

# MS18 - MSE18

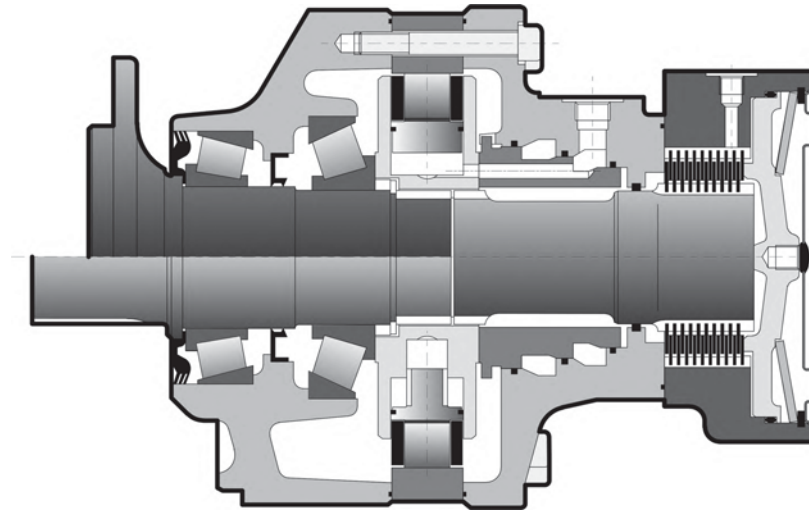
## HYDRAULIC MOTORS



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



# CHARACTERISTICS



Motor inertia 0.2 kg.m<sup>2</sup>

	C	Displacement		Theoretical torque		Max. power			Max. speed		Max. pressure bar [PSI]		
		1	2	1		1	2	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]	kW [HP]	preferred kW [HP]	non-preferred kW [HP]	tr/min [RPM]				
Cams with equal lobes	MS18	6	1 091 [66,5]	546 [33,3]	1 735 [882]	70 [94]	47 [63]	35 [47]	170	170	450 [6 527]		
		8	1 395 [85,1]	698 [42,5]	2 218 [1 128]				155	160			
		9	1 571 [95,8]	786 [47,9]	2 498 [1 270]				140	155			
		0	1 747 [106,5]	874 [53,3]	2 778 [1 413]				125	150			
		1	1 911 [116,6]	956 [58,3]	3 038 [1 545]				115	135			
	MSE18	2	2 099 [128,0]	1050 [64,0]	3 337 [1 697]	100	125	70 [94]	47 [63]	35 [47]	90	110	400 [5 802]
		0	2 340 [142,7]	1170 [71,4]	3 721 [1 892]	85	100						
		1	2 560 [156,1]	1280 [78,1]	4 070 [2 070]	75	90						
		2	2 812 [171,5]	1406 [85,8]	4 471 [2 274]								
Cams with unequal lobes	MS18	P	1 501 [91,5]	< 874 [53,3] 627 [38,2]	2 387 [1 214]	70 [94]	47 [63]	35 [47]	125	150	450 [6 527]		
		K	1 501 [91,5]	< 956 [58,3] 545 [33,2]	2 387 [1 214]				115	135			
		D	1 572 [95,9]	< 1049 [64,0] 523 [31,9]	2 499 [1 271]				100	125			
		F	1 650 [100,6]	< 990 [60,4] 660 [40,3]	2 624 [1 334]				110	135			
		A	1 745 [106,4]	< 1049 [64,0] 698 [42,6]	2 775 [1 411]				100	125			
		B	1 865 [113,7]	< 1049 [64,0] 816 [49,8]	2 965 [1 508]				100	125			
	MSE18	P	2 010 [122,6]	< 1170 [71,4] 840 [51,2]	3 196 [1 625]	70 [94]	47 [63]	35 [47]	90	110	400 [5 802]		
		K	2 010 [122,6]	< 1280 [78,1] 730 [44,5]	3 196 [1 625]				85	100			
		D	2 106 [128,4]	< 1406 [85,8] 700 [42,7]	3 349 [1 703]				75	90			
		F	2 209 [134,7]	< 1326 [80,9] 883 [53,9]	3 512 [1 786]				85	95			
		A	2 341 [142,8]	< 1406 [85,8] 935 [57,0]	3 722 [1 893]				75	90			
		B	2 499 [152,4]	< 1406 [85,8] 1093 [66,7]	3 973 [2 021]				75	90			

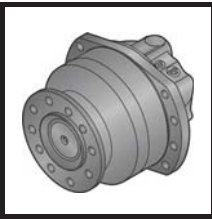
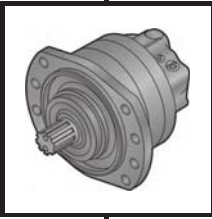
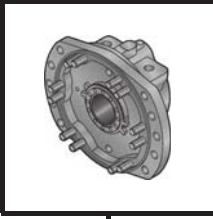
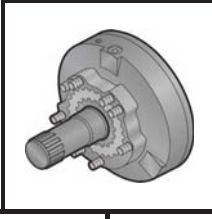
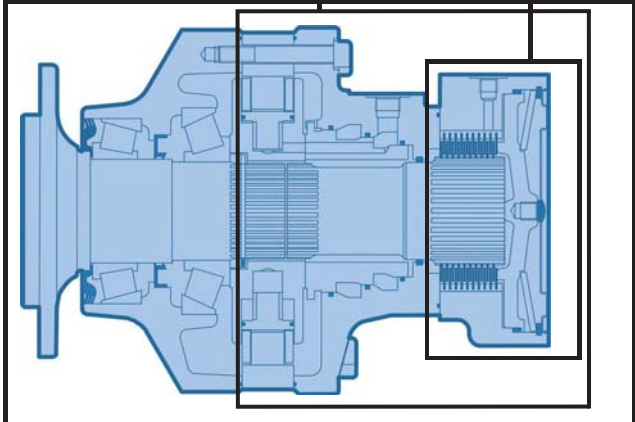
1 First displacement

2 Second displacement

\* See option "M" for higher speed.

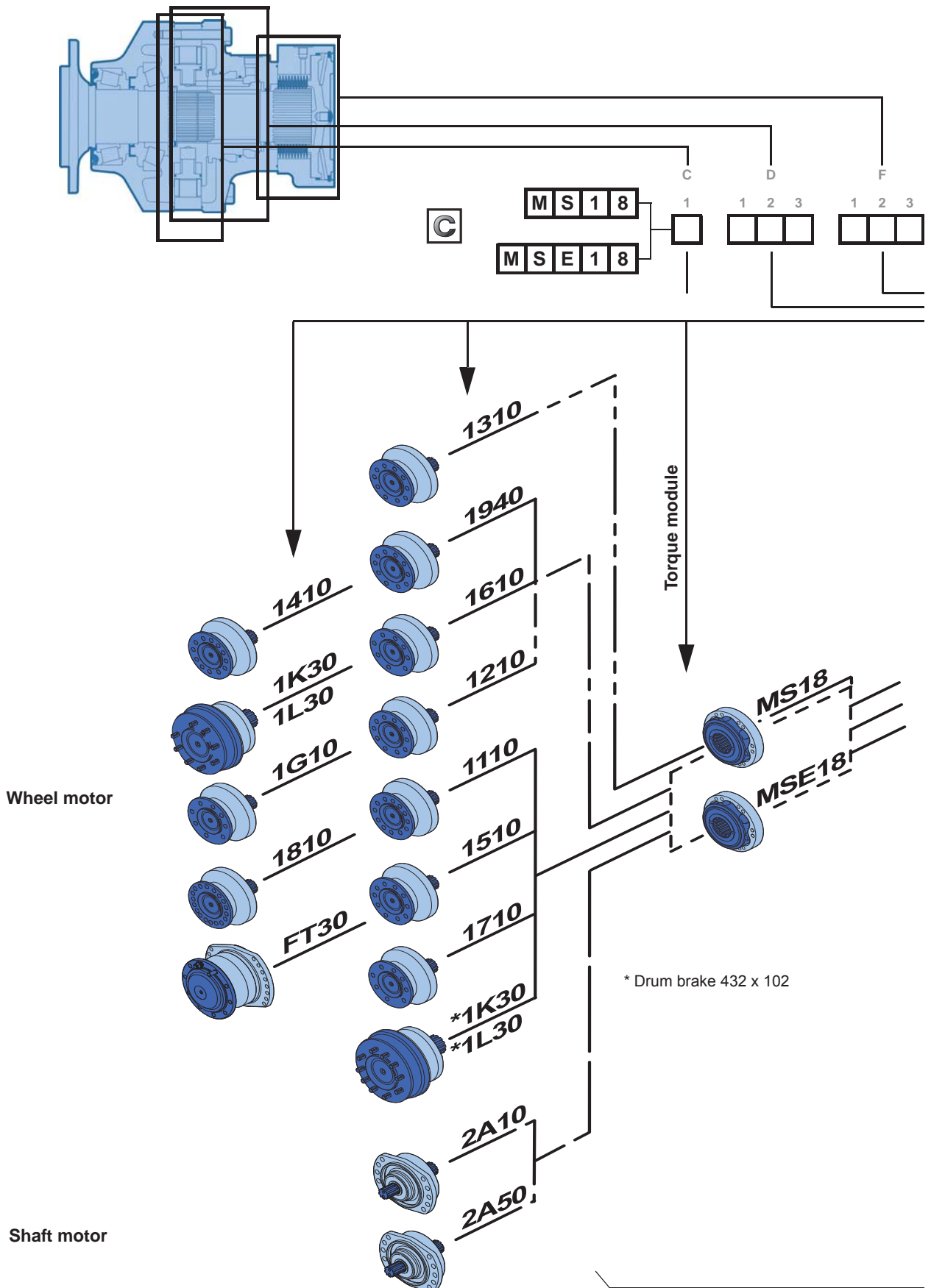


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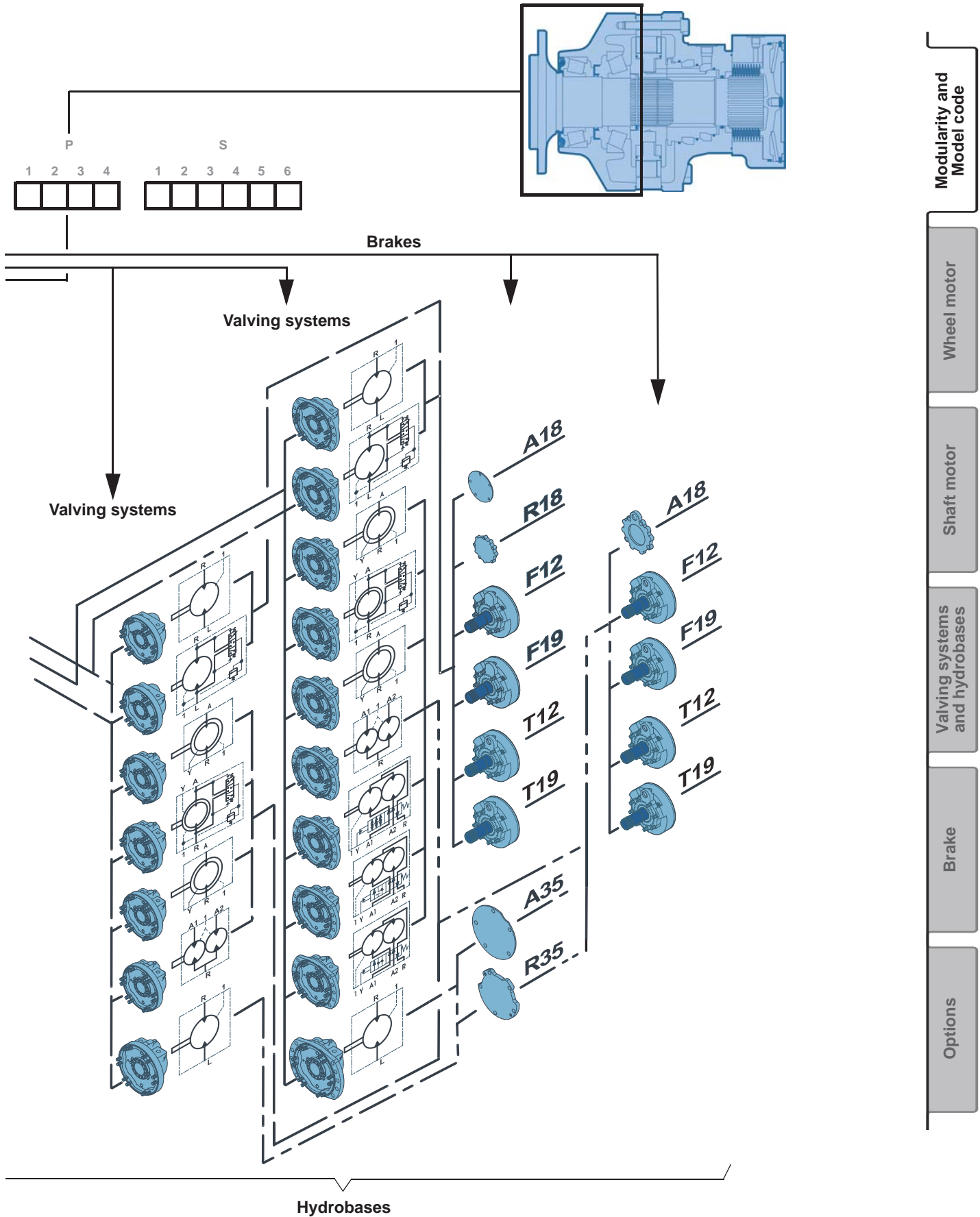


