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# 3PE

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## Aluminium gear pumps

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### Technical Catalogue

E0.130.0219.02.00IM04



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**GEAR PUMPS**

SALAMI gear pumps are available with displacements from 1.4 cm<sup>3</sup>/rev to 99 cm<sup>3</sup>/rev (*from 0.09 cu.in/rev to 6.03 cu.in/rev*).

Multiple pumps can always be realized combining stages taken from different or same series.

Several options of shafts, flanges and ports as for European, German and American standards are available for all the pumps.

SALAMI gear pumps offer:

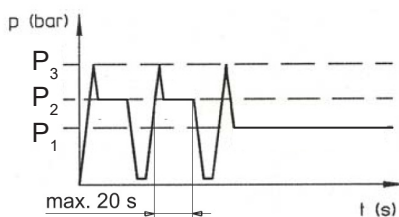
- High volumetric efficiency thanks to an innovative design and an accurate control of machining tolerances.
- Axial compensation achieved by the use of floating bushes that allow high volumetric efficiency throughout the working pressure range.
- DU bearings to ensure high pressure capability.
- 12 teeth integral gear and shaft.
- Aluminium body.
- Cast iron flange and cover.
- Double shaft seals.
- Nitrile seals as standard and Viton seals in high temperature applications.
- All pumps are hydraulically tested after assembly to ensure the highest standard performance.
- Gear pumps are ideal for mobile equipment including: snow plows, light duty equipment, farm vehicles, town trucks, cherry pickers, lift gates, utility vehicles, aerial devices, hoists, spreaders, fan drive.
- Also available Bidirectional rotation.

**WORKING CONDITIONS**

|                                                            |                                                                           |
|------------------------------------------------------------|---------------------------------------------------------------------------|
| - Pump inlet pressure (absolute pressure)                  | 0.8 to 1.5 bar<br>(11.6 to 21.7 psi)                                      |
| - Minimum operating fluid viscosity                        | 12 mm <sup>2</sup> / sec                                                  |
| - Max starting viscosity                                   | 800 mm <sup>2</sup> / sec                                                 |
| - Suggested fluid viscosity range                          | 17 - 65 mm <sup>2</sup> / sec                                             |
| - Fluid operating temperature range                        | -20 to 80 °C                                                              |
| - Fluid operating temperature range with FPM seals (Viton) | -15 to 110°C                                                              |
| - Fluid operating temperature range with HNBR seals*       | -30 to 110°C                                                              |
| - Hydraulic fluid                                          | Mineral oil according to DIN 51524.<br>Other hydraulic fluids on request. |

\*Available on request.

**DEFINITION OF PRESSURES**



$P_3$  = Peak pressure

$P_2$  = Intermittent operating pressure (1/3 of working time)

$P_1$  = Continuous operating pressure

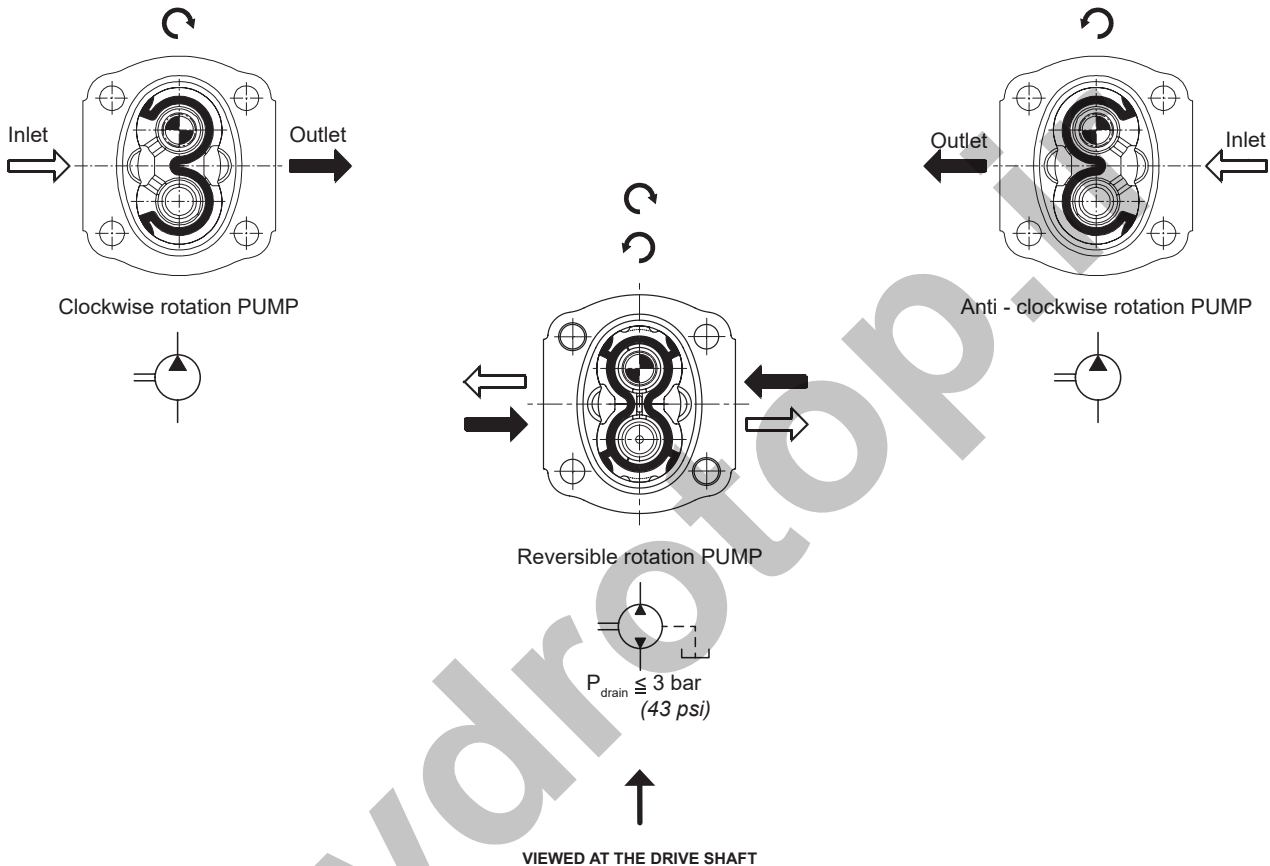
EO.100.0821.02.001M03



### DRIVE SHAFTS

Radial and axial loads on the shafts must be avoided since they reduce the life of the unit. In order to avoid misalignment during the assembly with the primary engine, a connection with “Oldham” coupling (or coupling having convex toothed hub) is recommended.

### ROTATION



### HYDRAULIC PIPE LINE

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

**FILTRATION INDEX RECOMMENDED**

| Working pressure                  | >200 bar/2900 psi | <200 bar/2900 psi |
|-----------------------------------|-------------------|-------------------|
| Contamination class NAS 1638      | 9                 | 10                |
| Contamination class ISO 4406      | 19/18/15          | 20/19/16          |
| Achieved with filter $\beta_x=75$ | 15 $\mu\text{m}$  | 25 $\mu\text{m}$  |

**COMMON FORMULAS FOR PUMPS**

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

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

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

LEGENDA

$\Delta p$  = Working pressure (bar)

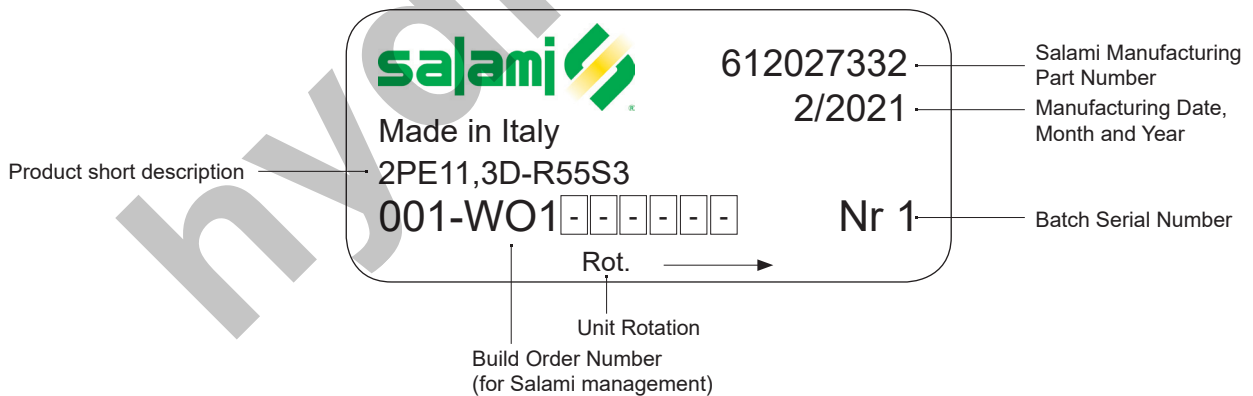
q = Displacement ( $\text{cm}^3/\text{rev}$ )

n = Speed ( $\text{min}^{-1}$ )

$\eta_m$  = Mechanical eff. (0.92)

$\eta_v$  = Volumetric eff. (0.95)

**IDENTIFICATION LABEL**



EO.100.0821.02.001M03



### TECHNICAL DATA

| GROUP 1.5 - E SERIES | Displacement         |           | Continuous pressure P <sup>1</sup> |      | Intermittent pressure P <sup>2</sup> |      | Peak pressure P <sup>3</sup> |      | Max. speed | Min. speed |
|----------------------|----------------------|-----------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------|------------|
|                      | cm <sup>3</sup> /rev | cu.in/rev | bar                                | psi  | bar                                  | psi  | bar                          | psi  | rpm        |            |
| 1.5PE - 1.4          | 1.4                  | 0.09      | 250                                | 3625 | 270                                  | 3915 | 290                          | 4205 | 5000       | 700        |
| 1.5PE - 2.1          | 2.1                  | 0.13      | 250                                | 3625 | 270                                  | 3915 | 290                          | 4205 | 5000       | 700        |
| 1.5PE - 2.8          | 2.8                  | 0.17      | 250                                | 3625 | 270                                  | 3915 | 290                          | 4205 | 4500       | 700        |
| 1.5PE - 3.5          | 3.5                  | 0.21      | 250                                | 3625 | 270                                  | 3915 | 290                          | 4205 | 4500       | 700        |
| 1.5PE - 4.1          | 4.1                  | 0.25      | 250                                | 3625 | 270                                  | 3915 | 290                          | 4205 | 4000       | 700        |
| 1.5PE - 5.2          | 5.2                  | 0.32      | 230                                | 3335 | 250                                  | 3625 | 270                          | 3915 | 4000       | 700        |
| 1.5PE - 6.2          | 6.2                  | 0.38      | 230                                | 3335 | 250                                  | 3625 | 270                          | 3915 | 3600       | 600        |
| 1.5PE - 7.6          | 7.6                  | 0.46      | 200                                | 2900 | 220                                  | 3190 | 250                          | 3625 | 3300       | 600        |
| 1.5PE - 9.3          | 9.3                  | 0.57      | 180                                | 2610 | 200                                  | 2900 | 240                          | 3480 | 3000       | 600        |
| 1.5PE - 11           | 11                   | 0.67      | 170                                | 2465 | 190                                  | 2755 | 220                          | 3190 | 3000       | 600        |

| GROUP 2 - E SERIES | cm <sup>3</sup> /rev | cu.in/rev | bar | psi  | bar | psi  | bar | psi  | rpm  |     |
|--------------------|----------------------|-----------|-----|------|-----|------|-----|------|------|-----|
| 2PE - 3.2*         | 3.2                  | 0.19      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 4000 | 600 |
| 2PE - 3.9*         | 3.9                  | 0.24      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 4000 | 600 |
| 2PE - 4.5          | 4.6                  | 0.27      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 4000 | 600 |
| 2PE - 6.5          | 6.5                  | 0.4       | 250 | 3625 | 280 | 4060 | 300 | 4350 | 4000 | 600 |
| 2PE - 8.3          | 8.2                  | 0.5       | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3500 | 500 |
| 2PE - 10.5         | 10.6                 | 0.65      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3500 | 500 |
| 2PE - 11.3         | 11.5                 | 0.68      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3500 | 500 |
| 2PE - 12.5         | 12.7                 | 0.77      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3500 | 500 |
| 2PE - 13.8         | 13.8                 | 0.84      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3500 | 500 |
| 2PE - 16           | 16.6                 | 1.01      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 400 |
| 2PE - 19           | 19.4                 | 1.15      | 220 | 3190 | 240 | 3480 | 260 | 3750 | 3000 | 400 |
| 2PE - 22.5         | 22.9                 | 1.37      | 200 | 2900 | 220 | 3190 | 240 | 3480 | 2750 | 400 |
| 2PE - 26           | 26.6                 | 1.62      | 180 | 2610 | 200 | 2900 | 220 | 3190 | 2500 | 400 |

\*Available only as rear pump

| GROUP 2.5 - B SERIES | cm <sup>3</sup> /rev | cu.in/rev | bar | psi  | bar | psi  | bar | psi  | rpm  |     |
|----------------------|----------------------|-----------|-----|------|-----|------|-----|------|------|-----|
| 2.5PB - 5.5*         | 5.97                 | 0.36      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 8.3*         | 8.29                 | 0.50      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 11.5*        | 11.76                | 0.72      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 13.8*        | 14.07                | 0.86      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 16           | 16                   | 0.97      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 19           | 19.3                 | 1.17      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 600 |
| 2.5PB - 22           | 22.2                 | 1.35      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 500 |
| 2.5PB - 25           | 25.2                 | 1.53      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 500 |
| 2.5PB - 28           | 27.6                 | 1.68      | 250 | 3625 | 280 | 4060 | 300 | 4350 | 3000 | 500 |
| 2.5PB - 32           | 32.4                 | 1.97      | 230 | 3335 | 250 | 3625 | 260 | 3750 | 3000 | 500 |
| 2.5PB - 38           | 38.1                 | 2.32      | 200 | 2900 | 220 | 3190 | 240 | 3480 | 2750 | 400 |
| 2.5PB - 44           | 44.2                 | 2.69      | 170 | 2465 | 190 | 2755 | 210 | 3040 | 2500 | 400 |

\*Available only as rear pump. Displacements 11.5-13.8 are available as single pump only with drive shaft "55".



