FEATURES

KAPPA pump and motor units consist essentially of a housing and a mounting flange in cast iron of superior mechanical specifications. KAPPA is available with mountig flanges and side or rear ports according to SAE and European standard.
The rigidity of assembly and the compact design of KAPPA pumps and motors ensure reliability and high volumetric efficiency also at high operating pressures. Infinite care and attention is taken over the design and construction of each single component, and with quality monitored unceasingly, the result is a consistent, perfectly balanced assembly that guarantees unbroken service under the most arduous operating conditions. KAPPA series is the right choice wherever noise, contamination, non inflammable fluids and size are critical factors. The wide choice of combinations of mounting flanges, shafts and ports ensure to KAPPA series to be applied in a vast range of application.

05/03.2012

DISPLACEMENTS

From 0.30 in^3/rev (4,95 cm^3/rev)
To 4.50 in^3/rev (73,82 cm^3/rev)

PRESSURE

Max. Continuous 4133 psi (285 bar)
Max. Intermittent 4350 psi (300 bar)
Max. Peak 4785 psi (330 bar)

MAX. SPEED

Max. 4000 min^{-1}

- High operating pressures
- High efficiency at high temperature
- Exceptional working life expectancy

Modification from former edition.

FEATURES

Replaces: 04/07.2008

Construction	External gear type pumps and motors
Mounting	EUROPEAN - SAE - ISO standard flanges
Line connections	Screw and flange
Direction of rotation (looking on drive shaft)	Anti-clock (S) - clockwise (D) - reversible (L, R or B)
Inlet pressure range for pumps	10 ÷ 44 psi - [0,7 ÷ 3 bar (abs.)]
Max back pressure for single rotation motors	p_1 (continuous) max 73 psi (5 bar)
	p_2 (for 20 s) max 116 psi (8 bar)
	p_3 (for 8 s) max 218 psi (15 bar)
Max drain line pressure on reversible rotation motors	73 psi (5 bar)
Max back pressure on the series motors	2175 psi (150 bar)
Fluid temperature range	See table (1)
Fluid	Mineral oil based hydraulic fluids to ISO/DIN and fire resistant fluids [see table (1)]. For other fluids please consult our technical sales department.
Viscosity range	From 60 to 456 SSU [12 to 100 mm²/s (cSt)] recommended
Filtering requirement	See table (2)

Tab. 1

Type	Fluid composition	Max pressure psi - (bar)	Max speed min^{-1}	Temperature °F - (°C)			Seals (◆)
				Min	Max continuous	Max peak	
ISO/DIN	Mineral oil based hydraulic fluid to ISO/DIN	See page 3, 4 75, 76	See page 3, 4 75, 76	-13 (-25)	176 (80)	212 (100)	N
				-13 (-25)	230 (110)		N-H
HFA	Oil emulsion in water 5 ÷ 15% of oil	725 (50)	1500	36 (2)	131 (55)	257 (125)	V
HFB	Water emulsion in oil 40 % of water	1740 (120)	1500	36 (2)	140 (60)		N
HFC	Water - glycol	1450 (100)	1500	-4 (-20)	140 (60)		N Bz
HFD	Phosphate ester	2175 (150)	1500	14 (-10)	176 (80)		V Bz

(◆) **N**= Buna N (standard) - **N-H**= Buna N and high back pressure shaft seals - **V**= Viton
N Bz= Buna N and Bronze thrust plates - **V Bz**= Viton and Bronze thrust plates

05/03.2012

Tab. 2

Working pressure psi (bar)	Δp<2030 (140)	2030<Δp<3045 (140) (210)	Δp>3045 (210)
Contamination class NAS 1638	10	9	8
Contamination class ISO 4406:1999	21/19/16	20/18/15	19/17/14
Achieved with filter $ß_{10}$ (c) ≥ 200 according to ISO 16889	-	10 µm	10 µm
Achieved with filter $ß_{25}$ (c) ≥ 200 according to ISO 16889	25 µm	-	-

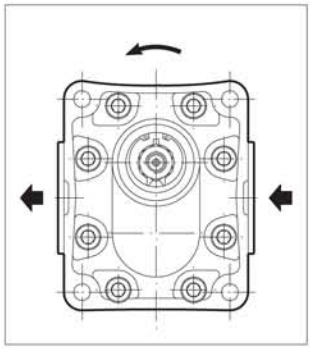
Casappa recommends to use its own production filters:

IKRON® Fluid Filtration

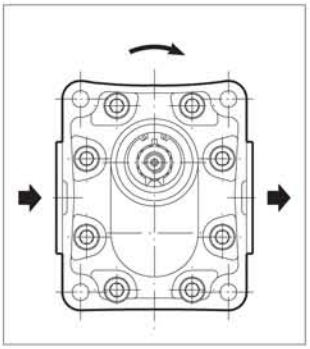
GENERAL NOTES

Available with different inlet and outlet ports. If you use fire resistant fluids specify the type of them at the order. For more information please consult our technical sales department.

