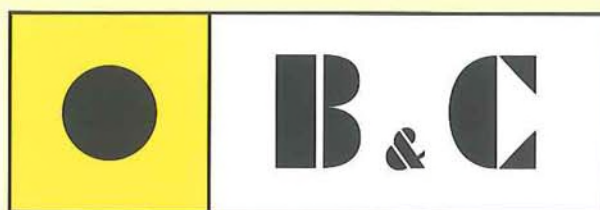


TECHNICAL CATALOGUE



**FIXED DISPLACEMENT
HYDRAULIC VANE PUMPS**

BQ series



FIXED DISPLACEMENT HYDRAULIC VANE PUMPS “BQ” SERIES

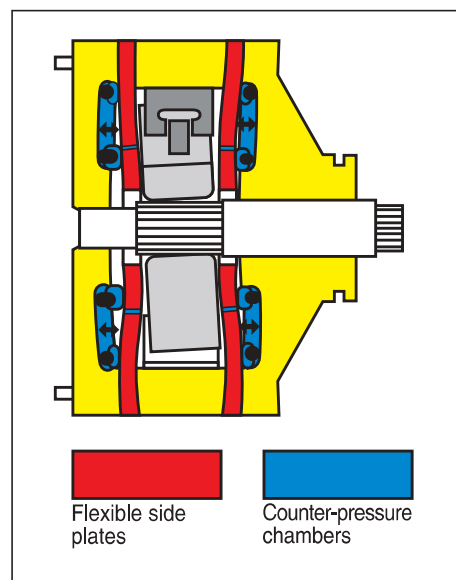
Versatility, power, compactness and low running costs are the main characteristics of B&C vane pumps.

All the components subject to wear are contained in a cartridge unit that can be easily removed for inspection and/or replacement without disconnecting the pump from the circuit, drastically reducing expensive machine down time.

The cartridge contains a rotor, vanes and inserts, a cam ring, two flexible plates and two covers. During operation the rotor is driven by a splined shaft coupled to the drive unit. As the rotation speed increases, centrifugal forces, in combination with the pressure generated behind the vanes, push the vanes outwards, where they follow the profile of the cam with a sufficient contact pressure to ensure adequate hydraulic sealing. The two opposed pumping chambers formed by the elliptical profile of the cam cancel out radial loads on the shaft bearings, thereby giving them extremely long lifetimes.

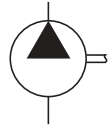
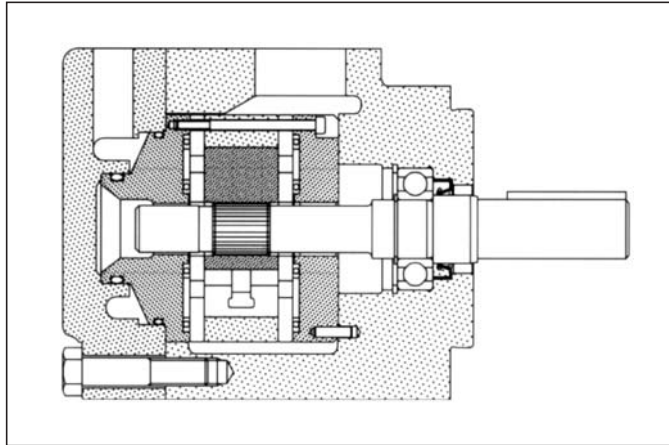
The design characteristics of the BQ series pumps make them particularly suited to applications in the mobile field. The special design of the flexible plates enables any thermal expansion in the rotor to be compensated for and to adequately cope with any sudden change in pressure. Furthermore, the counter-pressure chambers positioned between the flexible plates and the cartridge covers balance the internal pressure; this ensures that the correct clearance between the rotor and the flexible plates is always maintained so guaranteeing maximum volumetric efficiency (see drawing).

The BQ series is available in five versions of single pump (from 8 to 230 l/min at 1200 rpm) and seven versions of double pump (from 55 to 370 l/min at 1200 rpm), with maximum powers of over 300 HP. The BQ series pumps are extremely compact and are supplied with ISO norm mechanical couplings and SAE norm hydraulic fittings. This makes them very easy to install and guarantees their interchangeability with other similar pumps.



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General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the type of cartridge used and the speed of rotation. The pump is available in seven versions with capacities from 8 to 55 l/min (*from 2 to 14 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
	cm ³ /g	in ³ /r	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A01-02	7,2	(0.44)	8,3	(2)	10,4	(2.8)	210	(3050)	600	2700
A01-05	18,0	(1.10)	20,8	(5)	26,1	(6.9)	210	(3050)	600	2700
A01-08	27,4	(1.67)	31,8	(8)	39,4	(10.4)	210	(3050)	600	2700
A01-09	30,1	(1.83)	35,1	(9)	44,1	(11.7)	210	(3050)	600	2700
A01-11	36,4	(2.22)	42,4	(11)	52,6	(13.9)	210	(3050)	600	2700
A01-12	39,5	(2.41)	46,9	(12)	58,7	(15.5)	160	(2300)	600	2700
A01-14	45,9	(2.79)	54,9	(14)	69,6	(18.4)	140	(2030)	600	2700

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

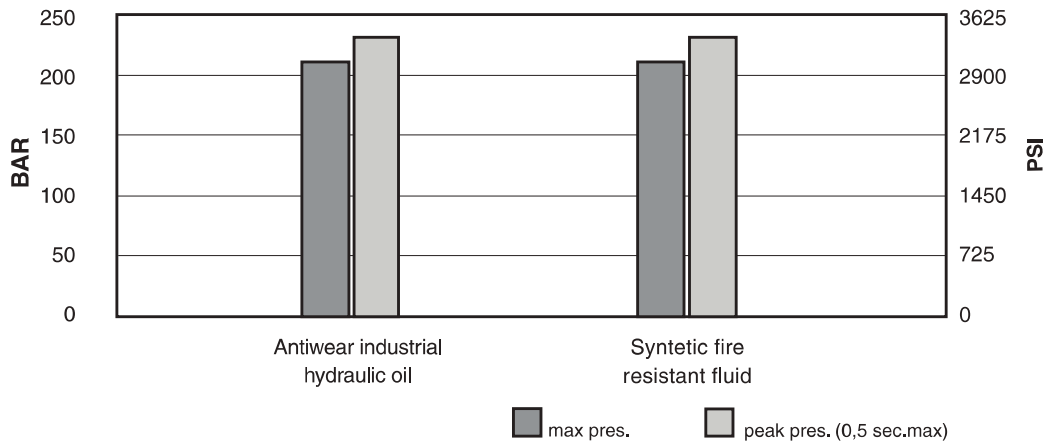
Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

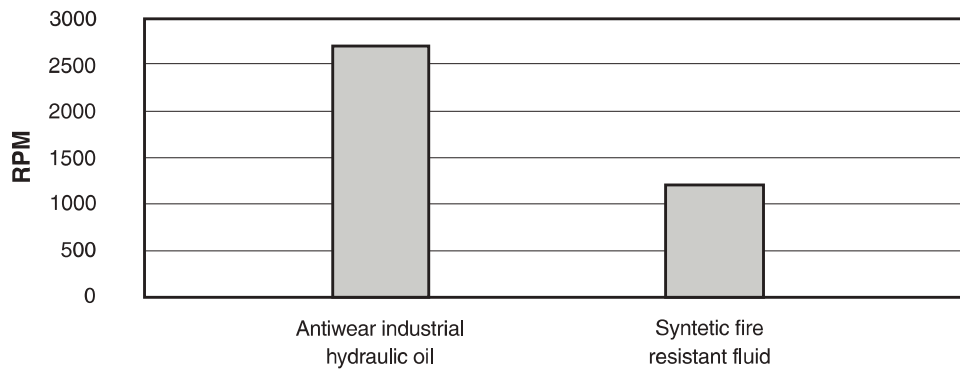
Drive: direct and coaxial by means of a flexible coupling.

Main operating data

max pressure / hydraulic fluid

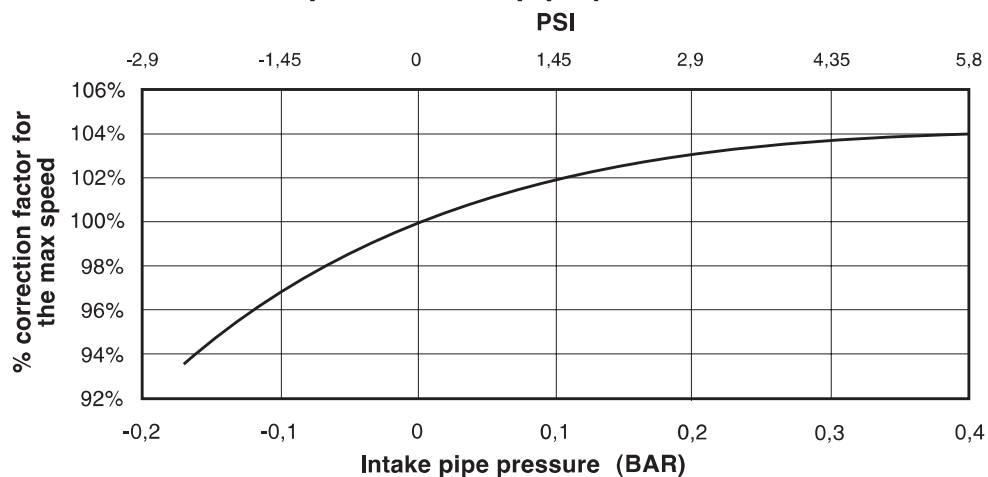


max speed / hydraulic fluid (with 0 bar in the intake pipe)

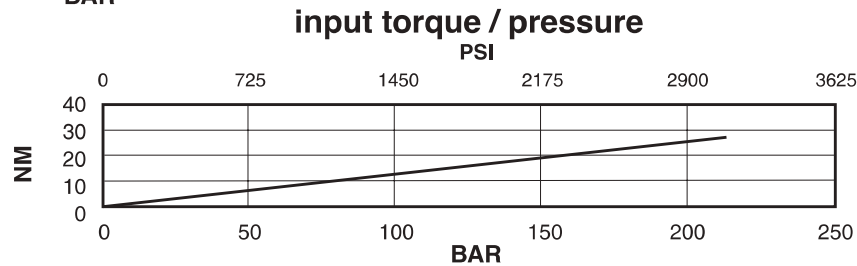
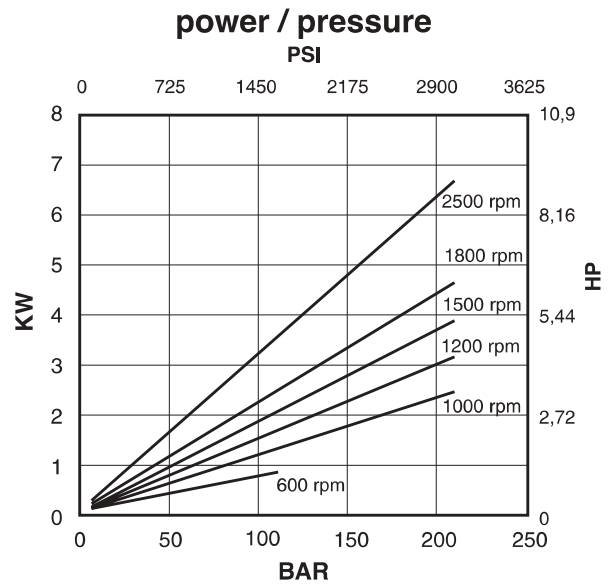
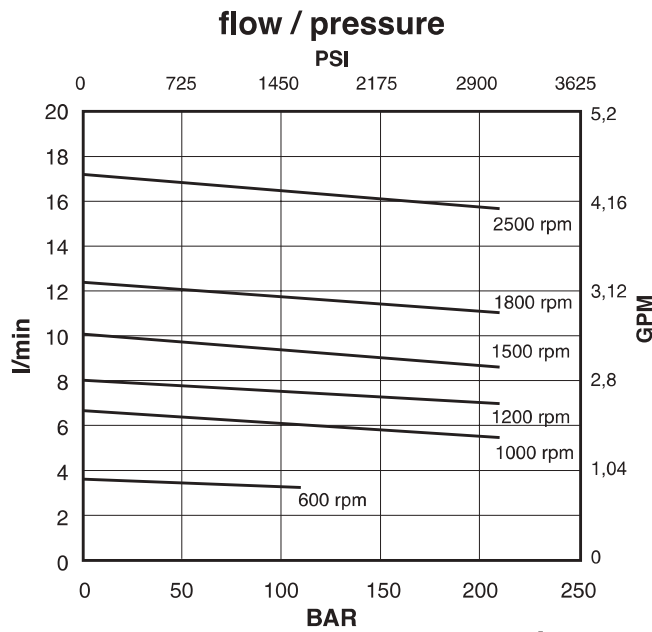


If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

max speed / intake pipe pressure

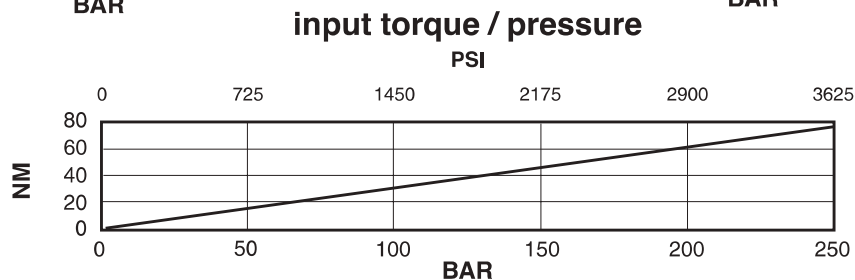
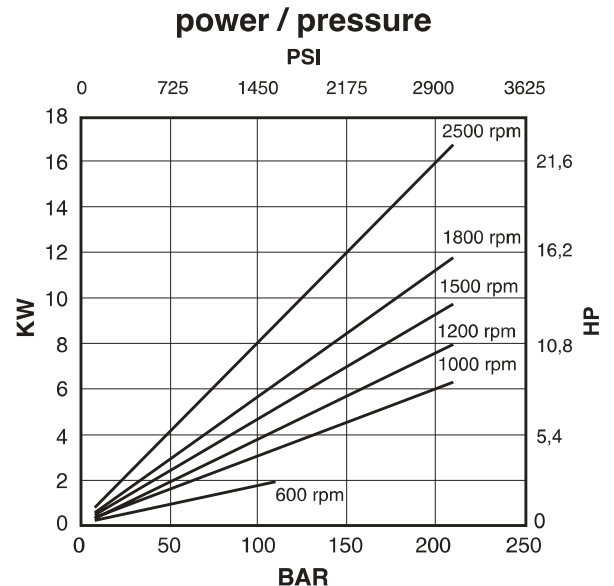
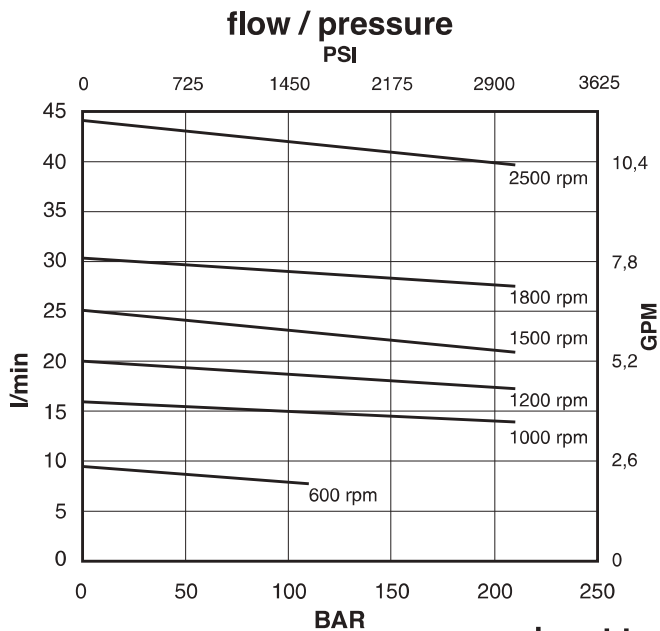


