

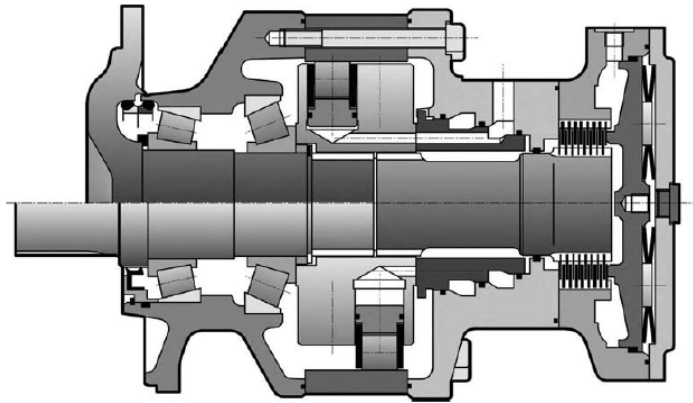


MS MOTORS



MS/MSE35. HYDRAULIC MOTOR.

CHARACTERISTICS



Motor inertia 0.5 kg.m²

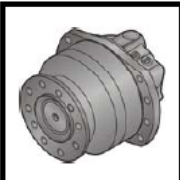
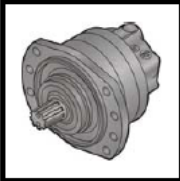
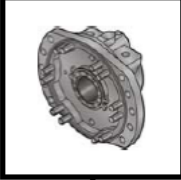
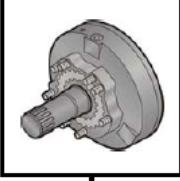
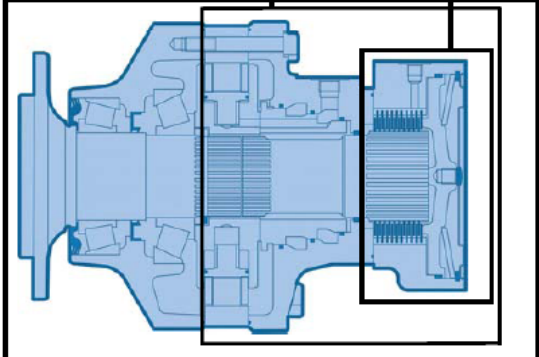
| | Displacement | | Theoretical torque | | Max. power | | | Max. speed | | Max. pressure bar [PSI] |
|-------------------------|-----------------------------------|-----------------------------------|--------------------|------------------------|------------|----------------------|--------------------------|--------------|-----|----------------------------|
| | ① | ② | ① | | ① | ② | ② | ① | ② | |
| | cm ³ /tr [cu.in./rev.] | cm ³ /tr [cu.in./rev.] | at 100 bar Nm | at 1000 PSI [lb.ft] | kW [HP] | preferred kW [HP] | non-preferred kW [HP] | tr/min [RPM] | | |
| Cams with equal lobes | 7 | 2 439 [148,8] | 1 220 [74,4] | 3 878 [1 972] | 110 [148] | 73 [98] | 55 [74] | | 140 | 450 [6 527] |
| | 9 | 3 143 [191,7] | 1 572 [95,8] | 4 997 [2 541] | | | | | 140 | |
| | 0 | 3 494 [213,1] | 1 747 [106,5] | 5 555 [2 825] | | | | | 130 | |
| | 2 | 4 198 [256,0] | 2 099 [128,0] | 6 675 [3 394] | | | | | 110 | |
| Cams with unequal lobes | K | 3 000 [183,0] | 1 911 [116,6] | 4 770 [2 426] | 110 [148] | 73 [98] | 55 [74] | | 120 | |
| | | | 1 091 [66,5] | | | | | | | |
| | A | 3 494 [213,1] | 2 099 [128,0] | 5 555 [2 825] | | | | | 110 | |
| | | | 1 395 [85,1] | | | | | | | |

- ① First displacement
② Second displacement

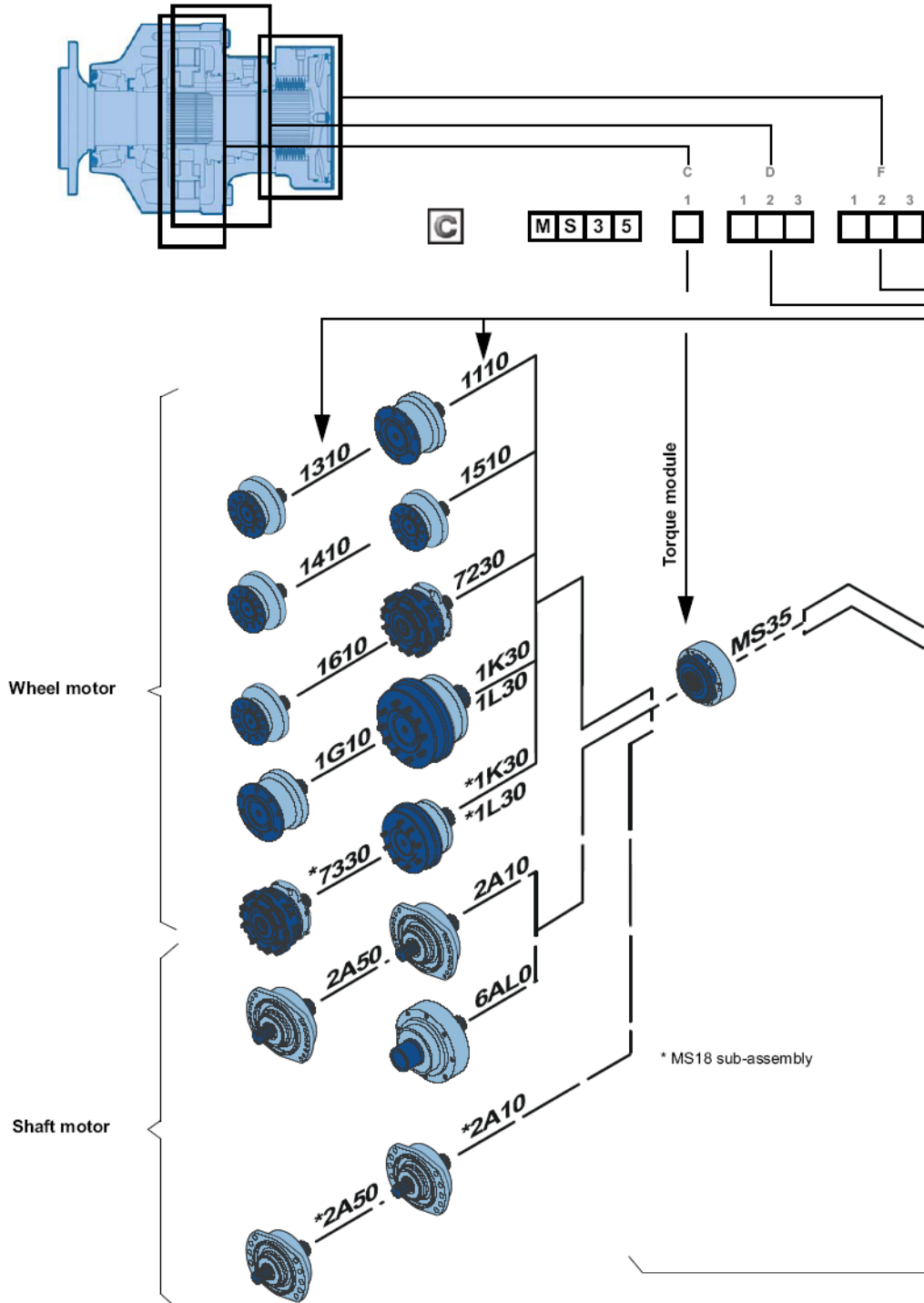


MS18 valving systems run at lower speeds. For an exact calculation, consult your Poclain Hydraulics application engineer.

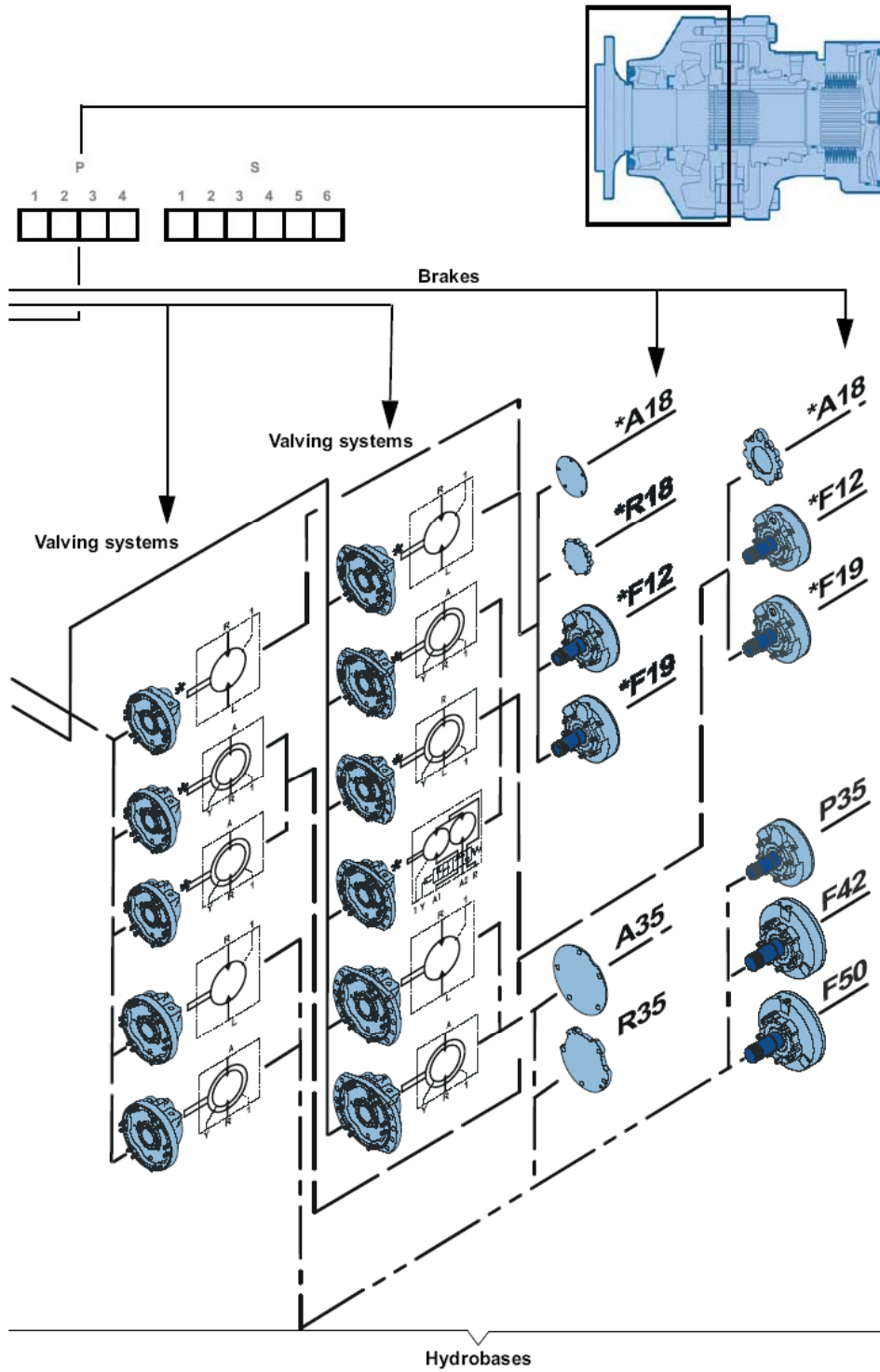
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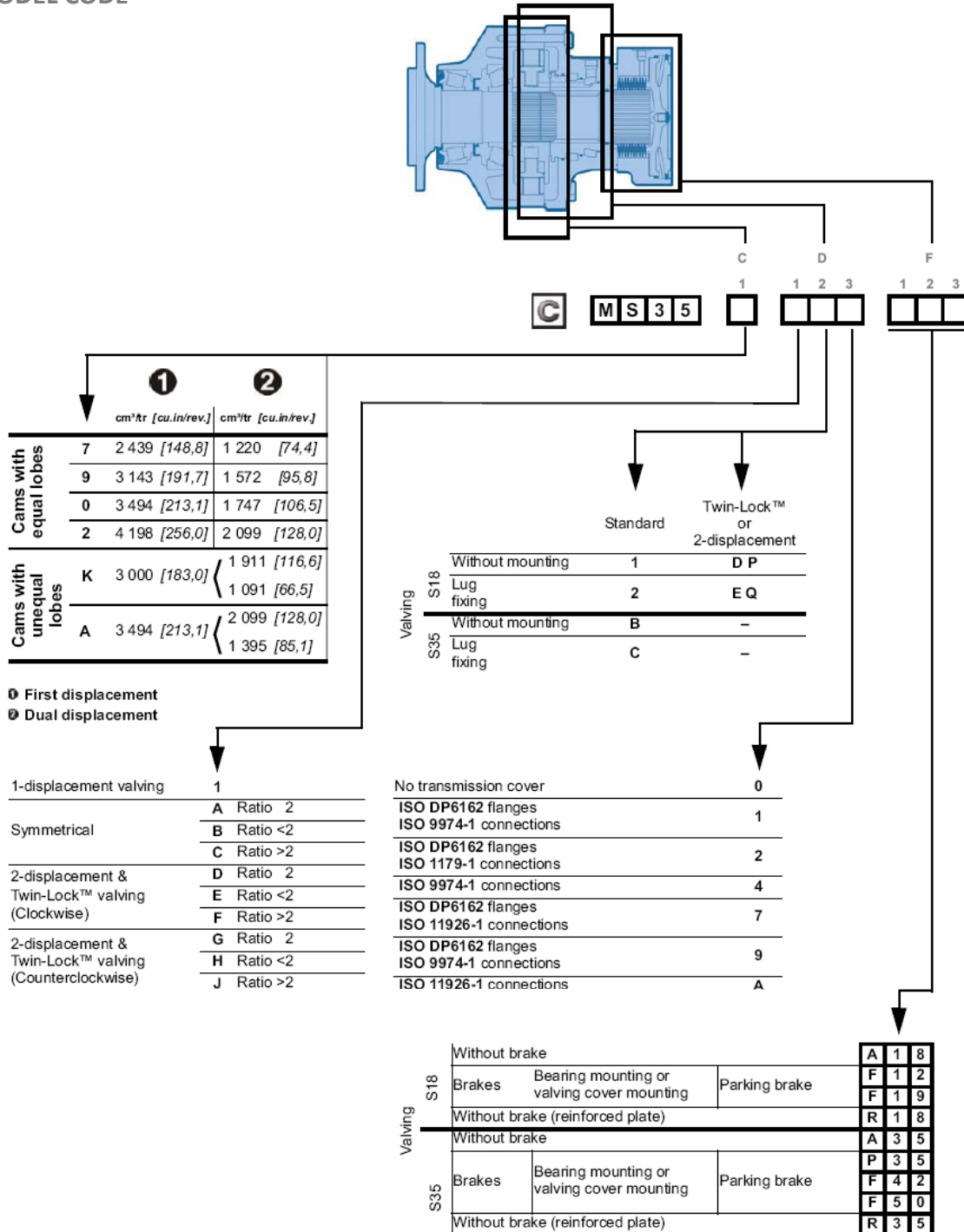
MODULARITY