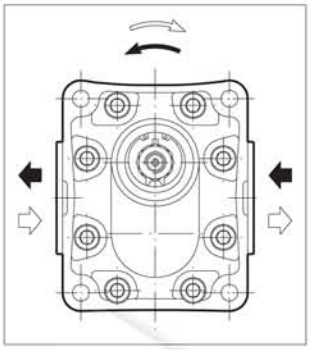
DEFINITION OF ROTATION DIRECTION LOOKING AT THE DRIVE SHAFT



Anti-clock rotation

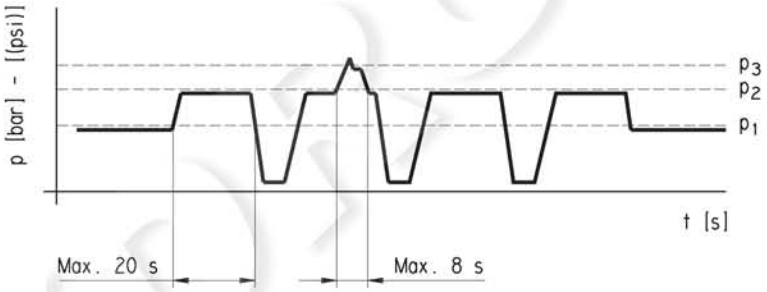


Clockwise rotation



Reversible rotation

PRESSURE DEFINITION



p_1 Max. continuous pressure

p_2 Max. intermittent pressure

p_3 Max. peak pressure

01/03.2002

KAPPA 20 GENERAL DATA PUMPS

KP 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 $^{-1}$	
KP 20•4	0.30 (4,95)	4133 (285)	4350 (300)	4785 (330)	4000	350
KP 20•6,3	0.40 (6,61)	4133 (285)	4350 (300)	4785 (330)	4000	350
KP 20•8	0.50 (8,26)	4133 (285)	4350 (300)	4785 (330)	3500	350
KP 20•11,2	0.69 (11,23)	3988 (275)	4205 (290)	4640 (320)	3500	350
KP 20•14	0.89 (14,53)	3843 (265)	4205 (290)	4640 (320)	3500	350
KP 20•16	1.03 (16,85)	3770 (260)	4205 (290)	4640 (320)	3000	300
KP 20•20	1.29 (21,14)	3045 (210)	3335 (230)	3625 (250)	3000	300
KP 20•25	1.61 (26,42)	2610 (180)	2900 (200)	3190 (220)	2500	300
KP 20•31,5	2.01 (33,03)	2030 (140)	2320 (160)	2610 (180)	2000	300

p_1= Max. continuous pressure p_2= Max. intermittent pressure p_3= Max. peak pressure

The values in the table refer to unidirectional pumps.
Reversible pump max pressures are 15% lower than those shown in table.
For different working conditions please consult our sales department.

01/03.2002

DESIGN CALCULATIONS FOR PUMPS

Replaces: 02/06.2005

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
$\eta_v = \eta_v (V, \Delta p, n)$	(≈ 0,98)	Volumetric efficiency
$\eta_{hm} = \eta_{hm} (V, \Delta p, n)$	(≈ 0,90)	Hydro-mechanical efficiency
$\eta_t = \eta_v \cdot \eta_m$	(≈ 0,88)	Overall efficiency