Cartridge A01-02



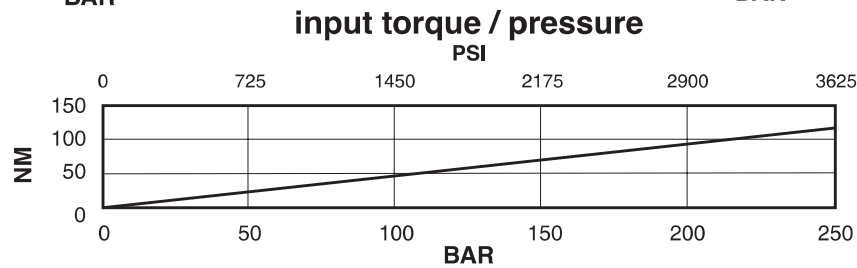
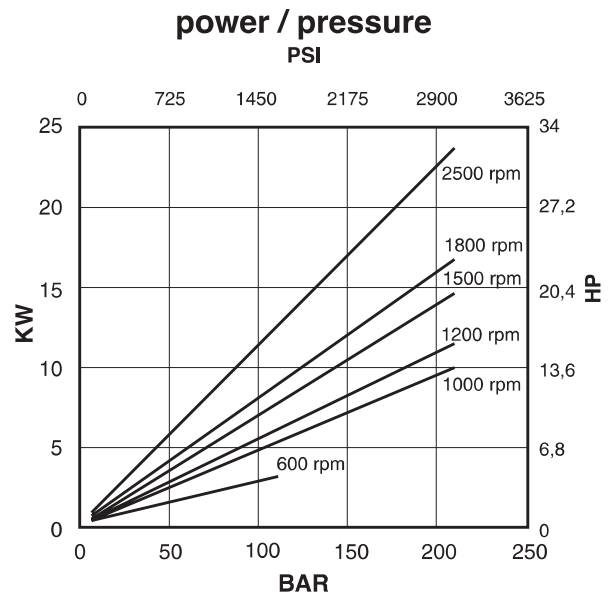
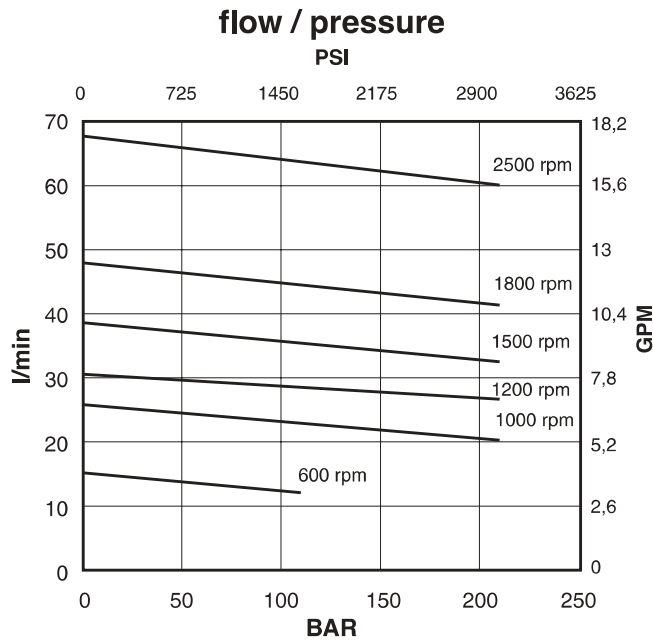
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cartridge A01-05



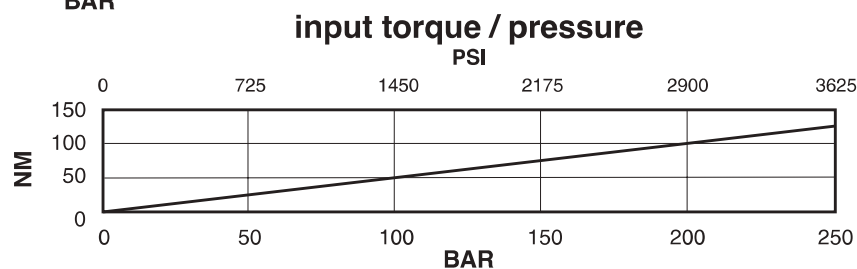
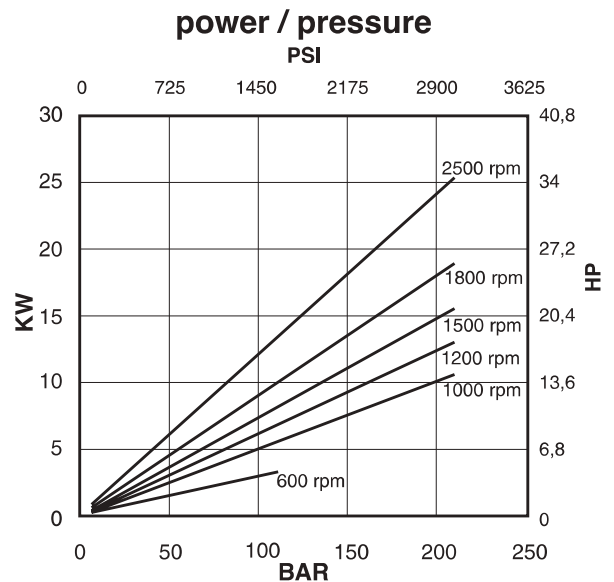
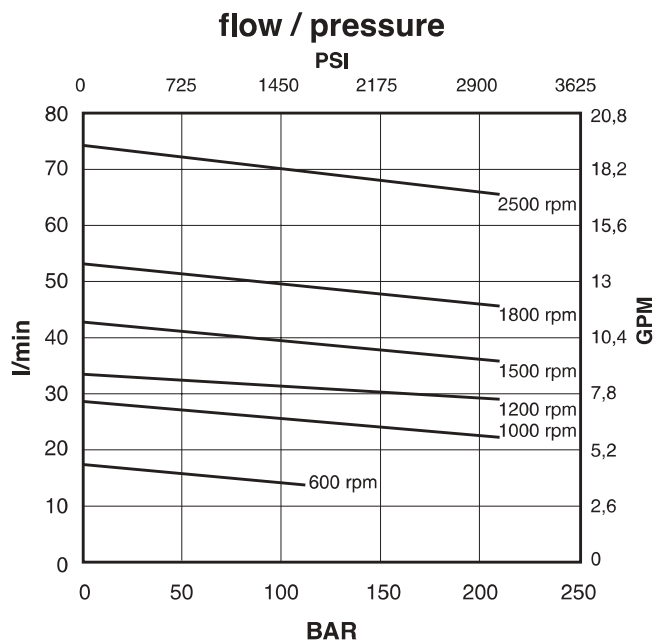
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cartridge A01-08



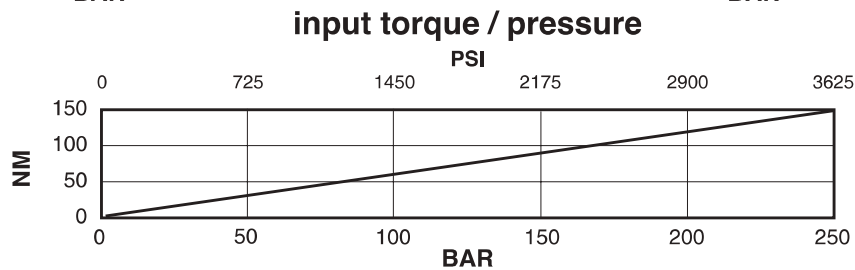
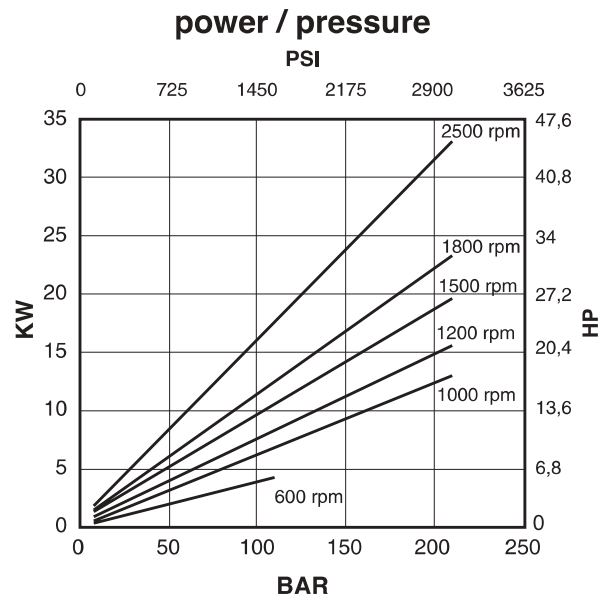
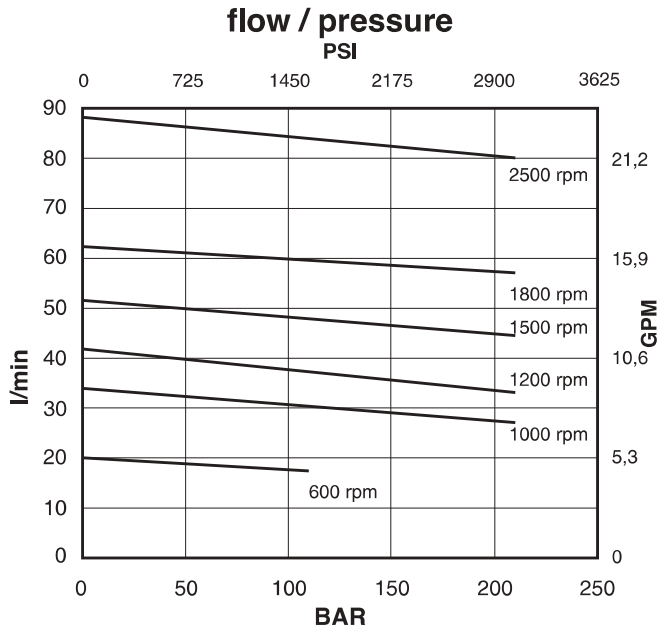
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A01-09



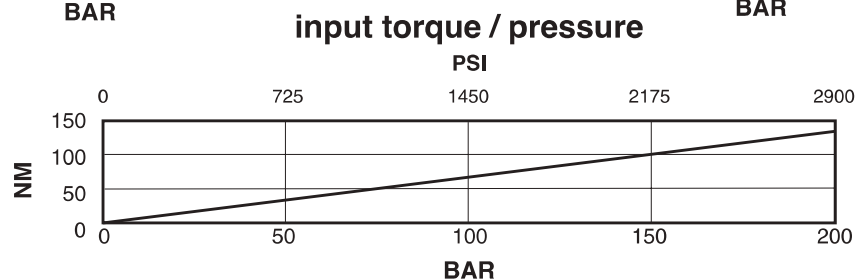
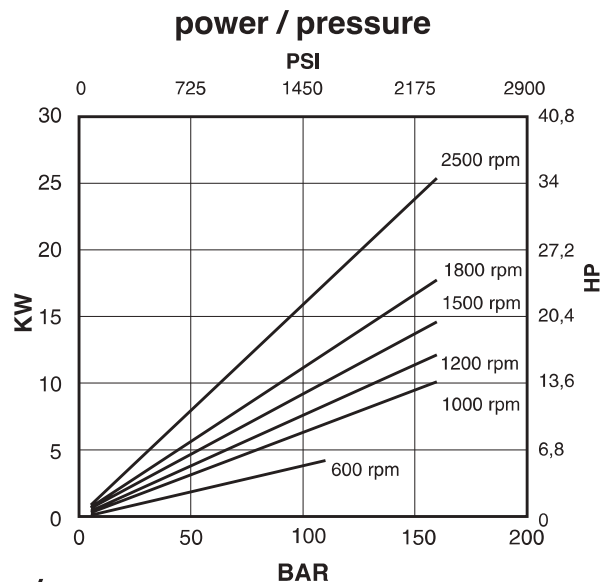
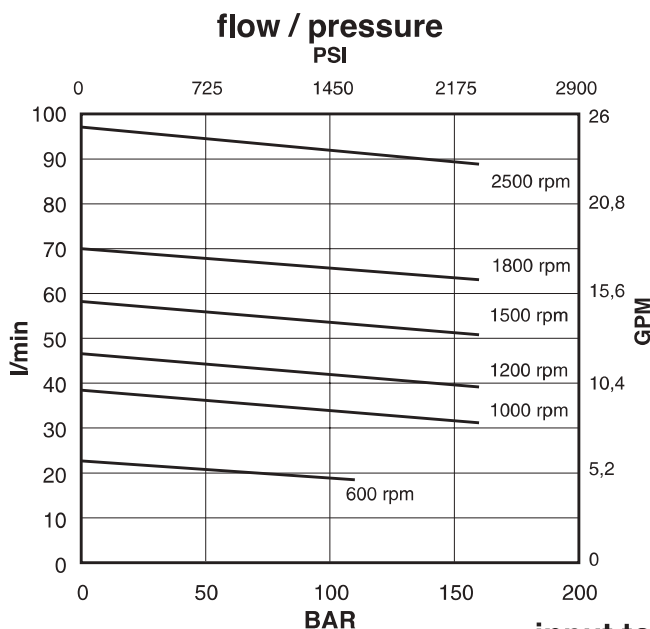
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A01-11



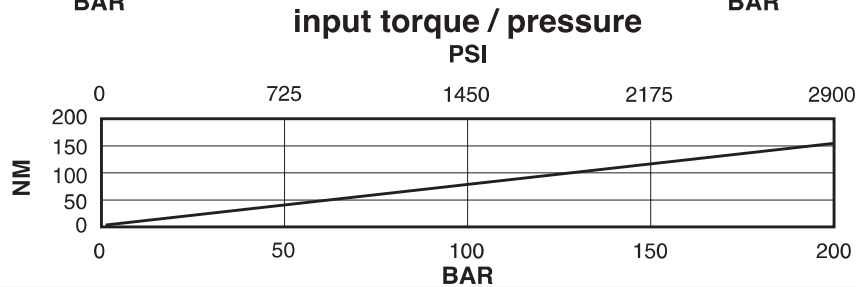
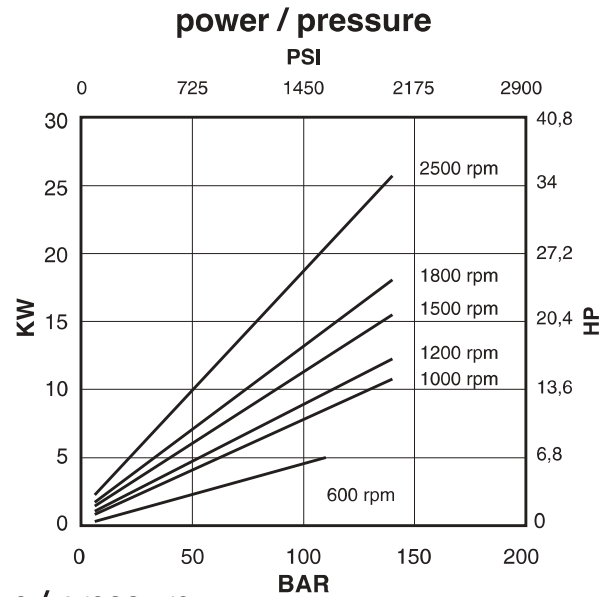
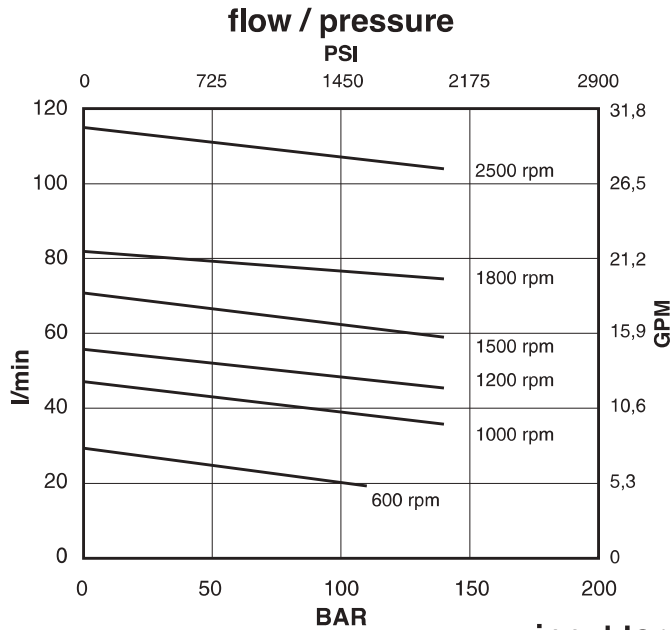
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A01-12