# MODUL



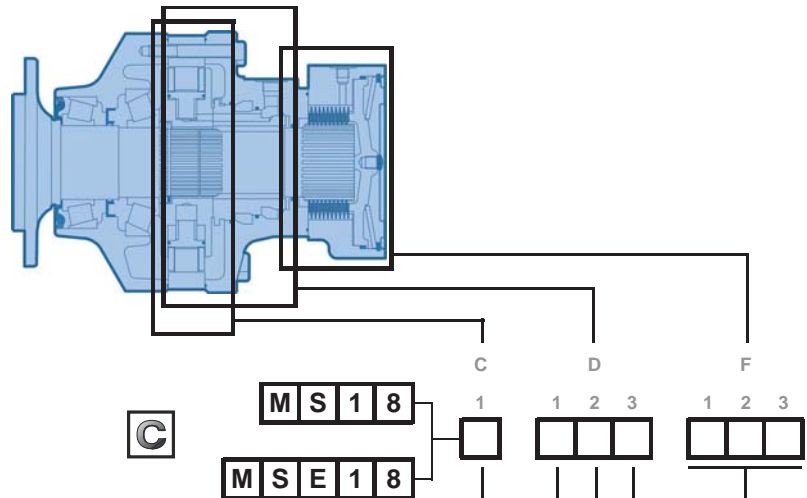


# ARITY





# MODEL



		①		②	
		cm³/rev [cu.in/rev.]	cm³/rev [cu.in/rev.]	cm³/rev [cu.in/rev.]	cm³/rev [cu.in/rev.]
Cams with equal lobes	MS18	6	1 091 [66,5]	546 [33,3]	
		8	1 395 [85,1]	698 [42,5]	
		9	1 571 [95,8]	786 [47,9]	
		0	1 747 [106,5]	874 [53,3]	
		1	1 911 [116,6]	956 [58,3]	
	MSE18	2	2 099 [128,0]	1050 [64,0]	
		0	2 340 [142,7]	1170 [71,4]	
		1	2 560 [156,1]	1280 [78,1]	
		2	2 812 [171,5]	1406 [85,8]	
		Cams with unequal lobes	MS18	P	1 501 [91,5]
K	1 501 [91,5]			956 [58,3] 545 [33,2]	
D	1 572 [95,9]			1049 [64,0] 523 [31,9]	
F	1 650 [100,6]			990 [60,4] 660 [40,3]	
A	1 745 [106,4]			1049 [64,0] 698 [42,6]	
MSE18	B		1 865 [113,7]	1049 [64,0] 816 [49,8]	
	P		2 010 [122,6]	1170 [71,4] 840 [51,2]	
	K		2 010 [122,6]	1280 [78,1] 730 [44,5]	
	D		2 106 [128,4]	1406 [85,8] 700 [42,7]	
	F		2 209 [134,7]	1326 [80,9] 883 [53,9]	
	A	2 341 [142,8]	1406 [85,8] 935 [57,0]		
	B	2 499 [152,4]	1406 [85,8] 1093 [66,7]		

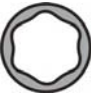
① First displacement  
② Second

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

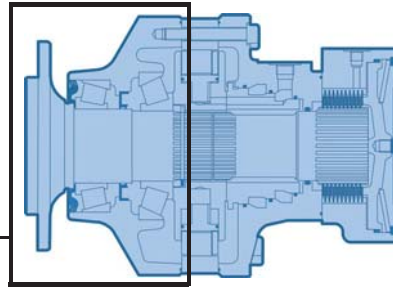
Valving	S18	S35
Without mounting	1 1 4 D P K L	B
Lug fixing	2 2 5 E Q V M	C
Without mounting		
Lug fixing»		
	1-displacement	0
	2-displacement	1
	Exchange	2
	Twin-Lock™	4
	Twin-Lock™ or	7
	2-displacement	9
	2-displacement or	
	Twin-Lock™	
	Twin-Lock™ with by-pass	A
No transmission cover		
ISO 6162 flanges	DN 19	
ISO 9974-1 connections		
ISO 6162 flanges	DN 19	
ISO 1179-1 connections		
ISO 9974-1 connections		
ISO DP6162 flanges	DN 19	
ISO 6149-1 connections		
ISO DP6162 flanges	S35 1C DN 32	
ISO 6149-1 connections		
ISO 11926-1 connections		

Valving	S18/SE18	Without brake	With reinforced plate	A 1 8	
		With sensor*		R 1 8	
				S 1 8	
	Brakes	Bearing mounting or valving cover mounting	Parking brake	Clipped environmental cover	F 1 2
				Screwed environmental cover	F 1 9
	S35	Without brake			T 1 2
		Without brake (reinforced plate)			T 1 9
		With sensor*			A 3 5
				R 3 5	
				S 3 5	

\* see page37



# CODE



P		S							
1	2	3	4	1	2	3	4	5	6
0	1	2	F	0	1	2	3	5	6
Without bearing support									
Without mounting									
Lug mounting									
Brake C27™ with chassis fixation									
Without shaft									
10 x Ø24 on Ø225									
8 x Ø22 on Ø275									
10 x Ø24 on Ø225									
10 x Ø24 on Ø335 (for studs length of 80 mm)									
10 x Ø24 on Ø335 (for studs length of 65 mm)									
10 x Ø24 on Ø225									
12 x Ø24 on Ø275									
18 x M16 on Ø254									
8 x M22 on Ø275									
Support without drum brake									
Valving		S18 / SE18		Drum brake (350 x 60)		Mineral		R	
						DOT		S	
		S35		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									
<b>Male shafts</b>									
NF E 22141 splines									
1									
DIN 5480 splines									
5									

### Drum brake

Without cable	4	Connection M14x1.5
Right-hand cable outlet	5	
Left-hand cable outlet	6	

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

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.

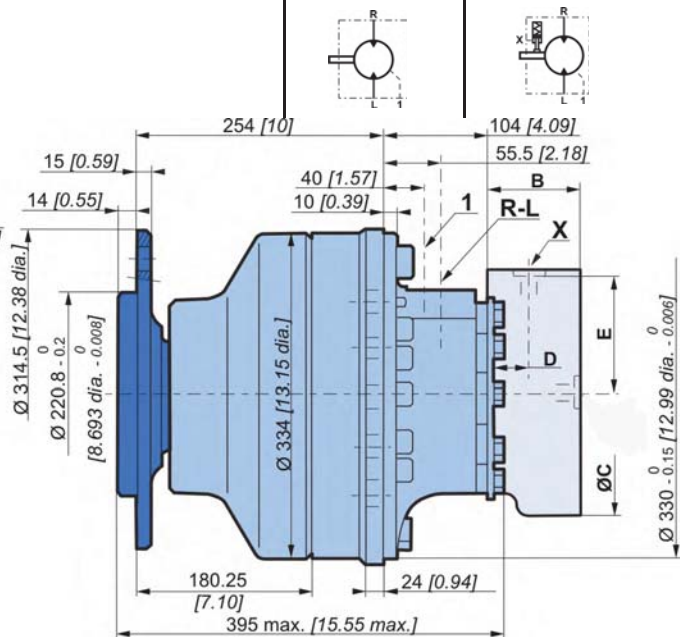
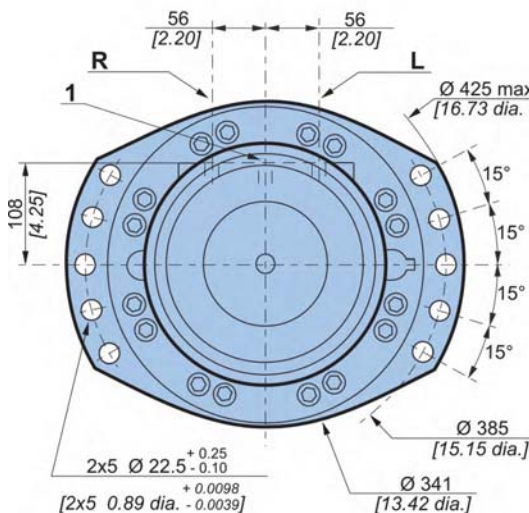
The views in this document are created using metric standards.

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

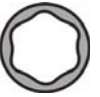


**Dimensions for standard (1210) 1-displacement motor**

	120 kg [264 lb]	150 kg [330 lb]
	3,00 L [180 cu.in]	2,50 L [150 cu.in]