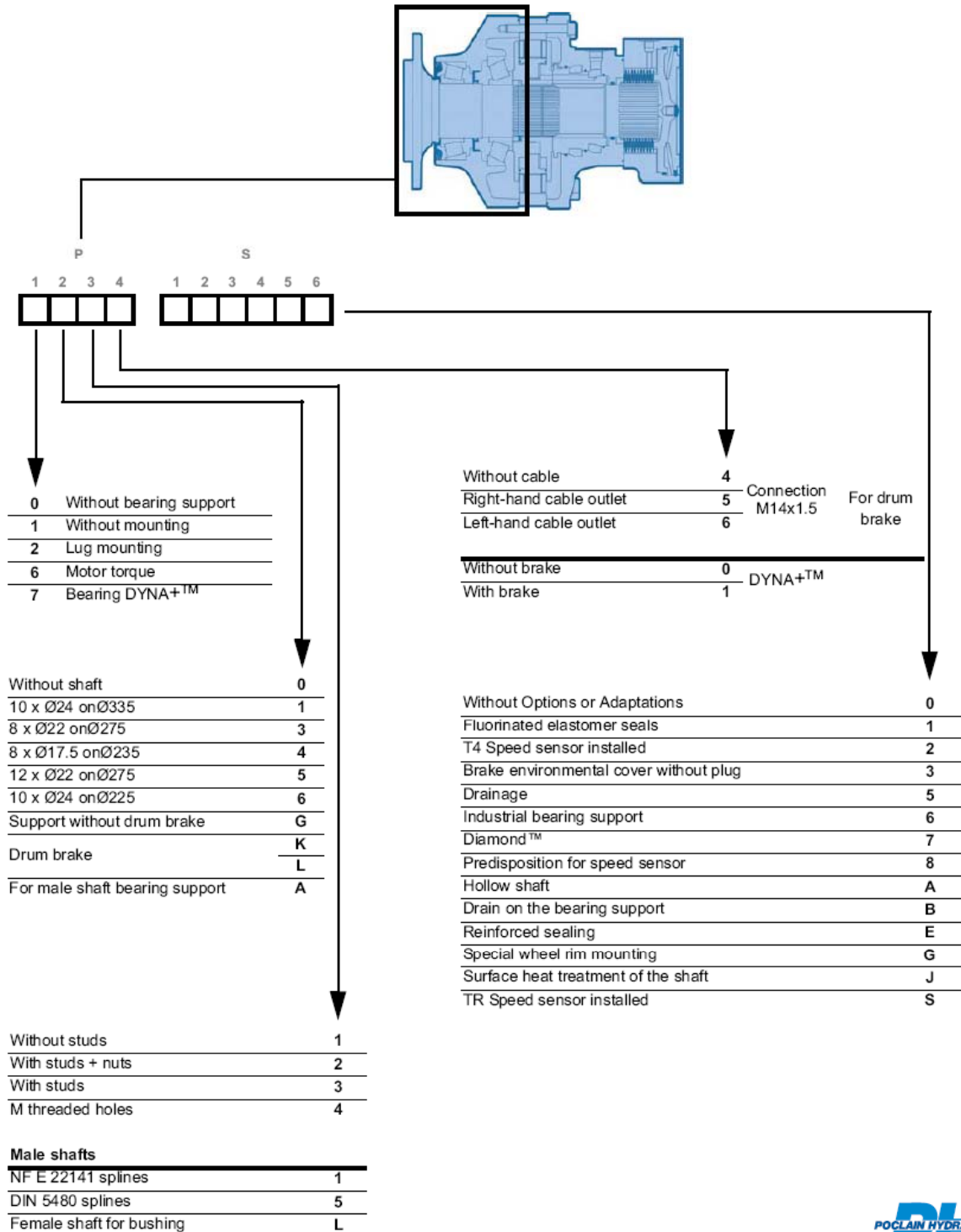
MODULARITY



MODEL CODE



MODEL CODE



Methodology :

This document is intended for manufacturers of machines that incorporate Poclairn Hydraulics products. It describes the technical characteristics of Poclairn 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. Information on the model code.



Weight of component without oil.



Volume of oil.



Units.



Tightening torque.



Screws.



Information intended for Poclairn-Hydraulics personnel.

The views in this document are created using metric standards.

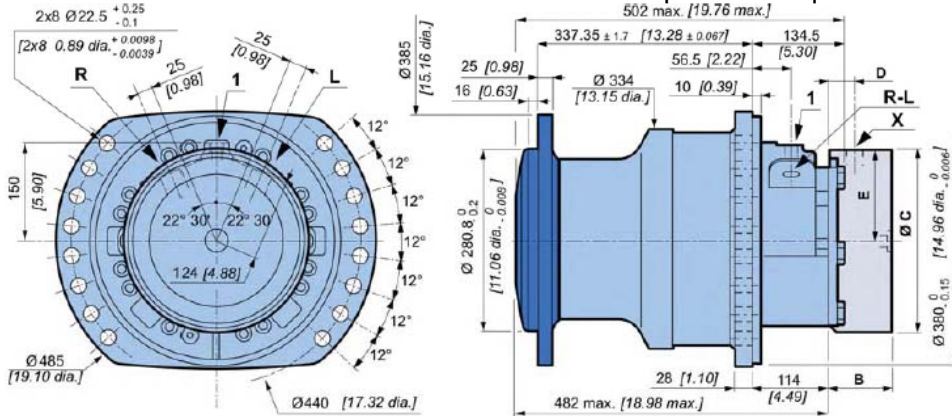
The dimensional data is given in mm and in inches (inches are between brackets and italic)



WHEEL MOTOR

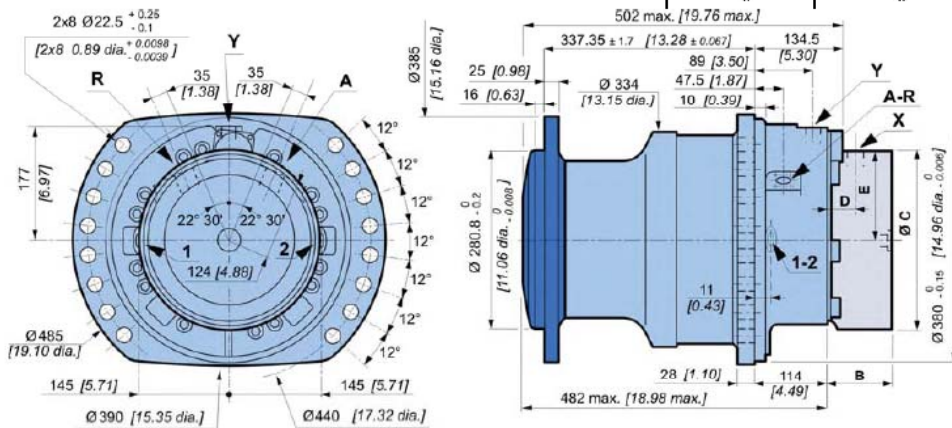
Dimensions for standard (1110) 1-displacement motor

| | | |
|--|--------------------|--------------------|
| | 209 kg [460 lb] | 269 kg [592 lb] |
| | 5,00 L [300 cu.in] | 4,00 L [240 cu.in] |
| | | |



Dimensions for standard (1110) 2-displacement motor

| | | |
|--|--------------------|--------------------|
| | 209 kg [460 lb] | 269 kg [592 lb] |
| | 5,00 L [300 cu.in] | 4,00 L [240 cu.in] |
| | | |



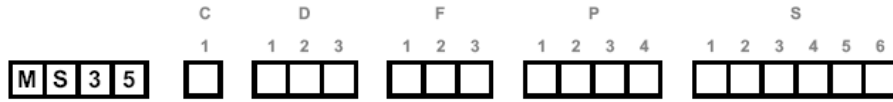
i Also see 'Valving systems and hydrobases' section (thumbnail opposite).

| | | | | |
|--|----------|-------------------|-------------------|-------------------|
| | C | P 3 5 | F 4 2 | F 5 0 |
| | B | 108,5 [4,27] | 142,5 [5,61] | 152 [5,98] |
| | C | Ø280 [11,02 dia.] | Ø375 [14,76 dia.] | Ø375 [14,76 dia.] |
| | D | 57 [2,24] | 63,5 [2,50] | 63,5 [2,50] |
| | E | 138,5 [5,45] | 183,5 [7,22] | 183,5 [7,22] |

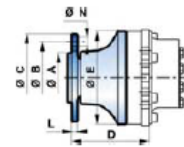
i Also see 'Brakes' section (thumbnail opposite).