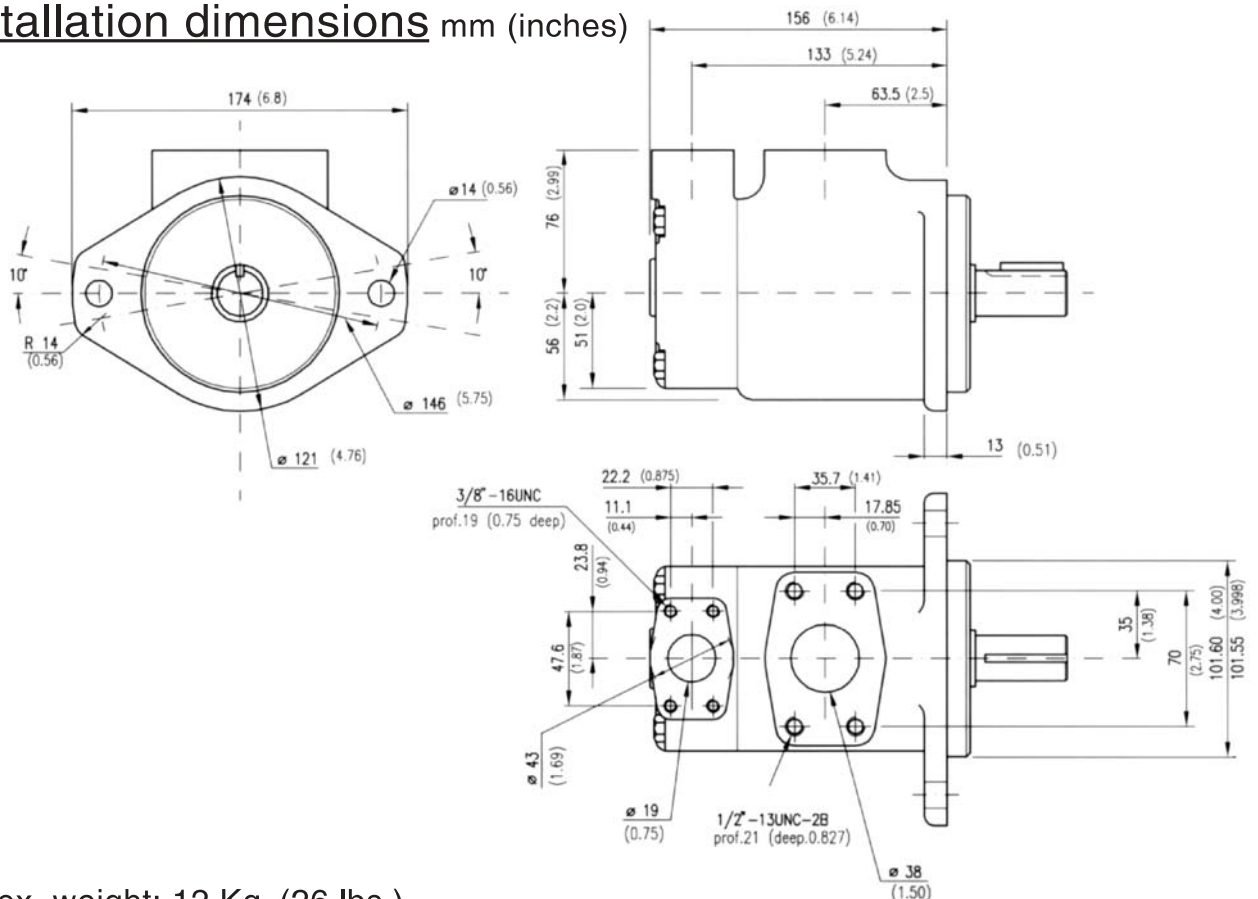
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A01-14



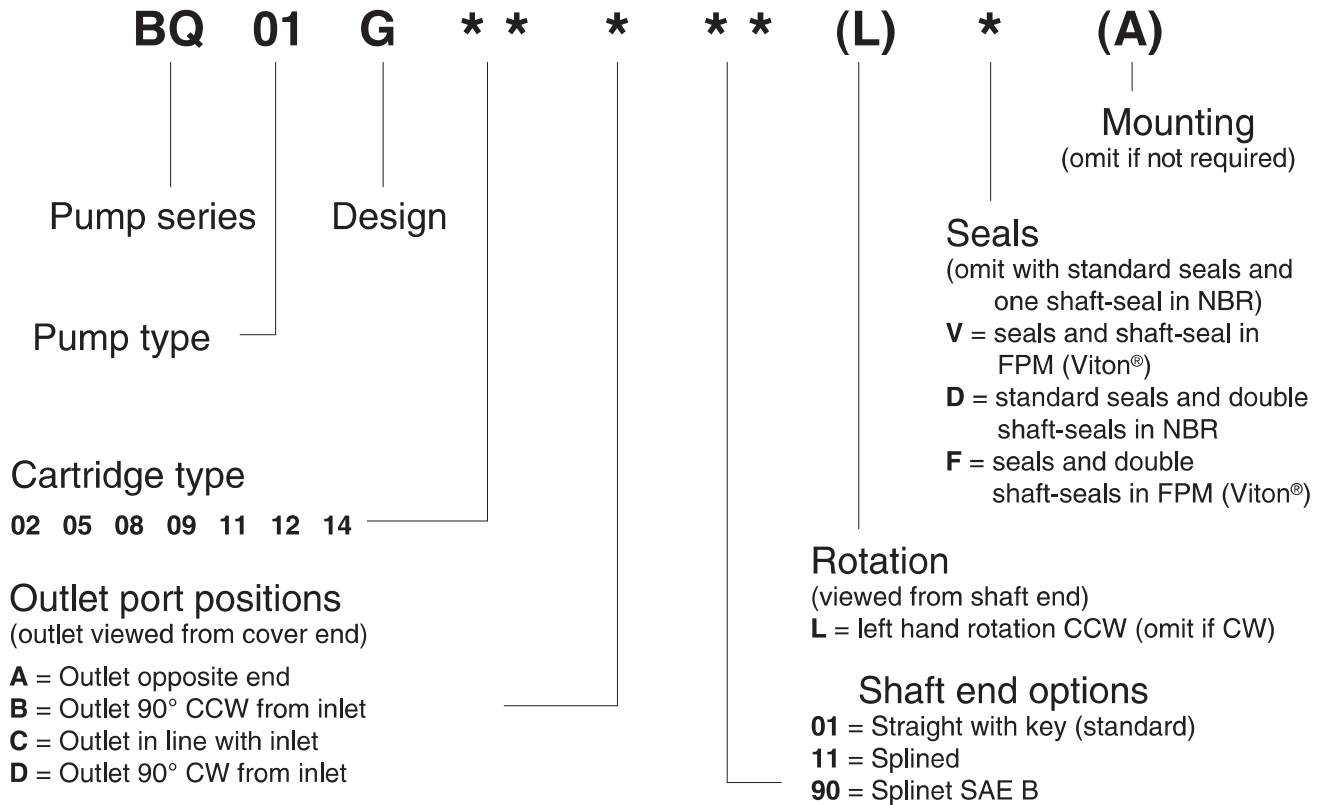
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

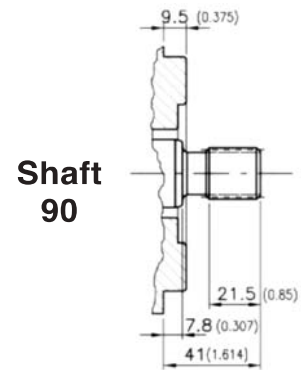
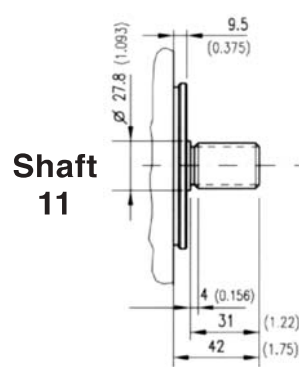
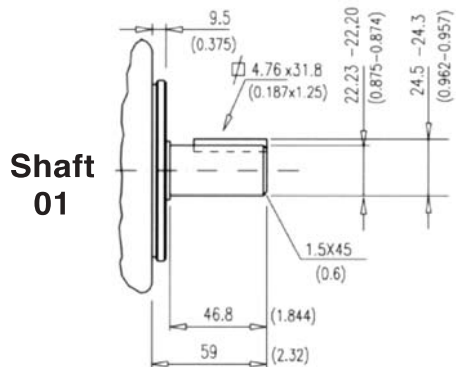


Approx. weight: 12 Kg. (26 lbs.)

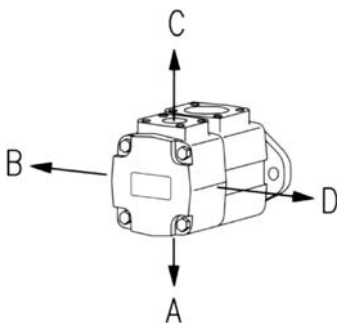
Model code breakdown



Shaft options mm (inches)



PORT ORIENTATIONS



Spline data (Shaft 11 and shaft 90)

	Involute side fit (ASA B5.15)	
Spline	30°	
Pressure angle	13	
No. of teeth	16/32	
Pitch	22.00 - 21.90 (0.866 - 0.862)	
Major dia.	20.638 (0.8125)	
Pitch dia.	18.63 - 18.35 (0.733 - 0.722)	
Minor dia.	11.67 - 11.70 (0.459 - 0.461)	
Wildhaber		

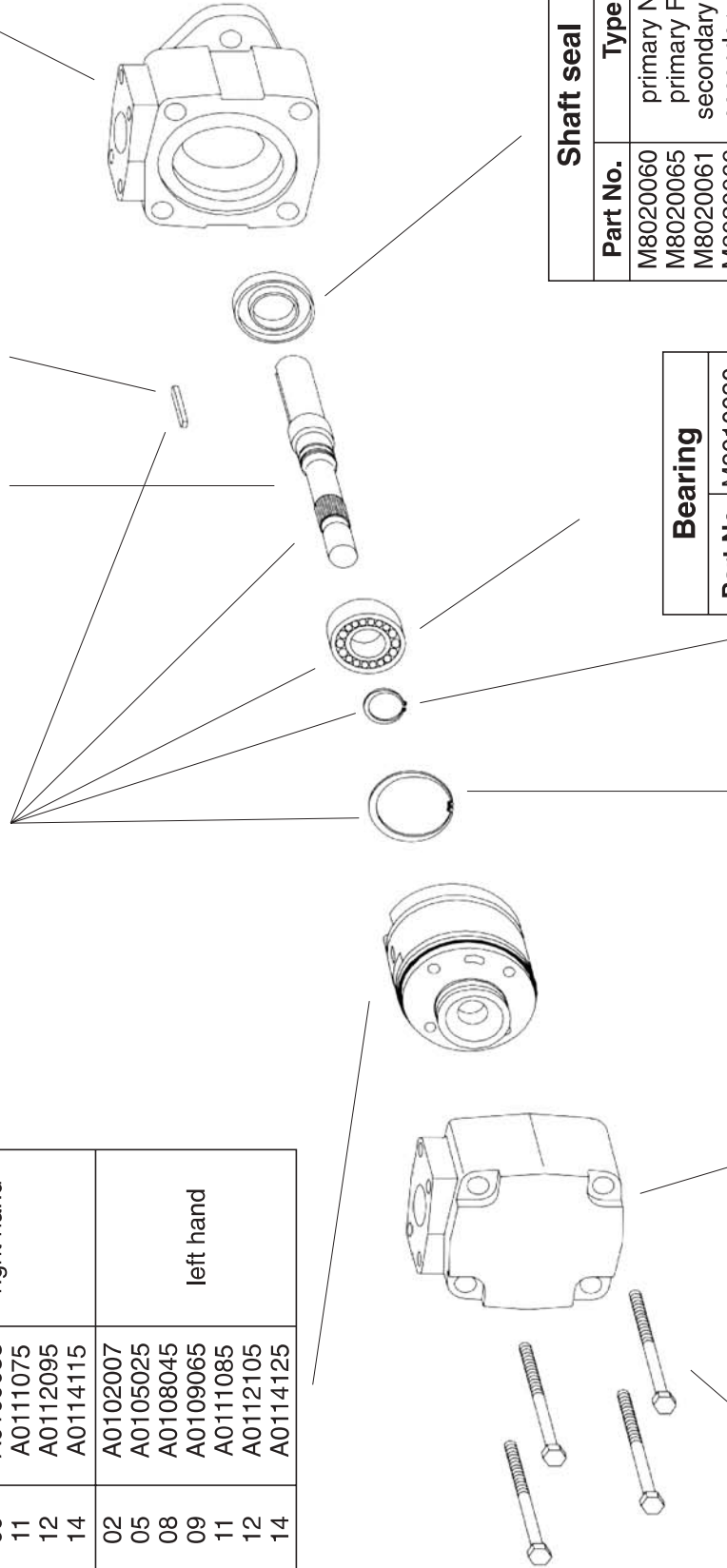
Id. codes of pump components

Cartridge		
Series	Model	Part No.
A01	02	A0102002
	05	A0105015
	08	A0108035
	09	A0109055
	11	A0111075
A01	12	A0112095
	14	A0114115
	02	A0102007
	05	A0105025
	08	A0108045
A01	09	A0109065
	11	A0111085
	12	A0112105
	14	A0114125

Shaft kit	
Model	Part No.
01	M8010601
11	M8010611
90	M8010690

Shaft	
Model	Part No.
01	K0101000
11	K0111000
90	K0190000

Body	
Part No.	M8010010



Shaft seal	
Part No.	Type
M8020060	primary NBR
M8020065	primary FPM
M8020061	secondary NBR
M8020066	secondary FPM

Bearing	
Part No.	M8010030

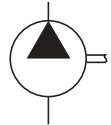
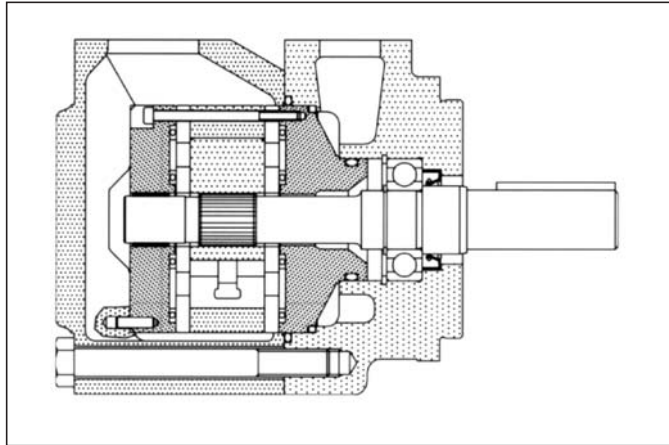
Seeger	
Part No.	M8010050

Seeger	
Part No.	M8010040

Cover	
Part No.	M8020120

Screw	
Part No.	M8020420
Torque to 70 Nm (625 lb. in.)	

