS | |
|------|----------------------------|-----------------|
| 3.2 | 3.2 cm ³ /rev. | 0.19 cu.in/rev. |
| 3.9 | 3.9 cm ³ /rev. | 0.24 cu.in/rev. |
| 4.5 | 4.6 cm ³ /rev. | 0.27 cu.in/rev. |
| 6.5 | 6.5 cm ³ /rev. | 0.40 cu.in/rev. |
| 8.3 | 8.2 cm ³ /rev. | 0.50 cu.in/rev. |
| 10.5 | 10.6 cm ³ /rev. | 0.65 cu.in/rev. |
| 11.3 | 11.5 cm ³ /rev. | 0.68 cu.in/rev. |
| 12.5 | 12.7 cm ³ /rev. | 0.77 cu.in/rev. |
| 13.8 | 13.8 cm ³ /rev. | 0.84 cu.in/rev. |
| 16 | 16.6 cm ³ /rev. | 1.01 cu.in/rev. |
| 19 | 19.4 cm ³ /rev. | 1.15 cu.in/rev. |
| 22.5 | 22.9 cm ³ /rev. | 1.37 cu.in/rev. |
| 26 | 25.8 cm ³ /rev. | 1.58 cu.in/rev. |

| ROTATION | CODES |
|----------------|-------|
| Clockwise | D |
| Anti-clockwise | S |

| PORTS (pag. 9) | CODES |
|---------------------------------|-------|
| Flanged ports european standard | P |
| Flanged ports german standard | B |
| GAS threaded ports (BSPP) | G |
| SAE Threaded ports (ODT) | R |

| DRIVE SHAFTS (pag. 10 - 11) | CODES |
|--------------------------------|-------|
| Tang drive for engine driven | 02 |
| Tang drive for electric motors | 03 |
| Tang drive | 04 |
| Tapered 1:5 | 25 |
| Tapered 1:5 (only for CB) | 26 |
| Tapered 1:8 | 28 |
| SAE A splined 9 T | 52 |
| SAE A splined 11 T | 54 |
| SAE A splined 13 T | 55 |
| DIN 5482 splined shaft 9 T | 62 |
| SAE A parallel shaft Ø 15,87 | 82 |
| SAE A parallel shaft Ø 19,05 | 85 |

| OUTRIGGER BEARINGS (pag. 15 - 16) | CODES |
|--|-------|
| European standard | CP |
| German standard | CB |
| For engine endothermic motors | CL |
| For endothermic motors with axial and radial loads | CF |
| SAE A | CS |

| PORTS POSITION | CODES |
|------------------------|-------|
| Lateral ports standard | |
| Rear ports (pag.16) | 1 |

| SUCTION TYPES | CODES |
|----------------------------|-------|
| Common suction (pag. 25) | UA* |
| Separated stages (pag. 26) | AS |

| SEAL | CODE |
|---------------|------|
| Buna Standard | |
| Viton | V |

| MOUNTING FLANGES (pag. 11 - 12 - 13) | CODES |
|---|-------|
| European standard | P1 |
| German standard Ø 80 | B1 |
| German standard Ø 52 | B2-B3 |
| German standard Ø 50 | B4-B5 |
| SAE A 2 bolts | S2 |
| SAE A 2 bolts (with O-ring on the centering collar) | S6 |
| SAE B 2 bolts | S3 |
| 4 bolts for Iveco motor | C1 |
| 4 bolts for Perkins Motor | K1 |
| 2 threaded holes flange for Perkins motor | MF |

See corresponding single pump (1PE).
Our catalogue code
10.38.1209.02.00

PD1 = pre-arranged for 1PE (pag. 17)

Available only as rear pump

*UA: this type of multiple pump is a Salami standard multiple pump which has only one inlet port opened, all the other inlet port are closed.

In case of common suction, the code 1 - 2 or 3, correspond to the body where inlet is located.

Example to order a tandem pump with common suction: 2PE 16/6.2D - B25 B2 - UA1

Example to order a triple pump with main relief in the rear pump: 2PE 13.8/8.3/4.5D - P28 P0 - VS175

WARRANTY

- We warrant products sold by us to be free from defects in material and workmanship.
- Our sole obligation to buyer under this warranty is the repair or replacement, at our option, of any products or parts thereof which, under normal use and proper maintenance, have proven defective in material or workmanship, this warranty does not cover ordinary wear and tear, abuse, misuse, averloading, alteration.
- No claims under this warranty will be valid unless buyer notifies SALAMI in writing within a reasonable time of the buyer's discovery of such defects, but in no event later than twelve (12) months from date of shipment to buyer.
- Our obligation under this warranty shall not include any transportation charges or cost of installation, replacement, field repair, or other charges related to returning products to us; or any liability for direct, indirect or consequential damage or delay. If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. The risk of loss of any products or parts thereof returned to SALAMI will be on buyer.
- No employee or representative is authorized to change any warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of SALAMI.



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