

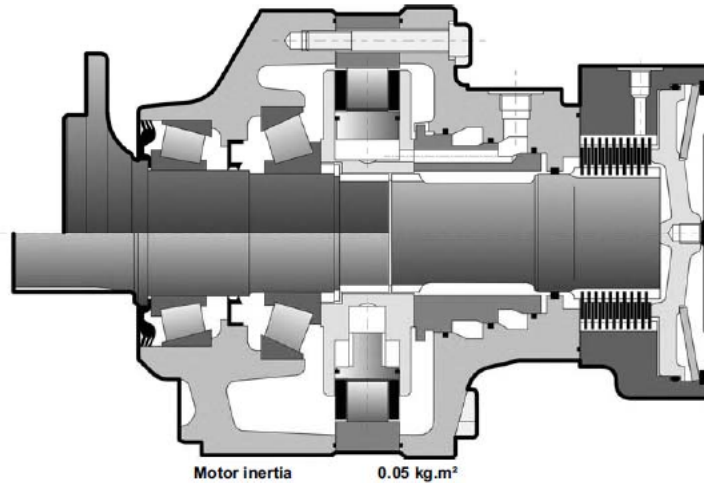


# MS MOTORS



## MS/MSE11. HYDRAULIC MOTOR.

### CHARACTERISTICS




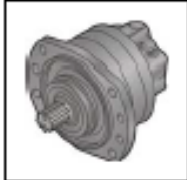

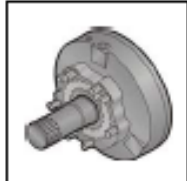
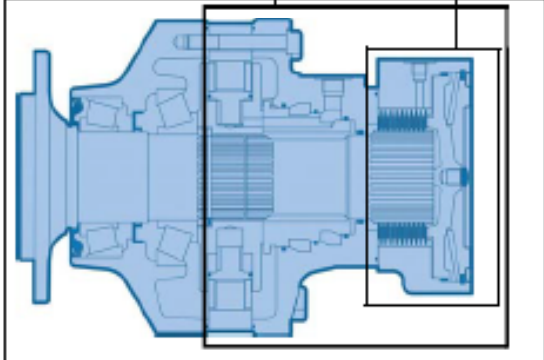
	C	Displacement		Theoretical torque		Max. power			Max. speed		Max. pressure bar [PSI]
		1	2	1	1	2 preferred	2 non-preferred	1	2		
		cm <sup>3</sup> /tr [cu.in./rev.]	cm <sup>3</sup> /tr [cu.in./rev.]	at 100 bar Nm at 1000 PSI [lb.ft]	kW [HP]	kW [HP]	kW [HP]	tr/min [RPM]			
Carris with equal lobes MS11	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		
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		
Carris with unequal lobes MS11	A	1 048 [63,9]	629 [38,4] 419 [25,6]	1 666 [847]	50 [67]	33 [44]	25 [34]			450 [6 527]	
	MSE11	A	1 404 [85,6]	843 [51,4] 561 [34,2]	2 232 [1 135]	50 [67]	33 [44]	25 [34]	120	400 [5 802]	

① First displacement

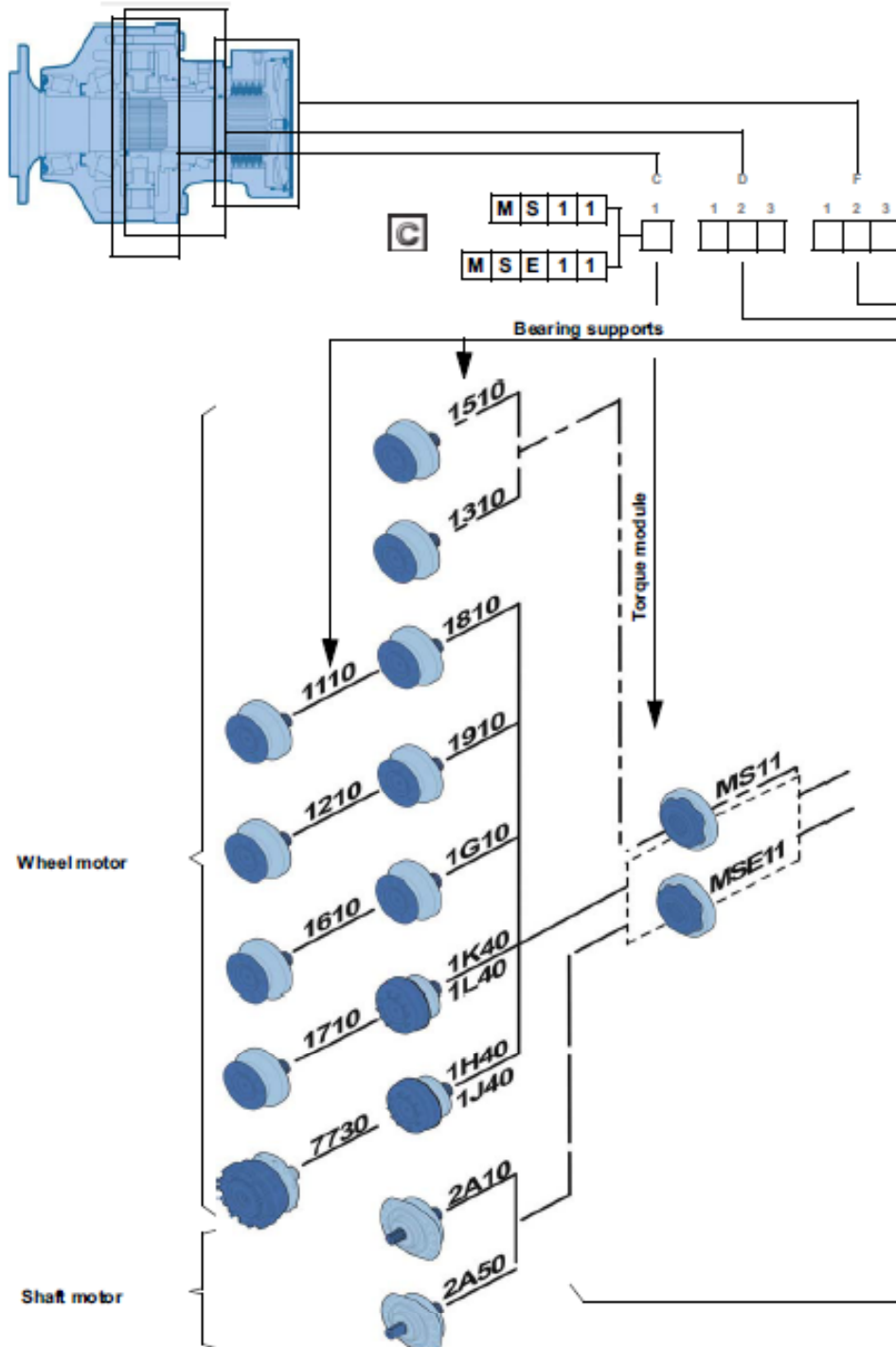
② Second displacement

\* See option "M" for higher speed.

