

Part number:

HYDROMA

HYDRAULICKÉ SYSTÉMY

**HIDROMA
SYSTEMS**

UKŁADY HYDRAULICZNE

HYDROMA

ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

Кappa

KAPPA 20 GENERAL DATA MOTORS**KM 20**

Pump type	Displacement	Max. pressure			Max. speed	Min. speed
		p ₁	p ₂	p ₃		
	in ³ /rev (cm ³ /rev)	psi (bar)			min ⁻¹	
KM 20•4	0.30 (4,95)	4133 (285)	4350 (300)	4785 (330)	4000	350
KM 20•6,3	0.40 (6,61)	4133 (285)	4350 (300)	4785 (330)	4000	350
KM 20•8	0.50 (8,26)	4133 (285)	4350 (300)	4785 (330)	3500	350
KM 20•11,2	0.69 (11,23)	3988 (275)	4205 (290)	4640 (320)	3500	350
KM 20•14	0.89 (14,53)	3843 (265)	4205 (290)	4640 (320)	3500	350
KM 20•16	1.03 (16,85)	3770 (260)	4205 (290)	4640 (320)	3000	300
KM 20•20	1.29 (21,14)	3045 (210)	3335 (230)	3625 (250)	3000	300
KM 20•25	1.61 (26,42)	2610 (180)	2900 (200)	3190 (220)	2500	300
KM 20•31,5	2.01 (33,03)	2030 (140)	2320 (160)	2610 (180)	2000	300

p₁= Max. continuous pressurep₂= Max. intermittent pressurep₃= Max. peak pressure

The values in the table refer to unidirectional motors.

Reversible motors max pressures are 15% lower than those shown in table.

For different working conditions please consult our sales department.

DESIGN CALCULATIONS FOR MOTORS

Q	US gpm (l/min)	Delivery
M	lbf in (Nm)	Torque
P	HP (kW)	Power
V	in ³ /rev (cm ³ /rev)	Displacement
n	min ⁻¹	Speed
Δp	psi (bar)	Pressure
$\eta_v = \eta_v(V, \Delta p, n) \quad (\approx 0,97)$		Volumetric efficiency
$\eta_m = \eta_m(V, \Delta p, n) \quad (\approx 0,88)$		Mechanical efficiency
$\eta_t = \eta_v \cdot \eta_m \quad (\approx 0,85)$		Overall efficiency

$$Q = \frac{V \text{ (cm}^3\text{/rev)} \cdot n \cdot 10^{-3}}{\eta_v} \quad [\text{Nm}]$$

$$M = \frac{\Delta p \text{ (bar)} \cdot V \text{ (cm}^3\text{/rev)} \cdot \eta_m}{62,83} \quad [\text{Nm}]$$

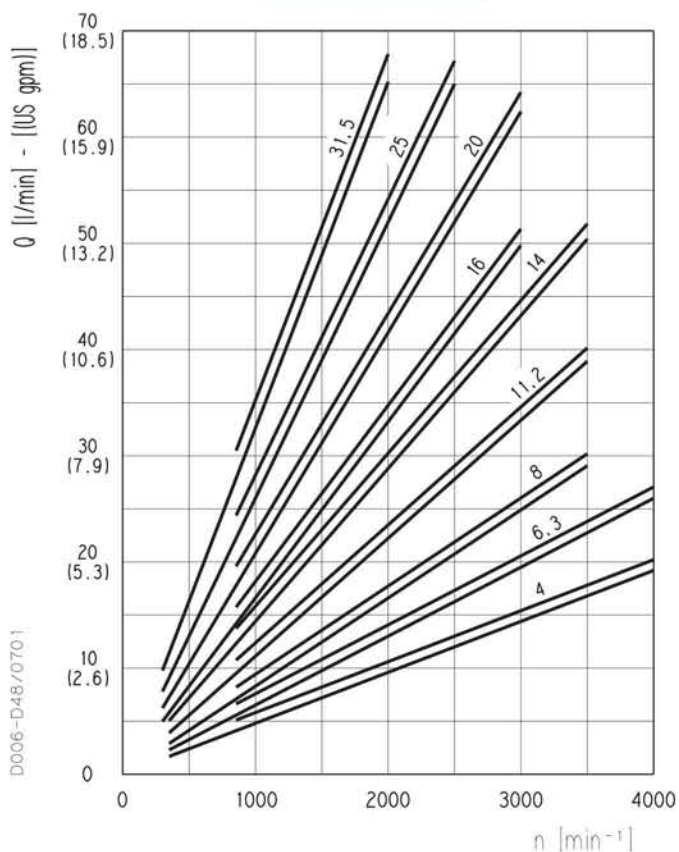
$$P = \frac{\Delta p \text{ (bar)} \cdot V \text{ (cm}^3\text{/rev)} \cdot n \cdot \eta_t}{600 \cdot 1000} \quad [\text{kW}]$$

Note: Diagrams providing approximate selection data will be found on subsequent pages.

KAPPA 20 GEAR MOTORS PERFORMANCE CURVES

KM 20

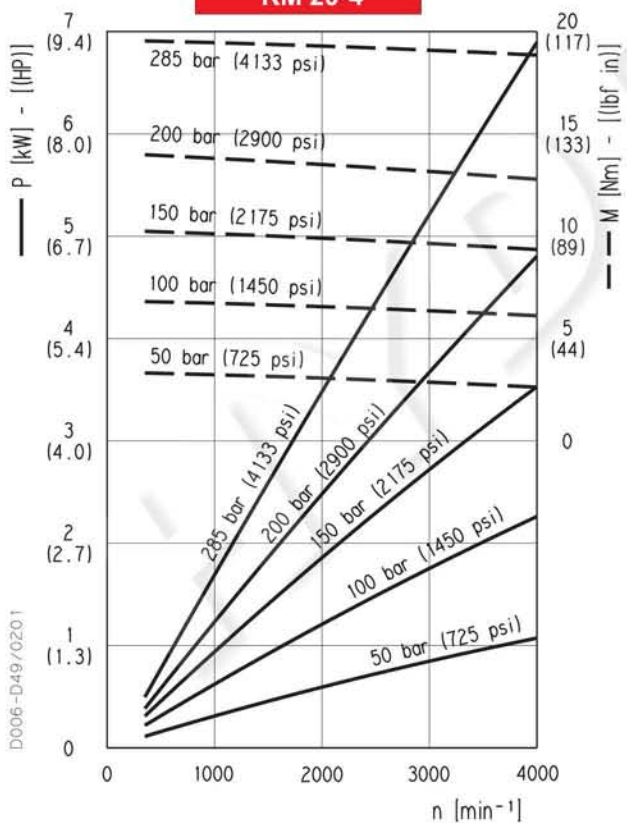
KM 20



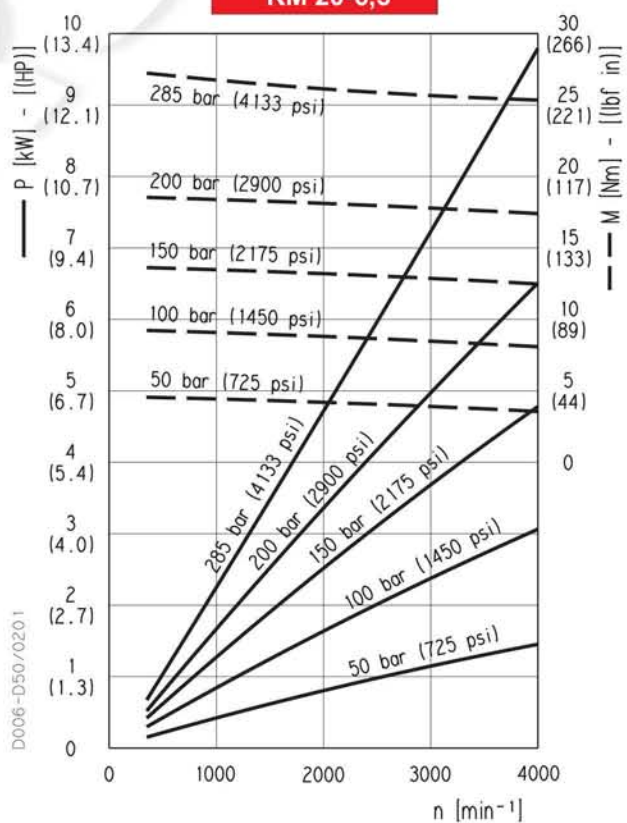
Each curve has been obtained at 122 °F (50 °C), using oil with viscosity 168 SSU (36 cSt) at 104 °F (40 °C) and at these pressures.

