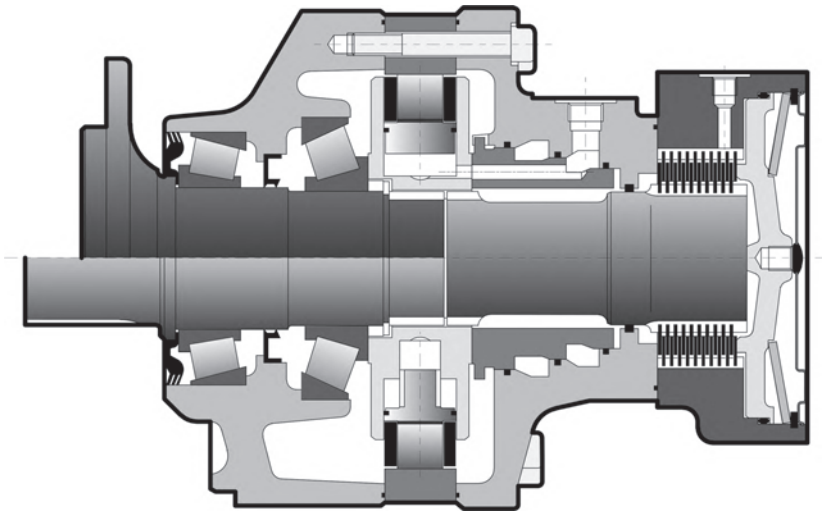
MS18 - MSE18

HYDRAULIC MOTORS

TECHNICAL CATALOG

POCLAIN Hydraulics

CHARACTERISTICS



Motor inertia **0.2 kg.m²**

	C	❶ cm³/tr [cu.in/rev.]	❷ cm³/tr [cu.in/rev.]	Theoretical torque ❶ at 100 bar Nm	Theoretical torque ❶ at 1000 PSI [lb.ft]	Max.power ❶ kW [HP]	Max.power ❷ preferred kW [HP]	Max.power ❷ non-preferred kW [HP]	Max. speed* ❶ tr/min [RPM]	Max. speed* ❷ tr/min [RPM]	Max. pressure bar [PSI]
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	
	2	2 099 [128,0]	1050 [64,0]	3 337	[1 697]				100	125	
Cams with equal lobes MSE18	0	2 340 [142,7]	1170 [71,4]	3 721	[1 892]	70 [94]	47 [63]	35 [47]	90	110	400 [5 802]
	1	2 560 [156,1]	1280 [78,1]	4 070	[2 070]				85	100	
	2	2 812 [171,5]	1406 [85,8]	4 471	[2 274]				75	90	
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	
Cams with unequal lobes 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	

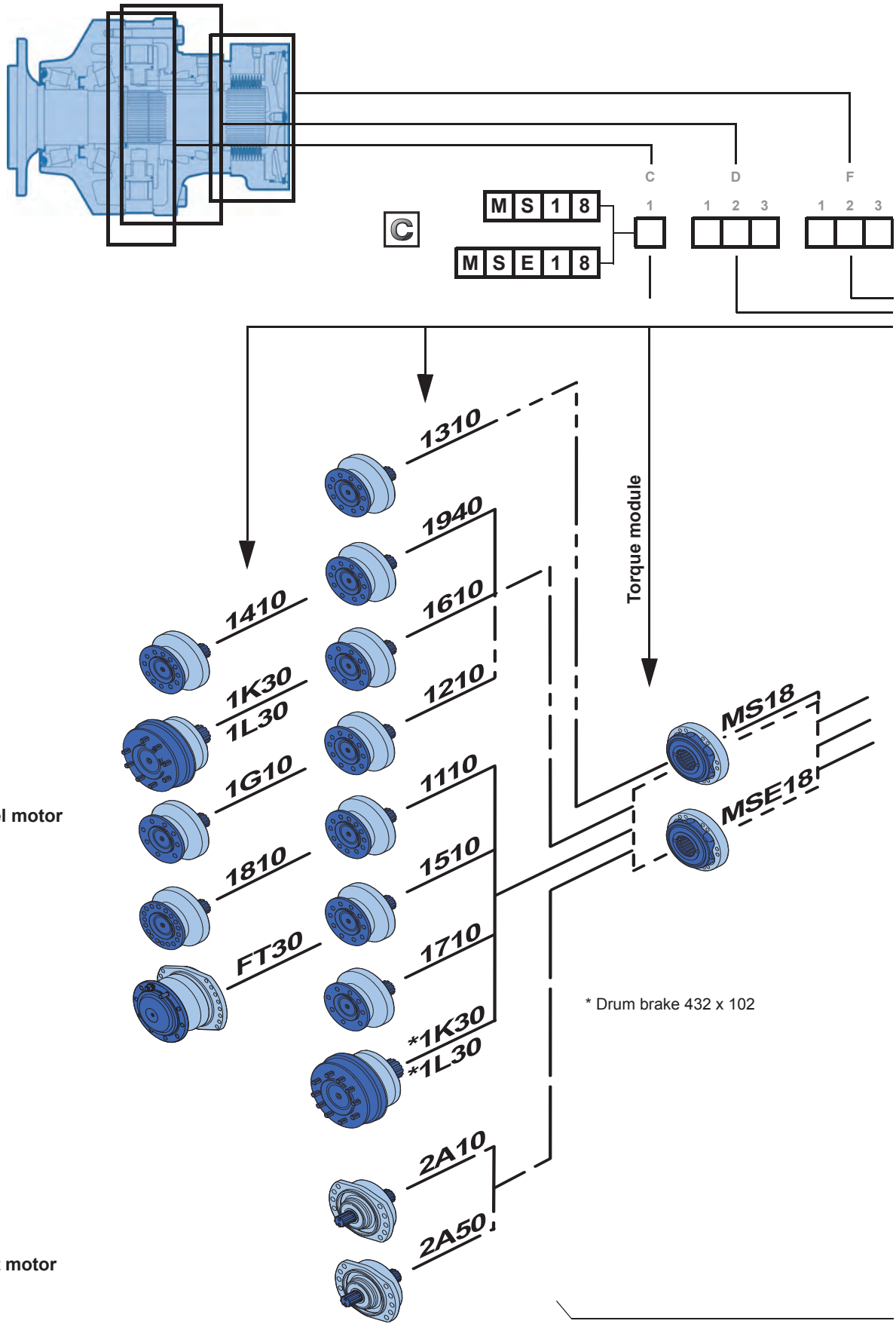
❶ **First displacement**

❷ **Second displacement**

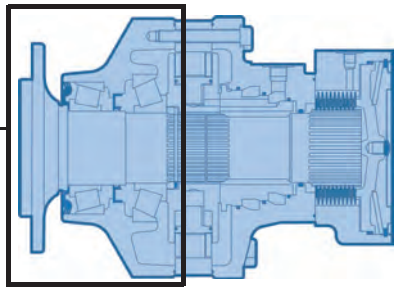
* See option ''M'' for higher speed.

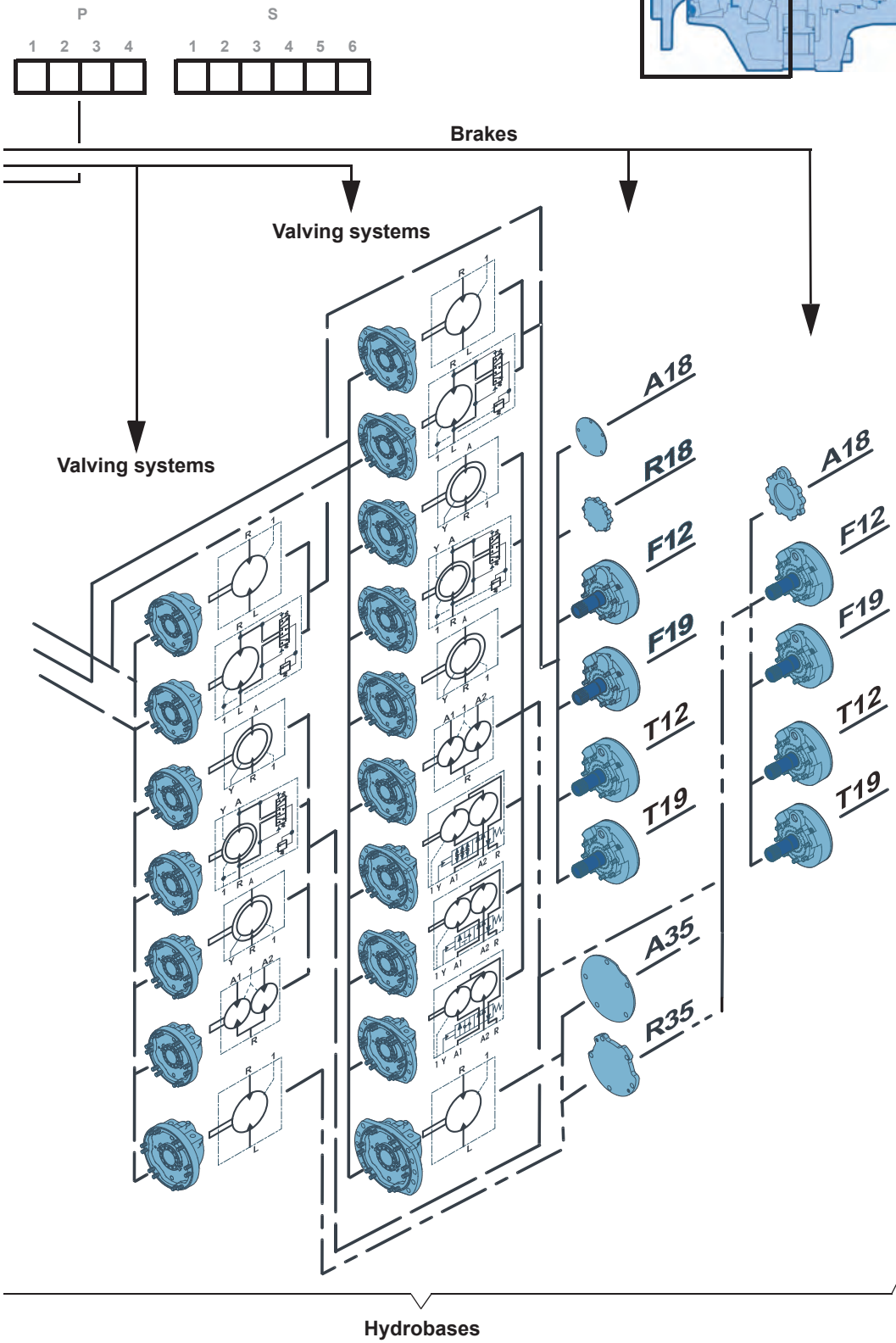
CONTENT

MODUL

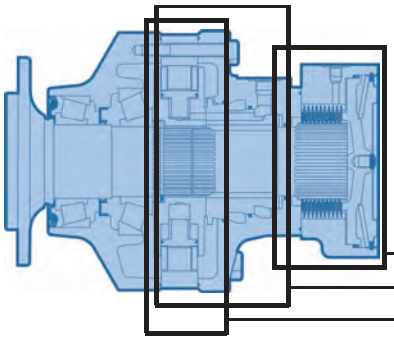

C
D
F
1
1 2 3
1 2 3
M S 1 8
M S E 1 8
C
Torque module
1310
1940
1610
1210
1110
1510
1710
*1K30
*1L30
2A10
2A50
1410
1K30
1L30
1G10
1810
FT30
MS18
MSE18
Wheel motor
Shaft motor
* Drum brake 432 x 102

ARITY




P
1 2 3 4
S
1 2 3 4 5 6
Brakes
Valving systems
Valving systems
A18
R18
F12
F19
T12
T19
A18
F12
F19
T12
T19
A35
R35
Hydrobases

MODEL



			❶ cm³/tr [cu.in/rev.]	❷ cm³/tr [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]
		2	2 099 [128,0]	1050 [64,0]
	MSE18	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]	874 [53,3] / 627 [38,2]
		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]
		B	1 865 [113,7]	1049 [64,0] / 816 [49,8]
	MSE18	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]

❶ **First displacement**
❷ **Second 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
		F Ratio >2
2-displacement & Twin-Lock™ valving (Counterclockwise)		**G** Ratio 2
		H Ratio <2
		J Ratio >2

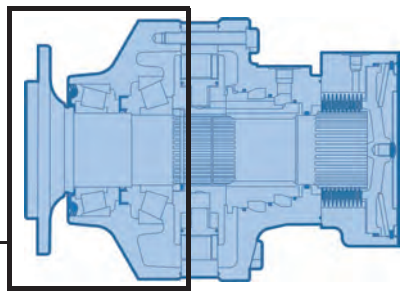
			C		D			F
			1		1	2	3	1 2 3
			M S 1 8					
			M S E 1 8					
Valving	S18	Without mounting	**1**	**1**	**4**	**D**	**P**	**K**	**L**
		Lug fixing	**2**	**2**	**5**	**E**	**Q**	**V**	**M**
	S35	Without mounting	**B**						
		Lug fixing	**C**						
			1-displacement	2-displacement	Exchange	Twin-Lock™	Twin-Lock™ or 2-displacement	2-displacement or Twin-Lock™	Twin-Lock™ with by-pass

No transmission cover			**0**
ISO 6162 flanges **ISO 9974-1** connections		**DN 19**	**1**
ISO 6162 flanges **ISO 1179-1** connections		**DN 19**	**2**
ISO 9974-1 connections			**4**
ISO DP6162 flanges **ISO 6149-1** connections		**DN 19**	**7**
ISO DP6162 flanges **ISO 6149-1** connections	S35 1C	**DN 32**	**9**
ISO 11926-1 connections			**A**

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

* see page 39

CODE



P S

1 2 3 4 1 2 3 4 5 6

0	Without bearing support
1	Without mounting
2	Lug mounting
F	C27™ Combined brake with chassis fixation

Drum brake

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

Without shaft				**0**
10 x Ø24 on Ø225				**1**
8 x Ø22 on Ø275				**2**
10 x Ø24 on Ø225				**3**
10 x Ø24 on Ø335 (for studs length of 80 mm)				**5**
10 x Ø24 on Ø335 (for studs length of 65 mm)				**T***
10 x Ø24 on Ø225				**6**
12 x Ø24 on Ø275				**7**
18 x M16 on Ø254				**8**
8 x M22 on Ø275				**9**
Support without drum brake				**G**
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**

Male shafts

NF E22-141 splines	**1**
DIN 5480 splines	**5**

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**

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.