Support types



| C | A | B | C | D | E | N | Wheel rim mountings | L |
|----------|-------------------------|-----------------------|-----------------------|------------------|-----------------------|---------------------|----------------------------|--------------|
| | mm [in.] | mm [in.] | mm [in.] | mm [in.] | mm [in.] | mm [in.] | | mm [in.] |
| | Ø 280,7 [11,05 dia.] | Ø 335 [13,19 dia.] | Ø 385 [15,16 dia.] | 338 [13,31] | Ø 334 [13,15 dia.] | Ø 24 [0,94 dia.] | 10 x M22x1.5 | 24 [0,94] |
| | Ø 220,7 [8,69 dia.] | Ø 275 [10,83 dia.] | Ø 314 [12,36 dia.] | 300,5 [11,83] | Ø 334 [13,15 dia.] | Ø 22 [0,87 dia.] | 8 x M20x1.5 | 14 [0,55] |
| | Ø 220,7 [8,69 dia.] | Ø 275 [10,83 dia.] | Ø 314 [12,36 dia.] | 301 [11,85] | Ø 334 [13,15 dia.] | Ø 22 [0,87 dia.] | (8+4) x M20x1.5 | 14 [0,55] |
| | Ø 175,7 [6,92 dia.] | Ø 225 [8,86 dia.] | Ø 276 [10,87 dia.] | 300,5 [11,83] | Ø 334 [13,15 dia.] | Ø 24 [0,94 dia.] | 10 x M22x1.5 | 15 [0,59] |



| | | | | | | | | |
|--|------------------------|-----------------------|-----------------------|------------------|-------------------------|-----------------|-------------|--------------|
| | Ø 220,7 [8,69 dia.] | Ø 275 [10,83 dia.] | Ø 363 [14,29 dia.] | 305,5 [12,03] | Ø 381,0 [15,00 dia.] | 212,0 [8,35] | 8 x M20x1.5 | 44 [1,73] |
|--|------------------------|-----------------------|-----------------------|------------------|-------------------------|-----------------|-------------|--------------|

Also see 'Brakes' section (thumbnail opposite).

Studs

| | | P | C min. | C max. | D | Class | (1)* | (2)* |
|---------------|-----------|-----------|---------------|---------------|-------------|--------------|-------------|--------------|
| | | mm [in.] | mm [in.] | mm [in.] | mm [in.] | | N.m [lb.ft] | N.m [lb.ft] |
| Various studs | M16 x 1.5 | 50 [1,97] | 5 [0,20] | | 21,0 [0,83] | | 300 [221,3] | 380 [280,3] |
| | M20 x 1.5 | 60 [2,36] | | | 25,0 [0,98] | | 600 [442,5] | 770 [567,9] |
| | M20 x 1.5 | 70 [2,76] | | | 26,0 [1,02] | | 695 [512,6] | 1050 [774,4] |
| | M22 x 1.5 | 64 [2,52] | | | 26,0 [1,02] | | 695 [512,6] | 1050 [774,4] |
| Screws | M16 x 1.5 | - | - | - | 23,0 [0,91] | 10,9 | 250 [184,4] | 315 [232,3] |

(*) The tightening torques are given for the indicated loads.
 (1) Wheel rim : Suggested tightening torque for wheel rim mountings (Re steel disc > 240 N/mm² [>34 800 PSI]).
 (2) Standard : Suggested tightening torque in other cases (Re steel flange 360 > N/mm² [>52 215 PSI]).



See generic installation motors N°801478197L.

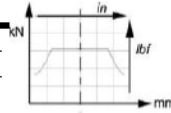
Load curves

Permissible radial loads

Test conditions :

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

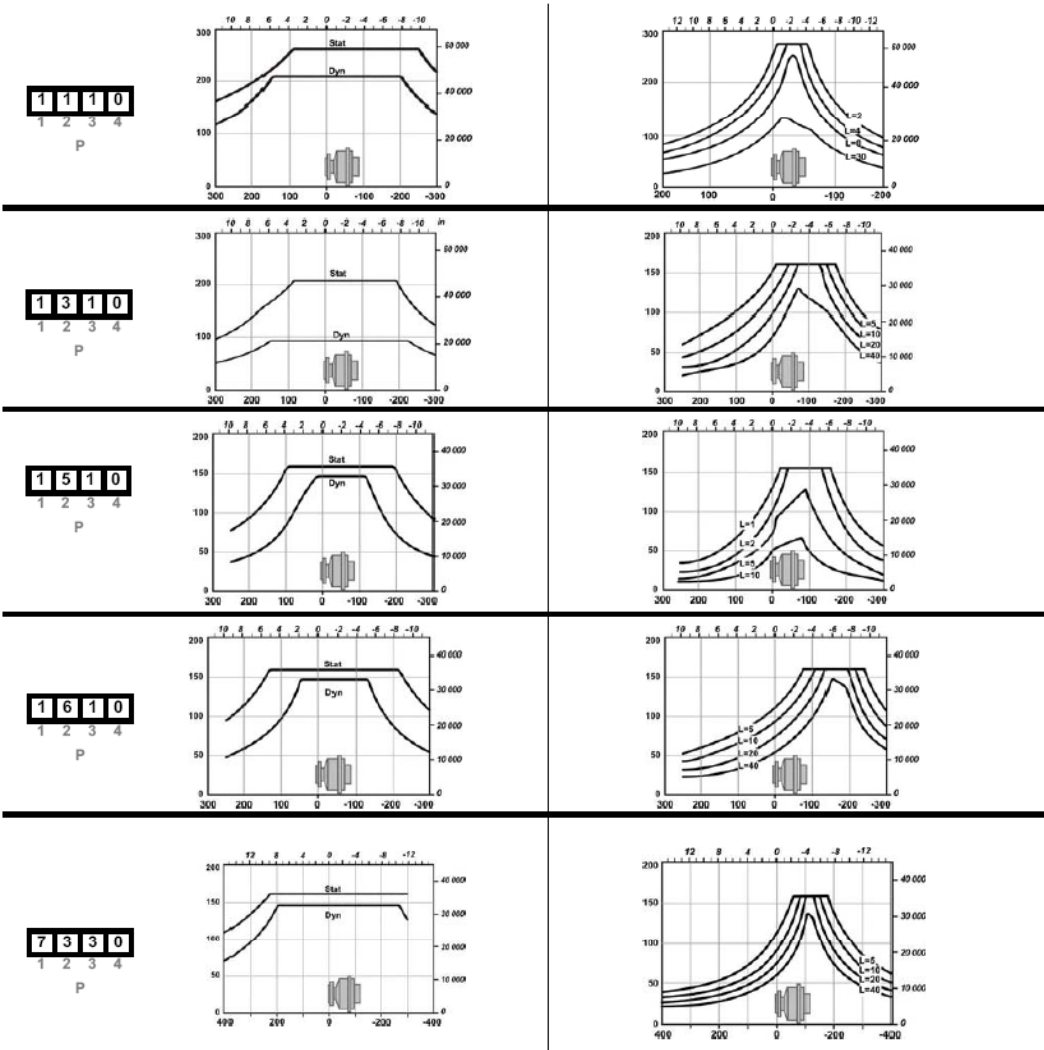
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



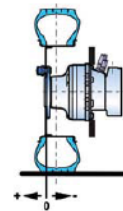
Service life of bearings

Test conditions :

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



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 Poclairn Hydraulics application engineer.



Support types (continued)

| | | C | | D | | | F | | | P | | | | S | | | | | | | | | | | | | | | | | |
|--|---|---------|---------|---------|---------|---------|---------|---------------------|---------|---------|---|---|---|-------------------------|-----------------------|-----------------------|----------------|-------------------------|-----------------------|-------------------------|----------------|--|---|--------------|--|---|--|--|--|--|--|
| | | 1 | | 1 2 3 | | | 1 2 3 | | | 1 2 3 4 | | | | 1 2 3 4 5 6 | | | | | | | | | | | | | | | | | |
| | | M S 3 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | | A | B | C | D | E | N | Wheel rim mountings | L | | | | | | | | | | | | | | | | | | | | | | |
| | | mm [in] | mm [in] | mm [in] | mm [in] | mm [in] | mm [in] | | mm [in] | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><td>1</td><td>K</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>L</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table> <p>350 x 60</p> | | 1 | K | 3 | 0 | 1 | L | 3 | 0 | 1 | 2 | 3 | 4 | P | | | | Ø 220,7 [8,69 dia.] | Ø 275 [10,83 dia.] | Ø 378 [14,88 dia.] | 363 [14,29] | | 8 x M20x 1.5 | 44 [1,73] | | Also see 'Brakes' section (thumbnail opposite). | | | | | |
| 1 | K | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | L | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><td>1</td><td>G</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table> | | 1 | G | 1 | 0 | 1 | 2 | 3 | 4 | P | | | | Ø 280,7 [11,05 dia.] | Ø 335 [13,19 dia.] | Ø 385 [15,16 dia.] | 352 [13,86] | Ø 334 [13,15 dia.] | Ø 24 [0,94 dia.] | 10 x M22x 1.5 | 17 [0,67] | | Also see 'Brakes' section (thumbnail opposite). | | | | | | | | |
| 1 | G | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr><td>1</td><td>K</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>L</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table> <p>432 x 102</p> | | 1 | K | 3 | 0 | 1 | L | 3 | 0 | 1 | 2 | 3 | 4 | P | | | | Ø 280,7 [11,05 dia.] | Ø 335 [13,19 dia.] | Ø 461,5 [18,17 dia.] | 362 [14,25] | | 10 x M22x 1.5 | 48 [1,89] | | Also see 'Brakes' section (thumbnail opposite). | | | | | |
| 1 | K | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | L | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

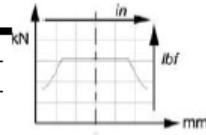
Load curves (continued)

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



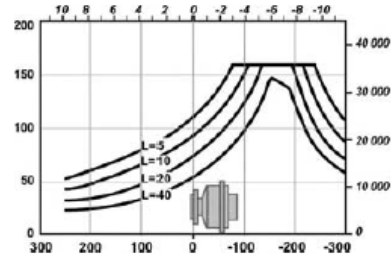
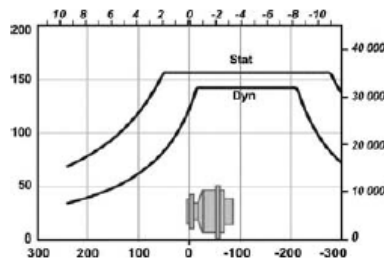
Service life of bearings

Test conditions :

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

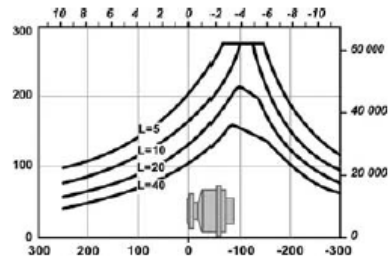
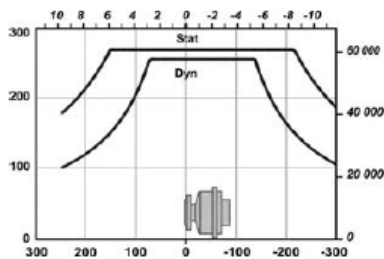
| | | | |
|---|---|---|---|
| 1 | K | 3 | 0 |
| 1 | L | 3 | 0 |