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

O 05/03.2012

O

$$Q = Q_{theor.} \cdot \eta_v$$

$$Q_{theor.} = \frac{V\ (cm^3/rev) \cdot n\ (min^{-1})}{1000} \quad [l/min]$$

$$M = \frac{M_{theor.}}{\eta_{hm}}$$

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

$$P_{IN} = \frac{P_{OUT}}{\eta_t}$$

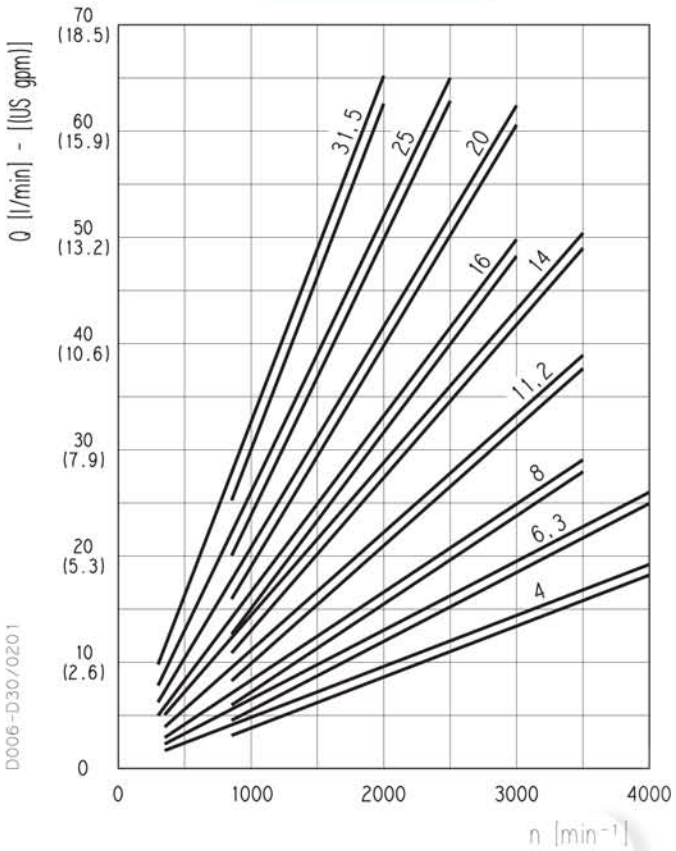
$$P_{OUT} = \frac{\Delta p\ (bar) \cdot Q\ (l/min)}{600} \quad [kW]$$

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

KAPPA 20 GEAR PUMPS PERFORMANCE CURVES

KP 20

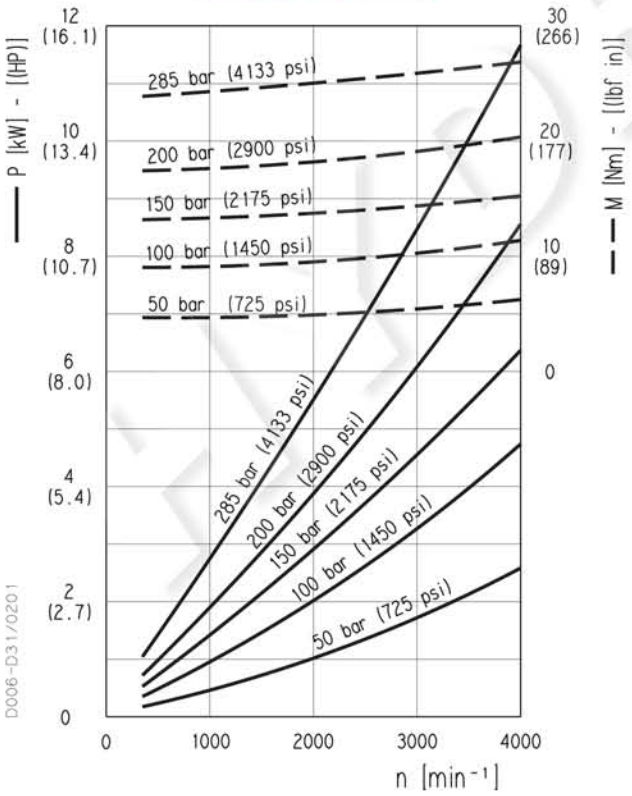
KP 20



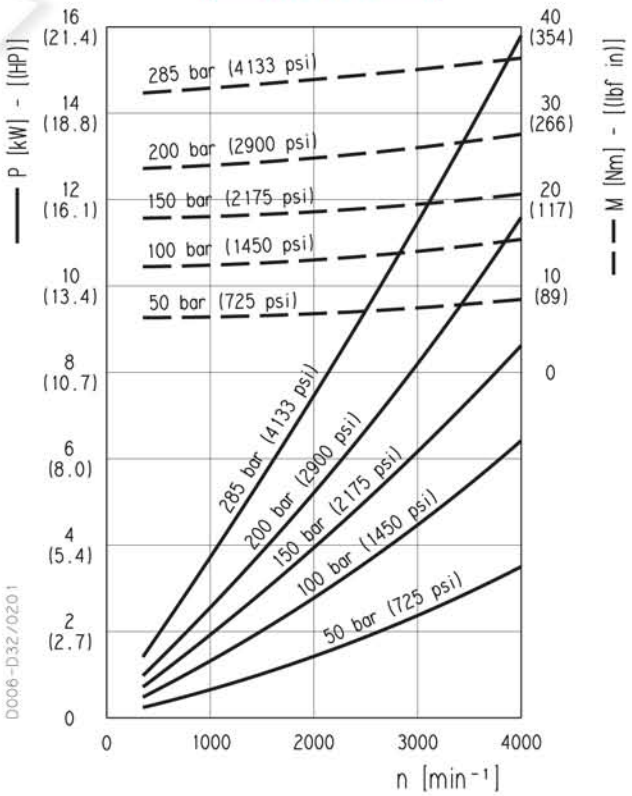
Each curve has been obtained at 122 °F (50 °C), using oil with viscosity 168 SSU (36 cSt) at 104 °F (40 °C) and at these pressures:

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

KP 20•4



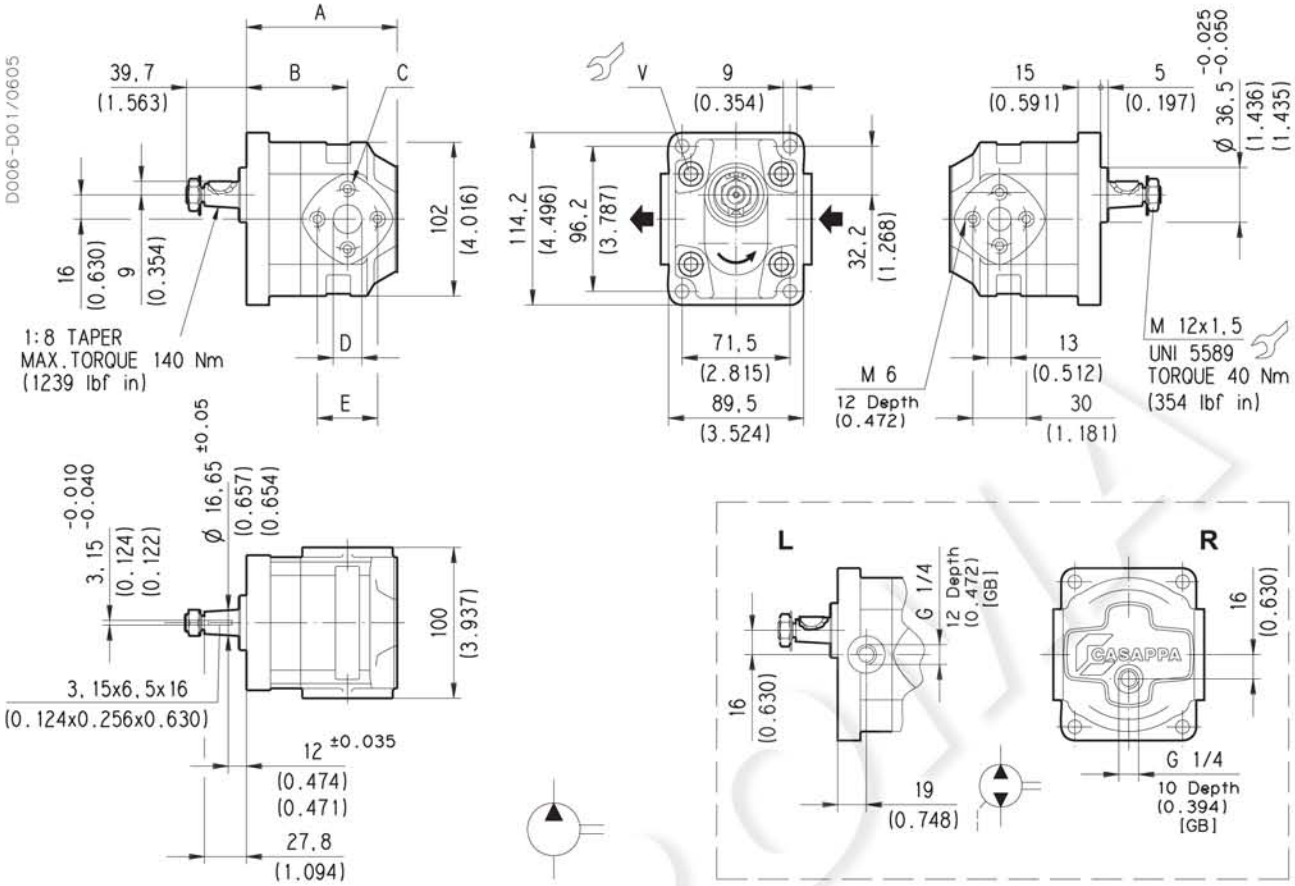
KP 20•6,3



01/03.2002

KAPPA 20 | HYDRAULIC GEAR PUMPS 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)

Pump type			A	B	C	D	E
			mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
KP 20•4	S D L R B	0-82 E2-L EA/EA-N	87,5 (3.445)	60 (2.362)	M6 Depth 12 (0.472)	13 (0.512)	30 (1.181)
KP 20•6,3			90 (3.543)	62,5 (2.461)			
KP 20•8			92,5 (3.642)	65 (2.559)			
KP 20•11,2			96 (3.780)	68,5 (2.697)			
KP 20•14		0-82 E2-L EB/EA-N	100 (3.937)	67 (2.638)	M8 Depth 14 (0.551)	19 (0.748)	40 (1.575)
KP 20•16			105,5 (4.154)	72,5 (2.854)			
KP 20•20			112 (4.409)	79 (3.110)			
KP 20•25			120 (4.724)	72 (2.835)			
KP 20•31,5			130 (5.118)	82 (3.228)			

02/06.2005

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

How to order:

KP 20•4 S0-82 E2-L EA/EA-N