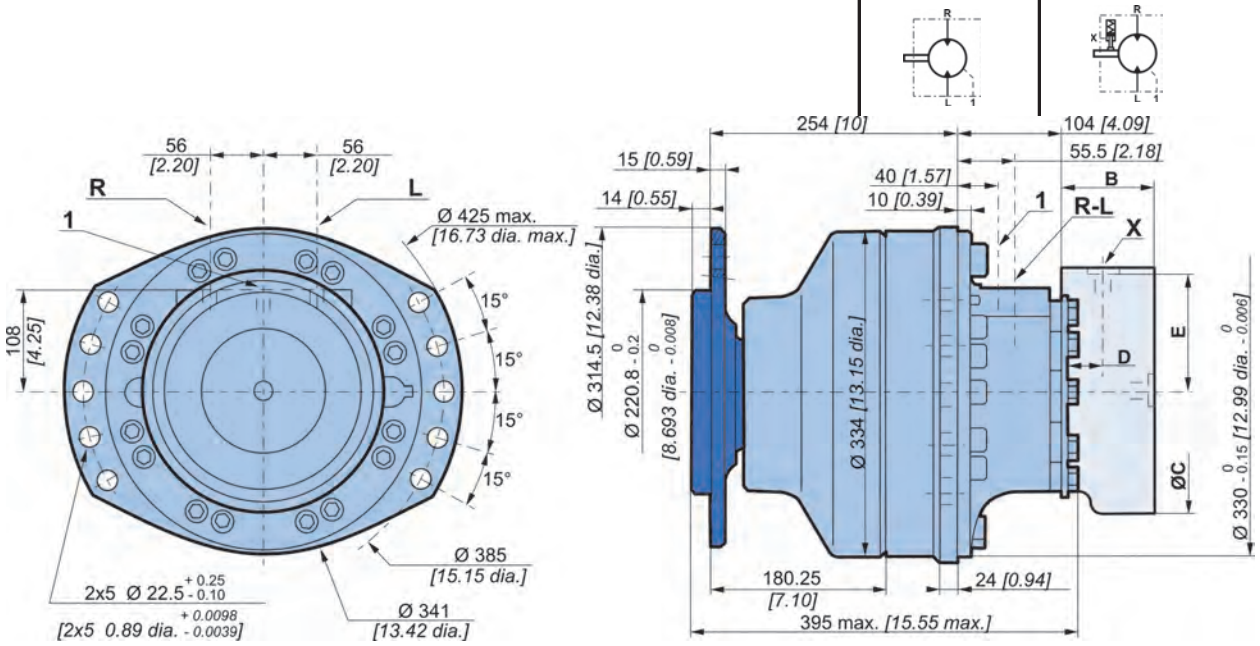
This document also includes essential operating instructions for the product and general information. These are indicated in the following way:

	Essential instructions.
	General information .
	Information on the model number.
	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 given in brackets in italic)

Dimensions for standard (1210) 1-displacement motor

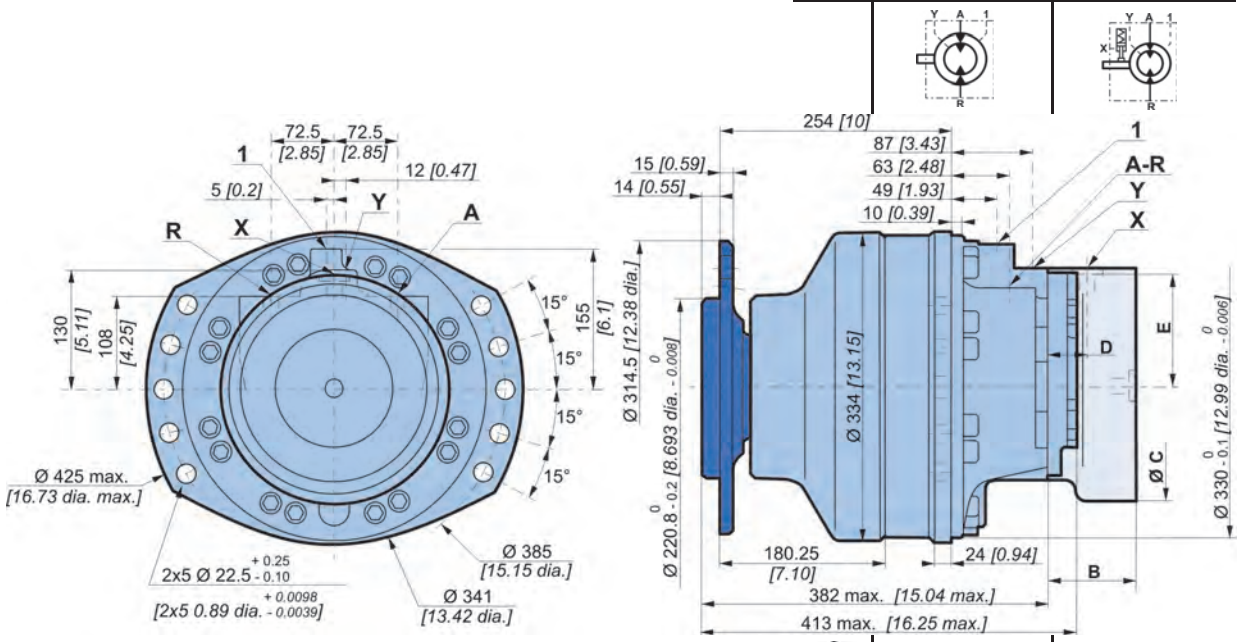
	120 kg *[264 lb]*	150 kg *[330 lb]*
	3,00 L *[180 cu.in]*	2,50 L *[150 cu.in]*



WHEEL MOTOR

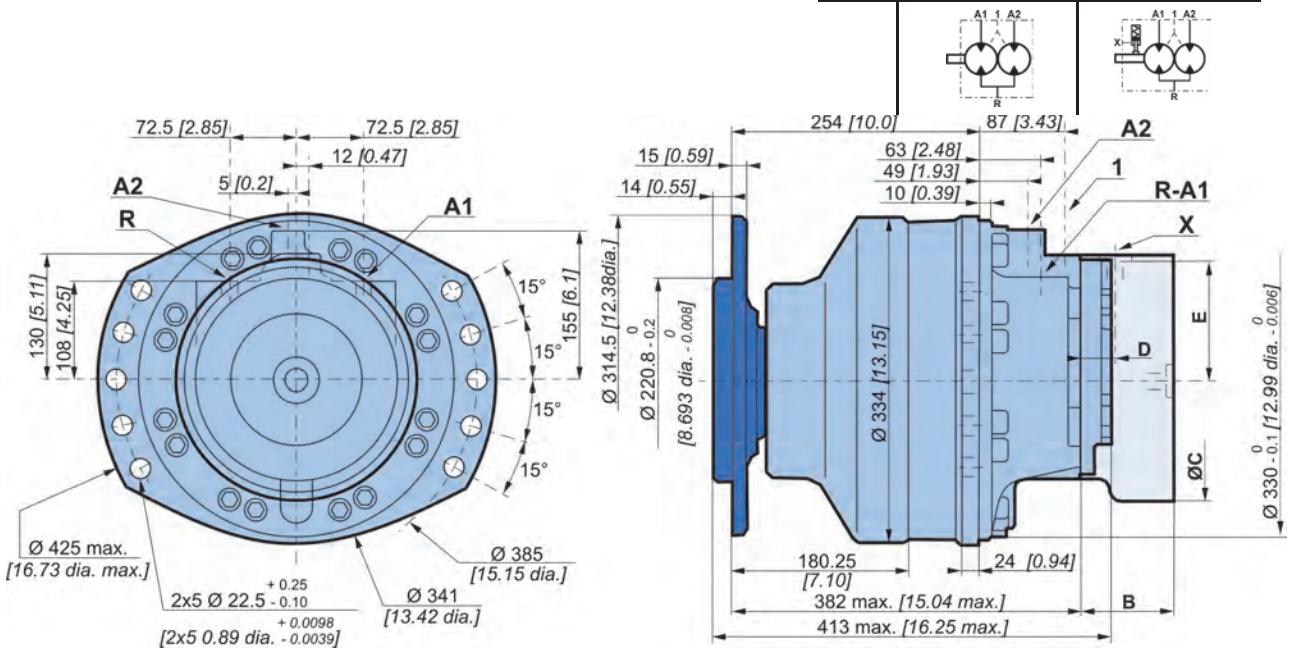
Dimensions for standard (1210) 2-displacement motor

	130 kg *[286 lb]*	160 kg *[352 lb]*
	3,00 L *[180 cu.in]*	2,50 L *[150 cu.in]*

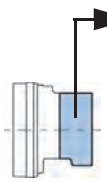


Dimensions for standard (1210) Twin-Lock™

	130 kg *[286 lb]*	160 kg *[352 lb]*
	3,00 L *[180 cu.in]*	2,50 L *[150 cu.in]*



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



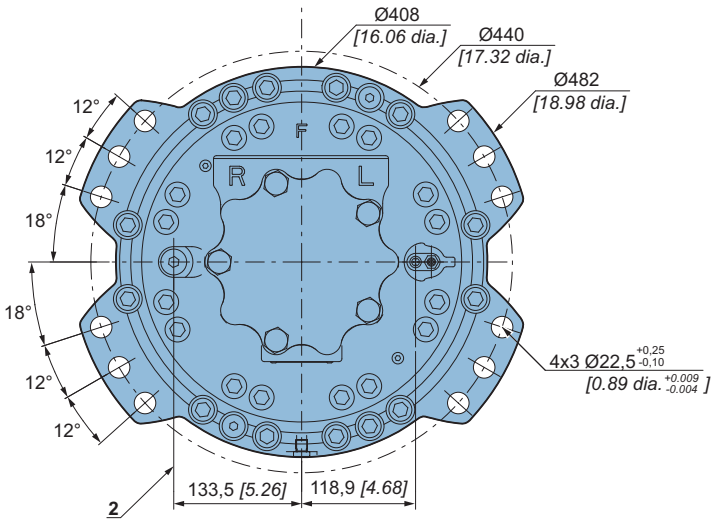
C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

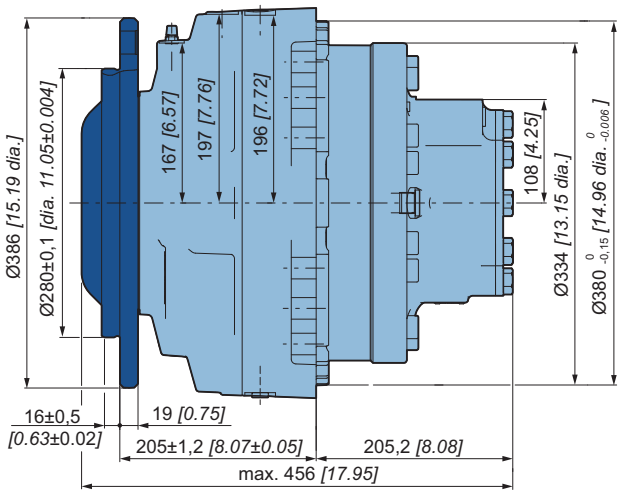
Also see "Brake" section (thumbnail opposite).

