

# MS35

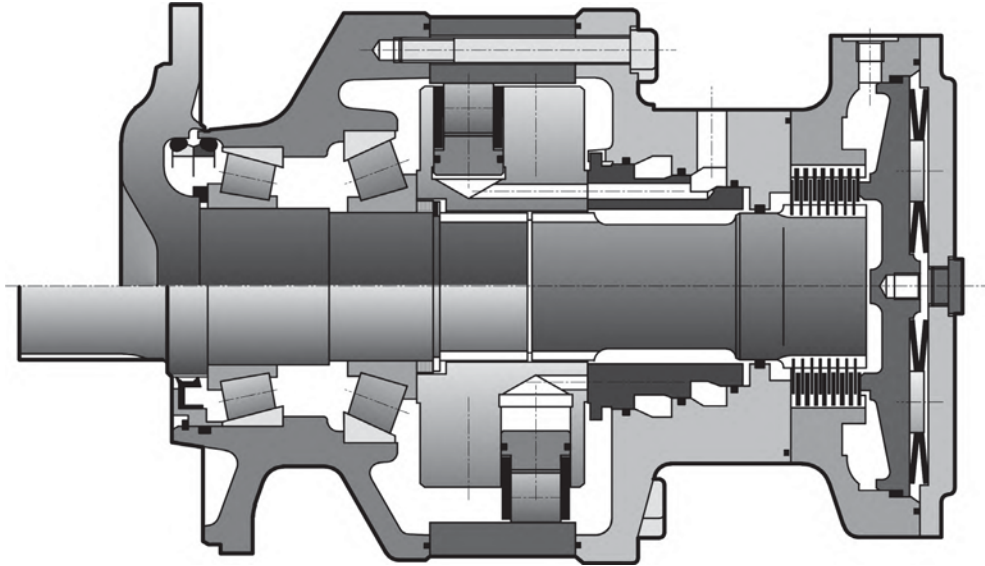
## HYDRAULIC MOTORS



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



# CHARACTERISTICS



Motor inertia 0.5 kg.m<sup>2</sup>

	Displacement		Theoretical torque		Max. power preferred	Max. power non-preferred	Max. speed		Max. pressure	
	①	②	①	②			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]	① kW [HP]	② kW [HP]	② kW [HP]	① tr/min   RPM	② tr/min   RPM	bar [PSI]
Cams with equal lobes	7	2 439 [148,8]	1 220 [74,4]	3 878 [1 972]	110 [148]	73 [98]	55 [74]	140	140	450 [6 527]
	9	3 143 [191,7]	1 572 [95,8]	4 997 [2 541]				140	140	
	0	3 494 [213,1]	1 747 [106,5]	5 555 [2 825]				130	130	
	2	4 198 [256,0]	2 099 [128,0]	6 675 [3 394]				110	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	120	450 [6 527]
			1 091 [66,5]					120	120	
	A	3 494 [213,1]	2 099 [128,0]	5 555 [2 825]				110	110	
			1 395 [85,1]							

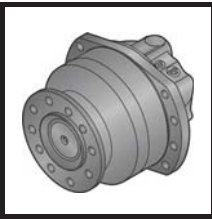
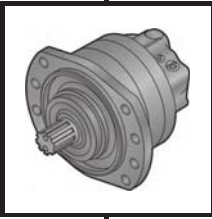
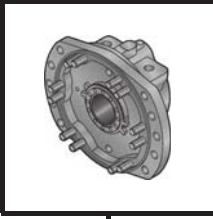
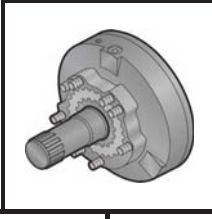
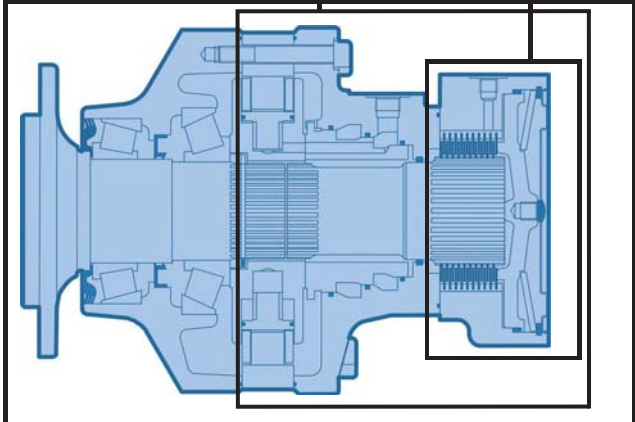
- ① First displacement
- ② Second displacement



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

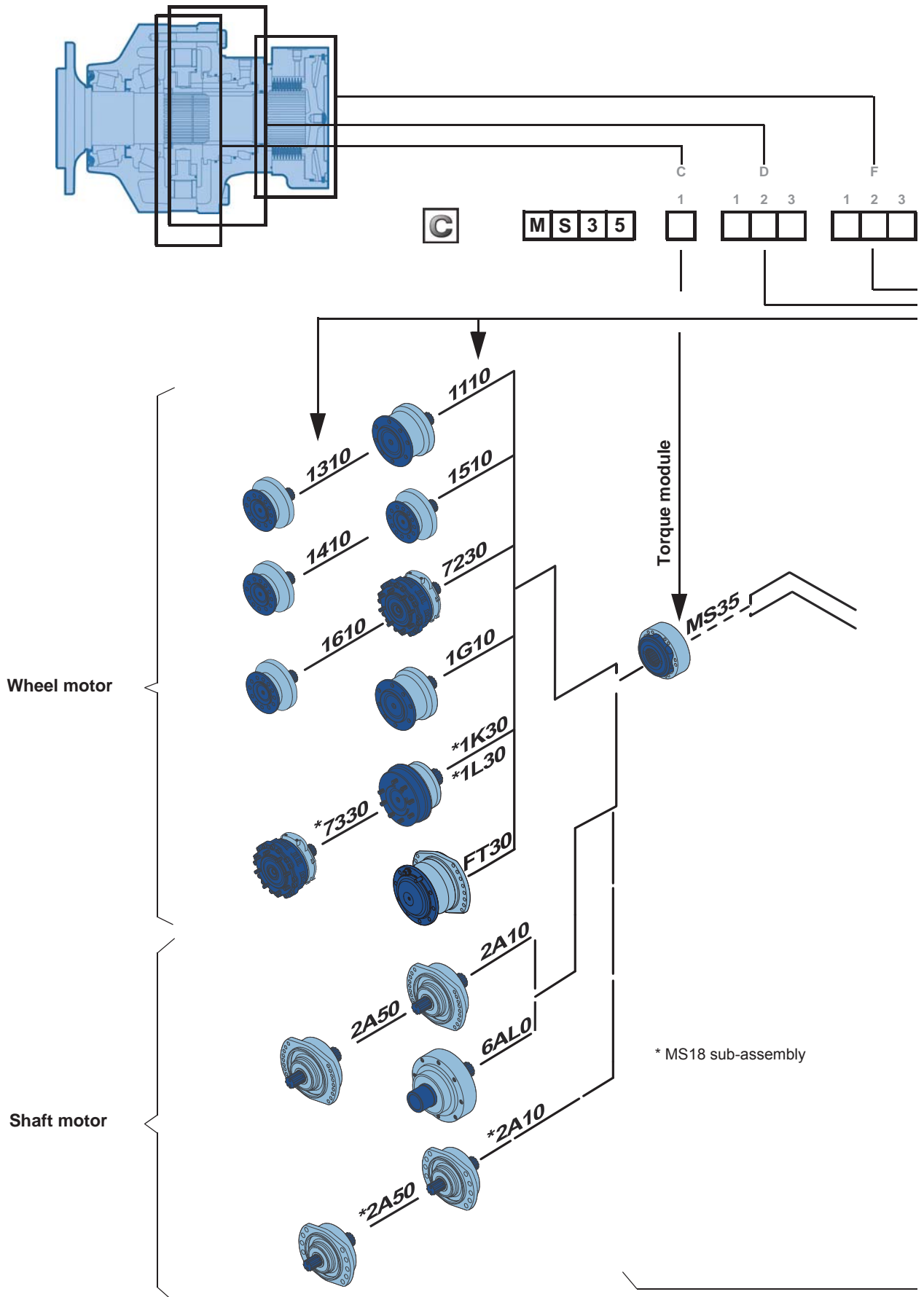


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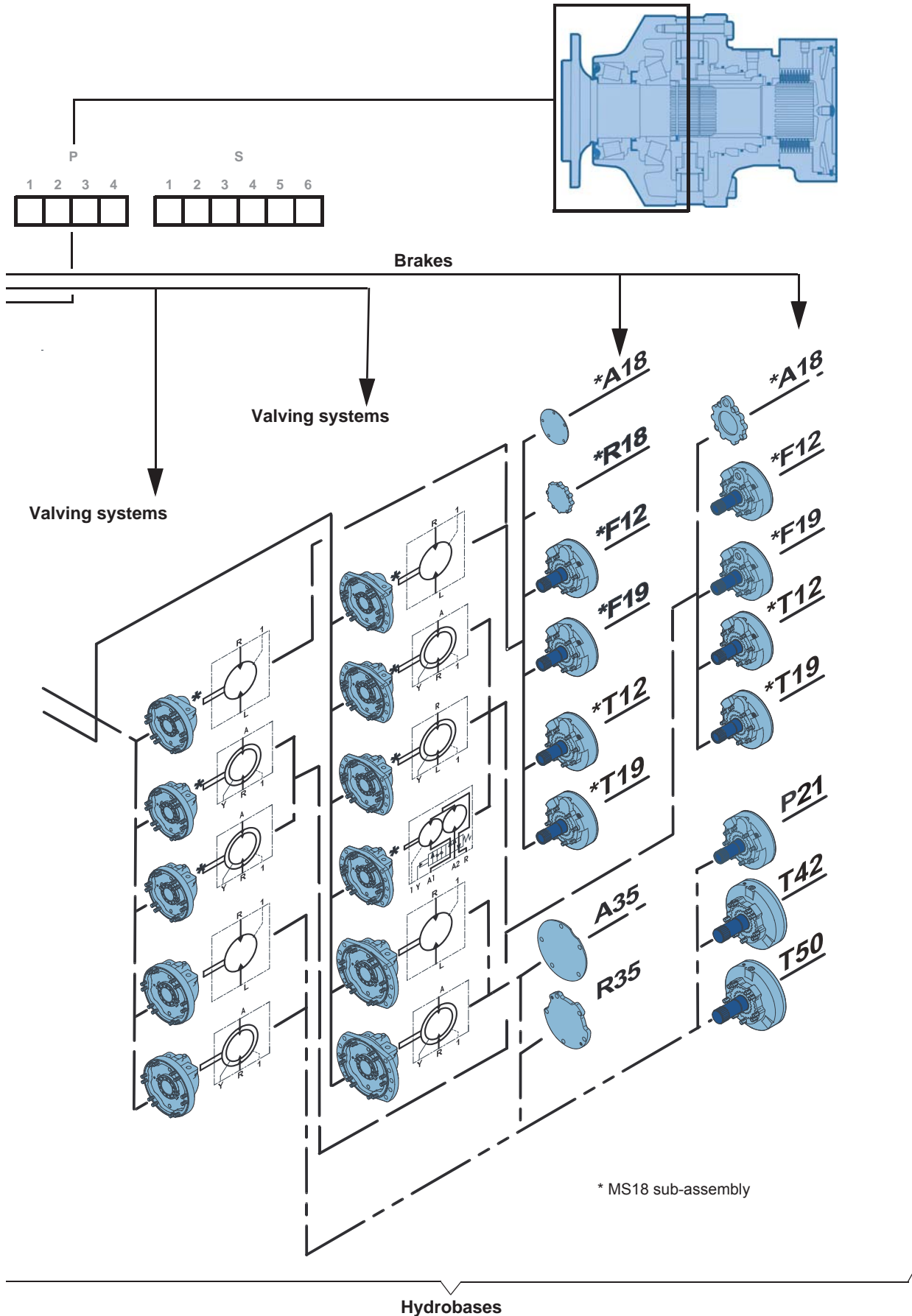