- KM 20•4 290-4133 psi (20-285 bar)
- KM 20•6,3 290-4133 psi (20-285 bar)
- KM 20•8 290-4133 psi (20-285 bar)
- KM 20•11,2 290-3988 psi (20-275 bar)
- KM 20•14 290-3843 psi (20-265 bar)
- KM 20•16 290-3770 psi (20-260 bar)
- KM 20•20 290-3045 psi (20-210 bar)
- KM 20•25 290-2610 psi (20-180 bar)
- KM 20•31,5 290-2030 psi (20-140 bar)

KM 20•4



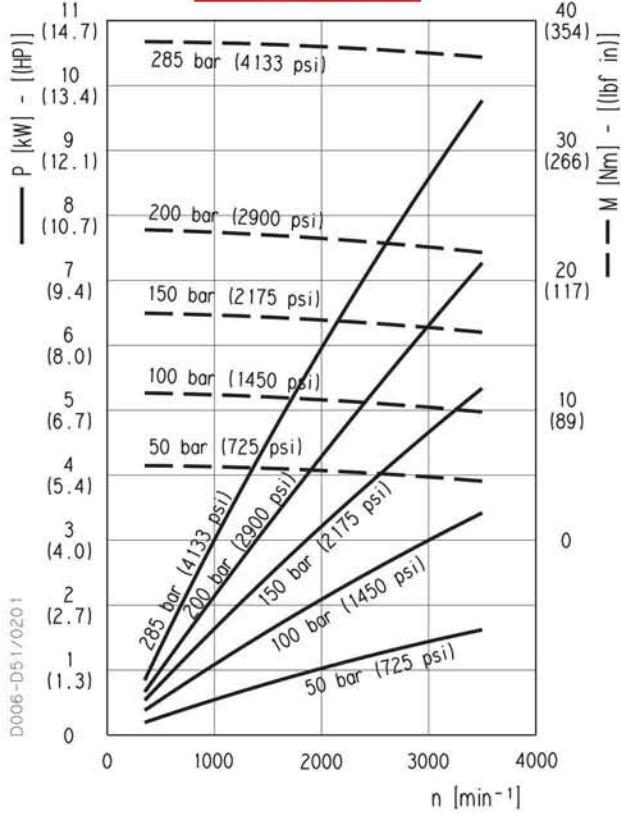
KM 20•6,3



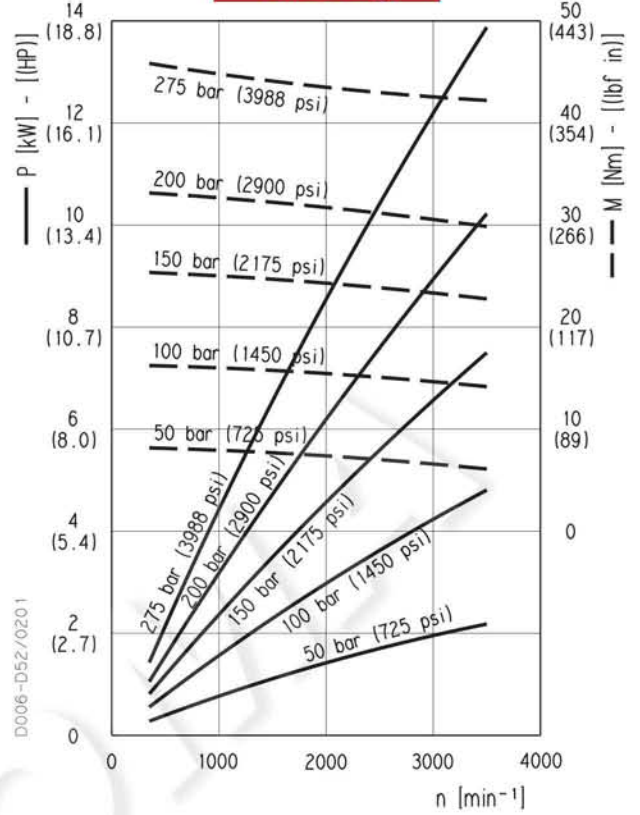
KAPPA 20 GEAR MOTORS PERFORMANCE CURVES

KM 20

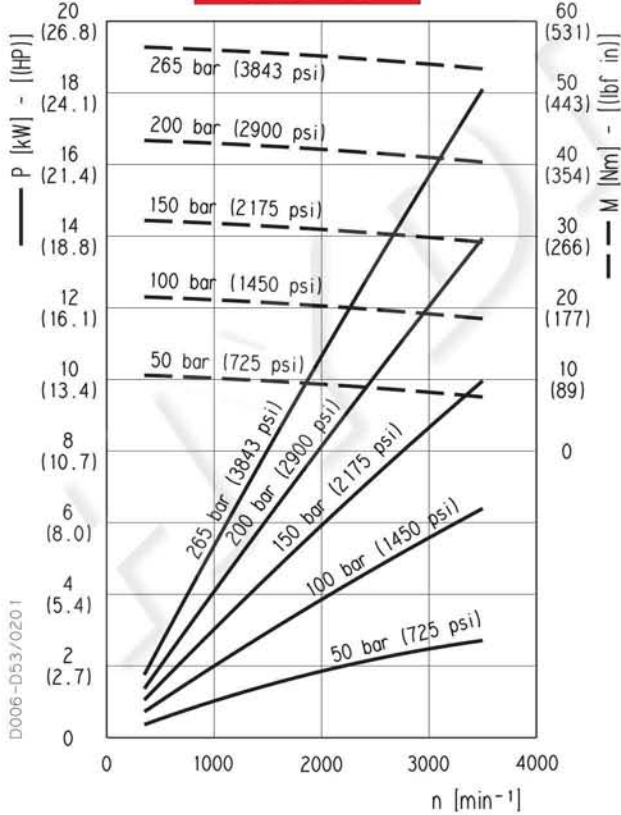
KM 20-8



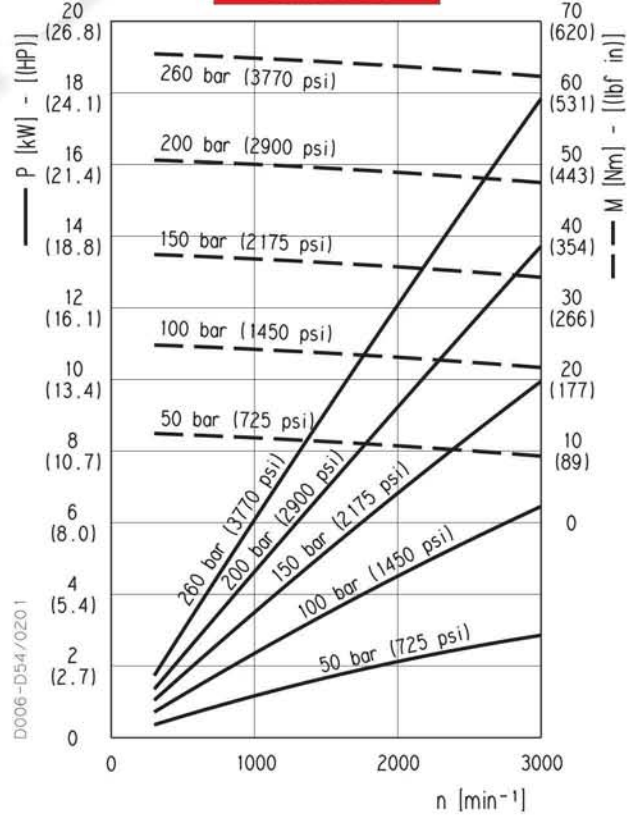
KM 20-11,2



KM 20-14

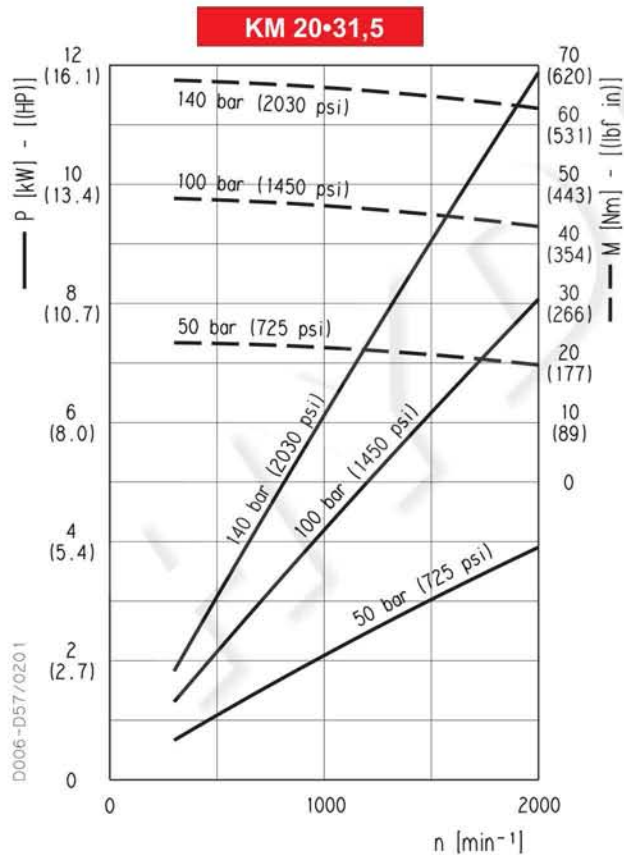
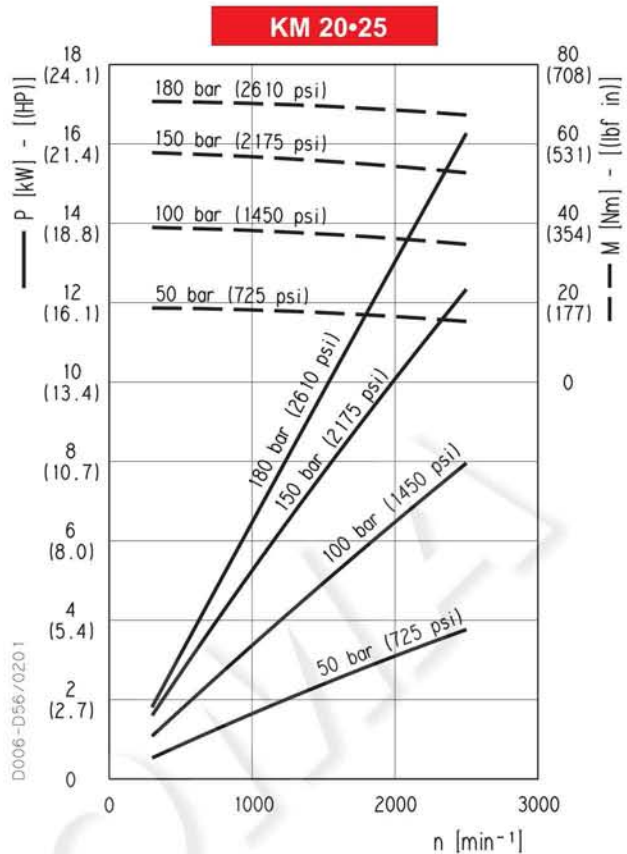
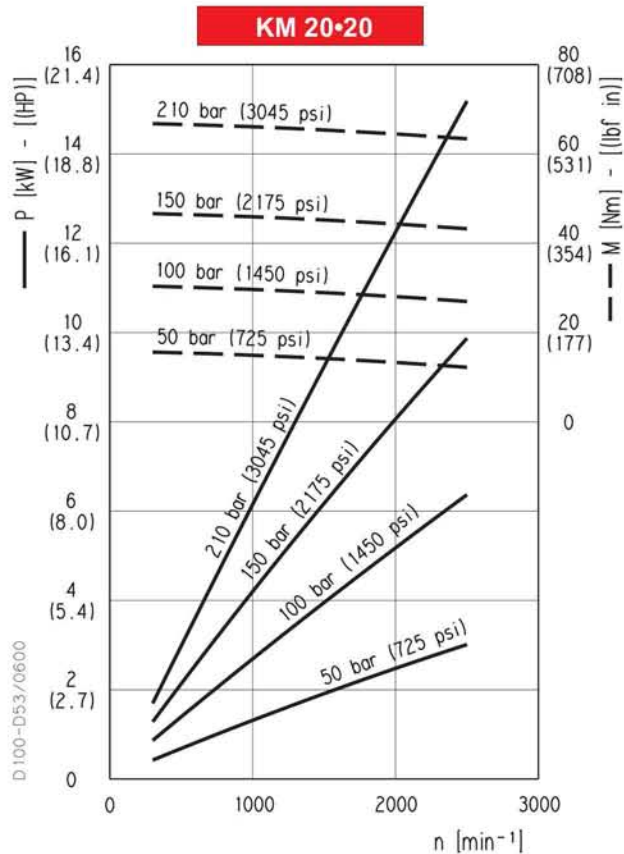


KM 20-16



KAPPA 20 GEAR MOTORS PERFORMANCE CURVES

KM 20

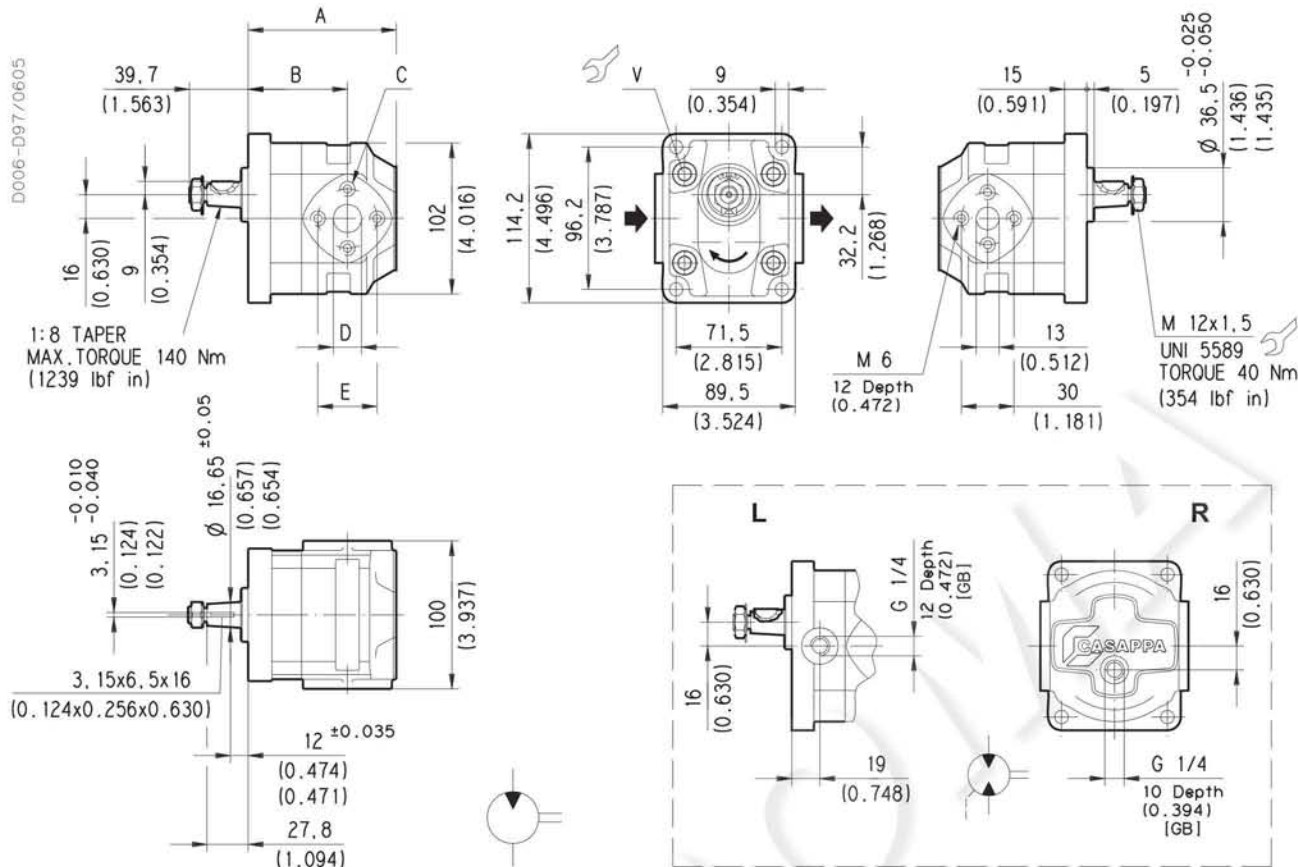


KAPPA 20