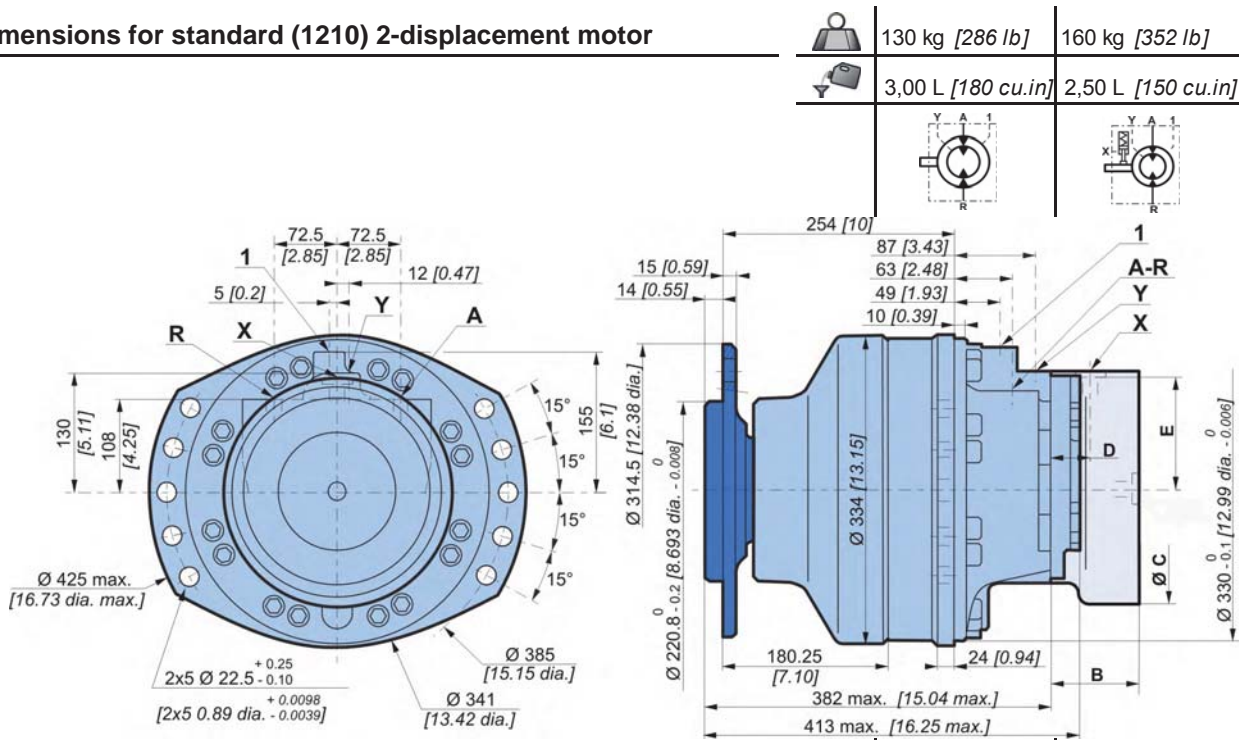




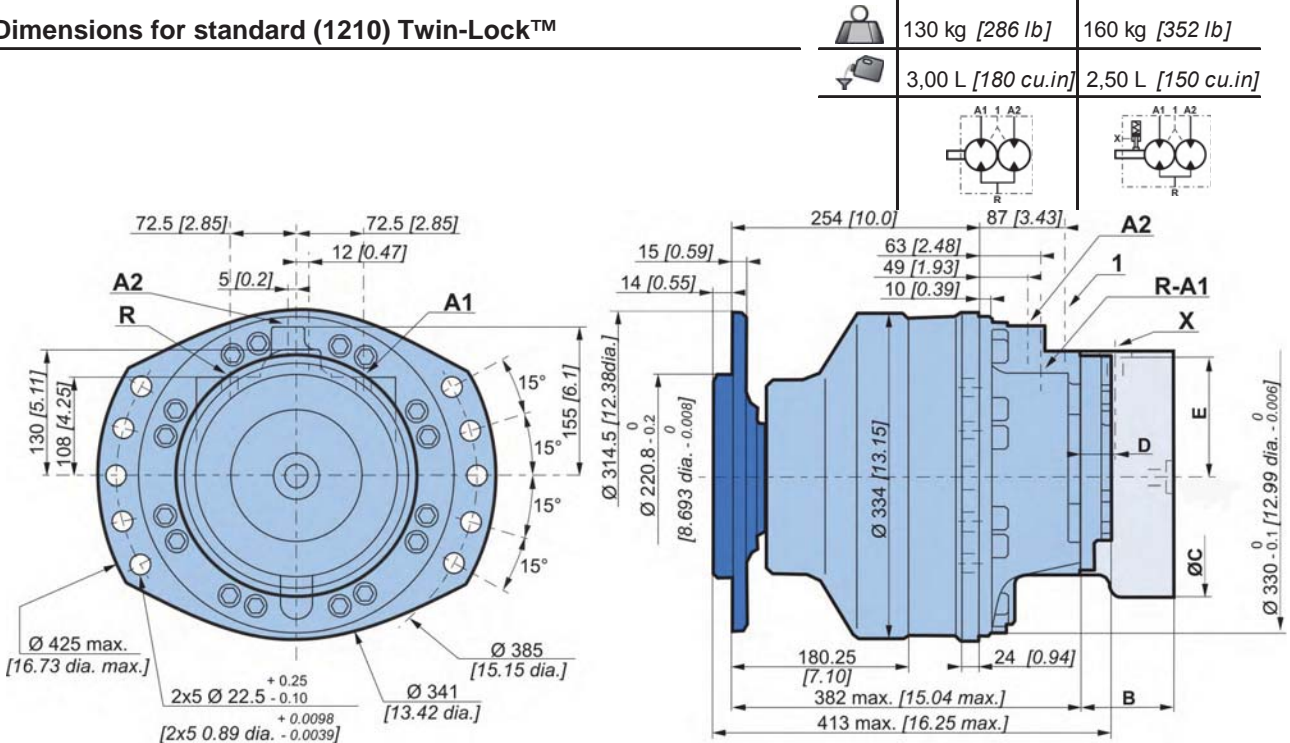


# WHEEL MOTOR

Dimensions for standard (1210) 2-displacement motor

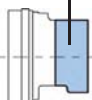


Dimensions for standard (1210) Twin-Lock™



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

	F12	F19	T12	T19
<b>C</b>				
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 "Brake" section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

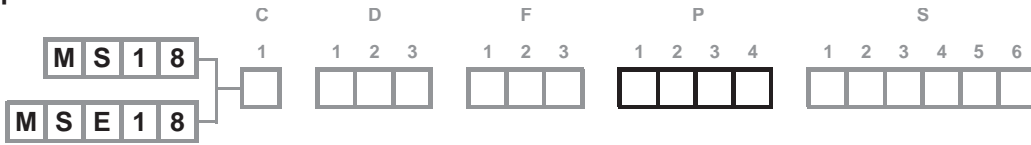
Valving systems and hydrobases

Brake

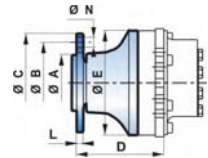
Options



Support types



<b>C</b>	<b>A</b> 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 1 1 0</b> 1 2 3 4 P	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 265 [10,43 dia.]	253,45 [9,98]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	14 [0,55]
<b>1 2 1 0</b> 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	253,25 [9,97]	Ø 334 [13,15 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	14 [0,55]
<b>1 7 1 0</b> 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	253,25 [9,97]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	12 x M22x1.5	18 [0,71]
<b>1 C 4 0</b> 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	253,25 [9,97]	Ø 334 [13,15 dia.]	8 x M20x1.5	-	18 [0,71]
<b>1 3 1 0</b> 1 2 3 4 P	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 276 [10,87 dia.]	208,75 [8,22]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	14 [0,55]
<b>1 4 1 0</b> 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 254 [10,00 dia.]	Ø 285 [11,22 dia.]	163,2 [6,43]	Ø 334 [13,15 dia.]	Ø 17,5 [0,69 dia.]	12 x M16x1.5	15 [0,59]
<b>1 8 4 0</b> 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 254 [10,00 dia.]	Ø 285 [11,22 dia.]	163,2 [6,43]	Ø 334 [13,15 dia.]	18 x M16x1.5	-	15 [0,59]
<b>1 5 1 0</b> 1 2 3 4 P	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 382 [15,04 dia.]	292,2 [11,50]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	25 [0,98]
<b>1 6 1 0</b> 1 2 3 4 P	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 265 [10,43 dia.]	208,75 [8,22]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	16,5 [0,65]



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

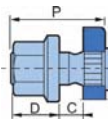
Studs

	<b>P</b> mm [in]	<b>C min.</b> mm [in]	<b>C max.</b> mm [in]	<b>D</b> mm [in]	<b>Class</b>	<b>(1) *</b> N.m [lb.ft]	<b>(2) *</b> N.m [lb.ft]	
Various studs	M16 x 2	50 [1.97]	5 [0.20]	17.75 [0.70]	12.9	300 [221.3]	380 [280.3]	
	M20 x 1.5	60 [2.36]		20 [0.79]				25 [0.98]
	M20 x 1.5	70 [2.76]		27 [1.06]				25 [0.98]
	M22 x 1.5	65 [2.56]		24 [0.94]				26 [1.02]
	M22 x 1.5	80 [3.15]		29 [1.14]				26 [1.02]
Screws	M16 x 1.5	-	-	-	10.9	275 [202.8]	275 [202.8]	
	M20 x 1.5	-	-	-				535 [394.6]

(\* 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))



See generic installation motors N°801478197L.



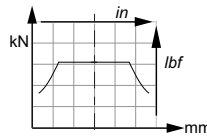
Load curves

Permissible radial loads

Test conditions :

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

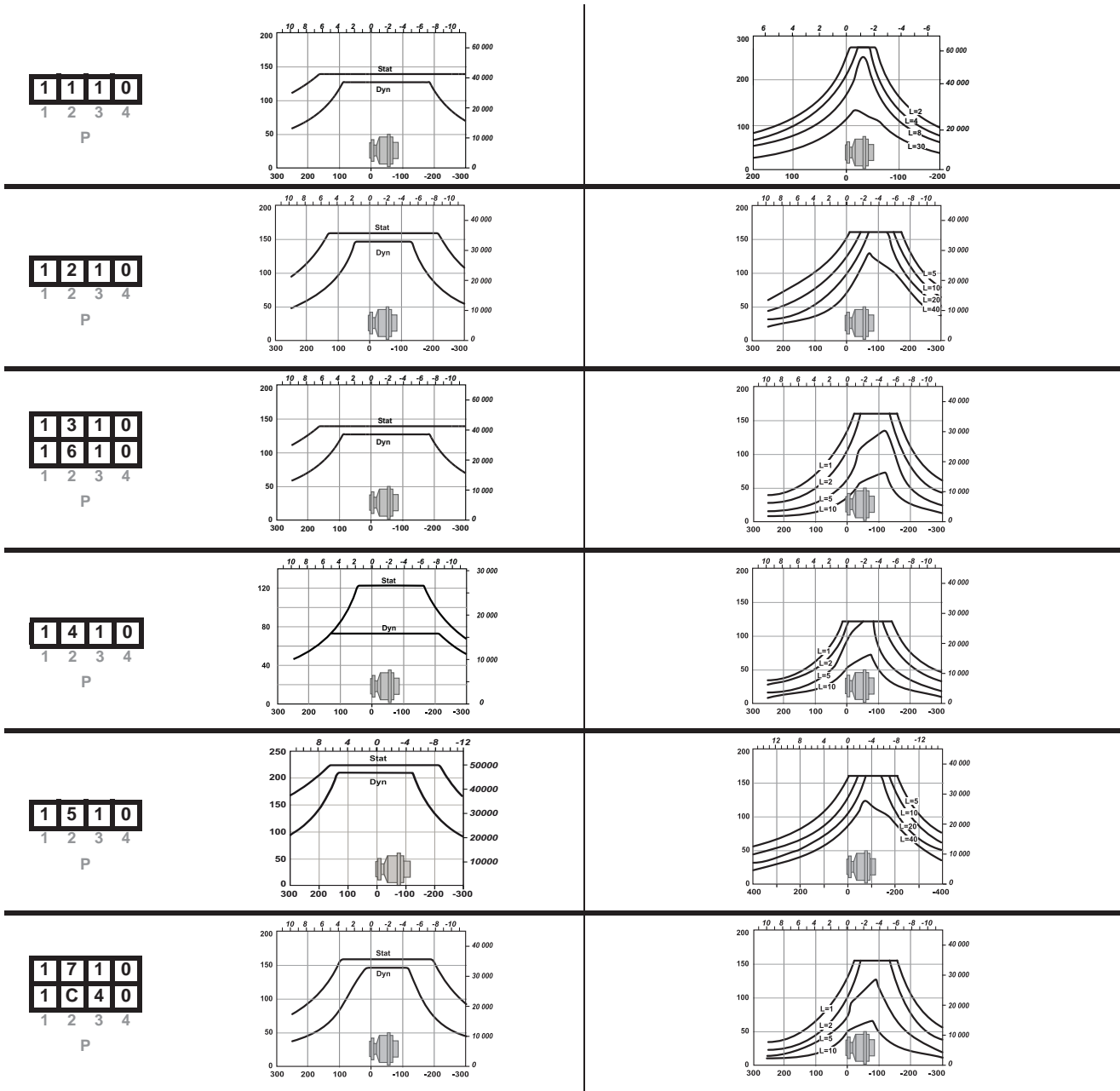
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



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.



Modularity and Model code

Wheel motor

Shaft motor

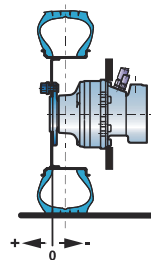
Valving systems and hydrobases

Brake

Options

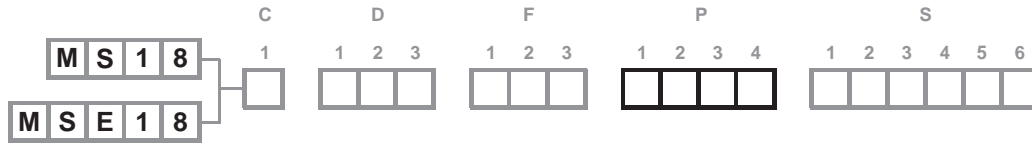


The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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





Support types (continued)



<b>C</b>	<b>A</b> 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]	Wheel rim mountings	<b>L</b> mm [in]													
<table border="1"> <tr><td>1</td><td>9</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> <p>P</p>	1	9	1	0	1	2	3	4	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	208,75 [8,22]	Ø 334 [13,15 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	18 [0,71]					
1	9	1	0																		
1	2	3	4																		
<table border="1"> <tr><td>1</td><td>R</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>S</td><td>3</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> </table> <p>P</p> <p>350 x 60</p>	1	R	3	0	1	S	3	0	1	2	3	4	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 378 [14,88 dia.]	320,8 [12,63]			8 x M20x1.5	44 [1,73]	
1	R	3	0																		
1	S	3	0																		
1	2	3	4																		
<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> </table> <p>P</p>	1	G	1	0	1	2	3	4	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 385 [15,16 dia.]	301 [11,85]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	14 [0,55]					
1	G	1	0																		
1	2	3	4																		
<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> </table> <p>P</p> <p>432 x 102</p>	1	K	3	0	1	L	3	0	1	2	3	4	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 461,5 [18,17 dia.]	315 [12,40]			10 x M22x1.5	48 [1,89]	
1	K	3	0																		
1	L	3	0																		
1	2	3	4																		
<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> </table> <p>P</p>	F	T	3	0	1	2	3	4	Ø 280,0 [11,02 dia.]	Ø 335 [13,19 dia.]	Ø 386 [15,20 dia.]	205 [8,07]	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																		



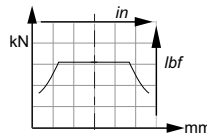
Load curves (continued)

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



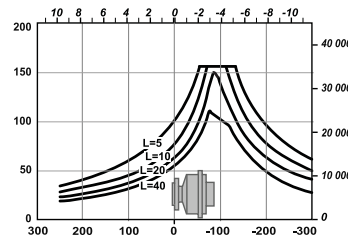
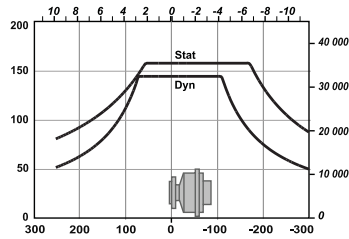
Service life of bearings

Test conditions :

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

1	9	1	0
1	2	3	4

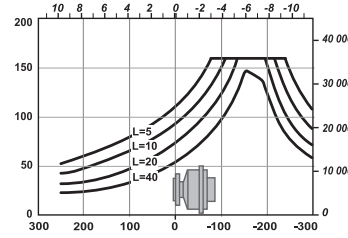
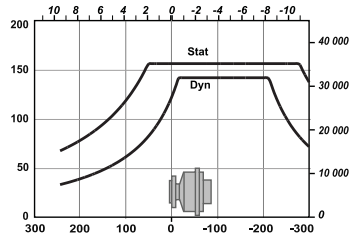
P