Pump seal kit		
Part No.	Parts	Type
M8010131	seals + 1 shaft seal	NBR
M8010132	seals + 2 shaft seals	NBR
M8010133	seals + 1 shaft seal	FPM (Viton®)
M8010134	seals + 2 shaft seals	FPM (Viton®)



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the type of cartridge used and the speed of rotation. The pump is available in five versions with capacities from 47 to 79 l/min (*from 12 to 21 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A02-12	40,1	(2.45)	46,9	(12)	58,8	(15.5)	210	(3050)	600	2700
A02-14	45,4	(2.77)	52,7	(14)	65,7	(17.4)	210	(3050)	600	2700
A02-17	55,2	(3.37)	64,2	(17)	80,2	(21.2)	210	(3050)	600	2500
A02-19	60,0	(3.66)	71,0	(19)	88,7	(23.4)	210	(3050)	600	2500
A02-21	67,5	(4.12)	79,0	(21)	99,8	(26.4)	210	(3050)	600	2500

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

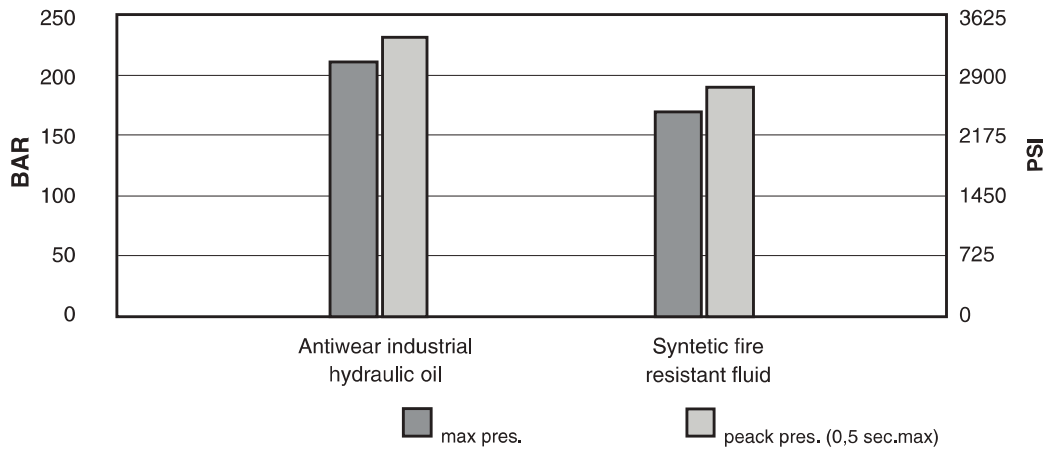
Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

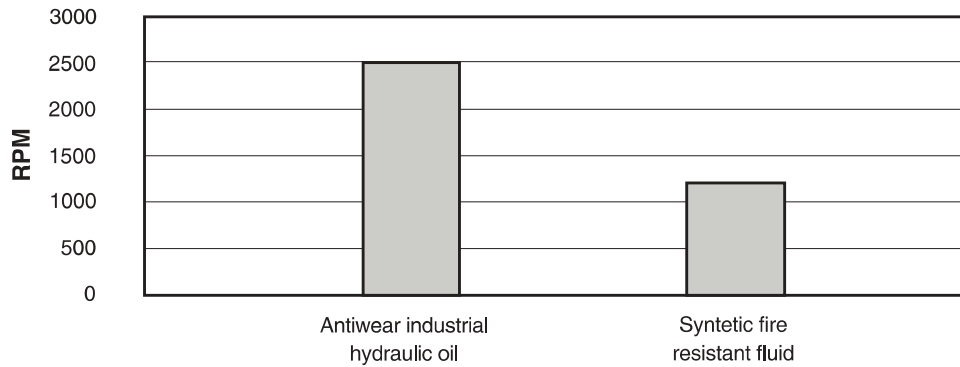
Drive: direct and coaxial by means of a flexible coupling.

Main operating data

max pressure / hydraulic fluid

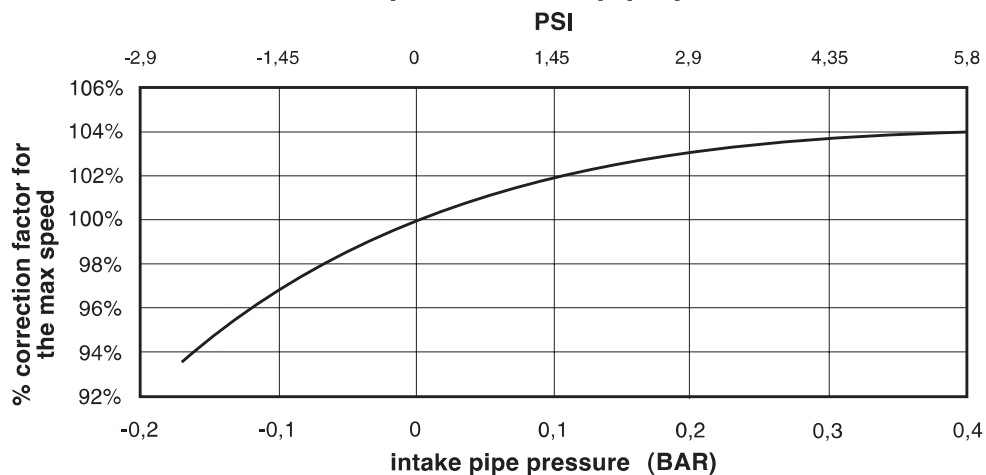


max speed / hydraulic fluid (with 0 bar in the intake pipe)

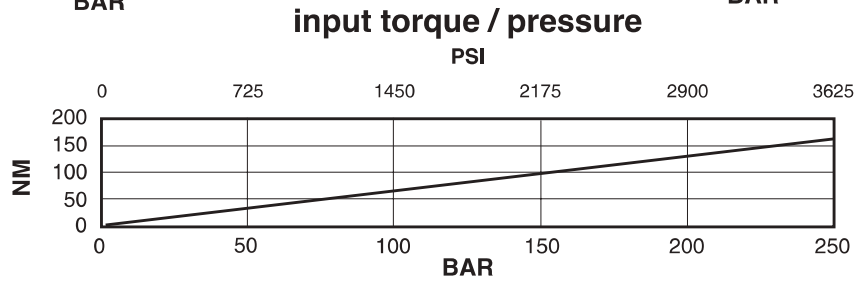
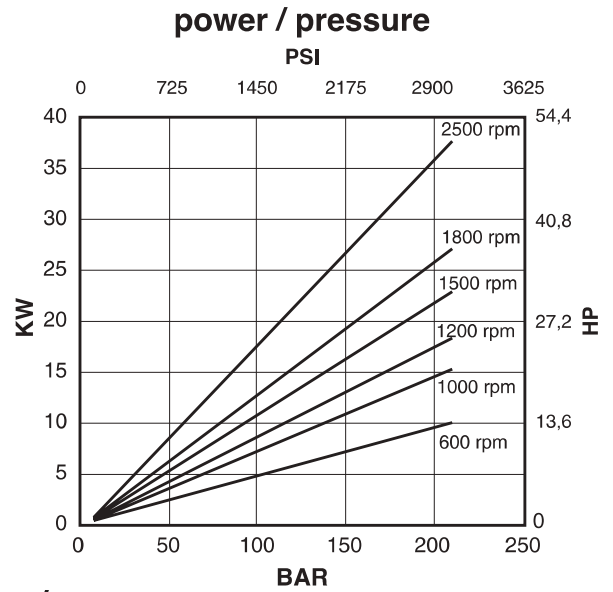
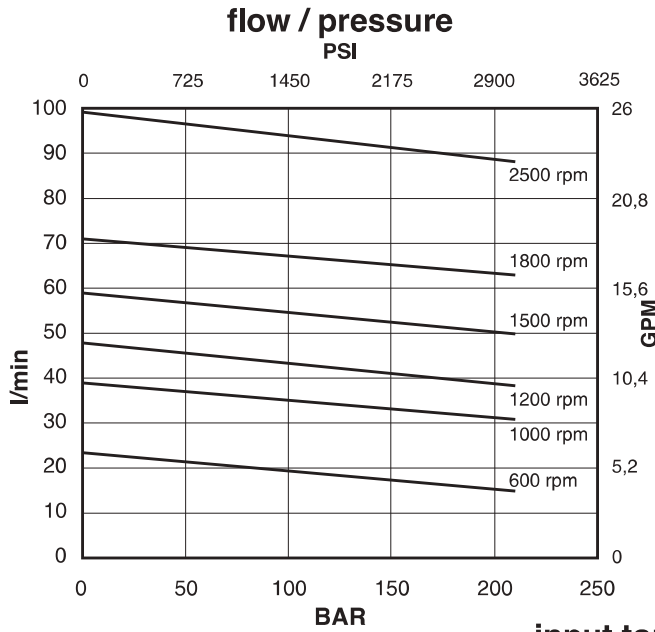


If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

max speed / intake pipe pressure

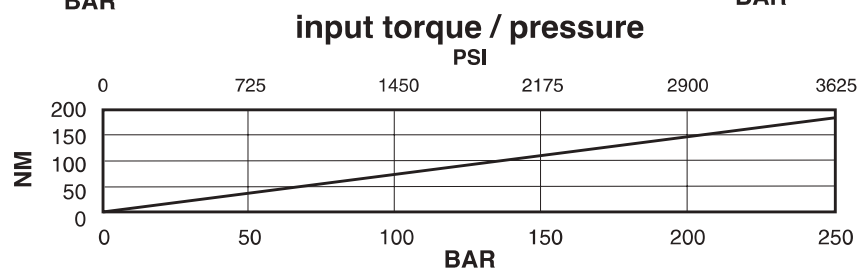
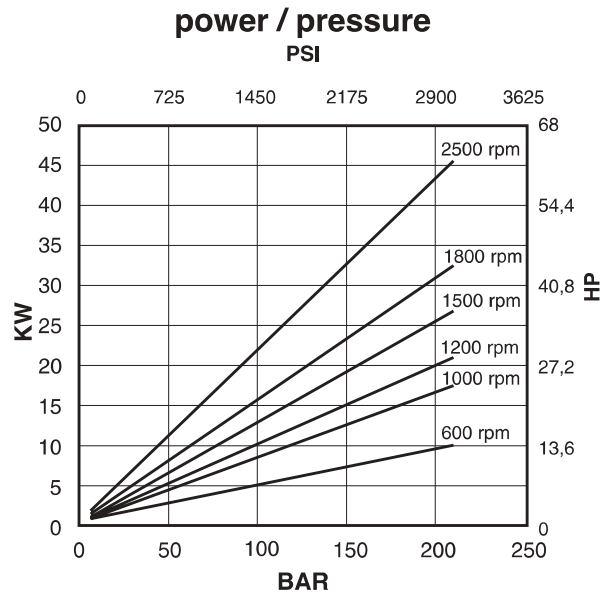
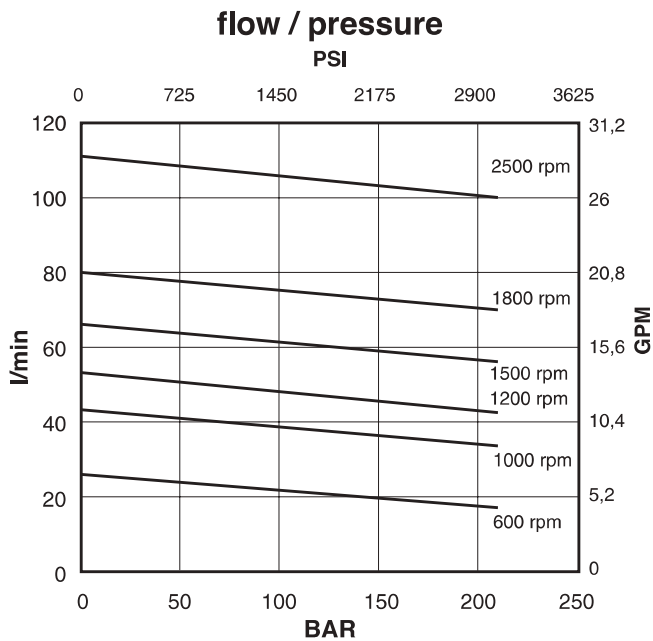


Cartridge A02-12



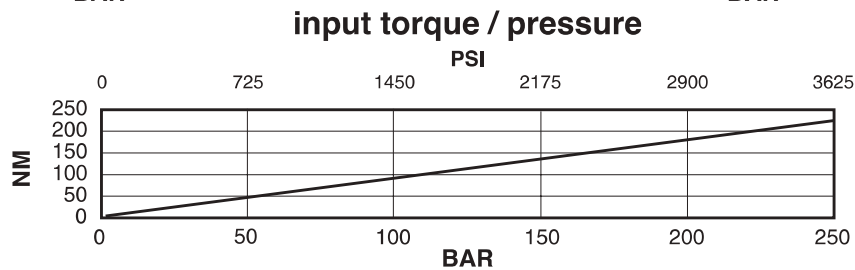
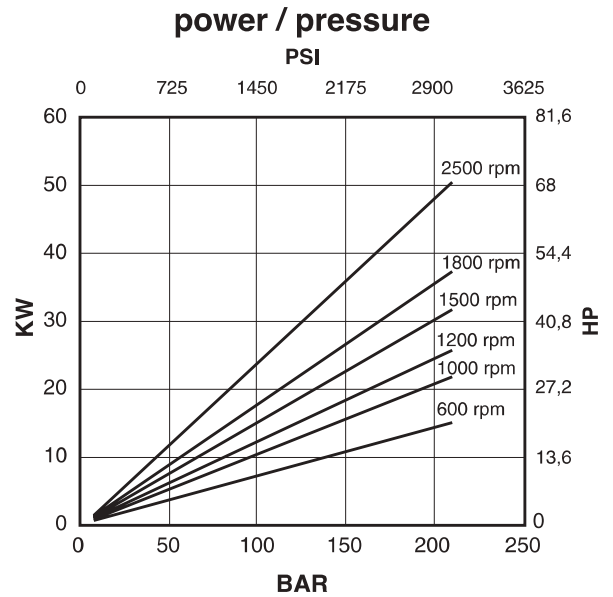
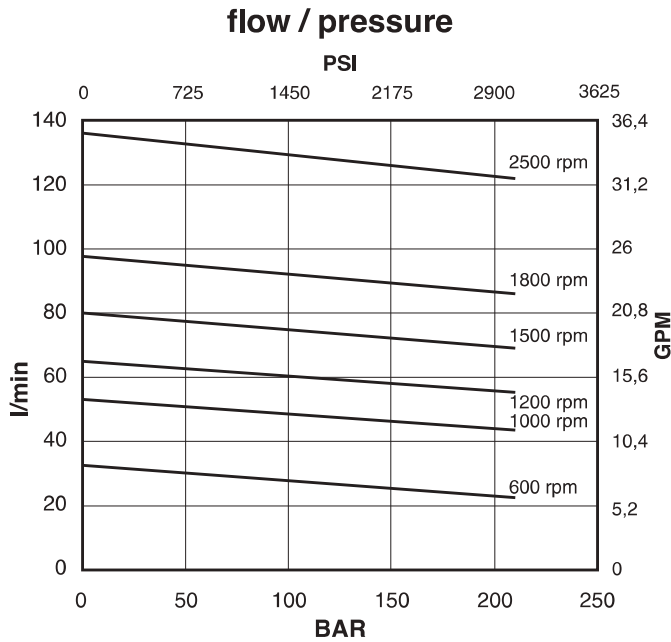
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A02-14