**TECHNICAL DATA**

|                           | Displacement         |           | Continuous pressure P <sup>1</sup> |      | Intermittent pressure P <sup>2</sup> |      | Peak pressure P <sup>3</sup> |      | Max. speed | Min. speed |
|---------------------------|----------------------|-----------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------|------------|
|                           | cm <sup>3</sup> /rev | cu.in/rev | bar                                | psi  | bar                                  | psi  | bar                          | psi  |            |            |
| <b>GROUP 3 - E SERIES</b> |                      |           |                                    |      |                                      |      |                              |      | rpm        |            |
| 3PE - 21                  | 20.6                 | 1.26      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 3000       | 600        |
| 3PE - 27                  | 27                   | 1.65      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 3000       | 600        |
| 3PE - 33                  | 33.5                 | 2.04      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 3000       | 600        |
| 3PE - 38                  | 38.7                 | 2.36      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 2750       | 500        |
| 3PE - 46                  | 46.9                 | 2.86      | 250                                | 3625 | 270                                  | 3915 | 280                          | 4060 | 2750       | 500        |
| 3PE - 55                  | 54.1                 | 3.3       | 220                                | 3190 | 240                                  | 3480 | 250                          | 3625 | 2500       | 400        |
| 3PE - 65                  | 63.1                 | 3.85      | 200                                | 2900 | 220                                  | 3190 | 240                          | 3480 | 2500       | 400        |
| 3PE - 75                  | 73.4                 | 4.48      | 180                                | 2610 | 200                                  | 2900 | 220                          | 3190 | 2500       | 400        |

|                             | Displacement         |           | Continuous pressure P <sup>1</sup> |      | Intermittent pressure P <sup>2</sup> |      | Peak pressure P <sup>3</sup> |      | Max. speed | Min. speed |
|-----------------------------|----------------------|-----------|------------------------------------|------|--------------------------------------|------|------------------------------|------|------------|------------|
|                             | cm <sup>3</sup> /rev | cu.in/rev | bar                                | psi  | bar                                  | psi  | bar                          | psi  |            |            |
| <b>GROUP 3.5 - C SERIES</b> |                      |           |                                    |      |                                      |      |                              |      | rpm        |            |
| 3.5PC - 55                  | 54.8                 | 3.34      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 2750       | 400        |
| 3.5PC - 64                  | 63.2                 | 3.85      | 250                                | 3625 | 280                                  | 4060 | 300                          | 4350 | 2750       | 350        |
| 3.5PC - 75                  | 74.7                 | 4.55      | 230                                | 3335 | 250                                  | 3625 | 280                          | 4060 | 2500       | 300        |
| 3.5PC - 87                  | 88                   | 5.36      | 210                                | 3040 | 230                                  | 3330 | 260                          | 3750 | 2250       | 300        |
| 3.5PC - 98*                 | 99                   | 6.03      | 200                                | 2900 | 220                                  | 3190 | 250                          | 3625 | 2000       | 300        |

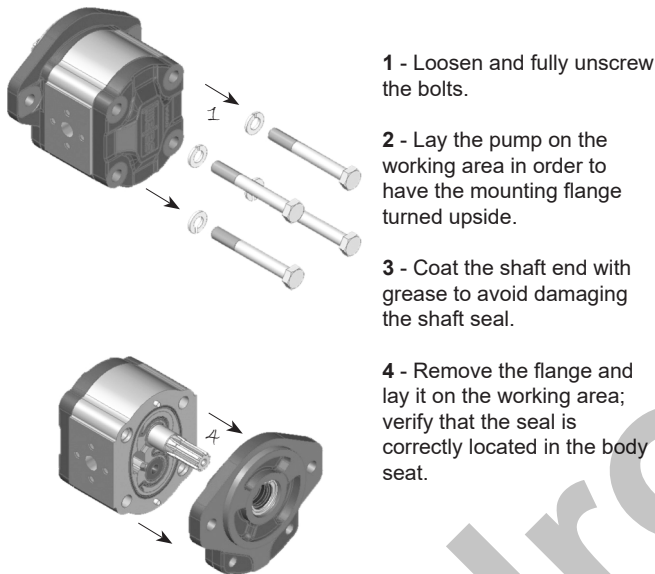
\*Displacement 98 are special release, please contact sales department.

- ⚠ *Max Speed must be lowered by 10% for system working continuously at p<sup>1</sup> pressure.  
Max pressure must be lowered by 10% for bi-directional pump.*

### ROTATION CHANGING INSTRUCTIONS FOR UNITS

Keep the working surface cleaned as well as the exterior of the pump before starting and avoid inner contamination of the pump. The pump shown below is a clockwise rotating pump. To achieve anti-clockwise rotation, please read the following instructions carefully.

#### CLOCKWISE ROTATION

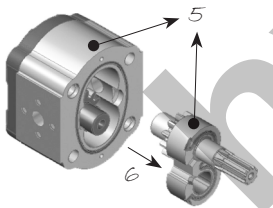


**1** - Loosen and fully unscrew the bolts.

**2** - Lay the pump on the working area in order to have the mounting flange turned upside.

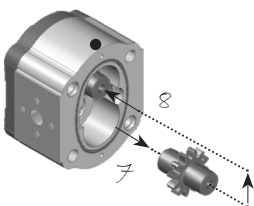
**3** - Coat the shaft end with grease to avoid damaging the shaft seal.

**4** - Remove the flange and lay it on the working area; verify that the seal is correctly located in the body seat.



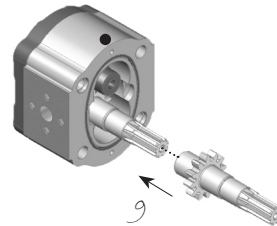
**5** - Mark the position of the bushing and eventually of the thrust plate, as well, with reference to the body.

**6** - Remove the bushing, thrust plate and the driving gear taking care to avoid driven gear axial shifts.

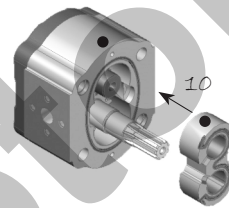


**7** - Draw out the driven gear from its housing, taking care to avoid rear cover axial shifts.

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



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



**10** - 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.

**11** - Clean the body and mounting flange facing surfaces.

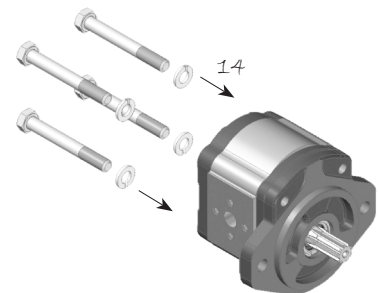
**12** - Verify that the two plugs are located in the body.

**13** - Refit the mounting flange, turned 180° from its original position.

**14** - Replace the bolts and tighten clockwise evenly to an appropriate torque.

**15** - Check that the shaft rotates freely.

**16** - Mark on the flange the new direction of rotation.



#### ANTI - CLOCKWISE ROTATION





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**Final revised edition** - February 2019

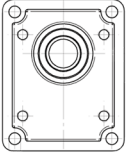
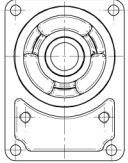
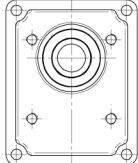
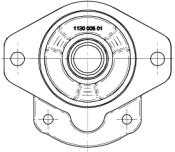
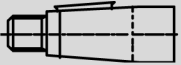


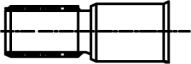
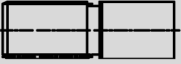
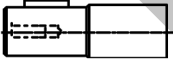

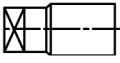
The data in this catalogue refers to the standard product.

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 contact our sales department.***

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**SHAFTS AND FLANGES COMBINATION**

| <p><b>3PE</b></p>                                                                                                                      | <br>CODE <b>P2</b> - European stand. | <br>CODE <b>B6</b> - German stand. | <br>CODE <b>P3</b> - European stand. for 3,5PC | <br>CODE <b>S3</b> - SAE B |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <br>CODE <b>35</b> - Tapered 1:5                      |                                                                                                                       | <p>35B6</p>                                                                                                         |                                                                                                                                   |                                                                                                               |
| <br>CODE <b>38</b> - Tapered 1:8                      | <p>38P2</p>                                                                                                           |                                                                                                                     |                                                                                                                                   |                                                                                                               |
| <br>CODE <b>48</b> - Tapered 1:8 for 3,5PC          |                                                                                                                       |                                                                                                                     | <p>48P3</p>                                                                                                                       |                                                                                                               |
| <br>CODE <b>55</b> - SAE B 13T                      |                                                                                                                       |                                                                                                                     |                                                                                                                                   | <p>55S3</p>                                                                                                   |
| <br>CODE <b>56</b> - SAE BB 15T                     |                                                                                                                       |                                                                                                                     |                                                                                                                                   | <p>56S3</p>                                                                                                   |
| <br>CODE <b>87</b> - SAE B parallel                 |                                                                                                                       |                                                                                                                     |                                                                                                                                   | <p>87S3</p>                                                                                                   |
| <br>CODE <b>88</b> - SAE BB parallel                |                                                                                                                       |                                                                                                                     |                                                                                                                                   | <p>88S3</p>                                                                                                   |
| <br>CODE <b>05</b> - Tang drive for electric motors |                                                                                                                       | <p>05B6</p>                                                                                                         |                                                                                                                                   |                                                                                                               |

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Displacements up to 4.48 cu.in./rev  
Pressure up to 4350 psi

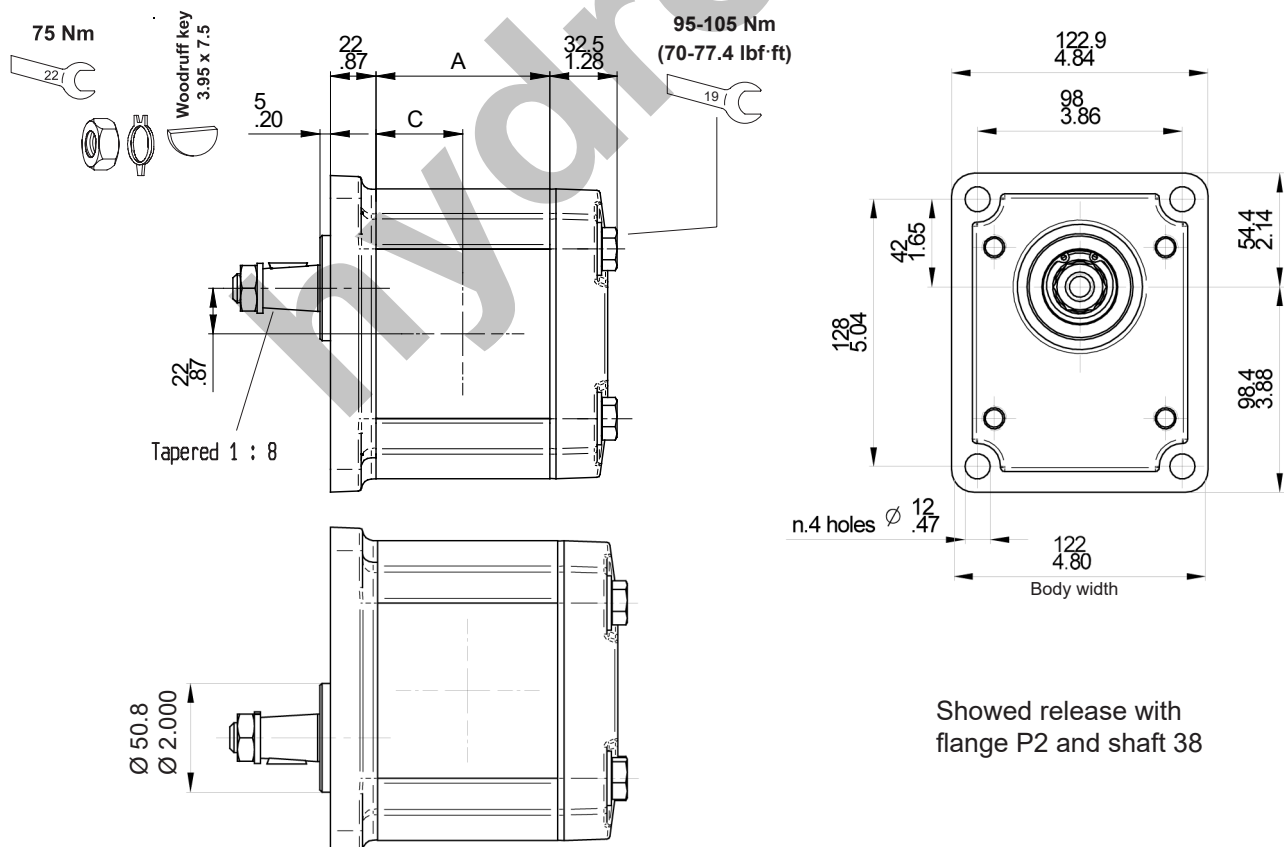


GEAR PUMPS

Displacements up to 73.4 cm<sup>3</sup>/rev  
Pressure up to 300 bar

### ASSEMBLING DIMENSIONS AND WORKING CONDITIONS

| Type                  |                      | 21    | 27    | 33    | 38    | 46    | 55    | 65    | 75    |
|-----------------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Displacement          | cm <sup>3</sup> /rev | 20.6  | 27    | 33.5  | 38.7  | 46.9  | 54.1  | 63.1  | 73.4  |
|                       | cu.in./rev           | 1.26  | 1.65  | 2.04  | 2.36  | 2.86  | 3.3   | 3.85  | 4.48  |
| Dimension A           | mm                   | 74    | 79    | 84    | 88    | 104   | 110   | 117   | 124   |
|                       | in                   | 2.91  | 3.11  | 3.31  | 3.46  | 4.09  | 4.33  | 4.61  | 4.88  |
| Dimension C           | mm                   | 37    | 39.5  | 42    | 44    | 52    | 55    | 58.5  | 62    |
|                       | in                   | 1.46  | 1.56  | 1.65  | 1.73  | 2.05  | 2.17  | 2.30  | 2.44  |
| Continuous pressure   | p <sup>1</sup> bar   | 250   | 250   | 250   | 250   | 250   | 220   | 200   | 180   |
|                       | psi                  | 3625  | 3625  | 3625  | 3625  | 3625  | 3190  | 2900  | 2610  |
| Intermittent pressure | p <sup>2</sup> bar   | 280   | 280   | 280   | 280   | 270   | 240   | 220   | 200   |
|                       | psi                  | 4060  | 4060  | 4060  | 4060  | 3915  | 3480  | 3140  | 2900  |
| Peak pressure         | p <sup>3</sup> bar   | 300   | 300   | 300   | 300   | 280   | 250   | 240   | 220   |
|                       | psi                  | 4350  | 4350  | 4350  | 4350  | 4060  | 3625  | 3480  | 3140  |
| Max speed             | rpm                  | 3000  | 3000  | 3000  | 2750  | 2750  | 2500  | 2500  | 2500  |
| Min speed             | rpm                  | 600   | 600   | 600   | 500   | 500   | 400   | 400   | 400   |
| Weight                | kg                   | 8.80  | 9.10  | 9.46  | 9.60  | 10.40 | 10.80 | 11.00 | 11.50 |
|                       | lbs                  | 19.40 | 20.06 | 20.86 | 21.16 | 22.93 | 23.81 | 24.25 | 25.35 |