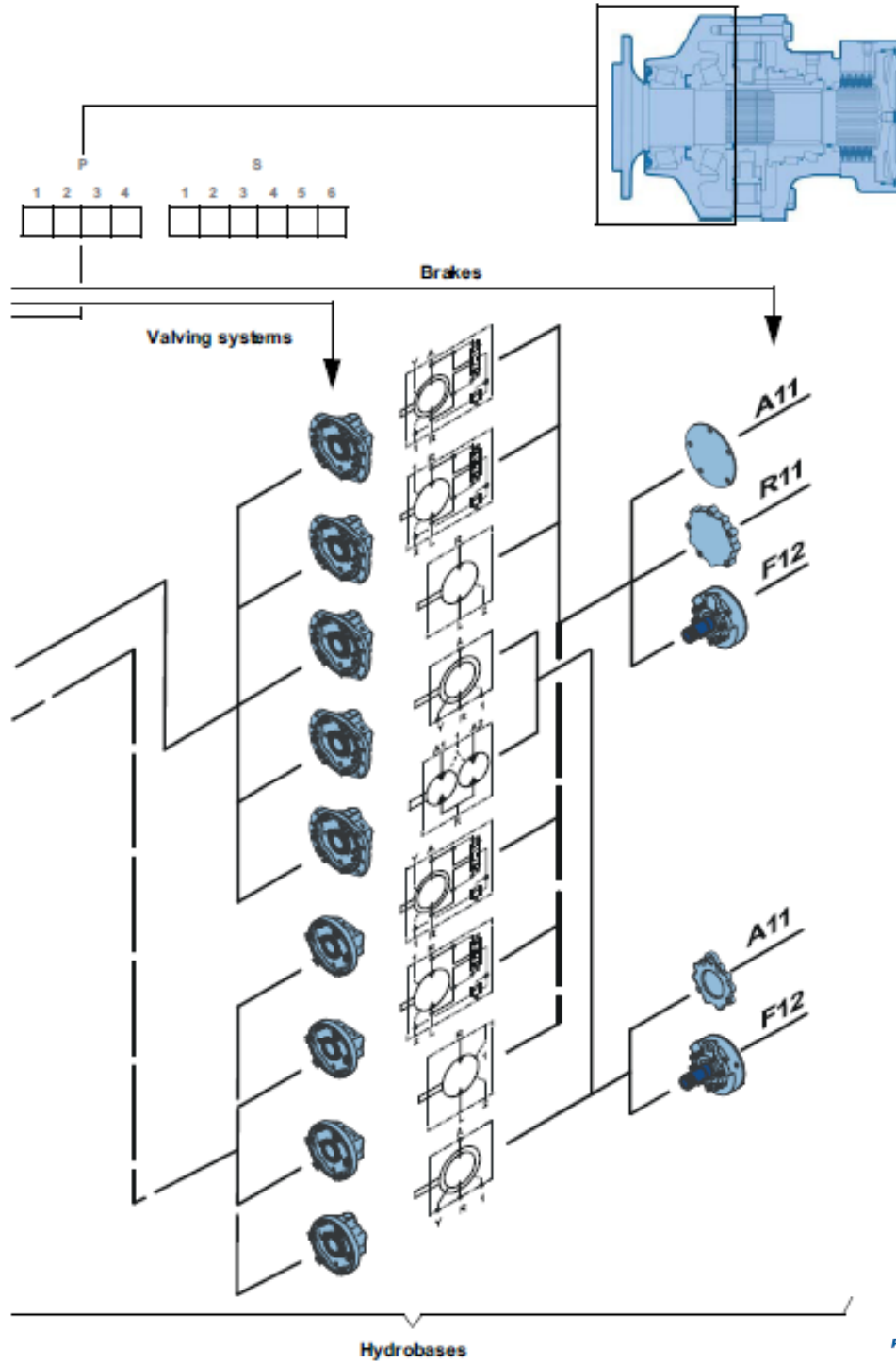
CONTENT

	<b>MODULARITY MODEL CODE</b>	<b>4 6</b>	Modularity and Model code
	<b>WHEEL MOTOR</b>	<b>8</b>	Wheel motor
	Dimensions for standard (1110) 1-displacement motor	8	
	Dimensions for standard (1110) 2-displacement motor	9	
	Dimensions for standard (1110) Twin-Lock™	9	
	Support types	10	
	Studs	10	
	Load curves	11	
	Support types (continued)	12	
	Load curves (continued)	13	
	<b>SHAFT MOTOR</b>	<b>15</b>	Shaft motor
	Dimensions for standard (2A50) 1-displacement motor	15	
	Dimensions for standard (2A50) 2-displacement motor	15	
	Support types	16	
	Splined coupling	16	
	Load curves	17	
	<b>VALVING SYSTEMS AND HYDROBASES</b>	<b>19</b>	Valving systems and hydrobases
	Dimensions for 1-displacement valving	19	
	Cylinder block spines	19	
	Exchange	22	
	Hydraulic connections	24	
	Efficiency	25	
	<b>BRAKES</b>	<b>27</b>	Brake
	Rear brake	27	
	D'YNA+™ Brake	28	
	Drum brake (315 x 80)	29	
	<b>OPTIONS</b>	<b>31</b>	Options

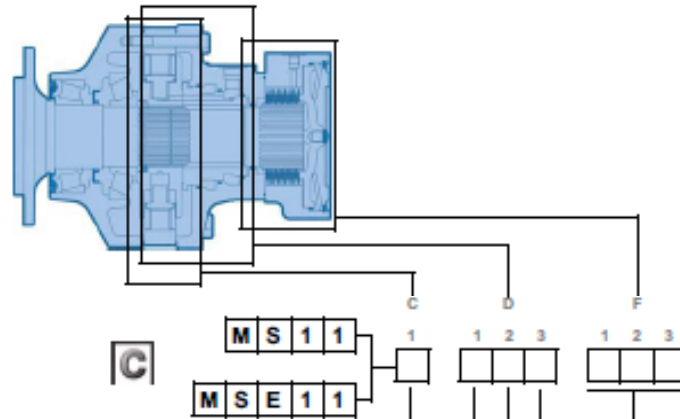
MODULARITY



MODULARITY



MODEL CODE



	①		②	
	cm <sup>3</sup> /r [cu.in/rev.]	cm <sup>3</sup> /r [cu.in/rev.]	cm <sup>3</sup> /r [cu.in/rev.]	cm <sup>3</sup> /r [cu.in/rev.]
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]	
Cams with unequal lobes MS11	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 equal 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]	
Cams with unequal lobes MSE11	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 First displacement  
② Second displacement

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

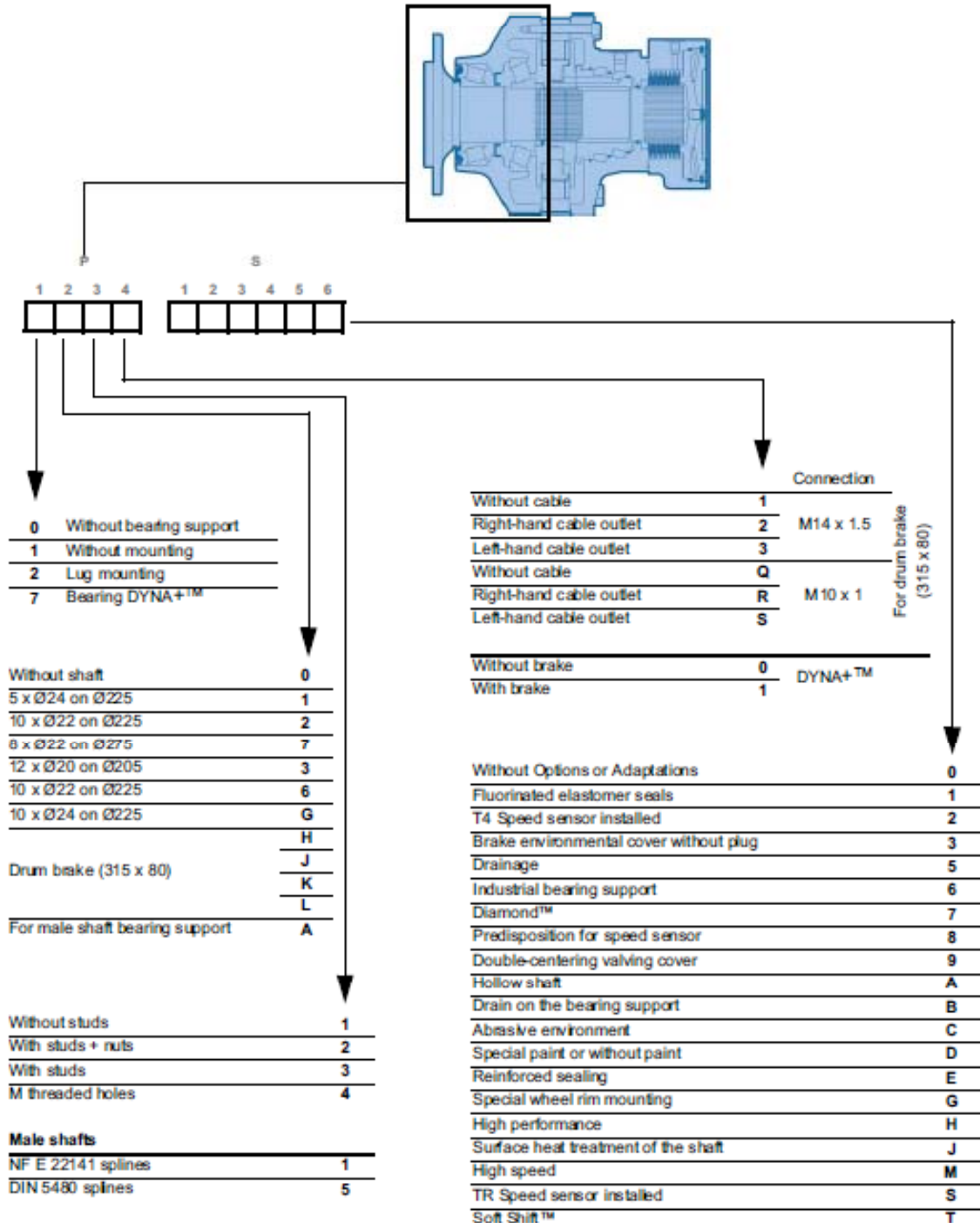
Without mounting	1	4	D
With mounting	2	5	E
	1 Displacement	Exchange	Twin-Lock™
	2 Displacement		

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

Without brake (simple plate)	A	1	1
Brake	F	1	2
Without brake (reinforced plate)	R	1	1



## MODEL CODE



**Methodology :**

This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain 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.**



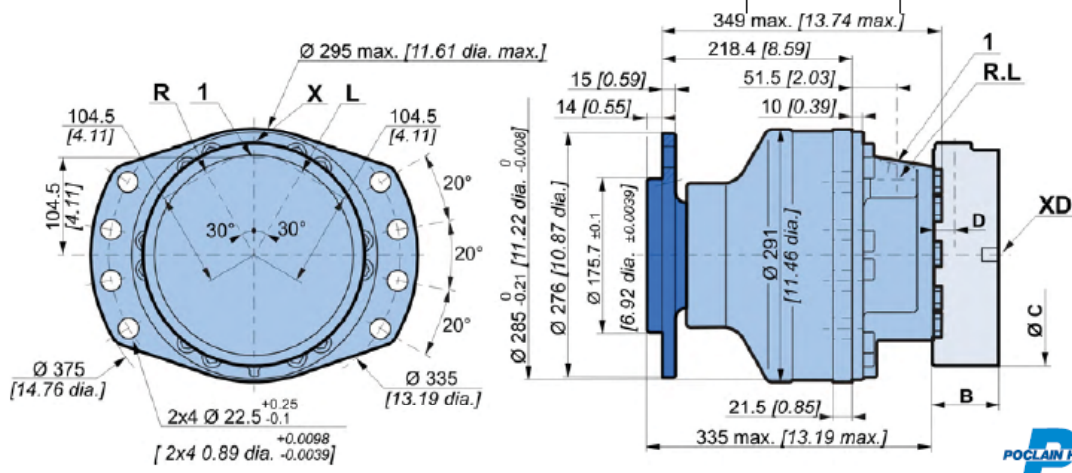
**Information intended for Poclain-Hydraulics personnel.**

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>



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

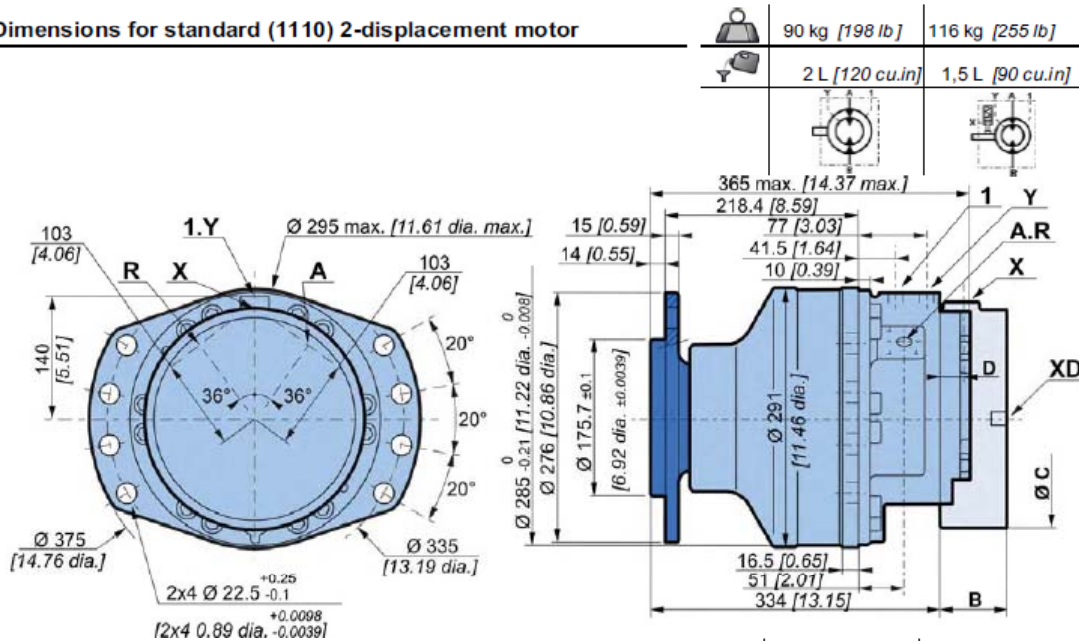
	86 kg [189 lb]	112 kg [246 lb]
	2 L [120 cu.in]	1,5 L [90 cu.in]