P
350 x 60

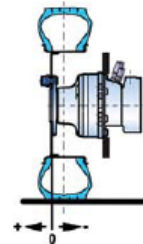


| | | | |
|---|---|---|---|
| 1 | G | 1 | 0 |
| 1 | K | 3 | 0 |
| 1 | L | 3 | 0 |

P
432 x 102



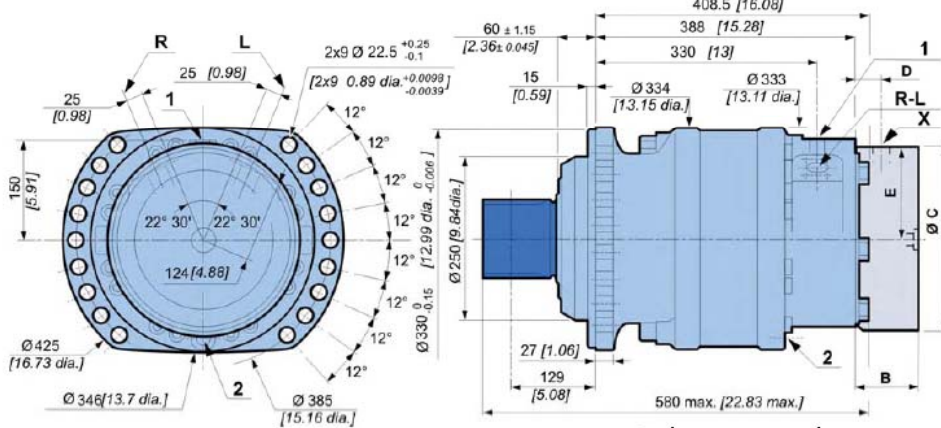
The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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



SHAFT MOTOR

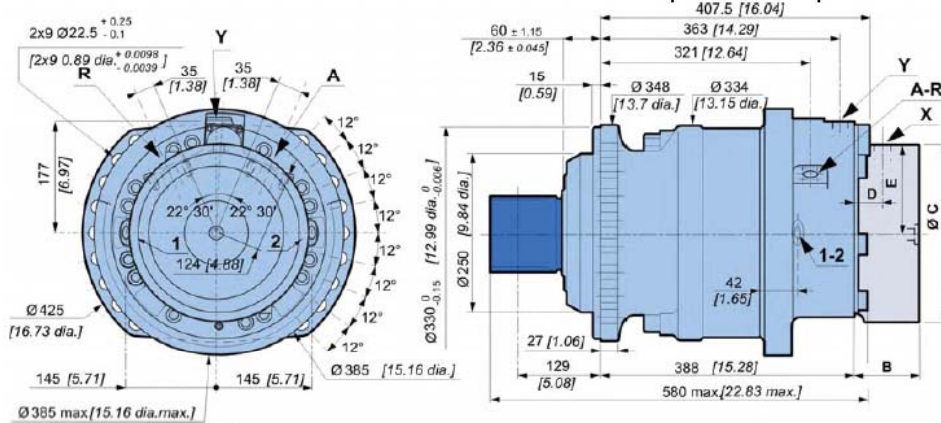
Dimensions for standard (2A50) 1-displacement motor

| | | |
|--|--------------------|--------------------|
| | 188 kg [414 lb] | 248 kg [546 lb] |
| | 5,00 L [300 cu.in] | 4,00 L [240 cu.in] |
| | | |



Dimensions for standard (2A50) 2-displacement motor

| | | |
|--|--------------------|--------------------|
| | 198 kg [436 lb] | 152 kg [334 lb] |
| | 3,00 L [180 cu.in] | 2,50 L [150 cu.in] |
| | | |



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

| | C | P 3 5 | F 4 2 | F 5 0 |
|---|-------------------|--------------|-------------------|-------------------|
| B | 108,5 [4,27] | | 142,5 [5,61] | 152 [5,98] |
| C | Ø280 [11,02 dia.] | | Ø375 [14,76 dia.] | Ø375 [14,76 dia.] |
| D | 57 [2,24] | | 63,5 [2,50] | 63,5 [2,50] |
| E | 138,5 [5,45] | | 183,5 [7,22] | 183,5 [7,22] |

Also see 'Brakes' section (thumbnail opposite).



SHAFT MOTOR

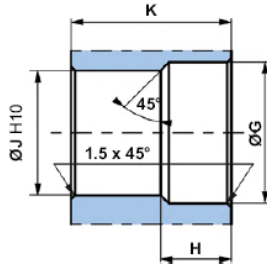
Support types

| | | C | D | F | P | S | | |
|---------------------------|-----------|-------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------|
| | | 1 | 1 2 3 | 1 2 3 | 1 2 3 4 | 1 2 3 4 5 6 | | |
| | | M S 3 5 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| C | | | A | B | C | D | E | |
| DIN 5480 splines | | | | | | | | |
| 2 A 5 0 | Nominal Ø | 120 [4,72] | 40 [1,57] | R 3 [R 0,12] | 60 [2,36] | 2 x M16 | 28 [1,10] | 110 [4,33] |
| | Module | 5 | | | | | | |
| | Z | 22 | | | | | | |
| NF E22-141 splines | | | | | | | | |
| 2 A 1 0 | Nominal Ø | 120 [4,72] | 40 [1,57] | R 3 [R 0,12] | 60 [2,36] | 2 x M16 | 28 [1,10] | 110 [4,33] |
| | Module | 3,75 | | | | | | |
| | Z | 30 | | | | | | |
| DIN 5480 splines | | | | | | | | |
| 6 A L 0 | Nominal Ø | Ø 105 [4,13 dia.] | Ø 140 [5,51 dia.] | 160 [6,30] | 323 [12,72] | Ø 249 [9,80 dia.] | Ø 290 [11,42 dia.] | |
| | Module | | | | | | | |
| | Z | | | | | | | |
| DIN 5480 splines | | | | | | | | |
| 2 A 5 0 | Nominal Ø | 90 [3,54] | 23 [0,91] | R 3 [R 0,12] | 35 [1,38] | 2 x M14 | 23 [0,91] | 90 [3,54] |
| | Module | 3 | | | | | | |
| | Z | 28 | | | | | | |
| NF E22-141 splines | | | | | | | | |
| 2 A 1 0 | Nominal Ø | 90 [3,54] | 23 [0,91] | R 3 [R 0,12] | 35 [1,38] | 2 x M14 | 27 [1,06] | 90 [3,54] |
| | Module | 2,5 | | | | | | |
| | Z | 34 | | | | | | |



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

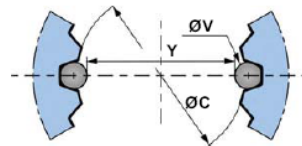
Splined coupling



Standard NF E 22-141
 Pressure angle 20°. Centering on flanks. Slide adjustment (7H quality).

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

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



| | | Ø G | H | Ø J | K | N | Mo | Z | Offset | Ø C (H10) | Ø V | Y | Tolerance |
|----------------|----------------|-------------|-----------|--------------|------------|------------|------|----|-------------|--------------|-------------|----------------|------------------------|
| | | mm [in] | mm [in] | mm [in] | mm [in] | mm [in] | | | mm [in] | mm [in] | mm [in] | µm [µin] | |
| 2 A 5 0 | | 122 [4,80] | 29 [1,14] | 110 [4,33] | 109 [4,29] | 120 [4,72] | 5 | 22 | 2,25 [0,09] | 110 [4,33] | 9 [0,35] | 101,104 [3,98] | + 87 / 0 [+3.425 / 0] |
| 2 A 1 0 | | 121 [4,76] | 29 [1,14] | 112,5 [4,43] | 109 [4,29] | 120 [4,72] | 3,75 | 30 | 3 [0,1181] | 112,5 [4,43] | 7,5 [0,30] | 105,253 [4,14] | + 104 / 0 [+4.094 / 0] |
| 2 A 5 0 | * MS18 bearing | 91,5 [3,60] | 25 [0,98] | 84 [3,31] | 89 [3,50] | 90 [3,54] | 3 | 28 | 1,35 [0,05] | 84 [3,31] | 5,25 [0,21] | 79,110 [3,11] | +68 / 0 [+2.874 / 0] |
| 2 A 1 0 | * MS18 bearing | 91 [3,58] | 28 [1,10] | 85,0 [3,35] | 89 [3,50] | 90 [3,54] | 2,5 | 34 | 2 [0,0787] | 85 [3,35] | 5 [0,20] | 80,169 [3,16] | + 104 / 0 [+4.094 / 0] |

General tolerances : ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

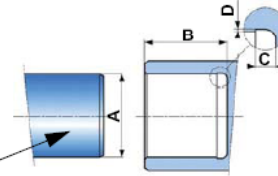
Hardening treatment to obtain R = 800 to 900 N/mm² [R = 116 030 to 130 533 PSI].



Cylindrical bushed coupling

| C | A | B | C | D |
|----------------|----------------------|--------------|---------------|-----------------|
| | mm [in] | mm [in] | mm [in] | mm [in] |
| 6 A L 0 | Ø 105 [4,13 dia.] | 95 [3,74] | 10 [0,394] | 0,5 [0,0197] |
| 1 2 3 4 P | | | | |

R min. : 640 N/mm² [132 800 PSI]



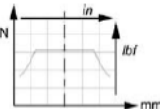
Load curves

Permissible radial loads

Test conditions :

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

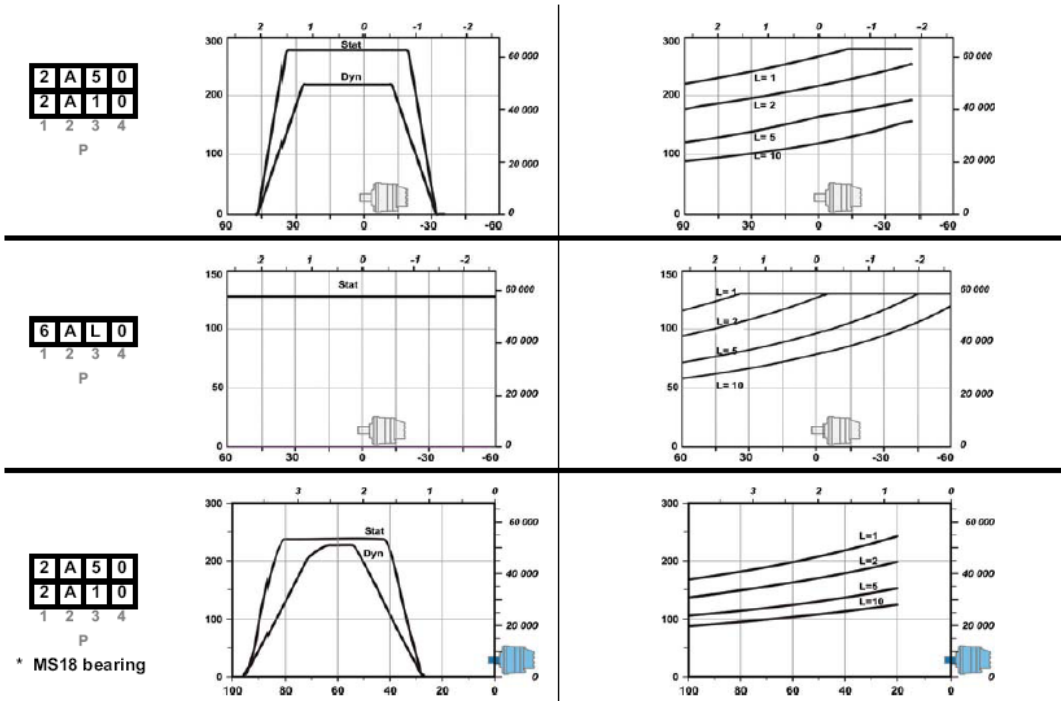
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



Service life of bearings

Test conditions :

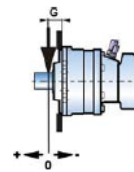
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.