1	R	3	
1	S	3	
1	2	3	4

P

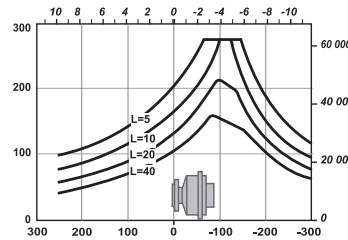
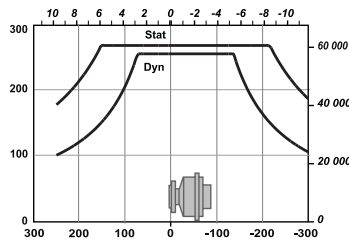
350 x 60



1	G	1	
1	K	3	
1	L	3	
1	2	3	4

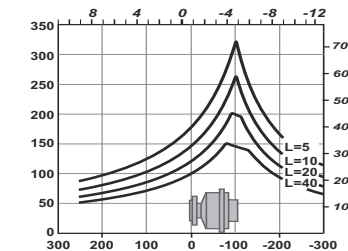
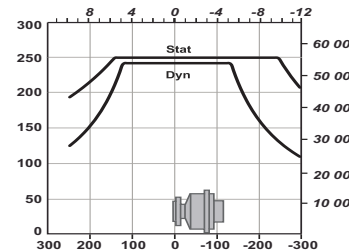
P

432 x 102



F	T	3	0
1	2	3	4

P



Modularity and Model code

Wheel motor

Shaft motor

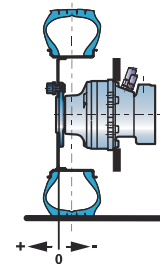
Valving systems and hydrobases

Brake

Options



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



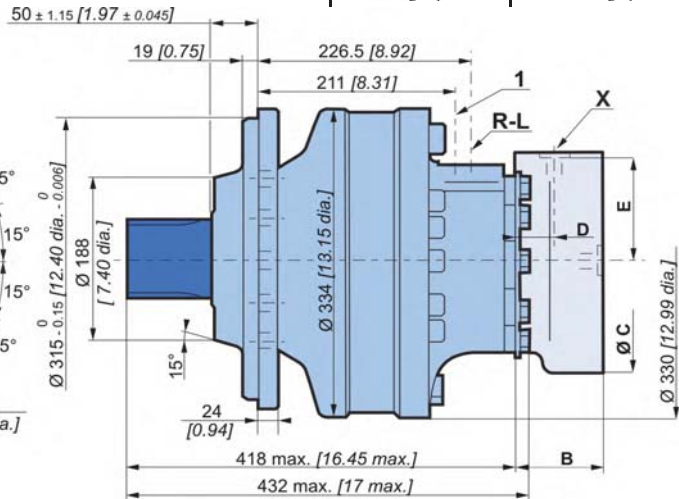
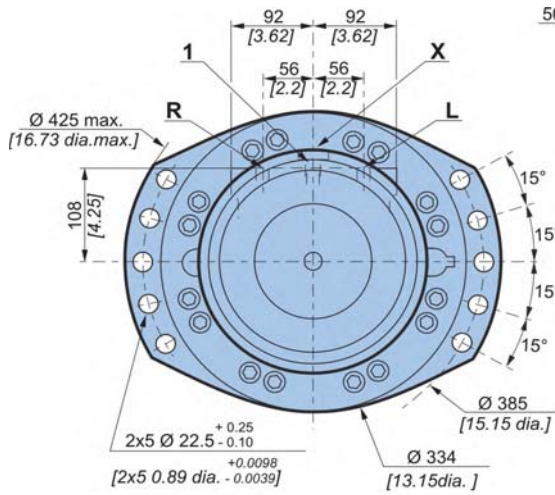




# SHAFT MOTOR

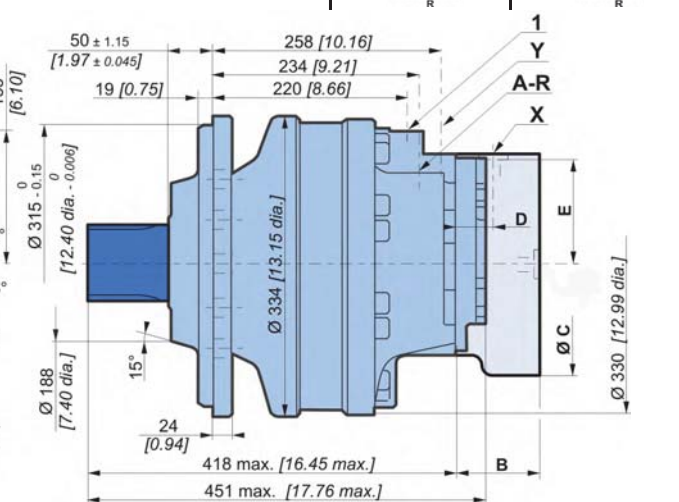
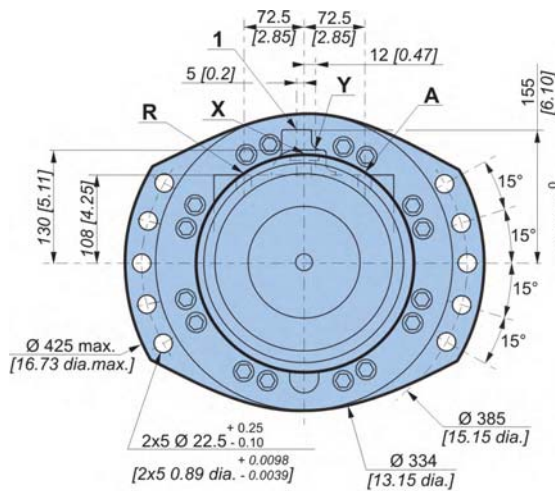
## Dimensions for standard (2A50) 1-displacement motor

	112 kg [246 lb]	142 kg [312 lb]
	3,00 L [180 cu.in]	2,50 L [150 cu.in]



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

	112 kg [246 lb]	152 kg [334 lb]
	3,00 L [180 cu.in]	2,50 L [150 cu.in]



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

	C	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 "Brake" section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

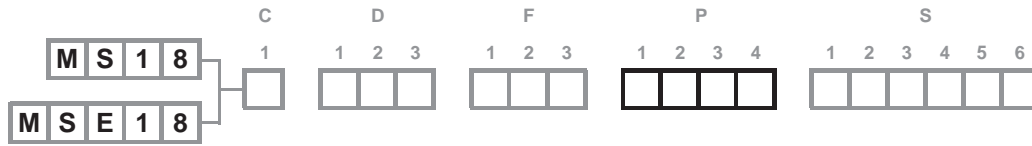
Valving systems and hydrobases

Brake

Options



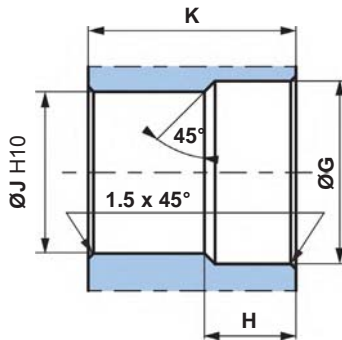
**Support types**



<b>C</b>				A	B	C	D	E	F	
<b>DIN 5480 splines</b>										
<b>2</b>	<b>A</b>	<b>5</b>	<b>0</b>	23	R 3	35	2 x M14	23	90	
1	2	3	4	[0,91]	[R 0,12]	[1,38]		[0,91]	[3,54]	
P				Z						
<b>NF E22-141 splines</b>										
<b>2</b>	<b>A</b>	<b>1</b>	<b>0</b>	23	R 3	35	2 x M14	23	90	
1	2	3	4	[0,91]	[R 0,12]	[1,38]		[0,91]	[3,54]	
P				Z						

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

**Splined coupling**



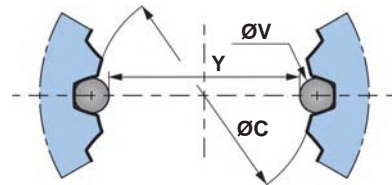
**Standard NF E 22-141**

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	Ø C (H10)	Ø V	Y	Tolerance µm [µin]
<b>2</b>	<b>A</b>	<b>1</b>	<b>0</b>	91	28	85	89	90	2,5	34	2	85	5	80,169	+ 104 / 0
1	2	3	4	[3,58]	[1,10]	[3,35]	[3,50]	[3,54]			[0,08]	[3,35]	[0,20]	[3,16]	[+4.094 / 0]
P															
<b>2</b>	<b>A</b>	<b>5</b>	<b>0</b>	91,5	25	84	89	90	3	28	1,35	84	5,25	79,110	+ 68 / 0
1	2	3	4	[3,60]	[0,98]	[3,31]	[3,50]	[3,54]			[0,0531]	[3,31]	[0,21]	[3,11]	[+2.677 / 0]
P															

General tolerances : ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

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



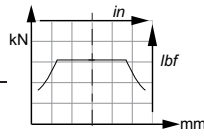


Load curves

**Permissible radial loads**

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

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

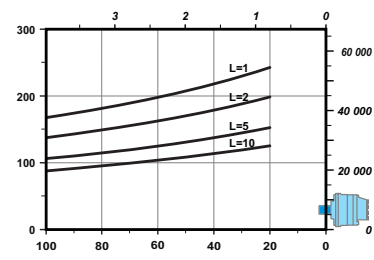
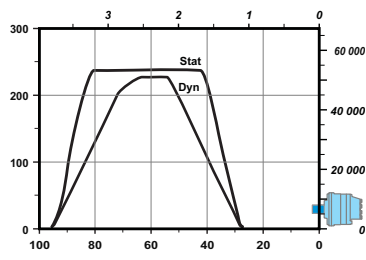


**Service life of bearings**

Test conditions :

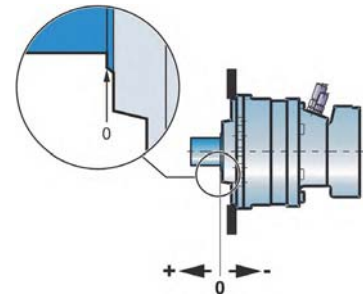
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

2	A	1	0
1	2	3	4
P			



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

C			
2	A	1	0
2	A	5	0



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

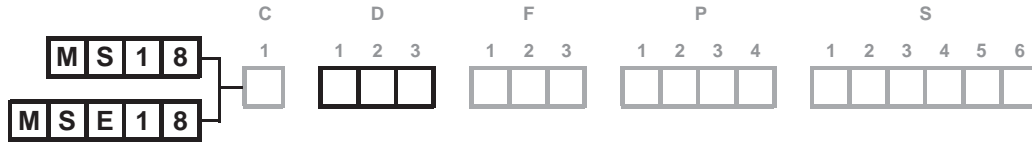
Brake

Options



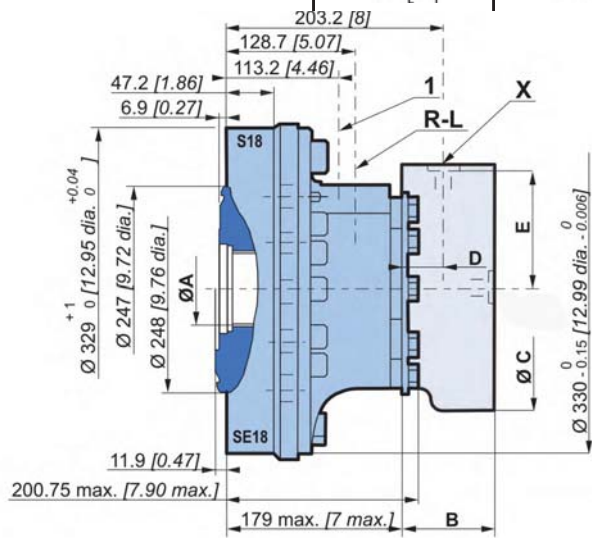
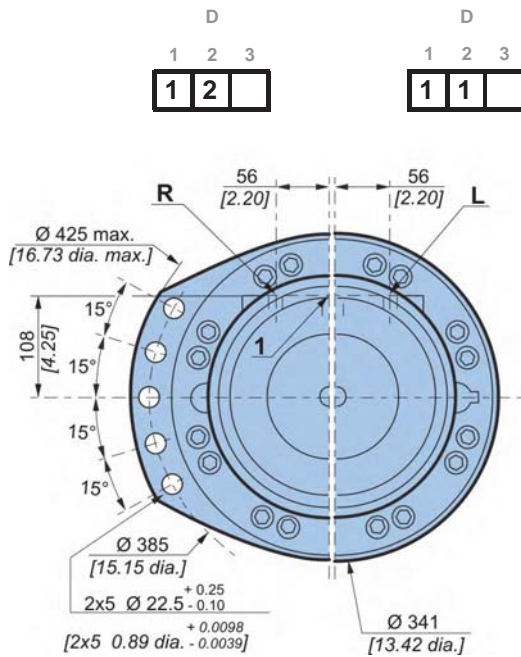


# VALVING SYSTEMS AND HYDROBASES



## Dimensions for 1-displacement valving

	68 kg [150 lb]	93 kg [205 lb]
	1.25 L [75 cu.in]	1.00 L [60 cu.in]



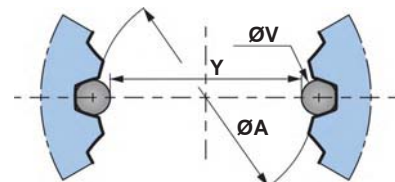
	F12	F19	T12	T19
B	76,7 [3,02]	98,5 [3,88]	92,5 [3,64]	114,3 [4,50]
Ø C	247 [9,72]	250 [9,84]	273,6 [10,77]	273,6 [10,77]
D	25 [0,98]	45,00 [1,77]	24,5 [0,96]	45,0 [1,77]
E	155 [6,10]	121,50 [4,78]	128,5 [5,06]	128,5 [5,06]

Also see "Brake" section (thumbnail opposite).