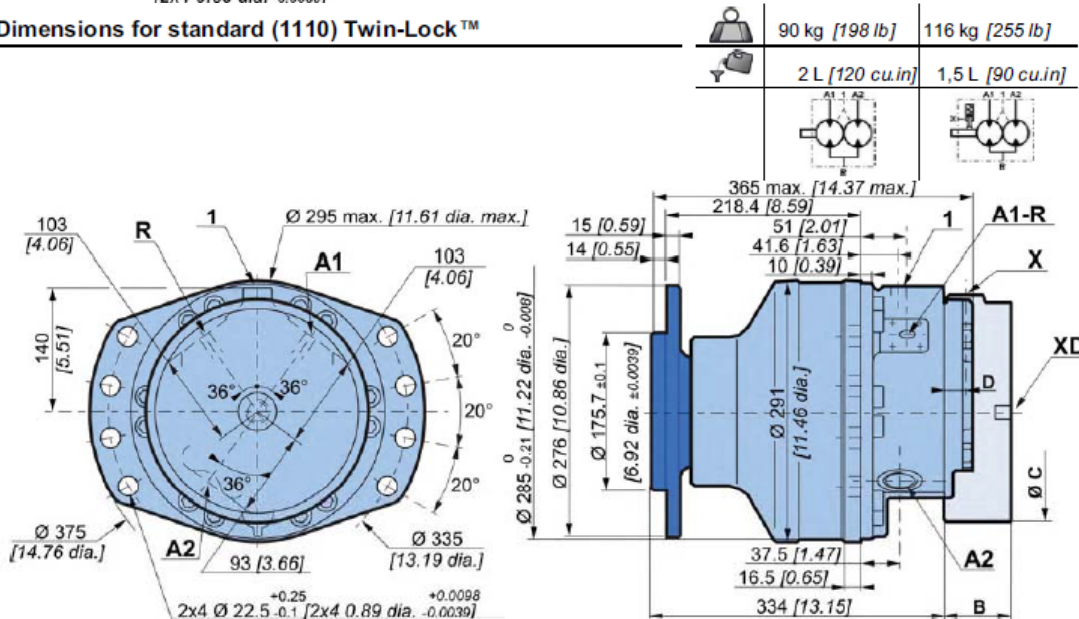


WHEEL MOTOR

Dimensions for standard (1110) 2-displacement motor



Dimensions for standard (1110) Twin-Lock™



	F12
B	76.7 [3.02]
C	Ø247 [9.72]
D	26 [1.02]

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



**Support types**

	C				D			F			P				S					
	MS11																			
	MSE11																			
	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 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 276 [10,87 dia.]	218,6 [8,61]	Ø 291 [11,46 dia.]	Ø 24 [0,94 dia.]	5 x M22x1.5	14 [0,55]												
	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 276 [10,87 dia.]	218,6 [8,61]	Ø 291 [11,46 dia.]	Ø 22 [0,87 dia.]	10 x M20x1.5	14 [0,55]												
	Ø 160,7 [6,33 dia.]	Ø 205,0 [8,07 dia.]	Ø 250 [9,84 dia.]	174,4 [6,87]	Ø 289,5 [11,40 dia.]	Ø 20 [0,79 dia.]	12 x M18x1.5	15 [0,59]												
	Ø 185 [7,28 dia.]	Ø 220 [8,66 dia.]	Ø 245 [9,65 dia.]	172,4 [6,79]	Ø 291 [11,46 dia.]	Ø 14 [0,55 dia.]	16 x M12	15 [0,59]												
	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 276 [10,87 dia.]	218,6 [8,61]	Ø 291 [11,46 dia.]	Ø 22 [0,87 dia.]	10 x M20x1.5	21 [0,83]												
	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	218,6 [8,61]	Ø 291 [11,46 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	14 [0,55]												

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

**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	M18 x 1.5	55 [2,17]	5 [0,20]	17 [0,67]	23 [0,91]	12,9		420 [309,8]	550 [405,7]
	M20 x 1.5	60 [2,36]		14 [0,55]	25 [0,98]			600 [442,5]	770 [567,9]
	M22 x 1.5	65 [2,56]		24 [0,94]	26 [1,02]			695 [512,6]	1 050 [774,4]
Screws	M12						120 [88,5]	120 [88,5]	

(\*) 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)

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



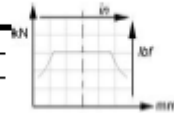
**Load curves**

**Permissible radial loads**

Test conditions :

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

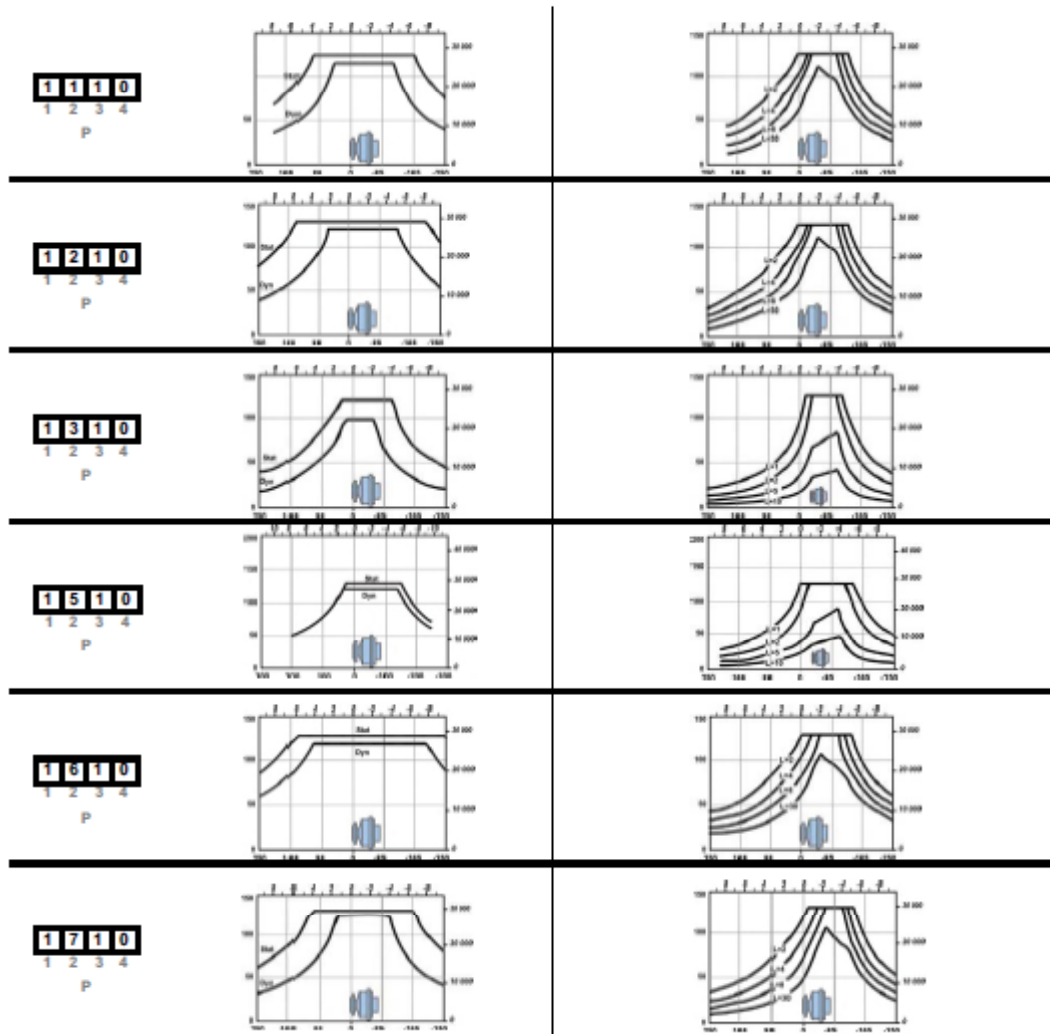
**Dynamic :** 0 *t/min* [0 *RPM*], code 0 displacement, without axial load at max. torque



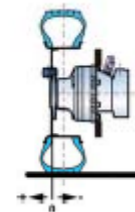
**Service life of bearings**

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 Poclain Hydraulics application engineer.



Support types (continued)

	C		D			F			P				S					
	M S 1 1		1	1 2 3	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6										
	M S E 1 1																	
<b>C</b>	<b>A</b> mm [in]	<b>B</b> mm [in]	<b>C</b> mm [in]	<b>D</b> mm [in]	<b>E</b> mm [in]	<b>N</b> mm [in]	<b>Wheel rim mountings</b>	<b>L</b> mm [in]										
<b>1 8 1 0</b> <small>1 2 3 4</small> <i>p</i>	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	174,3 [6,86]	Ø 291 [11,46 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	18 [0,71]										
<b>1 9 1 0</b> <small>1 2 3 4</small> <i>p</i>	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	219,6 [8,65]	Ø 291 [11,46 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	19 [0,75]										
<b>1 G 1 0</b> <small>1 2 3 4</small> <i>p</i>	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 270 [10,63 dia.]	284,6 [11,20]	Ø 291 [11,46 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	16 [0,63]										
<b>1 J 4 0</b> <small>1 2 3 4</small> <i>p</i>	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 354 [13,94 dia.]	294,6 [11,60]		M10x1.5 52 (2,05) 17 (0,67) 30°	10 x M22x1.5	39 [1,54]										
<b>1 H 4 0</b> <small>1 2 3 4</small> <i>p</i>	Also see 'Brakes' section (thumbnail opposite).																	
<b>1 K 3 0</b> <small>1 2 3 4</small> <i>p</i>	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 354 [13,94 dia.]	294,6 [11,60]		M10x1.5 52 (2,05) 17 (0,67) 30°	10 x M22x1.5	39 [1,54]										
<b>1 L 3 0</b> <small>1 2 3 4</small> <i>p</i>	Also see 'Brakes' section (thumbnail opposite).																	
<b>7 7 3 1</b> <small>1 2 3 4</small> <i>p</i>	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314,5 [12,38 dia.]	252,6 [9,94]	Ø 341,0 [13,43 dia.]	180 [7,09]	8 x M20x1.5	54 [2,13]										
	Also see 'Brakes' section (thumbnail opposite).																	