* MS18 bearing



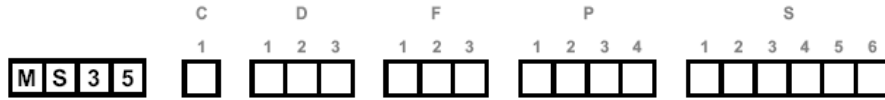
The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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



| C | G | mm [in] | C | G | mm [in] |
|----------------|----------|--------------|----------------|----------|----------------|
| 2 A 1 0 | | 129 [5,08] | 2 A 1 0 | | 108,5 [4,272] |
| 2 A 5 0 | | 129 [5,08] | 2 A 5 0 | | 106,5 [4,193] |
| 6 A L 0 | | 38,75 [1,53] | | | * MS18 bearing |

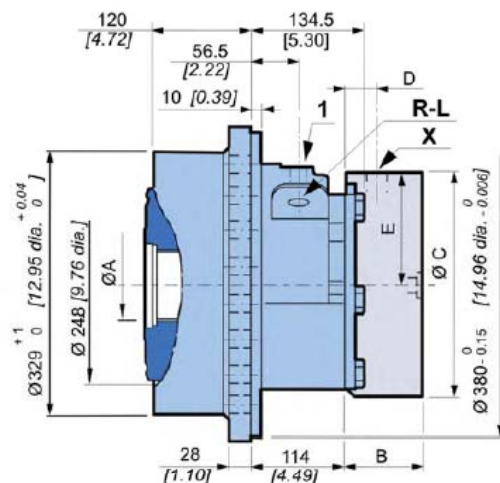
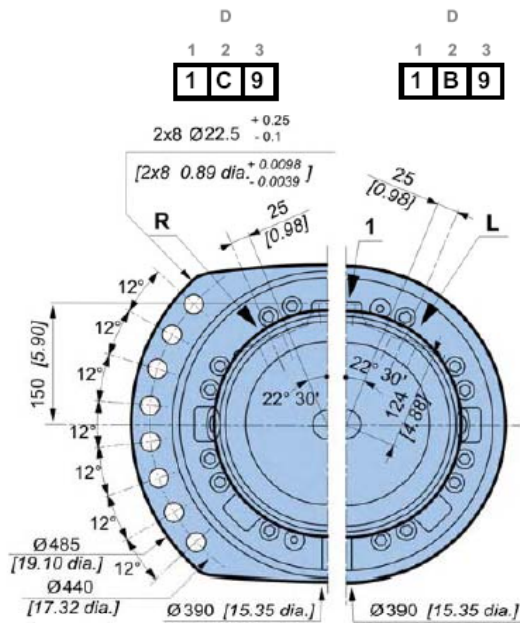


VALVING SYSTEMS AND HYDROBASES



Dimensions for 1-displacement valving

| | | |
|--|--------------------|--------------------|
| | 100 kg [221 lb] | 140 kg [307 lb] |
| | 2,70 L [162 cu.in] | 3,40 L [204 cu.in] |
| | | |

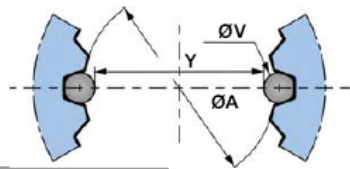


| | | | | |
|---|-------------------|-------------------|-------------------|--------------|
| | C | P 3 5 | F 4 2 | F 5 0 |
| B | 108,5 [4,27] | 142,5 [5,61] | 152 [5,98] | |
| C | Ø280 [11,02 dia.] | Ø375 [14,76 dia.] | Ø375 [14,76 dia.] | |
| D | 57 [2,24] | 63,5 [2,50] | 63,5 [2,50] | |
| E | 138,5 [5,45] | 183,5 [7,22] | 183,5 [7,22] | |

Also see 'Brakes' section (thumbnail opposite).

Cylinder block splines
(as per standard NF E22-141)

| ØA mm [in] | Module | Z | Dimension on 2 pins | |
|---------------|--------|----|---------------------|---------------|
| | | | Y mm [in] | ØV mm [in] |
| 90 [3,543] | 2,5 | 34 | 80,169 [3,156] | 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.

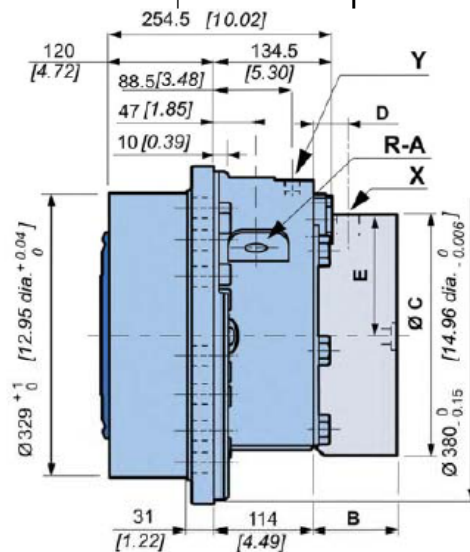
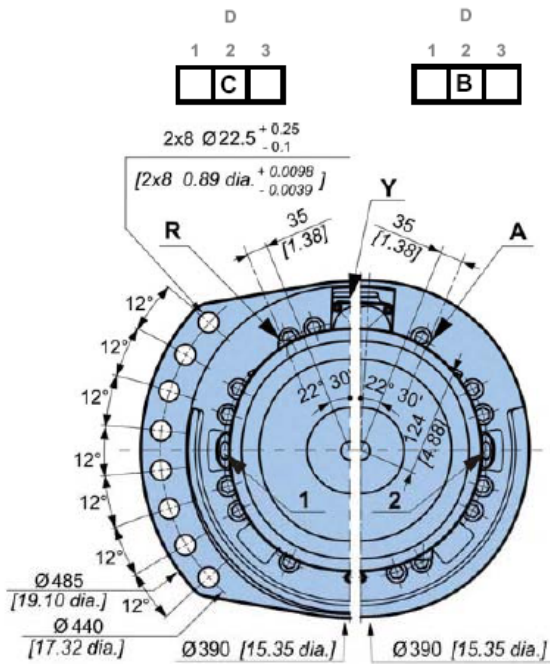
We must provide you with a detailed plan of the interface for any hydraulic unit use, consult your Poclair Hydraulics sales engineer.



VALVING SYSTEMS AND HYDROBASES

Dimensions for 2-displacement valving

| | | |
|--|--------------------|--------------------|
| | 98 kg [215 lb] | 136 kg [299 lb] |
| | 2,82 L [169 cu.in] | 3,32 L [199 cu.in] |
| | | |

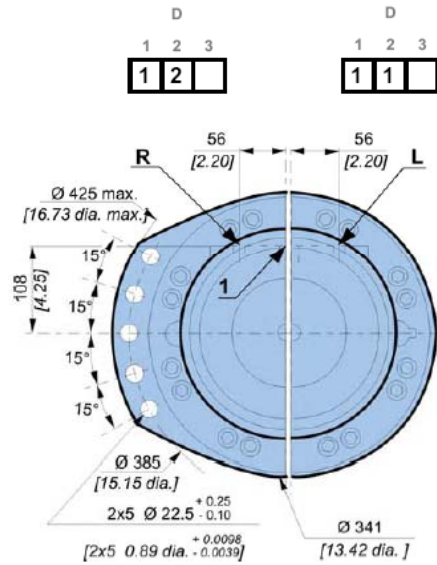


| | | | |
|---|-------------------|-------------------|-------------------|
| | P 3 5 | F 4 2 | F 5 0 |
| B | 108,5 [4,27] | 142,5 [5,61] | 152 [5,98] |
| C | Ø280 [11,02 dia.] | Ø375 [14,76 dia.] | Ø375 [14,76 dia.] |
| D | 57 [2,24] | 63,5 [2,50] | 63,5 [2,50] |
| E | 138,5 [5,45] | 183,5 [7,22] | 183,5 [7,22] |



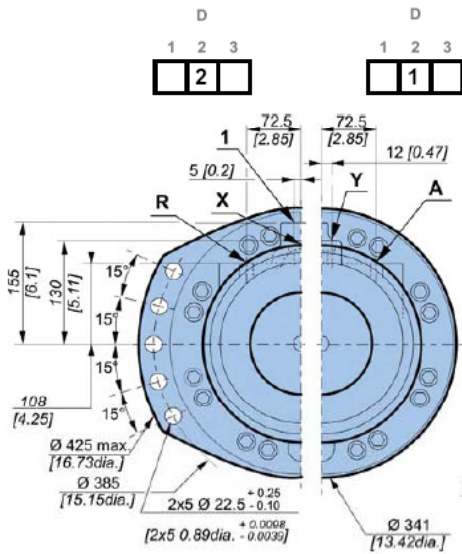
Also see 'Brakes' section (thumbnail opposite).

Dimensions for 1-displacement (MS18) valving



| | | |
|--|---------------------|---------------------|
| | 82 kg [180 lb] | 92 kg [202 lb] |
| | 1,95 L [117 cu.in.] | 2,12 L [127 cu.in.] |
| | | |

Dimensions for 2-displacement (MS18) valving



| | | |
|--|---------------------|---------------------|
| | 91 kg [200 lb] | 111 kg [245 lb] |
| | 1,95 L [117 cu.in.] | 2,12 L [127 cu.in.] |
| | | |

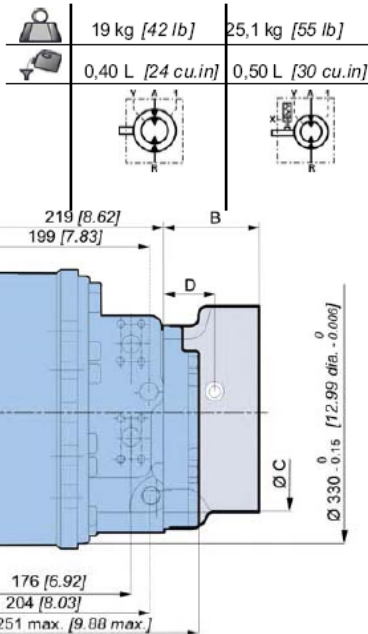
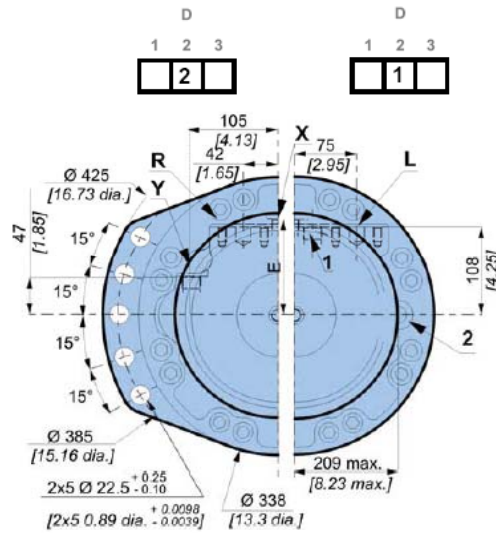
| | F12 | F19 |
|---|------------------|------------------|
| | | |
| B | 76,7 [3,02] | 98,5 [3,88] |
| C | Ø247 [9,72 dia.] | Ø250 [9,84 dia.] |
| D | 25 [0,98] | 45 [1,77] |
| E | 155 [6,10] | 121,5 [4,78] |

Also see 'Brakes' section (thumbnail opposite).