HYDRAULIC GEAR MOTORS EUROPEAN STANDARD

82 E2

EUROPEAN FLANGED PORTS - 4 Bolts
Metric thread ISO 60° conforms to ISO/R 262



V Screws tightening torque Nm (lbf in)
70 ±7 (558 ÷ 682)

Motor type		A	B	C	D	E		
		mm (in)	mm (in)	mm (in)	mm (in)	mm (in)		
KM 20•4 KM 20•6,3 KM 20•8 KM 20•11,2 KM 20•14 KM 20•16 KM 20•20 KM 20•25 KM 20•31,5	S D L R B	0-82 E2-L EA/EA-N	87,5 (3.445)	60 (2.362)	M 6 Depth 12 (0.472)	13 (0.512)	30 (1.181)	
			90 (3.543)	62,5 (2.461)				
			92,5 (3.642)	65 (2.559)				
			96 (3.780)	68,5 (2.697)				
			0-82 E2-L EA/EB-N	100 (3.937)	67 (2.638)	M 8 Depth 14 (0.551)	19 (0.748)	40 (1.575)
				105,5 (4.154)	72,5 (2.854)			
				112 (4.409)	79 (3.110)			
				120 (4.724)	72 (2.835)			
		130 (5.118)	82 (3.228)					

Rotation: S=left - D=right - L=reversible side drain - R=reversible rear drain - B=reversible internal drain

How to order:

KM 20•4 S0-82 E2-L EA/EA-N

02/06.05

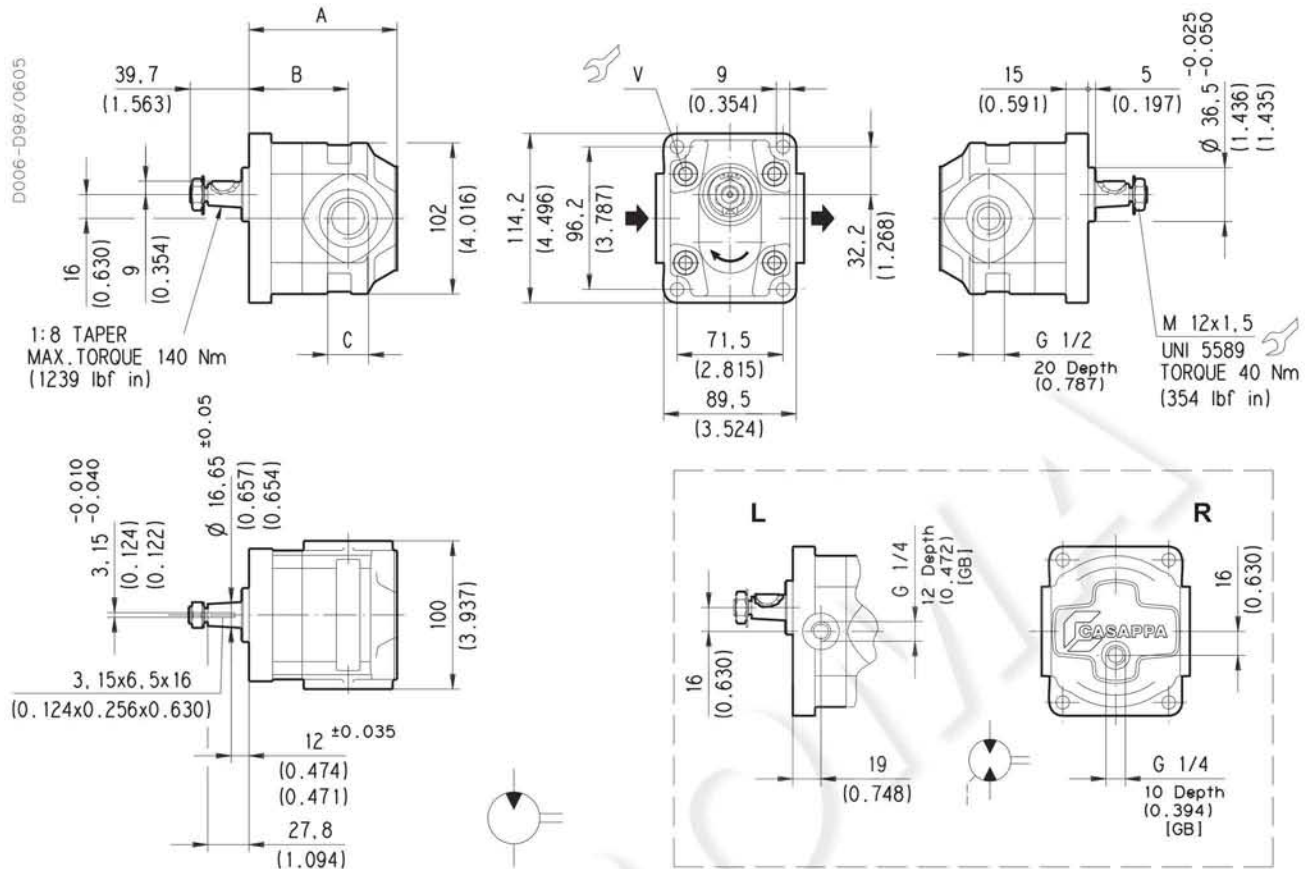
KAPPA 20

HYDRAULIC GEAR MOTORS EUROPEAN STANDARD

82 E2

GAS STRAIGHT THREAD PORTS

British standard pipe parallel (55°) conforms to UNI - ISO 228



V Screws tightening torque Nm (lbf in)
 70 ±7 (558 ÷ 682)

Motor type		A	B	C	
		mm (in)	mm (in)	mm (in)	
KM 20-4 KM 20-6,3 KM 20-8 KM 20-11,2	S D L R B	0-82 E2-L GD/GD-N	87,5 (3.445)	60 (2.362)	G 1/2 Depth 20 (0.787)
			90 (3.543)	62,5 (2.461)	
			92,5 (3.642)	65 (2.559)	
			96 (3.780)	68,5 (2.697)	
KM 20-14 KM 20-16 KM 20-20 KM 20-25 KM 20-31,5	S D L R B	0-82 E2-L GD/GE-N	100 (3.937)	67 (2.638)	G 3/4 Depth 22 (0.866)
			105,5 (4.154)	72,5 (2.854)	
			112 (4.409)	79 (3.110)	
			120 (4.724)	72 (2.835)	
			130 (5.118)	82 (3.228)	

Rotation: S=left - D=right - L=reversible side drain - R=reversible rear drain - B=reversible internal drain

How to order:

KM 20-4 S0-82 E2-L GD/GD-N

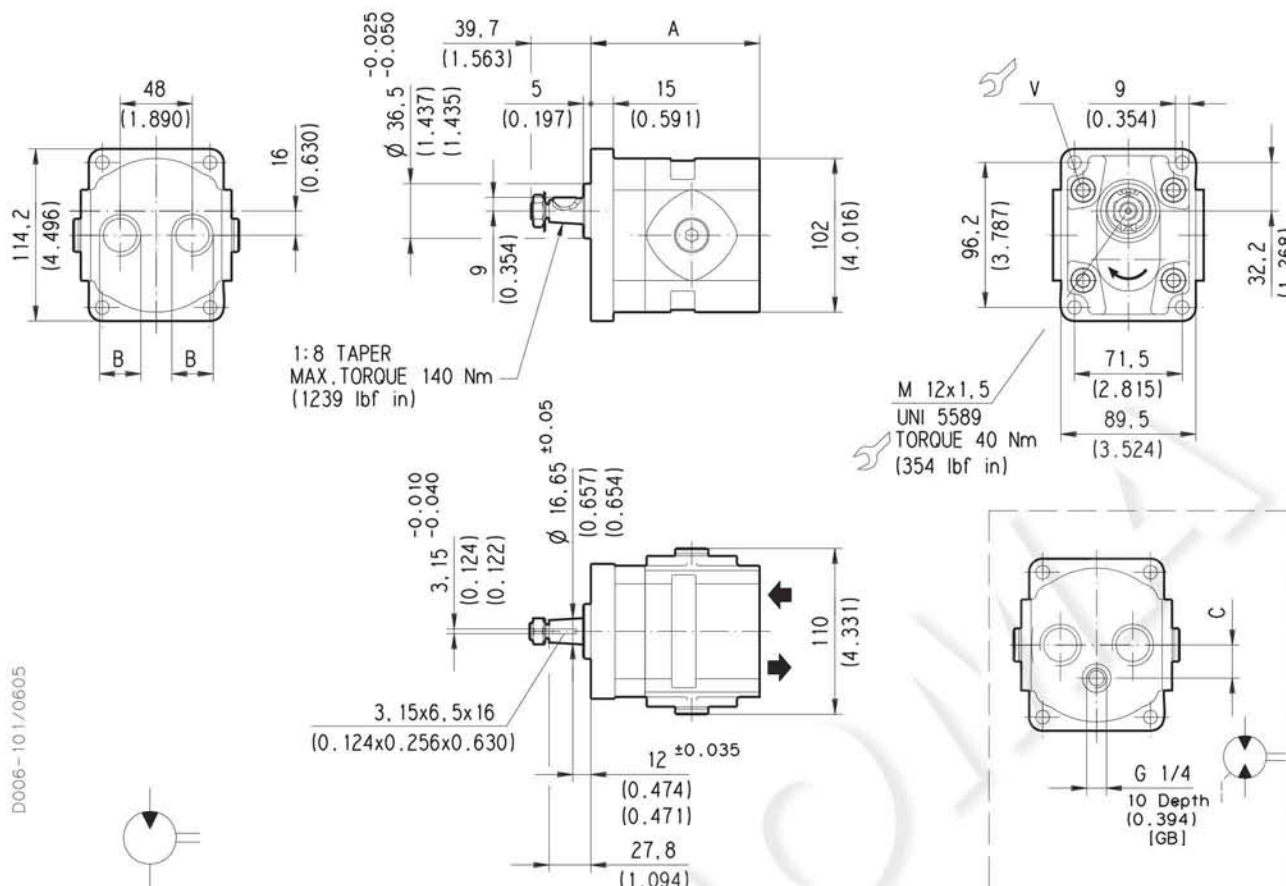
KAPPA 20

HYDRAULIC GEAR MOTORS EUROPEAN STANDARD

82 E2 - P

GAS STRAIGHT THREAD PORTS

British standard pipe parallel (55°) conforms to UNI - ISO 228



Rear ports version.