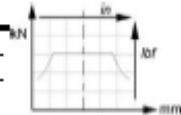
Load curves (continued)

**Permissible radial loads**

Test conditions :

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

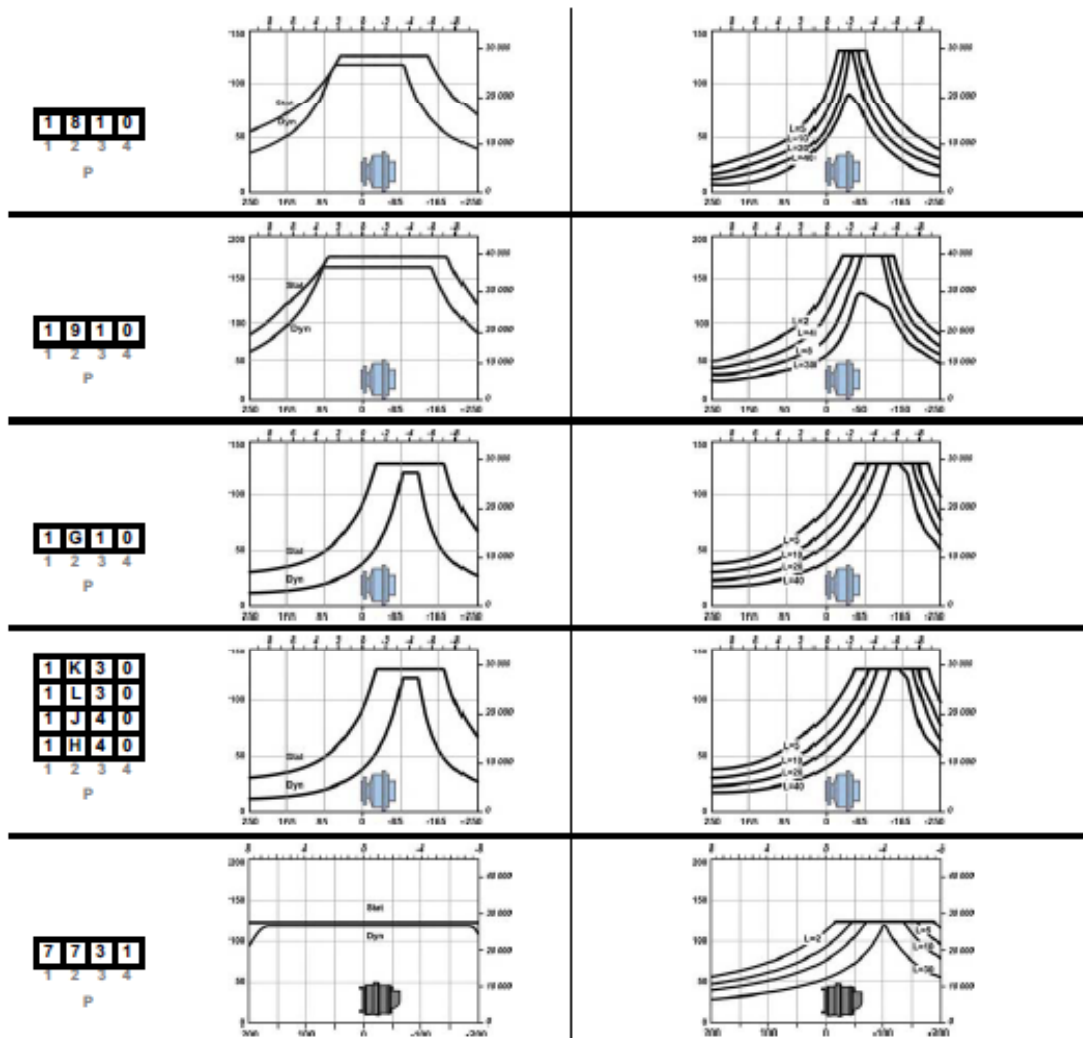
**Dynamic** : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



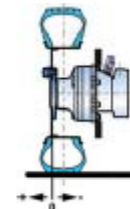
**Service life of bearings**

Test conditions :

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



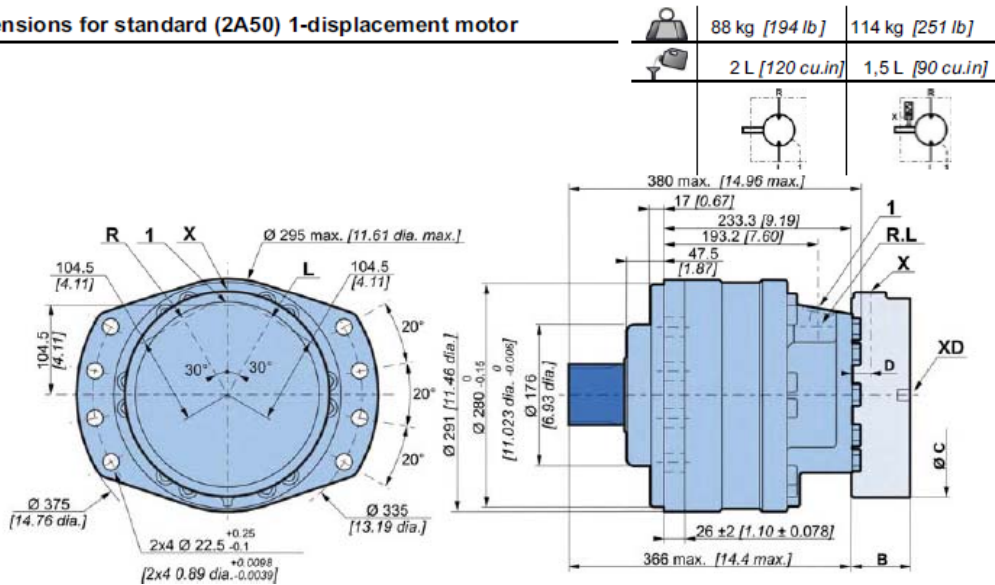
The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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



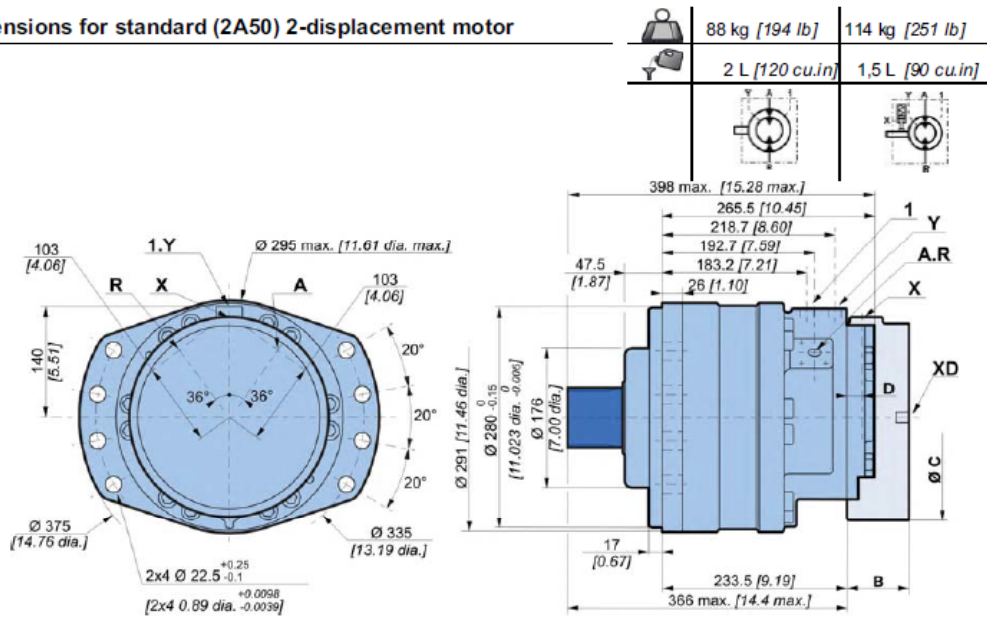


SHAFT MOTOR

Dimensions for standard (2A50) 1-displacement motor



Dimensions for standard (2A50) 2-displacement motor



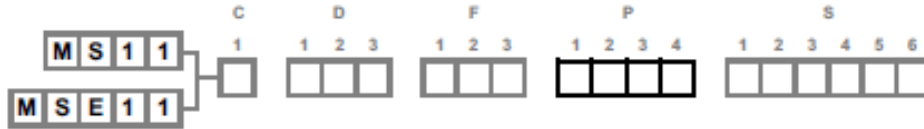
<b>C</b>	<b>F12</b>
<b>B</b>	76,7 [3,02]
<b>C</b>	$\varnothing 247$ [9,72]
<b>D</b>	26 [1,02]



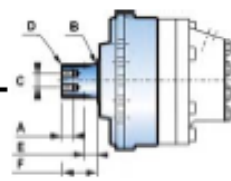
Also see 'Valving systems and hydrobases' section (thumbnail opposite).