# MODUL





# ARITY



Modularity and Model code

Wheel motor

Shaft motor

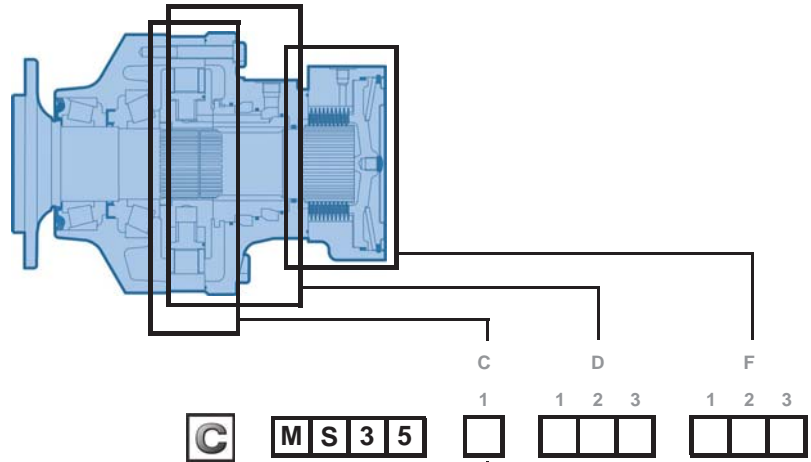
Valving systems and hydrobases

Brake

Options



# MODEL



	①	②
	cm <sup>3</sup> /tr [cu.in/rev.]	cm <sup>3</sup> /tr [cu.in/rev.]
Cams with equal lobes	7	2 439 [148,8]
	9	3 143 [191,7]
	0	3 494 [213,1]
	2	4 198 [256,0]
Cams with unequal lobes	K	3 000 [183,0] <math>\left\{ \begin{array}{l} 1\ 911 [116,6] \\ 1\ 091 [66,5] \end{array} \right.</math>
		A

① First displacement  
② Dual displacement

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

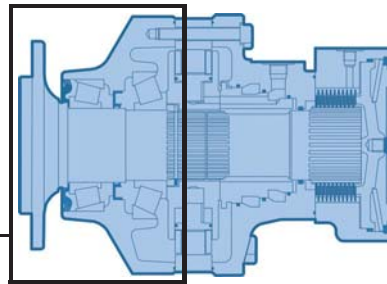
Valving		Standard		Twin-Lock™ or 2-displacement	
		1	2	DP	EQ
S18	Without mounting	1		DP	
	Lug fixing	2		EQ	
S35	Without mounting	B		-	
	Lug fixing	C		-	

No transmission cover	0
ISO DP6162 flanges	1
ISO 9974-1 connections	1
ISO DP6162 flanges	2
ISO 1179-1 connections	2
ISO 9974-1 connections	4
ISO DP6162 flanges	7
ISO 11926-1 connections	7
ISO DP6162 flanges	9
ISO 9974-1 connections	9
ISO 11926-1 connections	A

Valving	S18	Without brake	Reinforced plate		A 1 8	
		Brakes	Bearing mounting or valving cover mounting	Parking brake	Clipped environmental cover	R 1 8
					Screwed environmental cover	F 1 2
						F 1 9
	S35	Without brake	Reinforced plate		A 3 5	
		Brakes	Bearing mounting or valving cover mounting	Parking brake	Clipped environmental cover	R 3 5
					Screwed environmental cover	P 2 1
						T 4 2
				T 5 0		



# CODE



0	Without bearing support
1	Without mounting
2	Lug mounting
6	Motor torque
F	Brake C27™ with chasis fixation

Without shaft	0
10 x Ø24 on Ø335	1
8 x Ø22 on Ø275	3
8 x Ø17.5 on Ø235	4
12 x Ø22 on Ø275	5
10 x Ø24 on Ø335 (for studs length of 65 mm)	T*
10 x Ø24 on Ø225	6
Support without drum brake	G
Drum brake (432 x 102)	Mineral K DOT L
For male shaft bearing support	A

\*Standard for C27™ brake

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

**Male shafts**

NF E 22141 splines	1
DIN 5480 splines	5
Female shaft for bushing	L

**Drum brake**

Without cable	4
Right-hand cable outlet	5
Left-hand cable outlet	6

Connection M14x1.5

Without Options or Adaptations	0
Fluorinated elastomer seals	1
T4 Speed sensor installed	2
Brake environmental cover without plug	3
Drainage	5
Industrial bearing support	6
Diamond™	7
Predisposition for speed sensor	8
Hollow shaft	A
Drain on the bearing support	B
Reinforced sealing	E
Special wheel rim mounting	G
Surface heat treatment of the shaft	J
TR Speed sensor installed	S

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 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)



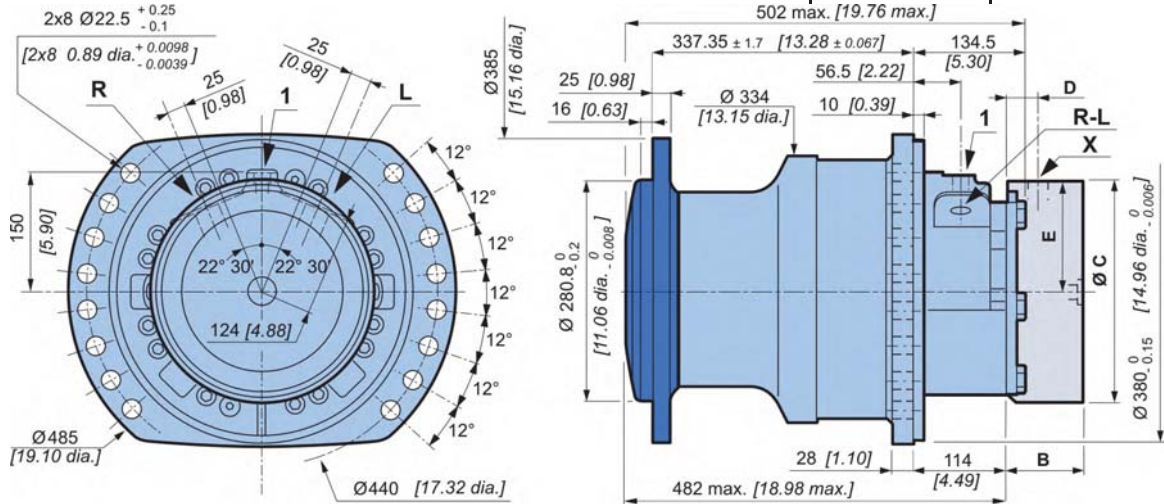




# WHEEL MOTOR

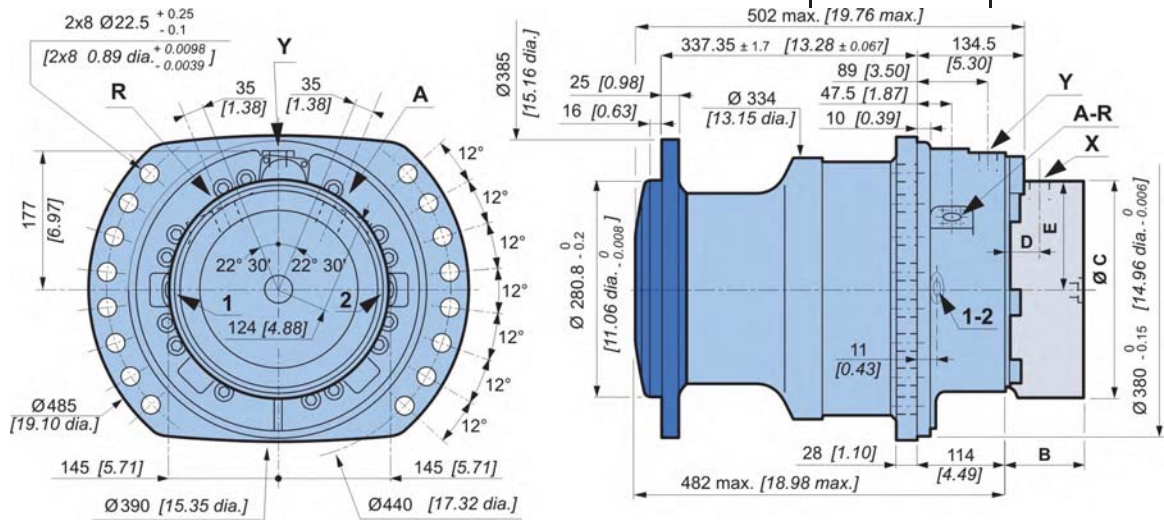
## Dimensions for standard (1110) 1-displacement motor

	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]



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

	<b>C</b>	<b>P 2 1</b>	<b>T 4 2</b>	<b>T 5 0</b>
<b>B</b>	108,5 [4,27]	148,0 [5,83]	157,5 [6,20]	
<b>C</b>	Ø280 [11,02 dia.]	Ø375 [14,76 dia.]	Ø375 [14,76 dia.]	
<b>D</b>	57 [2,24]	63,5 [2,50]	63,5 [2,50]	
<b>E</b>	138,5 [5,45]	183,5 [7,22]	183,5 [7,22]	



Also see 'Brakes' section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

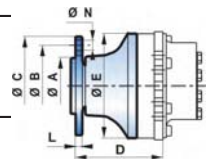
Options



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 280,8 [11,06 dia.]	Ø 335 [13,19 dia.]	Ø 386 [15,20 dia.]	319 [12,56]	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.]	282 [11,10]	Ø 334 [13,15 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	14 [0,55]
	Ø 152,7 [5,99 dia.]	Ø 235 [9,25 dia.]	Ø 280 [11,02 dia.]	213 [8,39]	Ø 334 [13,15 dia.]	Ø 17,5 [0,69 dia.]	-	15 [0,59]
	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	282 [11,10]	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.]	282 [11,10]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	15 [0,59]



Studs

	P	C min.	C max.	D	Class	Tightening torque	
						(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]	12,9	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]	1 050 [774,4]
	M22 x 1.5	80 [3,15]					
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/mm<sup>2</sup> [>34 800 PSI]).

(2) Standard : Suggested tightening torque in other cases (Re steel flange 360 > N/mm<sup>2</sup> [>52 215 PSI]).

(3) In case of bearings 8P30 and 8Q30 : Poclair recommends to use the flanged nuts with tightening torque = 900 Nm.



See generic installation motors N°801478197L.