V Screws tightening torque Nm (lbf in)
70 ±7 (558 ÷ 682)

Motor type		A	B	C	
		mm (in)	mm (in)	mm (in)	
KM 20•4 KM 20•6,3 KM 20•8 KM 20•11,2	S D R B	0-82 E2-P GD/GD-N	84,5 (3.327)	G 1/2 Depth 17 (0.670)	19 (0.748)
			87 (3.425)		
			89,5 (3.524)		
			93 (3.661)		
KM 20•14 KM 20•16 KM 20•20 KM 20•25 KM 20•31,5	S D R B	0-82 E2-P GE/GE-N	112 (4.409)	G 3/4 Depth 18 (0.709)	22 (0.866)
			115,5 (4.547)		
			122 (4.803)		
			130 (5.118)		
			140 (5.512)		

Rotation: S=left - D=right - R=reversible rear drain - B=reversible internal drain

How to order:

KM 20•4 S0-82 E2-P GD/GD-N

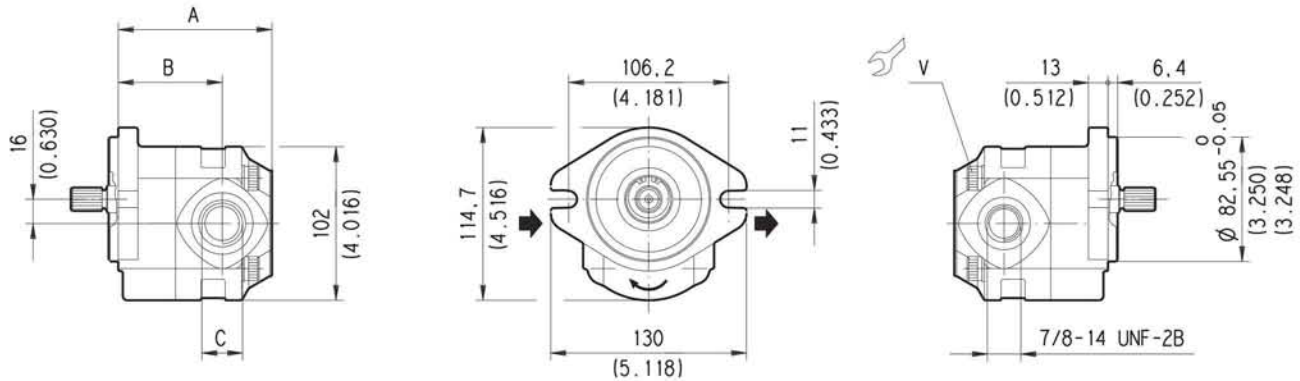
KAPPA 20

HYDRAULIC GEAR MOTORS SAE STANDARD

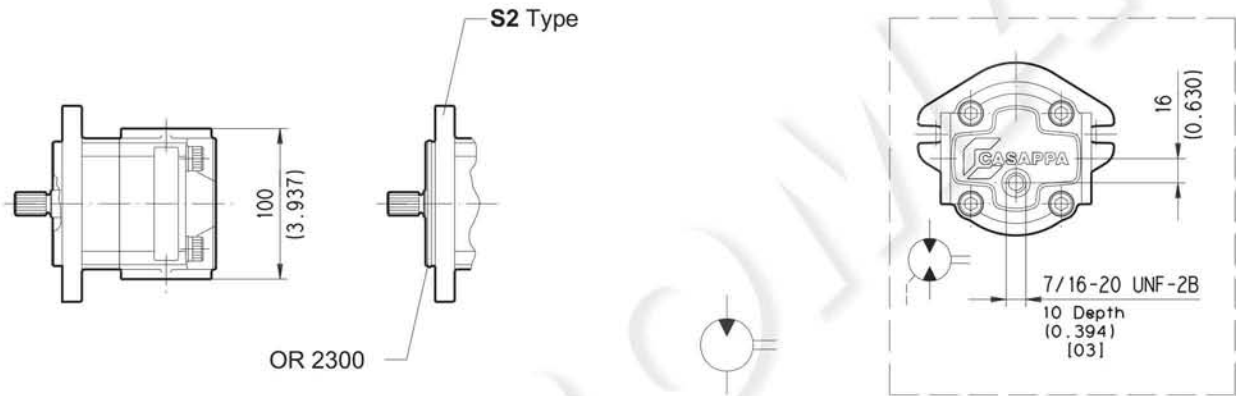
... S1

SAE STRAIGHT THREAD PORTS J514

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



D006-100/0605

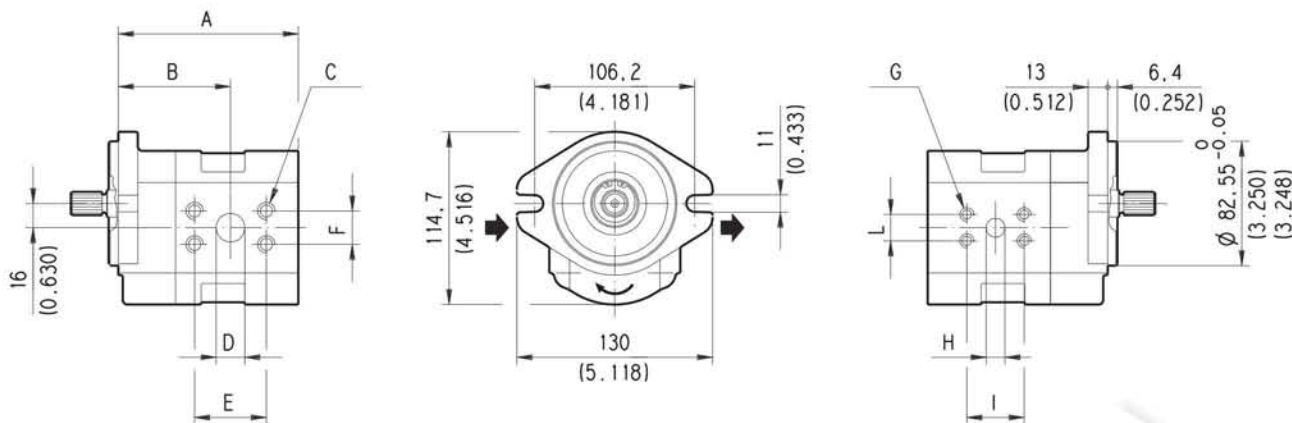


V Screws tightening torque Nm (lbf in)
70 ^{±7} (558 ÷ 682)

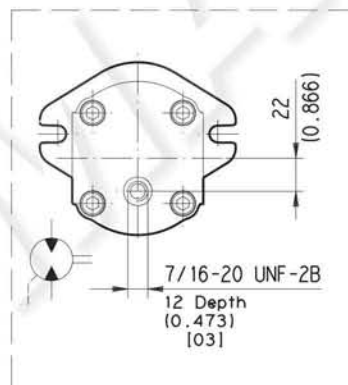
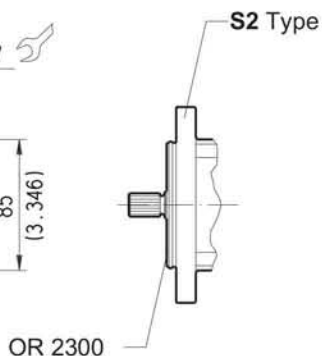
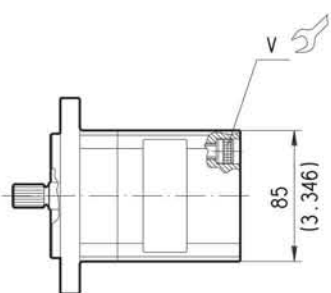
Side ports version (L) - To order see page 93 e 94

Motor type	A	B	C	Ports code	
	mm (in)	mm (in)	mm (in)	IN	OUT
KM 20•4	89,5 (3.524)	62 (2.441)	7/8-14 UNF-2B	OC	OC
KM 20•6,3	92 (3.622)	64,5 (2.539)			
KM 20•8	94,5 (3.720)	67 (2.638)			
KM 20•11,2	98 (3.858)	70,5 (2.776)			
KM 20•14	102 (4.016)	69 (2.717)	1-1/16-12 UN-2B	OC	OD
KM 20•16	107,5 (4.232)	74,5 (2.933)			
KM 20•20	114 (4.488)	81 (3.189)			
KM 20•25	122 (4.803)	74 (2.913)			
KM 20•31,5	132 (5.197)	84 (3.307)			

SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI
Metric thread ISO 60° conforms to ISO/R 262



D006-125/0605



V Screws tightening torque Nm (lbf in)

70 ±7 (558 ÷ 682)

Side ports version (L) - To order see page 93 e 94

Motor type	A	B	C	D	E	F	G	H	I	L	Ports code	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	IN	OUT
KM 20•4	101,5 (3.996)	62 (2.441)	M 8 Depth 12 (0.472)	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	M 8 Depth 12 (0.472)	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	MA	MA
KM 20•6,3	104 (4.094)	64,5 (2.539)										
KM 20•8	106,5 (4.193)	67 (2.638)										
KM 20•11,2	111 (4.370)	70,5 (2.776)	M 10 Depth 12 (0.472)	19 (0.748)	47,6 (1.874)	22,2 (0.874)	M 10 Depth 12 (0.472)	19 (0.748)	47,6 (1.874)	22,2 (0.874)	MB	MC
KM 20•14	116 (4.567)	69 (2.717)										
KM 20•16	119,5 (4.705)	74,5 (2.933)										
KM 20•20	126 (4.961)	81 (3.189)										
KM 20•25	134 (5.276)	74 (2.913)										
KM 20•31,5	144 (5.669)	84 (3.307)										