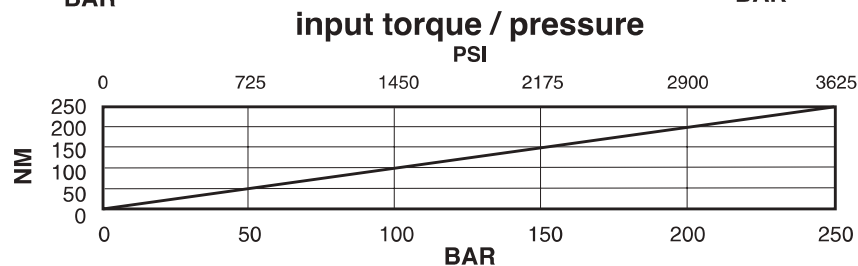
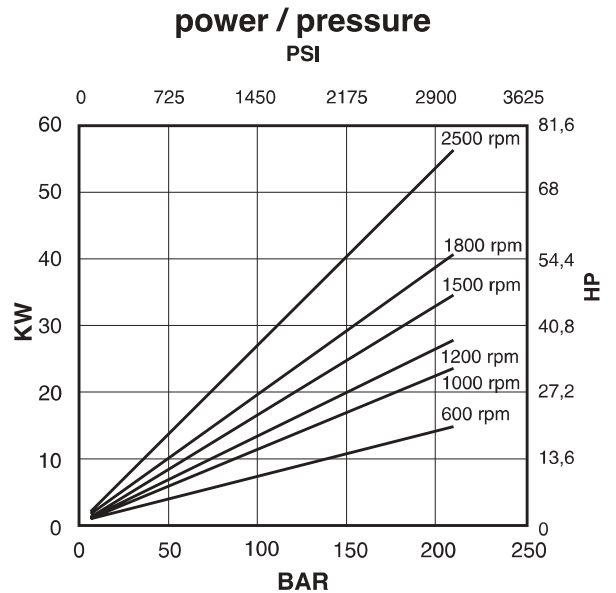
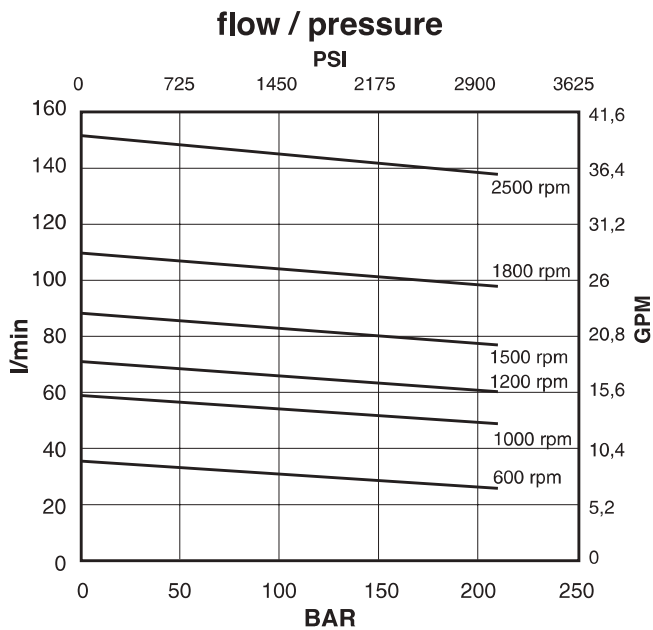
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A02-17



Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

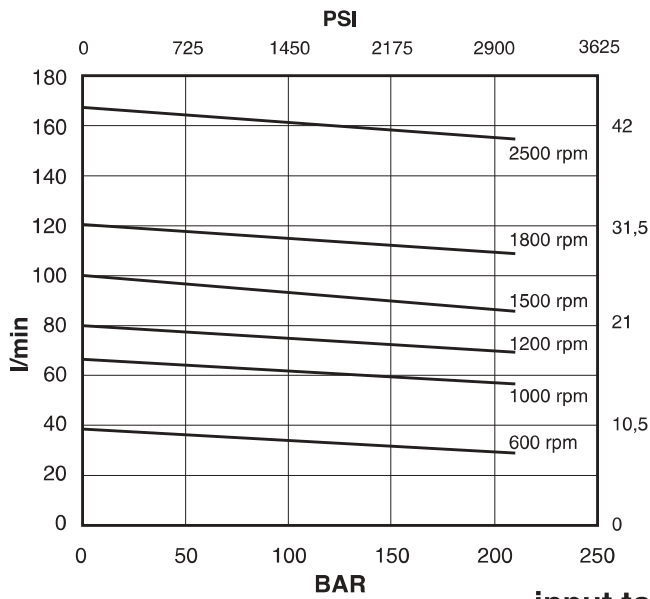
Cartridge A02-19



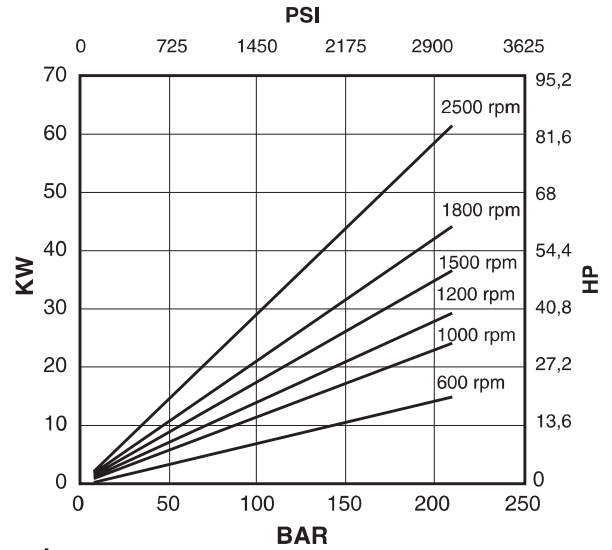
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cartridge A02-21

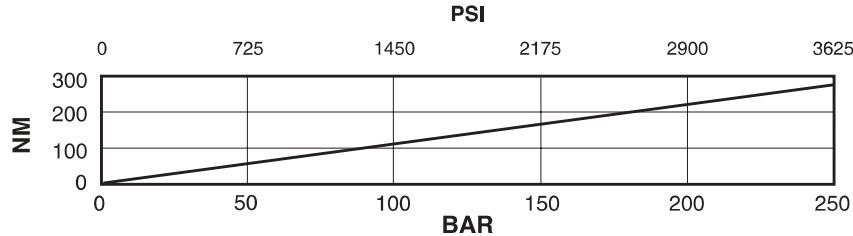
flow / pressure



power / pressure

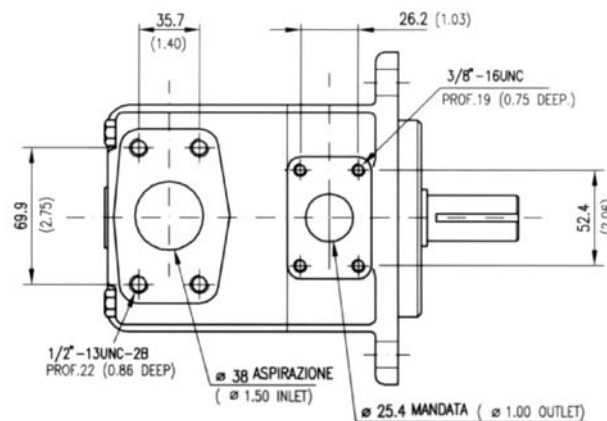
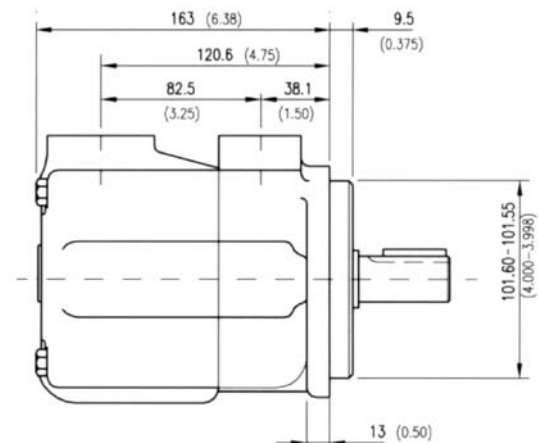
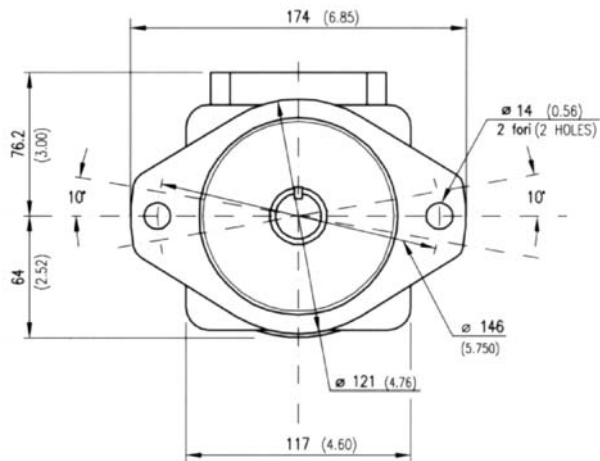


input torque / pressure



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

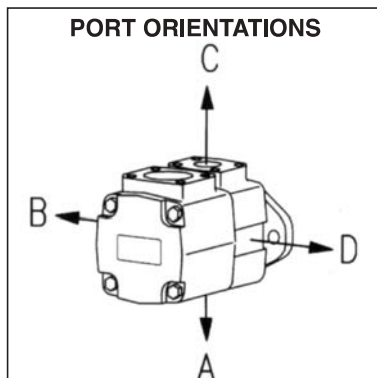
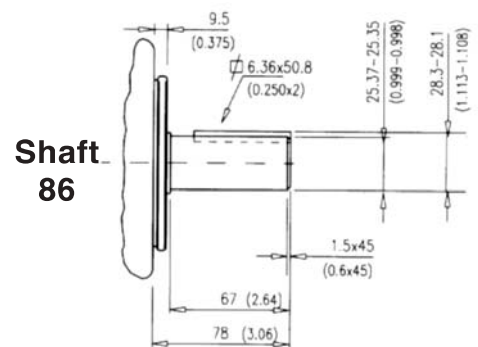
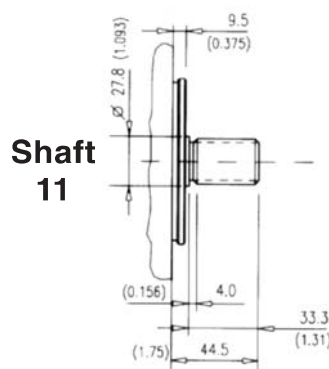
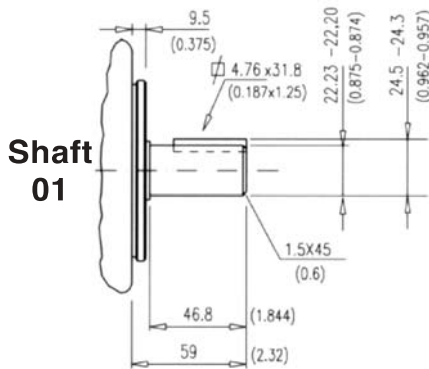


Approx. weight: 15 Kg. (33 lbs.)

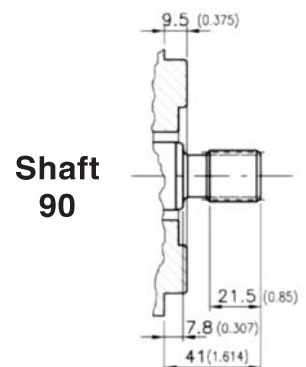
Model code breakdown

BQ	02	G	*	*	*	*	*	(L)	*	(A)
Pump series	Pump type	Design							Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)	Mounting (omit if not required)
Cartridge type 12 14 17 19 21								Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)		
Outlet port positions (outlet viewed from cover end) A = Outlet opposite end B = Outlet 90° CCW from inlet C = Outlet in line with inlet D = Outlet 90° CW from inlet								Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE B		

Shaft options mm (inches)



Spline data (Shaft 11 and shaft 90)		
Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	13	
Pitch	16/32	
Major dia.	22.00 - 21.90	(0.866 - 0.862)
Pitch dia.	20.638	(0.8125)
Minor dia.	18.63 - 18.35	(0.733 - 0.722)
Wildhaber	11.67 - 11.70	(0.459 - 0.461)



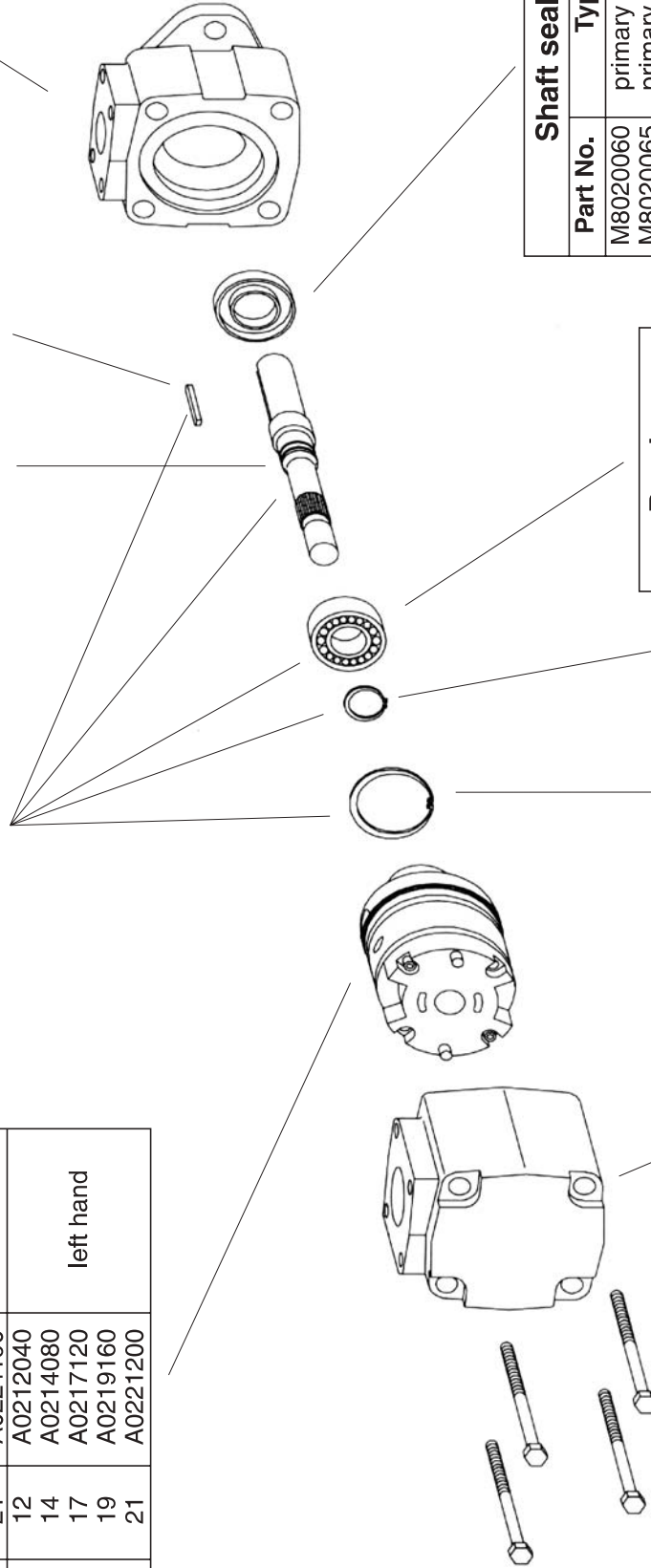
Id. codes of pump components

Cartridge		
Series	Model	Part No.
A02	12	A0212030
	14	A0214070
	17	A0217110
	19	A0219150
	21	A0221190
A02	12	A0212040
	14	A0214080
	17	A0217120
	19	A0219160
	21	A0221200
		Pump rotat.
		right hand
		left hand

