

# MS11 - MSE11

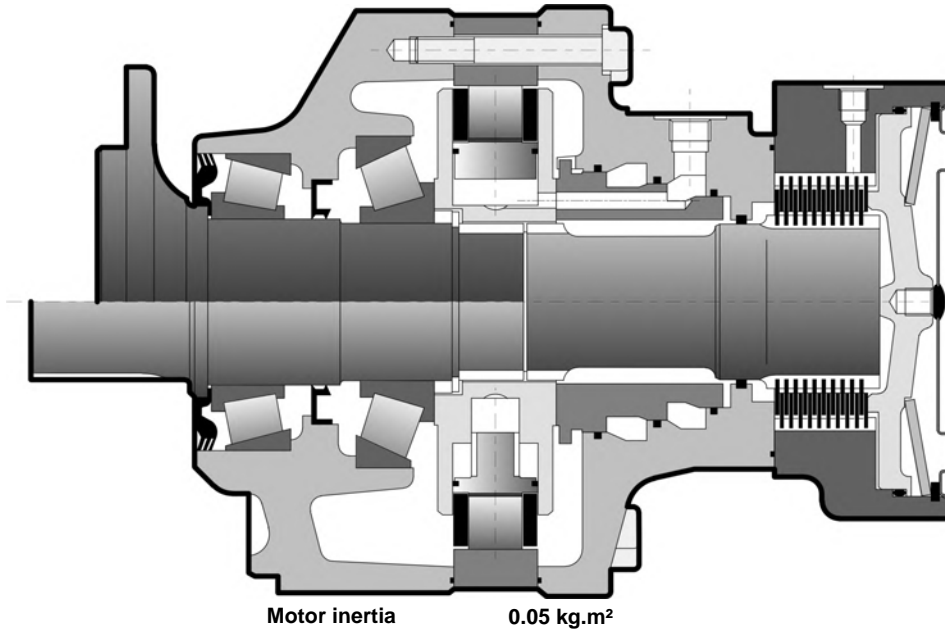
## HYDRAULIC MOTORS



T E C H N I C A L C A T A L O G



# CHARACTERISTICS



|                                  | C       | Displacement         |                      | Theoretical torque |                        | 1       | Max. power           |                          | Max. speed        |                   | Max. pressure |
|----------------------------------|---------|----------------------|----------------------|--------------------|------------------------|---------|----------------------|--------------------------|-------------------|-------------------|---------------|
|                                  |         | 1                    | 2                    | 1                  | 2                      |         | 2                    | 1                        | 2                 |                   |               |
|                                  |         | cm³/tr [cu.in./rev.] | cm³/tr [cu.in./rev.] | at 100 bar<br>Nm   | at 1000 PSI<br>[lb.ft] | kW [HP] | preferred<br>kW [HP] | non-preferred<br>kW [HP] | 1<br>tr/min [RPM] | 2<br>tr/min [RPM] | bar [PSI]     |
| Cams with equal lobes<br>MS11    |         | 7                    | 730 [44,5]           | 365 [22,3]         | 1 161 [590]            | 50 [67] | 33 [44]              | 25 [34]                  | 200               |                   | 450 [6 527]   |
|                                  |         | 8                    | 837 [51,0]           | 419 [25,5]         | 1 331 [677]            |         |                      |                          | 195               |                   |               |
|                                  |         | 9                    | 943 [57,5]           | 472 [28,8]         | 1 499 [762]            |         |                      |                          | 190               |                   |               |
|                                  |         | 0                    | 1 048 [63,9]         | 524 [32,0]         | 1 666 [847]            |         |                      |                          | 185               |                   |               |
|                                  |         | 1                    | 1 147 [70,0]         | 574 [35,0]         | 1 824 [927]            |         |                      |                          | 180               |                   |               |
|                                  |         | 2                    | 1 259 [76,8]         | 630 [38,4]         | 2 002 [1 018]          |         |                      |                          | 170               | 175               |               |
| Cams with unequal lobes<br>MSE11 |         | 9                    | 1 263 [77,0]         | 632 [38,5]         | 2 008 [1 021]          | 50 [67] | 33 [44]              | 25 [34]                  | 170               | 190               | 400 [5 802]   |
|                                  |         | 0                    | 1 404 [85,6]         | 702 [42,8]         | 2 232 [1 135]          |         |                      |                          | 155               | 185               |               |
|                                  |         | 1                    | 1 536 [93,7]         | 768 [46,8]         | 2 442 [1 242]          |         |                      |                          | 140               | 180               |               |
|                                  |         | 2                    | 1 687 [102,9]        | 844 [51,4]         | 2 682 [1 364]          |         |                      |                          | 130               | 165               |               |
| Cams with unequal lobes          | MS11 A  | 1 048 [63,9]         | 629 [38,4]           |                    | 1 666 [847]            | 50 [67] | 33 [44]              | 25 [34]                  |                   |                   | 450 [6 527]   |
|                                  |         |                      | 419 [25,6]           |                    |                        |         |                      |                          |                   |                   |               |
| Cams with unequal lobes          | MSE11 A | 1 404 [85,6]         | 843 [51,4]           |                    | 2 232 [1 135]          | 50 [67] | 33 [44]              | 25 [34]                  | 120               |                   | 400 [5 802]   |
|                                  |         |                      | 561 [34,2]           |                    |                        |         |                      |                          |                   |                   |               |

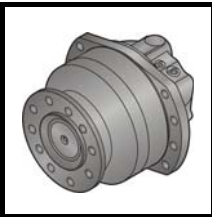
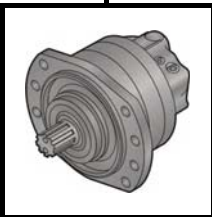
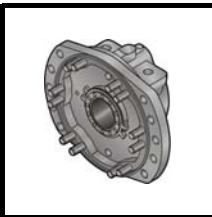
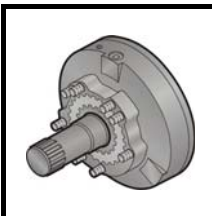
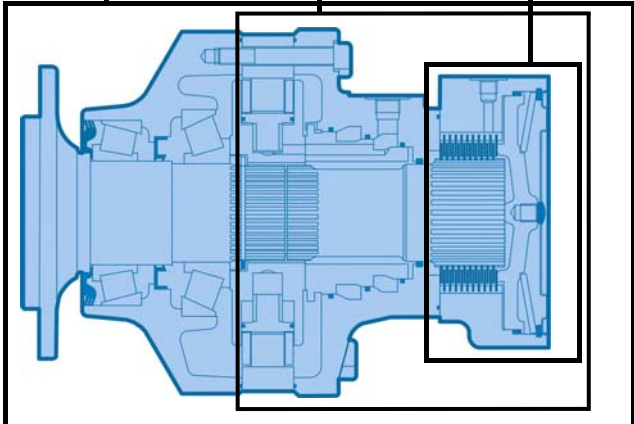
1 First displacement

2 Second displacement

\* See option "M" for higher speed.

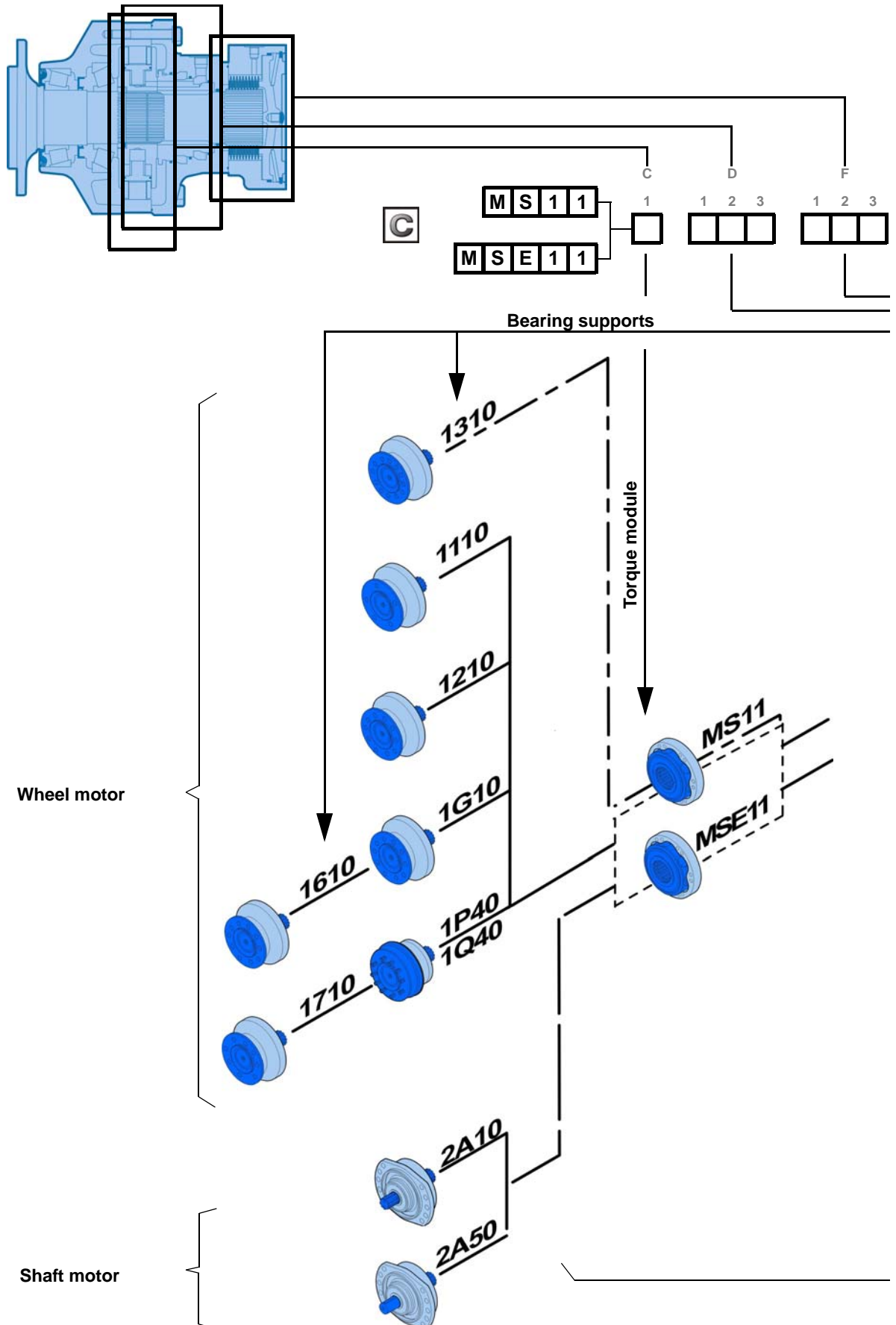


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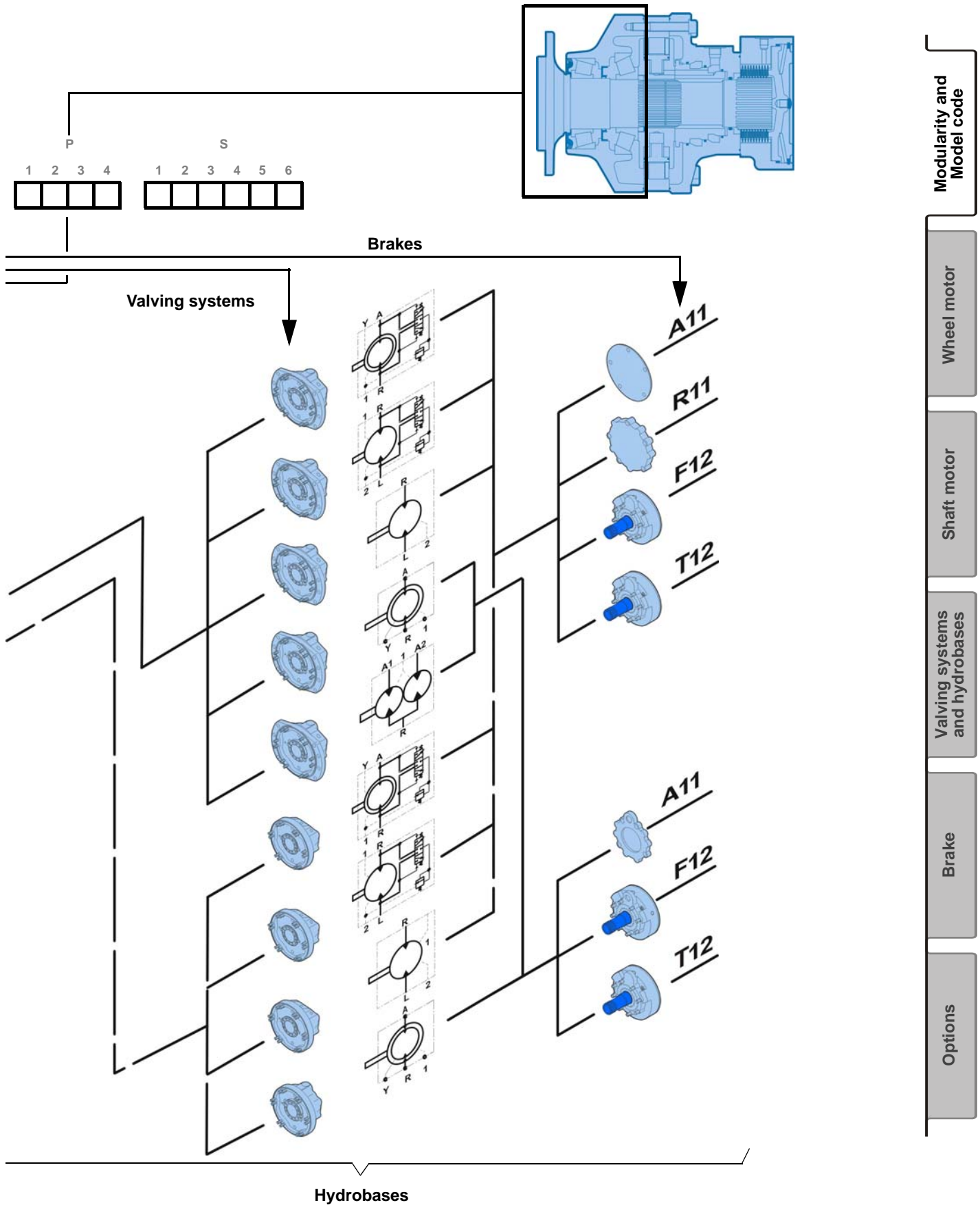