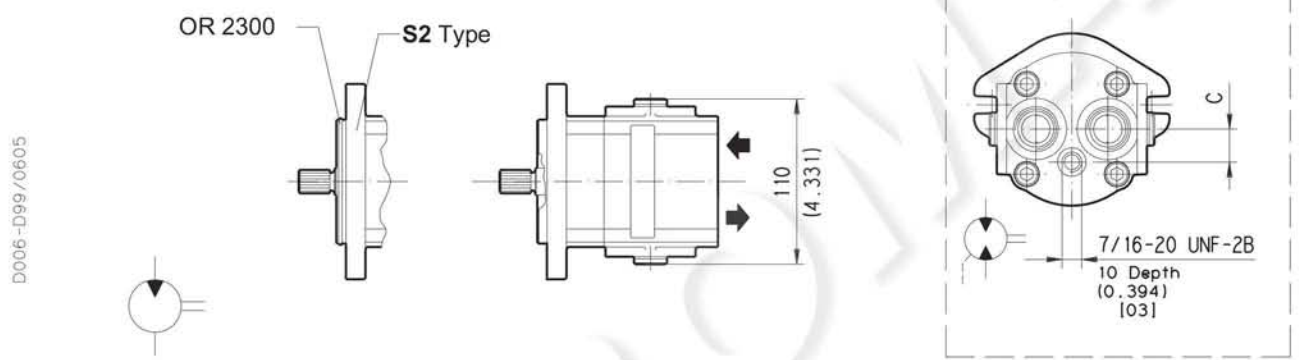
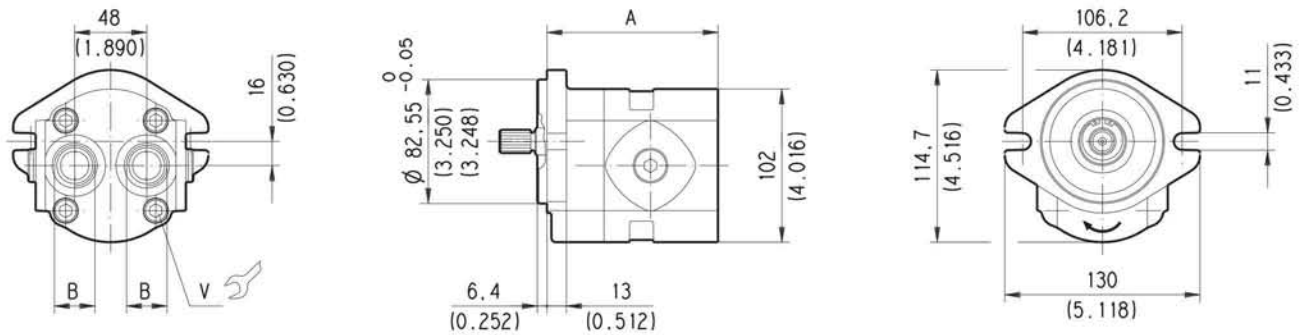
KAPPA 20

HYDRAULIC GEAR MOTORS SAE STANDARD

... S1

SAE STRAIGHT THREAD PORTS J514

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



D006-D99/0605

V Screws tightening torque Nm (lbf in)
70 ± 7 (558 ÷ 682)

Rear ports version (P) - To order see page 93 e 94

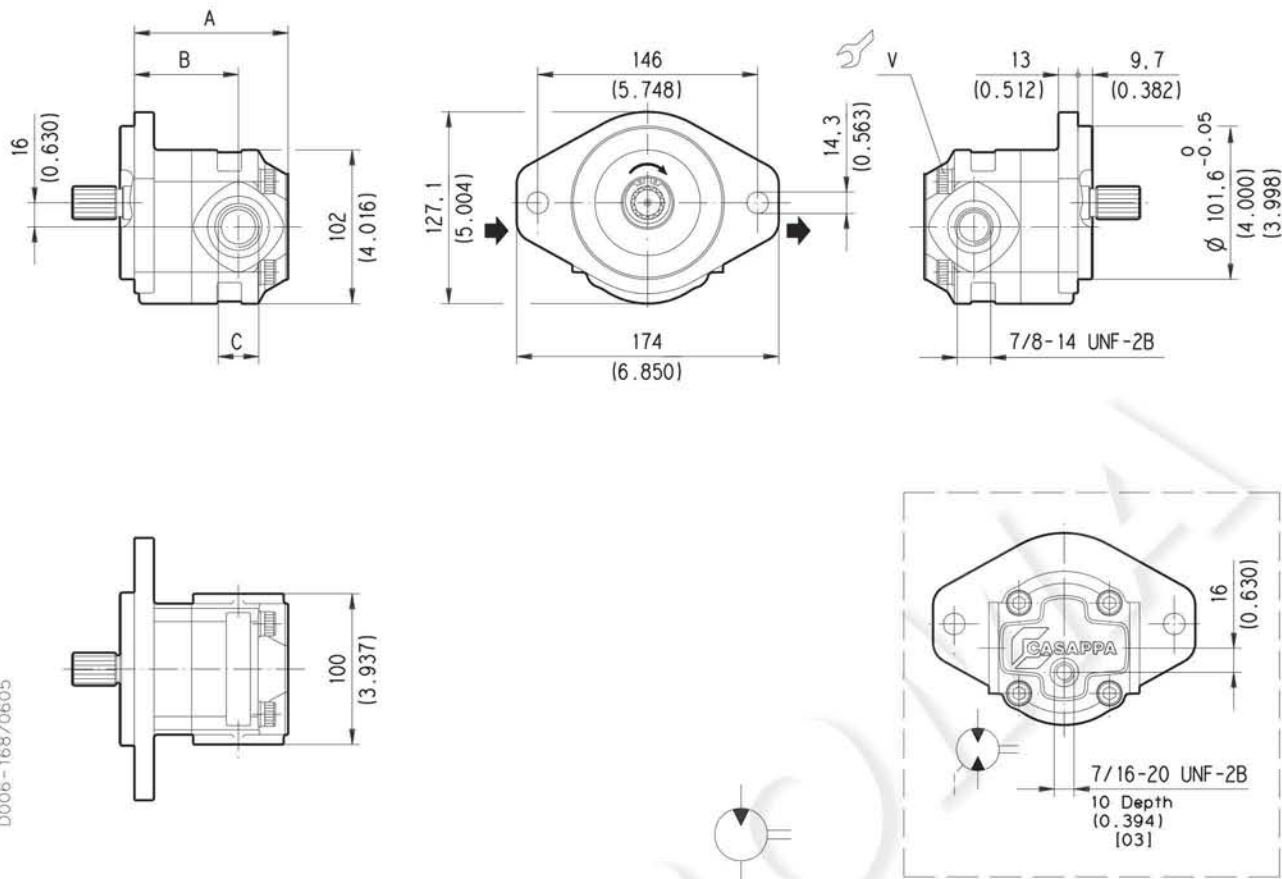
Motor type	A	B	C	Ports code	
	mm (in)	mm (in)	mm (in)	IN	OUT
KM 20-4	86,5 (3.406)	7/8-14 UNF-2B	19 (0.748)	OC	OD
KM 20-6,3	89 (3.504)				
KM 20-8	91,5 (3.602)				
KM 20-11,2	95 (3.740)				
KM 20-14	114 (4.488)	1-1/16-12 UN-2B	22 (0.866)	OC	OD
KM 20-16	117,5 (4.623)				
KM 20-20	124 (4.882)				
KM 20-25	132 (5.197)				
KM 20-31,5	142 (5.591)				

KAPPA 20

HYDRAULIC GEAR MOTORS SAE STANDARD

... S5

SAE STRAIGHT THREAD PORTS J514
American straight thread UNC-UNF 60° conforms to ANSI B 1.1