**Support types**

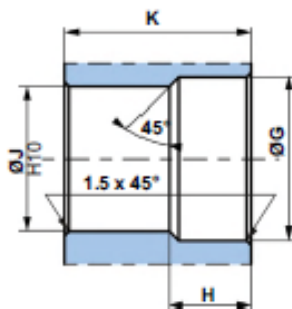


		A	B	C	D	E	F												
<b>C</b> <table border="1"> <tr><td>2</td><td>A</td><td>5</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table>	2	A	5	0	1	2	3	4	P				<b>DIN 5480 splines</b>	15 [0,59]	R 2,75 [R 0,11]	35 [1,38]	2 x M10	23 [0,91]	80 [3,15]
	2	A	5	0															
	1	2	3	4															
P																			
Nominal Ø	80 [3,15]																		
Module	3																		
Z	25																		
<b>C</b> <table border="1"> <tr><td>2</td><td>A</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>	2	A	1	0	1	2	3	4	P				<b>NF E22-141 splines</b>	15 [0,59]	R 2,75 [R 0,11]	35 [1,38]	2 x M10	24 [0,94]	70 [2,76]
	2	A	1	0															
	1	2	3	4															
P																			
Nominal Ø	75 [2,95]																		
Module	2,5																		
Z	28																		



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

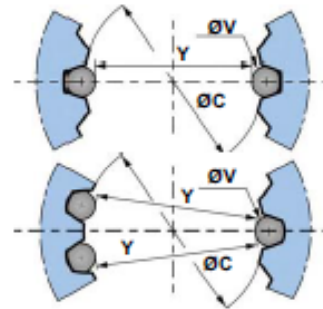
**Splined coupling**



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

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

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



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

General tolerances : ± 0.25 [±0.0098].  
 Material Ex: 42CrMod.  
 Hardening treatment to obtain R = 800 to 900 N/mm² [R = 116 030 to 130 533 PSI].

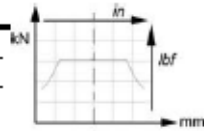
**Load curves**

**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



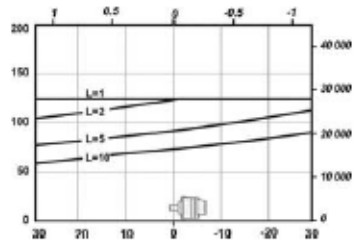
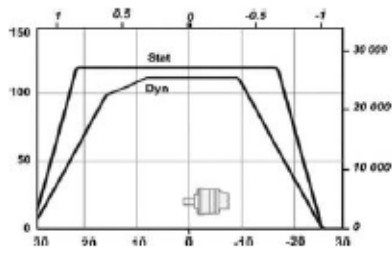
**Service life of bearings**

Test conditions :

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

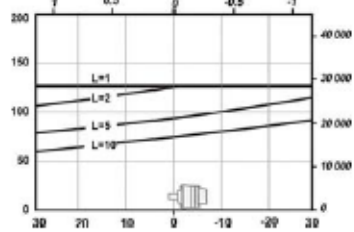
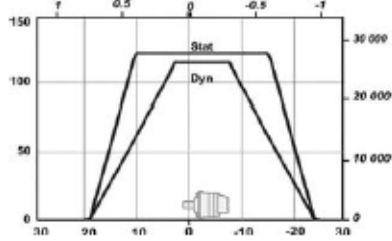
**2 A 5 0**

P

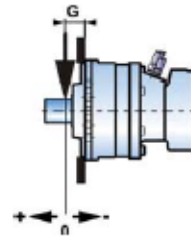


**2 A 1 0**

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.



**C**

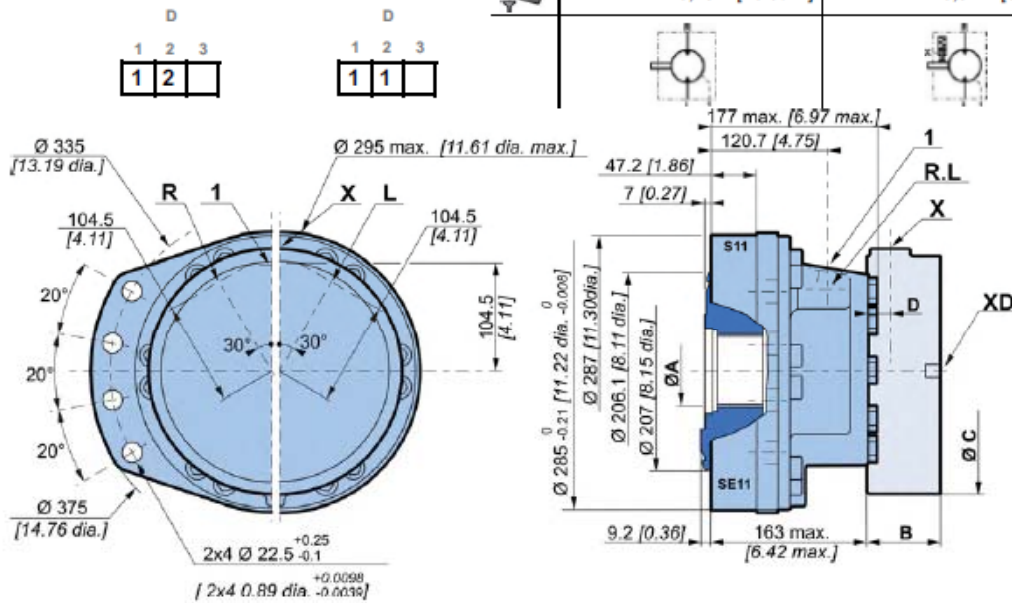
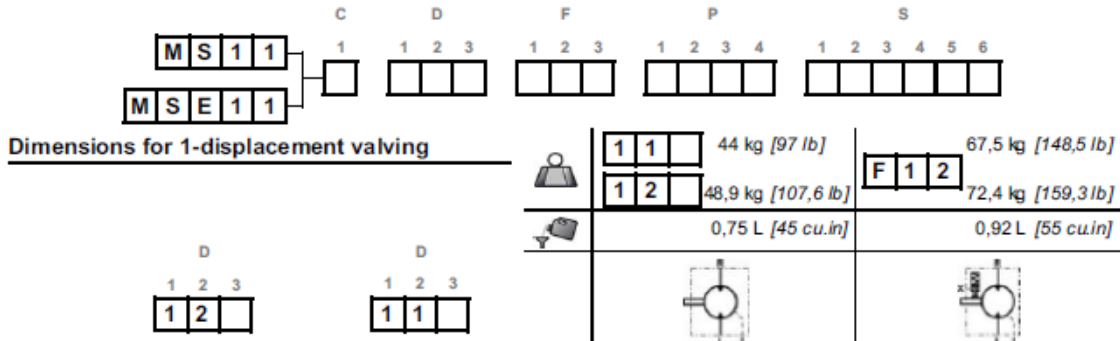
**G**

**2 A 1 0** 96,75 [3,81]

**2 A 5 0** 101,25 [3,99]



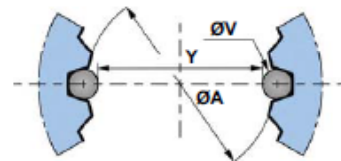
VALVING SYSTEMS AND HIDROBASES



<b>C</b>	<b>F12</b>
<b>B</b>	76,7 [3,02]
<b>C</b>	Ø247 [9,72]
<b>D</b>	26 [1,02]

**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]



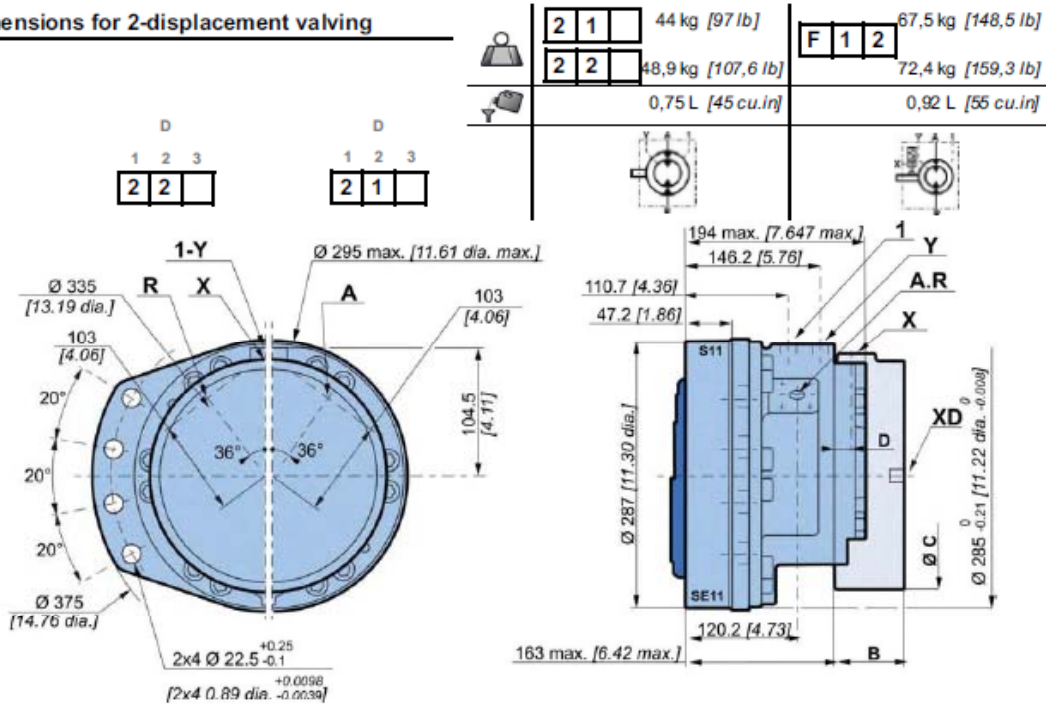
You are advised to have the installation validated by your Poclain Hydraulics application engineer before using the hydraulic unit in an application.