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Displacements up to 4.48 cu.in./rev  
Pressure up to 4350 psi

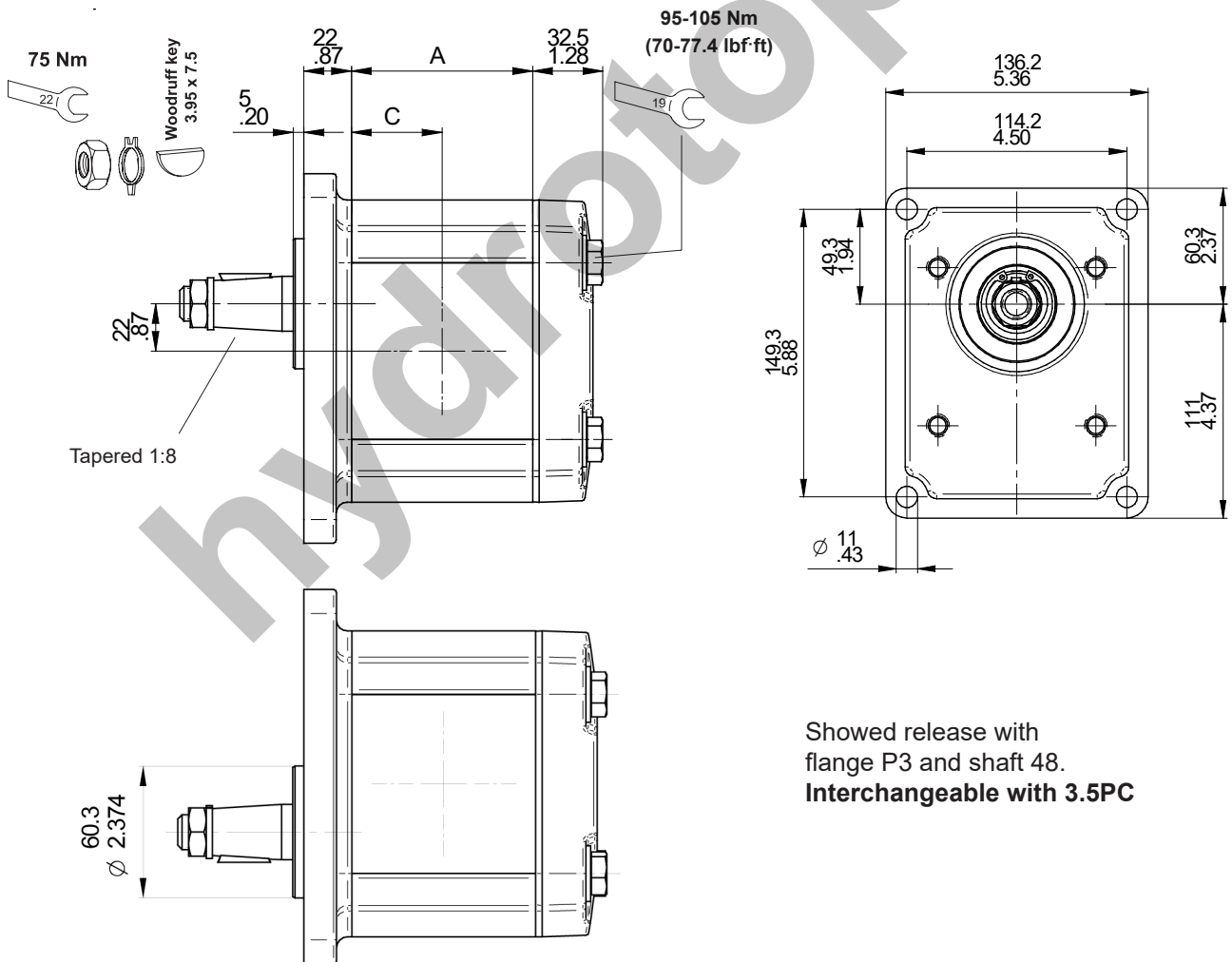


**GEAR PUMPS**

Displacements up to 73.4 cm<sup>3</sup>/rev  
Pressure up to 300 bar

**ASSEMBLING DIMENSIONS**

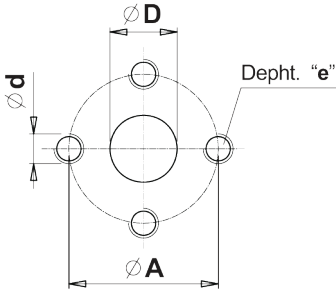
| Type         |                      | 46   | 55   | 65   | 75   |
|--------------|----------------------|------|------|------|------|
| Displacement | cm <sup>3</sup> /rev | 46.9 | 54.1 | 63.1 | 73.4 |
|              | cu.in./rev           | 2.86 | 3.3  | 3.85 | 4.48 |
| Dimension A  | mm                   | 104  | 110  | 117  | 124  |
|              | in                   | 4.09 | 4.33 | 4.61 | 4.88 |
| Dimension C  | mm                   | 52   | 55   | 58.5 | 62   |
|              | in                   | 2.05 | 2.17 | 2.30 | 2.44 |
| Weight       | kg                   | 10.1 | 10.5 | 10.8 | 11.2 |
|              | lbs                  | 22.3 | 23   | 23.8 | 24.6 |



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### FLANGED AND THREADED PORTS



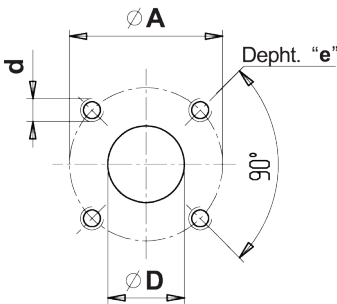
**code P**

Flanged ports  
European standard

| UNI-DIRECTIONAL PUMPS | TYPE          | INLET         |               |     |               | OUTLET        |               |     |               |
|-----------------------|---------------|---------------|---------------|-----|---------------|---------------|---------------|-----|---------------|
|                       |               | Ø D           | Ø A           | d   | e             | Ø D           | Ø A           | d   | e             |
|                       | From 21 to 55 | 27<br>(1.06") | 51<br>(2.01") | M10 | 16<br>(0.63") | 16<br>(0.63") | 40<br>(1.57") | M8  | 16<br>(0.63") |
|                       | From 65 to 75 | 33<br>(1.3")  | 62<br>(2.44") | M12 |               | 21<br>(0.83") | 51<br>(2.01") | M10 |               |



BI-DIRECTIONAL PUMPS Special version available on request.



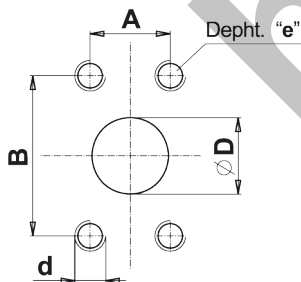
**code B**

Flanged ports  
German standard

| UNI-DIRECTIONAL PUMPS | TYPE          | INLET         |               |    |               | OUTLET        |               |    |               |
|-----------------------|---------------|---------------|---------------|----|---------------|---------------|---------------|----|---------------|
|                       |               | Ø D           | Ø A           | d  | e             | Ø D           | Ø A           | d  | e             |
|                       | 21            | 22<br>(0.86") | 55<br>(2.17") | M8 | 13<br>(0.51") | 19<br>(0.75") | 55<br>(2.17") | M8 | 13<br>(0.51") |
|                       | From 27 to 75 | 27<br>(1.06") |               |    |               | 19<br>(0.75") | 55<br>(2.17") | M8 | 13<br>(0.51") |



BI-DIRECTIONAL PUMPS Special version available on request.



**code W**

Flanged ports  
SAE J518  
METRIC THREAD

| UNI-DIRECTIONAL PUMPS | TYPE          | INLET         |                 |                 |     |               | OUTLET        |                 |                 |     |               |
|-----------------------|---------------|---------------|-----------------|-----------------|-----|---------------|---------------|-----------------|-----------------|-----|---------------|
|                       |               | ØD            | B               | A               | d   | e             | ØD            | B               | A               | d   | e             |
|                       | From 21 to 38 | 26<br>(1.02") | 52.4<br>(2.06") | 26.2<br>(1.03") | M10 | 18<br>(0.71") | 19<br>(0.75") | 47.6<br>(1.87") | 22.2<br>(0.87") | M10 | 18<br>(0.71") |
|                       | From 46 to 75 | 32<br>(1.26") | 58.7<br>(2.31") | 30.2<br>(1.19") |     |               | 26<br>(1.02") | 52.4<br>(2.06") | 26.2<br>(1.03") |     |               |



BI-DIRECTIONAL PUMPS Special version available on request.

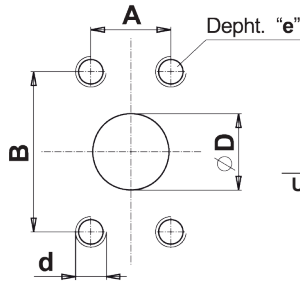
E0.130.0219.02.00IM04



# GEAR PUMPS "E" SERIES

## Aluminium Body

3PE



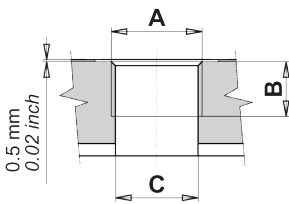
**code S**

Flanged ports  
SAE J518  
AMERICAN STANDARD  
THREAD

| UNI-DIRECTIONAL PUMPS | TYPE          | INLET           |                 |                |               |               | OUTLET          |                 |               |               |   |
|-----------------------|---------------|-----------------|-----------------|----------------|---------------|---------------|-----------------|-----------------|---------------|---------------|---|
|                       |               | ØD              | B               | A              | d             | e             | ØD              | B               | A             | d             | e |
| From 21 to 38         | 26<br>(1.02") | 52.4<br>(2.06") | 26.2<br>(1.03") | 3/8<br>16 UNC  | 18<br>(0.71") | 19<br>(0.75") | 47.6<br>(1.87") | 22.2<br>(0.87") | 3/8<br>16 UNC | 18<br>(0.71") |   |
| From 46 to 75         | 32<br>(1.26") | 58.7<br>(2.31") | 30.2<br>(1.19") | 7/16<br>14 UNC |               | 26<br>(1.02") | 52.4<br>(2.06") | 26.2<br>(1.03") |               |               |   |



BI-DIRECTIONAL PUMPS Special version available on request.



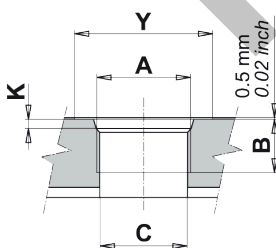
**code G**

Threaded ports  
GAS (BSPP)

| UNI-DIRECTIONAL PUMPS | TYPE   | INLET         |                 |    | OUTLET        |               |   |
|-----------------------|--------|---------------|-----------------|----|---------------|---------------|---|
|                       |        | A             | B               | C  | A             | B             | C |
| From 21 to 38         | G1     | 22<br>(0.86") | 27<br>(1.06")   | G1 | 22<br>(0.86") | 27<br>(1.06") |   |
| From 46 to 75         | G1 1/4 | 24<br>(0.94") | 32.5<br>(1.28") |    |               |               |   |



BI-DIRECTIONAL PUMPS Special version available on request.



**code R**

Threaded ports  
SAE (ODT)

| UNI-DIRECTIONAL PUMPS | TYPE                  | INLET         |               |               |                |                       | OUTLET        |               |               |                |   |
|-----------------------|-----------------------|---------------|---------------|---------------|----------------|-----------------------|---------------|---------------|---------------|----------------|---|
|                       |                       | A             | B             | C             | Y              | K                     | A             | B             | C             | Y              | K |
| From 21 to 38         | 1-5/16-12 UN (SAE 16) | 19<br>(0.75") | 25<br>(0.98") | 49<br>(1.93") | 3.3<br>(0.12") | 1-1/16-12 UN (SAE 12) | 19<br>(0.75") | 21<br>(0.83") | 41<br>(1.16") | 3.3<br>(0.13") |   |
| From 46 to 75         | 1-5/8-12 UN (SAE 20)  |               | 27<br>(1.06") | 58<br>(2.28") |                | 1-5/16-12 UN (SAE 16) |               | 25<br>(0.98") | 49<br>(1.93") |                |   |

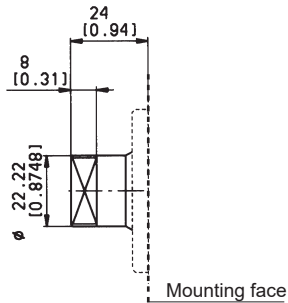


BI-DIRECTIONAL PUMPS Special version available on request.