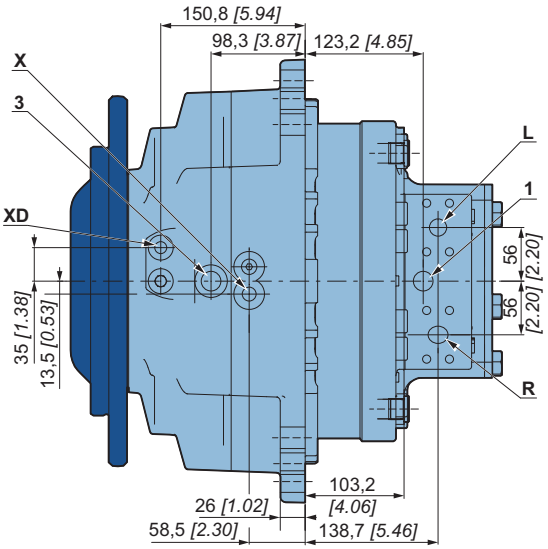
Dimensions for standard (FT30) 1-displacement motor

215 kg *[473 lb]*

4,70 L *[282 cu.in]*

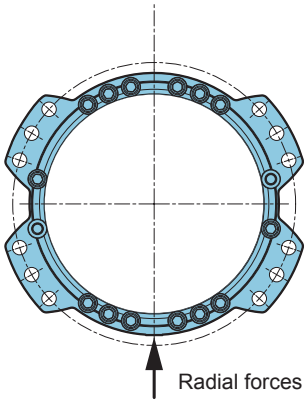






See page 28 for detailed info about hydraulic connections.

Brake bearing support orientation



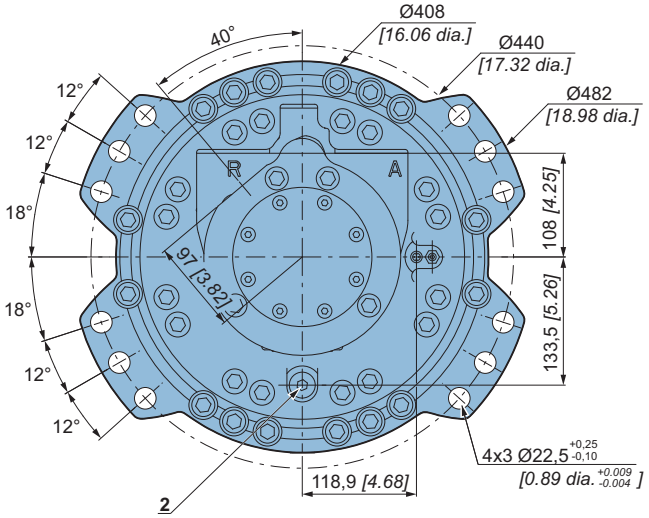
Recommended orientation:
Radial forces to be oriented along the brake bearing support axis.

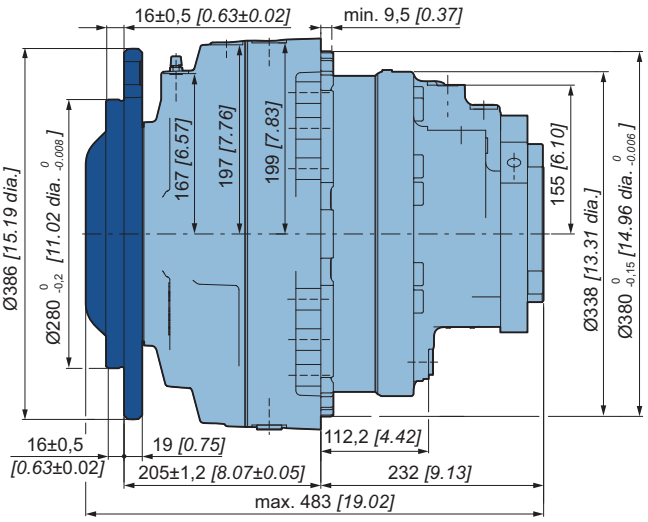
Warn the end user in the user documentation to perform an inspection of the shaft after any abnormal shock at wheel.

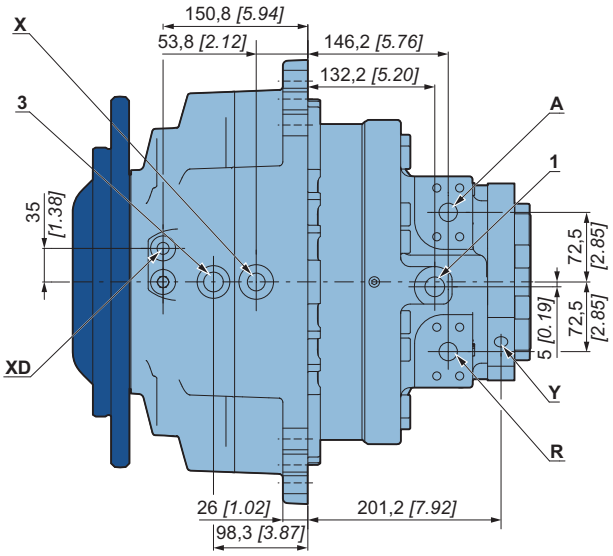
Dimensions for standard (FT30) 2-displacement motor

236 kg *[519 lb]*

4,70 L *[282 cu.in]*

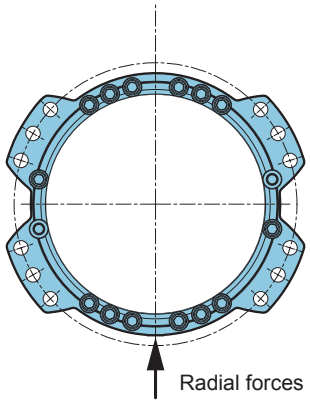






See page 28 for detailed info about hydraulic connections.

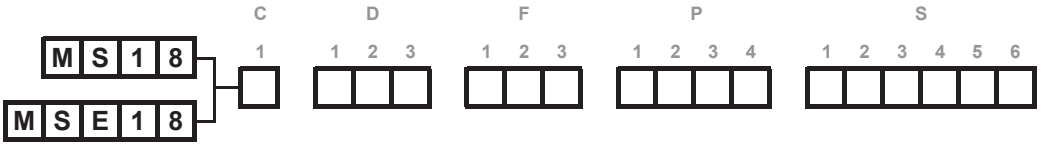
Brake bearing support orientation



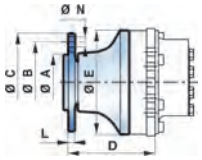
Recommended orientation:
Radial forces to be oriented along the brake bearing support axis.

Warn the end user in the user documentation to perform an inspection of the shaft after any abnormal shock at wheel.

Support types

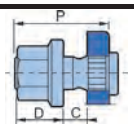


C	A mm *[in]*	B mm *[in]*	C mm *[in]*	D mm *[in]*	E mm *[in]*	N mm *[in]*	Wheel rim mountings	L mm *[in]*
1 1 1 0 (1 2 3 4 P)	Ø 175,7 *[6,92 dia.]*	Ø 225 *[8,86 dia.]*	Ø 265 *[10,43 dia.]*	253,45 *[9,98]*	Ø 334 *[13,15 dia.]*	Ø 24 *[0,94 dia.]*	10 x M22x1.5	14 *[0,55]*
1 2 1 0 (1 2 3 4 P)	Ø 220,7 *[8,69 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]*
1 7 1 0 (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]*
1 C 4 0 (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]*
1 3 1 0 (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]*
1 4 1 0 (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]*
1 8 4 0 (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]*
1 5 1 0 (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]*
1 6 1 0 (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

		P mm *[in]*	C min. mm *[in]*	C max. mm *[in]*	D mm *[in]*		Class
Various studs	M16 x 2	50 *[1,97]*	5 *[0,20]*	17,75 *[0,70]*	21 *[0,83]*		12,9
	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
	M20 x 1.5	-					

See generic installation motors N°801478197L.

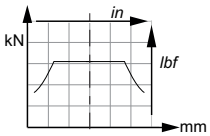
Load curves

Permissible radial loads

Test conditions :

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

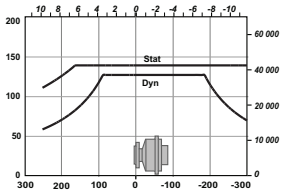
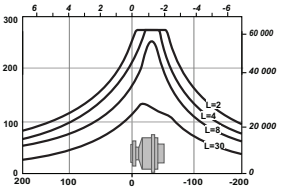
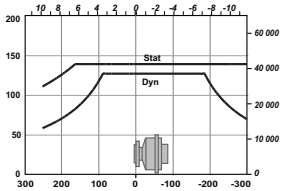
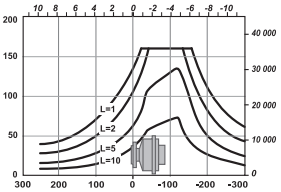
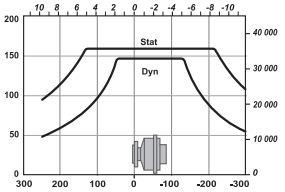
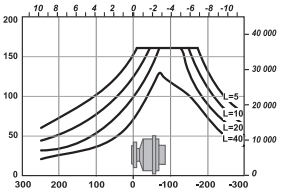
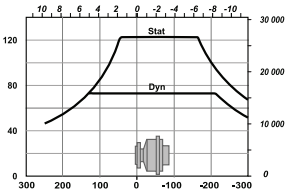
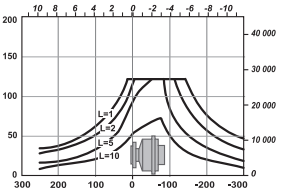
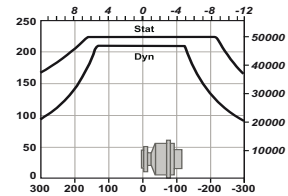
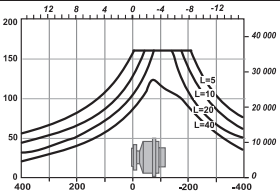
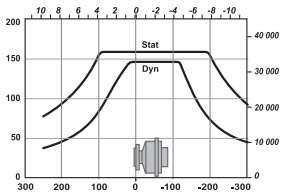
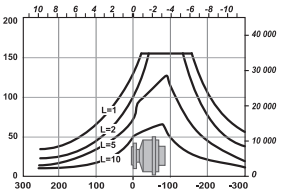
Dynamic : 0 tr/min *[0 RPM]*, code 0 displacement, without axial load at max. torque



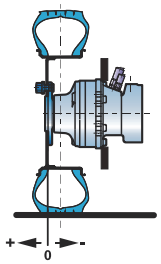
Service life of bearings

Test conditions :

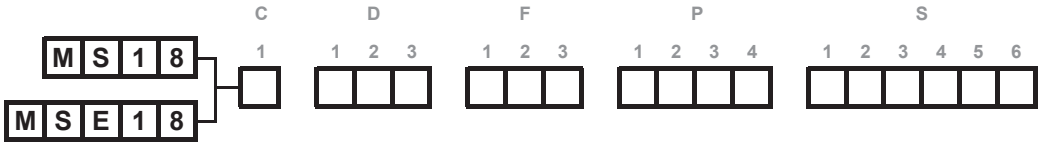
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

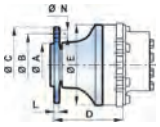
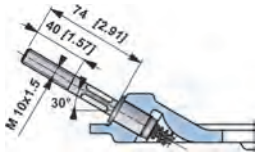
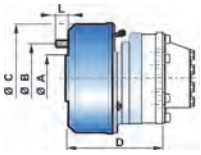
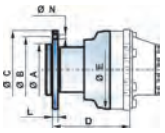
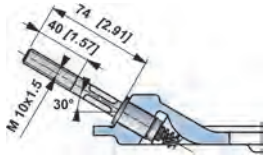
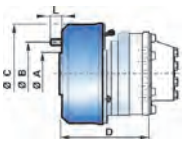
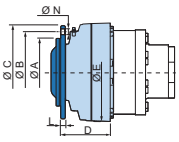
1 1 1 0 1 2 3 4 P		
1 2 1 0 1 2 3 4 P		
1 3 1 0 1 6 1 0 1 2 3 4 P		
1 4 1 0 1 2 3 4 P		
1 5 1 0 1 2 3 4 P		
1 7 1 0 1 C 4 0 1 2 3 4 P		

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



Support types (continued)



C	A mm *[in]*	B mm *[in]*	C mm *[in]*	D mm *[in]*	E mm *[in]*	N mm *[in]*	Wheel rim mountings	L mm *[in]*	
1 9 1 0 1 2 3 4 P	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 R 3 0 1 S 3 0 1 2 3 4 P **350 x 60**	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]*	
	Also see “Brake” section (thumbnail opposite).								
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.]*	301 *[11,85]*	Ø 334 *[13,15 dia.]*	Ø 24 *[0,94 dia.]*	10 x M22x1.5	14 *[0,55]*	
1 K 3 0 1 L 3 0 1 2 3 4 P **432 x 102**	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]*	
	Also see “Brake” section (thumbnail opposite).								
F T 3 0 1 2 3 4 P	Ø 280,7 *[11,05 dia.]*	Ø 335 *[13,19 dia.]*	Ø 386 *[15,20 dia.]*	205 *[8,07]*	Ø 408 *[16,06 dia.]*	Ø 24 *[0,94 dia.]*	10 x M22x1.5	19 *[0,75]*	
	Also see “Brake” section (thumbnail opposite).								