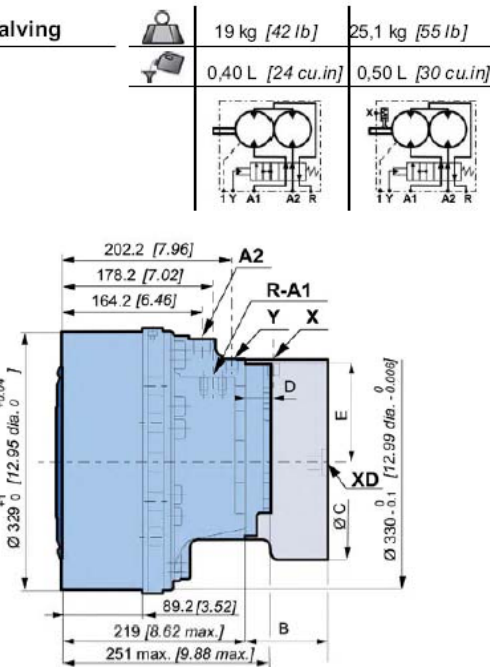
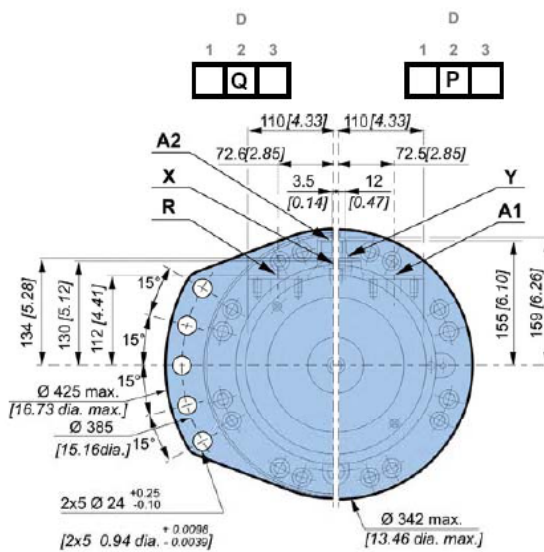
Dimensions for 2-displacement (MS18) symmetrical valving

For a small displacement, there is no preferred orientation for this motor.



| | | |
|--|-------------------|-------------------|
| | 19 kg [42 lb] | 25,1 kg [55 lb] |
| | 0,40 L [24 cu.in] | 0,50 L [30 cu.in] |

Dimensions for Twin-Lock™ / 2-displacement (MS18) valving



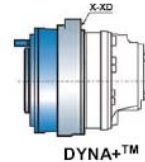
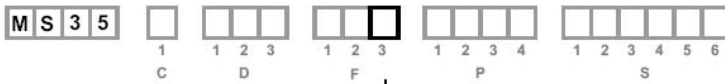
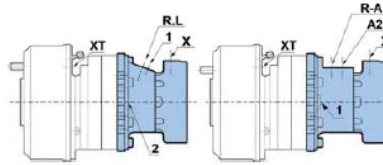
| | | |
|--|-------------------|-------------------|
| | 19 kg [42 lb] | 25,1 kg [55 lb] |
| | 0,40 L [24 cu.in] | 0,50 L [30 cu.in] |

| | C | F12 | F19 |
|----------|------------------|------------------|------------|
| B | 76,7 [3,02] | 98,5 [3,88] | |
| C | Ø247 [9,72 dia.] | Ø250 [9,84 dia.] | |
| D | 25 [0,98] | 45 [1,77] | |
| E | 155 [6,10] | 121,5 [4,78] | |

Also see 'Brakes' section (thumbnail opposite).



Hydraulic connections
connections



| | Old standards | Standards | Power supply | Case drain | 2 nd displacement control | Control of parking break | Control of drum break | Control of parking break | Control of service break |
|-----------------------|---------------|------------------------|---------------------------|----------------------------|--------------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------------|
| S 35 | | | R - L | | 1, 2 | X | XT | X | XD |
| 1C | 9 | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 32 PN 400 | M 22x15 | M 16x15 | | M 16x15 | M 14x15 |
| | | | R - A | | 1, 2 | Y | X | X | XD |
| 2C | 1 | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 25 PN 400 | M 22x15 | M 16x15 | | M 16x15 | M 14x15 |
| | 7 | ISO 6 162 SAE J514 | ISO 6 162 ISO 11 926-1 | DN 25 PN 400 | 1" 1/16"-12 UNF | 9/16"-18 UNF | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF | 9/16"-18 UNF |
| S 18 | | | R - L | | 1, 2 | X | | X | XD |
| 1 displacement | A | SAE J514 | ISO 11 926-1 | 1" 1/16"-12 UNF | 7/8"-14 UNF | 9/16"-18 UNF 3/4"-16 UNF | | 3/4"-16 UNF | 9/16"-18 UNF |
| | 1 | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 19 PN 400 | M 22x15 | M 16x15 | | M 16x15 | M 14x15 |
| | 2 | ISO 6 162 BSP | ISO 6 162 ISO 1 179-1 | DN 19 PN 400 | Ø21 [1/2" dia.] | Ø17 [3/8" dia.] | | M 16x15 | M 14x15 |
| | 4 | NF E48 050 | ISO 9 974-1 | M 27x2 | M 22x15 | M 16x15 | | M 16x15 | M 14x15 |
| | 7 | ISO 6 162 SAE J514 | ISO 6 162 ISO 11 926-1 | DN 19 PN 400 | 7/8"-14 UNF | | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF | 9/16"-18 UNF |
| 2 Displacement | A | SAE J514 | ISO 11 926-1 | 1" 1/16"-12 UNF | 7/8"-14 UNF | 3/4"-16 UNF | 9/16"-18 UNF | 3/4"-16 UNF | 9/16"-18 UNF |
| | 1 | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 19 PN 400 | M 22x15 | M 16x15 | M 16x15 | M 16x15 | M 14x15 |
| | 1* | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 19 PN 400 | M 22x15 | M 22x15 | M 16x15 | M 16x15 | M 14x15 |
| | 4 | NF E48 050 | ISO 9 974-1 | M 27x2 | M 22x15 | M 16x15 | M 16x15 | M 16x15 | M 14x15 |
| | 4* | NF E48 050 | ISO 9 974-1 | M 27x2 | M 22x15 | M 22x15 | M 16x15 | M 16x15 | M 14x15 |
| | 7 | ISO 6 162 SAE J514 | ISO 6 162 ISO 11 926-1 | DN 19 PN 400 | 7/8"-14 UNF | 3/4"-16 UNF | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF | 9/16"-18 UNF |
| | 7* | ISO 6 162 SAE J514 | ISO 6 162 ISO 11 926-1 | DN 19 PN 400 | 7/8"-14 UNF | 7/8"-14 UNF | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF | 9/16"-18 UNF |
| Twin-Lock™ | | | | R - A 1 | A 2 | 1, 2 | Y | X | XD |
| | A | SAE J514 | ISO 11 926-1 | 1" 1/16"-12 UNF | 1" 1/16"-12 UNF | 3/4"-16 UNF 7/8"-14 UNF | 9/16"-18 UNF 3/4"-16 UNF | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF 9/16"-18 UNF |
| | 1 | ISO 6 162 DIN 3 852 | ISO 6 162 ISO 9 974-1 | DN 19 PN 400 | M 27x2 | M 22x15 | M 16x15 | M 16x15 | M 16x15 M 14x15 |
| | 7 | ISO 6 162 SAE J514 | ISO 6 162 ISO 11 926-1 | DN 19 PN 400 | 1" 1/16"-12 UNF | 3/4"-16 UNF | 9/16"-18 UNF | 9/16"-18 UNF 3/4"-16 UNF | 3/4"-16 UNF 9/16"-18 UNF |
| | | | ISO 9 974-1 | | | | | M 14x15 | X XD |
| Max. pressures | M S M SE | →ar [P S] | | 450 [6 527] 400 [5 802] | 450 [6 527] 400 [5 802] | 1 [15] | 30 [435] | 30 [435] | 120 [1740] 30 [435] 120 [1740] |

*: Only symmetrical valving



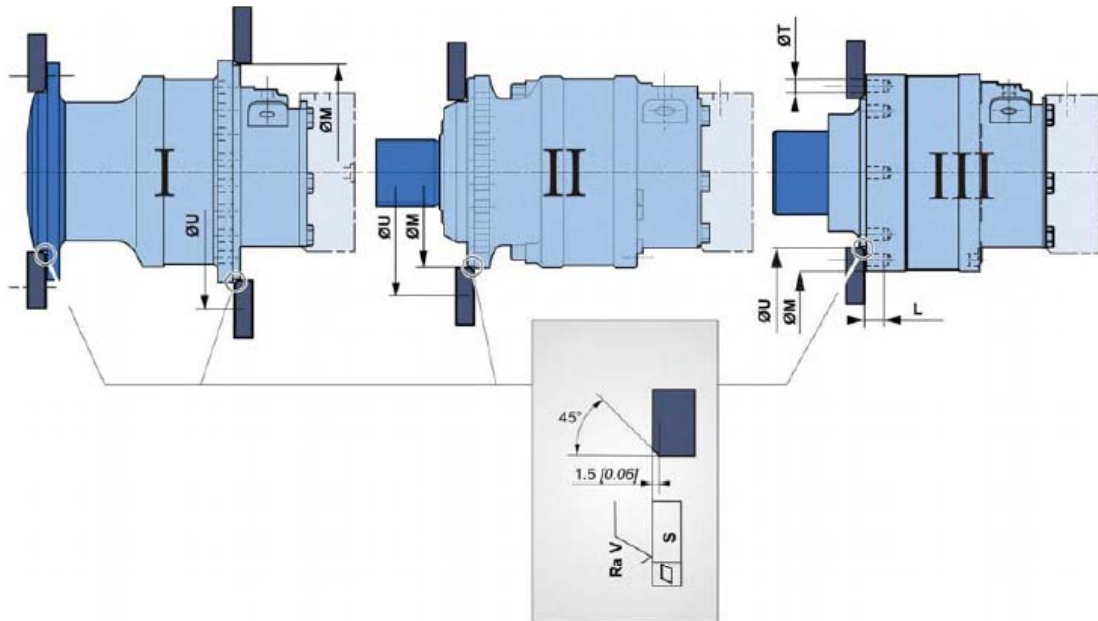
You are strongly advised to use the fluids specified in brochure "Installation guide" N° 801478197L.





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



Chassis mountings



Take care over the immediate environment of the connections.

| | | ØM (1) mm [in] | ØU mm [in] | ØT mm [in] | L mm [in] | S mm [in] | Ra V µm [µin] |  | Class |  * |
|------|-----|-------------------|---------------|-----------------|---------------|----------------|------------------|---|-------|---|
| MS18 | I | 330 [12,99] | 385 | - | - | | | 2 x 5 M20 x 2 | 8,8 | 410 N.m [302,4 lb.ft] |
| | II | 315 [12,40] | [15,16] | - | - | | | | | |
| MS35 | I | 380 [14,96] | 485 | - | - | 0,2 [0,008] | 12,5 [0,49] | 2 x 8 M20 x 2 | | |
| | II | 330 [12,99] | [19,09] | - | - | | | | | |
| | III | 250 [9,84] | | 22,5 [0,886] | 30 [1,181] | | | 8 x M20 x 2 | | |

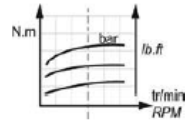
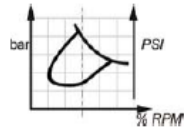
(1) +0,3 [+0,012]
+0,2 [+0,008]

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

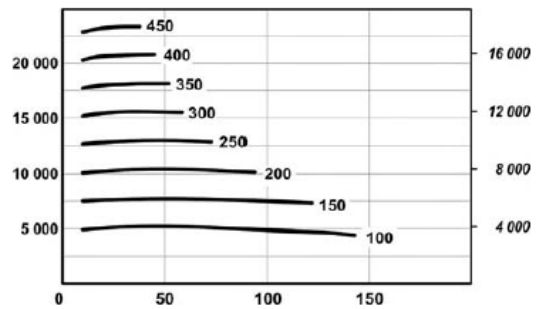
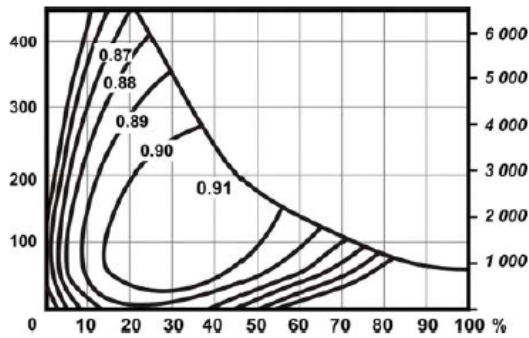
Efficiency

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].