## Cylinder block splines

(as per standard NF E22-141)

ØA	Module	Z	Dimension on 2 pins	
			Y	ØV
90 [3,543]	2,5	34	65,169 [3,156]	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.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

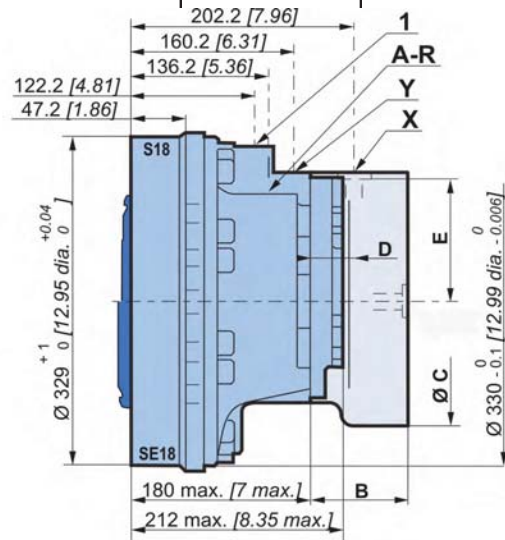
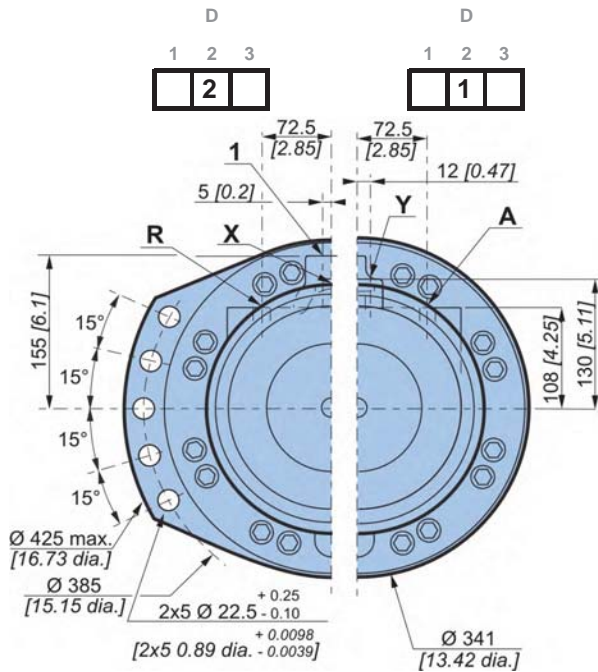
Brake

Options



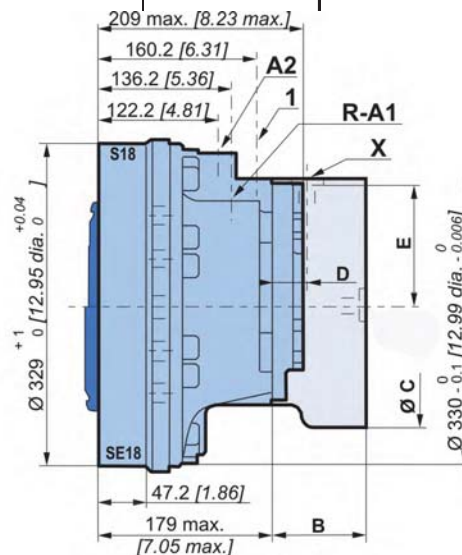
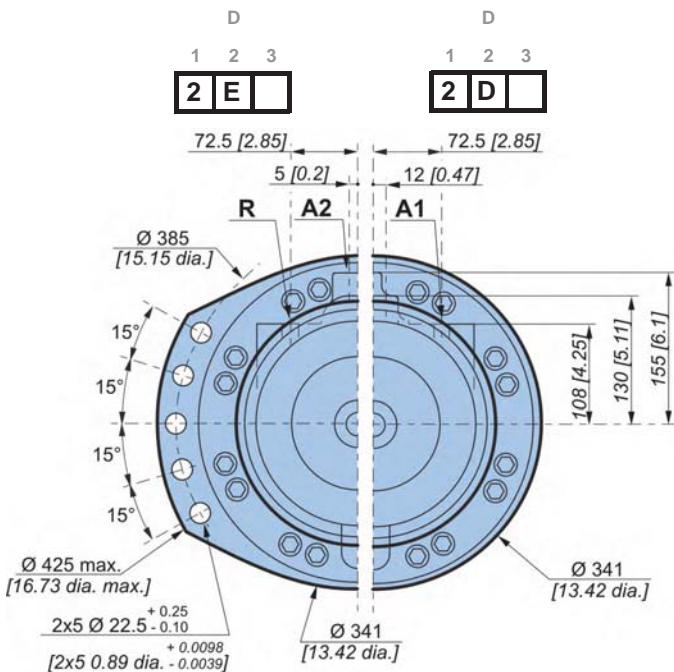
**Dimensions for 2-displacement valving**

	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in.]	1,00 L [60 cu.in.]



**Dimensions for Twin-Lock™ valving**

	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in.]	1,00 L [60 cu.in.]

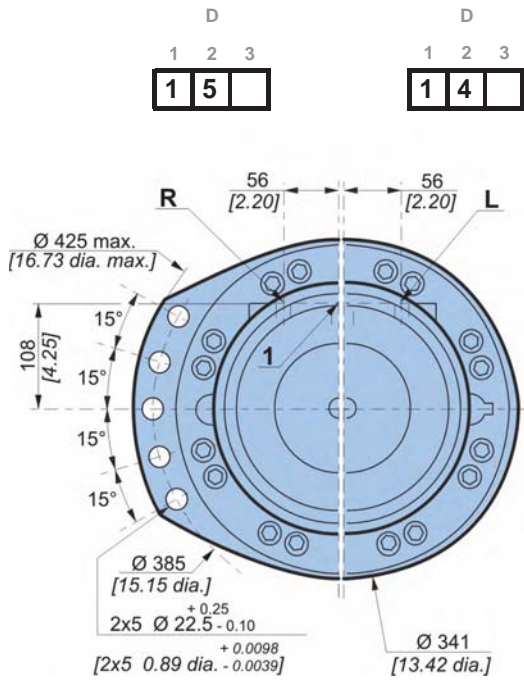


	F12	F19	T12	T19
B	76,7 [3,02]	98,5 [3,88]	92,5 [3,64]	114,3 [4,50]
Ø C	247 [9,72]	250 [9,84]	273,6 [10,77]	273,6 [10,77]
D	25 [0,98]	45,00 [1,77]	24,5 [0,96]	45,0 [1,77]
E	155 [6,10]	121,50 [4,78]	128,5 [5,06]	128,5 [5,06]

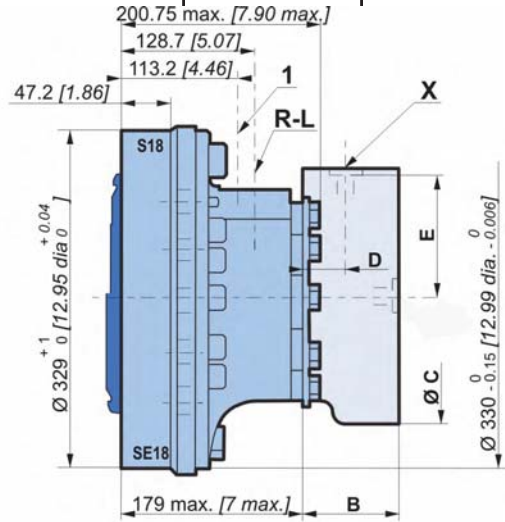
Also see "Brake" section (thumbnail opposite).



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

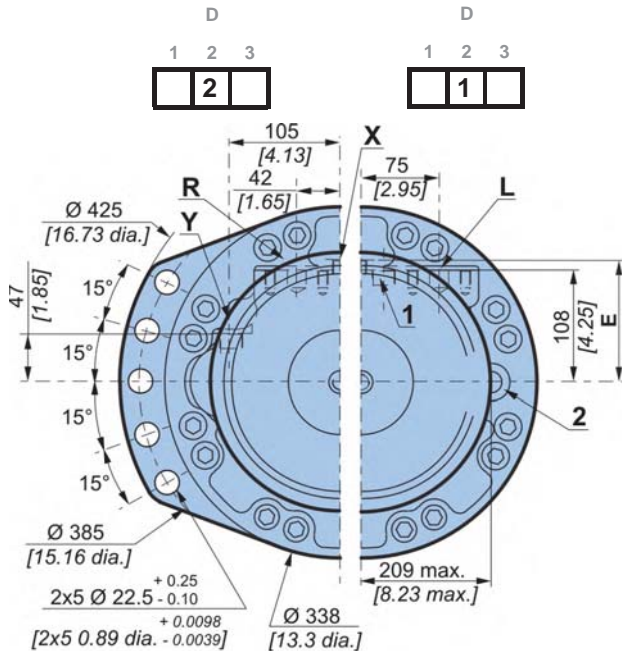


	68 kg [150 lb]	93 kg [205 lb]
	1,25 L [75 cu.in.]	1,00 L [60 cu.in.]

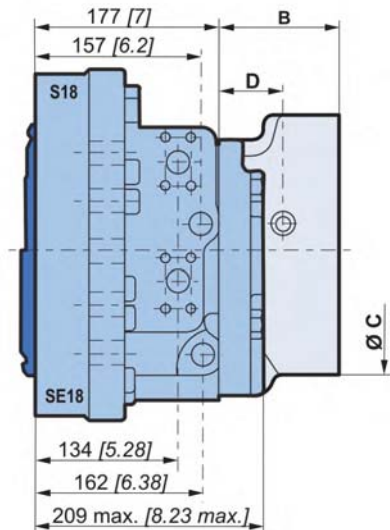


**Dimensions for 2-displacement symmetrical valving**

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



	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in.]	1,00 L [60 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 "Brake" section (thumbnail opposite).