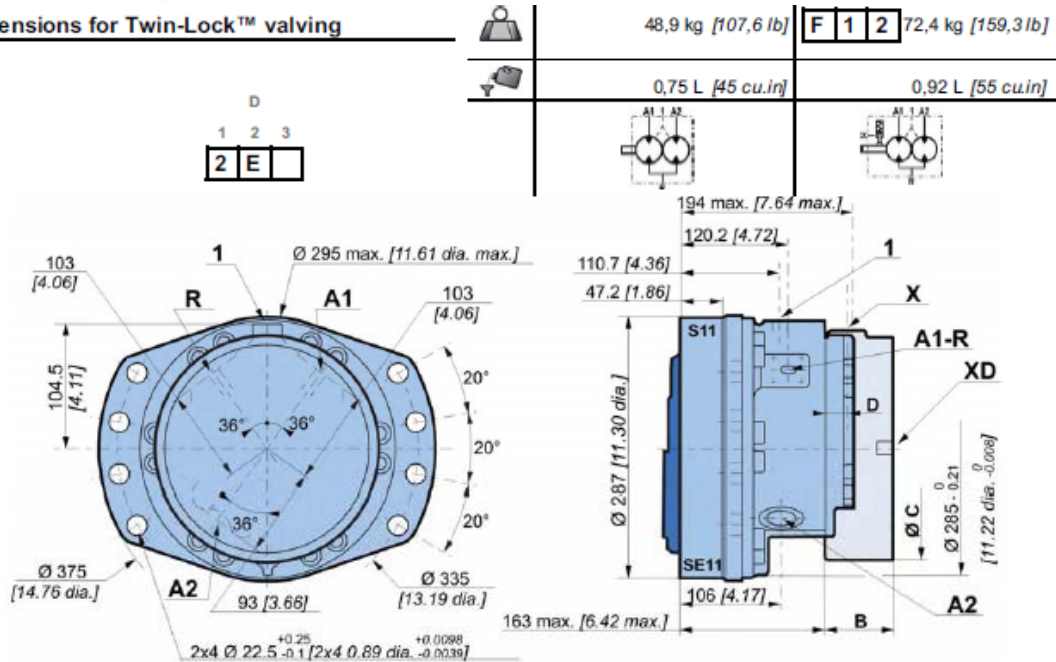
We must provide you with a detailed plan of the interface for any hydraulic unit use, consult your Poclain Hydraulics sales engineer.



**Dimensions for 2-displacement valving**

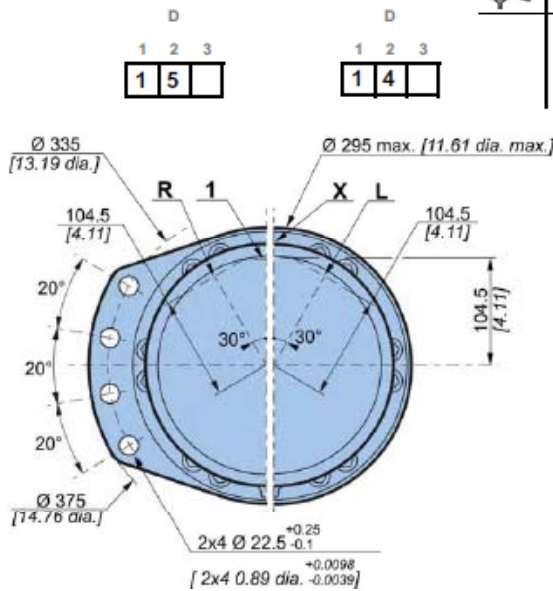


**Dimensions for Twin-Lock™ valving**

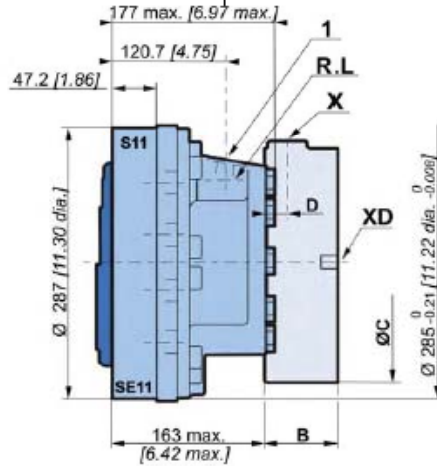


<b>C</b>	<b>F12</b>
<b>B</b>	76,7 [3,02]
<b>C</b>	Ø247 [9,72]
<b>D</b>	26 [1,02]

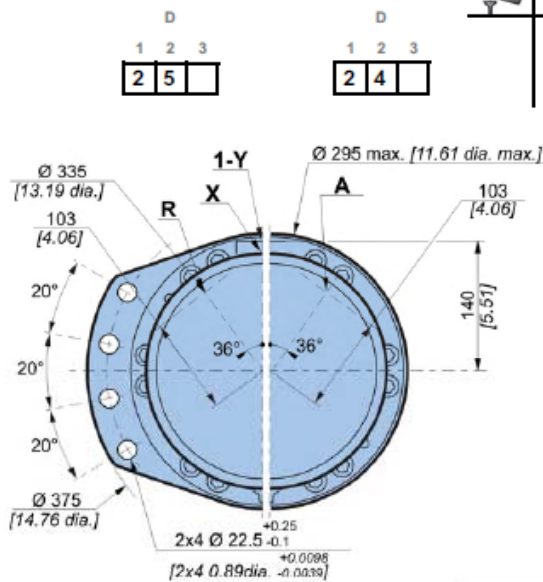
**Dimensions for 1-displacement valving with built-in exchange**



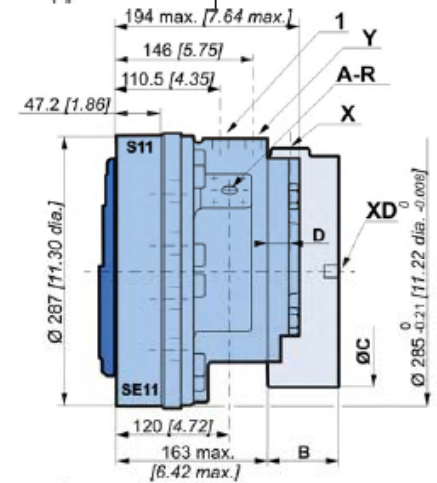
	<b>1 5</b>	44 kg [97 lb]	<b>F 1 2</b>	67,5 kg [148,5 lb]
	<b>1 4</b>	48,9 kg [107,6 lb]	<b>F 1 2</b>	72,4 kg [159,3 lb]
		0,75 L [45 cu.in]		0,92 L [55 cu.in]



**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]	<b>F 1 2</b>	72,4 kg [159,3 lb]
		0,75 L [45 cu.in]		0,92 L [55 cu.in]

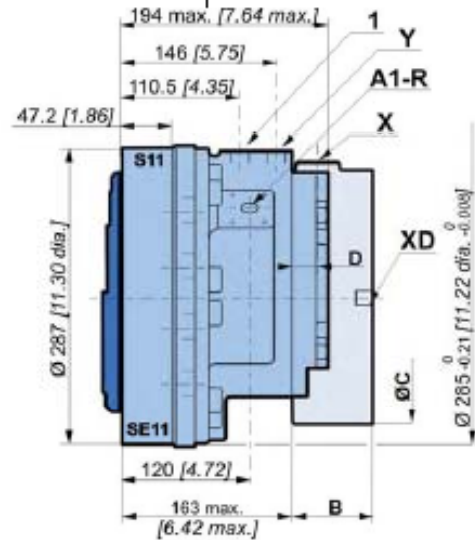
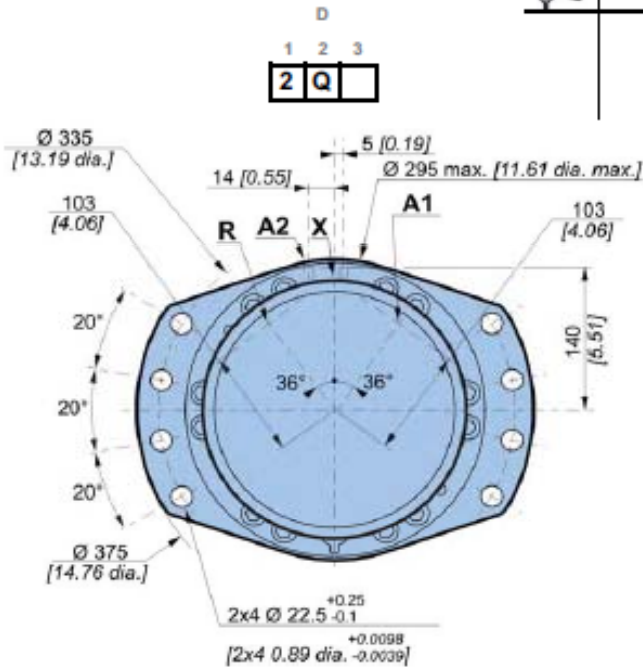


<b>C</b>	<b>F12</b>
<b>B</b>	76,7 [3,02]
<b>C</b>	Ø247 [9,72]
<b>D</b>	26 [1,02]



**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**

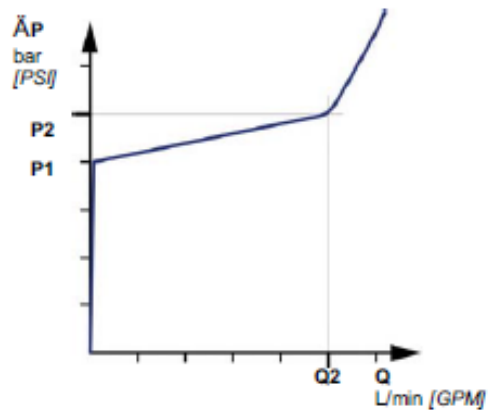
When a coding request is made, you must specify information on the threshold of the selector and the valve.

**Selector spool**

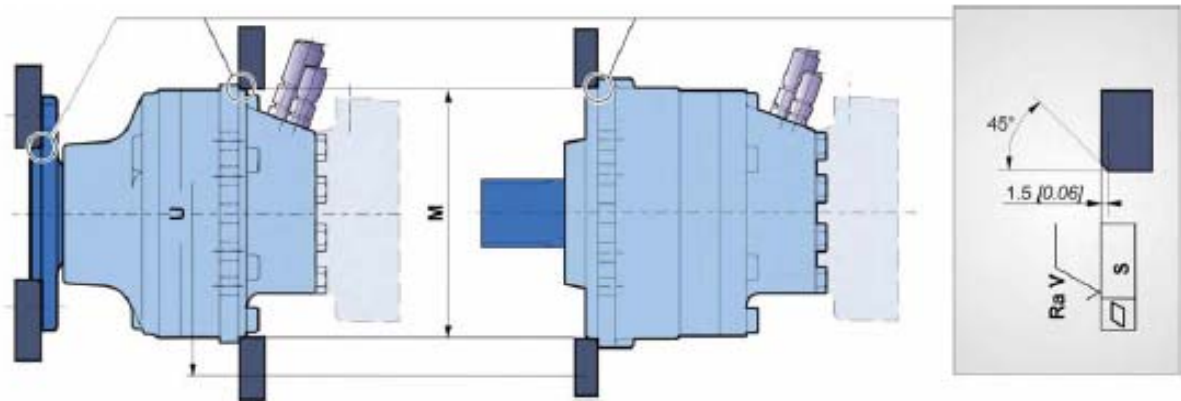
Selector threshold bar [PSI]	Opening pressure of selector bar [PSI]
8 [116]	9.9 ± 1.2 [144 ± 17]

**Fitted valve**



P1 bar [PSI]	Q2 L/min [GPM]	P2 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.