# MODUL



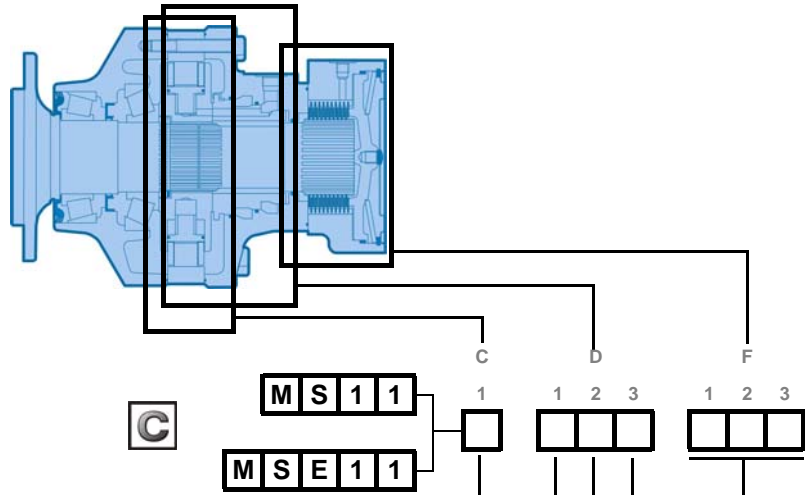


# ARITY





# MODEL



|                         |       | cm <sup>3</sup> /tr [cu.in/rev.] |                          |
|-------------------------|-------|----------------------------------|--------------------------|
|                         |       | 1                                | 2                        |
| Cams with equal lobes   | MS11  | 7                                | 730 [44,5] 365 [22,3]    |
|                         |       | 8                                | 837 [51,0] 419 [25,5]    |
|                         |       | 9                                | 943 [57,5] 472 [28,8]    |
|                         |       | 0                                | 1 048 [63,9] 524 [32,0]  |
|                         |       | 1                                | 1 147 [70,0] 574 [35,0]  |
|                         |       | 2                                | 1 259 [76,8] 630 [38,4]  |
| Cams with unequal lobes | MSE11 | 9                                | 1 263 [77,0] 632 [38,5]  |
|                         |       | 0                                | 1 404 [85,6] 702 [42,8]  |
|                         |       | 1                                | 1 536 [93,7] 768 [46,8]  |
|                         |       | 2                                | 1 687 [102,9] 844 [51,4] |

|                         |       |   |                         |
|-------------------------|-------|---|-------------------------|
| Cams with unequal lobes | MS11  | A | 1 048 [63,9] 629 [38,4] |
|                         |       |   | 419 [25,6]              |
| Cams with unequal lobes | MSE11 | A | 1 404 [85,6] 843 [51,4] |
|                         |       |   | 561 [34,2]              |

| 1  | 2                                     |
|--|---------------------------------------|
| First displacement                                     |                                       |
| Second displacement                                    |                                       |
| 1-displacement valving                                 | 1                                     |
| 2-displacement & Twin-Lock™ valving (Clockwise)        | D Ratio 2<br>E Ratio <2<br>F Ratio >2 |
| 2-displacement & Twin-Lock™ valving (Counterclockwise) | G Ratio 2<br>H Ratio <2<br>J Ratio >2 |

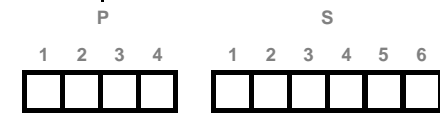
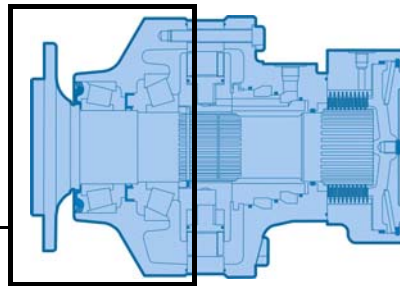
|                  |                |                |                     |
|------------------|----------------|----------------|---------------------|
| Without mounting | 1              | 4              | D                   |
| With mounting    | 2              | 5              | E                   |
|                  | 1 Displacement | 2 Displacement | Exchange Twin-Lock™ |

|                         |                    |
|-------------------------|--------------------|
| No transmission cover   | 0                  |
| ISO 6162 flanges        | 1 DN 19<br>2 DN 13 |
| ISO 9974-1 connections  | 1 DN 19<br>2 DN 13 |
| ISO 1179-1 connections  | 3                  |
| ISO 9974-1 connections  | 4                  |
| ISO 6162 flanges        | 1 DN 19<br>7       |
| ISO 11926-1 connections | 1 DN 19            |
| ISO 11926-1 connections | A                  |

|               |  |                |
|---------------|--|----------------|
| Without brake | Simple plate<br>Reinforced plate                           | A 1 1<br>R 1 1 |
| Brake         | Screwed environmental cover<br>Clipped environmental cover | T 1 2<br>F 1 2 |



# CODE



|   |                         |
|---|-------------------------|
| 0 | Without bearing support |
| 1 | Without mounting        |
| 2 | Lug mounting            |

|                                |                        |
|--------------------------------|------------------------|
| Without shaft                  | 0                      |
| 5 x Ø24 on Ø225                | 1                      |
| 10 x Ø22 on Ø225               | 2                      |
| 8 x Ø22 on Ø275                | 7                      |
| 12 x Ø20 on Ø205               | 3                      |
| 10 x Ø22 on Ø225               | 6                      |
| 10 x Ø24 on Ø225               | G                      |
| Drum brake (315 x 80)          | Mineral P<br>DOT 3&4 Q |
| For male shaft bearing support | A                      |

|                   |   |
|-------------------|---|
| Without studs     | 1 |
| With studs + nuts | 2 |
| With studs        | 3 |
| M threaded holes  | 4 |

|                    |   |
|--------------------|---|
| <b>Male shafts</b> |   |
| NF E22-141 splines | 1 |
| DIN 5480 splines   | 5 |

|                         |   |
|-------------------------|---|
| Connection              |   |
| Without cable           | 1 |
| Right-hand cable outlet | 2 |
| Left-hand cable outlet  | 3 |
| Without cable           | Q |
| Right-hand cable outlet | R |
| Left-hand cable outlet  | S |
| M14 x 1.5               |   |
| M10 x 1                 |   |

For drum brake (315 x 80)

|   |   |
|---|---|
| Without Options or Adaptations                  | 0 |
| Fluorinated elastomer seals                     | 1 |
| T4 speed sensor (without rotation direction)    | 2 |
| Brake environmental cover without plug          | 3 |
| Drainage  | 5 |
| Industrial bearing support                      | 6 |
| Diamond™  | 7 |
| Predisposition for speed sensor                 | 8 |
| Double-centering valving cover                  | 9 |
| Hollow shaft                                    | A |
| Drain on the bearing support                    | B |
| Abrasive environment                            | C |
| Special paint or without paint                  | D |
| Reinforced sealing                              | E |
| Special wheel rim mounting                      | G |
| High performance                                | H |
| Surface heat treatment of the shaft             | J |
| High speed                                      | M |
| TD speed sensor (two phase shifted frequencies) | Q |
| TR speed sensor (digital rotation direction)    | S |
| Soft Shift™                                     | T |

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options



**Methodology :**

This document is intended for manufacturers of machines that incorporate Poclair Hydraulics products. It describes the technical characteristics of Poclair Hydraulics products and specifies installation conditions that will ensure optimum operation. This document includes important comments concerning safety. They are indicated in the following way:



**Safety comment.**

This document also includes essential operating instructions for the product and general information. These are indicated in the following way:



**Essential instructions.**



**General information .**



**Information on the model number.**



**Weight of component without oil.**



**Volume of oil.**



**Units.**



**Tightening torque.**



**Screws.**



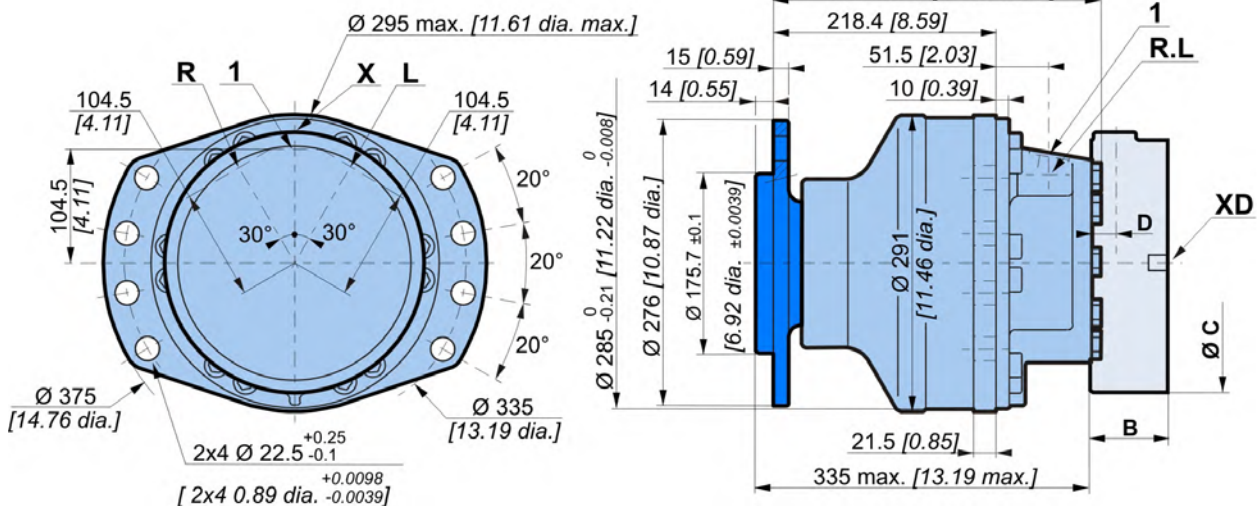
**Information intended for Poclair-Hydraulics personnel.**

The views in this document are created using metric standards. The dimensional data is given in mm and in inches (inches are given in brackets in italic)



**Dimensions for standard (1110) 1-displacement motor**

|  |                 |                  |
|--|-----------------|------------------|
|  | 86 kg [189 lb]  | 112 kg [246 lb]  |
|  | 2 L [120 cu.in] | 1,5 L [90 cu.in] |
|  |                 |                  |