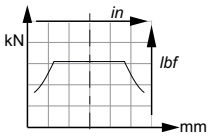
Load curves (continued)

Permissible radial loads

Test conditions :

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

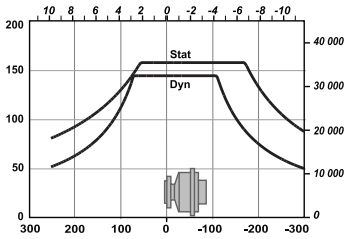
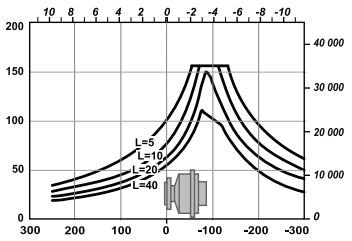
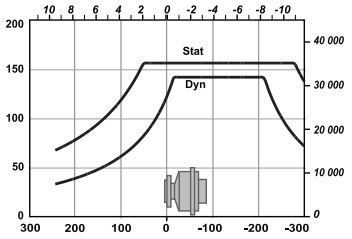
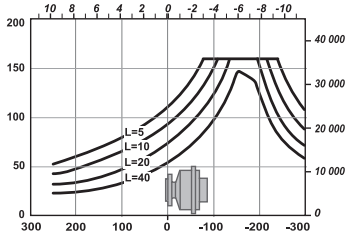
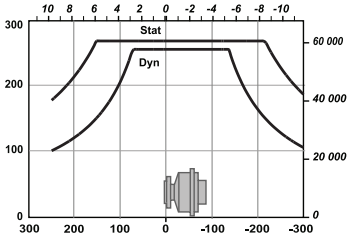
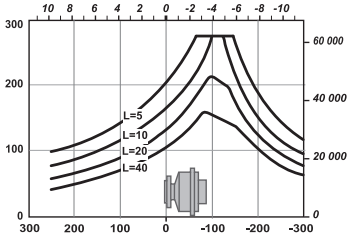
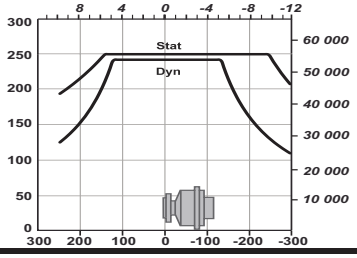
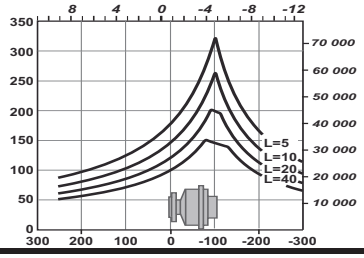
Dynamic : 0 tr/min *[0 RPM]*, code 0 displacement, without axial load at max. torque



Service life of bearings

Test conditions :

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

1 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		

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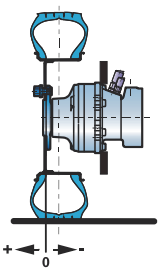
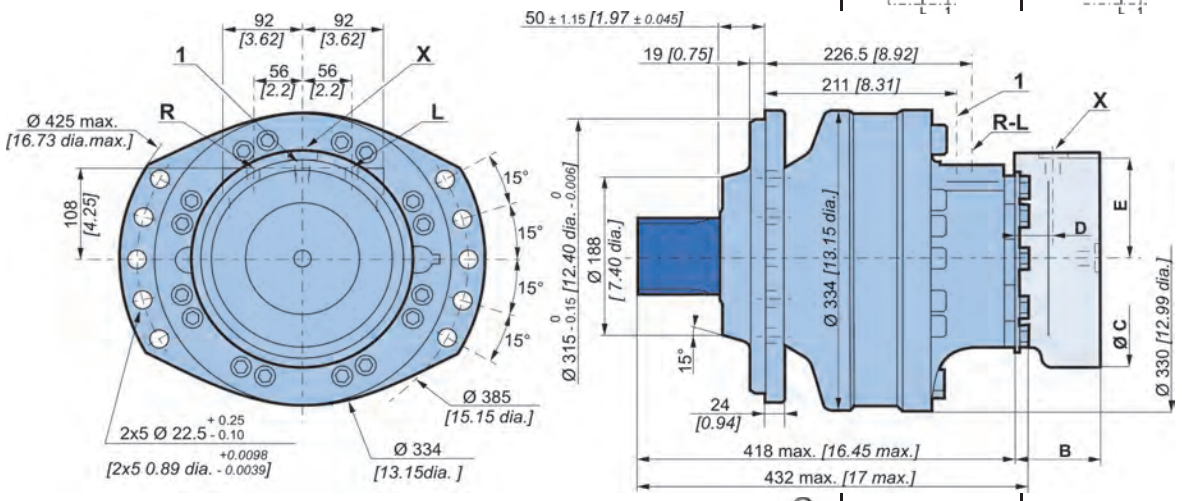


SHAFT MOTOR

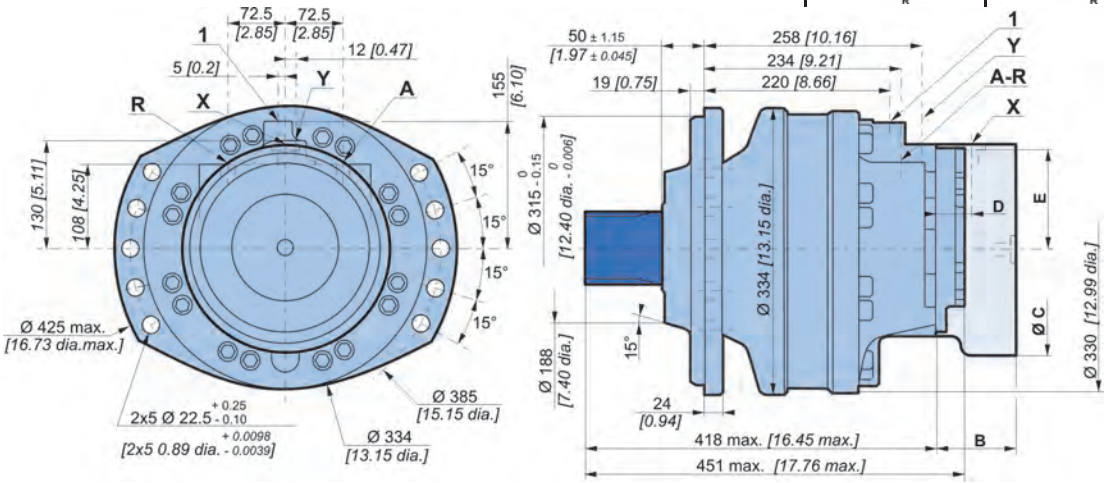
Dimensions for standard (2A50) 1-displacement motor

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

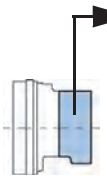


Dimensions for standard (2A50) 2-displacement motor

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



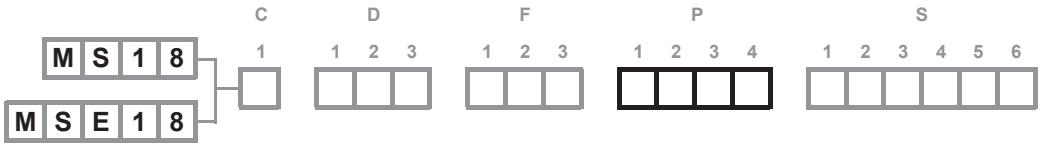
Also see 'Valving systems and hydrobases' section (thumbnail opposite).



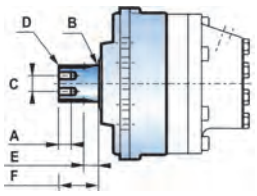
C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

Also see "Brake" section (thumbnail opposite).

Support types

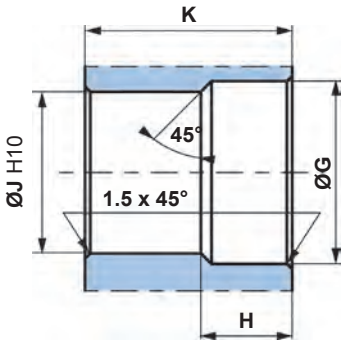


C		A	B	C	D	E	F
2 A 5 0 (1 2 3 4 P)	**DIN 5480** splines Nominal Ø 90 *[3,54]* Module 3 Z 28	23 *[0,91]*	R 3 *[R 0,12]*	35 *[1,38]*	2 x M14	23 *[0,91]*	90 *[3,54]*
2 A 1 0 (1 2 3 4 P)	**NF E22-141** splines Nominal Ø 90 *[3,54]* Module 2,5 Z 34	23 *[0,91]*	R 3 *[R 0,12]*	35 *[1,38]*	2 x M14	23 *[0,91]*	90 *[3,54]*



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

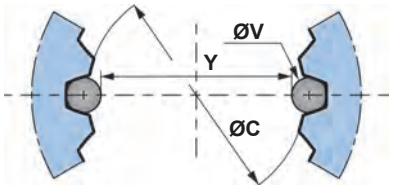
Splined coupling



Standard NF E22-141
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.



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

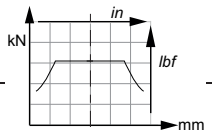
General tolerances : ± 0.25 *[±0.0098]*.
Material: Ex: 42CrMo4.
Hardening treatment to obtain R = 800 to 900 N/mm² *[R = 116 030 to 130 533 PSI]*.

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

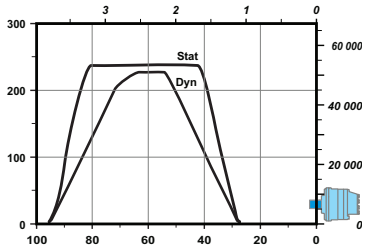
Test conditions :

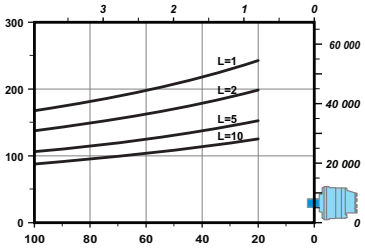
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

2	A	1	0
2	A	5	0

1 2 3 4

P





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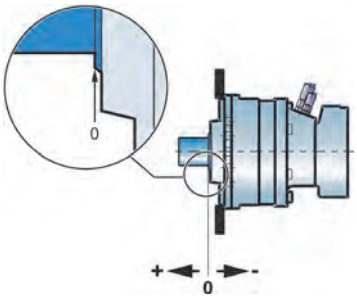
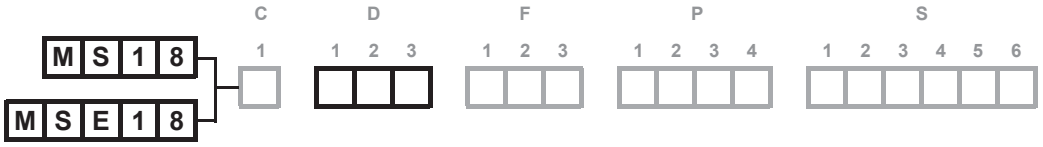
C

2	A	1	0
2	A	5	0

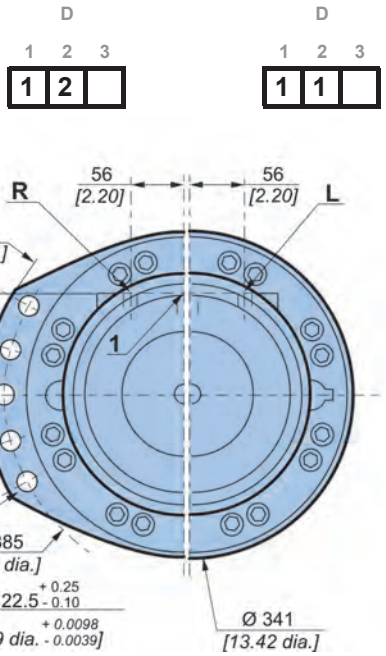


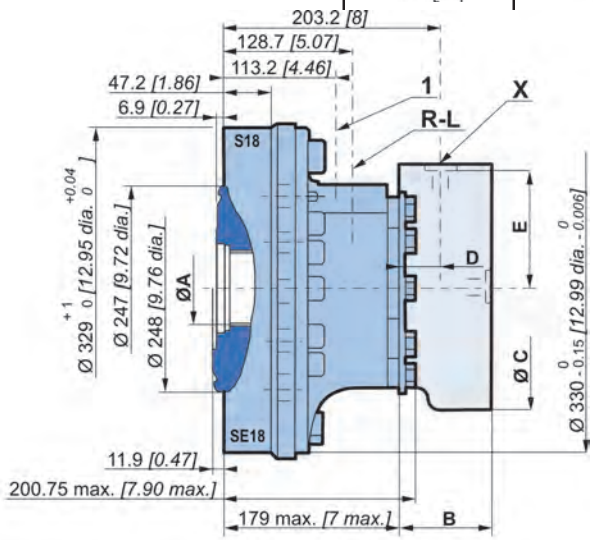
VALVING SYSTEMS AND HYDROBASES

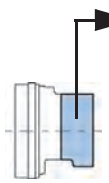


Dimensions for 1-displacement valving

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







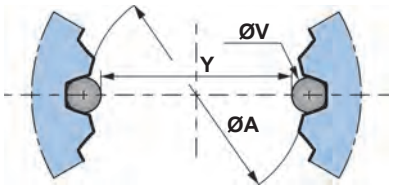
C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

Also see "Brake" section (thumbnail opposite).