D006-168/0605

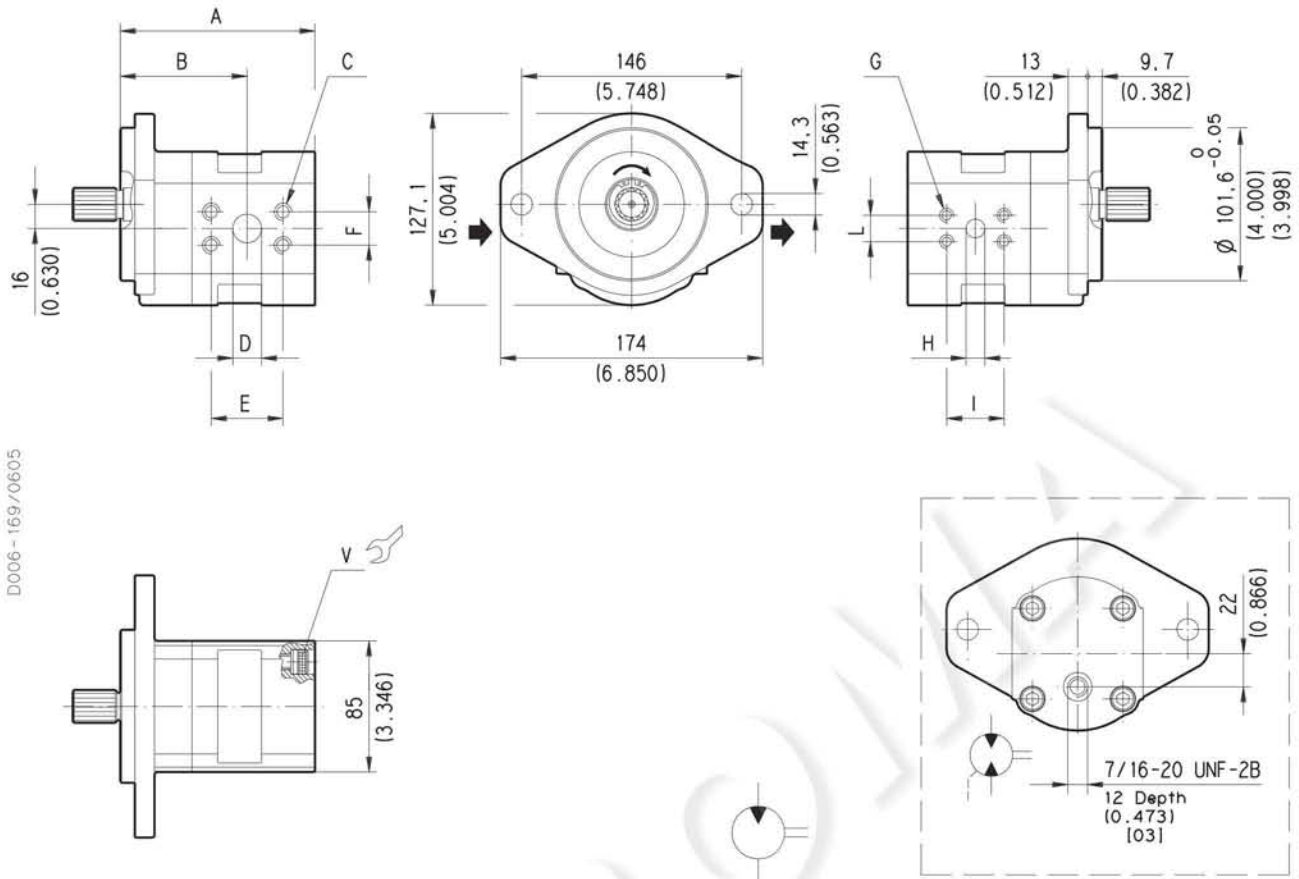
V Screws tightening torque Nm (lbf in)

70 ±7 (558 ÷ 682)

Side ports version (L) - To order see page 93 e 94

Motor type	A		B		C		Ports code	
	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)	IN	OUT	
KM 20•4	89,5 (3.524)	62 (2.441)	7/8-14 UNF-2B	69 (2.717)	OC	OC	OD	
KM 20•6,3	92 (3.622)	64,5 (2.539)						
KM 20•8	94,5 (3.720)	67 (2.638)						
KM 20•11,2	98 (3.858)	70,5 (2.776)						
KM 20•14	102 (4.016)	69 (2.717)	1-1/16-12 UN-2B	81 (3.189)	OC	OC	OD	
KM 20•16	107,5 (4.232)	74,5 (2.933)						
KM 20•20	114 (4.488)	81 (3.189)						
KM 20•25	122 (4.803)	74 (2.913)						
KM 20•31,5	132 (5.197)	84 (3.307)						

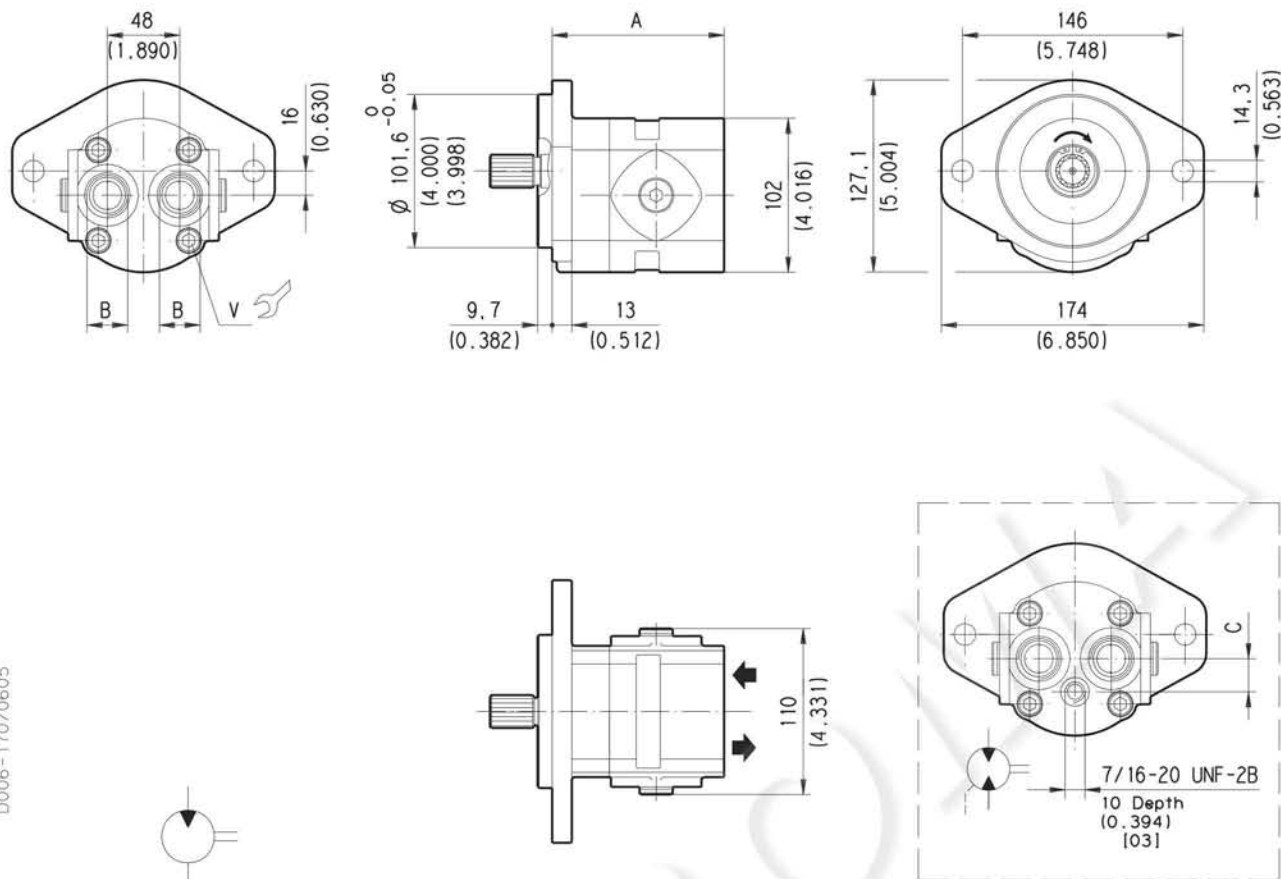
SAE FLANGED PORTS J518 - Standard pressure series 3000 PSI
Metric thread ISO 60° conforms to ISO/R 262



Motor type	A	B	C	D	E	F	G	H	I	L	Ports code	
	mm (in)	mm (in)		mm (in)	mm (in)	mm (in)		mm (in)	mm (in)	mm (in)	mm (in)	IN
KM 20-4	101,5 (3.996)	62 (2.441)	M 8 Depth 12 (0.472)	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	M 8 Depth 12 (0.472)	12,5 (0.492)	38,1 (1.500)	17,5 (0.689)	MA	MA
KM 20-6,3	104 (4.094)	64,5 (2.539)										
KM 20-8	106,5 (4.193)	67 (2.638)										
KM 20-11,2	111 (4.370)	70,5 (2.776)	M 10 Depth 12 (0.472)	19 (0.748)	47,6 (1.874)	22,2 (0.874)	M 10 Depth 12 (0.472)	19 (0.748)	47,6 (1.874)	22,2 (0.874)	MB	MC
KM 20-14	116 (4.567)	69 (2.717)										
KM 20-16	119,5 (4.705)	74,5 (2.933)										
KM 20-20	126 (4.961)	81 (3.189)										
KM 20-25	134 (5.276)	74 (2.913)	M 10 Depth 12 (0.472)	25,4 (1.000)	52,4 (2.063)	26,2 (1.031)	M 10 Depth 12 (0.472)	19 (0.748)	47,6 (1.874)	22,2 (0.874)	MB	MC
KM 20-31,5	144 (5.669)	84 (3.307)										

SAE STRAIGHT THREAD PORTS J514

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



D006-170/0605

V Screws tightening torque Nm (lbf in)