Modularity and Model code

Wheel motor

Shaft motor

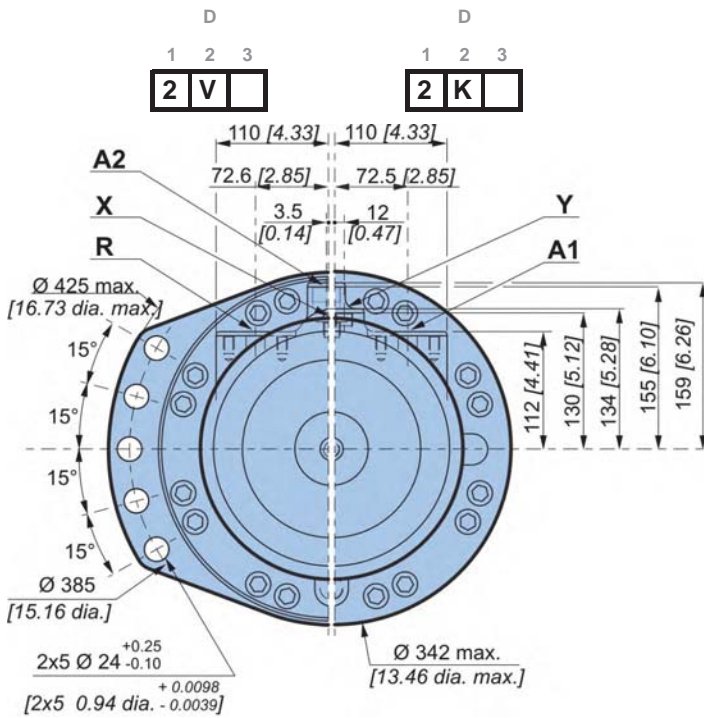
Valving systems and hydrobases

Brake

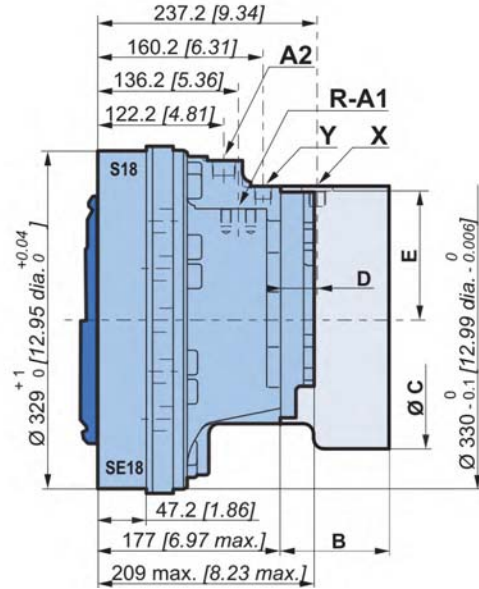
Options



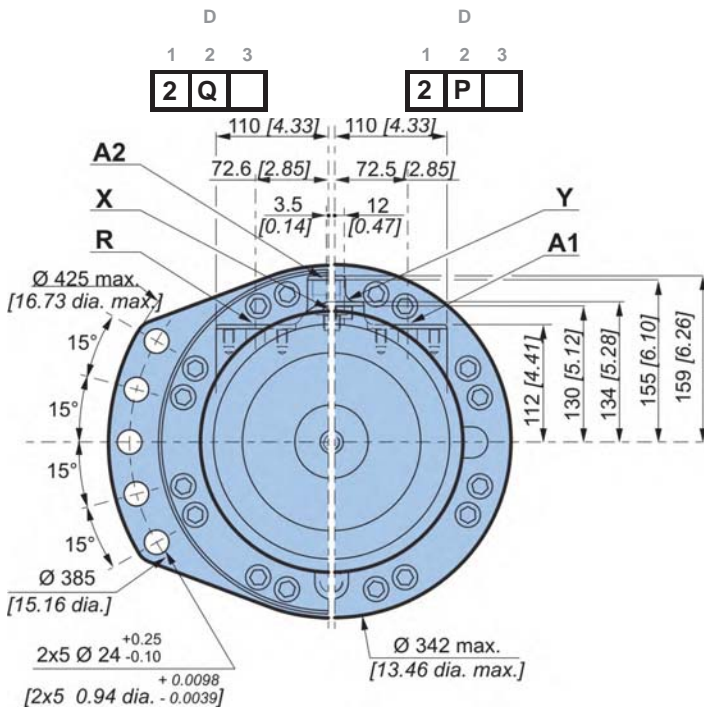
**Dimensions for Twin-Lock™ / 2-displacement valving**



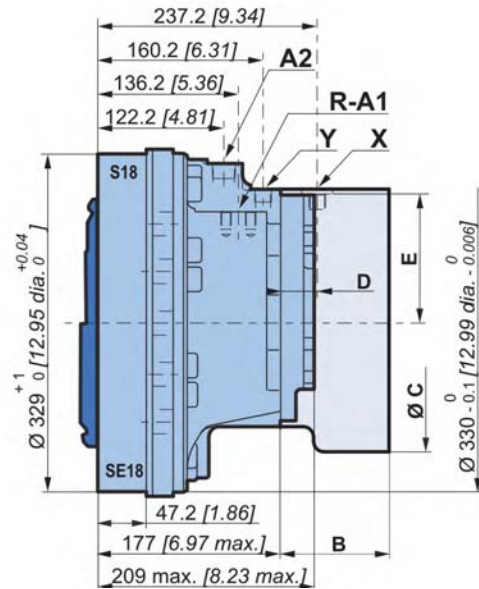
	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in]	1,00 L [60 cu.in]



**Dimensions for 2-displacement / Twin-lock™ valving**

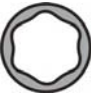


	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in]	1,00 L [60 cu.in]



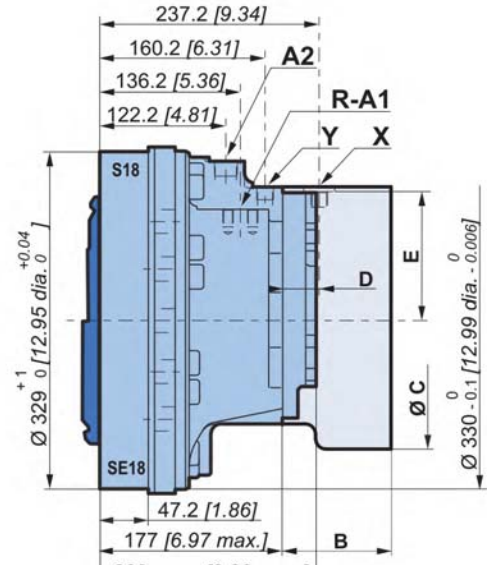
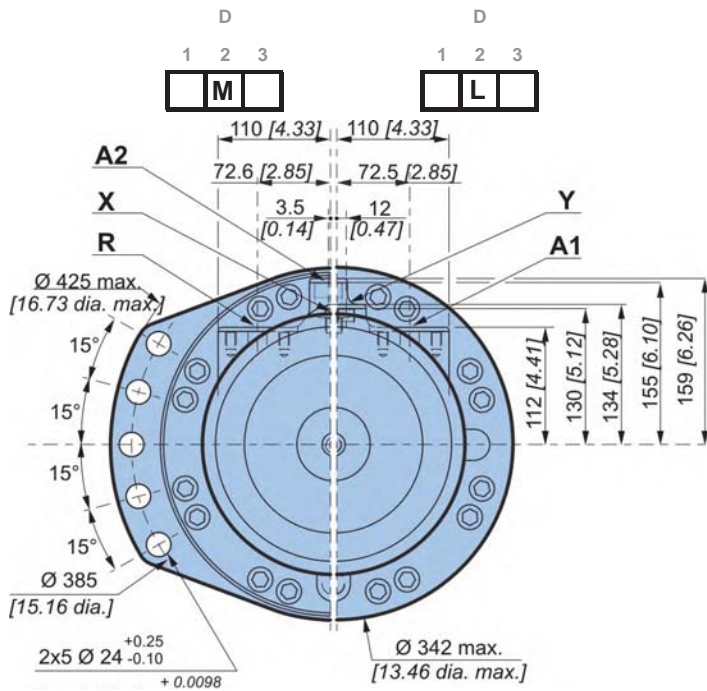
	<b>C</b>	<b>F12</b>	<b>F19</b>	<b>T12</b>	<b>T19</b>
<b>B</b>		76,7 [3,02]	98,5 [3,88]	92,5 [3,64]	114,3 [4,50]
<b>Ø C</b>		247 [9,72]	250 [9,84]	273,6 [10,77]	273,6 [10,77]
<b>D</b>		25 [0,98]	45,00 [1,77]	24,5 [0,96]	45,0 [1,77]
<b>E</b>		155 [6,10]	121,50 [4,78]	128,5 [5,06]	128,5 [5,06]

Also see "Brake" section (thumbnail opposite).



Dimensions for Twin-Lock™ valving with by-pass

	78 kg [172 lb]	99 kg [218 lb]
	1,25 L [75 cu.in]	1,00 L [60 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 "Brake" section (thumbnail opposite).



We can obtain a more important flow and speed with this valving system. For an accurate calculation, consult your Poclain Hydraulics application engineer.

Modularity and Model code

Wheel motor

Shaft motor

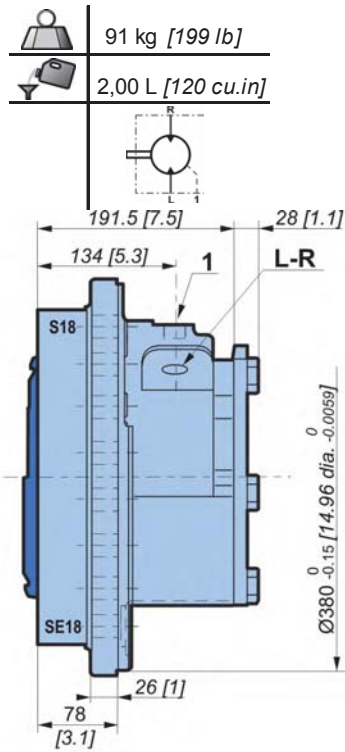
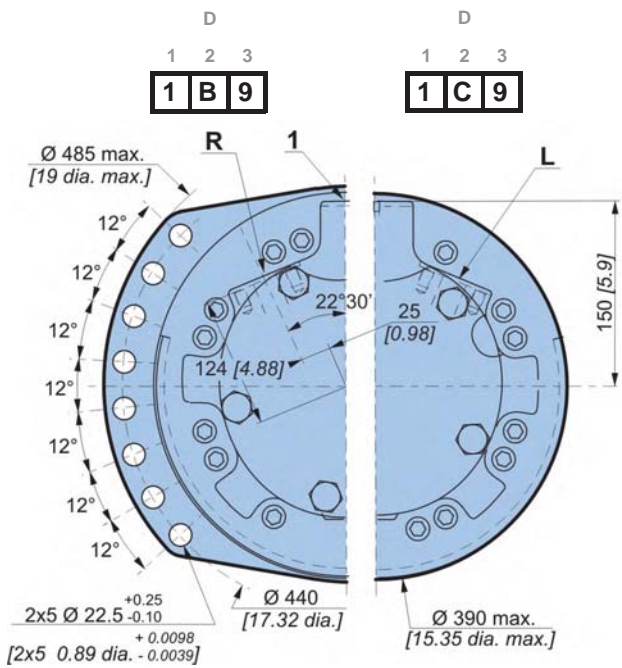
Valving systems and hydrobases

Brake

Options

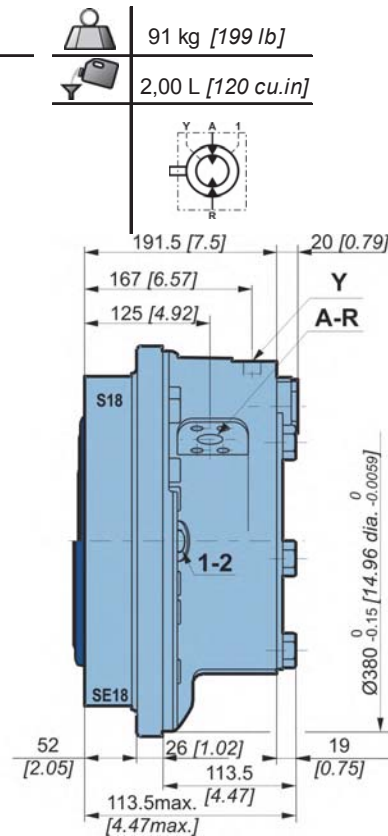
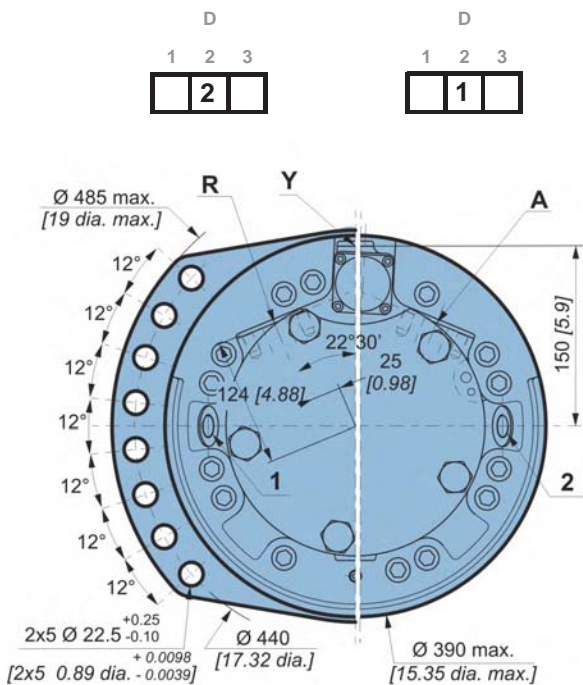


**Dimensions for 1-displacement valving**



	91 kg [199 lb]
	2,00 L [120 cu.in]

**Dimensions for 2-displacement valving**



	91 kg [199 lb]
	2,00 L [120 cu.in]





### Exchange

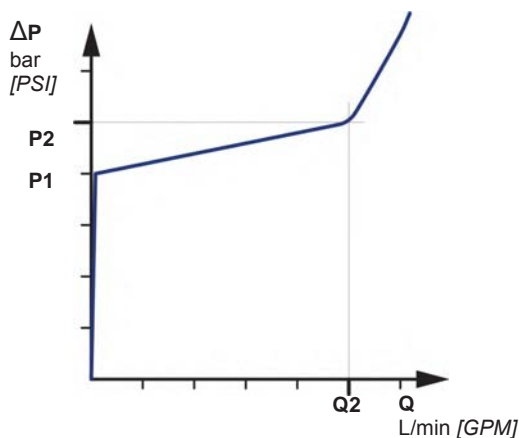
When a coding request is made, you must specify information on the threshold of the selector and the valve.