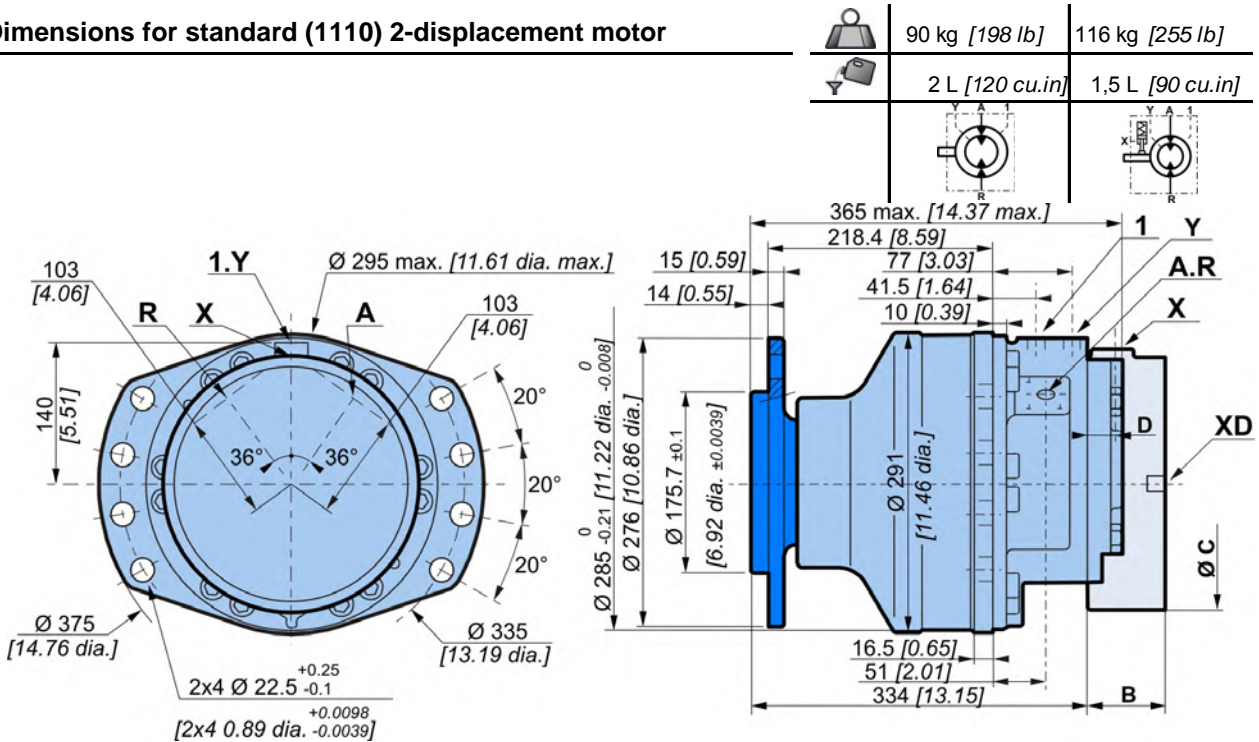




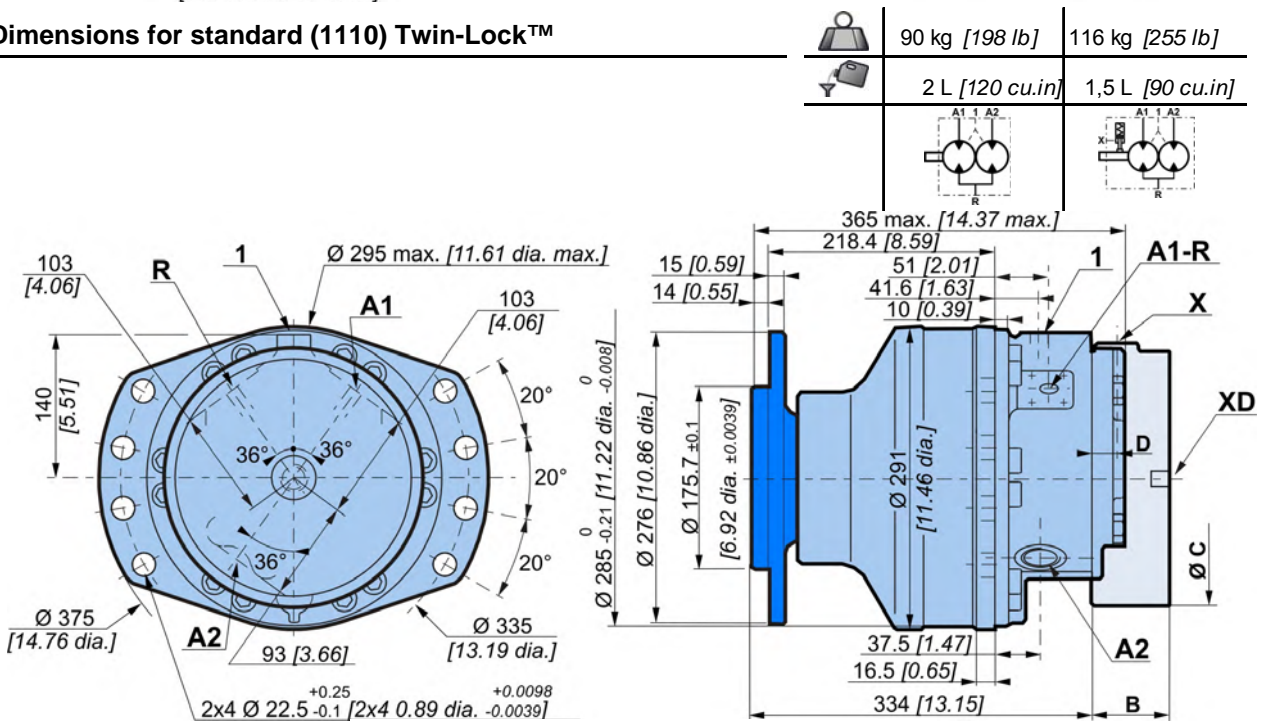


# WHEEL MOTOR

## Dimensions for standard (1110) 2-displacement motor



## Dimensions for standard (1110) Twin-Lock™



|   | F12           | T12            |
|---|---------------|----------------|
| B | 76,7 [3,02]   | 92,5 [3,64]    |
| C | Ø247,0 [9,72] | Ø273,6 [10,77] |
| D | 26,0 [1,02]   | 25,0 [0,96]    |



Also see 'Valving systems and hydrobases' section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

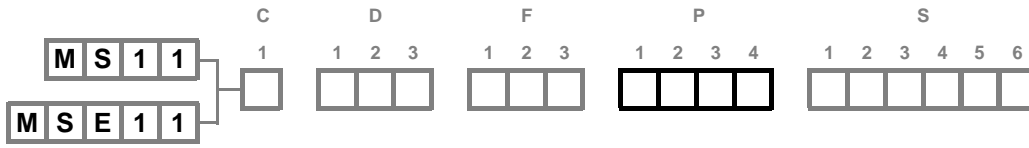
Valving systems and hydrobases

Brake

Options



Support types



| <b>C</b> | <b>A</b><br>mm [in]    | <b>B</b><br>mm [in]    | <b>C</b><br>mm [in]   | <b>D</b><br>mm [in] | <b>E</b><br>mm [in]     | <b>N</b><br>mm [in] | <b>Wheel rim mountings</b> | <b>L</b><br>mm [in] |  |
|----------|------------------------|------------------------|-----------------------|---------------------|-------------------------|---------------------|----------------------------|---------------------|--|
|          | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.]   | Ø 276<br>[10.87 dia.] | 218.6<br>[8.61]     | Ø 291<br>[11.46 dia.]   | Ø 24<br>[0.94 dia.] | 5 x<br>M22x1.5             | 14<br>[0.55]        |  |
|          | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.]   | Ø 276<br>[10.87 dia.] | 218.6<br>[8.61]     | Ø 291<br>[11.46 dia.]   | Ø 22<br>[0.87 dia.] | 10 x<br>M20x1.5            | 14<br>[0.55]        |  |
|          | Ø 160.7<br>[6.33 dia.] | Ø 205.0<br>[8.07 dia.] | Ø 250<br>[9.84 dia.]  | 174.4<br>[6.87]     | Ø 289.5<br>[11.40 dia.] | Ø 20<br>[0.79 dia.] | 12 x<br>M18x1.5            | 15<br>[0.59]        |  |
|          | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.]   | Ø 276<br>[10.87 dia.] | 219.6<br>[8.65]     | Ø 291<br>[11.46 dia.]   | Ø 22<br>[0.87 dia.] | 10 x<br>M20x1.5            | 21<br>[0.83]        |  |
|          | Ø 220.7<br>[8.69 dia.] | Ø 275<br>[10.83 dia.]  | Ø 314<br>[12.36 dia.] | 218.6<br>[8.61]     | Ø 291<br>[11.46 dia.]   | Ø 22<br>[0.87 dia.] | 8 x<br>M20x1.5             | 14<br>[0.55]        |  |



The supports in gray must not be assembled with an MSE hydrobase.

Studs

|               |           | <b>P</b><br>mm [in] | <b>C min.</b><br>mm [in] | <b>C max.</b><br>mm [in] | <b>D</b><br>mm [in] | <b>Class</b>    |
|---------------|-----------|---------------------|--------------------------|--------------------------|---------------------|-----------------|
| Various studs | M18 x 1.5 | 55 [2,17]           | 5 [0,20]                 | 17 [0,67]                | 23 [0,91]           | <br><b>12,9</b> |
|               | M20 x 1.5 | 60 [2,36]           |                          | 14 [0,55]                | 25 [0,98]           |                 |
|               | M22 x 1.5 | 65 [2,56]           |                          | 24 [0,94]                | 26 [1,02]           |                 |
| Screws        | M12       |                     |                          |                          |                     |                 |



You can accumulate more than one optional part. Consult your Poclair Hydraulics sales engineer.



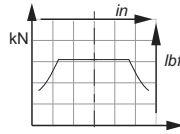
Load curves

Permissible radial loads

Test conditions :

Static : 0 tr/min [0 RPM] 0 bar [0 PSI]

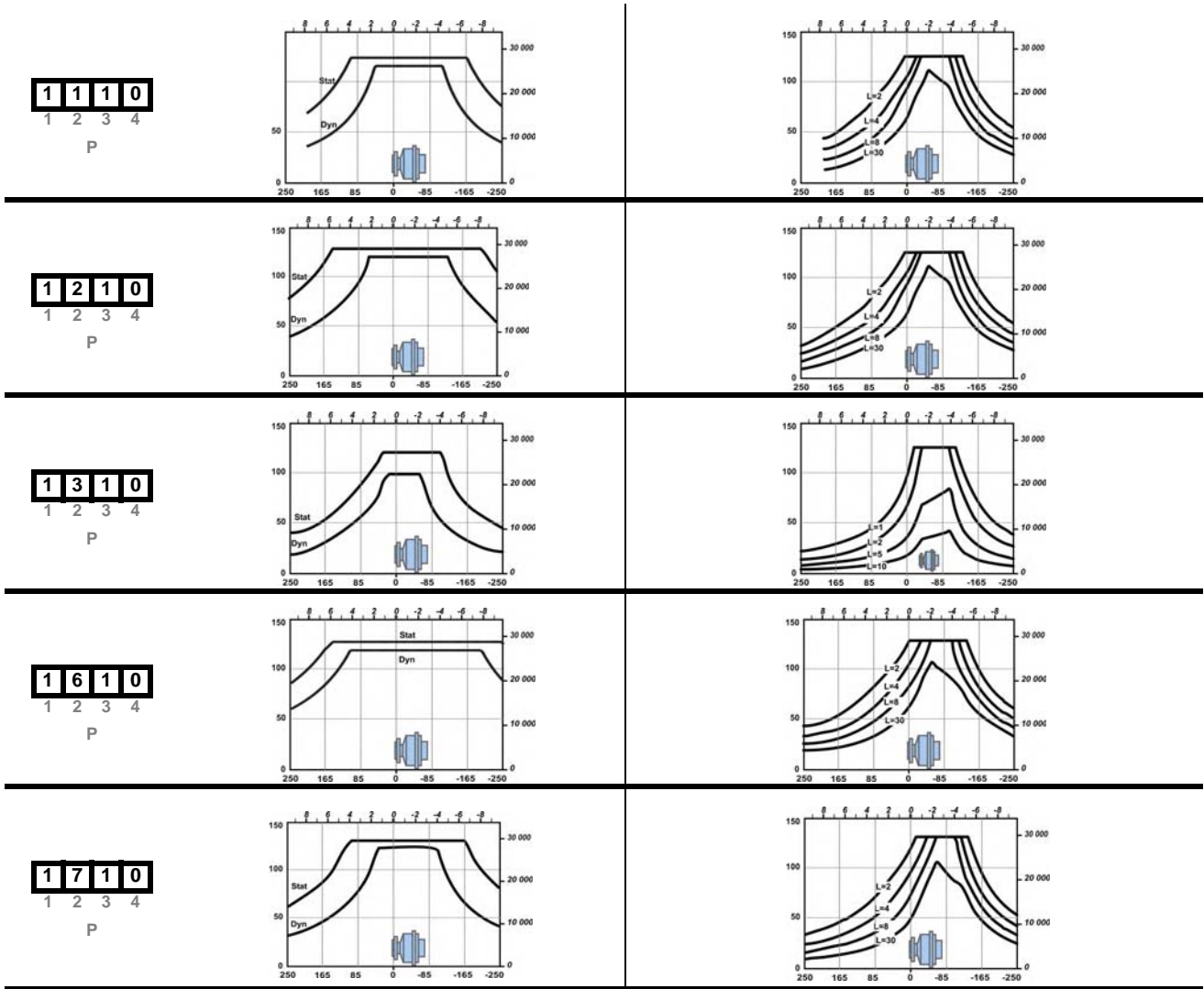
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



Service life of bearings

Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.