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

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

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



**Hydraulic connections**  
connections

	Old standards	Standards	Power supply	Case drain	2 <sup>nd</sup> displacement control	Control of parking break	Control of drum break	Control of parking break	Control of service break	
1 displacement	A	SAE J514 ISO 11926-1	R-L T T F E-2 UNF	1, 2 3/4" -16 UNF	X 9/16" -18 UNF	XT	X 3/4" -16 UNF	XD 9/16" -18 UNF		
	1	ISO 6 162 DIN 3 852	ISO 9 974-1 DN 8 P N4 00	M 18x15	M 6x15		M 6x15	M 14x15		
	2	ISO 6 162 BSPP	ISO 1 179-1 DN 8 P N4 00	Ø21 [f2" dia.]	Ø17 [3/8" dia.]	Ø17 [3/8" dia.]				
	3	BSPP	ISO 1 179-1	Ø27 [3/4" dia.]	Ø21 [f2" dia.]	Ø17 [3/8" dia.]				
	4	NFE48 050	ISO 9 974-1	M27x2	M 18x15		M 6x15	M 14x15		
	5	DIN 3 852	ISO 9 974-1	M33x2	M 18x15	M 6x15				
	7	ISO 6 162 SAE J514	ISO 6 162 ISO 11926-1	DN 8 P N4 00	3/4" -16 UNF		9/16" -18 UNF	3/4" -16 UNF 9/16" -18 UNF		
2 Displacement	A	SAE J514 ISO 11926-1	R-A T T F E-2 UNF	1, 2 3/4" -16 UNF	Y 9/16" -18 UNF	X 9/16" -18 UNF	X 3/4" -16 UNF	XD 9/16" -18 UNF		
	1	ISO 6 162 DIN 3 852	ISO 9 974-1 DN 8 P N4 00	M 18x15	M 6x15	M 6x15	M 6x15	M 14x15		
	2	ISO 6 162 BSPP	ISO 1 179-1 DN 8 P N4 00	Ø21 [f2" dia.]	Ø17 [3/8" dia.]	Ø17 [3/8" dia.]				
	3	BSPP	ISO 1 179-1	Ø27 [3/4" dia.]	Ø21 [f2" dia.]	Ø17 [3/8" dia.]				
4	NFE48 050	ISO 9 974-1	M27x2	M 18x15	M 6x15	M 6x15	M 6x15	M 14x15		
Twin-Lock™	A	SAE J514 ISO 11926-1	R-A1 T T F E-2 UNF	A2 9/16" -18 UNF	1, 2 3/4" -16 UNF	Y 9/16" -18 UNF	X 9/16" -18 UNF	X 3/4" -16 UNF	XD 9/16" -18 UNF	
	1	ISO 6 162 DIN 3 852	ISO 9 974-1 DN 8 P N4 00	M27x2	M 18x15	M 18x15	M 6x15	M 6x15	M 14x15	
	4	NFE48 050	ISO 9 974-1	M27x2	M 18x15	M 6x15	M 6x15	M 6x15	M 14x15	
		ISO 9 974-1					M 10x1 M 6x15			
Max. pressures	M S	bar /PSI	450 [6 527]	450 [6 527]	1 [15]	30 [435]	30 [435]	20 [1740]	30 [435]	120 [1740]
	M S E		400 [5 802]	400 [5 802]						

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

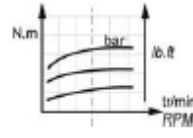
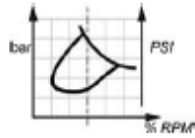
To find the connections' tightening torques, see the brochure "Installation guide" N° 801478197L.



**Efficiency**

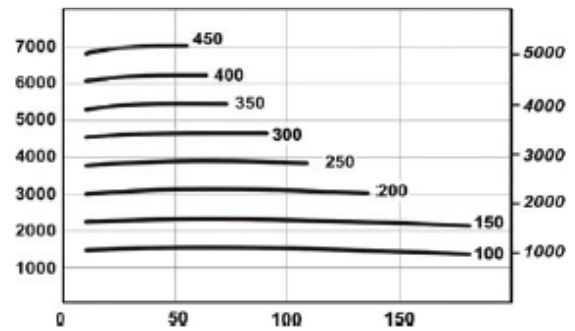
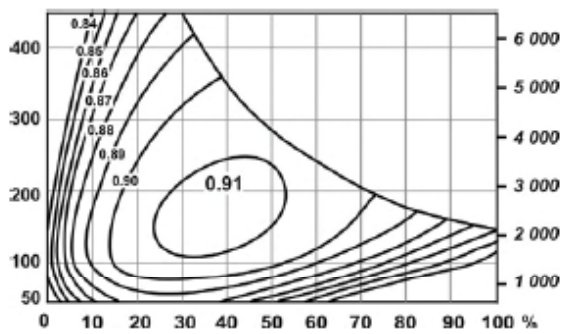
**Overall efficiency**

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

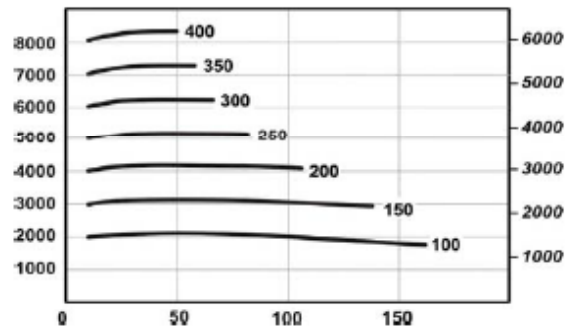
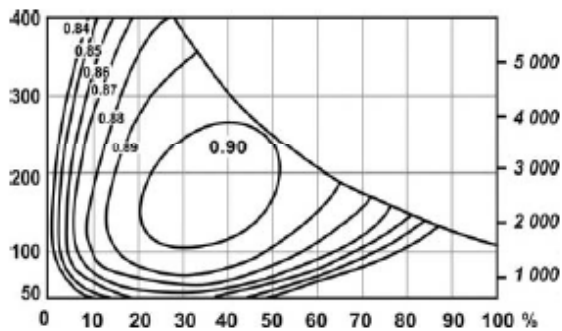


**Actual output torque**

**MS11**

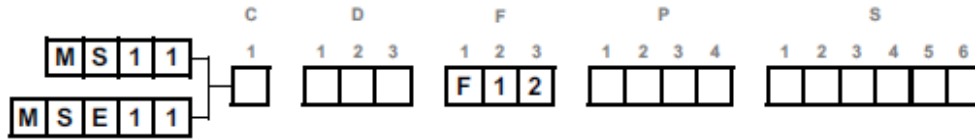


**MSE11**

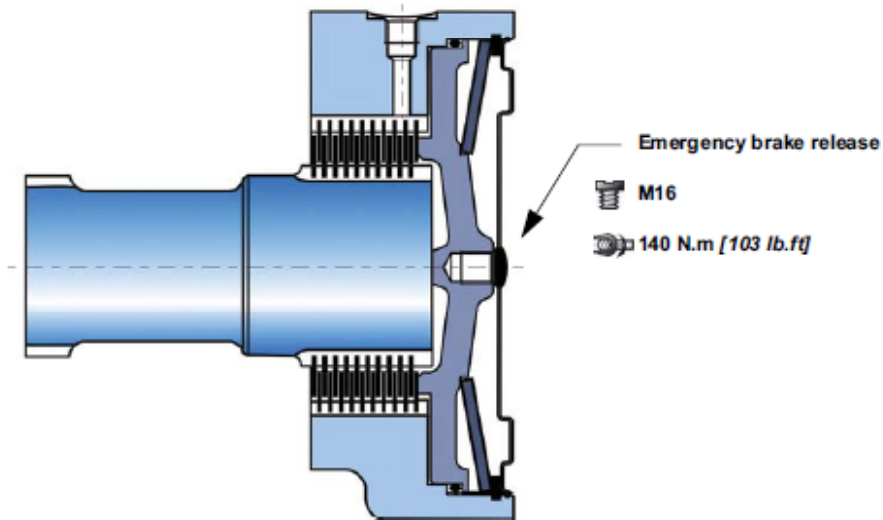


The starting torque is taken to be approximately 85% of the first value for available pressure. For a precise calculation, consult your Poclain Hydraulics application engineer.

**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.

<b>C</b>	<b>F 1 2</b>
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

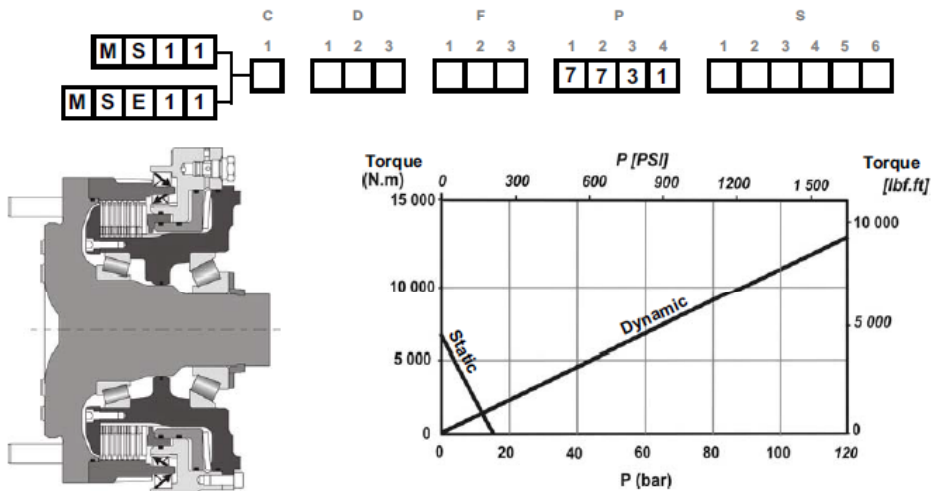
\* After emergency brake has been used

- Do not run in 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 Podain 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.