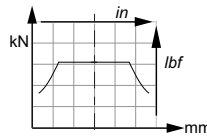
Load curves

Permissible radial loads

Test conditions :

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

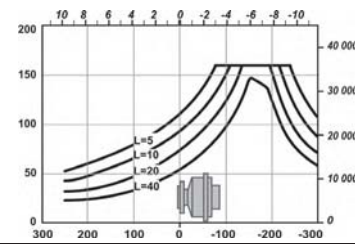
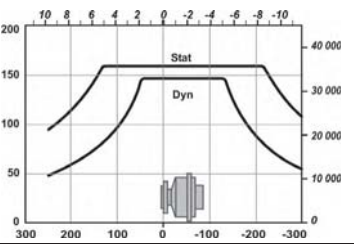
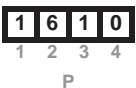
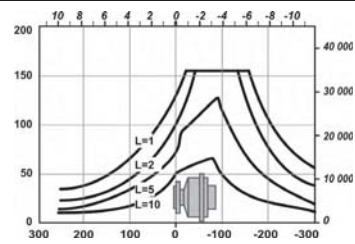
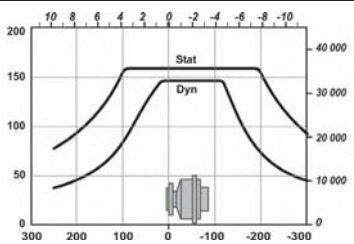
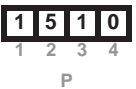
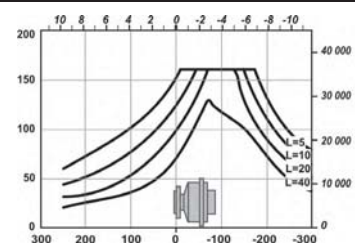
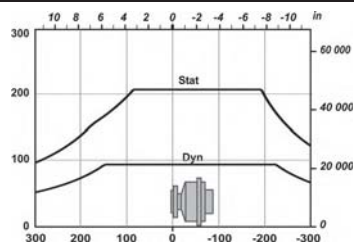
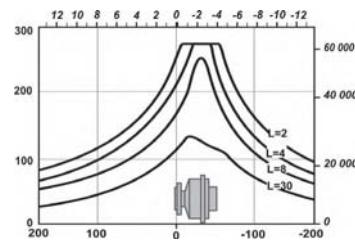
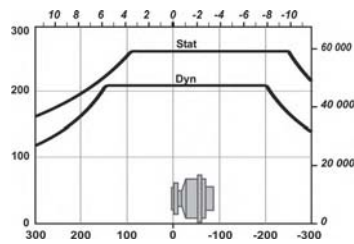
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



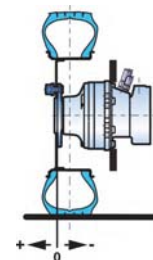
Service life of bearings

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 Poclair Hydraulics application engineer.



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options



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
<b>M</b>	<b>S</b>	<b>3</b>	<b>5</b>															

<b>C</b>	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	N mm [in]	Wheel rim mountings	L mm [in]																	
<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 M22x1.5	17 [0,67]					
1	G	1	0																						
1	2	3	4																						
P																									
	<b>Also see "Brake" section</b> (thumbnail opposite).																								
<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">432 x 102</td></tr> </table>	1	K	3	0	1	L	3	0	1	2	3	4	432 x 102				Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 461,5 [18,17 dia.]	362 [14,25]		Ø 24 [0,94 dia.]	10 x M22x1.5	48 [1,89]	
1	K	3	0																						
1	L	3	0																						
1	2	3	4																						
432 x 102																									
	<b>Also see "Brake" section</b> (thumbnail opposite).																								
<table border="1"> <tr><td>F</td><td>T</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>	F	T	3	0	1	2	3	4	P				Ø 280,0 [11,02 dia.]	Ø 335 [13,19 dia.]	Ø 386 [15,20 dia.]	232 [9,13]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	19 [0,75]					
F	T	3	0																						
1	2	3	4																						
P																									
	<b>Also see "Brake" section</b> (thumbnail opposite).																								



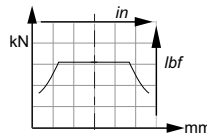
Load curves (continued)

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



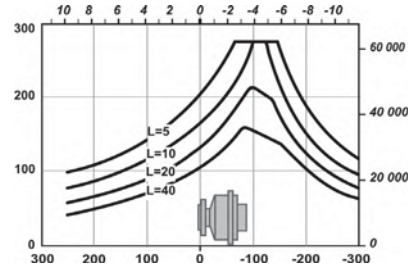
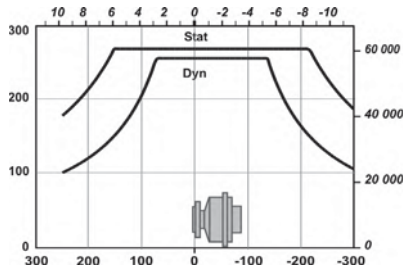
Service life of bearings

Test conditions :

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

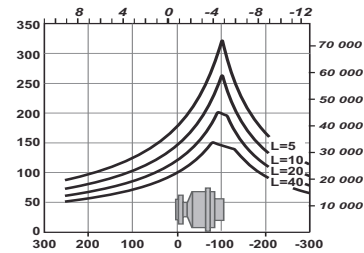
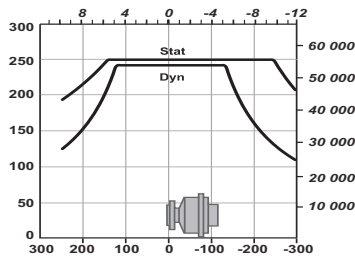
1	G	1	0
1	K	3	0
1	L	3	0

P  
432 x 102

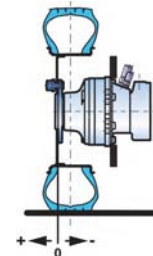


F	T	3	0
---	---	---	---

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 Poclain Hydraulics application engineer.



Modularity and Model code

Wheel motor

Shaft motor

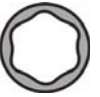
Valving systems and hydrobases

Brake

Options

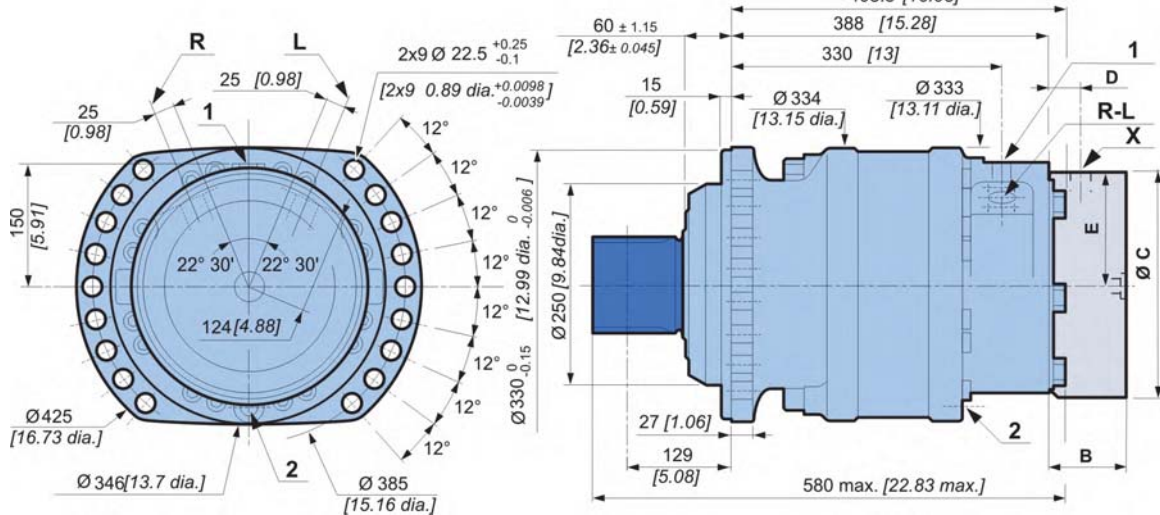






# SHAFT MOTOR

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



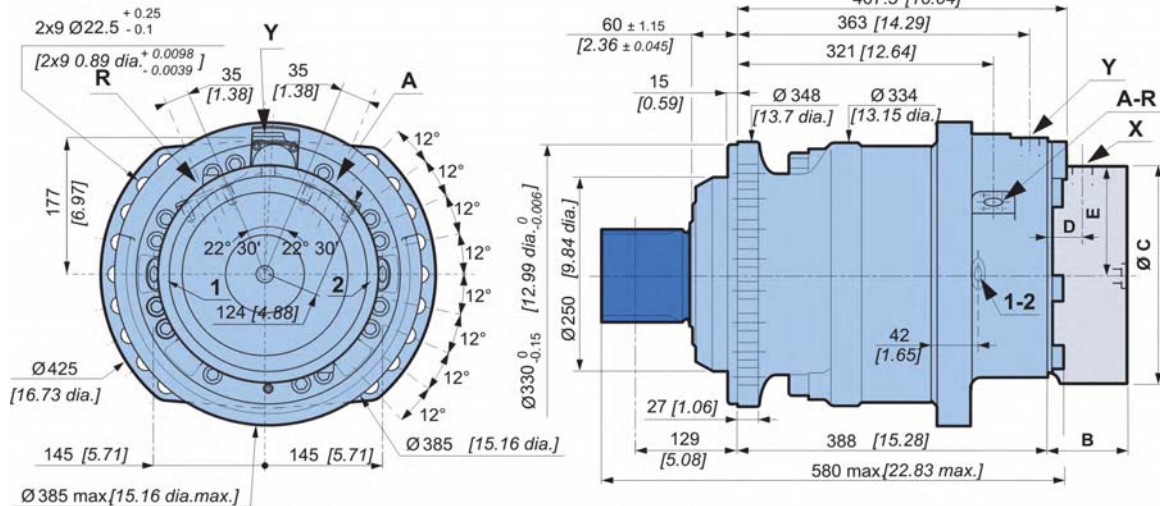
	188 kg [414 lb]	248 kg [546 lb]
	5,00 L [300 cu.in.]	4,00 L [240 cu.in.]

Modularity and Model code

Wheel motor

Shaft motor

## 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.]

Valving systems and hydrobases

Brake

Options



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

	<b>C</b>	<b>P 2 1</b>	<b>T 4 2</b>	<b>T 5 0</b>
<b>B</b>	108,5 [4,27]	148,0 [5,83]	157,5 [6,20]	157,5 [6,20]
<b>C</b>	Ø280 [11,02 dia.]	Ø375 [14,76 dia.]	Ø375 [14,76 dia.]	Ø375 [14,76 dia.]
<b>D</b>	57 [2,24]	63,5 [2,50]	63,5 [2,50]	63,5 [2,50]
<b>E</b>	138,5 [5,45]	183,5 [7,22]	183,5 [7,22]	183,5 [7,22]

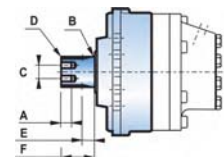
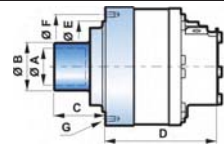
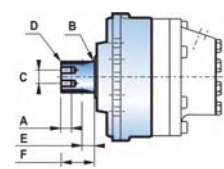


Also see 'Brakes' section (thumbnail opposite).