Modularity and Model code

Wheel motor

Shaft motor

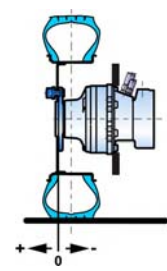
Valving systems and hydrobases

Brake

Options

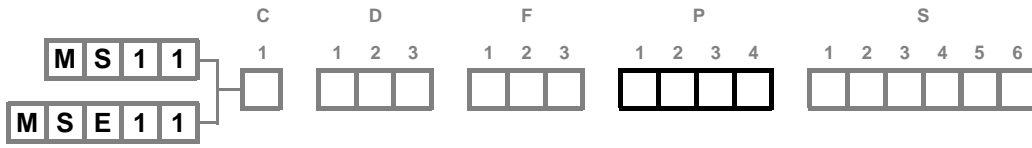


The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclair Hydraulics application engineer.





Support types (continued)



| <b>C</b>   | <b>A</b><br>m m [in] | <b>B</b><br>m m [in] | <b>C</b><br>m m [in] | <b>D</b><br>m m [in] | <b>E</b><br>m m [in] | <b>N</b><br>m m [in] | <b>Wheel rim mountings</b> | <b>L</b><br>m m [in] |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|----------------------|---|--|---|--|--|--|---|--|------------------------|----------------------|-----------------------|------------------|------------------------|----------------------|-----------------------|------------------|--|--|-----------------|--------------|--|
| <table border="1"> <tr><td>1</td><td>G</td><td>1</td><td>0</td></tr> <tr><td>1</td><td></td><td>2</td><td></td></tr> <tr><td></td><td></td><td>3</td><td></td></tr> <tr><td></td><td></td><td>4</td><td></td></tr> </table> <p style="text-align: center;">P</p>   | 1                    | G                    | 1                    | 0                    | 1                    |                      | 2                          |                      |   |  | 3 |  |  |  | 4 |  | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.] | Ø 270<br>[10.63 dia.] | 284.6<br>[11.20] | Ø 291<br>[11.46 dia.]  | Ø 24<br>[0.94 dia.]  | 10 x<br>M22x1.5       | 16<br>[0.63]     |  |  |                 |              |  |
| 1  | G                    | 1                    | 0                    |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| 1  |                      | 2                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 3                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 4                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| <table border="1"> <tr><td>1</td><td>Q</td><td>4</td><td>0</td></tr> <tr><td>1</td><td>P</td><td>4</td><td>0</td></tr> <tr><td>1</td><td></td><td>2</td><td></td></tr> <tr><td></td><td></td><td>3</td><td></td></tr> <tr><td></td><td></td><td>4</td><td></td></tr> </table> <p style="text-align: center;">P</p> | 1                    | Q                    | 4                    | 0                    | 1                    | P                    | 4                          | 0                    | 1 |  | 2 |  |  |  | 3 |  |                        |                      | 4                     |                  | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.] | Ø 354<br>[13.94 dia.] | 294.6<br>[11.60] |  |  | 10 x<br>M22x1.5 | 39<br>[1.54] |  |
| 1  | Q                    | 4                    | 0                    |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| 1  | P                    | 4                    | 0                    |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| 1  |                      | 2                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 3                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 4                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| <table border="1"> <tr><td>1</td><td>P</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>Q</td><td>3</td><td>0</td></tr> <tr><td>1</td><td></td><td>2</td><td></td></tr> <tr><td></td><td></td><td>3</td><td></td></tr> <tr><td></td><td></td><td>4</td><td></td></tr> </table> <p style="text-align: center;">P</p> | 1                    | P                    | 3                    | 0                    | 1                    | Q                    | 3                          | 0                    | 1 |  | 2 |  |  |  | 3 |  |                        |                      | 4                     |                  | Ø 175.7<br>[6.92 dia.] | Ø 225<br>[8.86 dia.] | Ø 354<br>[13.94 dia.] | 294.6<br>[11.60] |  |  | 10 x<br>M22x10  | 39<br>[1.54] |  |
| 1  | P                    | 3                    | 0                    |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| 1  | Q                    | 3                    | 0                    |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
| 1  |                      | 2                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 3                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |
|  |                      | 4                    |                      |                      |                      |                      |                            |                      |   |  |   |  |  |  |   |  |                        |                      |                       |                  |                        |                      |                       |                  |  |  |                 |              |  |

Also see "Brake" section (thumbnail opposite).

Also see "Brake" section (thumbnail opposite).



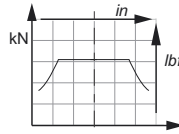
Load curves (continued)

**Permissible radial loads**

Test conditions :

**Static** : 0 tr/min [0 RPM] 0 bar [0 PSI]

**Dynamic** : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



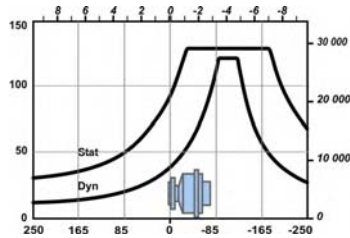
**Service life of bearings**

Test conditions :

**L** : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

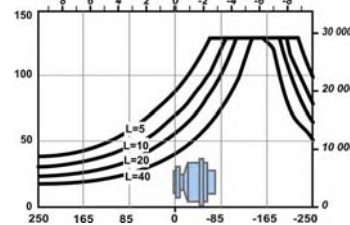
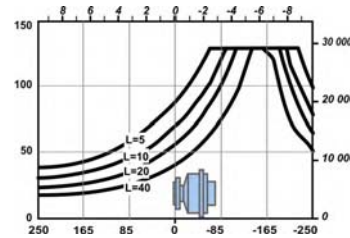
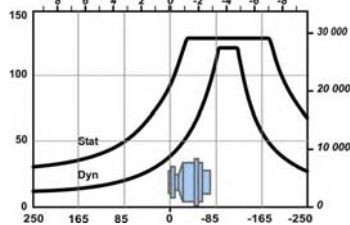
|   |   |   |   |
|---|---|---|---|
| 1 | G | 1 | 0 |
| 1 | 2 | 3 | 4 |

P

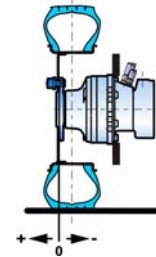


|   |   |   |   |
|---|---|---|---|
| 1 | P | 3 | 0 |
| 1 | Q | 3 | 0 |
| 1 | P | 4 | 0 |
| 1 | Q | 4 | 0 |
| 1 | 2 | 3 | 4 |

P



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclair Hydraulics application engineer.



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

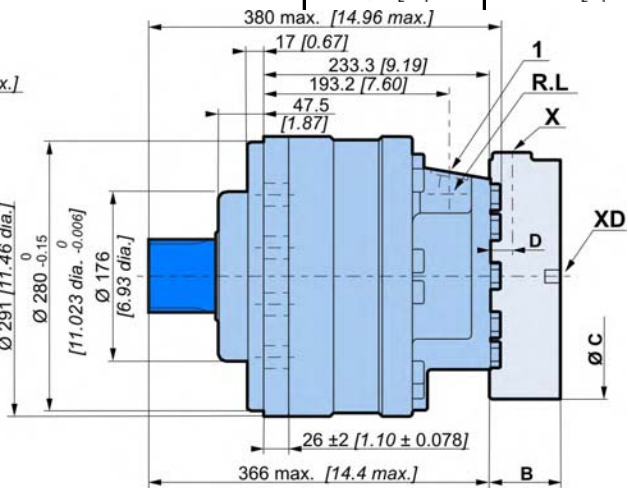
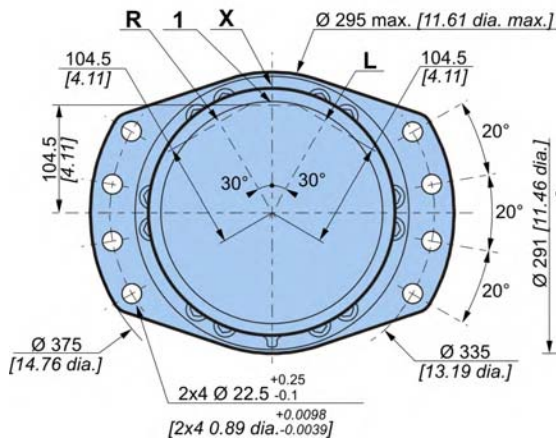
Options





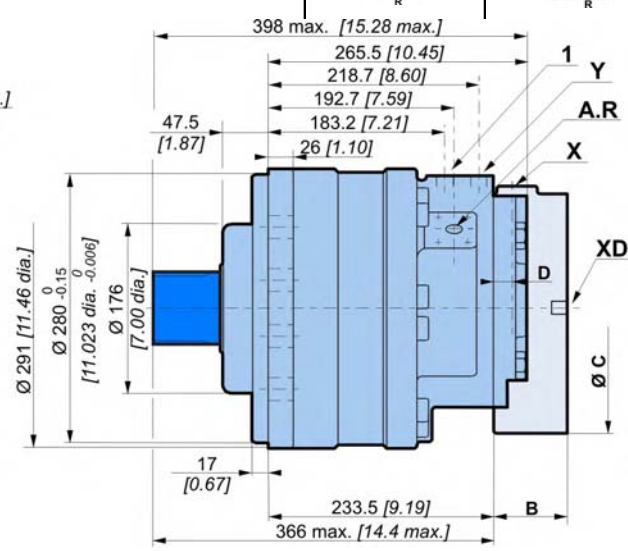
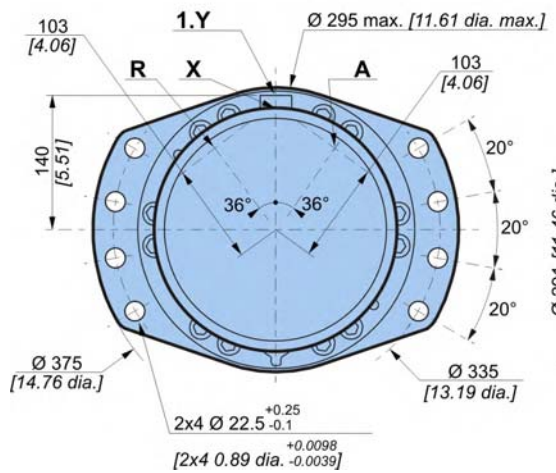
# SHAFT MOTOR

## Dimensions for standard (2A50) 1-displacement motor



|  |                 |                  |
|--|-----------------|------------------|
|  | 88 kg [194 lb]  | 114 kg [251 lb]  |
|  | 2 L [120 cu.in] | 1,5 L [90 cu.in] |
|  |                 |                  |

## Dimensions for standard (2A50) 2-displacement motor



|  |                 |                  |
|--|-----------------|------------------|
|  | 88 kg [194 lb]  | 114 kg [251 lb]  |
|  | 2 L [120 cu.in] | 1,5 L [90 cu.in] |
|  |                 |                  |

| <b>C</b> | <b>F12</b>    | <b>T12</b>     |
|----------|---------------|----------------|
| <b>B</b> | 76,7 [3,02]   | 92,5 [3,64]    |
| <b>C</b> | Ø247,0 [9,72] | Ø273,6 [10,77] |
| <b>D</b> | 26,0 [1,02]   | 25,0 [0,96]    |

Also see 'Valving systems and hydrobases' section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

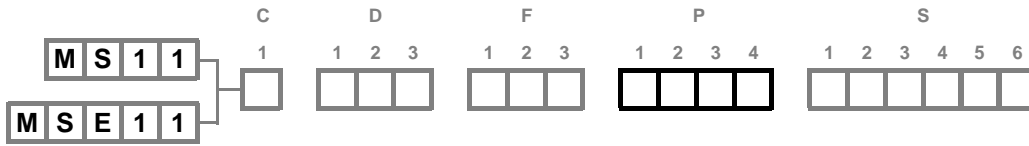
Valving systems and hydrobases

Brake

Options



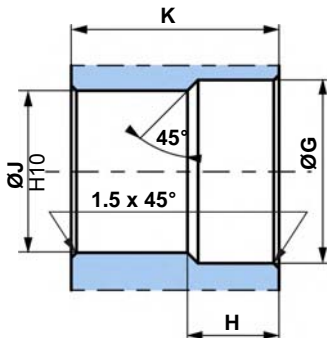
**Support types**



| <b>C</b>                  |           | A      | B        | C      | D       | E      | F      |  |
|---------------------------|-----------|--------|----------|--------|---------|--------|--------|--|
| <b>DIN 5480 splines</b>   |           |        |          |        |         |        |        |  |
| <b>2 A 5 0</b>            | Nominal Ø | 15     | R 2,75   | 35     | 2 x M10 | 23     | 80     |  |
| 1 2 3 4<br>P              | Module    | [0,59] | [R 0,11] | [1,38] |         | [0,91] | [3,15] |  |
|                           | Z         |        |          |        |         |        |        |  |
|                           |           |        |          |        |         |        |        |  |
| <b>NF E22-141 splines</b> |           |        |          |        |         |        |        |  |
| <b>2 A 1 0</b>            | Nominal Ø | 15     | R 2,75   | 35     | 2 x M10 | 24     | 70     |  |
| 1 2 3 4<br>P              | Module    | [0,59] | [R 0,11] | [1,38] |         | [0,94] | [2,76] |  |
|                           | Z         |        |          |        |         |        |        |  |

Also see 'Valving systems and hydrobases' section (thumbnail opposite).