**Hydraulically controlled dynamic braking**

Max. permissible brake torque	13 100 Nm [9 660 lb.ft]
Pressure to obtain max. permissible brake torque	120 bar [1 740 PSI]
Volume required for braking	15 cm <sup>3</sup> [0,92 cu.in]
Mini. irrigation flow rate for dynamic braking	4 L/min [1,06 GPM]

**Hydraulically controlled parking brake**

Parking brake torque (new brakes)	6 810 Nm [5 020 lb.ft]
Parking brake torque (after 500 dynamic braking)	5 450 Nm [4 020 lb.ft]
Parking brake torque mini. requiring renovation	4 850 Nm [3 580 lb.ft]
Max. release brake pressure	30 bar [435 PSI]
Volume for brake release	67 cm <sup>3</sup> [4,09 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 to the case	5 700 Nm [4 200 lb.ft]
Max. energy dissipation	583 kJ

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



**Brake release pressure vented.**



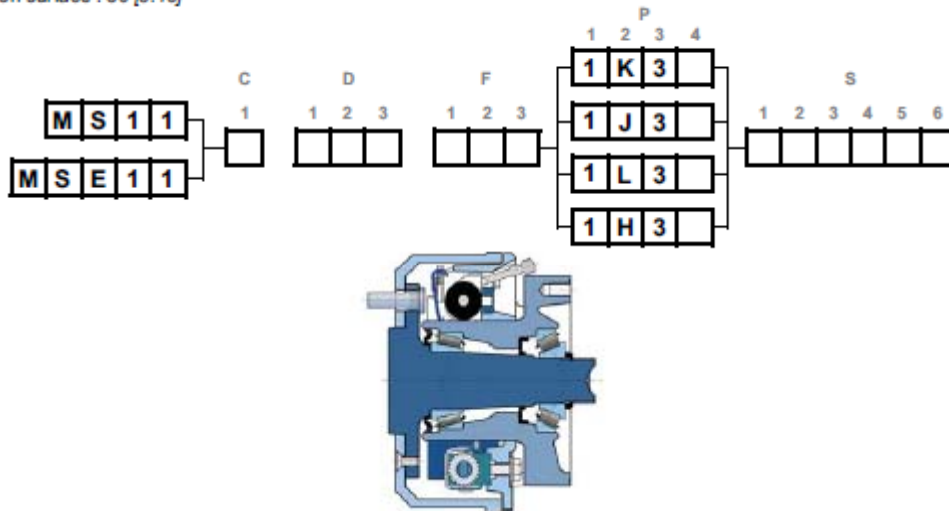
**Do not use both dynamic and parking brake simultaneously.**



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

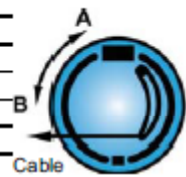
**Drum brake (315 x 80)**

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	H - K
DOT 3/DOT4/SAE J1703	No	Yes	J - L
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 lb.f]		
Force required to bring pads into contact	63,5 N [14,3 lb.f]		
Stroke required to bring pads into contact	A	10,5 mm [0,41 "]	
	B	12 mm [0,47 "]	
Max. stroke before automatic brake adjustment	A	12,5 mm [0,49 "]	
	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.



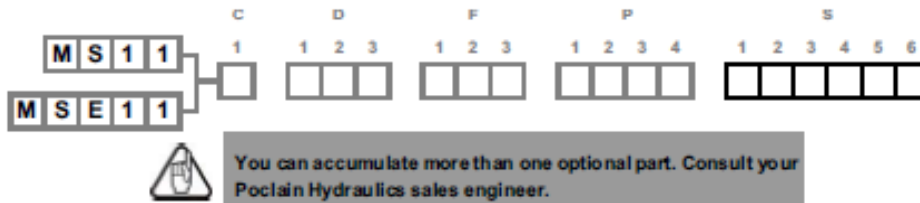
Brake release pressure vented.



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.

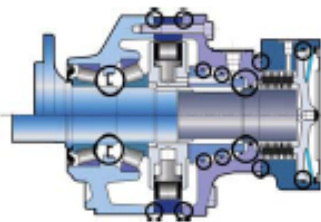


OPTIONS



1 - Fluorinated elastomer seals

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

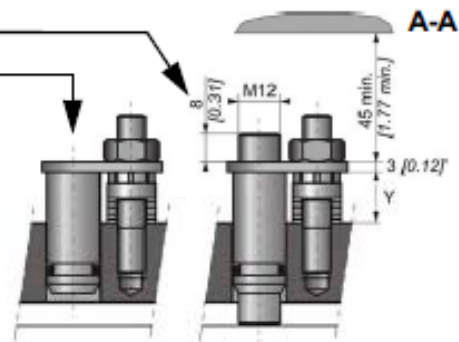
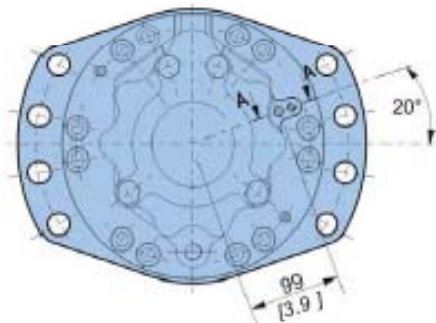


Consult your Poclain Hydraulics sales engineer.

2 - S - 8 - Installed speed sensor or predisposition

Designation

T4 Speed sensor installed	<b>2</b>
TR Speed sensor installed (direction of rotation)	<b>S</b>
Predisposition for speed sensor	<b>8</b>



Max. length Y= 20.9

Standard number of pulses per revolution= 56



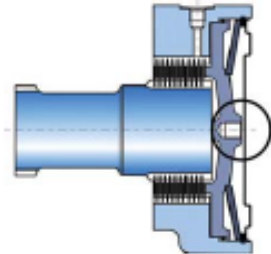
Look at the "Mobile Electronic" N° A01889D technical catalogue for the sensor specifications and its connection.



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

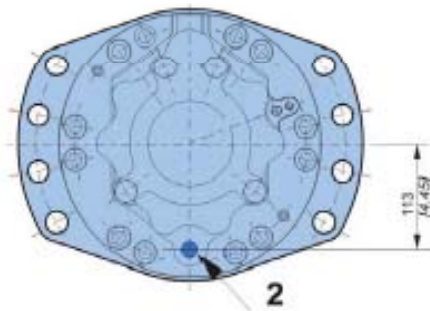
### 3 - Brake environmental cover without plug

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



### 5 - Drainage

Additional drain in the cover.

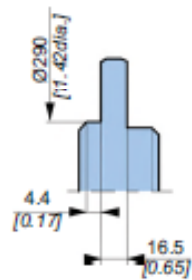


### 7 - Diamond™

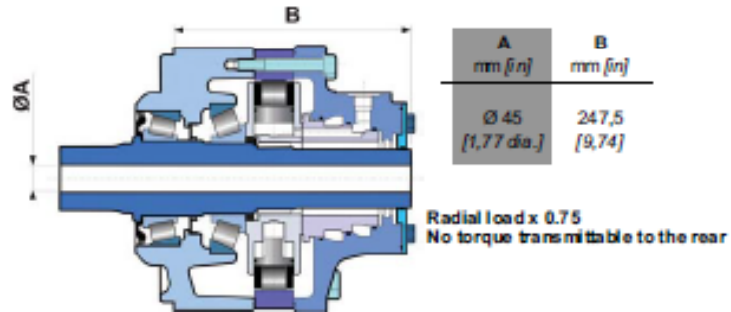
Special treatment of the motor core which considerably increases its strength, making the motor much more tolerant to temporary instances of the operating conditions being exceeded.

### 9 - Double-centering valving cover

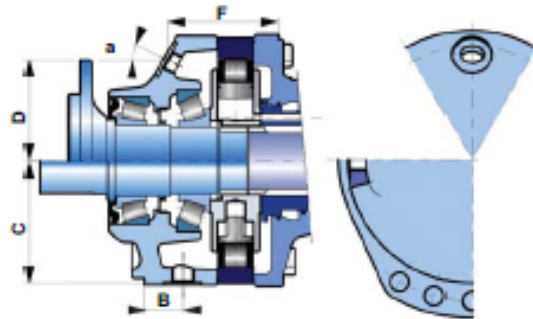
This option allows a motor to be installed from the front or the back.



**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)**

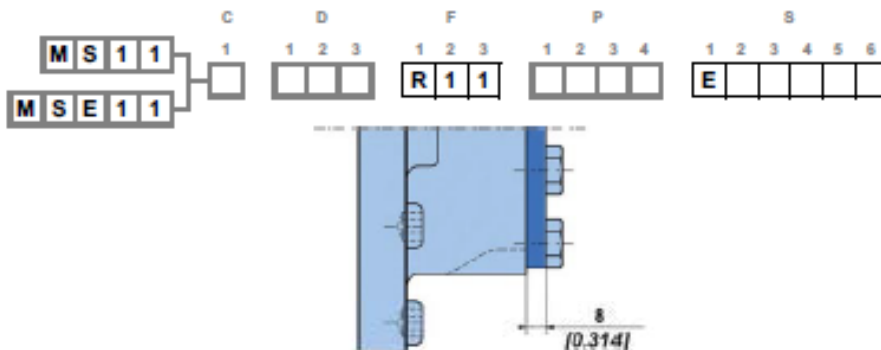
Certain environments can be very harmful. The mirror seal gives reinforced motor sealing.



Consult your Poclain 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]).



### 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

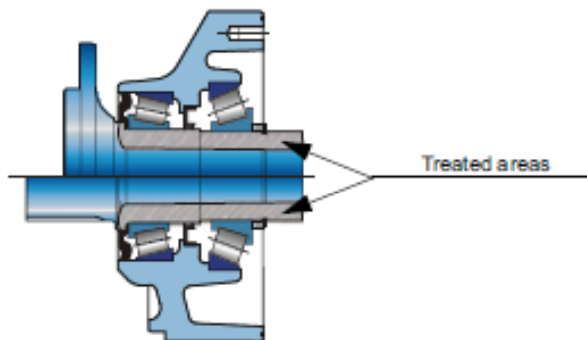
Reinforced piston sealing to improve volumetric efficiency.



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

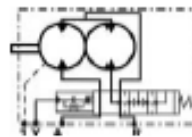
Under certain conditions, an increase in the maximum speed of 30% above the values indicated in the table on page 2 is possible.



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.