Shaft kit	
Model	Part No.
01	M8020601
11	M8020611
86	M8020686
90	M8020690

Shaft		Key
Model	Part No.	Part No.
01	K0201000	M8010100
11	K0211000	-
86	K0286000	M8028600
90	K0290000	-

Body	
Part No.	M8020010



Shaft seal	
Part No.	Type
M8020060	primary in NBR
M8020065	primary in FPM
M8020061	secondary in NBR
M8020066	secondary in FPM

Bearing	
Part No.	M8020030

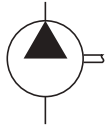
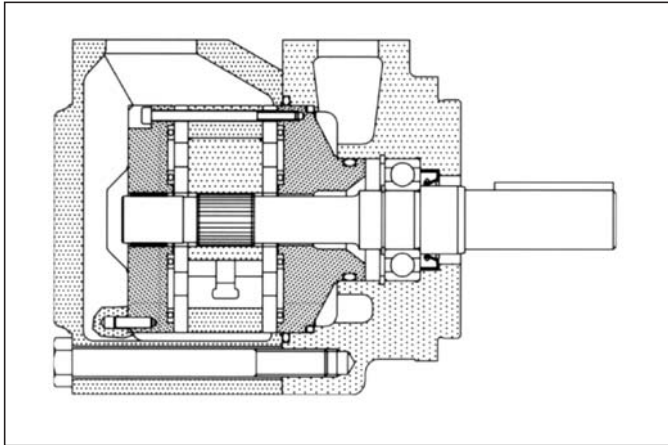
Seeger	
Part No.	M8020050

Seeger	
Part No.	M8020040

Cover	
Part No.	M8020020

Screw	
Part No.	M8020070
Torque to 102 Nm (910 lb. in.)	

Pump seal kit		
Part No.	Parts	Type
M8020131	seals + 1 shaft seal	NBR
M8020132	seals + 2 shaft seals	NBR
M8020133	seals + 1 shaft seal	FPM (Viton®)
M8020134	seals + 2 shaft seals	FPM (Viton®)



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available from in two versions with rated capacities 90 to 106 l/min (*from 24 to 28 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated Capacity		Rated capacity		Maximum pressure		Speed range	
			at 1200 rpm 7 bar		at 1500 rpm 7 bar		with mineral oil		rpm	
	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A03-24	78,3	(4.78)	90	(24)	115,3	(30.5)	210	(3050)	600	2500
A03-28	91,2	(5.56)	106	(28)	131,8	(34.8)	210	(3050)	600	2500

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

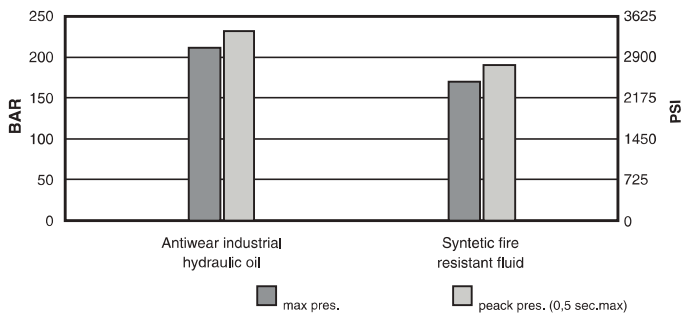
Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

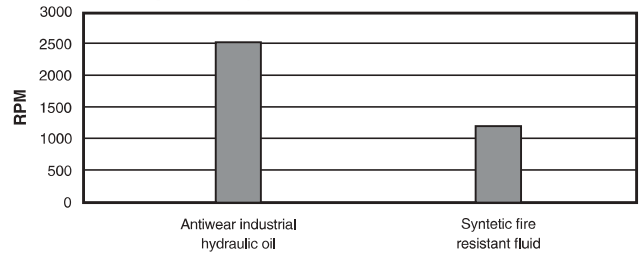
Drive: direct and coaxial by means of a flexible coupling.

Main operating data

max pressure / hydraulic fluid

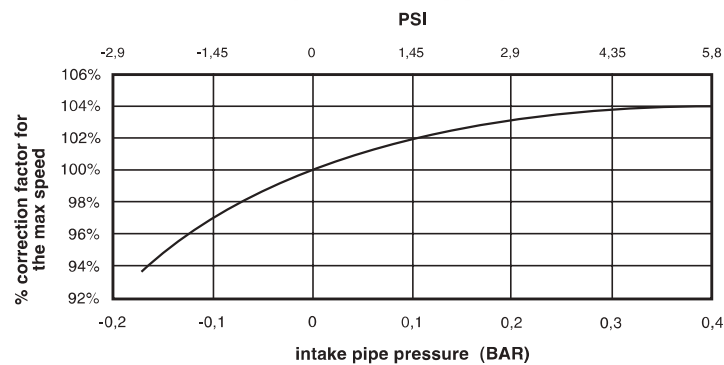


max speed / hydraulic fluid (with 0 bar in the intake pipe)



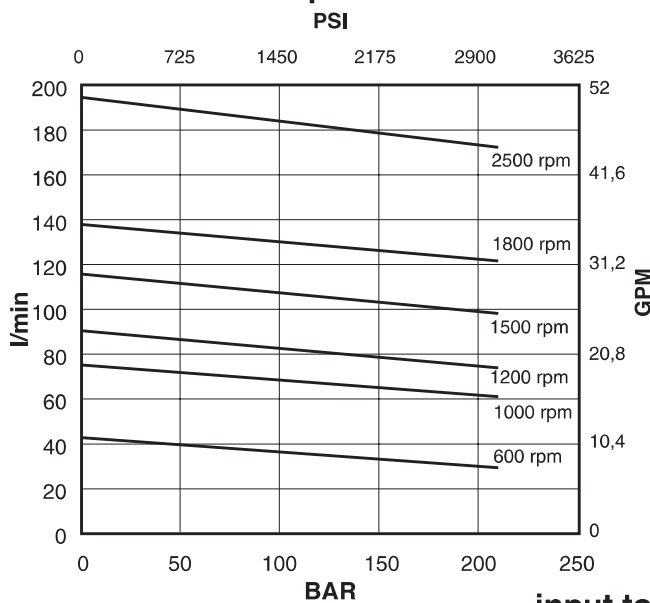
If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

max speed / intake pipe pressure

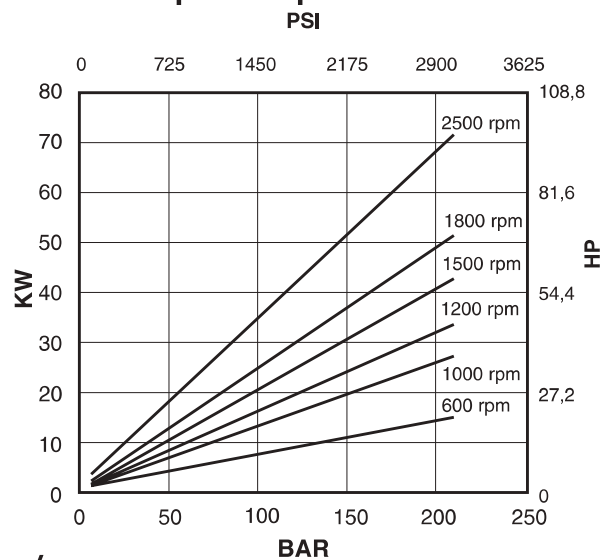


Cartridge A03-24

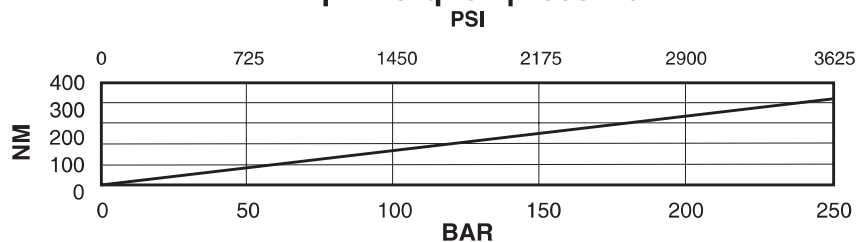
flow / pressure



power / pressure



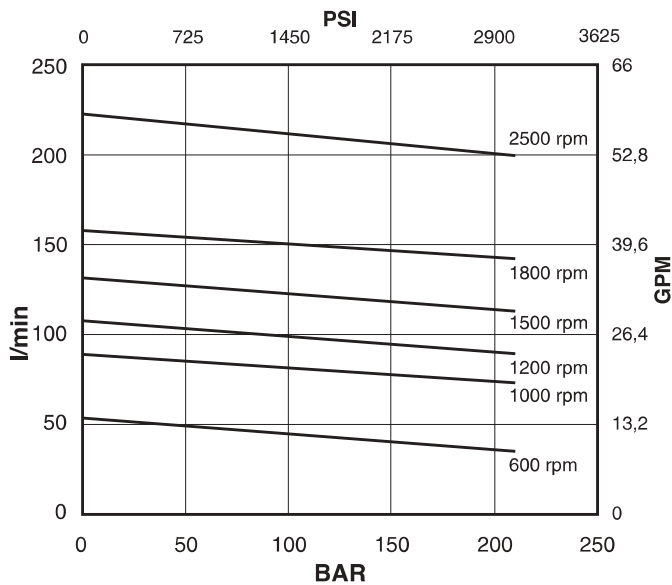
input torque / pressure



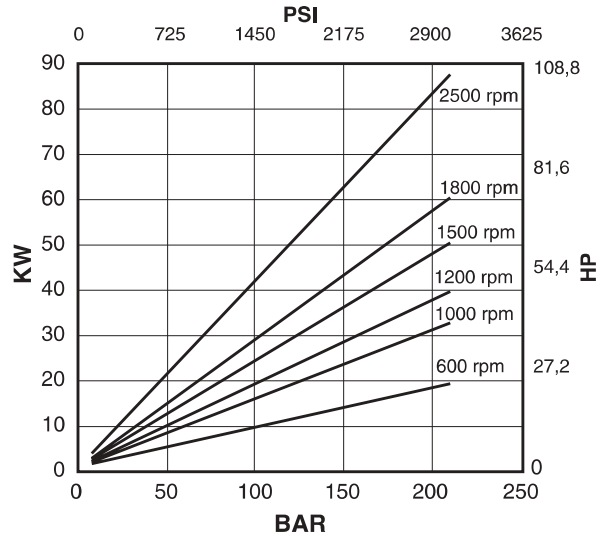
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A03-28

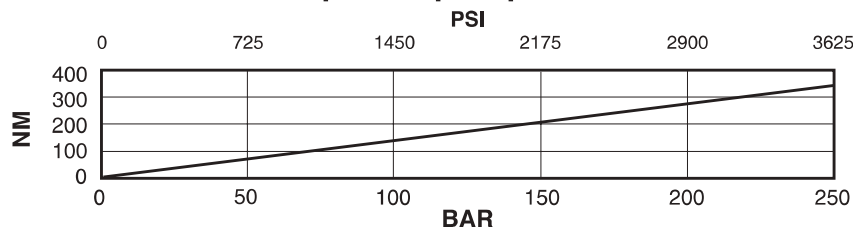
flow / pressure



power / pressure

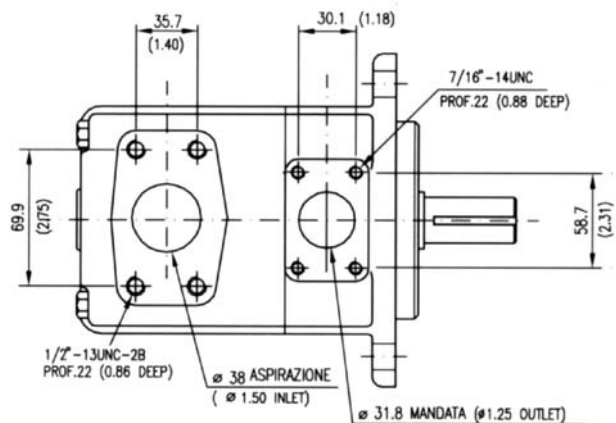
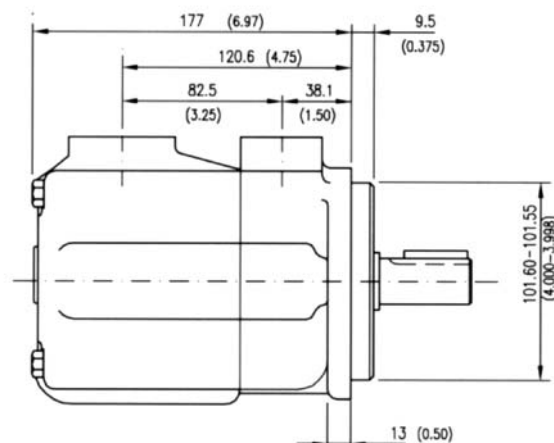
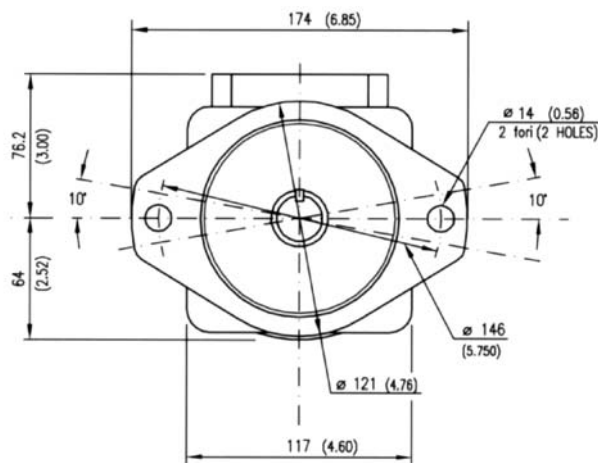


input torque / pressure



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

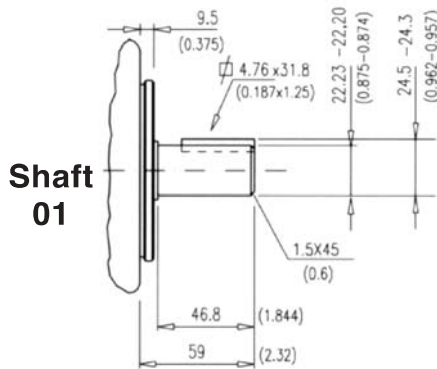


Approx. weight: 17 Kg. (37 lbs.)