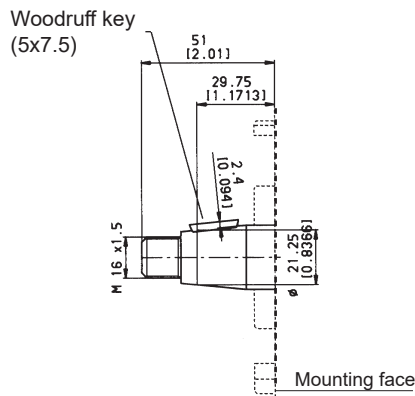
EO.130.0219.02.001M04



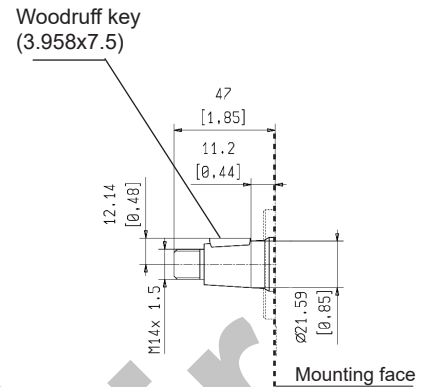
### DRIVE SHAFTS



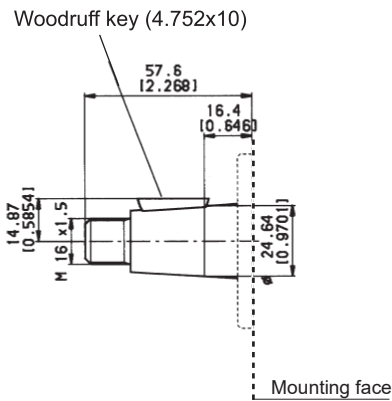
**code 05** Max torque 180 Nm (1590 lbf in)  
Tang drive for electric motor



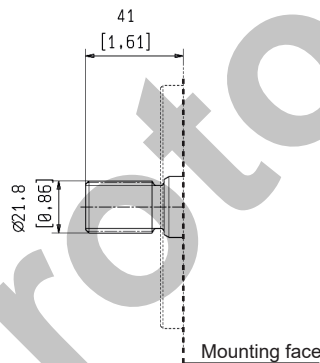
**code 35** Max torque 260 Nm (2300 lbf in)  
European tapered 1:5



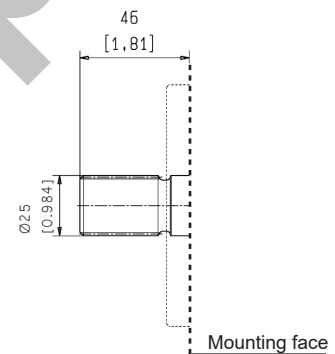
**code 38** Max torque 250 Nm (2213 lbf in)  
European tapered 1:8



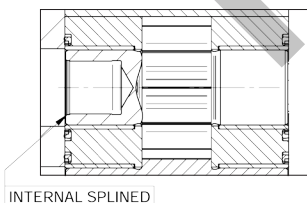
**code 48** Max torque 350 Nm (3100 lbf in)  
European tapered 1:8 for 3.5PC



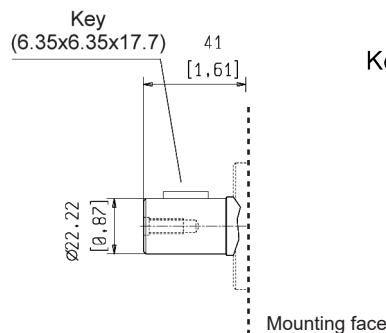
**code 55** Max torque 330 Nm (2921 lbf in)  
SAE B 13T-16/32DP Ansi B92 1a 1976



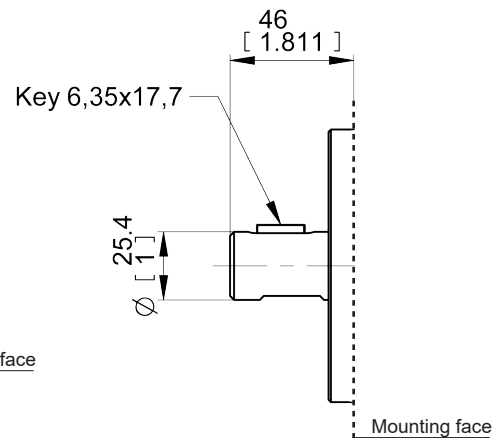
**code 56** Max torque 480 Nm (4250 lbf in)  
SAE BB 15T-16/32DP Ansi B92 1a 1976



**code 65** Max torque 280 Nm (2478 lbf in)  
DIN 5480 internal splined (only for rear pumps)



**code 87** Max torque 220 Nm (1950 lbf in)  
SAE B Parallel



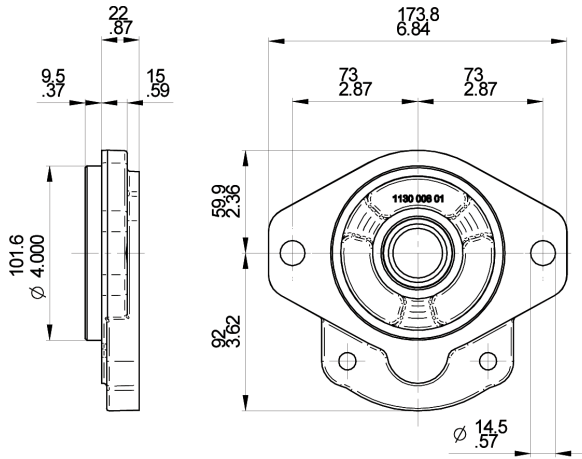
**code 88** Max torque 320 Nm (2830 lbf in)  
SAE BB Parallel

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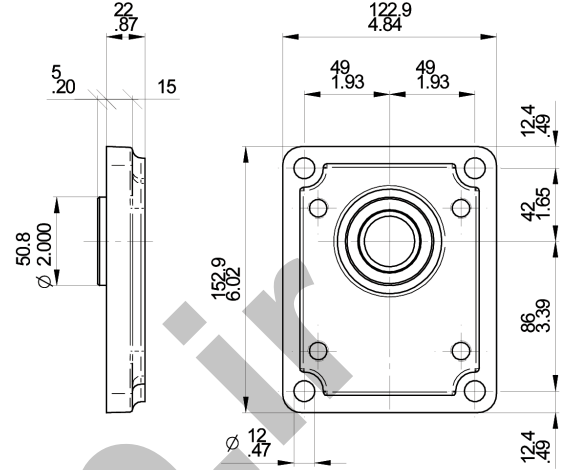




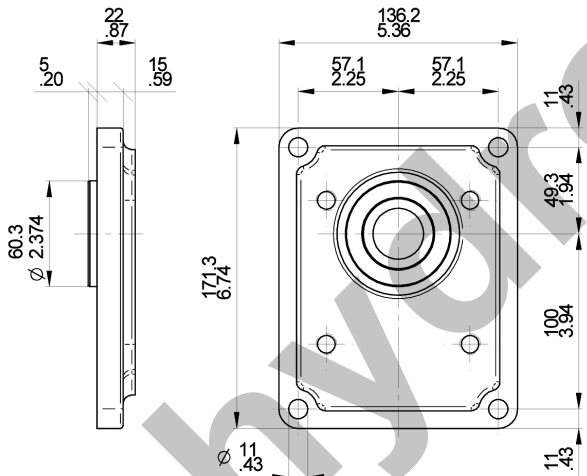
**MOUNTING FLANGES**



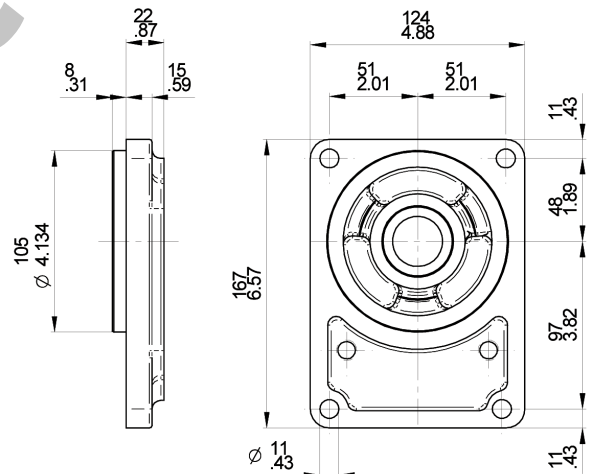
**S3** SAE B 2 Bolts  
With shaft code 55-56-87-88



**P2** European standard  
With shaft code 38



**P3** European standard for 3.5PC  
With shaft code 48



**B6** German standard  
With shaft code 05-35

EO.130.0219.02.001M04



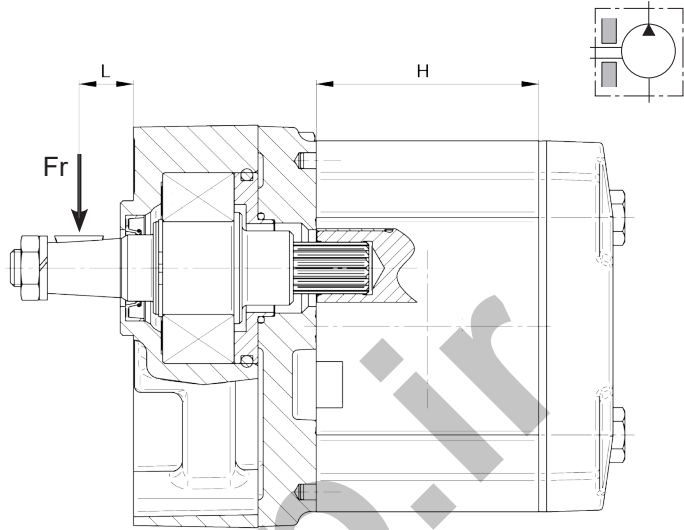
### OUTRIGGER BEARING

The following diagrams show radial load capability of the bearing.

Calculation according to ISO 281 at 10 cSt.

| TYPE | H           |
|------|-------------|
| 27   | 79 (3.11")  |
| 33   | 84 (3.31")  |
| 38   | 88 (3.46")  |
| 46   | 104 (4.09") |
| 55   | 110 (4.33") |
| 65   | 117 (4.61") |

**L**=Distance between mounting flange and radial force point of application.



Example:

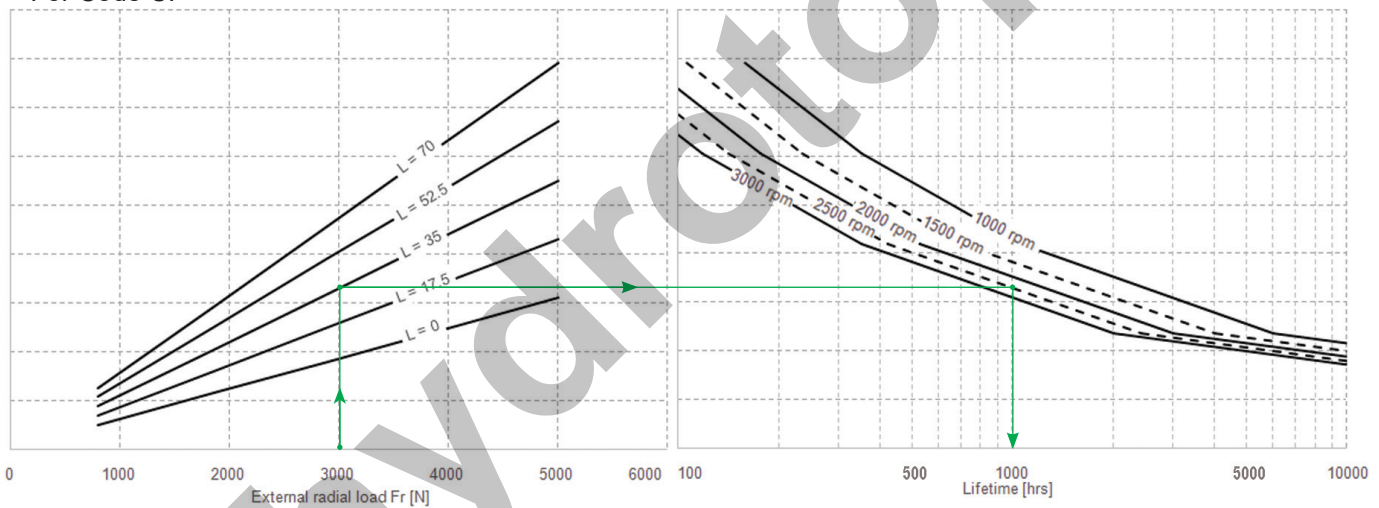
$F_r = 3000\text{ N}$

$L = 35$

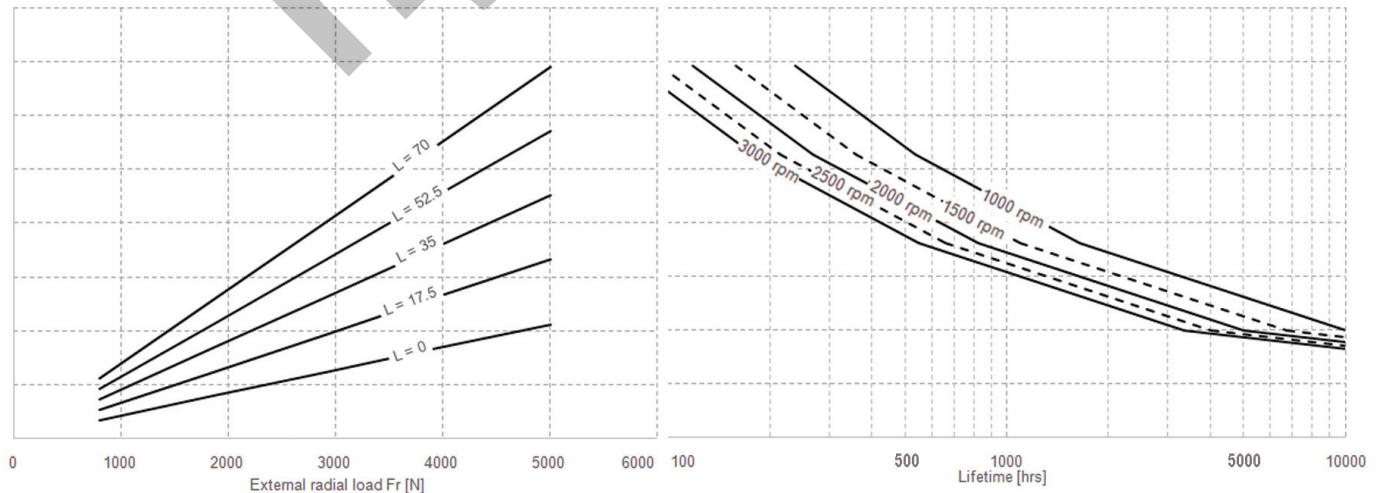
Speed = 2500 rpm

→ Expected life: 1000 hrs

For Code CP



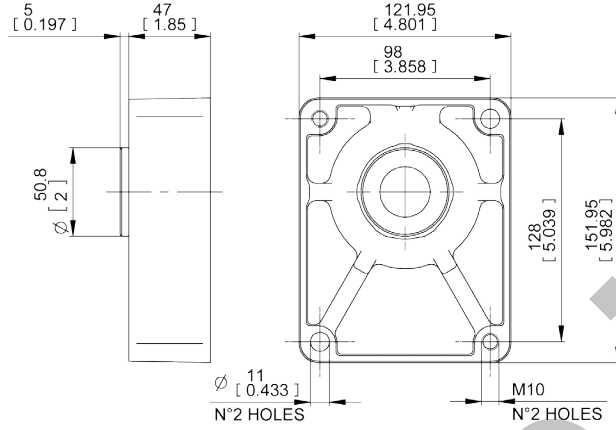
For Code CSB



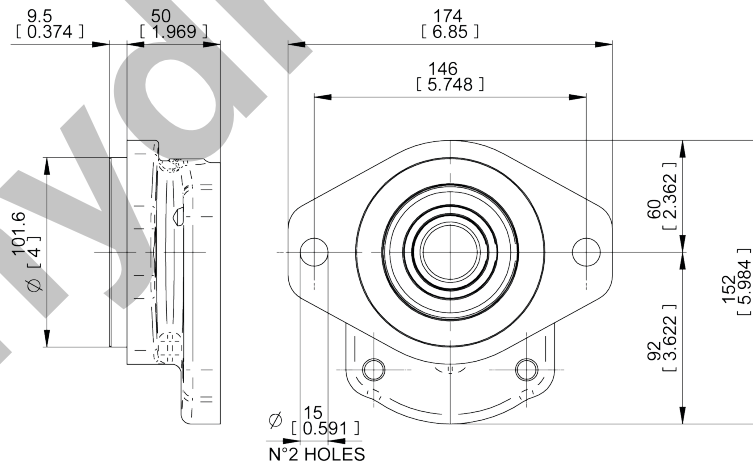
E0.130.0219.02.00IM04



**MOUNTING FLANGES WITH BEARING**



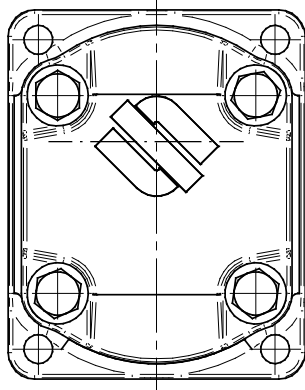
|                    |                                         |
|--------------------|-----------------------------------------|
| <b>CP</b>          | European standard $\varnothing 50.8$ mm |
| With shaft code 38 |                                         |



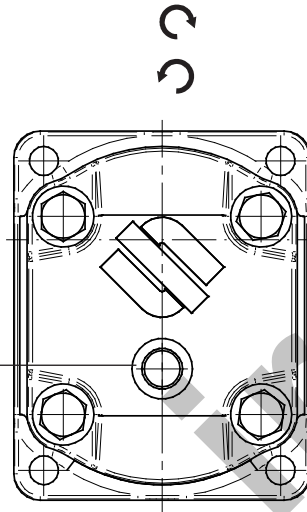
|                             |       |
|-----------------------------|-------|
| <b>CSB</b>                  | SAE B |
| With shaft code 55-56-87-88 |       |

EO.130.0219.02.001M04

REAR COVER



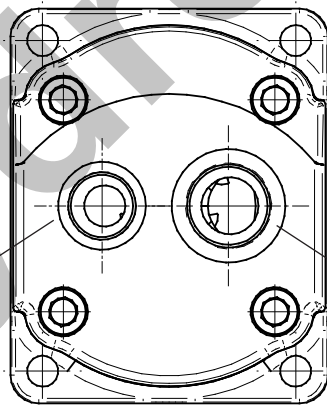
Standard rear cover for unidirectional pumps



external drain  
DIMENSION C

Standard rear cover for reversible pumps, with external drain C.  
For the dimension C please see the table here below

| C                     |
|-----------------------|
| G3/8                  |
| 9/16-18 UNF-2B (SAE6) |



↓ Outlet  
DIMENSION B

↑ Inlet  
DIMENSION A

code 1

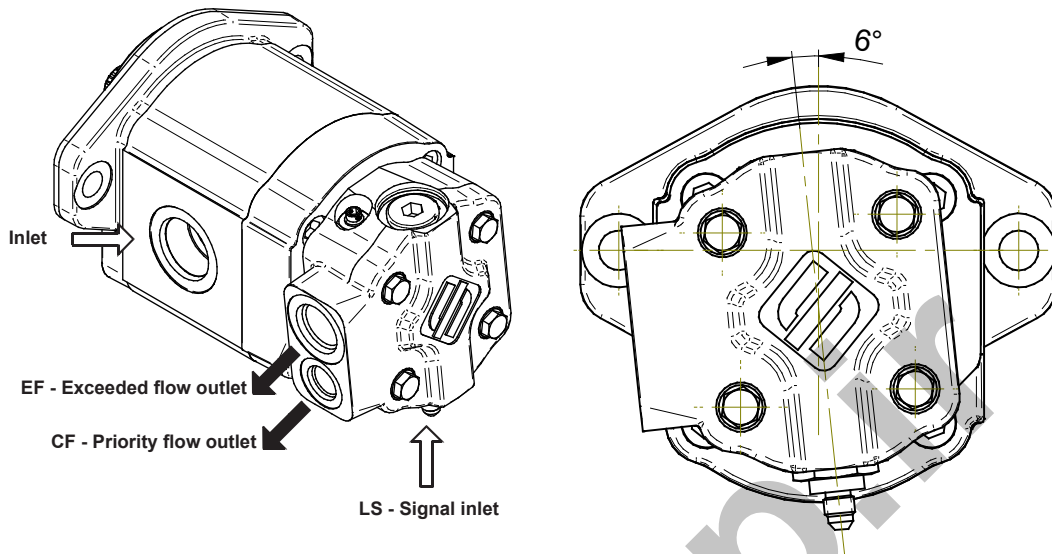
For pumps with threaded rear ports, suitable up to 80 l/min delivery.

| A                       | B                       |
|-------------------------|-------------------------|
| G1                      | G3/4                    |
| 1-5/16-12 UN-2B (SAE16) | 1-1/16-12 UN-2B (SAE12) |

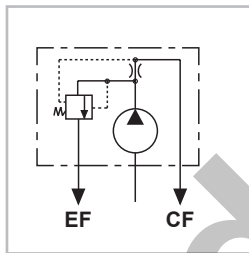
E0.130.0219.02.00IM04



**PRIORITY VALVES**

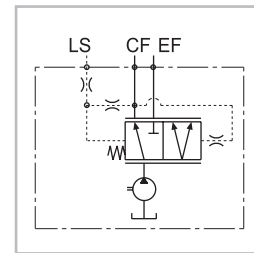


The double or triple pumps can be configured with priority flow valve too.  
The stage which has its flow divided into priority and exceeded flows is always the back one.



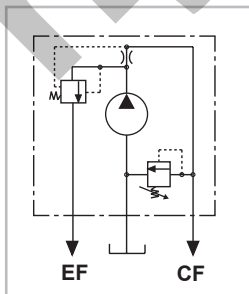
**code VP1**

Priority flow valve, excess flow to second actuator.



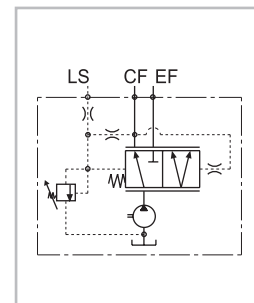
**code VPD1**

Load sensing priority valve with dynamic signal without main relief valve.



**code VPS1**

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



**code VPDS1**

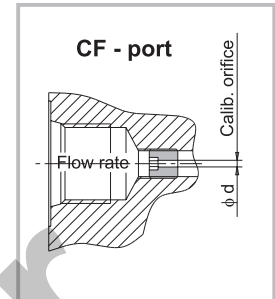
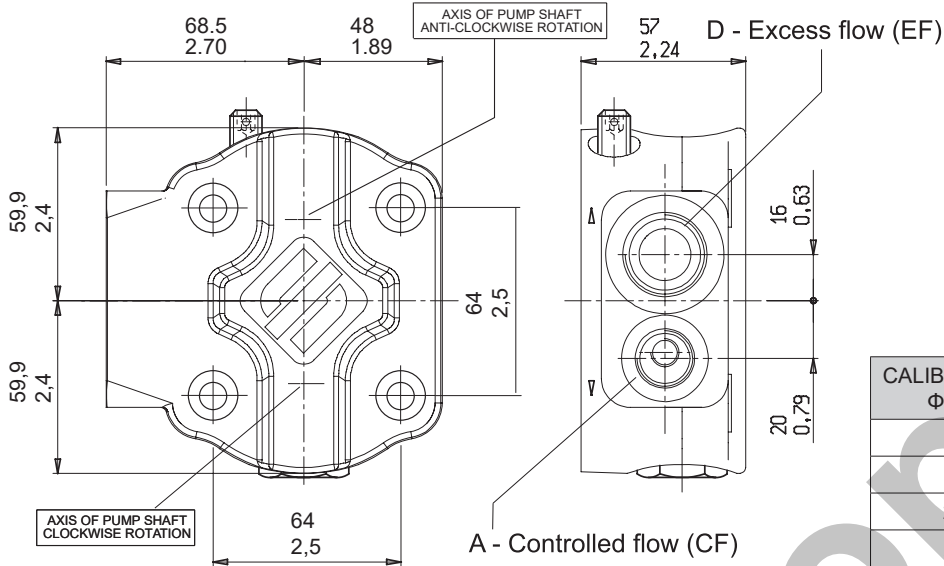
Load sensing priority valve with dynamic signal with main relief valve.

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

EO.130.0219.02.001M04



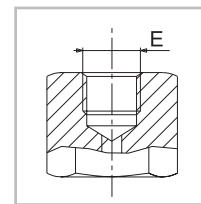
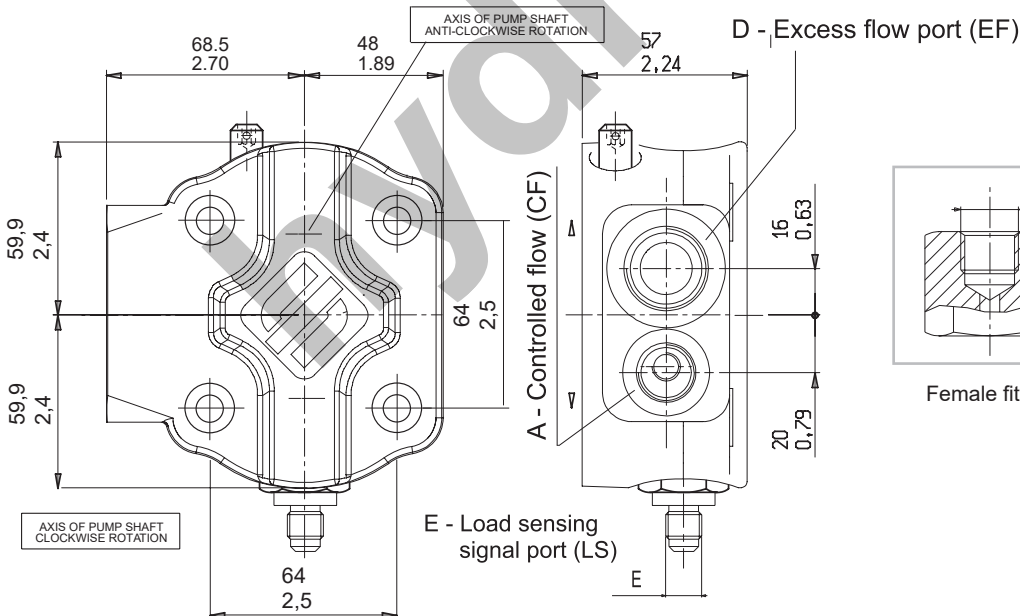
### VP1 - VPS1 SIDE PORTS



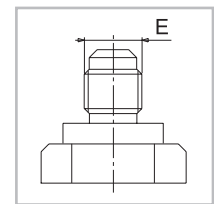
| CALIBRATED ORIFICE<br>$\Phi d$ (mm/inch) | FLOW RATE<br>(l/min - gpm) $\pm 10\%$ |
|------------------------------------------|---------------------------------------|
| 1.5 l/(0.06")                            | 2.5 - (0.66)                          |
| 2 l/(0.08")                              | 4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

### VPD1 - VPDS1 SIDE PORTS

| A                     | D                            |
|-----------------------|------------------------------|
| G 3/8                 | G 3/4                        |
| SAE8<br>3/4-16 UNF-2B | SAE12<br>1 1/16 - 12 UN - 2B |



Female fitting



Male fitting

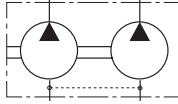
Minimum load sensing signal  
(LS) = 4 bar (28 psi)

| A                         | D                            | E                          |
|---------------------------|------------------------------|----------------------------|
| G 3/8                     | G 3/4                        | G 1/4                      |
| SAE8<br>3/4 - 16 UNF - 2B | SAE12<br>1-1/16 - 12 UN - 2B | SAE4<br>7/16 - 20 UNF - 2B |

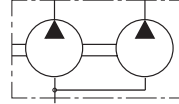
E0.130.0219.02.00IM04



**MULTIPLE GEAR PUMPS  
ASSEMBLING DIMENSIONS**



**MULTIPLE  
GEAR PUMPS  
with inlet port  
on each body**

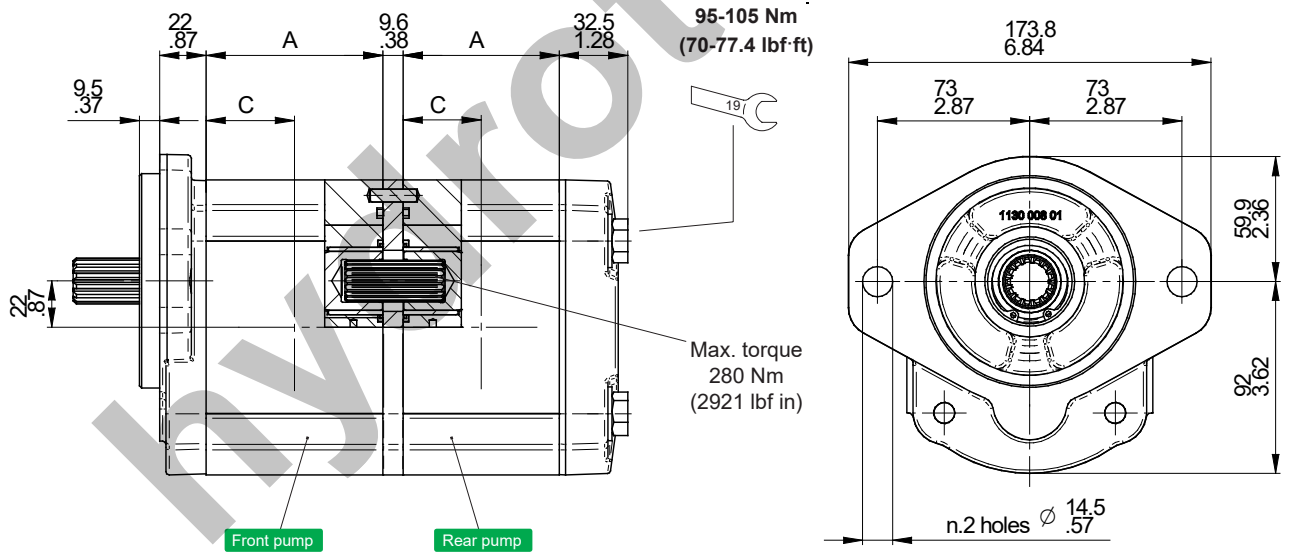


**MULTIPLE  
GEAR PUMPS  
with common  
inlet port\***

\*In case of common inlet port, to avoid too high value of oil speed, 60 l/min is the max sucked flow for the downstream pump.  
Commercial code **UA**.