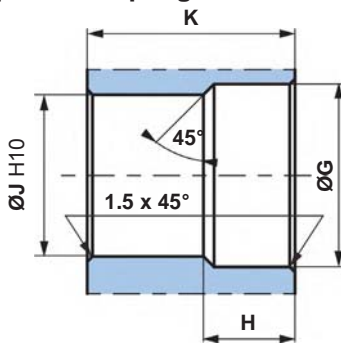
Support types

		C	D	F	P	S		
		1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6		
		<b>M S 3 5</b>						
<b>C</b>		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	
		mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	
<b>DIN 5480 splines</b>								
<b>2 A 5 0</b>	Nominal Ø	120 [4,72]	40	R3	60	2 x M16	28	110
	Module	5	[1,57]	[R 0,12]	[2,36]		[1,10]	[4,33]
	Z	22						
<b>NF E22-141 splines</b>								
<b>2 A 1 0</b>	Nominal Ø	120 [4,72]	40	R3	60	2 x M16	28	110
	Module	3,75	[1,57]	[R 0,12]	[2,36]		[1,10]	[4,33]
	Z	30						
<b>6 A L 0</b>								
	Nominal Ø	Ø 105	Ø 140	160	323	Ø 249	Ø 290	
		[4,13 dia.]	[5,51 dia.]	[6,30]	[12,72]	[9,80 dia.]	[11,42 dia.]	
<b>DIN 5480 splines</b>								
<b>2 A 5 0</b>	Nominal Ø	90 [3,54]	23	R3	35	2 x M14	23	90
	Module	3	[0,91]	[R 0,12]	[1,38]		[0,91]	[3,54]
	Z	28						
<b>NF E22-141 splines</b>								
<b>2 A 1 0</b>	Nominal Ø	90 [3,54]	23	R3	35	2 x M14	27	90
	Module	2,5	[0,91]	[R 0,12]	[1,38]		[1,06]	[3,54]
	Z	34						



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

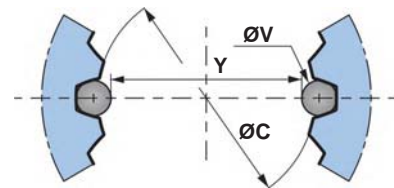
Splined coupling



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

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

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



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

General tolerances : ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

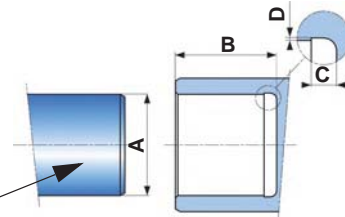
Hardening treatment to obtain R = 800 to 900 N/mm² [R = 116 030 to 130 533 PSI].





**Cylindrical bushed coupling**

<b>C</b>												
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>								
	mm [in]	mm [in]	mm [in]	mm [in]								
<table border="1"> <tr> <td>6</td> <td>A</td> <td>L</td> <td>0</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table> <p>P</p>	6	A	L	0	1	2	3	4	Ø 105 [4,13 dia.]	95 [3,74]	10 [0,394]	0,5 [0,0197]
6	A	L	0									
1	2	3	4									



R min. : 640 N/mm<sup>2</sup> [132 800 PSI]

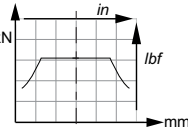
**Load curves**

**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].



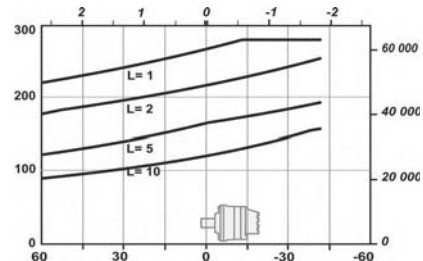
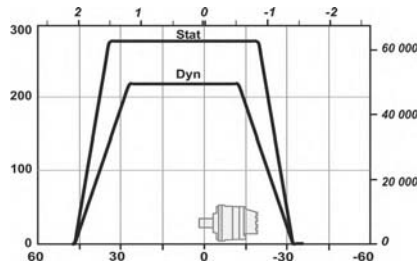
**Service life of bearings**

Test conditions :

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

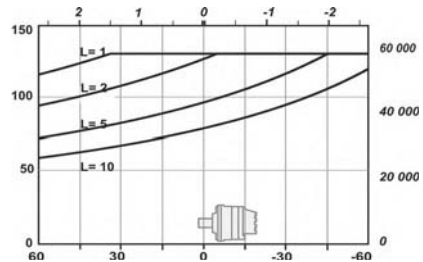
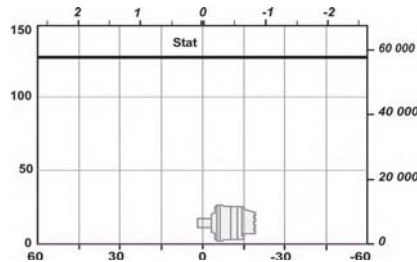
2	A	5	0
1	2	3	4

P



6	A	L	0
1	2	3	4

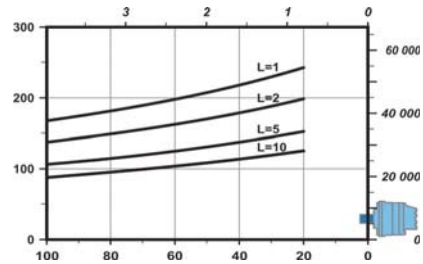
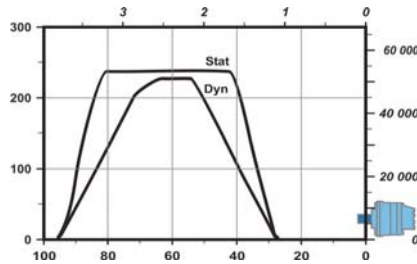
P



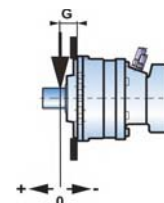
2	A	5	0
1	2	3	4

P

\* 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.



<b>C</b>	<b>G</b>	mm [in]	<b>C</b>	<b>G</b>	mm [in]																
<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> </table>	2	A	1	0	1	2	3	4		129 [5,08]	<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> </table>	2	A	1	0	1	2	3	4		108,5 [4,272]
2	A	1	0																		
1	2	3	4																		
2	A	1	0																		
1	2	3	4																		
<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> </table>	2	A	5	0	1	2	3	4		129 [5,08]	<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> </table>	2	A	5	0	1	2	3	4		106,5 [4,193]
2	A	5	0																		
1	2	3	4																		
2	A	5	0																		
1	2	3	4																		
<table border="1"> <tr> <td>6</td> <td>A</td> <td>L</td> <td>0</td> </tr> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> </table>	6	A	L	0	1	2	3	4		38,75 [1,53]	* MS18 bearing										
6	A	L	0																		
1	2	3	4																		

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

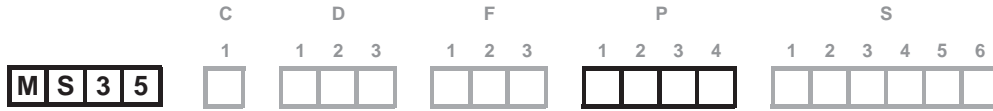
Brake

Options



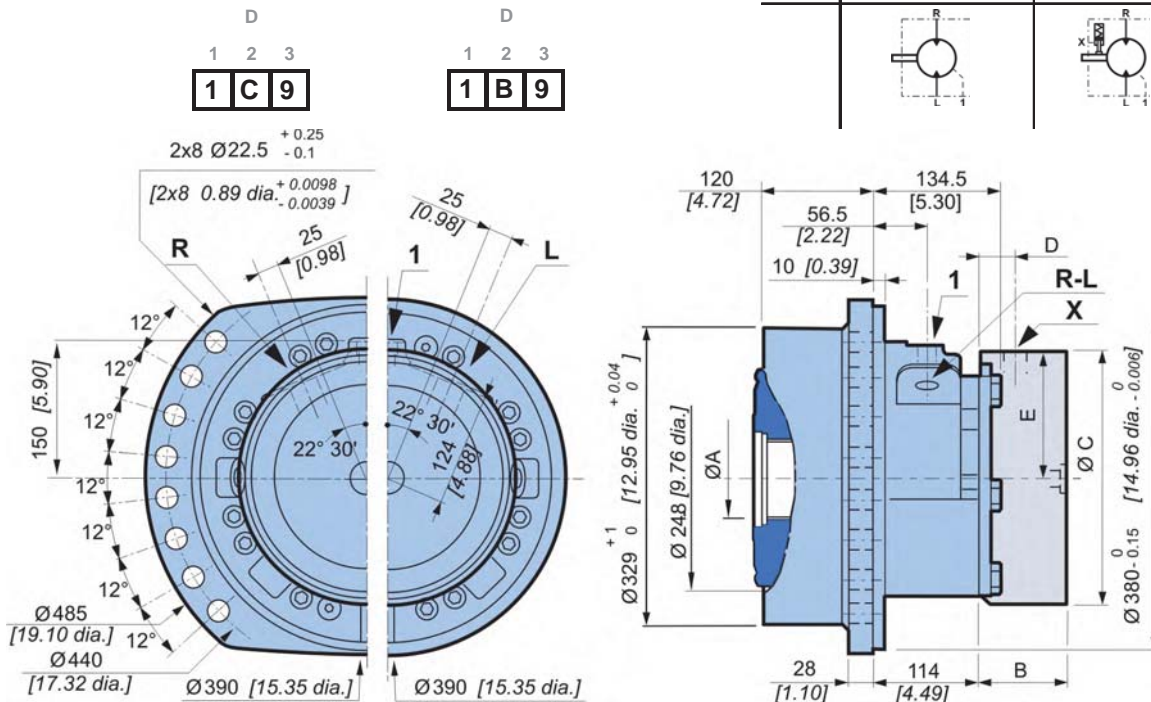


# VALVING SYSTEMS AND HYDROBASES



## 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]

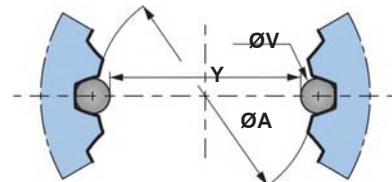


	<b>C</b>	<b>P 2 1</b>	<b>T 4 2</b>	<b>T 5 0</b>
B	108,5 [4,27]	148,0 [5,83]	157,5 [6,20]	
C	Ø280 [11,02 dia.]	Ø375 [14,76 dia.]	Ø375 [14,76 dia.]	
D	57 [2,24]	63,5 [2,50]	63,5 [2,50]	
E	138,5 [5,45]	183,5 [7,22]	183,5 [7,22]	

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.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

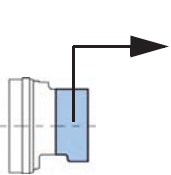
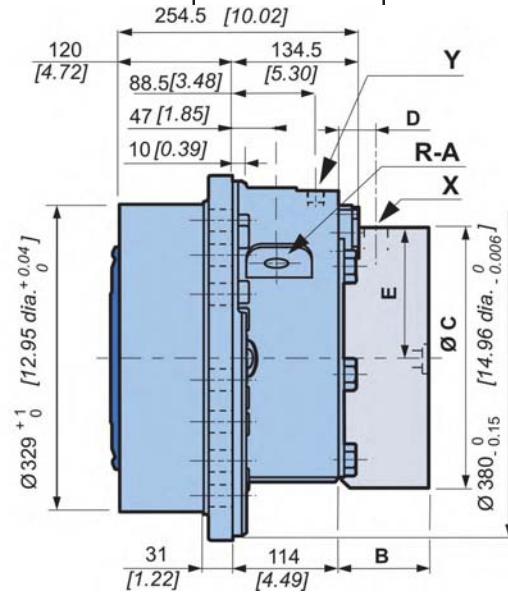
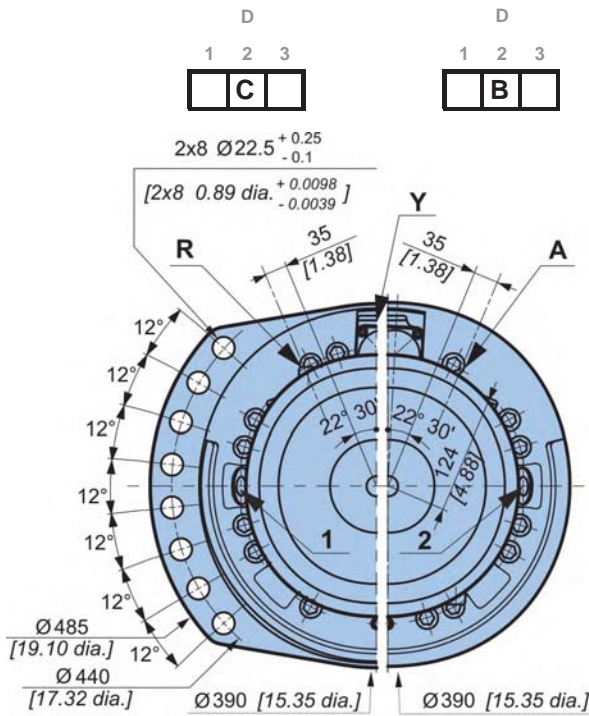
Brake