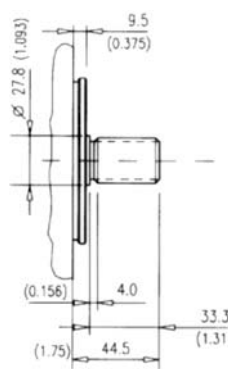
Model code breakdown

BQ		03	G	*	*	*	*	*	(V)	(A)
Pump series		Design							Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)	Mounting (omit if not required)
Pump type										
Cartridge types 24 28										
Outlet port positions (outlet viewed from cover end) A = Outlet opposite end B = Outlet 90° CCW from inlet C = Outlet in line with inlet D = Outlet 90° CW from inlet										
									Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)	
									Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE B	

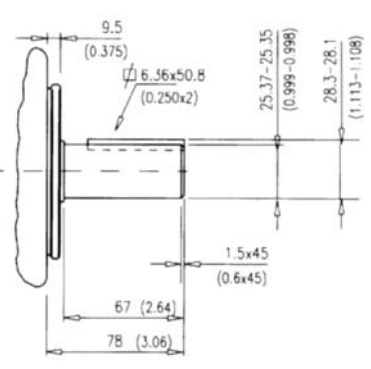
Shaft options mm (inches)



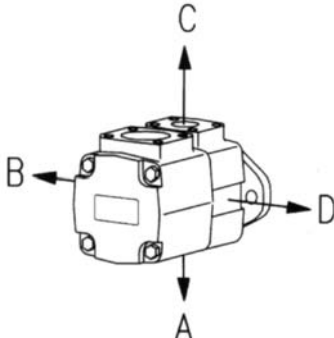
Shaft 11



Shaft 86



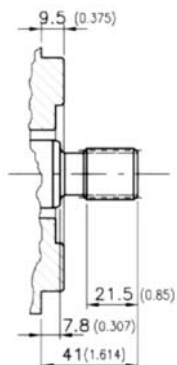
PORT ORIENTATIONS



Spline data (Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	13	
Pitch	16/32	
Major dia.	22.00 - 21.90	(0.866 - 0.862)
Pitch dia.	20.638	(0.8125)
Minor dia.	18.63 - 18.35	(0.733 - 0.722)
Wildhaber	11.67 - 11.70	(0.459 - 0.461)

Shaft 90



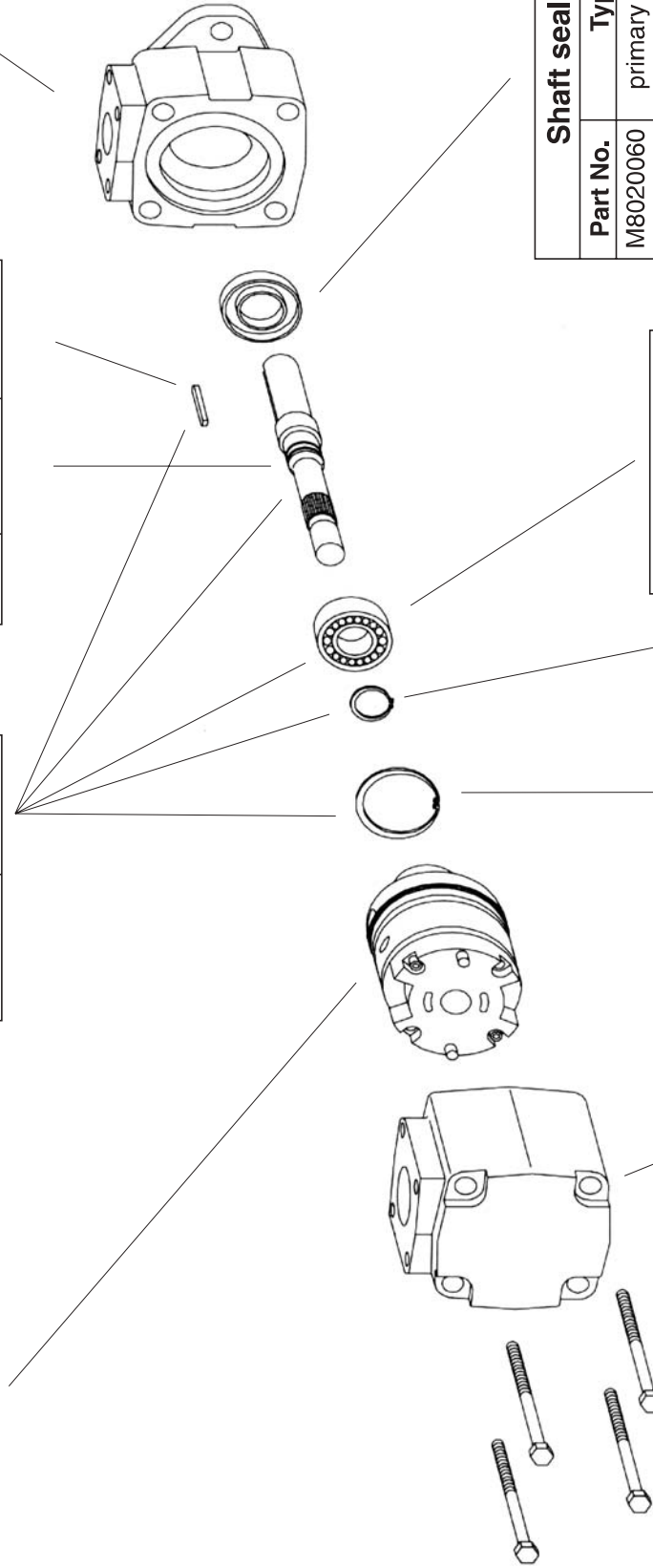
Id. codes of pump components

Cartridge		
Series	Model	Part No.
A03	24	A0324030
	28	A0328070
A03	24	A0324040
	28	A0328080
		Pump rotat.
		right hand
		left hand

Shaft kit	
Model	Part No.
01	M8030601
11	M8030611
86	M8030686
90	M8030690

Shaft		Key
Model	Part No.	Part No.
01	K0301000	M8010100
11	K0311000	-
86	K0386000	M8028600
90	K0390000	-

Body	
Part No.	M8030010



Shaft seal	
Part No.	Type
M8020060	primary in NBR
M8020065	primary in FPM
M8020061	secondary in NBR
M8020066	secondary in FPM

Bearing	
Part No.	M8020030

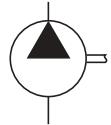
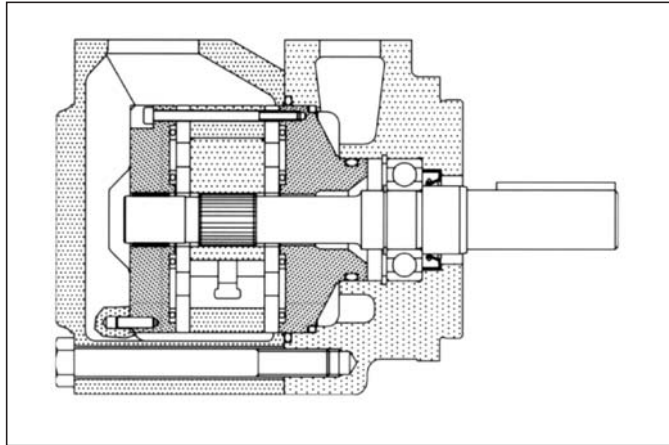
Seeger	
Part No.	M8020050

Seeger	
Part No.	M8020040

Cover	
Part No.	M8030020

Screw	
Part No.	M8020090
Torque to 102 Nm (910 lb. in.)	

Pump seal kit		
Part No.	Parts	Type
M8020131	seals + 1 shaft seal	NBR
M8020132	seals + 2 shaft seals	NBR
M8020133	seals + 1 shaft seal	FPM (Viton®)
M8020134	seals + 2 shaft seals	FPM (Viton®)



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the type of cartridge used and the speed of rotation. The pump is available in five versions with capacities from 80 to 140 l/min (*from 21 to 38 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A04-21	69,0	(4.2)	79,5	(21)	101,4	(26.8)	210	(3050)	600	2500
A04-25	81,6	(5)	94,0	(25)	120,1	(31.7)	210	(3050)	600	2500
A04-30	97,7	(6)	113,8	(30)	141,2	(37.3)	210	(3050)	600	2500
A04-35	112,7	(6.9)	131,6	(35)	167,2	(44.1)	210	(3050)	600	2400
A04-38	121,6	(7.4)	139,9	(38)	177,3	(46.8)	210	(3050)	600	2400

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

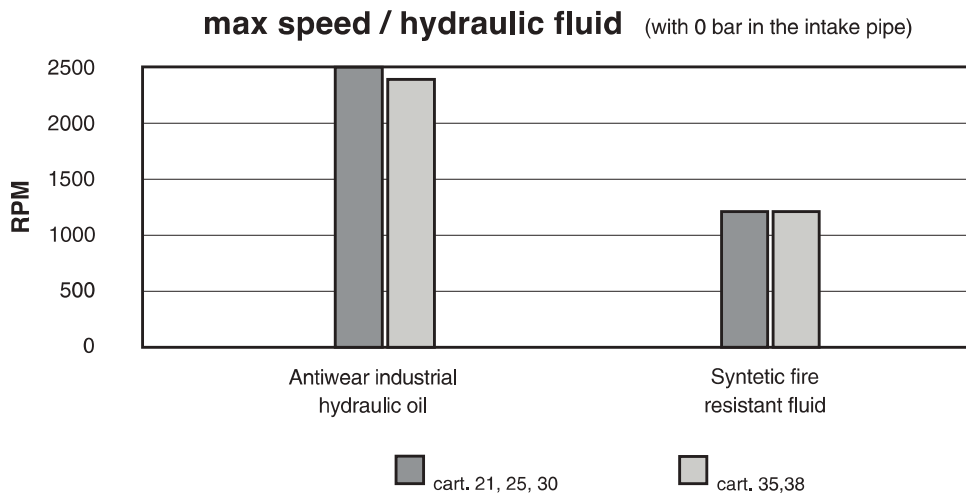
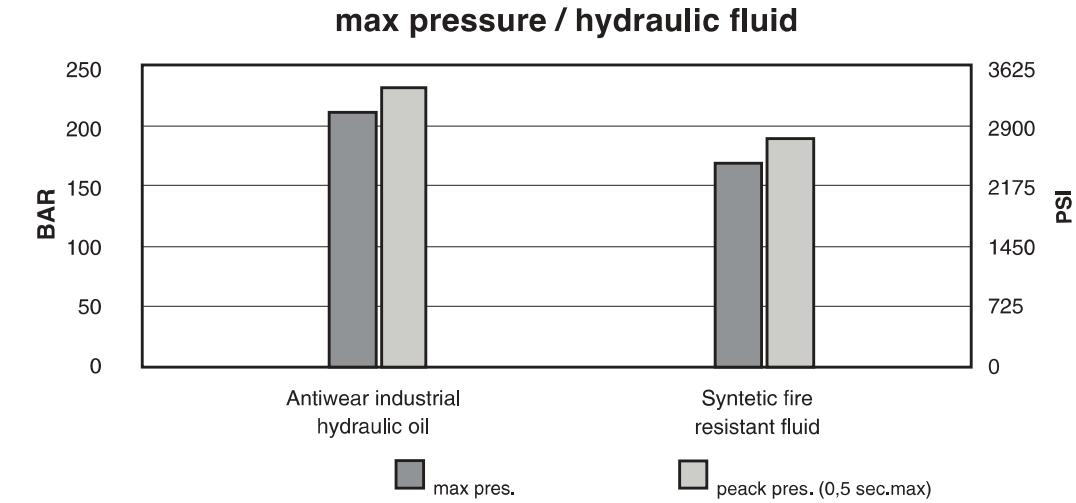
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

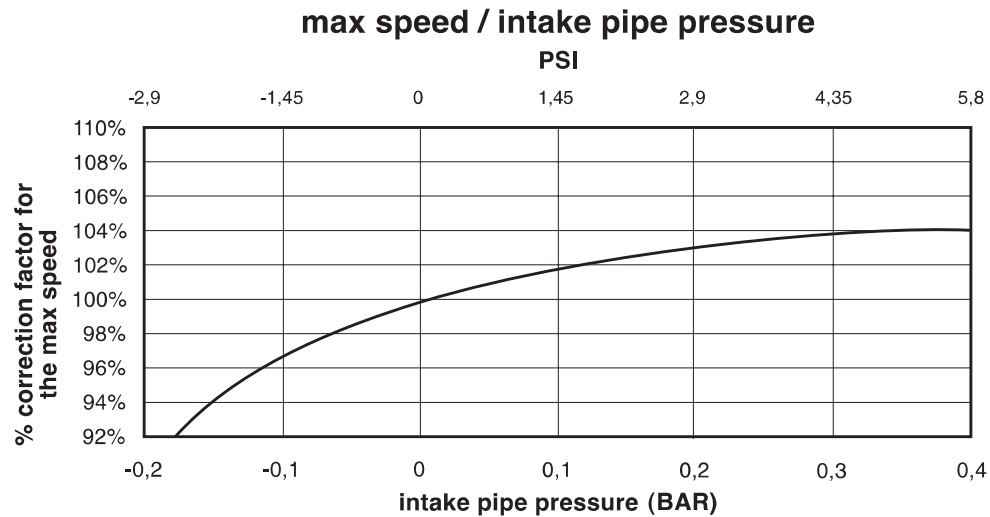
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

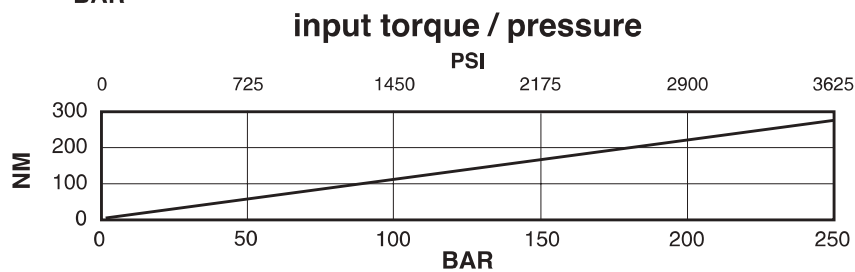
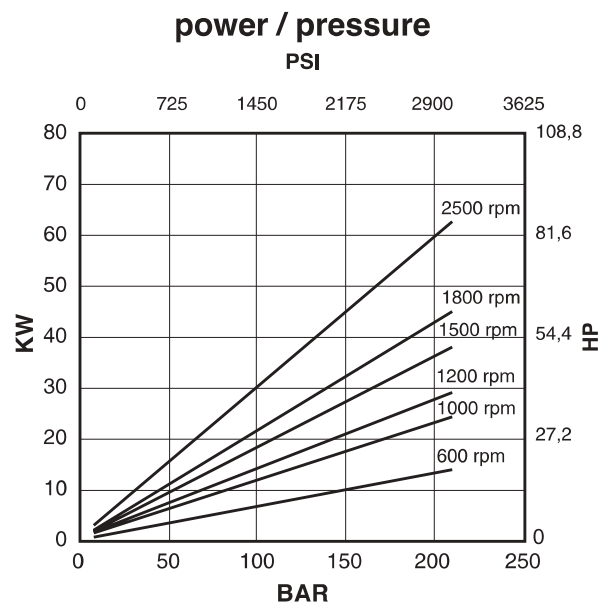
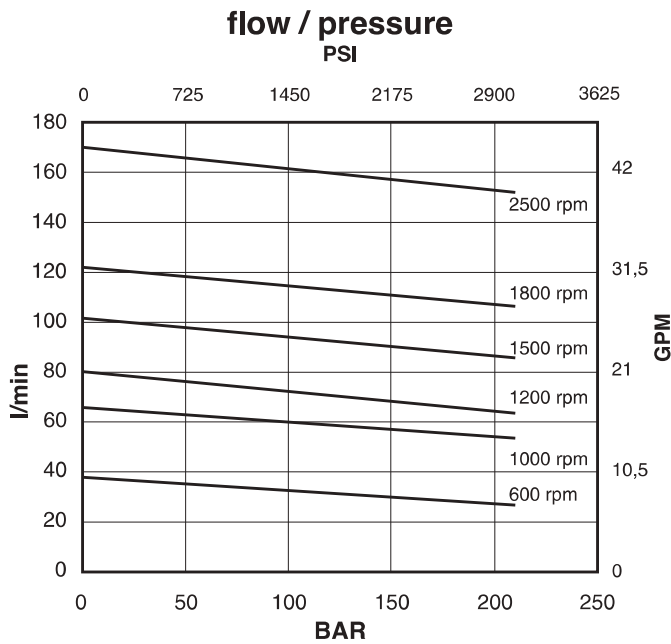
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