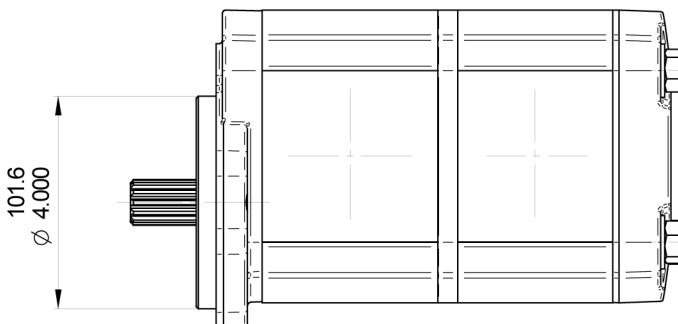
| Type         |                      | 21*  | 27   | 33   | 38   | 46   | 55   | 65   | 75*  |
|--------------|----------------------|------|------|------|------|------|------|------|------|
| Displacement | cm <sup>3</sup> /rev | 20.6 | 27   | 33.5 | 38.7 | 46.9 | 54.1 | 63.1 | 73.4 |
|              | cu.in./rev           | 1.26 | 1.65 | 2.04 | 2.36 | 2.86 | 3.3  | 3.85 | 4.48 |
| Dimension A  | mm                   | 74   | 79   | 84   | 88   | 104  | 110  | 117  | 124  |
|              | in                   | 2.91 | 3.11 | 3.31 | 3.46 | 4.09 | 4.33 | 4.61 | 4.88 |
| Dimension C  | mm                   | 37   | 39.5 | 42   | 44   | 52   | 55   | 58.5 | 62   |
|              | in                   | 1.46 | 1.56 | 1.65 | 1.73 | 2.05 | 2.17 | 2.30 | 2.44 |

\*Displacements 21 and 75 are special release, please contact sales department.



This is a Salami standard pump.  
alla drive shafts have a splined end.

These units are pre-arranged for multiple  
pumps, they have the drive shaft code 65.



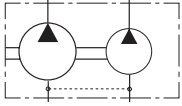
EO.130.0219.02.001M04



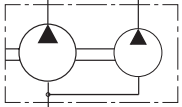
### 3PE COMBINATION WITH PUMP 2PE

**PD2** Kit multiple pumps  
Pre-arranged for 2PE rear

ALL THE PUMPS  
CAN BE ALSO  
MULTIPLE

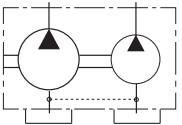


**MULTIPLE  
GEAR PUMPS  
with inlet port  
on each body**



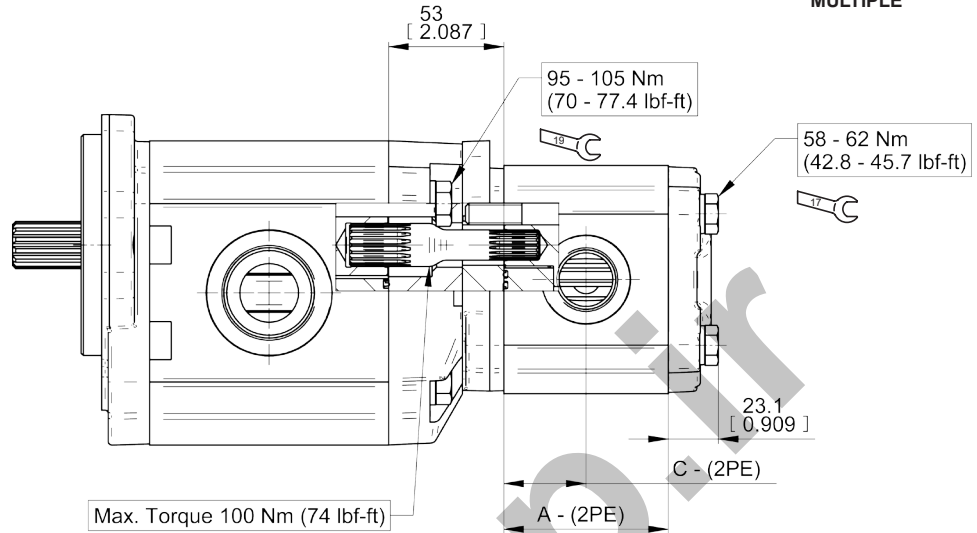
**MULTIPLE  
GEAR PUMPS  
with common  
inlet port\***

\*In case of common inlet port, to avoid too high value of oil speed, 30 l/min is the max. sucked flow for the downstream pump.  
Commercial code UA.



**MULTIPLE  
GEAR PUMPS  
with separated  
stages**

**code AS**



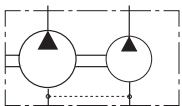
| 2PE-Type          |          | 3.2*          | 3.9* | 4.5 | 6.5           | 8.3          | 10.5          | 11.3          | 12.5          | 13.8          | 16            | 19           | 22.5         | 26 |
|-------------------|----------|---------------|------|-----|---------------|--------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|----|
| Dimension A - 2PE | mm<br>in | 47.1<br>1.83  |      |     | 49.95<br>1.97 | 52.8<br>2.07 | 56.3<br>2.22  | 59.7<br>2.35  | 63.5<br>2.5   | 67.5<br>2.65  | 75.6<br>2.97  | 81<br>3.19   | 86.8<br>3.42 |    |
| Dimension C - 2PE | mm<br>in | 23.55<br>0.93 |      |     | 25<br>0.98    | 26.4<br>1.04 | 28.15<br>1.11 | 29.75<br>1.17 | 31.75<br>1.25 | 33.75<br>1.33 | 37.80<br>1.49 | 40.5<br>1.59 | 43.4<br>1.71 |    |

\*Available only as rear pump

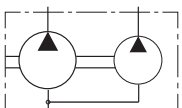
### 3PE COMBINATION WITH PUMP 1.5PE

**PD1.5** Kit multiple pumps  
Pre-arranged for 1.5PE rear

ALL THE PUMPS  
CAN BE ALSO  
MULTIPLE

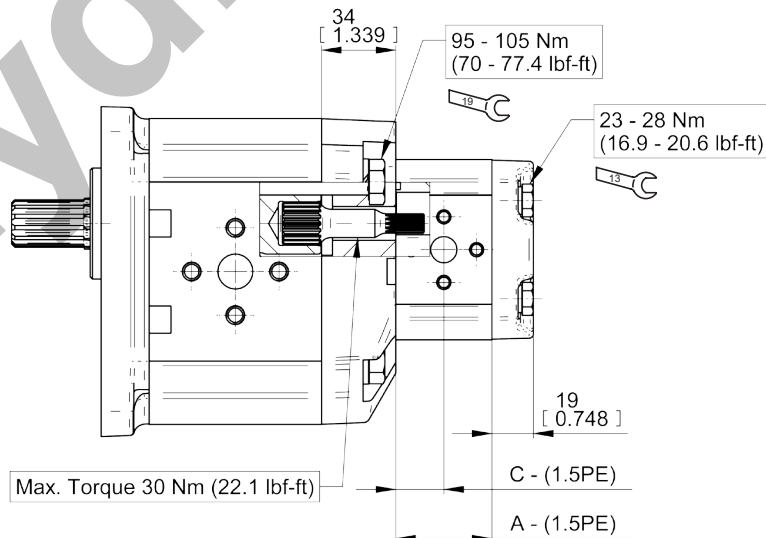


**MULTIPLE  
GEAR PUMPS  
with inlet port  
on each body**



**MULTIPLE  
GEAR PUMPS  
with common  
inlet port\***

\*In case of common inlet port, to avoid too high value of oil speed, 12 l/min is the max. sucked flow for the downstream pump.  
Commercial code UA.



| 1.5PE-Type          |          | 1.4        | 2.1           | 2.8           | 3.5           | 4.1          | 5.2           | 6.2           | 7.6           | 9.3           | 11            |
|---------------------|----------|------------|---------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Dimension A - 1.5PE | mm<br>in | 44<br>1.73 | 45.9<br>1.81  | 47.9<br>1.89  | 49.9<br>1.96  | 51.6<br>2.03 | 54.7<br>2.15  | 57.5<br>2.26  | 61.5<br>2.42  | 66.3<br>2.61  | 71.1<br>2.80  |
| Dimension C - 1.5PE | mm<br>in | 22<br>0.87 | 22.95<br>0.90 | 23.95<br>0.94 | 24.95<br>0.98 | 25.8<br>1.02 | 27.35<br>1.08 | 28.75<br>1.13 | 30.75<br>1.21 | 33.15<br>1.31 | 35.55<br>1.40 |

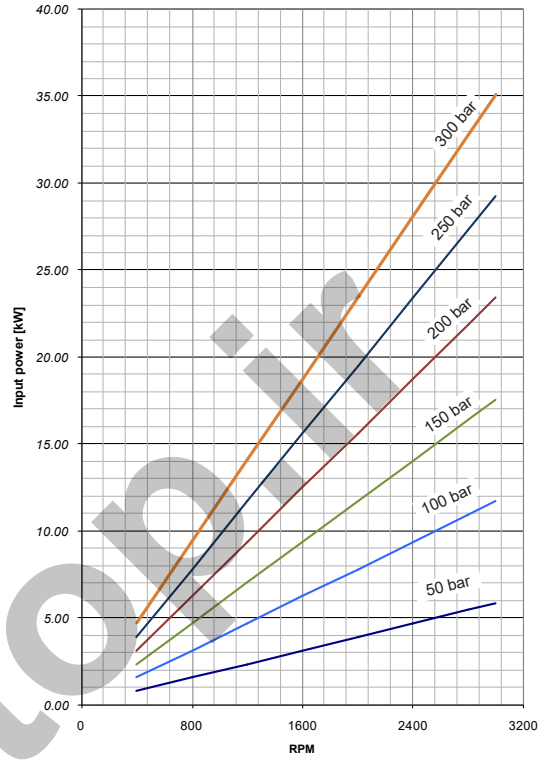
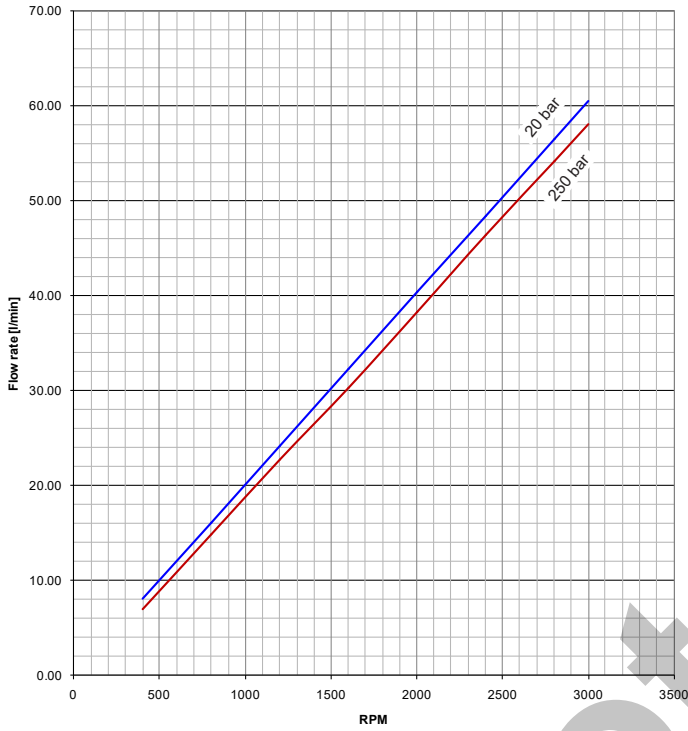
E0.130.0219.02.00IM04



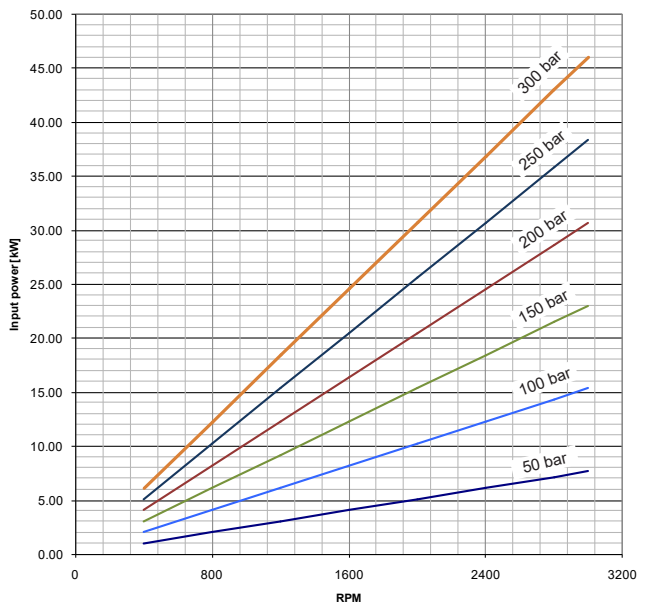
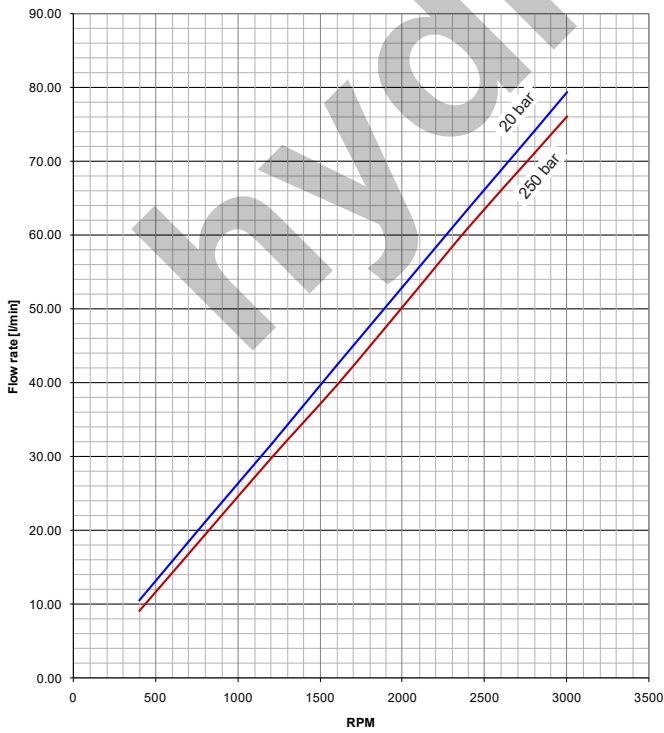