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]*

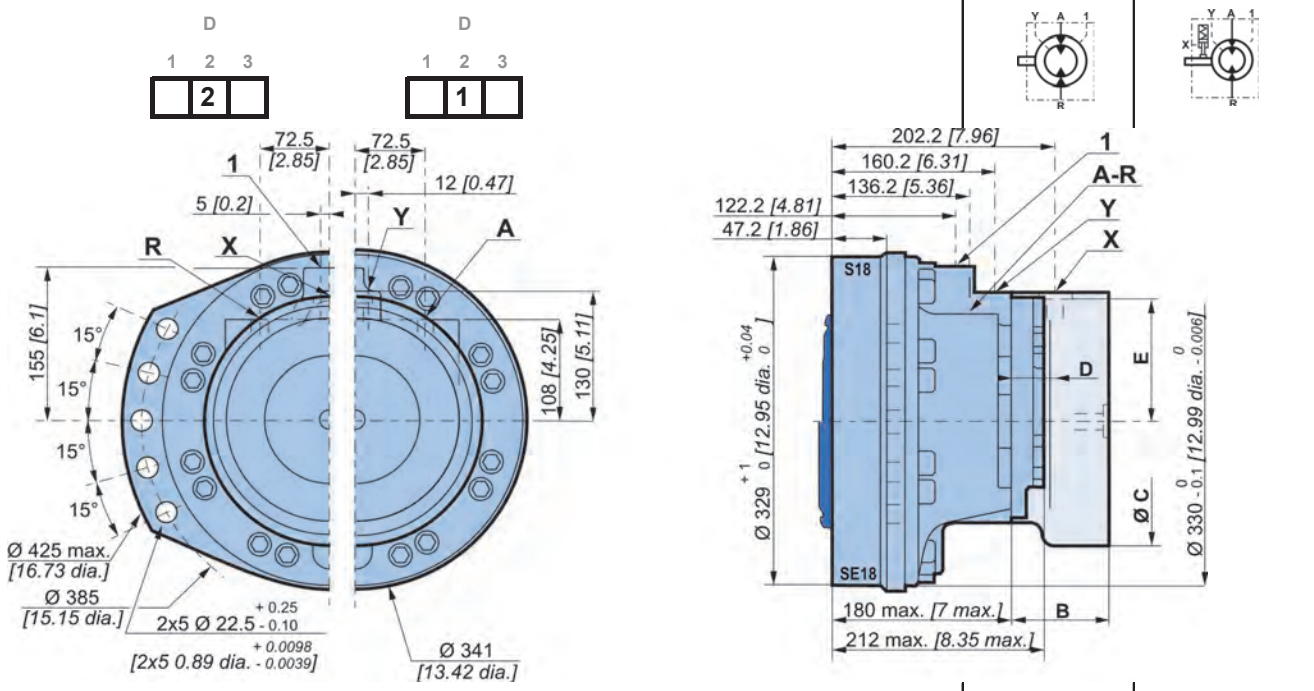


You are advised to have the installation validated by your Poclain Hydraulics application engineer before using the hydraulic unit in an application.

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

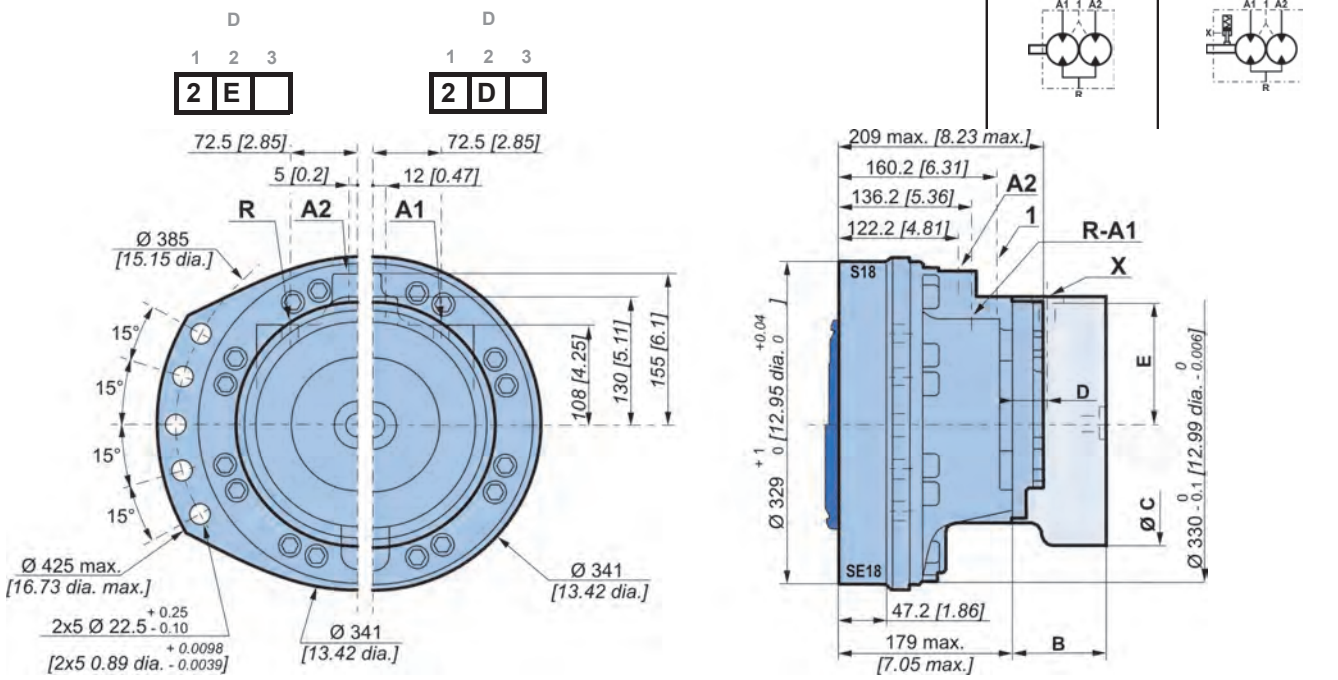
Dimensions for 2-displacement valving

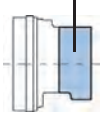
	78 kg *[172 lb]*	99 kg *[218 lb]*
	1,25 L *[75 cu.in]*	1,00 L *[60 cu.in]*



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]*



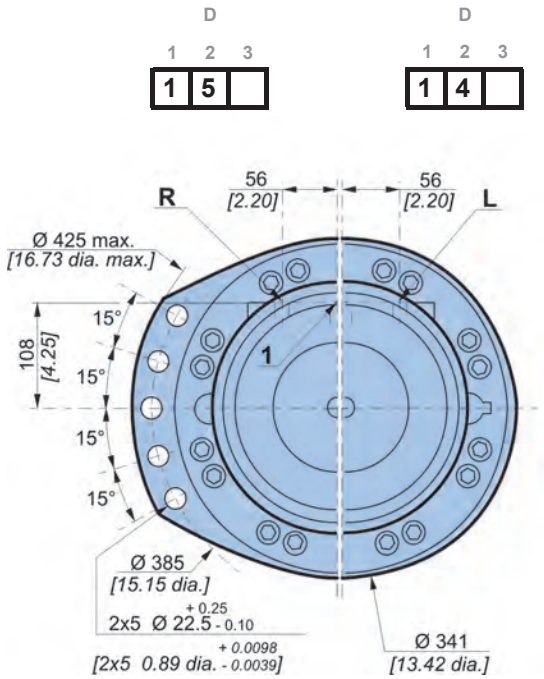


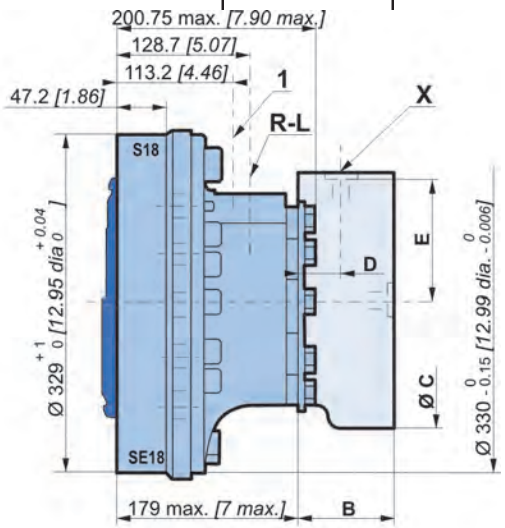
C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

Also see “Brake” section (thumbnail opposite).

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]*

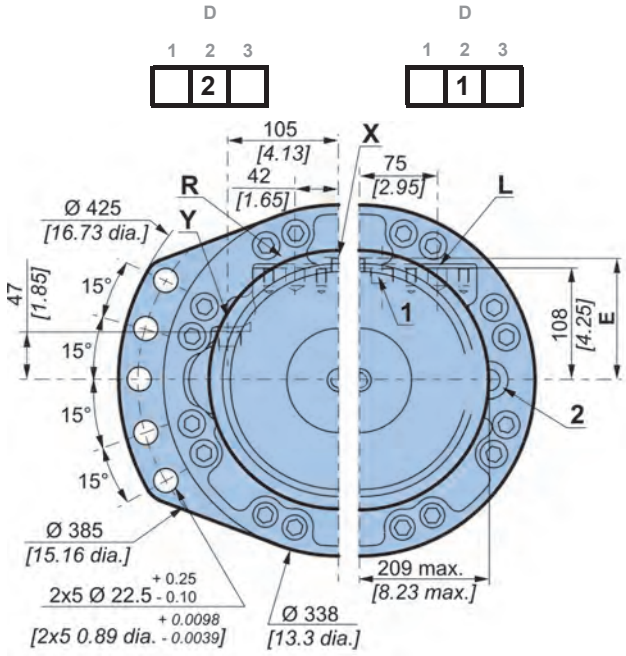


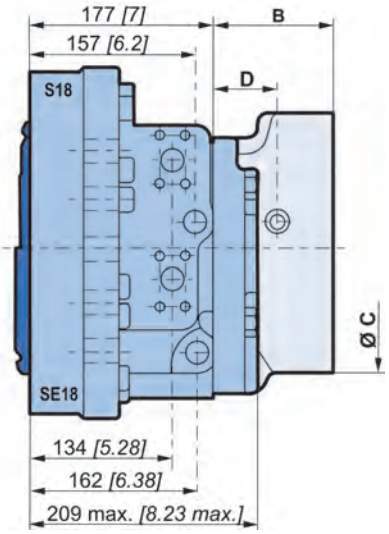


Dimensions for 2-displacement symetrical valving

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

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



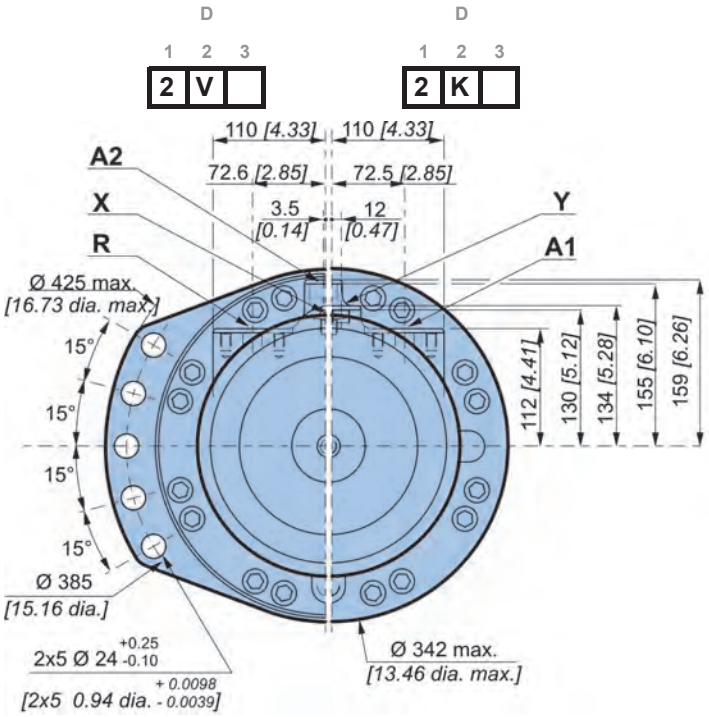


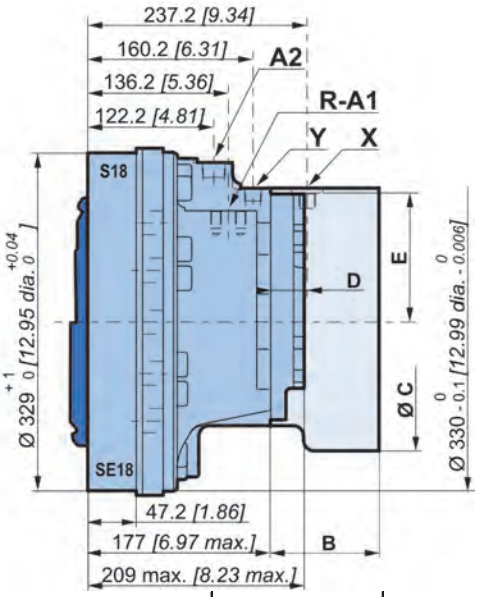
C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

Also see "Brake" section (thumbnail opposite).