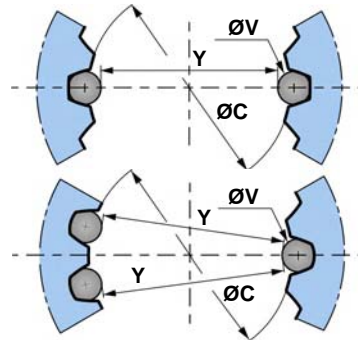
**Splined coupling**



**N** : Nominal Ø.  
**Mo** : Module.  
**Z** : Number of teeth.

**Standard DIN 5480**  
Pressure angle 30°.  
Centering on flanks.  
Slide fit (7H quality).

**Standard NF E22-141**  
Pressure angle 20°.  
Centering on flanks.  
Slide fit (7H quality).



| <b>C</b>       |              | Ø G    | H      | Ø J    | K      | N      | Mo  | Z  | Offset   | Ø C (H10) | Ø V    | Y      | Tolerance µm [µin] |
|----------------|--------------|--------|--------|--------|--------|--------|-----|----|----------|-----------|--------|--------|--------------------|
| <b>2 A 1 0</b> | 1 2 3 4<br>P | 76     | 25     | 70     | 69     | 75     | 2,5 | 28 | 2        | 70        | 5      | 65,169 | + 103 / 0          |
|                |              | [2,99] | [0,98] | [2,76] | [2,72] | [2,95] |     |    | [0,08]   | [2,76]    | [0,20] | [2,57] | [+4.055 / 0]       |
| <b>2 A 5 0</b> | 1 2 3 4<br>P | 81,5   | 25     | 74     | 79     | 80     | 3   | 25 | 0,85     | 74        | 5,25   | 68,957 | + 71 / 0           |
|                |              | [3,21] | [0,98] | [2,91] | [3,11] | [3,15] |     |    | [0,0335] | [2,91]    | [0,21] | [2,71] | [+2.795 / 0]       |

General tolerances : ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

Hardening treatment to obtain R = 800 to 900 N/mm<sup>2</sup> [R = 116 030 to 130 533 PSI].



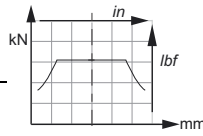


Load curves

Permissible radial loads

Max. permissible loads: 0 tr/min [0 RPM]; 0 bar [0 PSI]

Continuous permissible loads:  
 > 0 tr/min [> 0 RPM]; 275 bar [3 988 PSI].

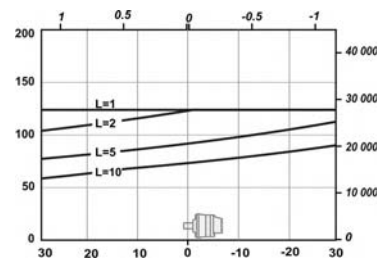
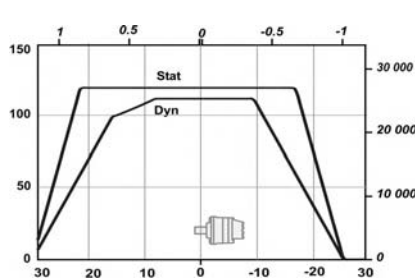


Service life of bearings

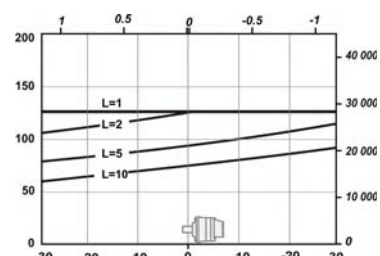
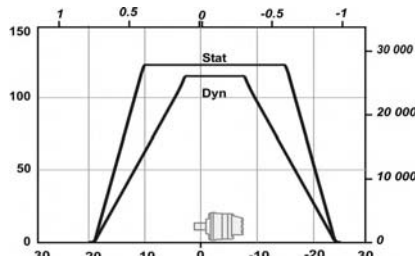
Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

**2 A 5 0**  
 1 2 3 4  
 P



**2 A 1 0**  
 1 2 3 4  
 P



Modularity and Model code

Wheel motor

Shaft motor

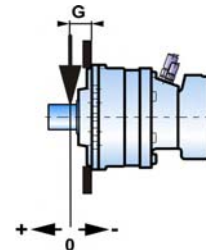
Valving systems and hydrobases

Brake

Options



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclair Hydraulics application engineer.

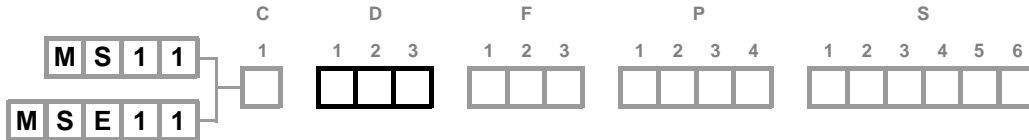


| C              | G             |
|----------------|---------------|
| <b>2 A 1 0</b> | 96,75 [3,81]  |
| <b>2 A 5 0</b> | 101,25 [3,99] |



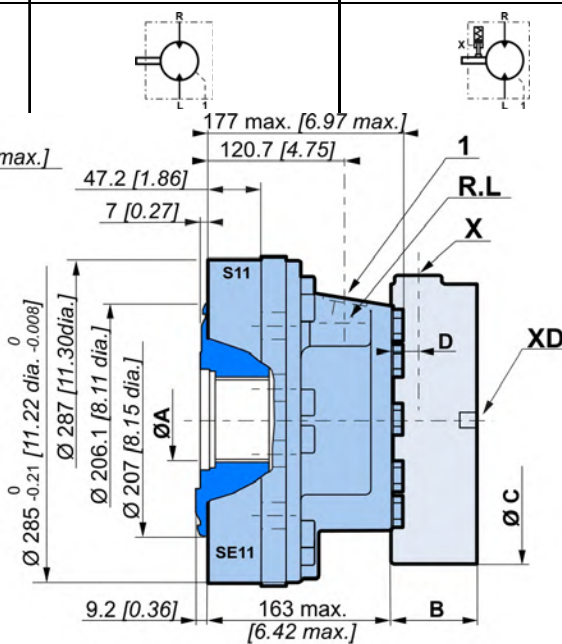
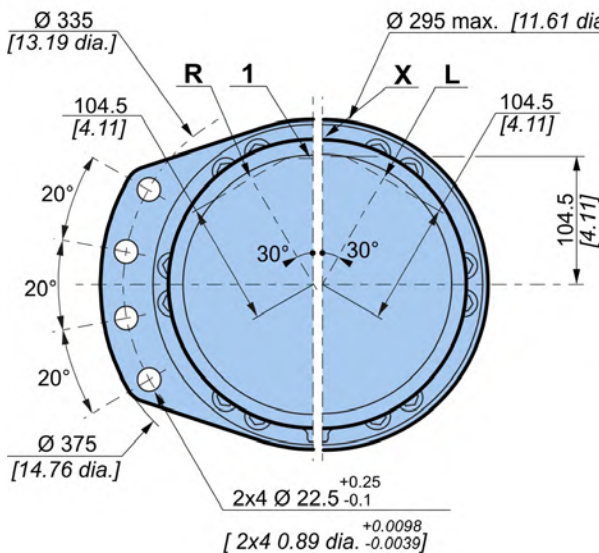


# VALVING SYSTEMS AND HYDROBASES



## Dimensions for 1-displacement valving

|                   |                    |                   |                    |
|-------------------|--------------------|-------------------|--------------------|
| <b>1 1</b>        | 44 kg [97 lb]      | <b>F 1 2</b>      | 67,5 kg [148,5 lb] |
| <b>1 2</b>        | 48,9 kg [107,6 lb] |                   | 72,4 kg [159,3 lb] |
| 0,75 L [45 cu.in] |                    | 0,92 L [55 cu.in] |                    |

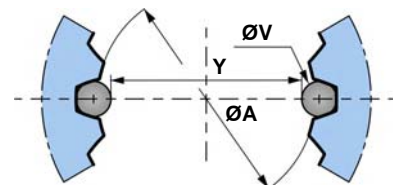


| <b>C</b> | F12           | T12            |
|----------|---------------|----------------|
| B        | 76,7 [3,02]   | 92,5 [3,64]    |
| C        | Ø247,0 [9,72] | Ø273,6 [10,77] |
| D        | 26,0 [1,02]   | 25,0 [0,96]    |

## Cylinder block splines

(as per standard NF E22-141)

| ØA         | Module | z  | Dimension on 2 pins |           |
|------------|--------|----|---------------------|-----------|
|            |        |    | Y                   | ØV        |
| 75 [2,953] | 2,5    | 28 | 65,169 [2,739]      | 5 [0,197] |



You are advised to have the installation validated by your Poclair Hydraulics application engineer before using the hydraulic unit in an application.



We must provide you with a detailed plan of the interface for any hydraulic unit use, consult your Poclair Hydraulics sales engineer.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

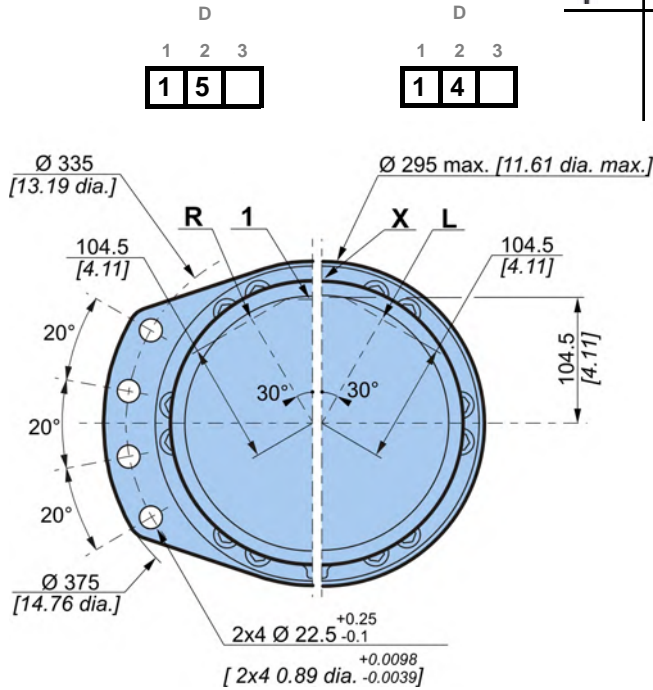
Brake

Options

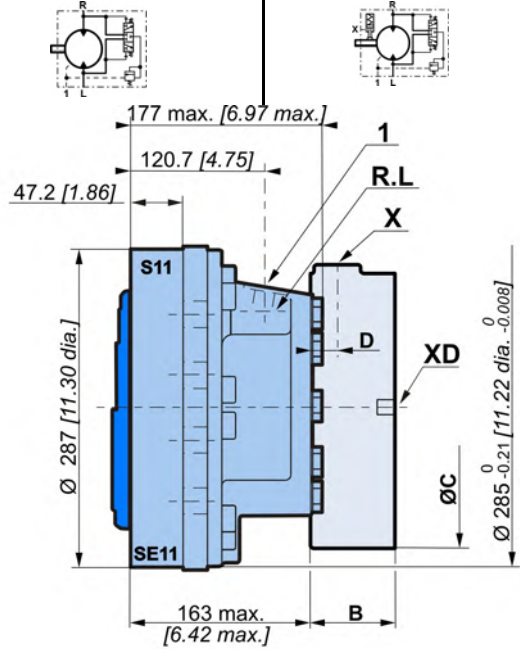




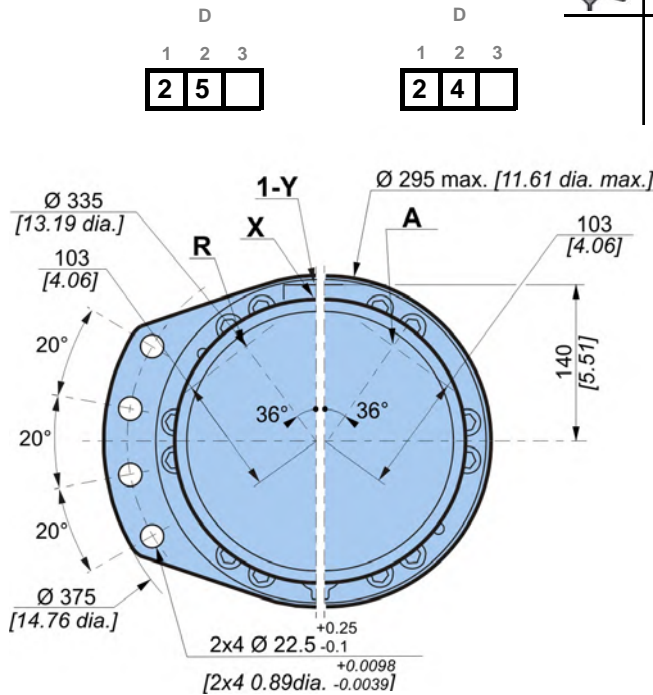
**Dimensions for 1-displacement valving with built-in exchange**