 70 ± 7 (558 ÷ 682)

Rear ports version (P) - To order see page 93 e 94

Motor type	A	B	C	Ports code	
	mm (in)		mm (in)	IN	OUT
KM 20•4	86,5 (3.406)	7/8-14 UNF-2B	19 (0.748)	OC	
KM 20•6,3	89 (3.504)				
KM 20•8	91,5 (3.602)				
KM 20•11,2	95 (3.740)				
KM 20•14	114 (4.488)	1-1/16-12 UN-2B	22 (0.866)	OC	OD
KM 20•16	117,5 (4.623)				
KM 20•20	124 (4.882)				
KM 20•25	132 (5.197)				
KM 20•31,5	142 (5.591)				

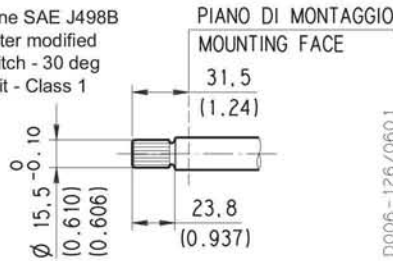
KAPPA 20 END DRIVE SHAFTS

SAE

SAE "A" SPLINE

03

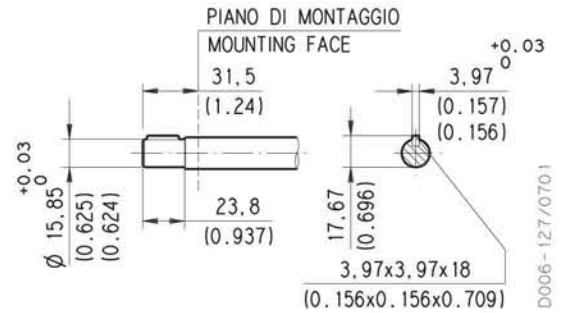
Ext. Involute Spline SAE J498B with major diameter modified 9 teeth - 16/32 Pitch - 30 deg Flat Root - Side fit - Class 1



MAX 885 lbf in (100 Nm)

SAE "A" STRAIGHT

31

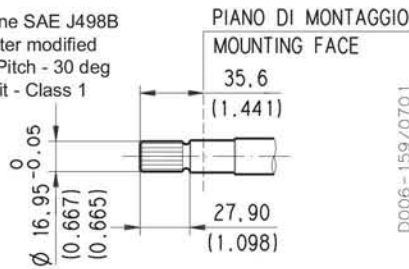


MAX 620 lbf in (70 Nm)

SAE SPLINE

01

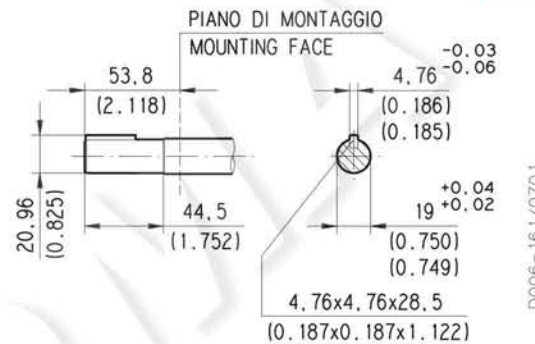
Ext. Involute Spline SAE J498B with major diameter modified 10 teeth - 16/32 Pitch - 30 deg Flat Root - Side fit - Class 1



MAX 1151 lbf in (130 Nm)

STRAIGHT

49

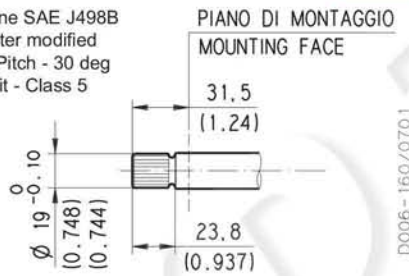


MAX 1239 lbf in (140 Nm)

SAE SPLINE

07

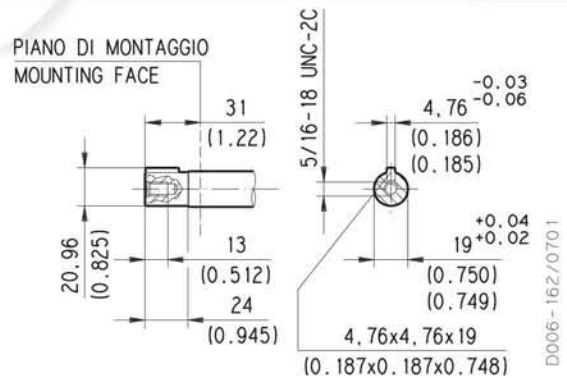
Ext. Involute Spline SAE J498B with major diameter modified 11 teeth - 16/32 Pitch - 30 deg Flat Root - Side fit - Class 5



MAX 1505 lbf in (170 Nm)

STRAIGHT

50

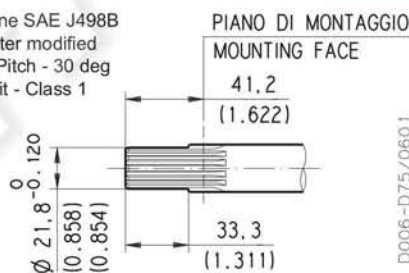


MAX 885 lbf in (100 Nm)

SAE "B" SPLINE

04

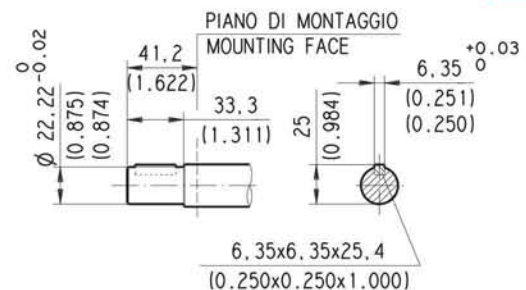
Ext. Involute Spline SAE J498B with major diameter modified 13 teeth - 16/32 Pitch - 30 deg Flat Root - Side fit - Class 1



MAX 2478 lbf in (280 Nm)

SAE "B" STRAIGHT

32



MAX 1770 lbf in (200 Nm)

HOW TO ORDER SAE STANDARD MOTORS

1	2	3	4	5	6	7	8
Motor type	Rotation	Version	Drive shaft	Mounting flange	Ports position	Ports IN/OUT	Seals
KM20•4	S	0	03	S1	L	OC/OC	N

1 Motor type		CODE
in ³ /rev	cm ³ /rev	
0.30	4,95	KM 20•4
0.40	6,61	KM 20•6,3
0.50	8,26	KM 20•8
0.69	11,23	KM 20•11,2
0.89	14,53	KM 20•14
1.03	16,85	KM 20•16
1.29	21,14	KM 20•20
1.61	26,42	KM 20•25
2.01	33,03	KM 20•31,5

2 Rotation		CODE
Left		S
Right		D
Reversible		R
Reversible internal drain		B

3 Version		CODE
Without outboard bearing		0

4 Drive shaft		CODE
SAE "A" spline (9 teeth)		03
SAE spline (10 teeth)		01
SAE spline (11 teeth)		07
SAE "B" spline (13 teeth)		04
SAE "A" straight		31
Straight		49
Straight		50
SAE "B" straight		32

5 Mounting flange		CODE
SAE "A" 2 holes		S1
SAE "A" 2 holes (with o-ring seal)		S2
SAE "B" 2 holes (a)		S5

CODE	Ports position	6
L	Side	
P	Rear	

CODE	Ports IN/OUT		7
SAE STRAIGHT THREAD PORTS (ODT)			
Side	Rear	Motor type	
OC/OC	OC/OC	KM 20•4	
OC/OC	OC/OC	KM 20•6,3	
OC/OC	OC/OC	KM 20•8	
OC/OC	OC/OC	KM 20•11,2	
OC/OD	OD/OD	KM 20•14	
OC/OD	OD/OD	KM 20•16	
OC/OD	OD/OD	KM 20•20	
OC/OD	OD/OD	KM 20•25	
OC/OD	OD/OD	KM 20•31,5	

METRIC SAE SPLIT PORTS SAE J518 C			
Side	Rear	Motor type	
MA/MA		KM 20•4	
MA/MA		KM 20•6,3	
MA/MA		KM 20•8	
MA/MA		KM 20•11,2	
MA/MB		KM 20•14	
MA/MB		KM 20•16	
MA/MB		KM 20•20	
MB/MC		KM 20•25	
MB/MC		KM 20•31,5	

CODE	Seals (b)	8
N	Buna N (standard) - No code	
N-H	Buna with high back pressure shaft seals	
V	Viton	
N Bz	Buna N and bronze thrust plates	
V Bz	Viton and Bronze thrust plates	

(a) Available only with 04 and 32 shaft

(b) Choose the seals according to the temperature shown on page 1

ORDER EXAMPLE

Standard motor

KM 20•4 S0 - 03 S1 - L OC/OC - N

Special version motor

KM 20•4 S0 - 04 S5 - L MA/MA - V Bz