Dimensions for Twin-Lock™ / 2-displacement valving

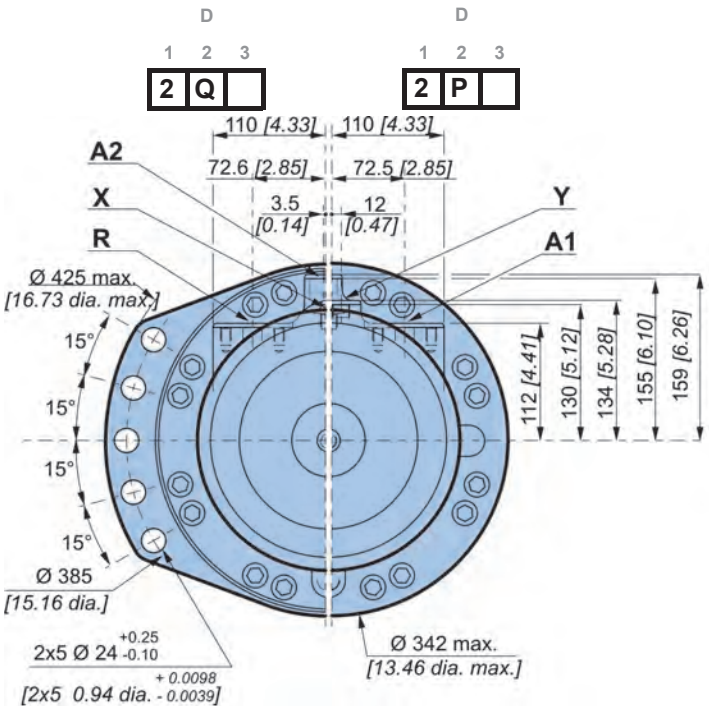
	78 kg *[172 lb]*	99 kg *[218 lb]*
	1,25 L *[75 cu.in]*	1,00 L *[60 cu.in]*

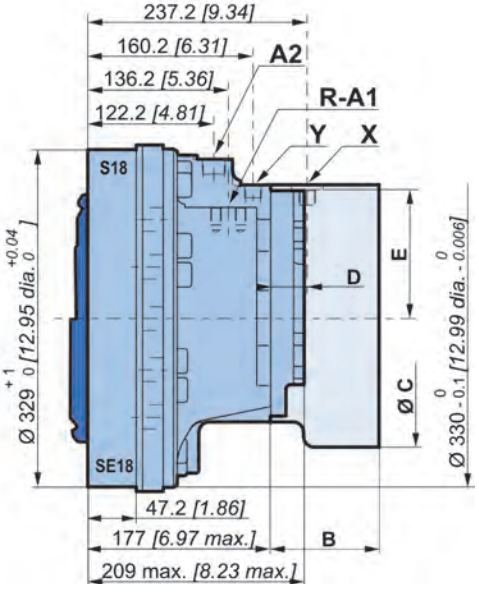


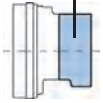


Dimensions for 2-displacement / Twin-lock™ valving

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





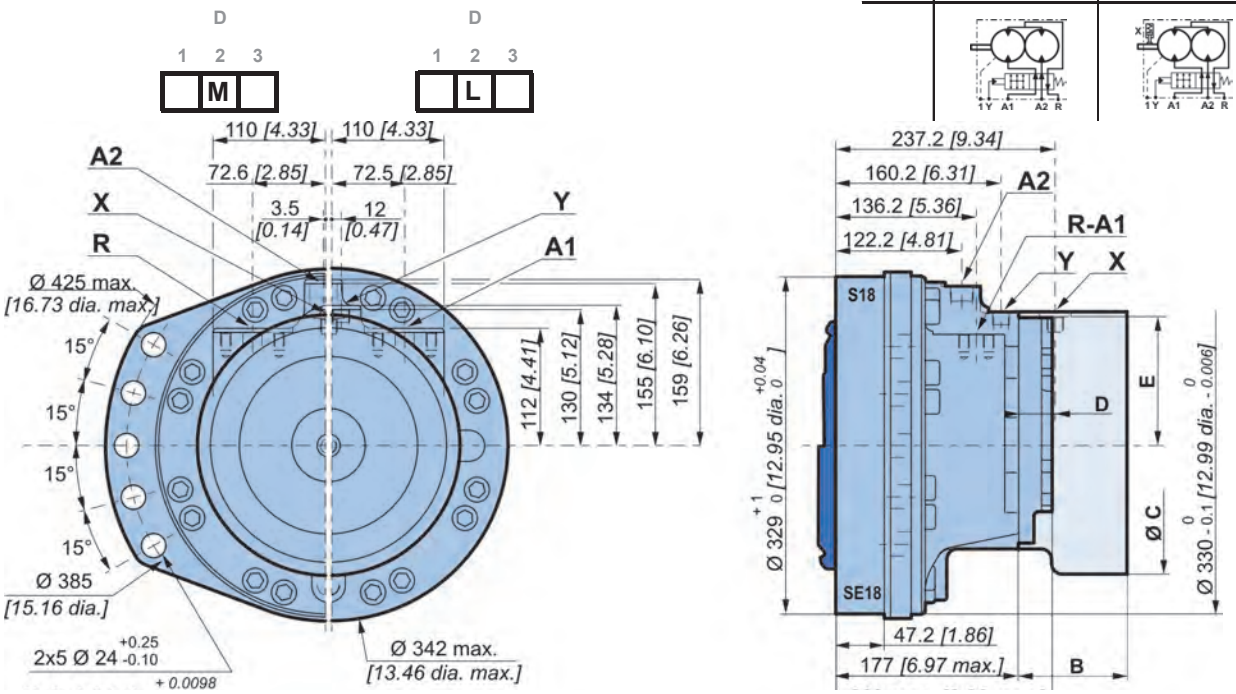


C	F12	F19	T12	T19
B	76,7 *[3,02]*	98,5 *[3,88]*	92,5 *[3,64]*	114,3 *[4,50]*
Ø C	247 *[9,72]*	250 *[9,84]*	273,6 *[10,77]*	273,6 *[10,77]*
D	25 *[0,98]*	45,00 *[1,77]*	24,5 *[0,96]*	45,0 *[1,77]*
E	155 *[6,10]*	121,50 *[4,78]*	128,5 *[5,06]*	128,5 *[5,06]*

Also see "Brake" section (thumbnail opposite).

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]*



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]*

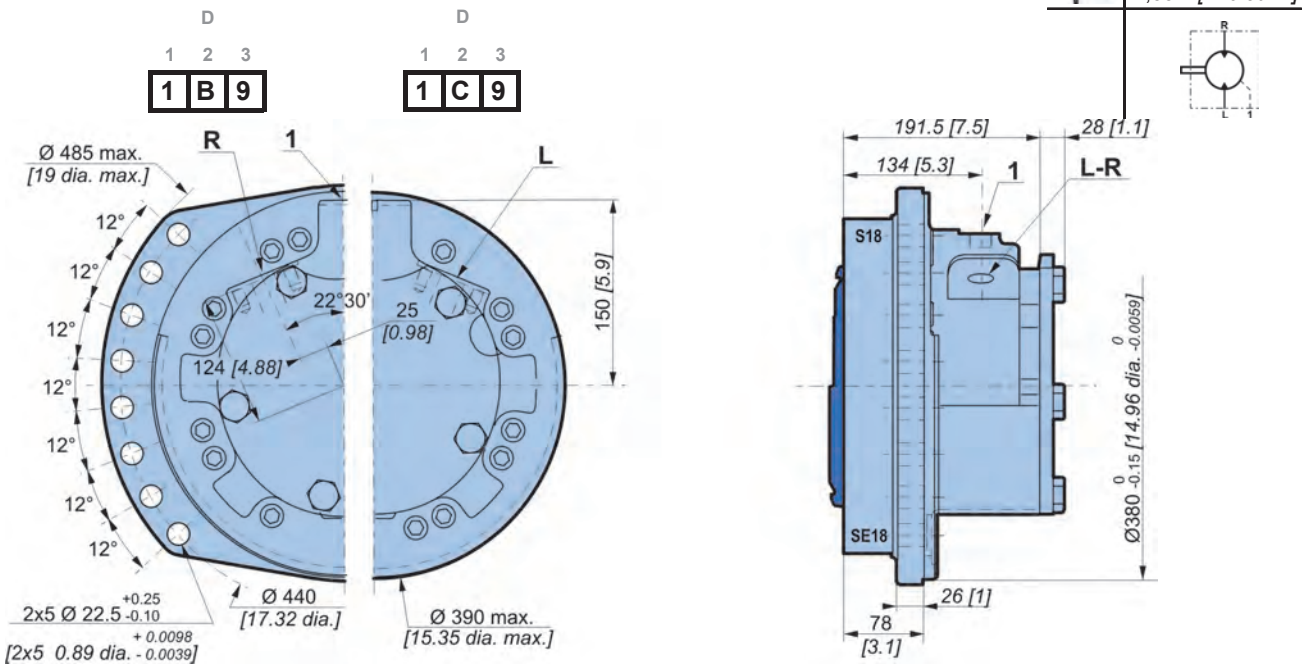
Also see “Brake” section (thumbnail opposite).

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

Dimensions for 1-displacement valving

91 kg *[199 lb]*

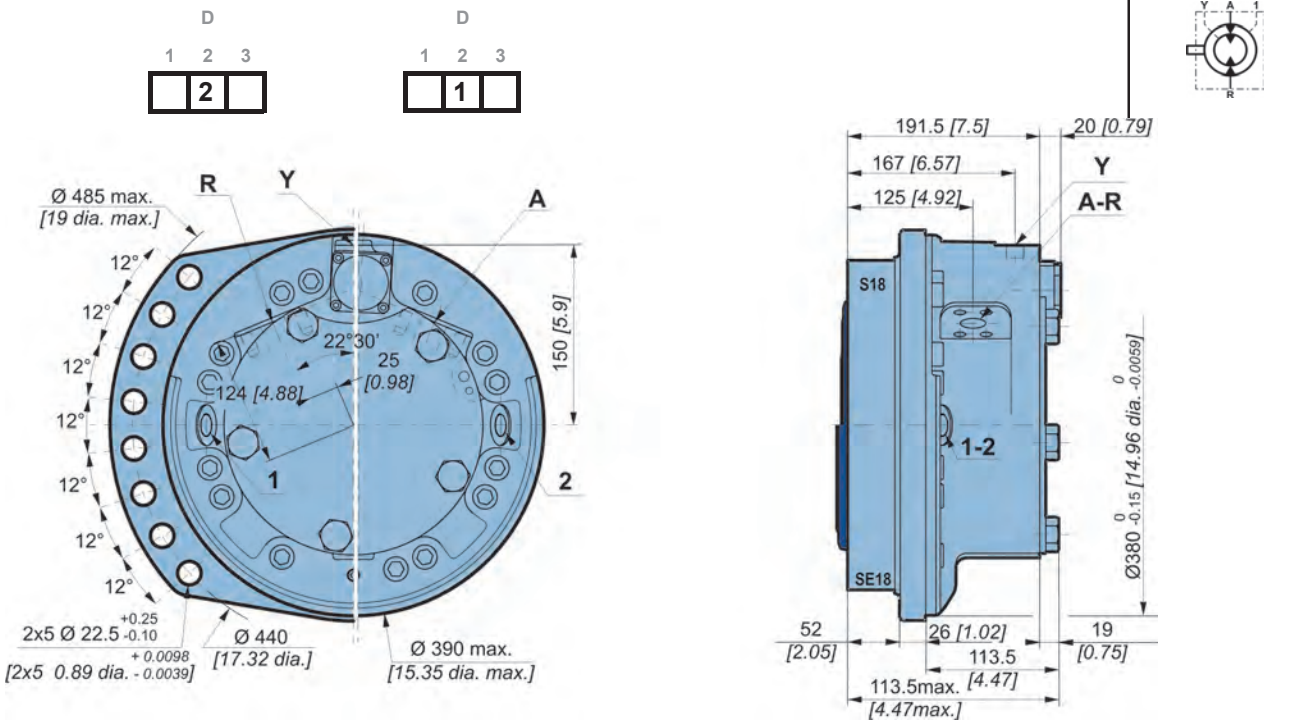
2,00 L *[120 cu.in]*



Dimensions for 2-displacement valving

91 kg *[199 lb]*

2,00 L *[120 cu.in]*



Exchange

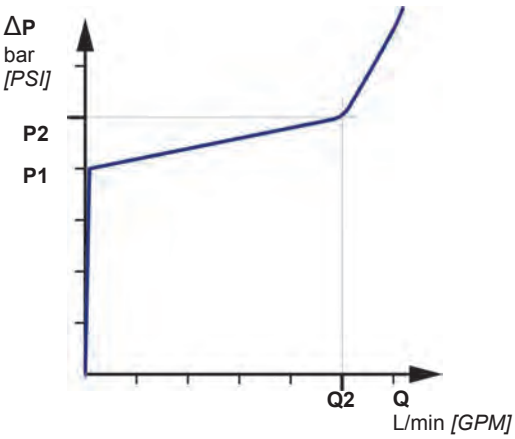
When a coding request is made, you must specify information on the threshold of the selector and the valve.