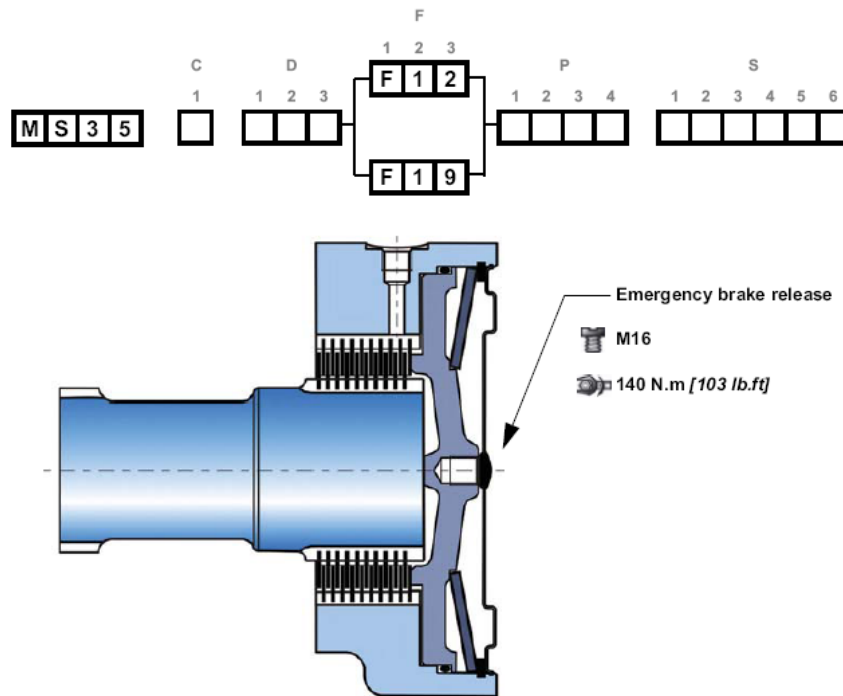
Actual output torque



The starting torque is taken to be approximately 85% of the first value for available pressure. For a precise calculation, consult your Poclain Hydraulics application engineer.

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 | F 1 9 |
|--|----------------------------------|----------------------------------|
| Parking brake torque at 0 bars on housing (new brake) | 11 840 Nm [8 730 lb.ft] | 18 600 Nm [13 720 lb.ft] |
| Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes) | 7 695 Nm [5 680 lb.ft] | 12 800 Nm [9 440 lb.ft] |
| Residual parking braking at 0 bars on housing * | 8 880 Nm [6 550 lb.ft] | 13 940 Nm [10 280 lb.ft] |
| Min. brake release pressure | 12 bar [174 PSI] | 12 bar [174 PSI] |
| Max. brake release pressure | 30 bar [435 PSI] | 30 bar [435 PSI] |
| Oil capacity | 170 cm ³ [10,4 cu.in] | 180 cm ³ [11,0 cu.in] |
| Volume for brake release | 40 cm ³ [2,4 cu.in] | 70 cm ³ [4,3 cu.in] |
| Max. energy dissipation | 123 699 J | 193 033 J |

* After emergency brake has been used



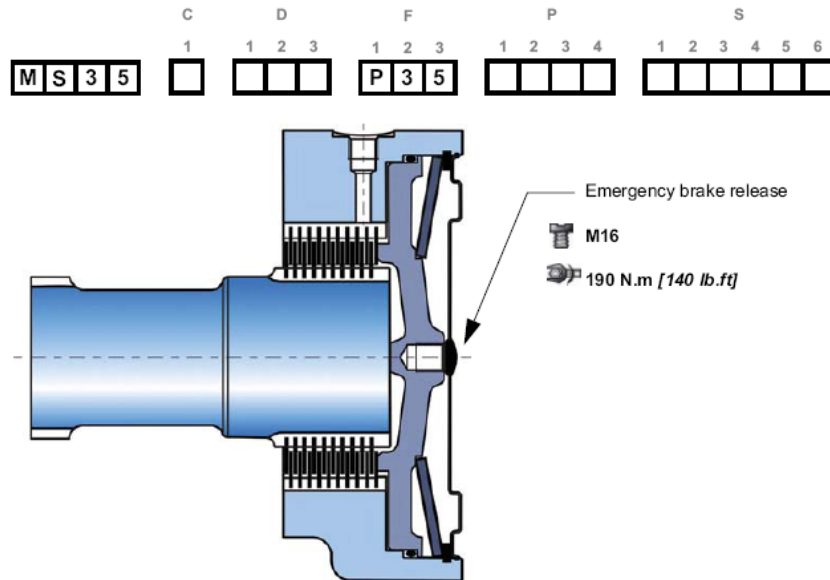
Do not run-in the multidisc brakes.



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/hour, please contact your Poclain Hydraulics application engineer.

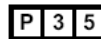
BRAKES

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.



| | |
|--|----------------------------------|
| Parking brake torque at 0 bars on housing (new brake) | 20 500 Nm [15 120 lb.ft] |
| Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes) | 13 325 Nm [9 830 lb.ft] |
| Residual parking braking at 0 bars on housing * | 15 375 Nm [11 340 lb.ft] |
| Min. brake release pressure | 12 bar [174 PSI] |
| Max. brake release pressure | 30 bar [435 PSI] |
| Oil capacity | 700 cm ³ [42,7 cu.in] |
| Volume for brake release | 70 cm ³ [4,3 cu.in] |

* After emergency brake has been used



Do not run-in the multidisc brakes.

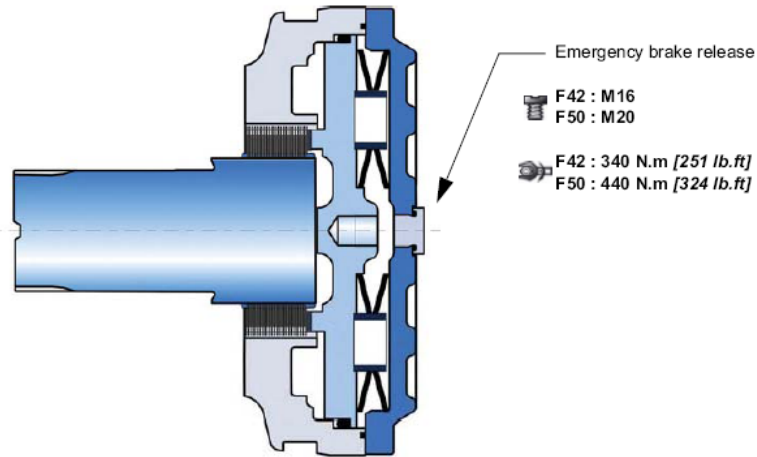
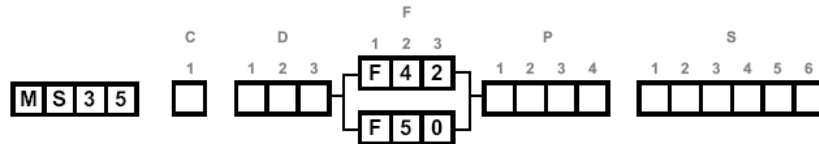


A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/hour, please contact your Poclairn Hydraulics application engineer.



BRAKES

Rear brake



- Emergency brake release
- F42 : M16
- F50 : M20
- F42 : 340 N.m [251 lb.ft]
- F50 : 440 N.m [324 lb.ft]

Brake principle

This is a multidisc brake which functions through the absence of pressure. The spring exerts a force on the piston, which acts on the fixed and mobile discs, and thus immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.

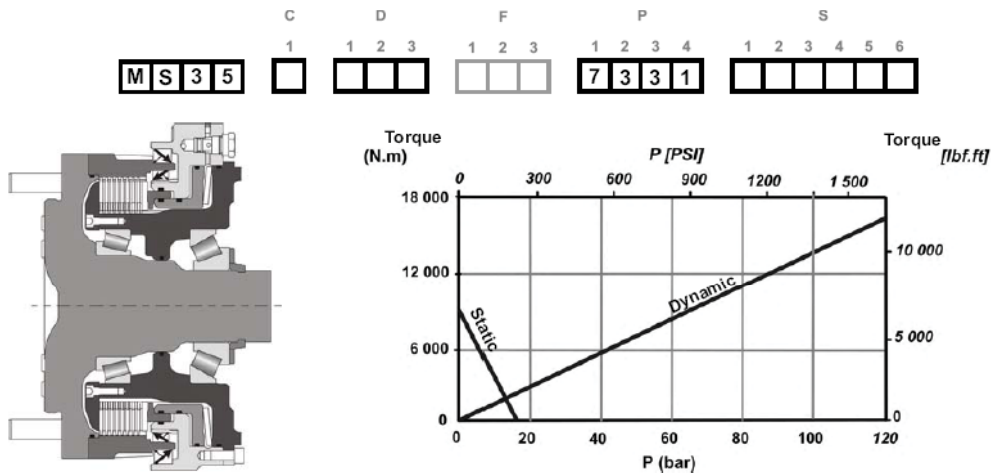
| C | F 4 2 | F 5 0 |
|--|----------------------------------|----------------------------------|
| Parking brake torque at 0 bars on housing (new brake) | 25 000 Nm [18 440 lb.ft] | 30 000 Nm [22 130 lb.ft] |
| Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes) | 16 250 Nm [11 990 lb.ft] | 19 500 Nm [14 380 lb.ft] |
| Residual parking braking at 0 bars on housing * | 18 750 Nm [13 830 lb.ft] | 22 500 Nm [16 600 lb.ft] |
| Min. brake release pressure | 12 bar [174 PSI] | 12 bar [174 PSI] |
| Max. brake release pressure | 30 bar [435 PSI] | 30 bar [435 PSI] |
| Oil capacity | 400 cm ³ [24,4 cu.in] | 450 cm ³ [27,5 cu.in] |
| Volume for brake release | 135 cm ³ [8,2 cu.in] | 135 cm ³ [8,2 cu.in] |

* 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/hour, please contact your Poclain Hydraulics application engineer.



DYNA+™ Brake



Brake operation

This multi-disk brake operates in two distinct ways:

- Either by an absence of pressure (static braking): The spring applies a force to the static piston that is transmitted to the dynamic piston, which clamps the fixed and free disks, preventing the shaft from turning. Braking torque decreases linearly as a function of unlocking pressure.
- Or by braking pressure (dynamic braking). The braking command creates a pressure on the dynamic braking piston, which clamps the fixed and free disks, preventing the shaft from turning. Braking torque increases linearly as a function of the unlocking pressure.

C **7 3 3 1**

Hydraulically controlled dynamic braking

| | |
|--|---------------------------------|
| Max. permissible brake torque | 16 600 Nm [12 240 lb.ft] |
| Pressure to obtain max. permissible brake torque | 120 bar [1 740 PSI] |
| Volume required for braking | 22 cm ³ [1,34 cu.in] |
| Mini. irrigation flow rate for dynamic braking | 4 L/min [1,06 GPM] |

Hydraulically controlled parking brake

| | |
|---|---------------------------------|
| Parking brake torque (new brakes) | 9 580 Nm [7 070 lb.ft] |
| Parking brake torque (after 500 dynamic braking) | 7 660 Nm [5 650 lb.ft] |
| Parking brake torque mini. requiring renovation | 6 830 Nm [5 040 lb.ft] |
| Max. release brake pressure | 30 bar [435 PSI] |
| Volume for brake release | 86 cm ³ [5,25 cu.in] |
| Inlet conditions for brake release in towing (Flow rate of 2 L/min) | 14 bar [203 PSI] |
| Emergency dynamical braking torque at 0 bar in the case | 8 000 Nm [5 900 lb.ft] |
| Max. energy dissipation | 890 kJ |

Indicative values coming from fly-wheel test bench. Braking performance must be performed on machine by the manufacturer.