**PERFORMANCE CURVES**

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



**3PE-21**



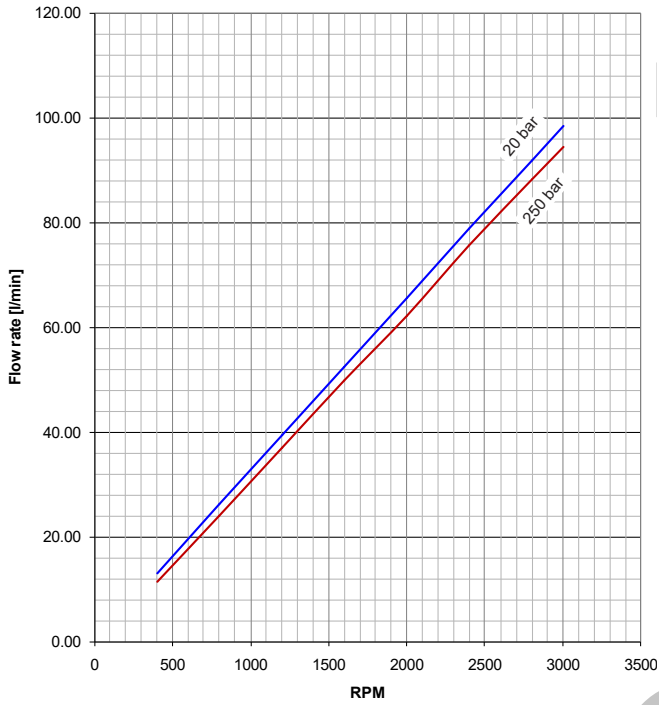
**3PE-27**

EO.130.0219.02.001M04

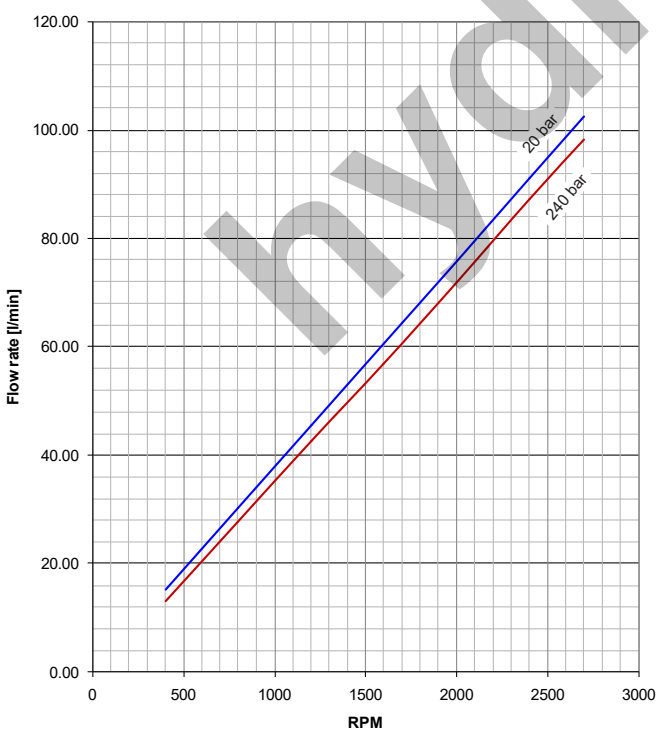
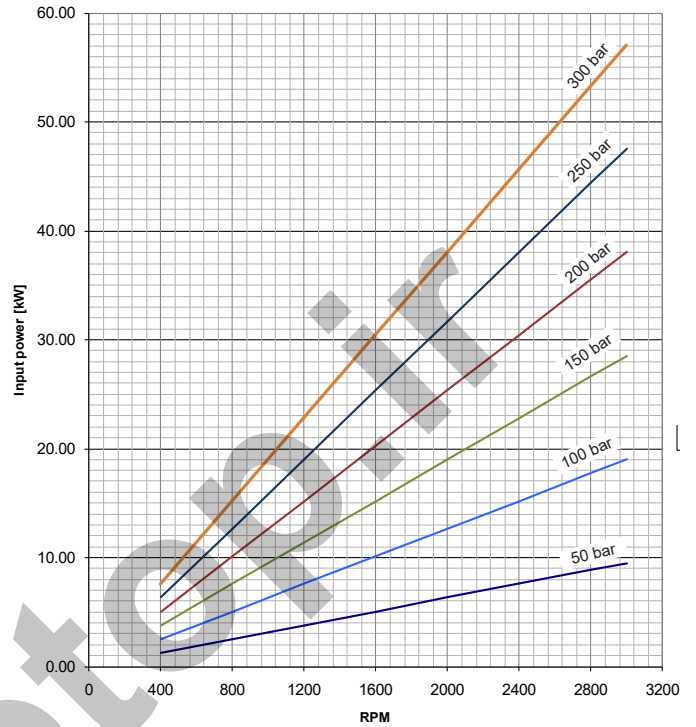


### PERFORMANCE CURVES

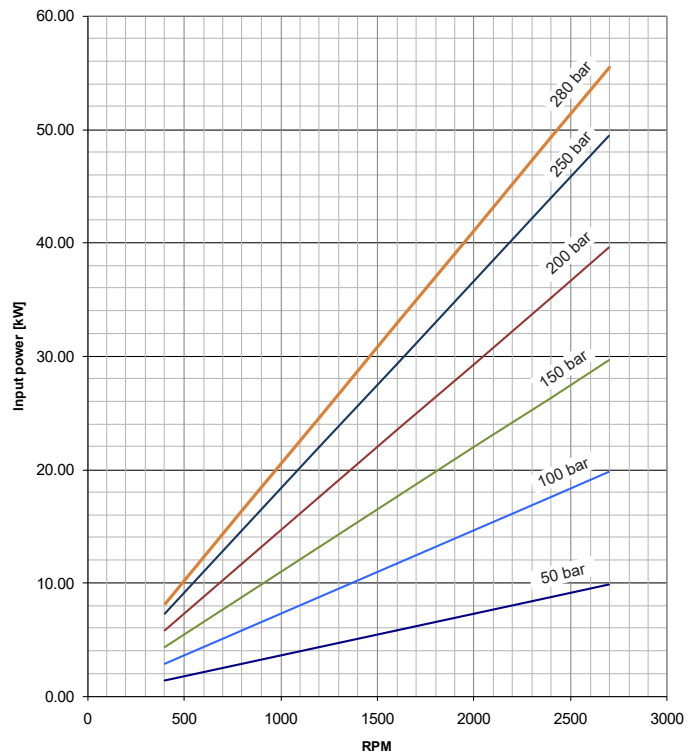
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



3PE-33



3PE-38

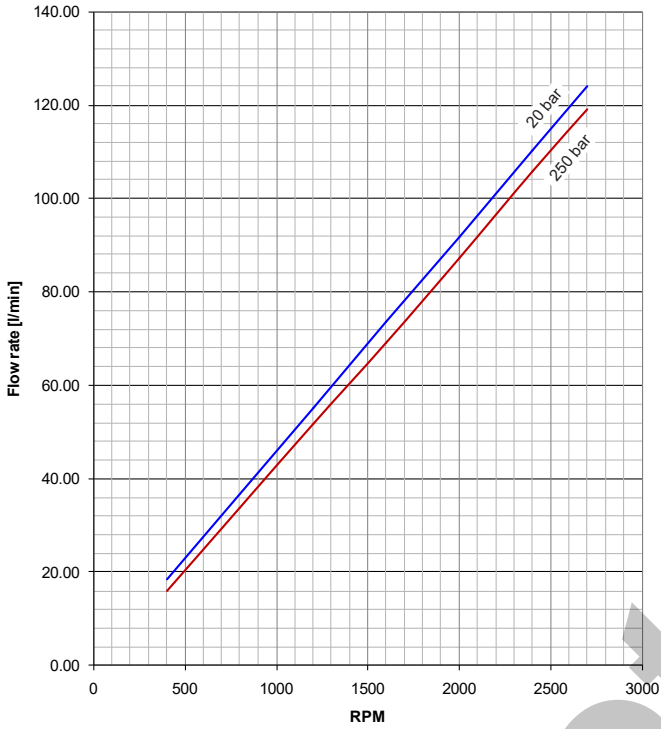


E0.130.0219.02.00IM04

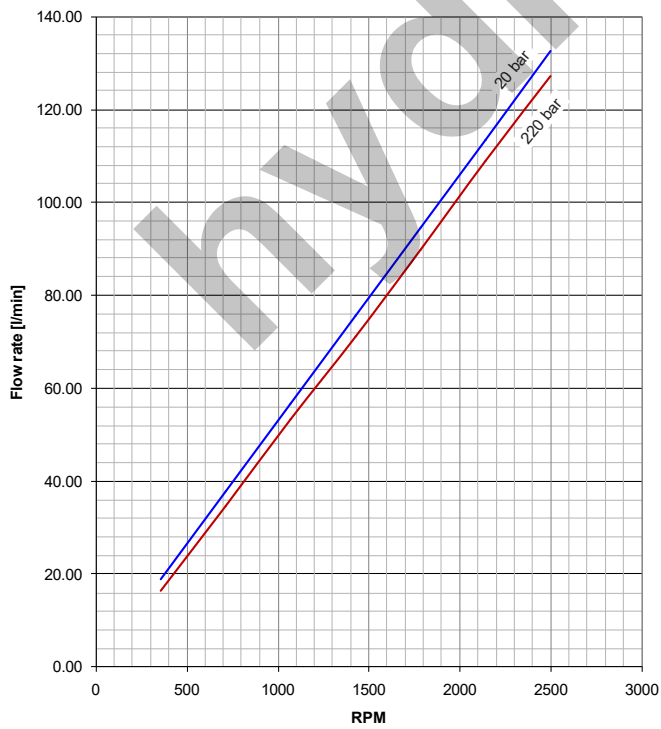
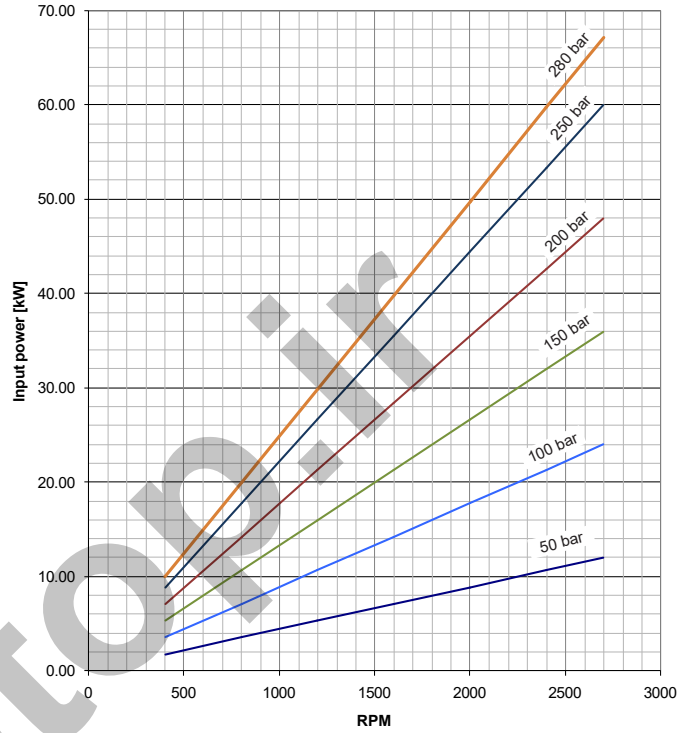


**PERFORMANCE CURVES**

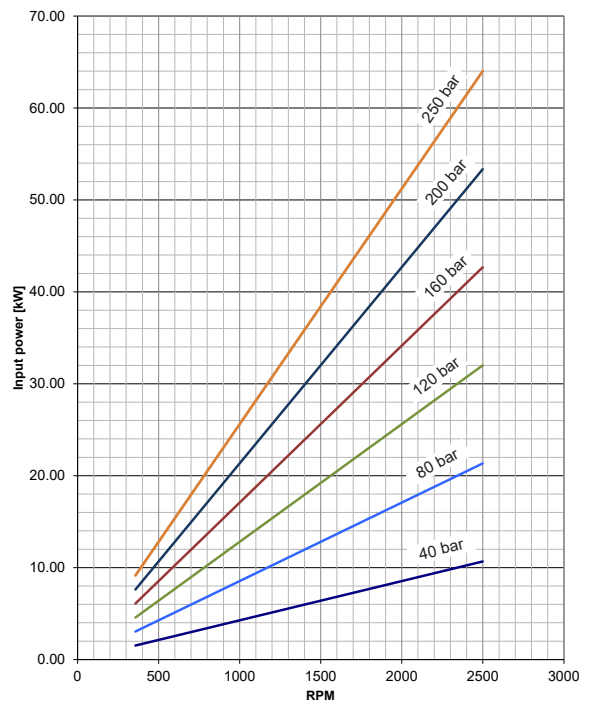
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