Selector spool

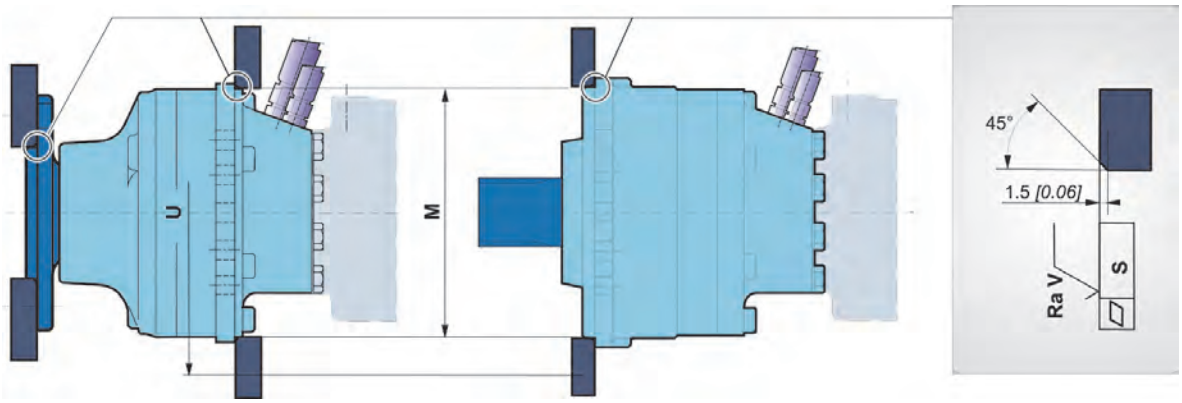
Selector threshold bar *[PSI]*	Opening pressure of selector bar *[PSI]*
8 *[116]*	9.9 ±1.2 *[144 ±17]*

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



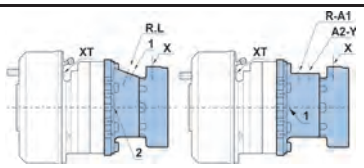
Take care over the immediate environment of the connections.

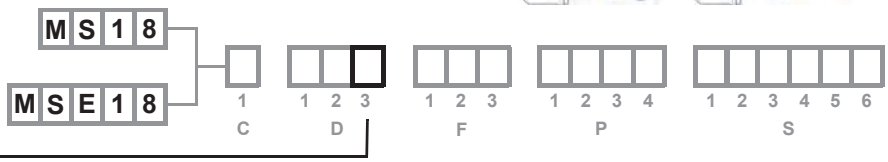
		ØM (1)	ØU	S	Ra V		Class	*
MS35	Wheel motor	330 *[12,99]*	385 *[15,16]*	0,2 *[0,008]*	12,5 *[0,492]*	2 x 5 M20 x 2.5	10,9	580 N.m *[428 lb.ft]*
	Shaft motor	315 *[12,40]*	385 *[15,16]*					
MS18 / MSE18	Wheel motor	330 *[12,99]*	385 *[15,16]*			2 x 5 M20 x 2.5		
	Shaft motor	380 [14,96]	440 *[17,32]*			2 x 8 M20 x 2.5		
	Short wheel motor					2 x 8 M20 x 2.5		

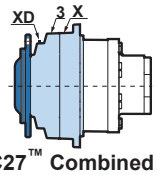
(1) +0,3 *[+0,012]*
+0,2 *[+0,008]*

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

Hydraulic connections







C27™ Combined brake

		Old standards	Standards	Power supply		Case drain	2nd displacement control	Control of parking brake	Control of drum brake	Control of parking brake	Control of service brake	Flushing
S18				**R-L**		**1, 2**		**X**	**XT**	**X**	**XD**	**3**
1 displacement	**A**	SAE J514	**ISO 11 926-1**	1"1/16-12 UNF		7/8"-14 UNF		9/16"-18 UNF 3/4"-16 UNF		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
				R-A		**1, 2**	**Y**	**X**		**X**	**XD**	**3**
2 Displacement	**A**	SAE J514	**ISO 11 926-1**	1"1/16-12 UNF		7/8"-14 UNF	3/4"-16 UNF	9/16"-18 UNF		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**
Twin-Lock™	**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
S35				**R-L**		**1, 2**		**X**		**X**	**XD**	**3**
1C	**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**
2C	**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			
Max. pressures			**MS** bar **MSE** *[PSI]*	450 *[6 527]* 400 *[5 802]*	450 *[6 527]* 400 *[5 802]*	1 *[15]*	30 *[435]*	30 *[435]*	120 *[1 740]*	130 *[1 885]*	70 *[1 015]*	30 *[435]*

* : Only symmetrical valving

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

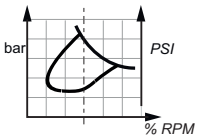
You are strongly advised to use the fluids specified in brochure "Installation guide" N° 801478197L.

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.

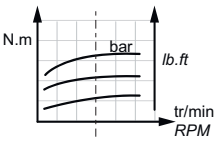
Efficiency

Overall efficiency

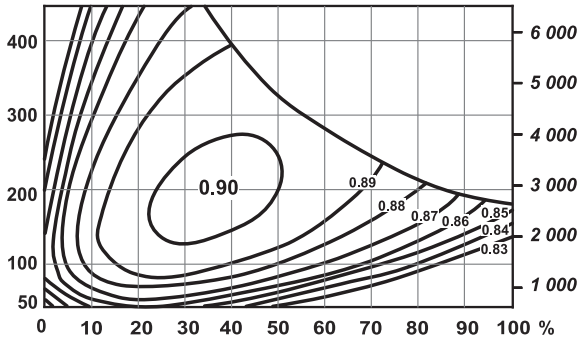
Average values given for guidance for code 0 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C *[122°F]*.

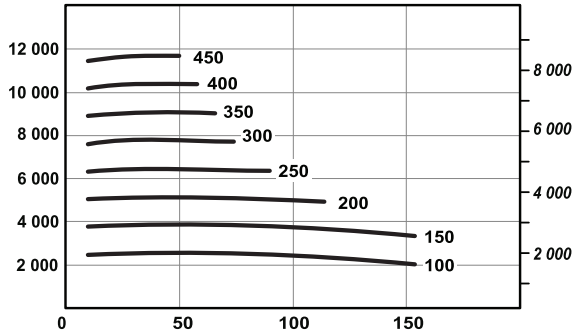


Actual output torque

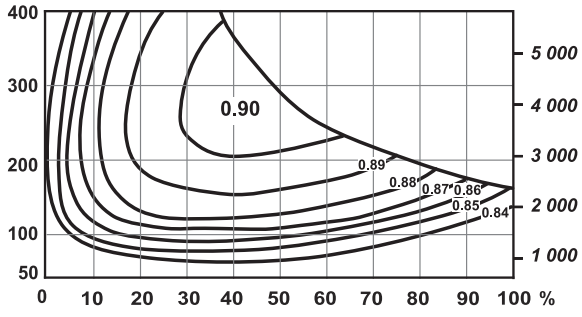


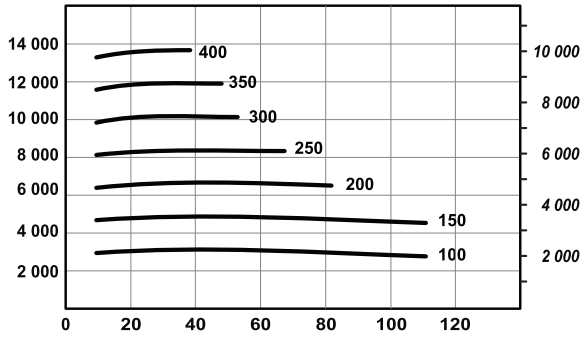
MS18





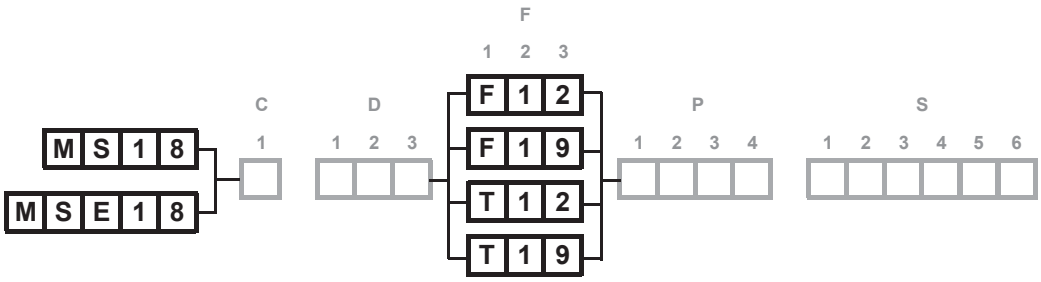
MSE18



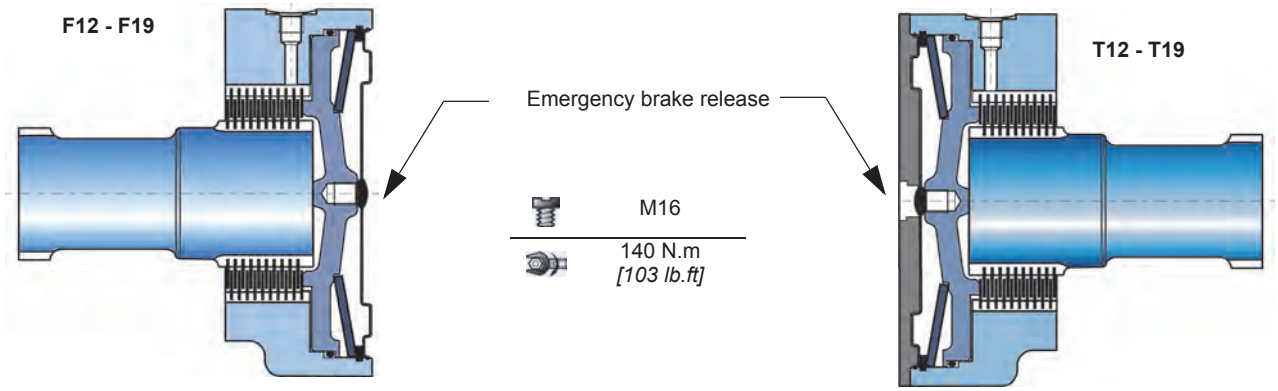


For a precise calculation, consult your Poclain Hydraulics application engineer.

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 / T 1 2	F 1 9 / 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 cm³ *[10,4 cu.in]*	180 cm³ *[11,0 cu.in]*
Volume for brake release	40 cm³ *[2,4 cu.in]*	70 cm³ *[4,3 cu.in]*
Max. energy dissipation	123 699 J	193 033 J

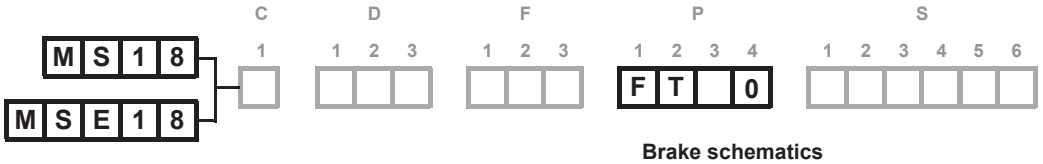
* After emergency brake has been used

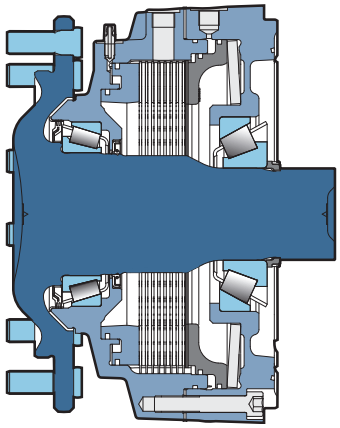
Do not run-in the multidisc brakes.

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/h, please contact your Poclain Hydraulics

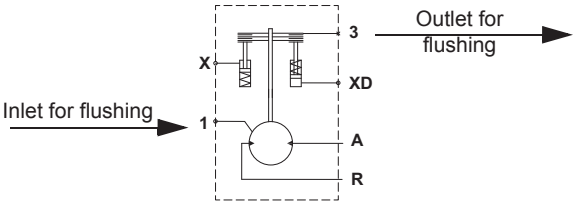
The use of certain oils may not offer the characteristics stated above. Consult your Poclain Hydraulics application engineer.

C27™ Combined brake





Brake schematics



The dynamic brake must be flushed according to the brake schematics (flushing flow always goes of the bearing support).