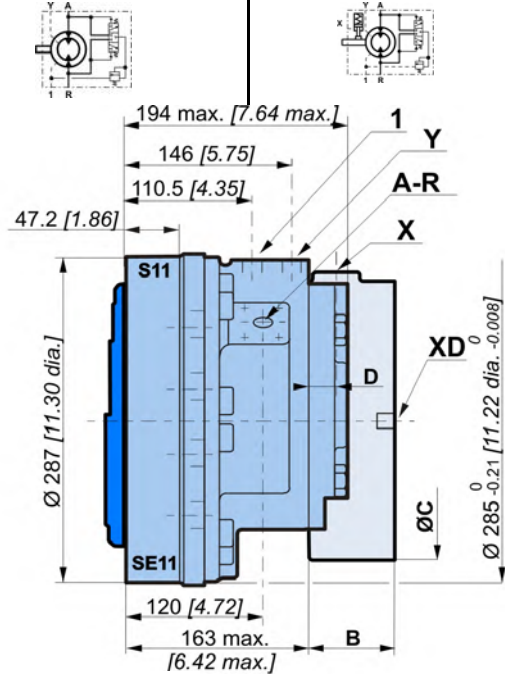
|  |            |                    |              |                    |
|--|------------|--------------------|--------------|--------------------|
|  | <b>1 5</b> | 44 kg [97 lb]      | <b>F 1 2</b> | 67,5 kg [148,5 lb] |
|  | <b>1 4</b> | 48,9 kg [107,6 lb] |              | 72,4 kg [159,3 lb] |
|  |            | 0,75 L [45 cu.in]  |              | 0,92 L [55 cu.in]  |



**Dimensions for 2-displacement valving with built-in exchange**



|  |            |                    |              |                    |
|--|------------|--------------------|--------------|--------------------|
|  | <b>1 5</b> | 44 kg [97 lb]      | <b>F 1 2</b> | 67,5 kg [148,5 lb] |
|  | <b>1 4</b> | 48,9 kg [107,6 lb] |              | 72,4 kg [159,3 lb] |
|  |            | 0,75 L [45 cu.in]  |              | 0,92 L [55 cu.in]  |



| <b>C</b> | <b>F12</b>    | <b>T12</b>     |
|----------|---------------|----------------|
| <b>B</b> | 76,7 [3,02]   | 92,5 [3,64]    |
| <b>C</b> | Ø247,0 [9,72] | Ø273,6 [10,77] |
| <b>D</b> | 26,0 [1,02]   | 25,0 [0,96]    |

Modularity and Model code

Wheel motor

Shaft motor



Valving systems and hydrobases

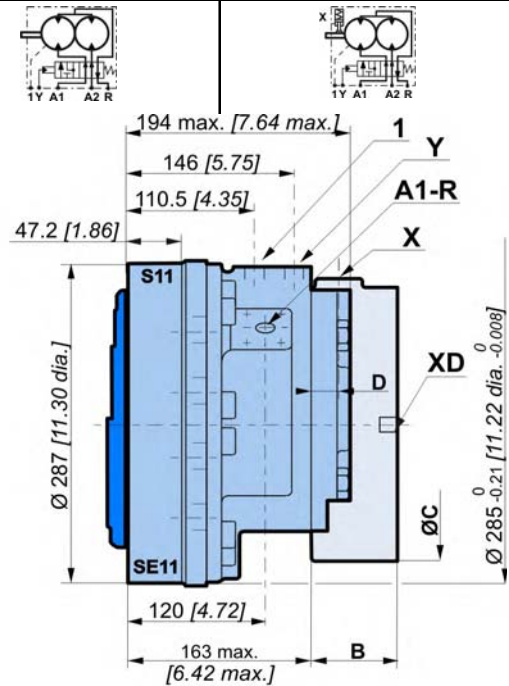
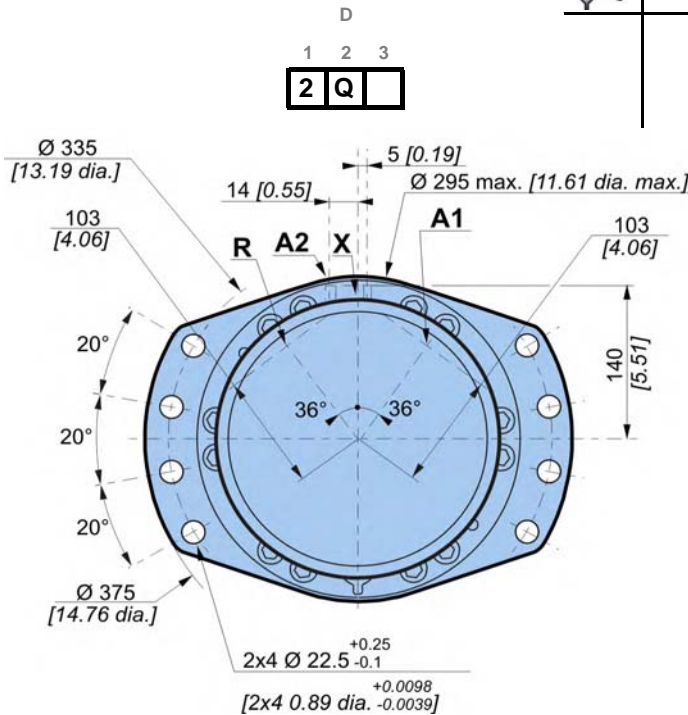
Brake

Options



**Dimensions for 2-displacement valving or Twin-Lock™ valving**

|   |                    |                                 |
|---|--------------------|---------------------------------|
|  | 48,9 kg [107,6 lb] | <b>F 1 2</b> 72,4 kg [159,3 lb] |
|  | 0,75 L [45 cu.in]  | 0,92 L [55 cu.in]               |



**Exchange**

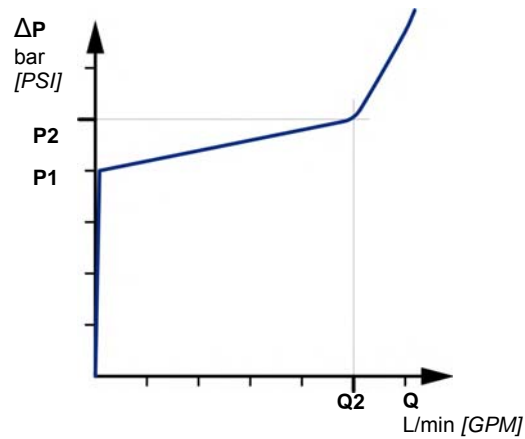
When a coding request is made, you must specify information on the threshold of the selector and the valve.

**Selector spool**

| Selector threshold<br>bar [PSI] | Opening pressure of selector<br>bar [PSI] |
|---------------------------------|---|
| 8 [116]                         | 9.9 ±1.2 [144 ±17]                        |

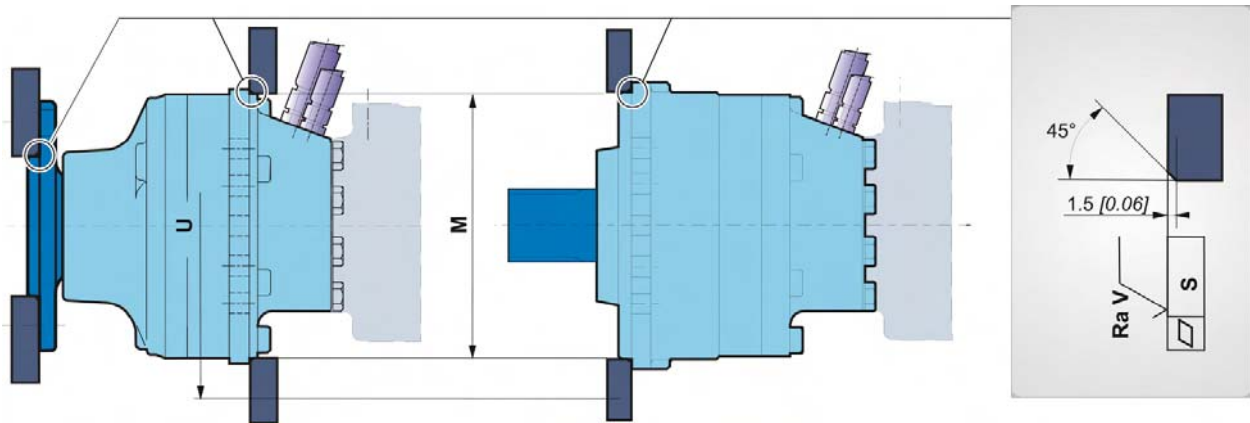
**Fitted valve**

| P1<br>bar [PSI] | Q2<br>L/min [GPM] | P2<br>bar [PSI] |
|-----------------|-------------------|-----------------|
| 13.5 [195]      | 14 [3.7]          | 16 [232]        |
| 18 [261]        | 15 [3.9]          | 21 [305]        |
| 22 [319]        | 16 [4.2]          | 25 [363]        |







Chassis mountings



Take care over the immediate environment of the connections.

|             | $\varnothing M$ <sup>(1)</sup> | $\varnothing U$ | S              | Ra V                            |  | Class |  * |
|-------------|--------------------------------|-----------------|----------------|---------------------------------|---|-------|---|
| Wheel motor | 285<br>[11,22]                 | 335<br>[13,19]  | 0,2<br>[0,008] | 12,5 $\mu$ m<br>[0,49 $\mu$ in] | 2 x 4<br>4 x M20  | 8,8   | 410 N.m<br>[302 lb.ft]  |
| Shaft motor | 280<br>[11,02]                 | 335<br>[13,19]  |                |                                 |   |       |   |

(1) +0,3 [+0,012]  
+0,2 [+0,008]

\* : Min. values for torque and load to be transmitted.