**3PE-46**



**3PE-55**

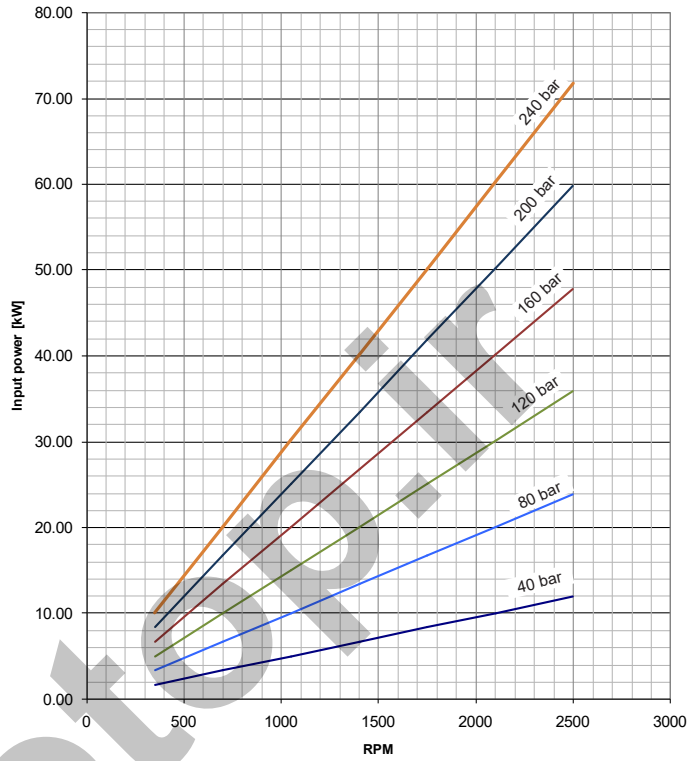
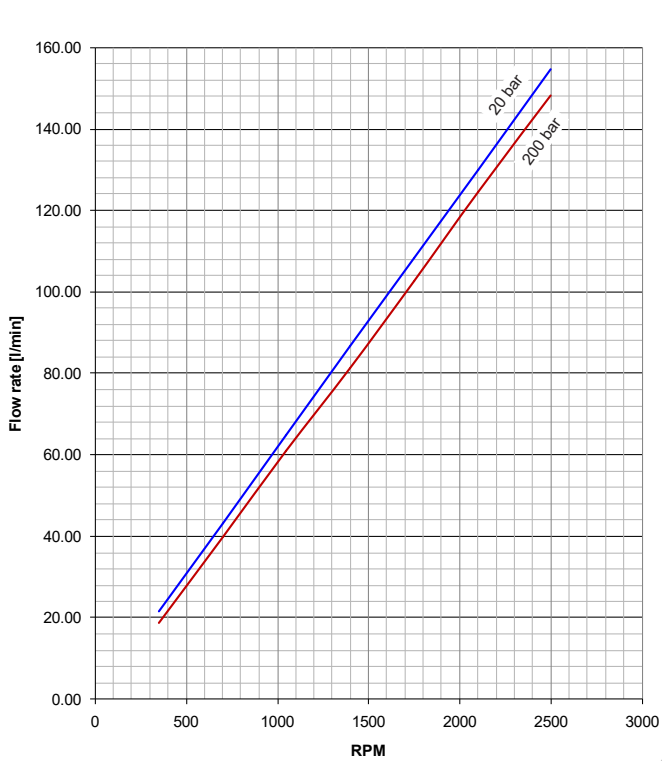


EO.130.0219.02.001M04

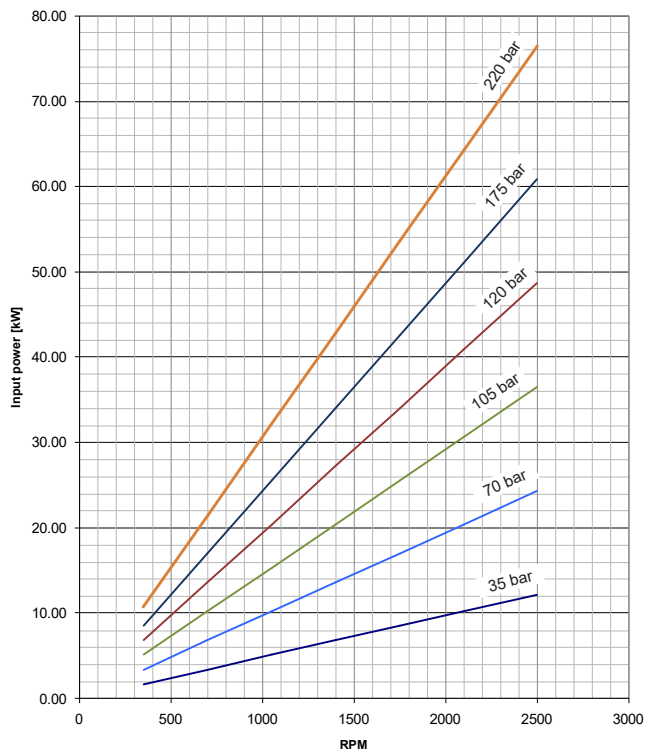
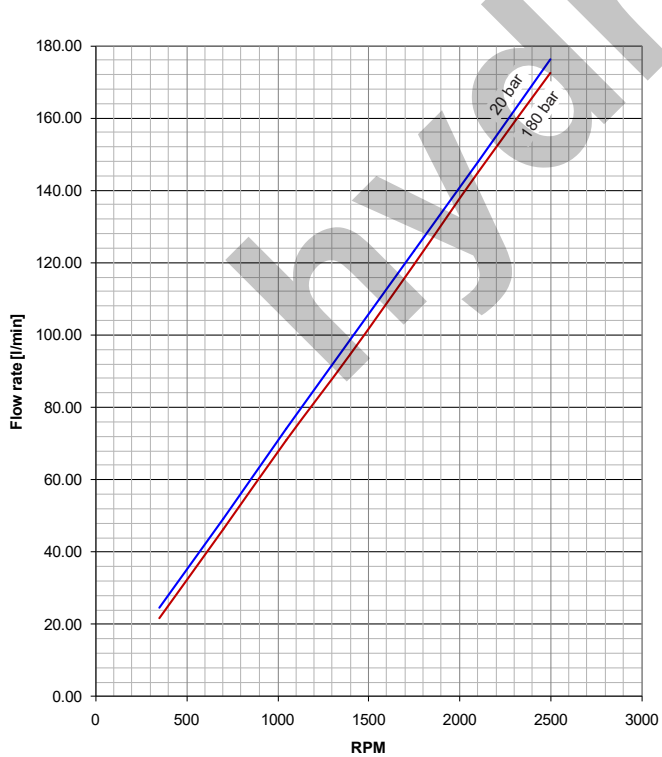


### PERFORMANCE CURVES

Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



### 3PE-65

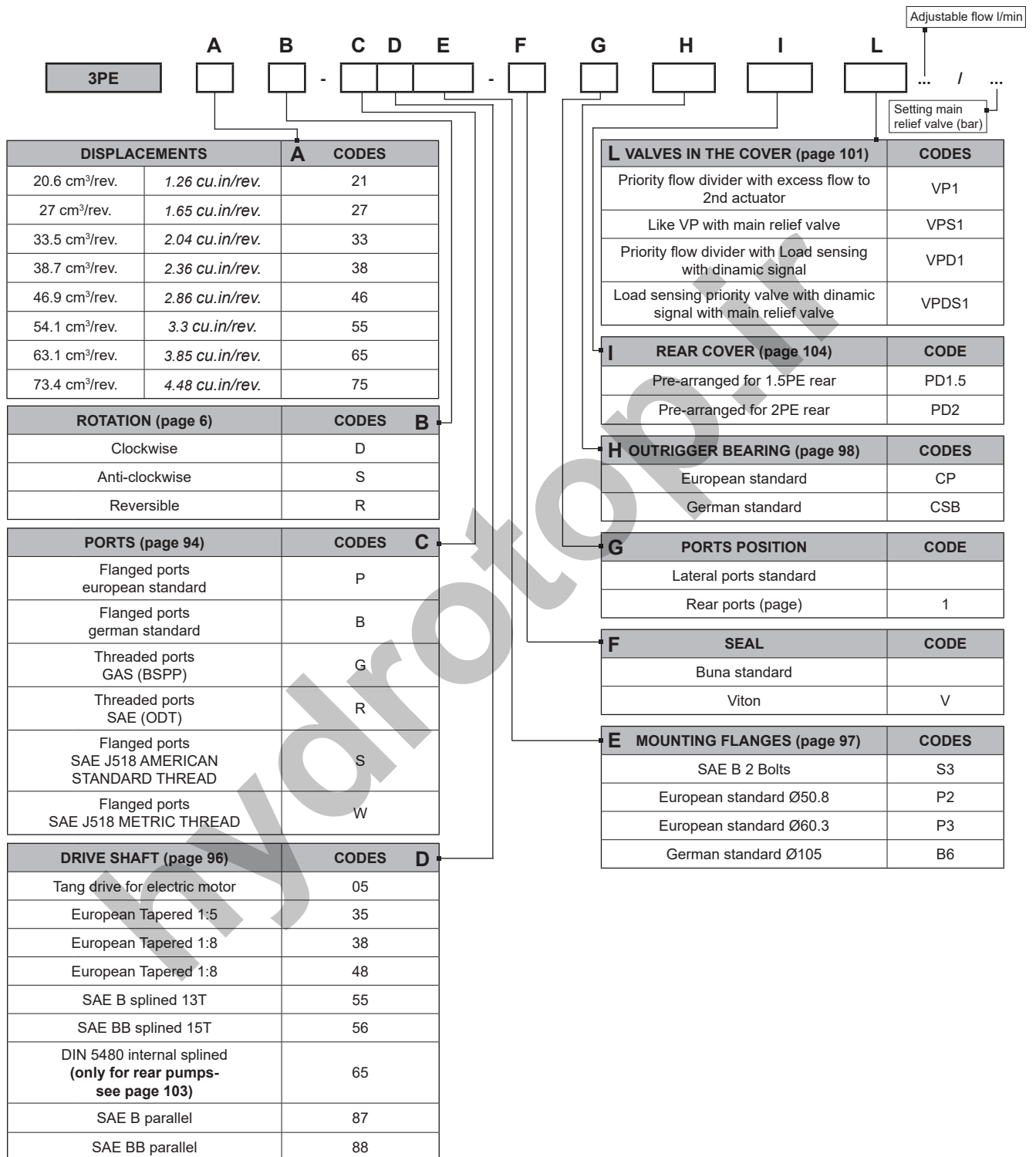


### 3PE-75

E0.130.0219.02.00IM04



**SINGLE PUMPS**



**Order example:** 3PE 46D, ports SAE (R), drive shaft (56), mounting flange (S3)  
**3PE46D-R56S3**

EO.130.0219.02.001M04



### MULTIPLE PUMPS

| DISPLACEMENTS              |                 | A | CODES |
|----------------------------|-----------------|---|-------|
| 20.6 cm <sup>3</sup> /rev. | 1.26 cu.in/rev. |   | 21    |
| 27 cm <sup>3</sup> /rev.   | 1.65 cu.in/rev. |   | 27    |
| 33.5 cm <sup>3</sup> /rev. | 2.04 cu.in/rev. |   | 33    |
| 38.7 cm <sup>3</sup> /rev. | 2.36 cu.in/rev. |   | 38    |
| 46.9 cm <sup>3</sup> /rev. | 2.86 cu.in/rev. |   | 46    |
| 54.1 cm <sup>3</sup> /rev. | 3.3 cu.in/rev.  |   | 55    |
| 63.1 cm <sup>3</sup> /rev. | 3.85 cu.in/rev. |   | 65    |
| 73.4 cm <sup>3</sup> /rev. | 4.48 cu.in/rev. |   | 75    |

| ROTATION (page 6) | CODES | B |
|-------------------|-------|---|
| Clockwise         |       | D |
| Anti-clockwise    |       | S |

| PORTS (page 94)                                 | CODES | C |
|-------------------------------------------------|-------|---|
| Flanged ports european standard                 |       | P |
| Flanged ports german standard                   |       | B |
| Threaded ports GAS (BSPP)                       |       | G |
| Threaded ports SAE (ODT)                        |       | R |
| Flanged ports SAE J518 AMERICAN STANDARD THREAD |       | S |
| Flanged ports SAE J518 METRIC THREAD            |       | W |

| DRIVE SHAFT (page 96)         | CODES | D  |
|-------------------------------|-------|----|
| Tang drive for electric motor |       | 05 |
| European Tapered 1:5          |       | 35 |
| European Tapered 1:8          |       | 38 |
| European Tapered 1:8          |       | 48 |
| SAE B splined 13T             |       | 55 |
| SAE BB splined 15T            |       | 56 |
| SAE B parallel                |       | 87 |
| SAE BB parallel               |       | 88 |

| M VALVES IN THE COVER (page 101)                                       | CODES |
|------------------------------------------------------------------------|-------|
| Priority flow divider with excess flow to 2nd actuator                 | VP1   |
| Like VP with main relief valve                                         | VPS1  |
| Priority flow divider with Load sensing with dinamic signal            | VPD1  |
| Load sensing priority valve with dinamic signal with main relief valve | VPDS1 |

| L REAR COVER (page 104)     | CODE  |
|-----------------------------|-------|
| Pre-arranged for 1.5PE rear | PD1.5 |
| Pre-arranged for 2PE rear   | PD2   |

| I OUTRIGGER BEARING (page 98) | CODES |
|-------------------------------|-------|
| European standard             | CP    |
| German standard               | CSB   |

| H PORTS POSITION       | CODE |
|------------------------|------|
| Lateral ports standard |      |
| Rear ports (page)      | 1    |

| G SUCTION PORTS  | CODES |
|------------------|-------|
| Common suction   | UA*   |
| Separated stages | AS    |

| F SEAL        | CODE |
|---------------|------|
| Buna standard |      |
| Viton         | V    |

| E MOUNTING FLANGES (page 97) | CODES |
|------------------------------|-------|
| SAE B 2 Bolts                | S3    |
| European standard Ø50.8      | P2    |
| European standard Ø60.3      | P3    |
| German standard Ø105         | B6    |

Adjustable flow l/min / ...  
Setting main relief valve (bar)

**Order example:** 3PE 33/27D, ports SAE (P), drive shaft (56), mounting flange (S3)  
3PE33/27D-R56S3

\*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.

E0.130.0219.02.00IM04



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