Options



**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]



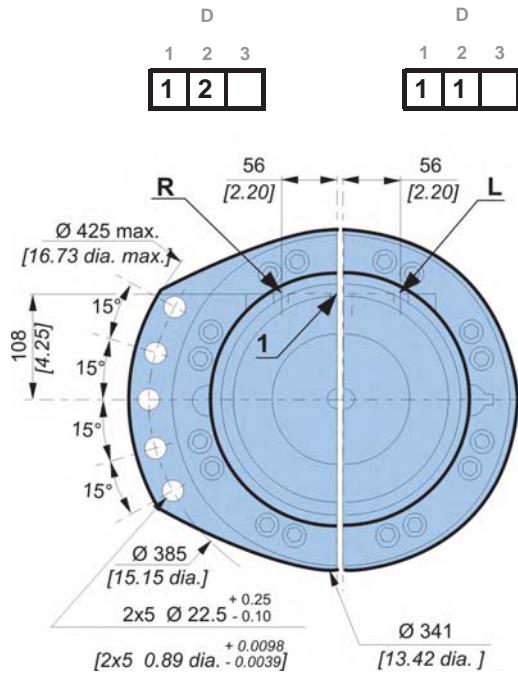
<b>C</b>	<b>P 2 1</b>	<b>T 4 2</b>	<b>T 5 0</b>
<b>B</b>	108,5 [4,27]	148,0 [5,83]	157,5 [6,20]
<b>C</b>	Ø280 [11,02 dia.]	Ø375 [14,76 dia.]	Ø375 [14,76 dia.]
<b>D</b>	57 [2,24]	63,5 [2,50]	63,5 [2,50]
<b>E</b>	138,5 [5,45]	183,5 [7,22]	183,5 [7,22]



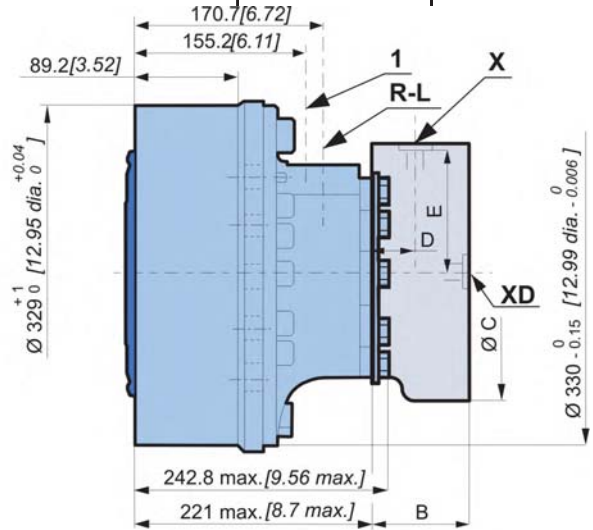
Also see 'Brakes' section (thumbnail opposite).



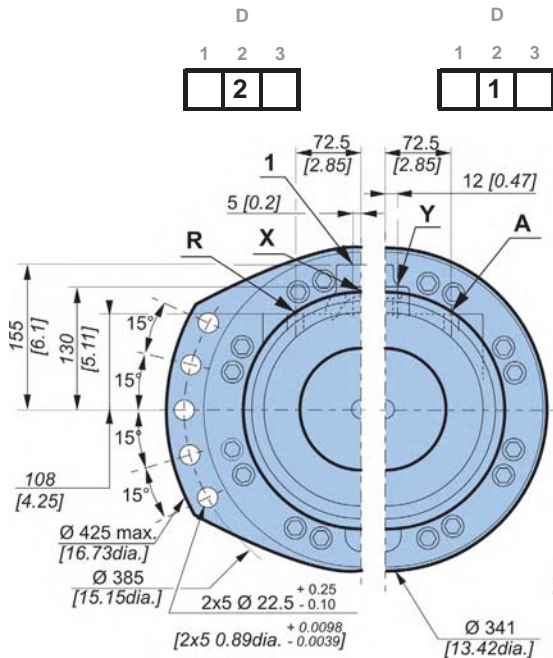
Dimensions for 1-displacement (MS18) valving



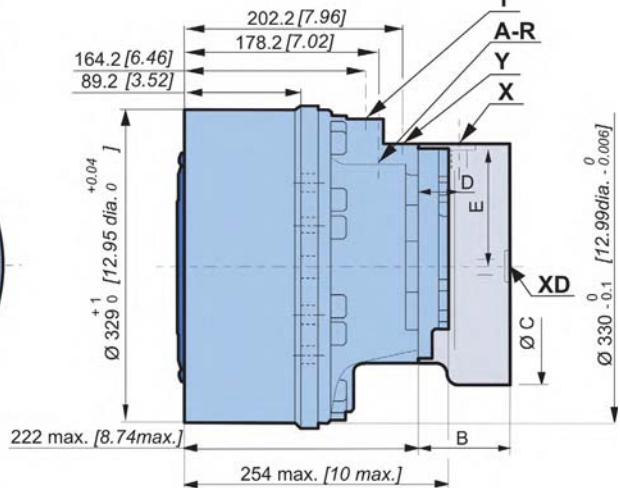
	82 kg [180 lb]	92 kg [202 lb]
	1,95 L [117 cu.in.]	2,12 L [127 cu.in.]



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.]



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options

	<b>C</b>	<b>F12</b>	<b>F19</b>	<b>T12</b>	<b>T19</b>
<b>B</b>	76,7 [3,02]	98,5 [3,88]	92,5 [3,64]	114,3 [4,50]	
<b>Ø C</b>	247 [9,72]	250 [9,84]	273,6 [10,77]	273,6 [10,77]	
<b>D</b>	25 [0,98]	45,00 [1,77]	24,5 [0,96]	45,0 [1,77]	
<b>E</b>	155 [6,10]	121,50 [4,78]	128,5 [5,06]	128,5 [5,06]	

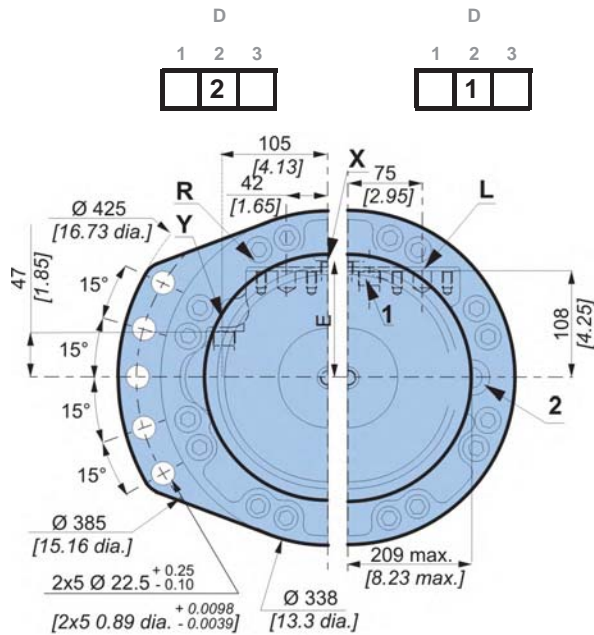
Also see "Brakes" section (thumbnail opposite).



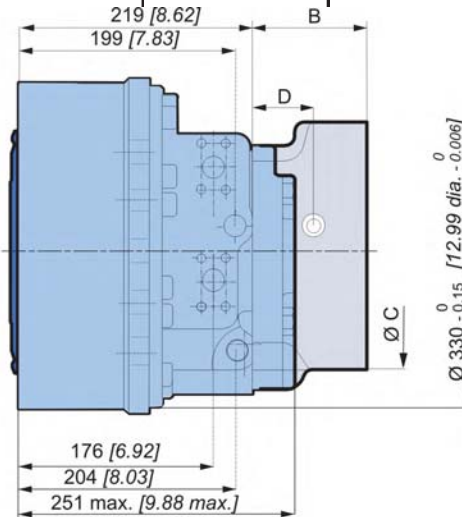


**Dimensions for 2-displacement (MS18) symmetrical valving**

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

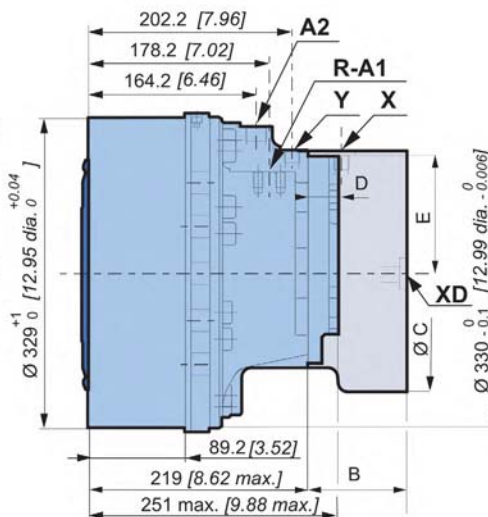
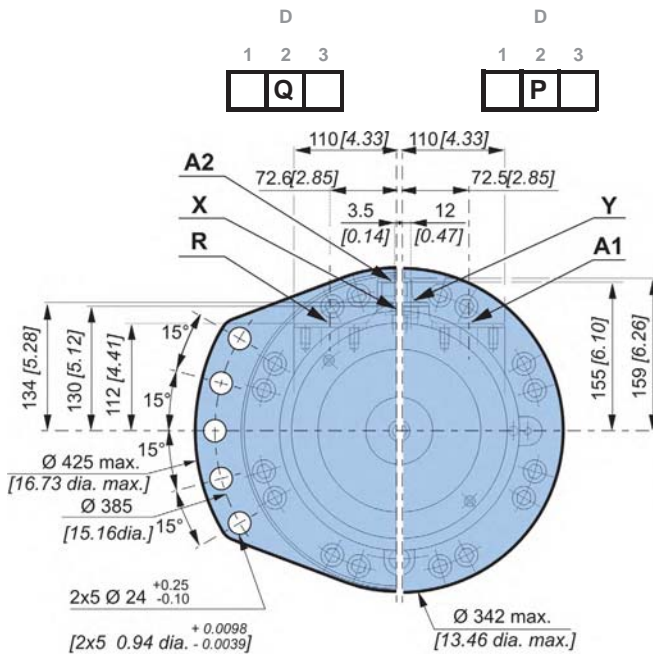


	19 kg [42 lb]	25,1 kg [55 lb]
	0,40 L [24 cu.in]	0,50 L [30 cu.in]