Brake operation

This multi-disc brake operates in two distinct ways:

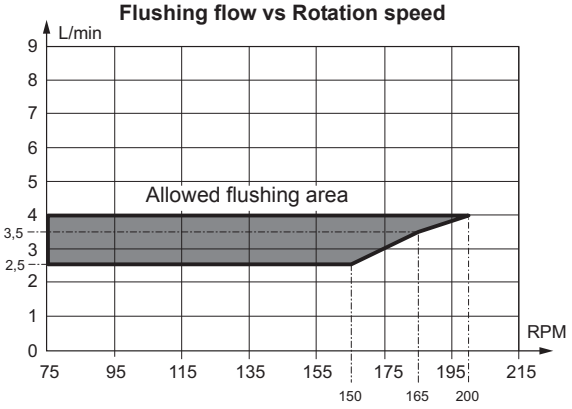
Either by an absence of pressure (static braking): The spring applies a force to the static piston that is transmitted to the dynamic piston, which damps the fixed and free discs, preventing the shaft from turning.

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.

C F T 0

General information	
Max. rotation speed	200 rpm
Max. energy dissipation for 1 braking (maintenance needed)	1000 kJ
Dynamic brake information	
Average torque during dynamic braking	32 000 Nm *[23 600 lb.ft]*
Pressure to obtain max. permissible braking	70 bar *[1 015 PSI]*
Piston chamber piloting volume, worn brake	74 cm³ *[4,5 cu.in]*
Service brake max. allowed energy	500 kJ
Parking brake information	
Min. parking brake torque	18 000 Nm *[13 280 lb.ft]*
Min. dynamic brake torque in case of emergency brake with new brake	24 000 Nm *[17 700 lb.ft]*
Min. dynamic brake torque in case of emergency brake with worn brake	13 000 Nm *[9 590 lb.ft]*
Release brake pressure (min. / max.)	100 *[1 450]* / 135 *[1 958]*
Piston chamber piloting volume (worn brake)	48 cm³ *[2,9 cu.in]*
Number of parking brake applications	1 000 000

Flushing flow vs Rotation speed

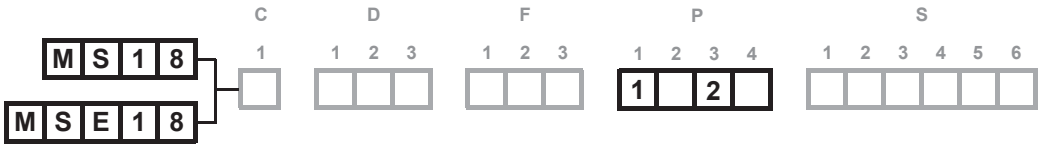


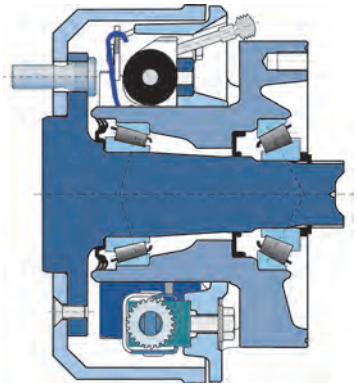
Brake release pressure vented.

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

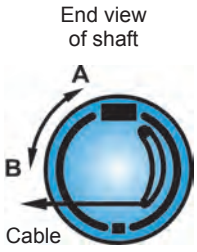
Drum brake (350 x 60 or 432 x 102)

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





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

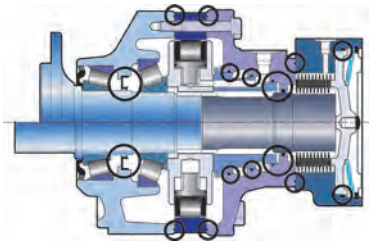
OPTIONS

	C	D	F	P	S
	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6
MS18					
MSE18					

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

1 - Fluorinated elastomer seals

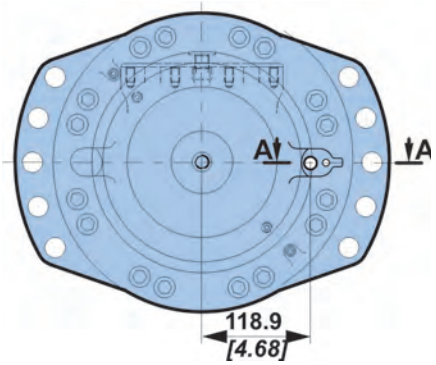
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.

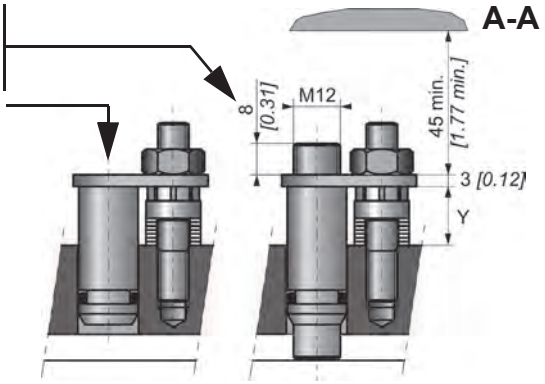


Consult your Poclain Hydraulics sales engineer.

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

Designation	C
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

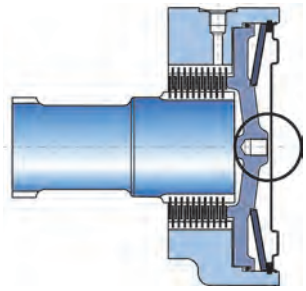
Standard number of pulses per revolution= 60

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.

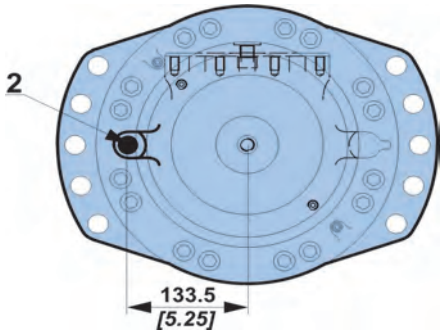
3 - Brake environmental cover without plug

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



5 - Drainage

Additional drain in the cover.



6 - Industrial support

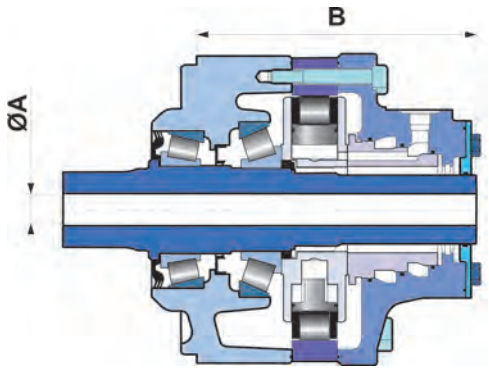
Reduction of around 50% from the rated value in the bearings' preload value.

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.

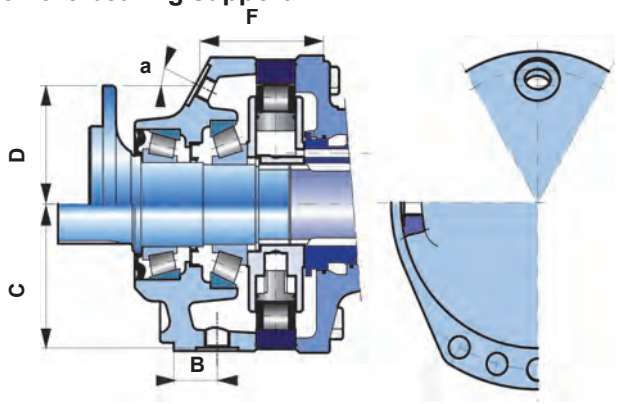
A - Hollow shaft



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

Radial load x 0.75
No torque transmittable to the rear

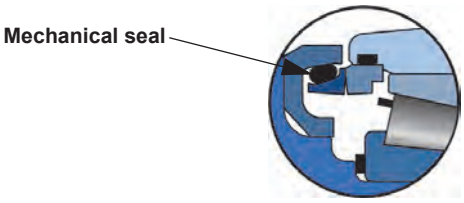
B - Drain on the bearing support



		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)

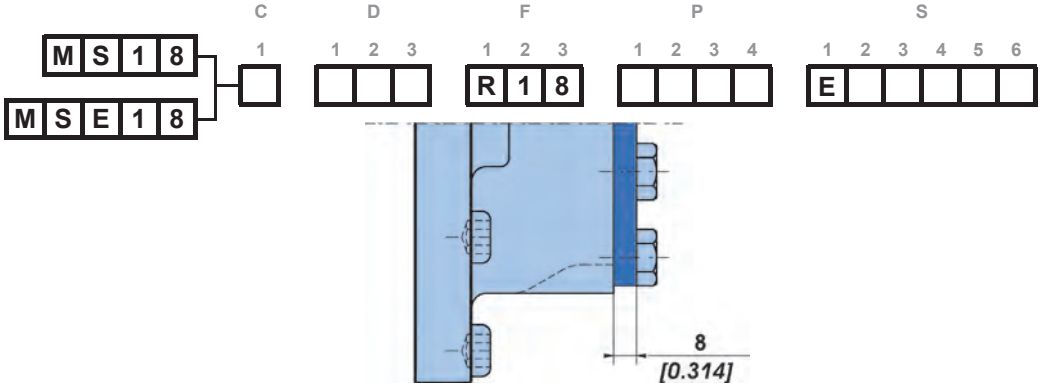
Some environments can be very harmful. The mirror seal gives reinforced motor sealing.



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.

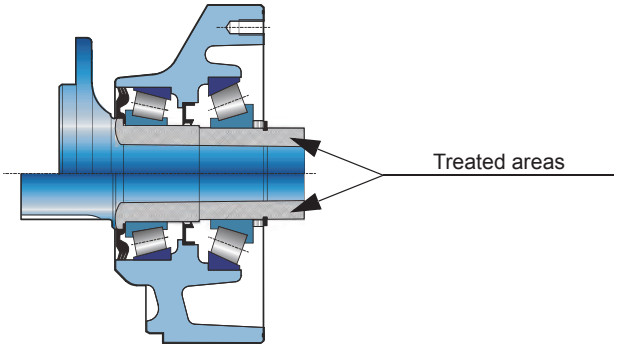
H - High efficiency

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.



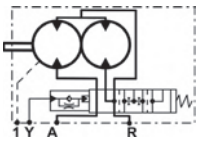
M - High speed

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.

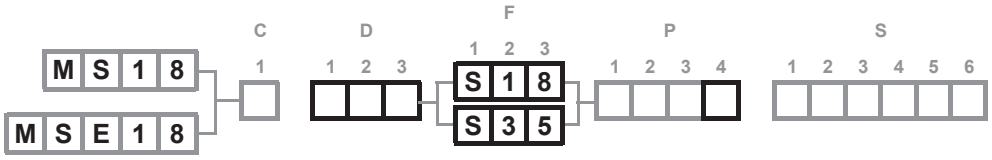
T - Soft Shift™

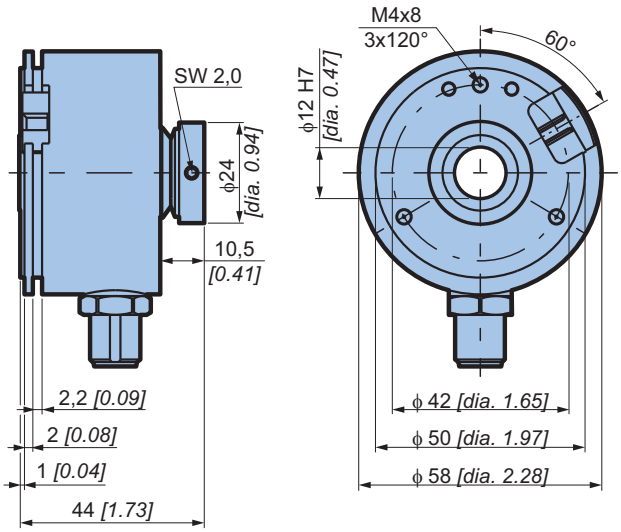
Progressive displacement change (cushioned slide-valve)



Consult your Poclain Hydraulics sales engineer.

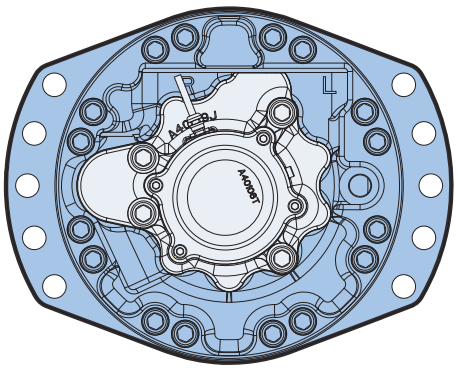
Magnetic Incremental Hollow Shaft Encoder

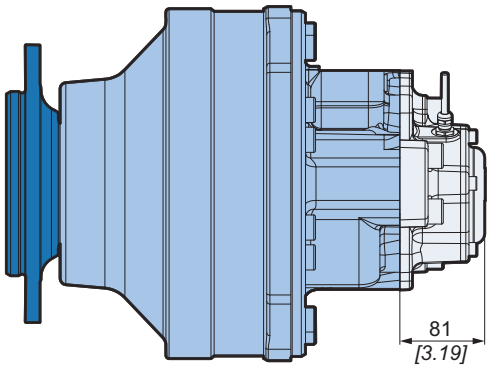




Features	
Power supply voltage (+Vs)	10 to 30 VDC
Number of pulses per revolution	3600
Max revolutions	6000 rpm
Protection	IP65
Operating temperature	-20°C to +85°C *[-4°F to 185°F]*

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





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