Modularity and Model code

Wheel motor

Shaft motor

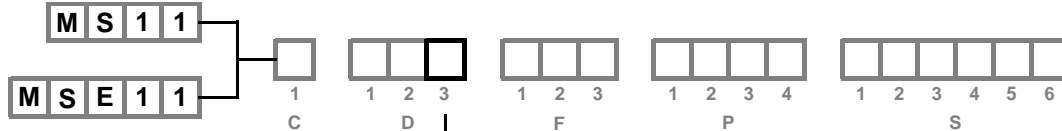
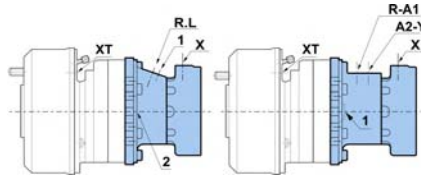
Valving systems and hydrobases

Brake

Options



Hydraulic connections



|                | Old standards | Standards              | Power supply              |             | Case drain                  | 2 <sup>nd</sup> displacement control | Control of parking brake | Control of drum brake |              |             |
|----------------|---------------|------------------------|---------------------------|-------------|-----------------------------|--------------------------------------|--------------------------|-----------------------|--------------|-------------|
| 1 displacement | A             | SAE J514               | ISO 11 926-1              |             | R-L                         | 1, 2                                 | X                        | XT                    |              |             |
|                | 1             | ISO 6 162<br>DIN 3 852 | ISO 6 162<br>ISO 9 974-1  |             | 1 <sup>st</sup> 1/16-12 UNF | 3/4"-16 UNF                          | 9/16"-18 UNF             |                       |              |             |
|                | 2             | ISO 6 162<br>BSPP      | ISO 6 162<br>ISO 1 179-1  |             | DN19 PN400                  | M18x1.5                              | M16x1.5                  |                       |              |             |
|                | 3             | BSPP                   | ISO 1 179-1               |             | DN19 PN400                  | Ø21<br>[1/2" dia.]                   | Ø17<br>[3/8" dia.]       |                       |              |             |
|                | 4             | NF E48 050             | ISO 9 974-1               |             | Ø27<br>[3/4" dia.]          | Ø21<br>[1/2" dia.]                   | Ø17<br>[3/8" dia.]       |                       |              |             |
|                | 5             | DIN 3 852              | ISO 9 974-1               |             | M27x2                       | M18x1.5                              | M16x1.5                  |                       |              |             |
|                | 7             | ISO 6 162<br>SAE J514  | ISO 6 162<br>ISO 11 926-1 |             | M33x2                       | M18x1.5                              | M16x1.5                  |                       |              |             |
|                | DN19 PN400    |                        |                           | 3/4"-16 UNF | 9/16"-18 UNF                |                                      |                          |                       |              |             |
| 2 Displacement | A             | SAE J514               | ISO 11 926-1              |             | R-A                         | 1, 2                                 | Y                        | X                     |              |             |
|                | 1             | ISO 6 162<br>DIN 3 852 | ISO 6 162<br>ISO 9 974-1  |             | 1 <sup>st</sup> 1/16-12 UNF | 3/4"-16 UNF                          | 9/16"-18 UNF             | 9/16"-18 UNF          |              |             |
|                | 2             | ISO 6 162<br>BSPP      | ISO 6 162<br>ISO 1 179-1  |             | DN13 PN400                  | M18x1.5                              | M16x1.5                  | M16x1.5               |              |             |
|                | 3             | BSPP                   | ISO 1 179-1               |             | DN13 PN400                  | Ø21<br>[1/2" dia.]                   | Ø17<br>[3/8" dia.]       | Ø17<br>[3/8" dia.]    |              |             |
|                | 4             | NF E48 050             | ISO 9 974-1               |             | Ø27<br>[3/4" dia.]          | Ø21<br>[1/2" dia.]                   | Ø17<br>[3/8" dia.]       | Ø17<br>[3/8" dia.]    |              |             |
| Twin-Lock™     | A             | SAE J514               | ISO 11 926-1              |             | R-A1                        | A2                                   | 1, 2                     | Y                     | X            |             |
|                | 1             | ISO 6 162<br>DIN 3 852 | ISO 6 162<br>ISO 9 974-1  |             | 1 <sup>st</sup> 1/16-12 UNF | 9/16"-18 UNF                         | 3/4"-16 UNF              | 9/16"-18 UNF          | 9/16"-18 UNF |             |
|                | 4             | NF E48 050             | ISO 9 974-1               |             | DN13 PN400                  | M27x2                                | M18x1.5                  | M16x1.5               | M16x1.5      |             |
|                |               |                        |                           |             | M27x2                       | M27x2<br>M22x1.5                     | M18x1.5                  | M16x1.5               | M16x1.5      |             |
|                |               |                        |                           |             |                             |                                      |                          | M10x1                 |              |             |
|                |               |                        |                           |             |                             |                                      |                          | M14x1.5               |              |             |
| Max. pressures | MS            |                        | MSE                       |             | 450 [6 527]                 | 450 [6 527]                          | 1 [15]                   | 30 [435]              | 30 [435]     | 120 [1 740] |
|                |               |                        |                           |             | 400 [5 802]                 | 400 [5 802]                          |                          |                       |              |             |



To find the connections' tightening torques, see the brochure "Installation guide" N° 801478197L.



You are strongly advised to use the fluids specified in brochure "Installation guide" N° 801478197L.



Do not put either a check valve or a poppet valve on the pilot lines (parking brake and displacement change) between the charge pump and the pilot valve. Do not use a piloting valve with integrated check valve.

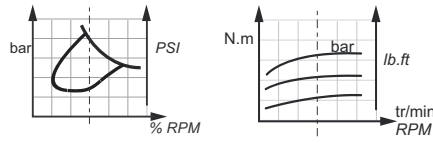




**Efficiency**

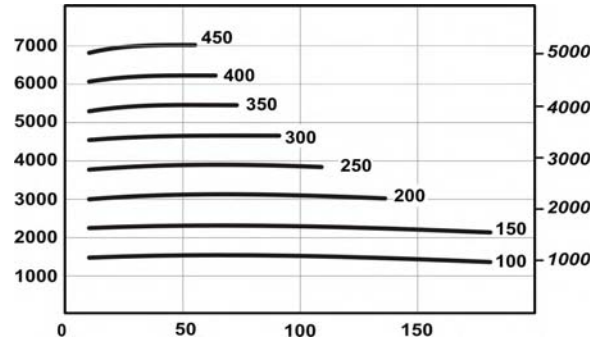
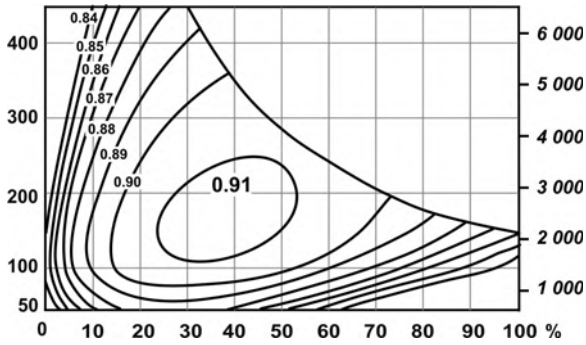
**Overall efficiency**

Average values given for guidance for code 0 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C [122°F].

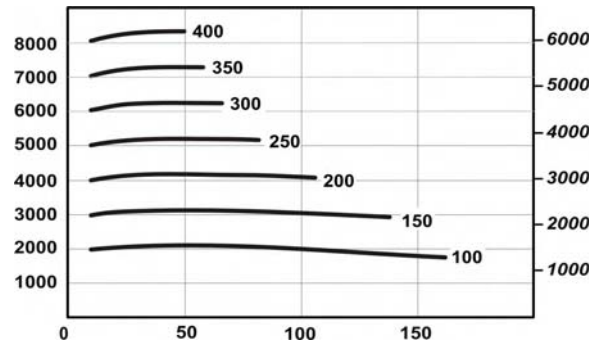
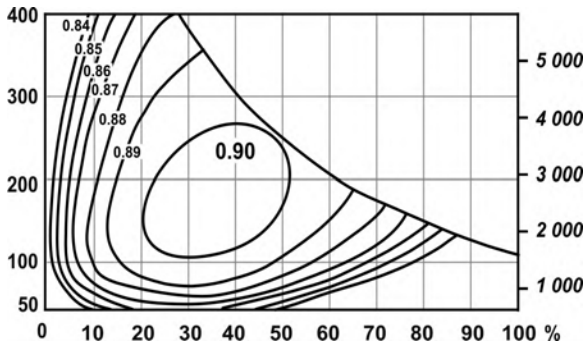


**Actual output torque**

**MS11**



**MSE11**



For a precise calculation, consult your Poclain Hydraulics application engineer.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

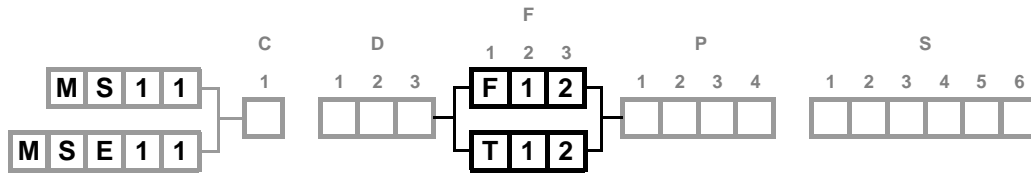
Brake

Options

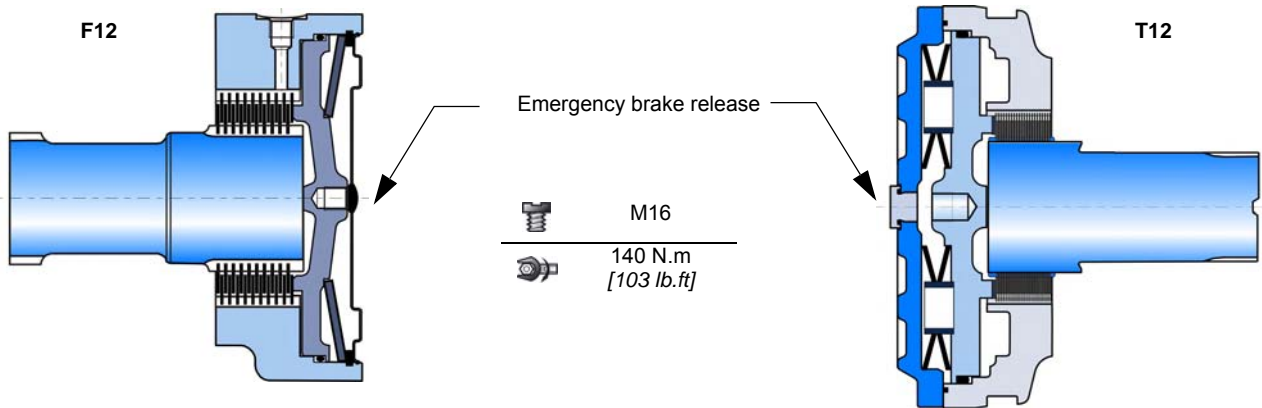




# BRAKES



## Rear brake



## Brake principle

This is a multidisc brake which is activated by a lack of pressure. The spring exerts a force on the piston, which presses on the fixed and mobile discs, and immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.

| C  | F 1 2<br>T 1 2                   |
|--|----------------------------------|
| Parking brake torque at 0 bars on housing (new brake)                                    | 11 840 Nm [8 730 lb.ft]          |
| Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes) | 7 695 Nm [5 680 lb.ft]           |
| Residual parking braking at 0 bars on housing *  | 8 880 Nm [6 550 lb.ft]           |
| Min. brake release pressure  | 12 bar [174 PSI]                 |
| Max. brake release pressure  | 30 bar [435 PSI]                 |
| Oil capacity   | 170 cm <sup>3</sup> [10,4 cu.in] |
| Volume for brake release   | 40 cm <sup>3</sup> [2,4 cu.in]   |
| Max. energy dissipation  | 123 699 J                        |

\* After emergency brake has been used



**Do not run-in the multidisc brakes.**



**A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/h, please contact your Poclain Hydraulics**

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

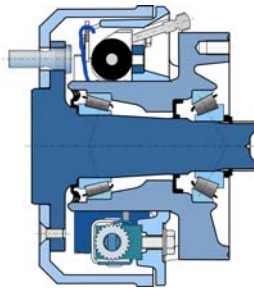
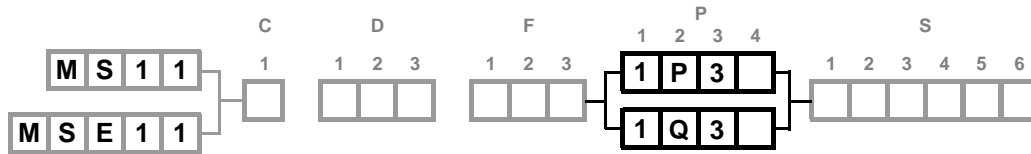
Brake

Options



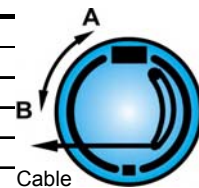
### Drum brake (315 x 80)

Diameter of brake pads : Ø 315 [12.4 dia.]  
 Width of friction surface : 80 [3.15]



|   |                                   |                                   |          |
|---|-----------------------------------|-----------------------------------|----------|
| <b>Brake pads</b>   | <b>315 x 80</b>                   |                                   | <b>C</b> |
| Asbestos free material                                      | BERAL 1518                        |                                   |          |
| Compensation for wear                                       | Automatic                         |                                   |          |
| <b>Hydraulically controlled dynamic braking</b>             |                                   |                                   |          |
| Max. permissible continuous brake torque                    | 7 200 N.m [5 310 lb.ft]           |                                   |          |
| Pressure to obtain max. permissible continuous brake torque | 71 bar [1 023 PSI]                |                                   |          |
| Max. permissible brake torque                               | 12 000 N.m [8 851 lb.ft]          |                                   |          |
| Pressure to obtain max. permissible brake torque            | 120 bar [1 740 PSI]               |                                   |          |
| <b>Brake cylinder filler hole</b>                           |                                   |                                   |          |
| Size  | M14 x 1.5                         | M10 x 1                           |          |
| Standard  | DIN 74234                         | DIN 74234                         |          |
| <b>Fluid</b>  |                                   |                                   |          |
| Mineral   | Yes                               | Yes                               | <b>P</b> |
| DOT 3/DOT4/SAE J1703  | No                                | Yes                               | <b>Q</b> |
| Max. volume required to bring pads into contact             | 5,38 cm <sup>3</sup> [0,33 cu.in] | 5,38 cm <sup>3</sup> [0,33 cu.in] |          |
| <b>Mechanically controlled parking brake</b>                |                                   |                                   |          |
| Max. braking torque   | 12 000 N.m [8 851 lb.ft]          |                                   |          |
| Max permissible force on the cable                          | 3 800 N [854 lbf]                 |                                   |          |
| Force required to bring pads into contact                   | 63,5 N [14,3 lbf]                 |                                   |          |
| Stroke required to bring pads into contact                  | <b>A</b>                          | 10,5 mm [0,41 "]                  |          |
|   | <b>B</b>                          | 12 mm [0,47 "]                    |          |
| Max. stroke before automatic brake adjustment               | <b>A</b>                          | 12,5 mm [0,49 "]                  |          |
|   | <b>B</b>                          | 14,5 mm [0,57 "]                  |          |

End view of shaft



The max. braking torque can only be obtained when the brake has been run in. Consult your Poclain Hydraulics application engineer.