**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]



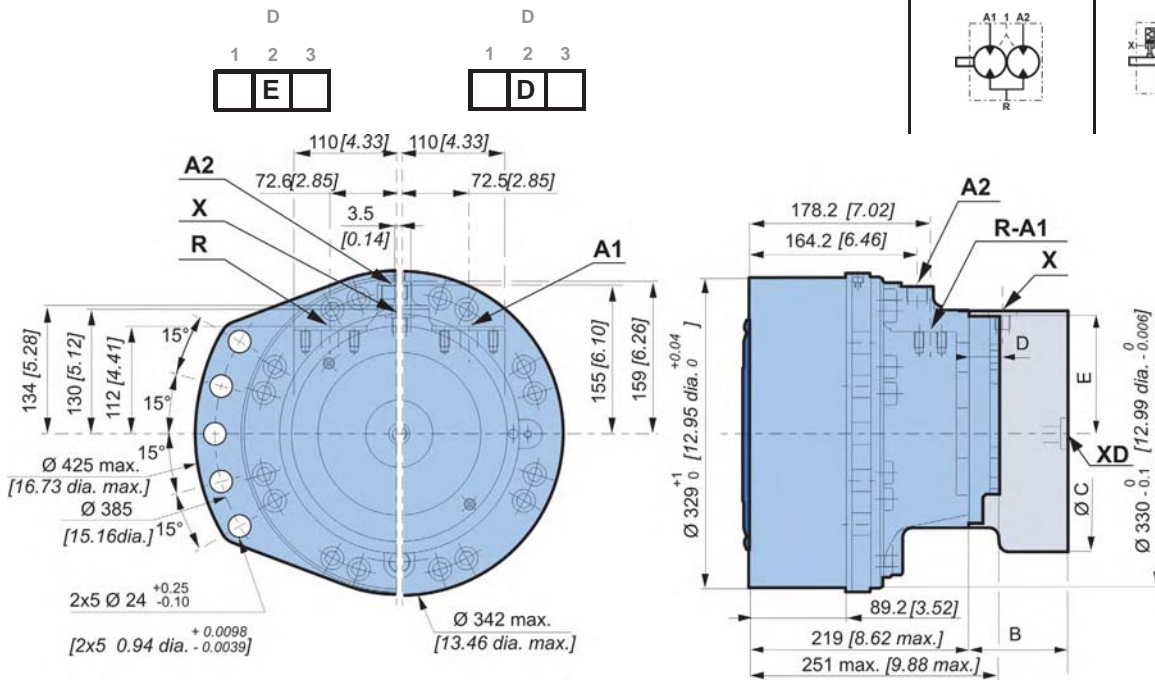
	F12	F19	T12	T19
B	76,7 [3,02]	98,5 [3,88]	92,5 [3,64]	114,3 [4,50]
Ø C	247 [9,72]	250 [9,84]	273,6 [10,77]	273,6 [10,77]
D	25 [0,98]	45,00 [1,77]	24,5 [0,96]	45,0 [1,77]
E	155 [6,10]	121,50 [4,78]	128,5 [5,06]	128,5 [5,06]

Also see "Brakes" section (thumbnail opposite).



Dimensions for Twin-Lock™ valving

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



Modularity and Model code

Wheel motor

Shaft motor

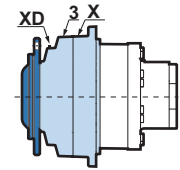
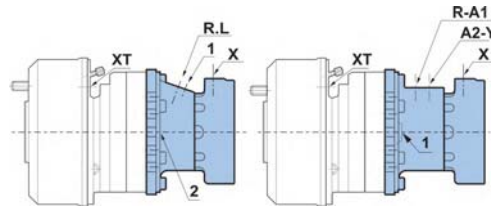
Valving systems and hydrobases

Brake

Options



**Hydraulic connections**  
connections



**C27™ combined brake**

		Standards	Power supply	Case drain	2 <sup>nd</sup> displacement control	Control of parking brake	Control of drum brake	Control of parking brake	Control of service brake	Flushing
<b>35</b>			R-L	1, 2		X	XT	X	XD	3
9	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN32 PN400	M22x1.5		M16x1.5		M20x1.5	M14x1.5	M22x1.5
			R-A	1, 2	Y	X		X	XD	3
1	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN25 PN400	M22x1.5	M18x1.5	M16x1.5		M20x1.5	M14x1.5	M22x1.5
7	ISO 6 162 SAE J514	ISO 6 162 ISO 11 926-1	DN25	1"1/16-12 UNF	9/16"-18 UNF	9/16"-18 UNF 3/4"-16 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
<b>18</b>			R-L	1, 2		X		X	XD	3
A	SAE J514	ISO 11 926-1	1"1/16-12 UNF	7/8"-14 UNF		9/16"-18 UNF 3/4"-16 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
1	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN19 PN400	M22x1.5		M16x1.5		M20x1.5	M14x1.5	M22x1.5
2	ISO 6 162 BSP	ISO 6 162 ISO 1 179-1	DN19 PN400	Ø21 [1/2" dia.]		Ø17 [3/8" dia.]		M20x1.5	M14x1.5	M22x1.5
4	NF E48 050	ISO 9 974-1	M27x2	M22x1.5		M16x1.5		M20x1.5	M14x1.5	M22x1.5
7	ISO 6 162 SAE J514	ISO 6 162 ISO 11 926-1	DN19 PN400	7/8"-14 UNF		9/16"-18 UNF 3/4"-16 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
			R-A	1, 2	Y	X		X	XD	3
A	SAE J514	ISO 11 926-1	1"1/16-12 UNF	7/8"-14 UNF	3/4"-16 UNF	9/16"-18 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
1	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN19 PN400	M22x1.5	M16x1.5	M16x1.5		M20x1.5	M14x1.5	M22x1.5
1*	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN19 PN400	M22x1.5	M22x1.5	M16x1.5		M20x1.5	M14x1.5	M22x1.5
4	NF E48 050	ISO 9 974-1	M27x2	M22x1.5	M16x1.5	M16x1.5		M20x1.5	M14x1.5	M22x1.5
4*	NF E48 050	ISO 9 974-1	M27x2	M22x1.5	M22x1.5	M16x1.5		M20x1.5	M14x1.5	M22x1.5
7	ISO 6 162 SAE J514	ISO 6 162 ISO 11 926-1	DN19 PN400	7/8"-14 UNF	3/4"-16 UNF	9/16"-18 UNF 3/4"-16 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
7*	ISO 6 162 SAE J514	ISO 6 162 ISO 11 926-1	DN19 PN400	7/8"-14 UNF	7/8"-14 UNF	9/16"-18 UNF 3/4"-16 UNF		9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
			R-A1	A2	1, 2	Y	X	X	XD	3
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	9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
1	ISO 6 162 DIN 3 852	ISO 6 162 ISO 9 974-1	DN19 PN400	M27x2	M22x1.5	M16x1.5	M16x1.5	M20x1.5	M14x1.5	M22x1.5
7	ISO 6 162 SAE J514	ISO 6 162 ISO 11 926-1	DN19 PN400	1"1/16-12 UNF	3/4"-16 UNF	9/16"-18 UNF	9/16"-18 UNF 3/4"-16 UNF	9/16"-18 UNF	9/16"-18 UNF	3/4"-16 UNF
		ISO 9 974-1					M14x1.5	X	XD	3
	<b>MS</b> bar	450 [6 527]	450 [6 527]	1 [15]	30 [435]	30 [435]	120 [1 740]	30 [435]	120 [1 740]	120 [1 740]
	<b>MSE</b> [PSI]	400 [5 802]	400 [5 802]							



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

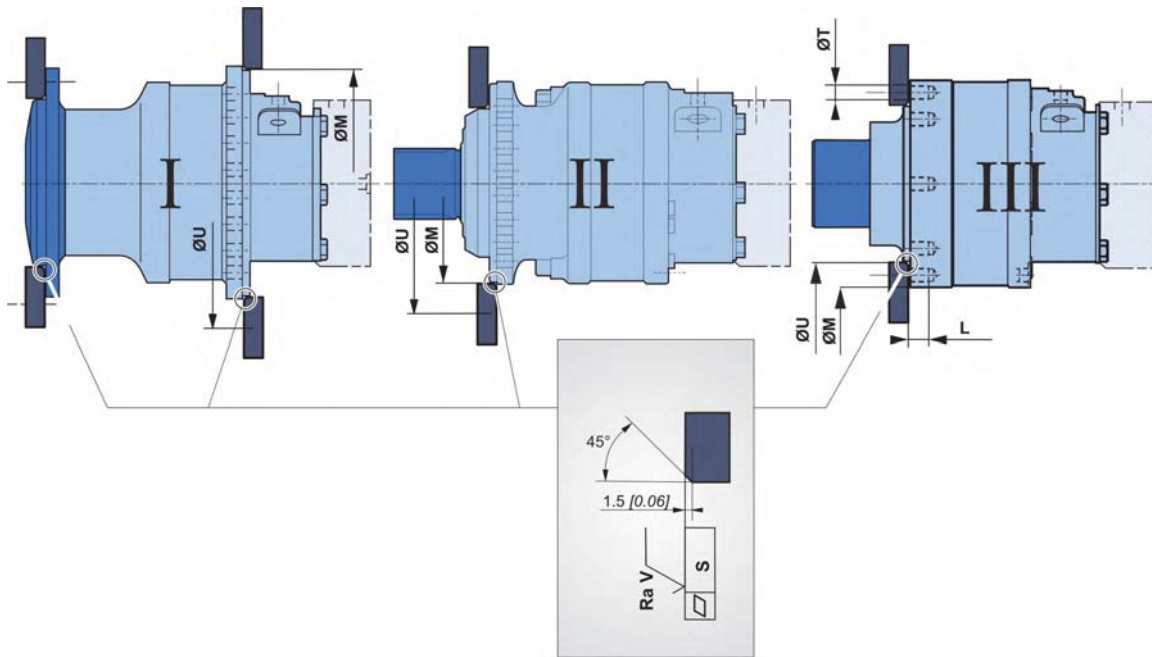


To find the connections' tightening torques, see the brochure "Installation guide" N° 801478197L.





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]	-	-			8 x M20 x 2		
	III	250 [9,84]		22,5 [0,886]	30 [1,181]					

(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

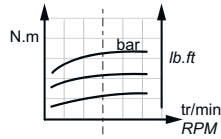
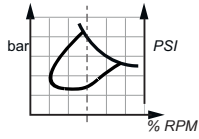
Options



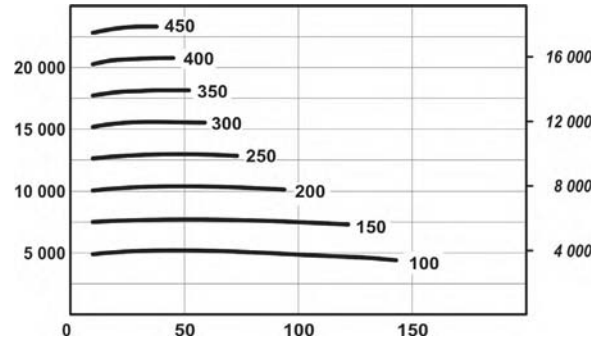
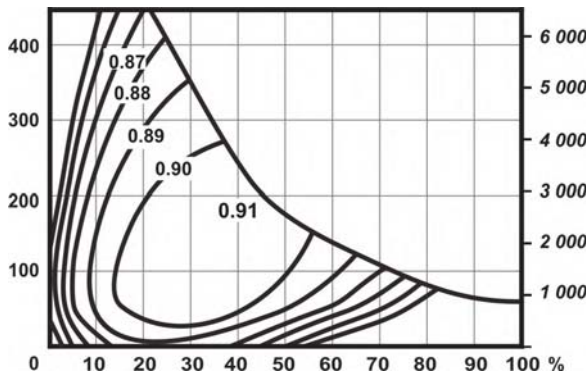
## Efficiency