Brake release pressure vented.



Do not use both dynamic and parking brake simultaneously.

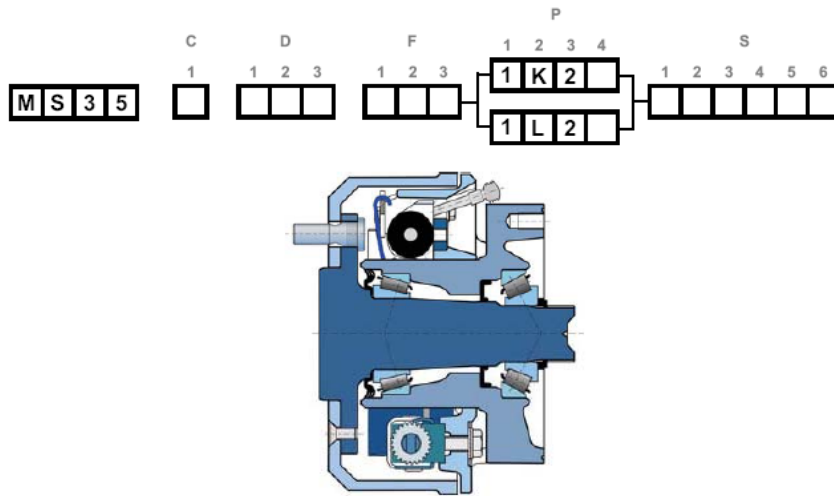


The use of certain oils, can not offer the characteristics ones above. Consult your Poclairn Hydraulics sales engineer.

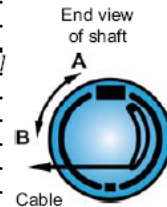
Drum brake (350 x 60 or 432 x 102)

Diameter of brake pads : Ø 350 [13.77 dia.] or Ø 432 [17 dia]
 Width of friction surface : 60 [2.36] or 102 [4]





| Brake pads | 350 x 60 | 432 x 102 |
|---|--------------------------------------|-----------------------------------|
| Asbestos free material | BERAL 1109 or JURID 505 | BERAL 1109 or JURID 505 |
| Compensation for wear | Automatic | Automatic |
| Hydraulically controlled dynamic braking | | |
| Max. permissible continuous brake torque | 6 600 N.m [4 868 lb.ft] | 16 200 N.m [11 948 lb.ft] |
| Pressure to obtain max. permissible continuous brake torque | 70 bar [1 015 PSI] | 71 bar [1 030 PSI] |
| Max. permissible brake torque | 11 000 N.m [8 113 lb.ft] | 27 000 N.m [19 914 lb.ft] |
| Pressure to obtain max. permissible brake torque | 120 bar [1 740 PSI] | 120 bar [1 740 PSI] |
| Fluid | | |
| Mineral | Yes | Yes |
| DOT 3/DOT4/SAE J1703 | Yes | Yes |
| Max. volume required to bring pads into contact | 8,8 cm ³ [0,54 cu.in] | 10,2 cm ³ [0,62 cu.in] |
| Mechanically controlled parking brake | | |
| Max. braking torque | 11 000 N.m [8 113 lb.ft] | 27 000 N.m [19 914 lb.ft] |
| Max permissible force on the cable | 2 900 N [652 lbf] | 5 700 N [1 281 lbf] |
| Force required to bring pads into contact | 35 N [8 lbf] | 37 N [8 lbf] |
| Stroke required to bring pads into contact | A 8 mm [0,31 "] B 8 mm [0,31 "] | 17 mm [0,67 "] 15 mm [0,59 "] |
| Max. stroke before automatic brake adjustment | A 50 mm [1,97 "] B 50 mm [1,97 "] | 19 mm [0,75 "] 19 mm [0,75 "] |



The max. braking torque can only be obtained when the brake has been run in. Consult your Poclairn 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.



See also 'Wheel motor' section (thumbnail opposite)

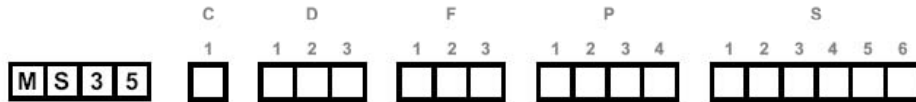


When making an encoding request, you must indicate the following information:

- 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.



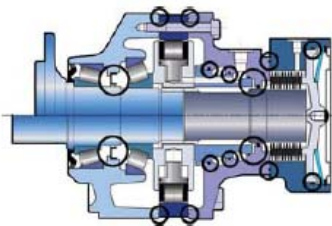
OPTIONS



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

1 - Fluorinated elastomer seals

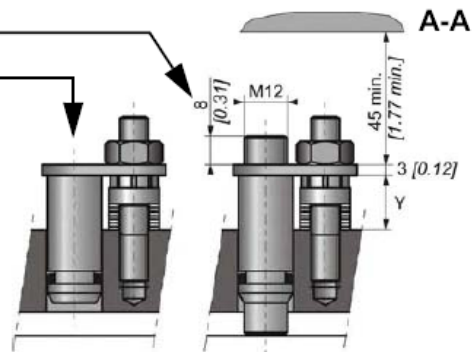
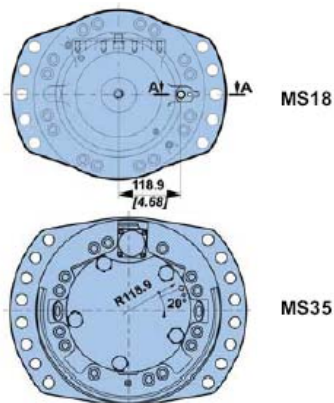
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.



Consult your Poclairn Hydraulics sales engineer.

2 - S - 8 - Installed speed sensor or predisposition

| | |
|---|----------|
| Designation | C |
| T4 Speed sensor installed | 2 |
| TR Speed sensor installed (direction of rotation) | S |
| Predisposition for speed sensor | 8 |



Max. length Y= 17.3
Standard number of pulses per revolution= 60



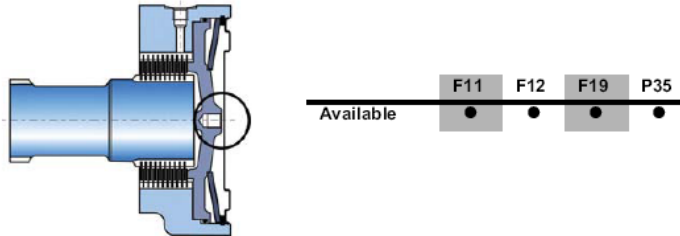
Look at the "Mobile Electronic" N° A01889D technical catalogue for the sensor specifications and its connection.



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

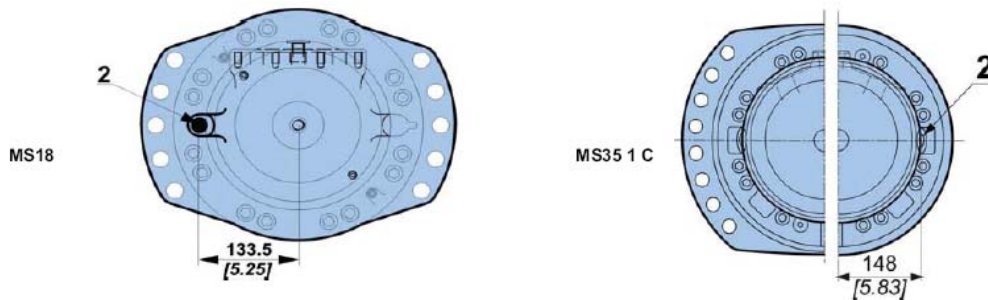
3 - Brake environmental cover without plug

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



5 - Drainage

Additional drain in the cover.



6 - Industrial support

Reduction of around 50% from the rated value in the bearings' preload value.

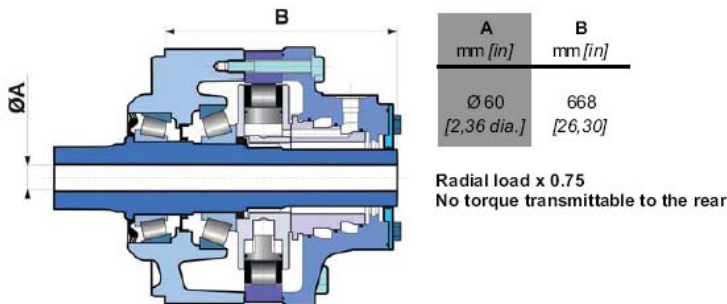


For a precise calculation, consult your Poclairn Hydraulics application engineer.

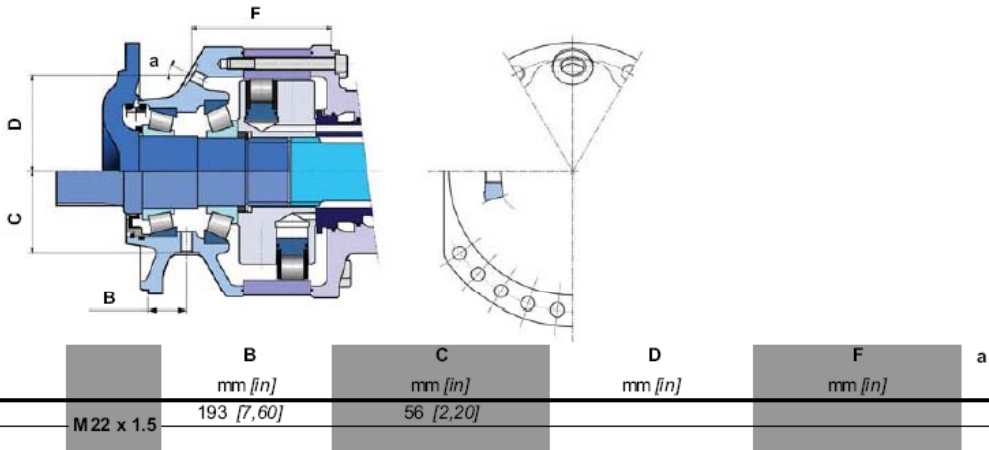
7 - Diamond™

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.

A - Hollow shaft

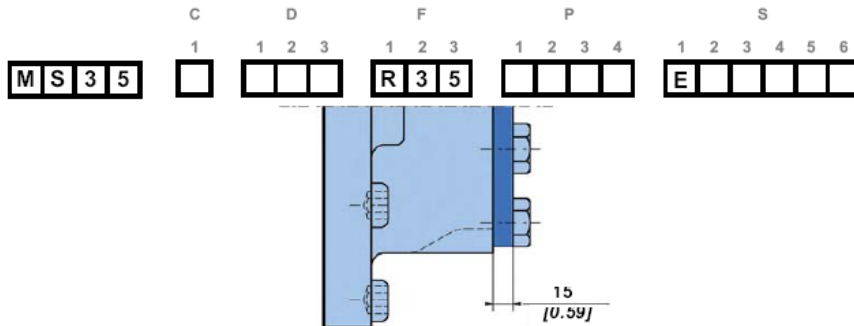


B - Drain on the bearing support



E - Reinforced sealing

Requires reinforced seals and, for an unbraked motor, a rear reinforced plate (R35 - 15 [0.59] thick, instead of 6 [0.236]).



G - Special wheel rim mounting

Enables certain combinations different from the standard mountings defined on pages 10.



Consult your Poclain Hydraulics sales engineer.

J - Treated shaft

Heat treatment on the indicated bearing radius and splines.