#### Control

The drum brakes can be controlled hydraulically (service brake) and by a cable (mechanical control for parking brake).



Do not use hydraulic and mechanical brake controls simultaneously.



Brake release pressure vented.

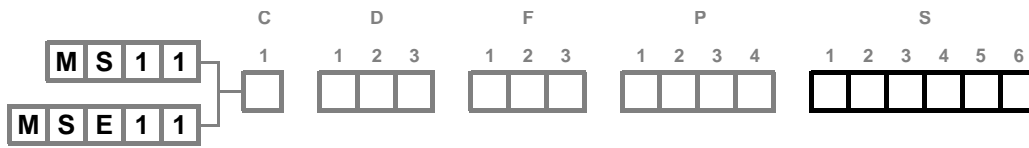


When making an encoding request, you must indicate the following information:

- The material of the brake linings,
- The type of connection at the end of the parking brake control cable,
- Fill out the technical questionnaire for validation of the brake.



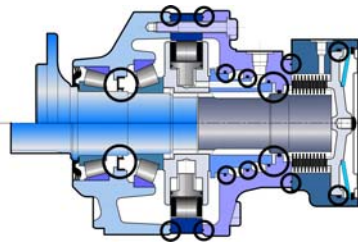
# OPTIONS



You can accumulate more than one optional part. Consult your Poclain Hydraulics sales engineer.

## 1 - Fluorinated elastomer seals

Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.

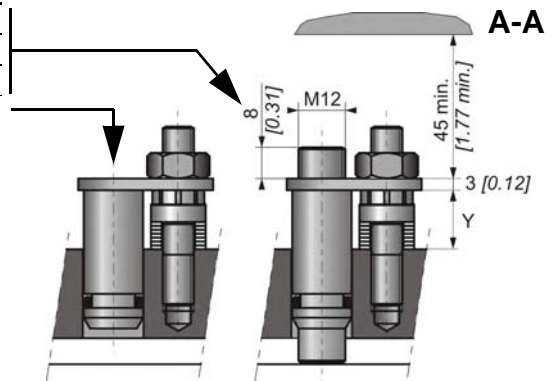
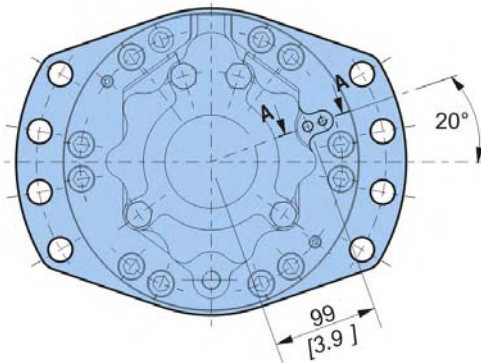


Consult your Poclain Hydraulics sales engineer.

## 2 - S - Q - 8 - Installed speed sensor or predisposition

### Designation

|   |   |
|---|---|
| T4 speed sensor (without rotation direction)    | 2 |
| TR speed sensor (digital rotation direction)    | S |
| TD speed sensor (two phase shifted frequencies) | Q |
| Predisposition for speed sensor                 | 8 |



Max. length Y= 20.9  
Standard number of pulses per revolution= 56



Look at the "Mobile Electronic" N° A01889D technical catalogue for the sensor specifications and its connection.



To install the sensor, see the "Installation guide" brochure No. 801478197L.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

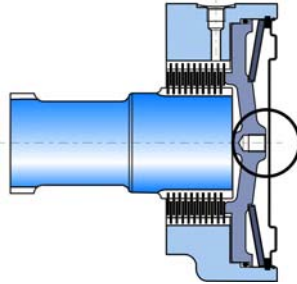
Brake

Options



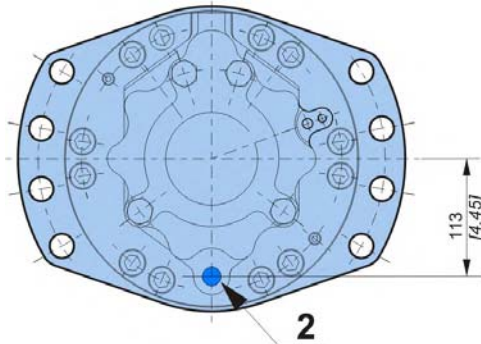
### 3 - Brake environmental cover without plug

No plug or hole in the cover.  
(see figure opposite)



### 5 - Drainage

Additional drain in the cover.

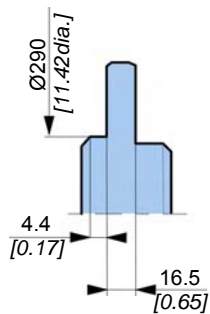


### 7 - Diamond™

Special treatment of the motor core which considerably increases its strength, making the motor much more tolerant to temporary instances of the operating conditions being exceeded.

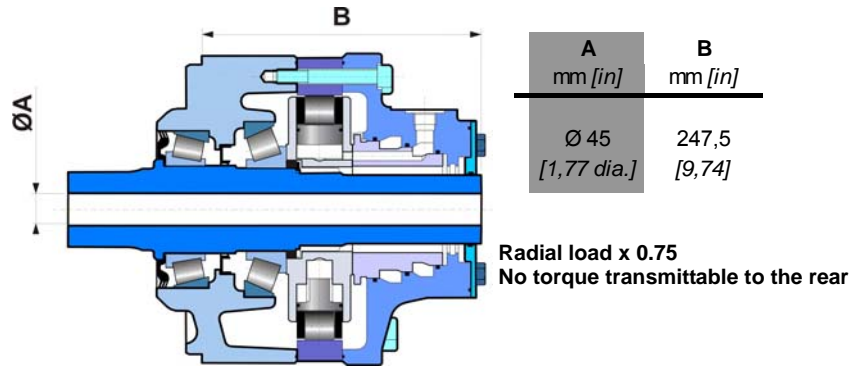
### 9 - Double-centering valving cover

This option allows a motor to be installed from the front or the back.

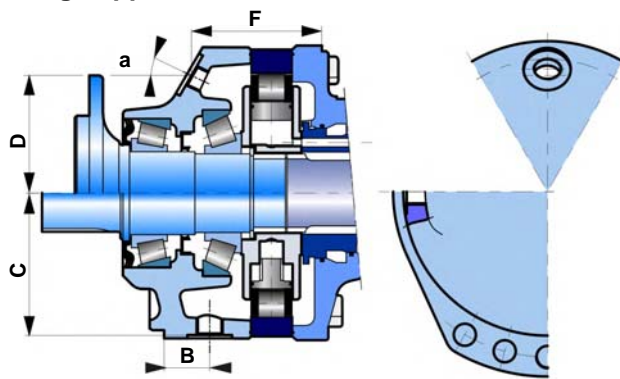




**A - Hollow shaft**



**B - Drain on the bearing support**



|             | ISO       | B           | C          | D          | F            | a   |
|-------------|-----------|-------------|------------|------------|--------------|-----|
|             |           | mm [in]     | mm [in]    | mm [in]    | mm [in]      |     |
| Shaft motor | M18 x 1.5 | 32,5 [1,28] | 143 [5,63] |            |              |     |
| Wheel motor | M18 x 1.5 |             |            | 112 [4,41] | 112,5 [4,43] | 30° |

**C - Abrasive environments (mechanical seal)**

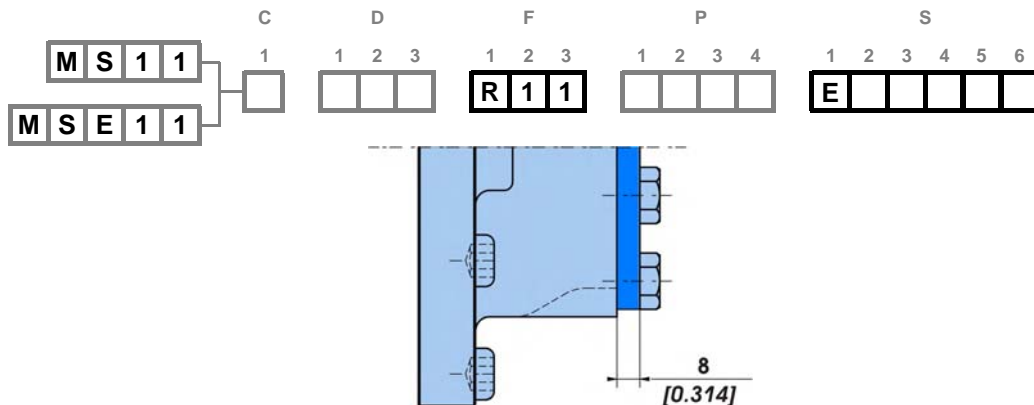
Certain environments can be very harmful. The mirror seal gives reinforced motor sealing.



Consult your Poclair Hydraulics sales engineer.

**E - Reinforced sealing**

Requires reinforced seals and, for an unbraked motor, a rear reinforced plate (R08 - 8 [0.314] thick, instead of 4 [0.157]).



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options



### G - Special wheel rim mounting

Enables certain combinations different from the standard mountings defined on pages 11 and 13.



Consult your Poclain Hydraulics sales engineer.

### H - High efficiency

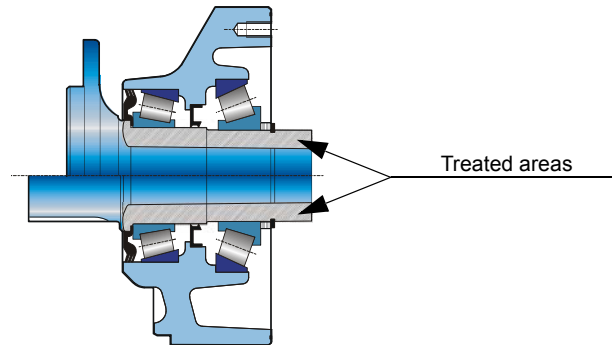
Reinforced piston sealing to improve volumetric efficiency.



For a precise calculation, consult your Poclain Hydraulics application engineer.

### J - Treated shaft

Heat treatment on the indicated bearing radius and splines.



### M - High speed

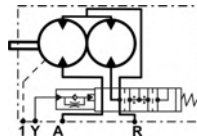
Under certain conditions, an increase in the maximum speed of 30% above the values indicated in the table on page 2 is possible.



For a precise calculation, consult your Poclain Hydraulics application engineer.

### T - Soft Shift™

Progressive displacement change (cushioned slide-valve)



Consult your Poclain Hydraulics sales engineer.





Modularity and  
Model code

Wheel motor

Shaft motor

Valving systems  
and hydrobases

Brake

Options





Modularity and  
Model code

Wheel motor

Shaft motor

Valving systems  
and hydrobases

Brake










Options



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*Illustrations are not binding.*

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-  19/03/2019
-  801 478 120C
-  801 478 190D
-  801 578 103E
-  801 578 115S
-  801 578 127F
-  A07443Q
-  Non available
-  A14242F