### 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

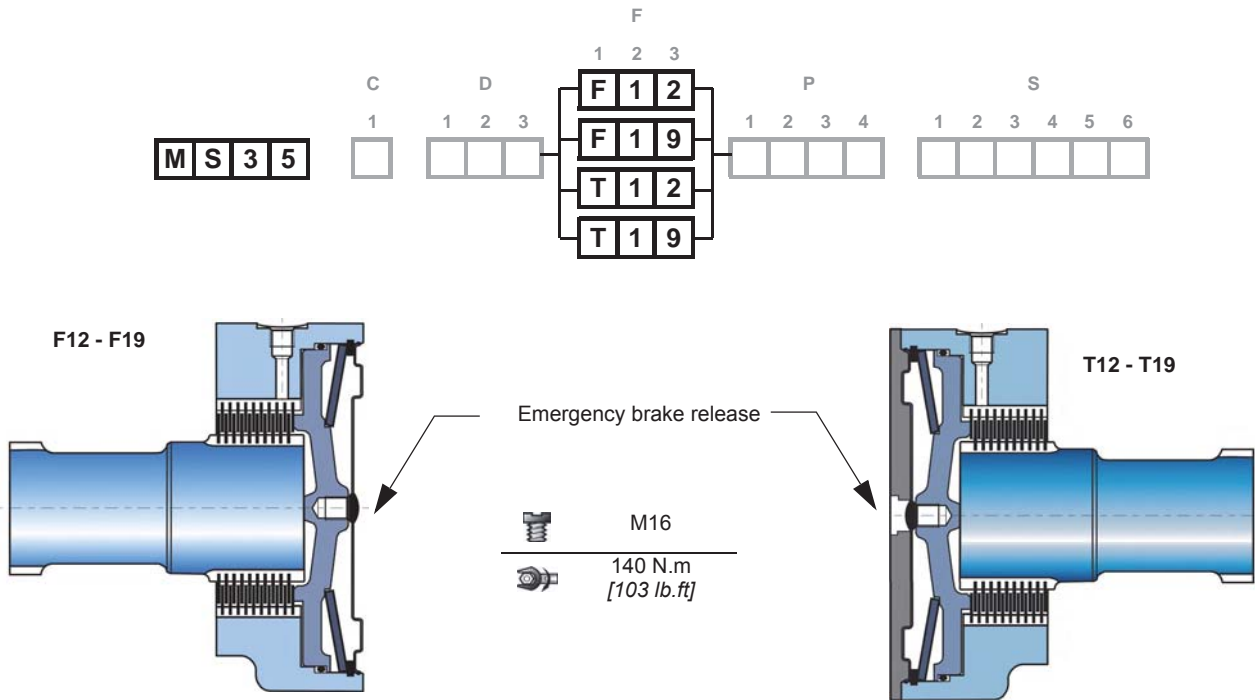


The starting torque is taken to be approximately 85% of the first value for available pressure. For a precise calculation, consult your Poclain Hydraulics application engineer.



# 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	
	T 1 2		T 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 <sup>3</sup> [10,4 cu.in]	180 cm <sup>3</sup> [11,0 cu.in]		
Volume for brake release	40 cm <sup>3</sup> [2,4 cu.in]	70 cm <sup>3</sup> [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.**

Modularity and Model code

Wheel motor

Shaft motor

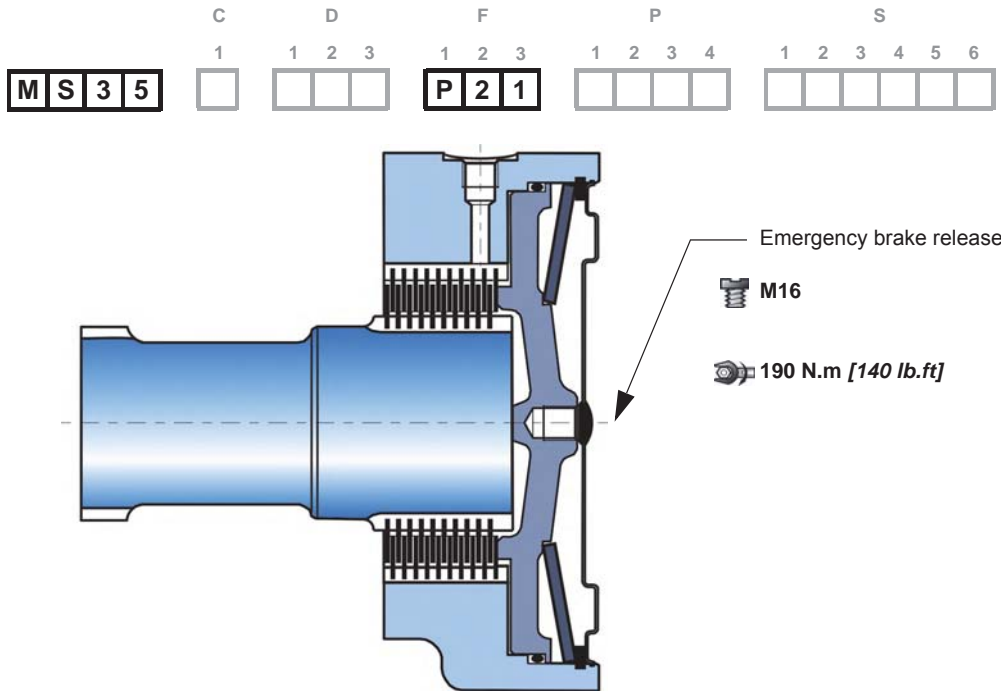
Valving systems and hydrobases

Brake

Options



### 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>P 2 1</b>
Parking brake torque at 0 bars on housing (new brake)	20 900 Nm [15 420 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 <sup>3</sup> [42,7 cu.in]
Volume for brake release	70 cm <sup>3</sup> [4,3 cu.in]

\* After emergency brake has been used



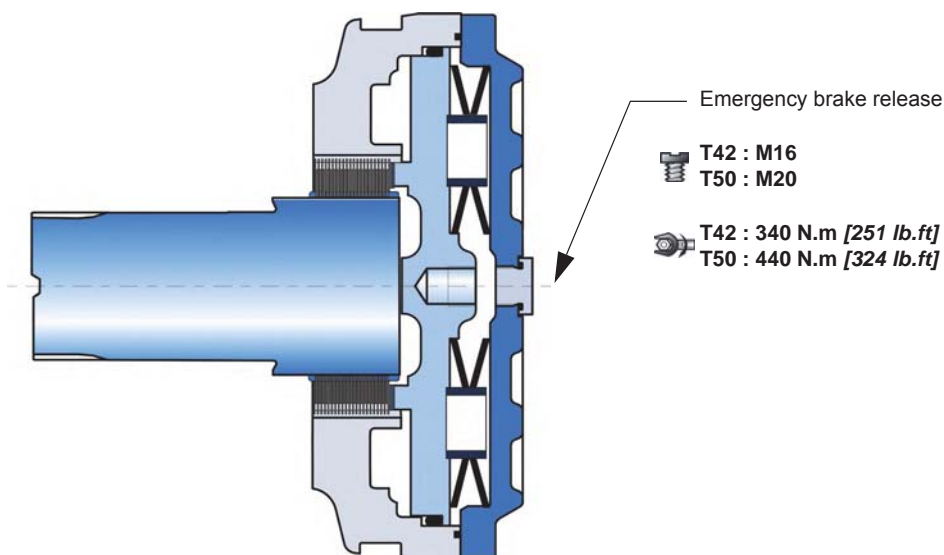
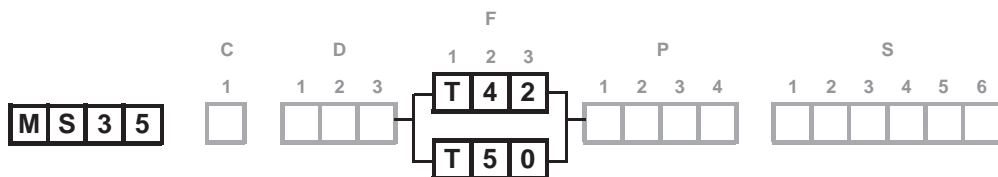
Do not run-in the multidisc brakes.



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 Poclain Hydraulics application engineer.



Rear brake



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.

<b>C</b>	<b>T 4 2</b>	<b>T 5 0</b>
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 <sup>3</sup> [24,4 cu.in]	450 cm <sup>3</sup> [27,5 cu.in]
Volume for brake release	135 cm <sup>3</sup> [8,2 cu.in]	135 cm <sup>3</sup> [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.

Modularity and Model code

Wheel motor

Shaft motor

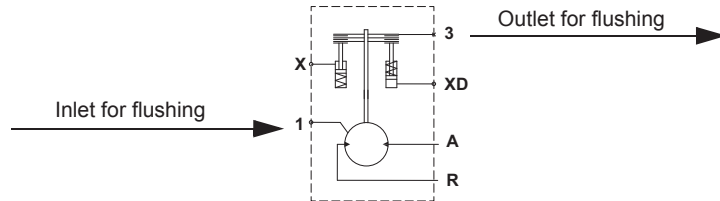
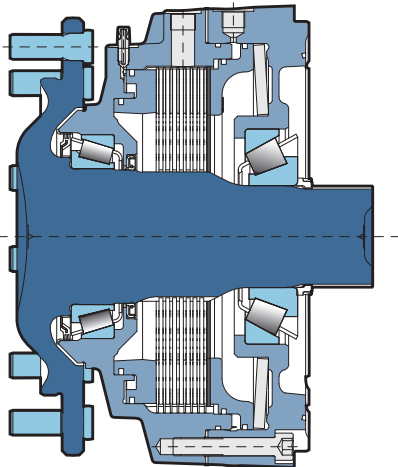
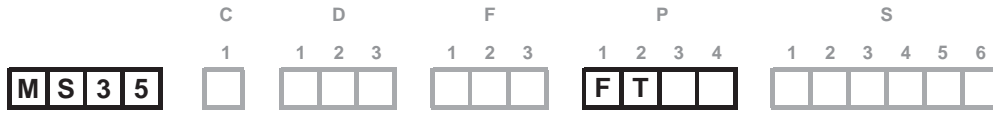
Valving systems and hydrobases

Brake

Options



**C27™ combined brake**



**The dynamic brake must be flushed according the brake schematics (flushing flow always goes out from bearing support).**

**Brake operation**

This multi-disc 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 damps the fixed and free discs, preventing the shaft from turning.

Or by braking pressure (dynamic braking): The braking command creates a pressure on the dynamic braking piston, which damps the fixed and free discs, preventing the shaft from turning. Braking torque increases linearly as a function of the piloting pressure.



**Hydraulically controlled dynamic braking**

Max. permissible torque	33 000 Nm [24 340 lb.ft]
Pressure to obtain max. permissible brake torque	75 bar [1 088 PSI]
Volume required for braking	49 cm <sup>3</sup> [3,0 cu.in]
Min. irrigation flow rate for dynamic brake	4 l/min
Max. rotation speed	200 rpm

**Hydraulically controlled parking brake**

Parking brake torque (new brakes)*	19 000 Nm [14 010 lb.ft]
Parking brake torque (used brakes)	13 000 Nm [9 590 lb.ft]
Min. release brake pressure	100 bar [1 450 PSI]
Max. release brake pressure	135 bar [1 958 PSI]
Max. volume of brake release (new brakes)	32 cm <sup>3</sup> [2,0 cu.in]
Emergency dynamic braking torque at 0 bar to the case	24 000 Nm [17 700 lb.ft]
Max. energy dissipation	1000 kJ

\*Consult your Poclain Hydraulics application engineer.

Indicative values coming from fly-wheel test bench with mineral oil HV 46. Braking performance must be performed on machine by the manufacturer.