#### Selector spool

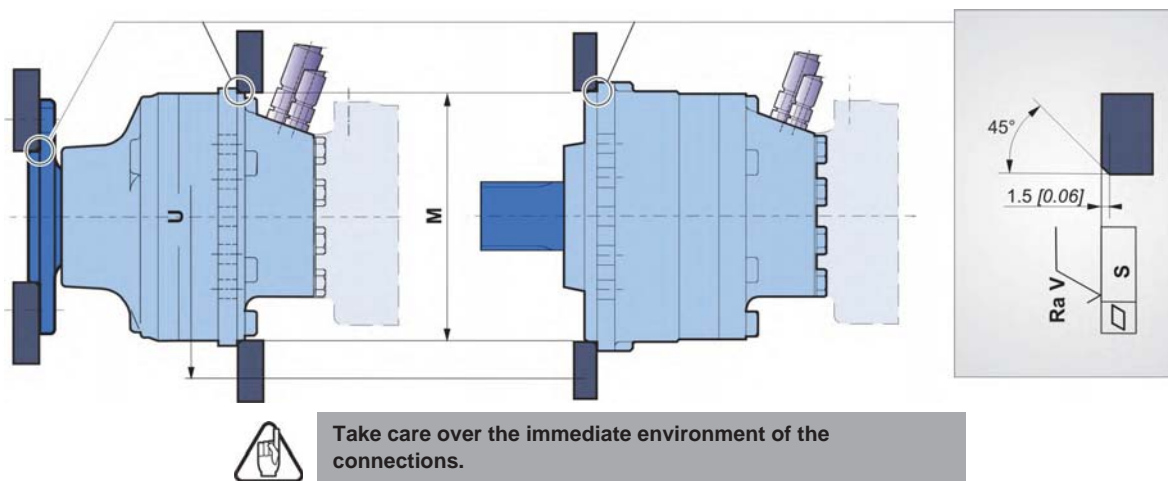
Selector threshold bar [PSI]	Opening pressure of selector bar [PSI]
8 [116]	9.9 ± 1.2 [144 ± 17]

#### 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



		ØM <sup>(1)</sup>	ØU	S	Ra V	Class	*
MS35	Wheel motor	330 [12,99]	385 [15,16]				
	Shaft motor	315 [12,40]	385 [15,16]				
MS18 / MSE18	Wheel motor	330 [12,99]	385 [15,16]	0,2 [0,008]	12,5 [0,492]	10,9	580 N.m [428 lb.ft]
	Shaft motor						
	Short wheel motor	380 [14,96]	440 [17,32]				

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

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

Modularity and Model code

Wheel motor

Shaft motor

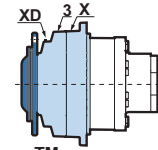
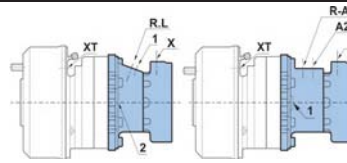
Valving systems and hydrobases

Brake

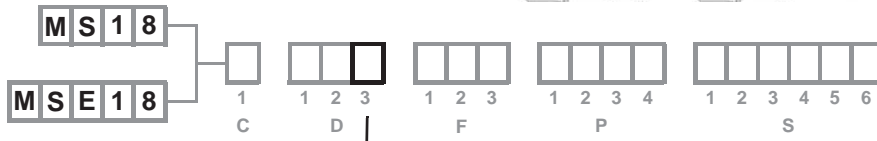
Options



Hydraulic connections



C27™ combined brake



	Old standards	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>S18</b>			R-L	1, 2		X	XT	X	XD	3		
<b>1 displacement</b>	A	SAE J514 ISO 11 926-1	1"1/16-12 UNF	7/8"-14 UNF		9/16"-18 UNF 3/4"-16 UNF		9/18"-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 BSPP	ISO 6 162 ISO 1 179-1	DN19 PN400	Ø21 [1/2" dia.]	Ø17 [3/8" dia.]		M16x1.5	M14x1.5	M14x1.5		
	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		
<b>2 Displacement</b>	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	
<b>Twin-Lock™</b>	A	SAE J514 ISO 11 926-1	1"1/16-12 UNF	1"1/16-12 UNF 3/4"-16 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
<b>S35</b>			R-L	1, 2		X		X	XD	3		
<b>1C</b>	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	XD	
<b>2C</b>	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 PN400	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	
		ISO 9 974-1					M14x1.5					
<b>Max. pressures</b>	MS	bar	450 [6 527]	450 [6 527]	1 [15]	30 [435]	30 [435]	120 [1 740]	130 [1 885]	70 [1 015]	30 [435]	
	MSE	[PSI]	400 [5 802]	400 [5 802]								

\* : Only symmetrical valving



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



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

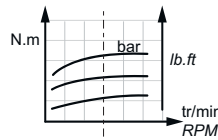
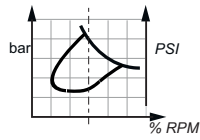


Do not put either a check valve or a poppet valve on the pilot lines (parking brake and displacement change) between the charge pump and the pilot valve. Do not use a piloting valve with integrated check valve.

Efficiency

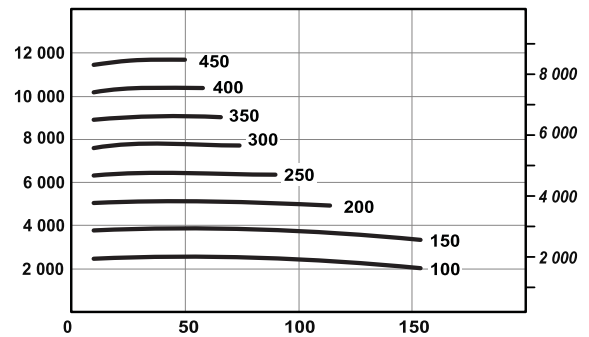
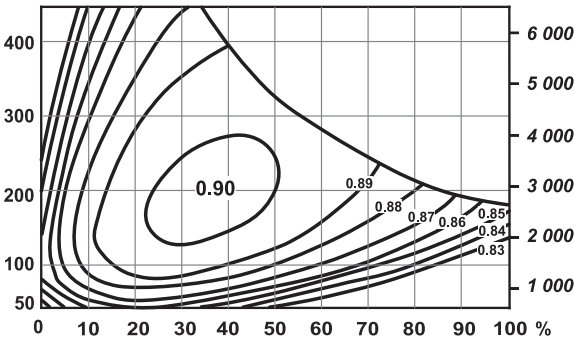
Overall efficiency

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

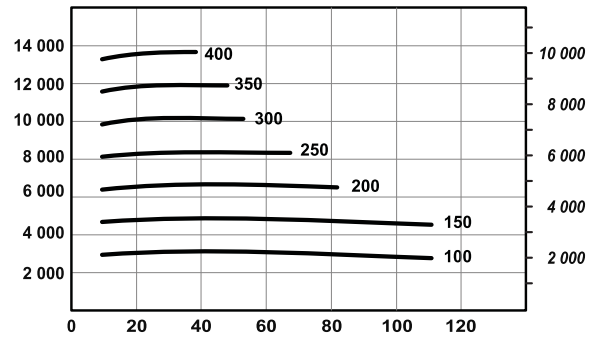
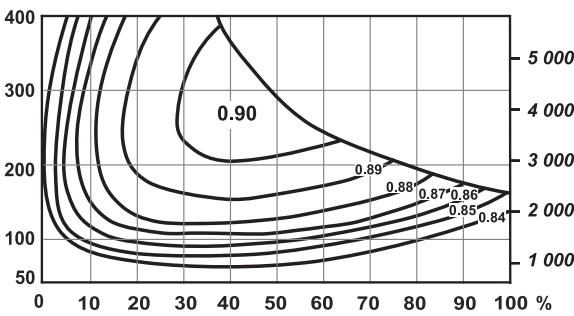


Actual output torque

MS18



MSE18



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

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

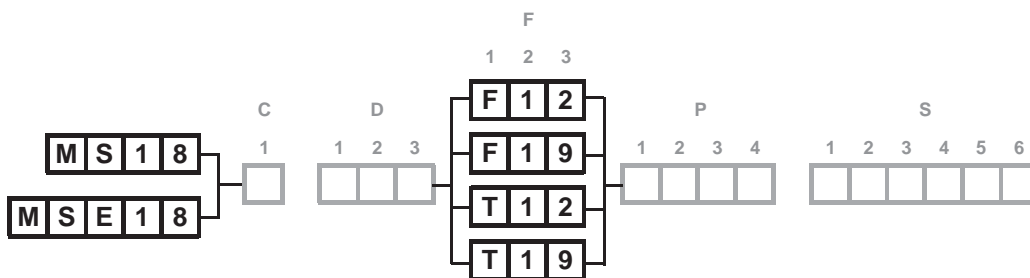
Brake

Options

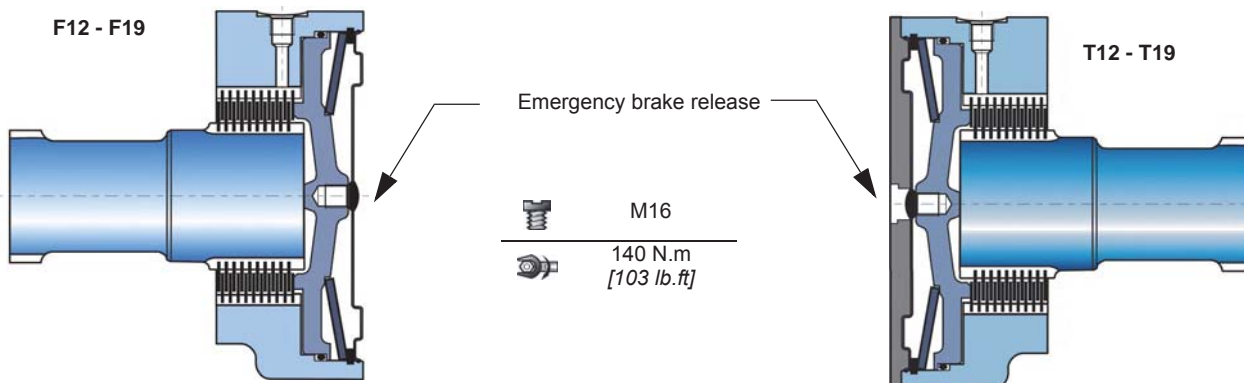




# BRAKES



## Rear brake



## Brake principle

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

C	F 1 2	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.
- The use of certain oils, may not offer the characteristics stated above. Consult your Poclain Hydraulics sales engineer.

Modularity and Model code

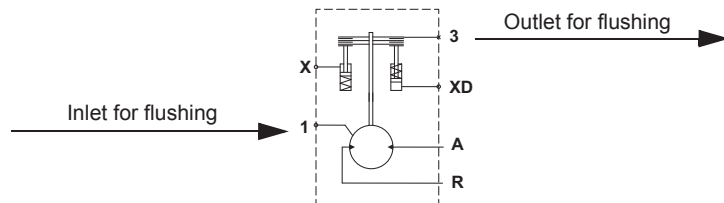
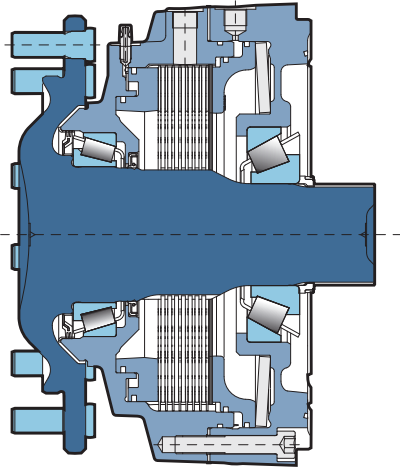
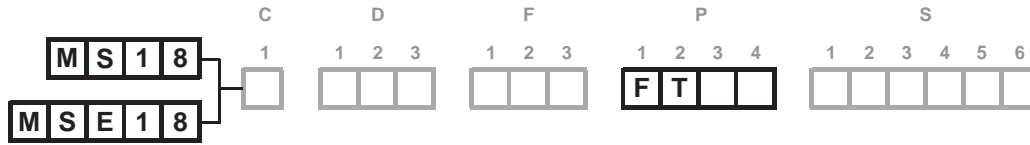
Wheel motor

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.



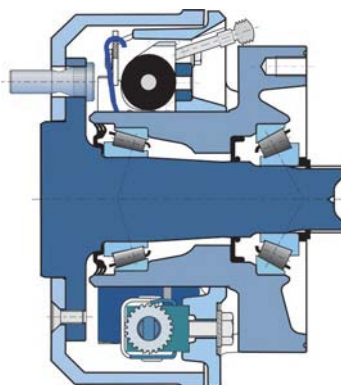
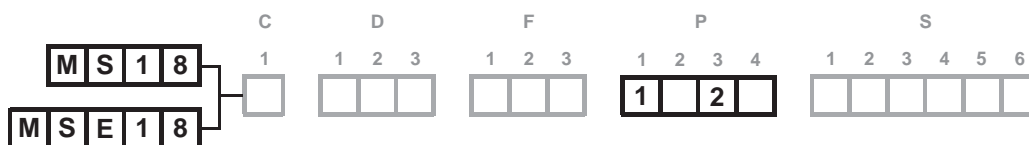
The use of certain oils, may not offer the characteristics stated above. Consult your Poclain Hydraulics sales engineer.



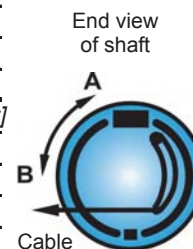
### Drum brake (350 x 60 or 432 x 102)

Diameter of brake pads : Ø 350 [13.77 dia.] or Ø 432 [17 dia.]