**Brake release pressure vented.**

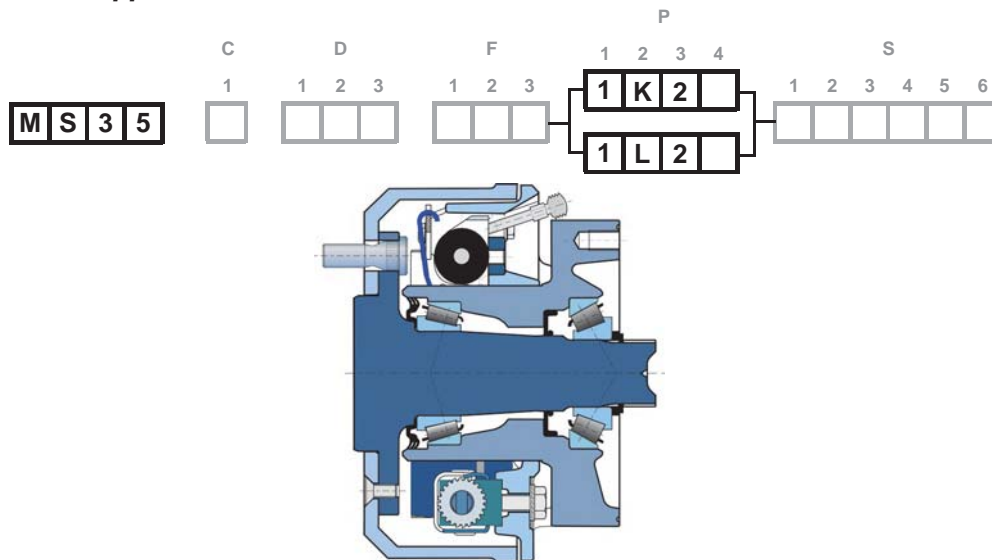


**The use of certain oils, may not offer the characteristics stated above. Consult your Poclain Hydraulics sales engineer.**



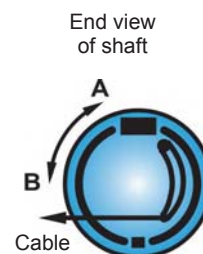
### Drum brake (432 x 102)

Diameter of brake pads : Diameter of brake pads : Ø 432 [17 dia.]  
 Width of friction surface : 102 [4]



<b>Brake pads</b>	<b>432 x 102</b>
Asbestos free material	BERAL 1109 or JURID 505
Compensation for wear	Automatic
<b>Hydraulically controlled dynamic braking</b>	
Max. permissible continuous brake torque	16 200 N.m [11 948 lb.ft]
Pressure to obtain max. permissible continuous brake torque	71 bar [1 030 PSI]
Max. permissible brake torque	27 000 N.m [19 914 lb.ft]
Pressure to obtain max. permissible brake torque	120 bar [1 740 PSI]
<b>Fluid</b>	
Mineral	Yes
DOT 3/DOT4/SAE J1703	Yes
Max. volume required to bring pads into contact	10,2 cm <sup>3</sup> [0,62 cu.in]
<b>Mechanically controlled parking brake</b>	
Max. braking torque	27 000 N.m [19 914 lb.ft]
Max permissible force on the cable	5 700 N [1 281 lbf]
Force required to bring pads into contact	37 N [8 lbf]
Stroke required to bring pads into contact	<b>A</b> 31 mm [1,22 "] <b>B</b> 34 mm [1,34 "]

K  
L



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.



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.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

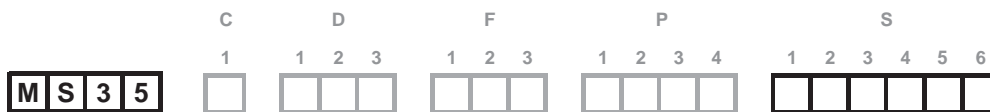
Options







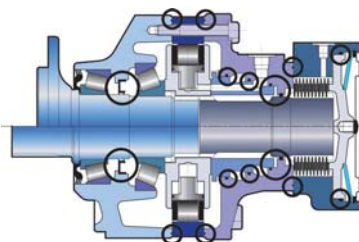
# OPTIONS



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.

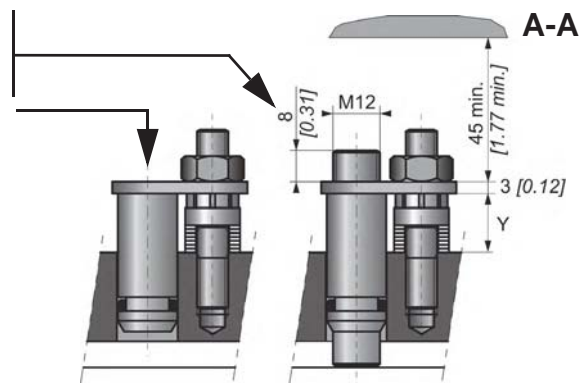
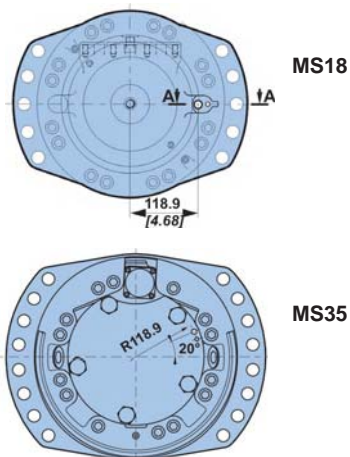


Consult your Poclain Hydraulics sales engineer.

## 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= 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.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

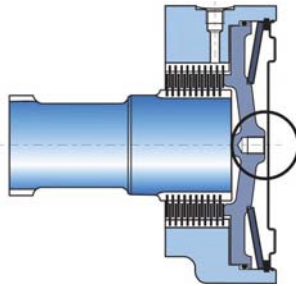
Brake

Options



### 3 - Brake environmental cover without plug

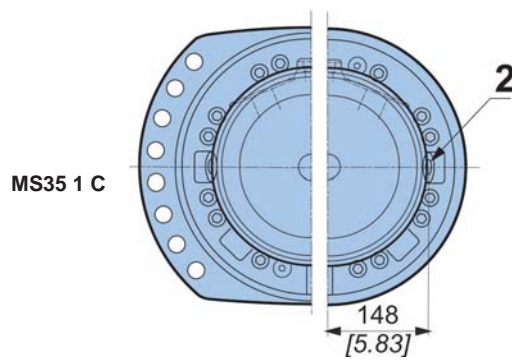
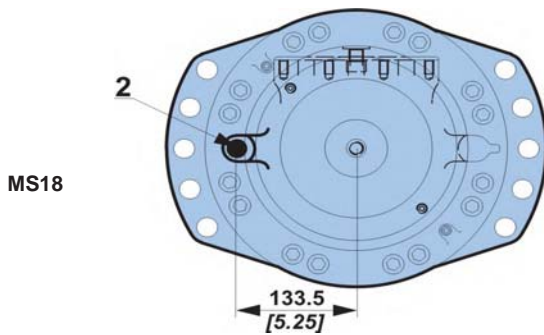
No plug or hole in the cover.  
(see figure opposite)



	F11	F12	F19	P35
Available	●	●	●	●

### 5 - Drainage

Additional drain in the cover.



### 6 - Industrial support

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

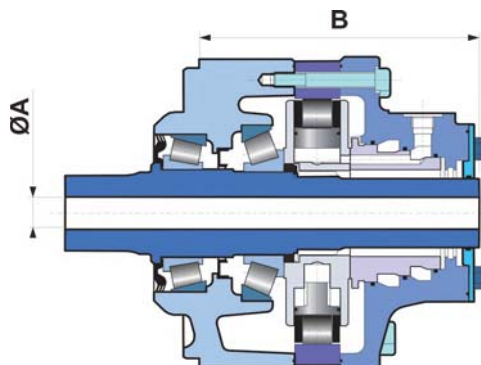


For a precise calculation, consult your Poclain Hydraulics application engineer.

### 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

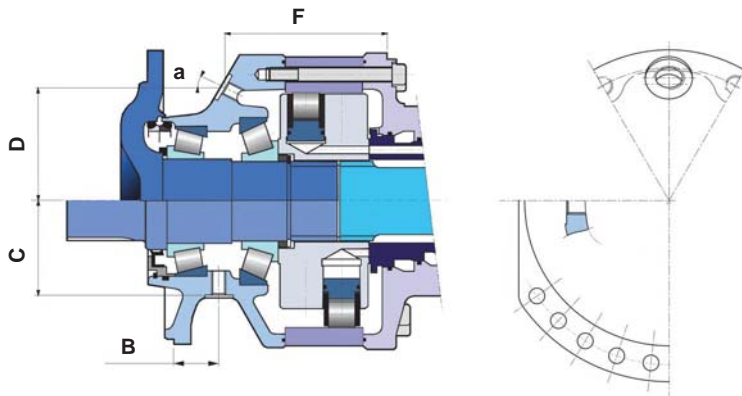


A	B
mm [in]	mm [in]
Ø 60 [2,36 dia.]	668 [26,30]

Radial load x 0.75  
No torque transmittable to the rear



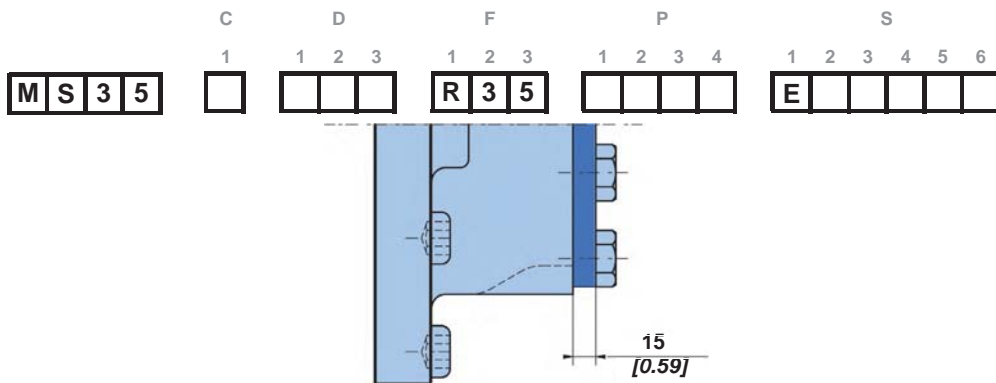
**B - Drain on the bearing support**



		B	C	D	F	a
		mm [in]	mm [in]	mm [in]	mm [in]	
Shaft motor	M22 x 1.5	193 [7.60]	56 [2.20]			
Wheel motor						

**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**

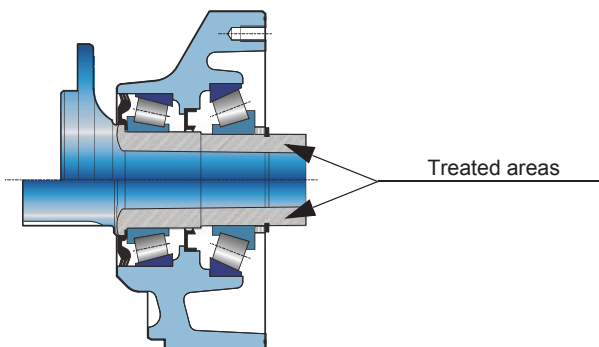
Enables certain combinations different from the standard mountings defined on pages 10.



Consult your Poclair Hydraulics sales engineer.

**J - Treated shaft**

Heat treatment on the indicated bearing radius and splines.



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake


Options





*Poclain Hydraulics reserves the right to make any modifications it deems necessary to the products described in this document without prior notification. The information contained in this document must be confirmed by Poclain Hydraulics before any order is submitted.*


*Illustrations are not binding.*


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 31/08/2016

 801 478 123F

 801 478 193G


 801 578 106H

 801 578 118V

 801 578 130J

 A07447U

 Not available

 A14245J