Width of friction surface : 60 [2.36] or 102 [4]



Brake pads	350 x 60		432 x 102	
Asbestos free material	BERAL 1109 or JURID 505		BERAL 1109 or JURID 505	
Compensation for wear	Automatic		Automatic	
<b>Hydraulically controlled dynamic braking</b>				
Max. permissible continuous brake torque	6 600 N.m [4 868 lb.ft]		16 200 N.m [11 948 lb.ft]	
Pressure to obtain max. permissible continuous brake torque	70 bar [1 015 PSI]		71 bar [1 030 PSI]	
Max. permissible brake torque	11 000 N.m [8 113 lb.ft]		27 000 N.m [19 914 lb.ft]	
Pressure to obtain max. permissible brake torque	120 bar [1 740 PSI]		120 bar [1 740 PSI]	
<b>Fluid</b>				
Mineral	R	Yes	K	Yes
DOT 3/DOT4/SAE J1703	S	Yes	L	Yes
Max. volume required to bring pads into contact	8,8 cm³ [0,54 cu.in]		10,2 cm³ [0,62 cu.in]	
<b>Mechanically controlled parking brake</b>				
Max. braking torque	11 000 N.m [8 113 lb.ft]		27 000 N.m [19 914 lb.ft]	
Max permissible force on the cable	2 900 N [652 lbf]		5 700 N [1 281 lbf]	
Force required to bring pads into contact	35 N [8 lbf]		37 N [8 lbf]	
Stroke required to bring pads into contact	A	24 mm [0,94 "]	31 mm [1,22 "]	
	B	28 mm [1,10 "]	34 mm [1,34 "]	



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

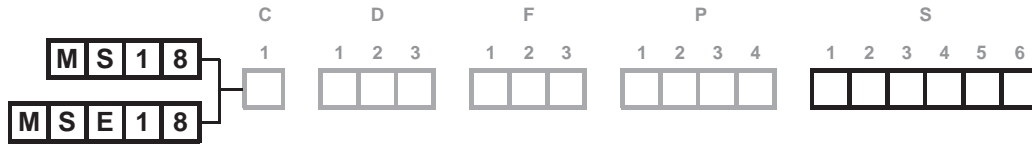
Options







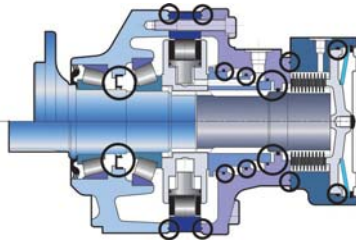
# OPTIONS



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.

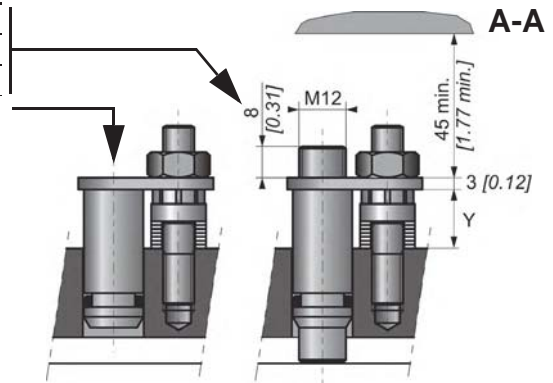
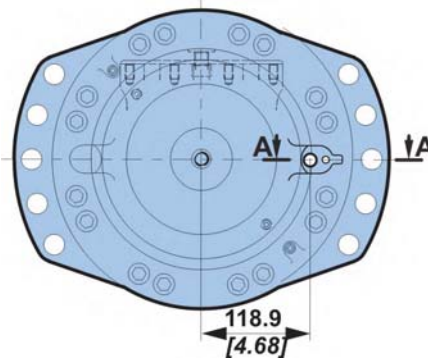


Consult your Poclain Hydraulics sales engineer.

## 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= 17.6  
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

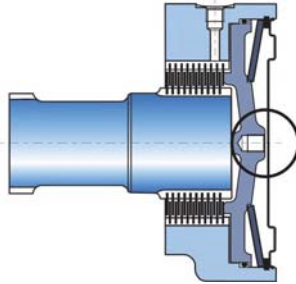
Brake

Options



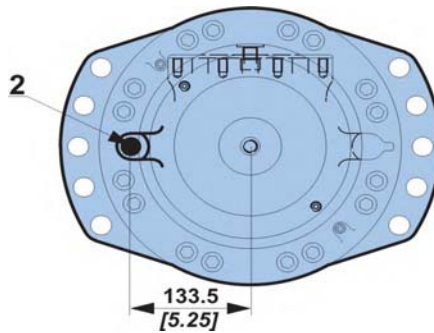
### 3 - Brake environmental cover without plug

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



### 5 - Drainage

Additional drain in the cover.



### 6 - Industrial support

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

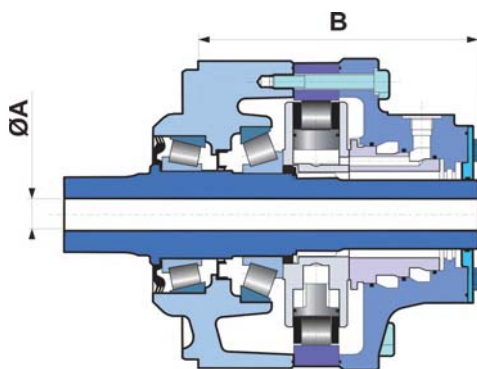


For a precise calculation, consult your Poclain Hydraulics application engineer.

### 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

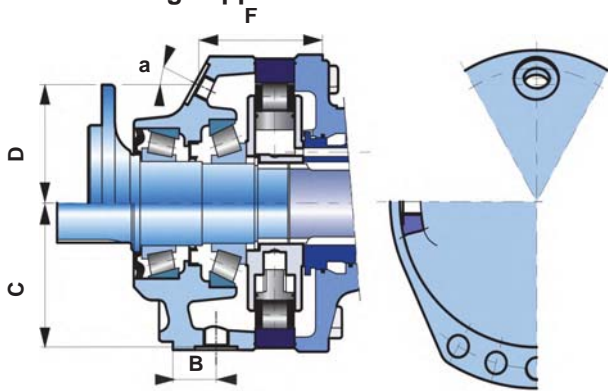


A	B
mm [in]	mm [in]
Ø 60 [2.36 dia.]	297.5 [11.71]

Radial load x 0.75  
No torque transmittable to the rear



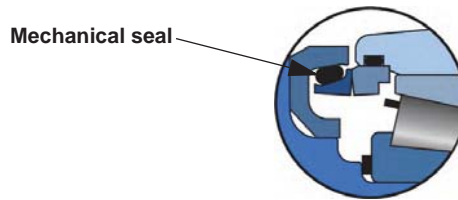
**B - Drain on the bearing support**



		B	C	D	F	a
		mm [in]	mm [in]	mm [in]	mm [in]	
Shaft motor	M16 x 1.5	34.0 [1.34]	100 [3.94]			
Wheel motor	M22 x 1.5			130.5 [5.14]	135 [5.31]	36°
Short wheel motor				123 [4.84]	121 [4.76]	25°

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

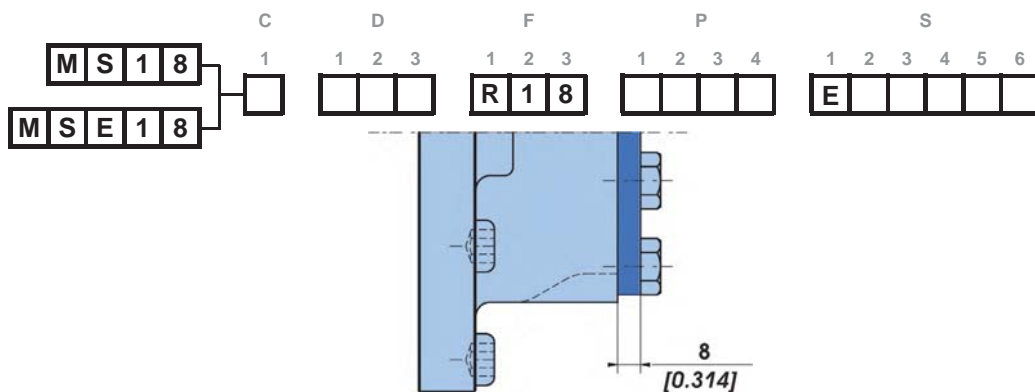
Some environments can be very harmful. The mirror seal gives reinforced motor sealing.



Consult your Poclain Hydraulics sales engineer.

**E - Reinforced sealing**

Requires reinforced seals and, for an unbraked motor, a rear reinforced plate (R18 - 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 10.



Consult your Poclain Hydraulics sales engineer.

Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options



### H - High efficiency

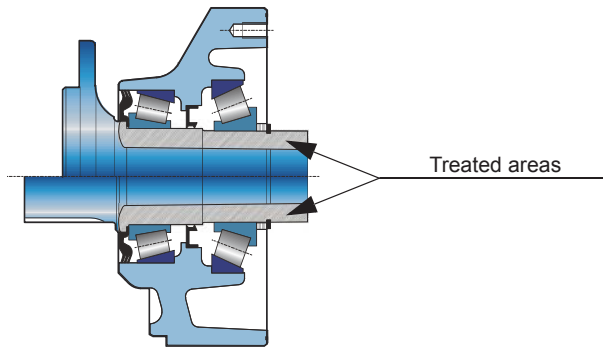
Reinforced piston sealing to improve volumetric efficiency.



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

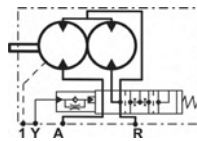
Under certain conditions, an increase in the maximum speed of 30% above the values indicated in the table on page 2 is possible.



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

### T - Soft Shift™

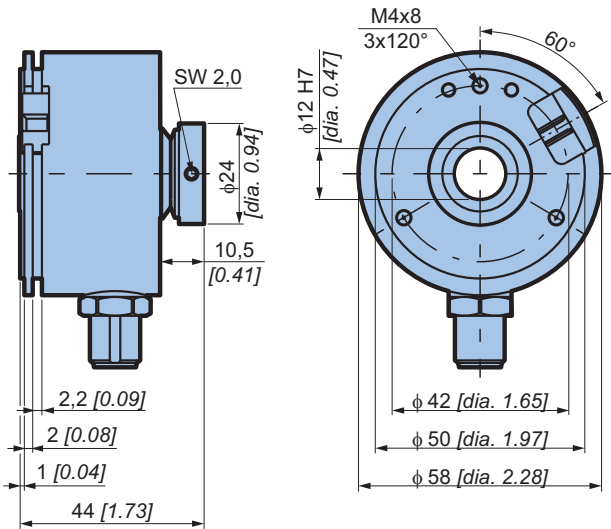
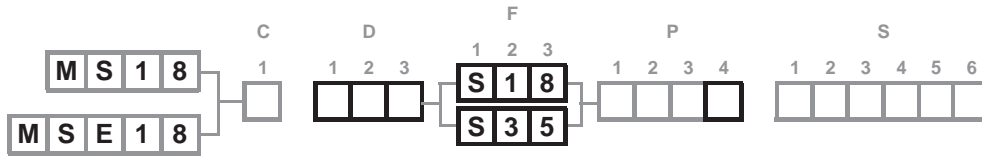
Progressive displacement change (cushioned slide-valve)



Consult your Poclain Hydraulics sales engineer.



**Magnetic incremental hollow shaft encoder**

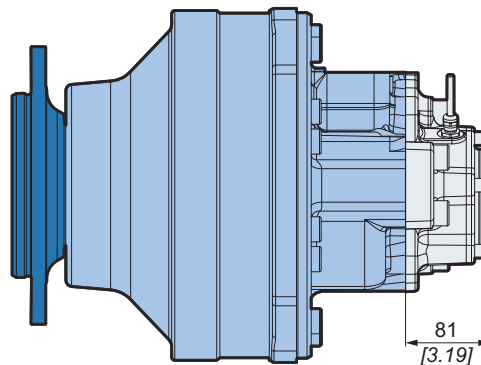
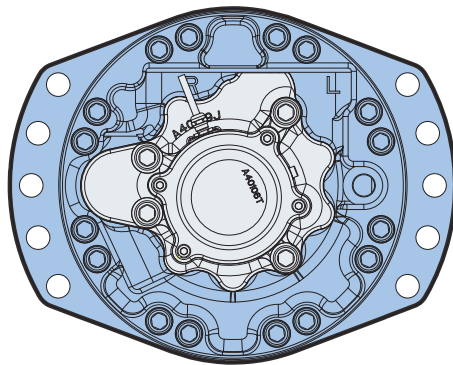


**Features**

Power supply voltage (+Vs)	10 to 30 VDC
Number of pulses per revolution	3600
Max revolutions	6000 rpm
Protection	IP65
Operating temperature	-20°C to +85°C [-4°F to 185°F]



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



Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake

Options





Modularity and Model code

Wheel motor

Shaft motor

Valving systems and hydrobases

Brake










Options



*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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-  09/05/2016
-  801 478 121D
-  801 478 191E
-  801 578 104F
-  801 578 116T
-  801 578 128G
-  A07444R
-  Non available
-  A14243G