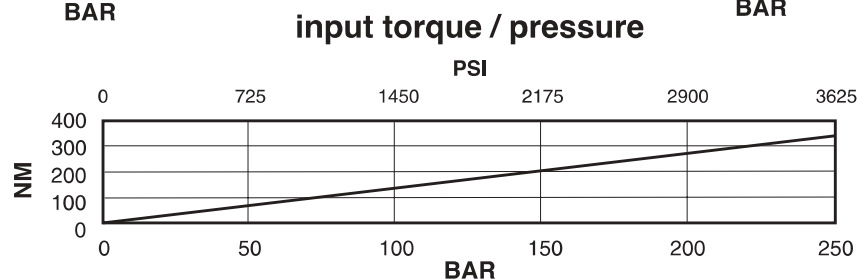
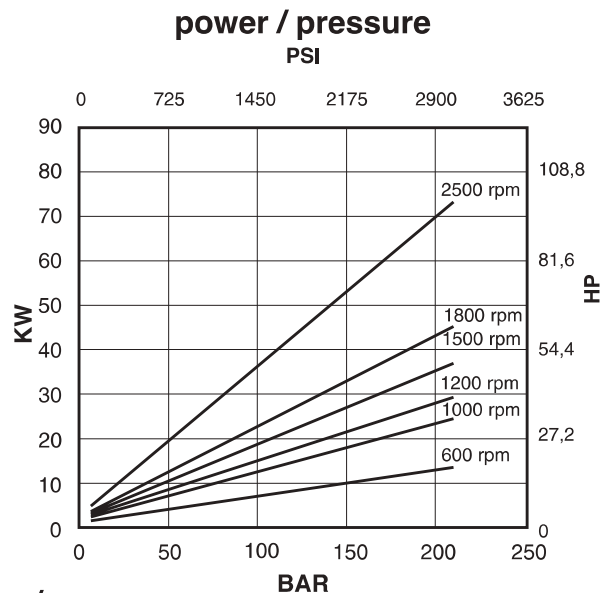
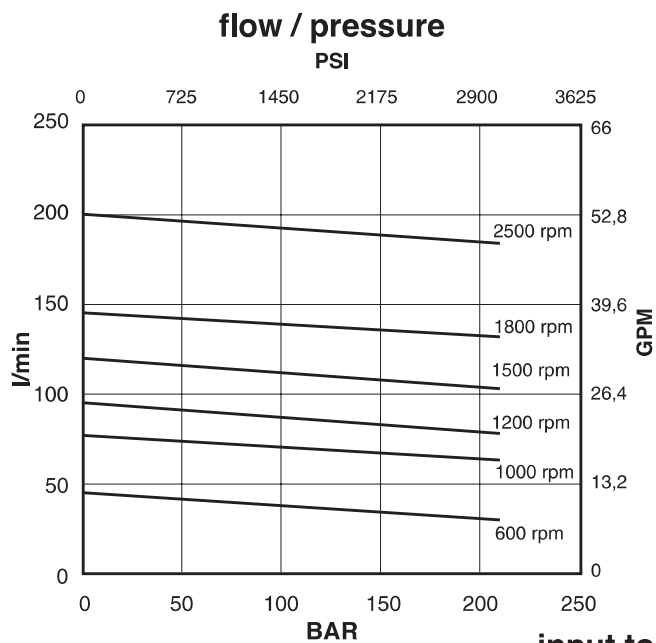


Cartridge A04-21



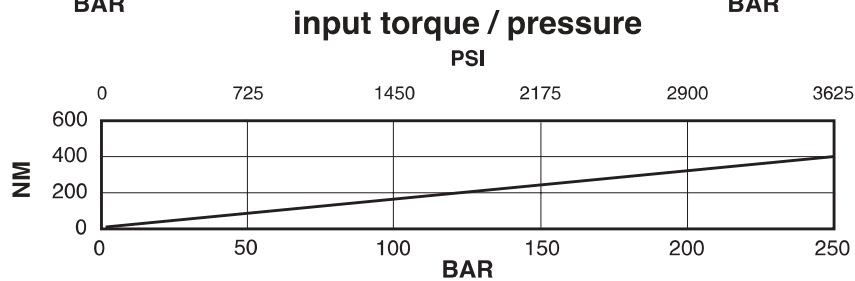
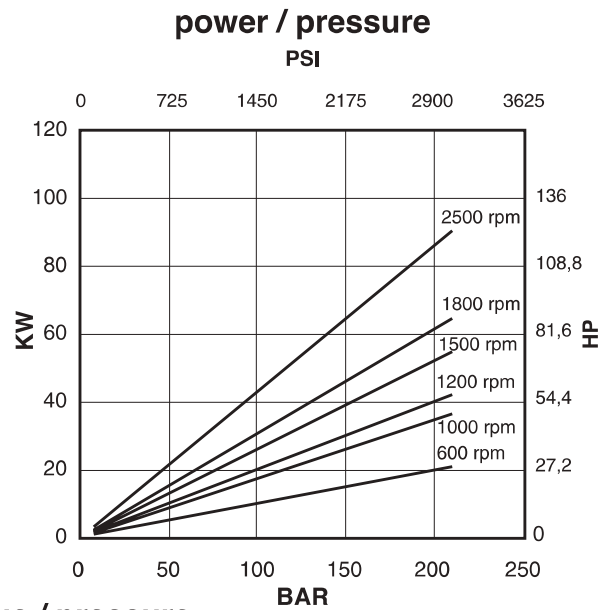
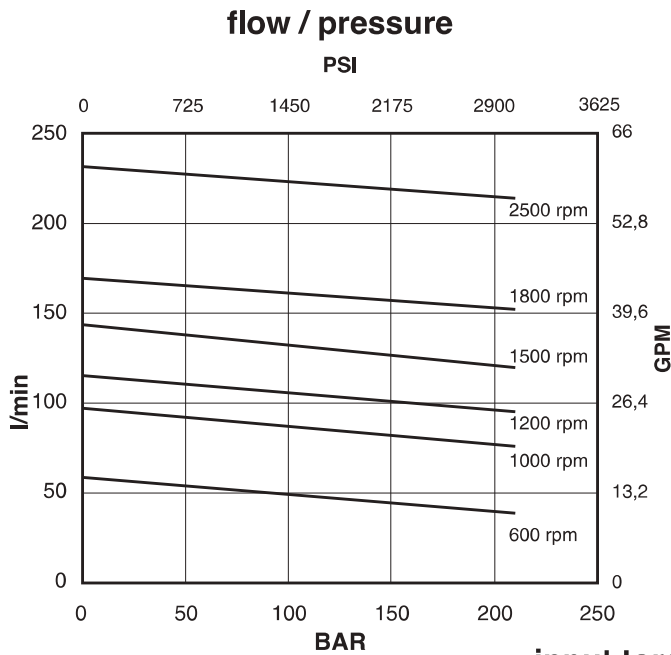
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A04-25



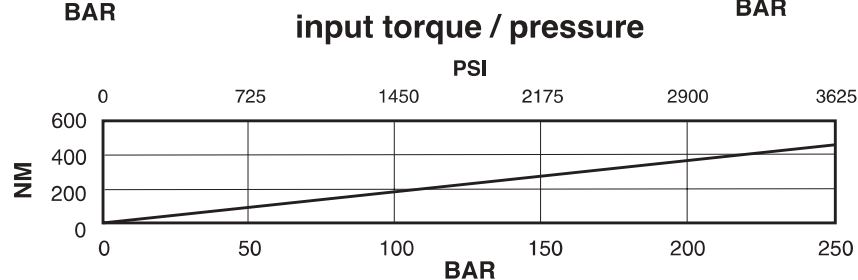
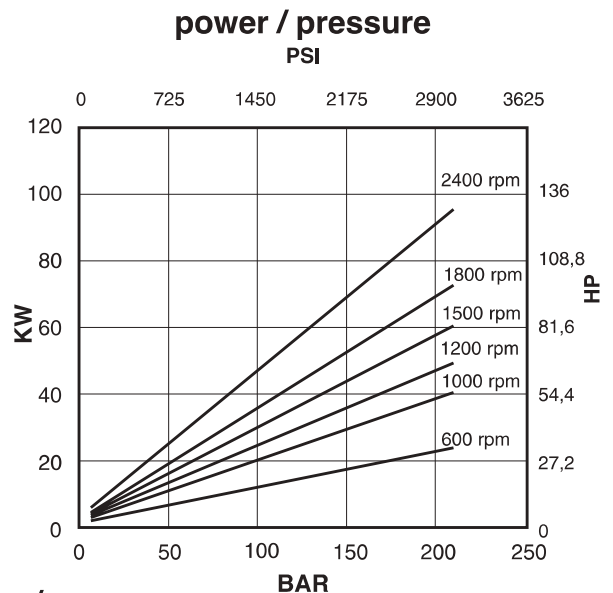
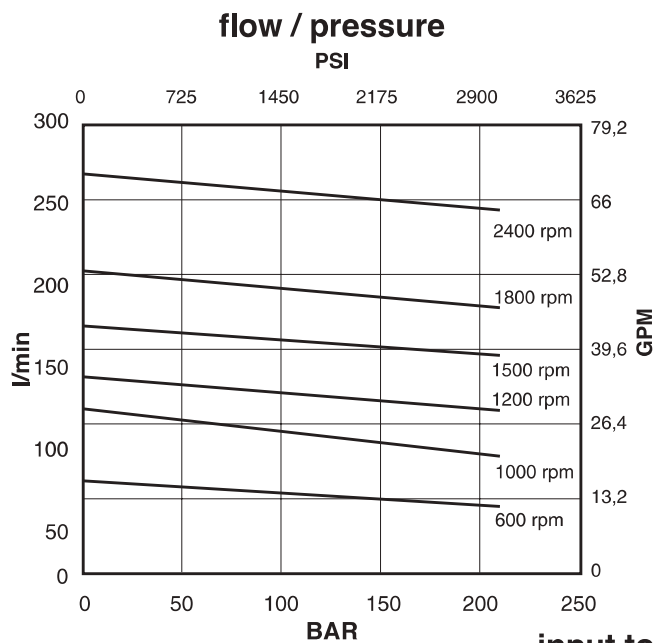
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A04-30



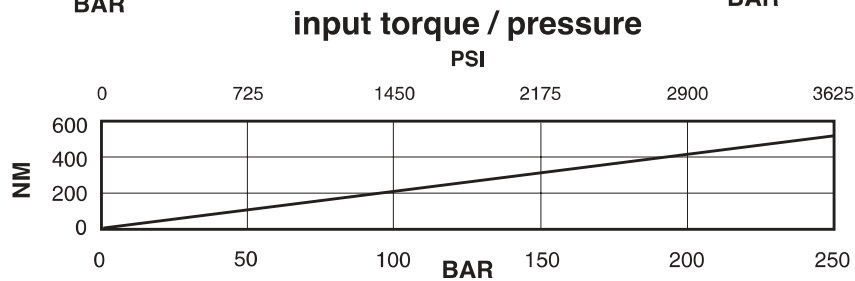
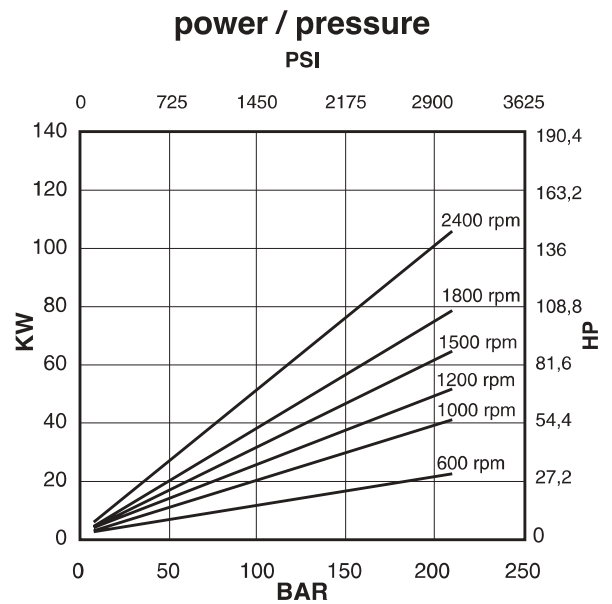
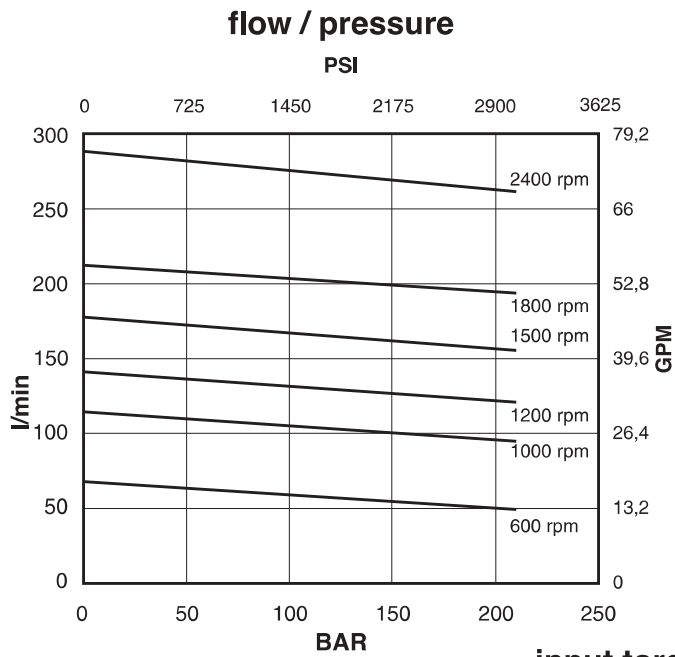
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A04-35



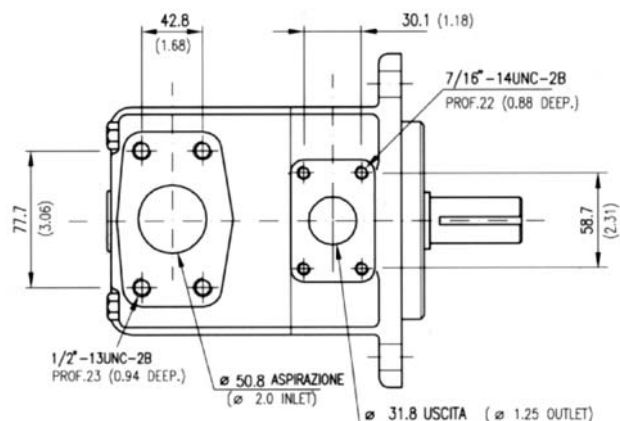
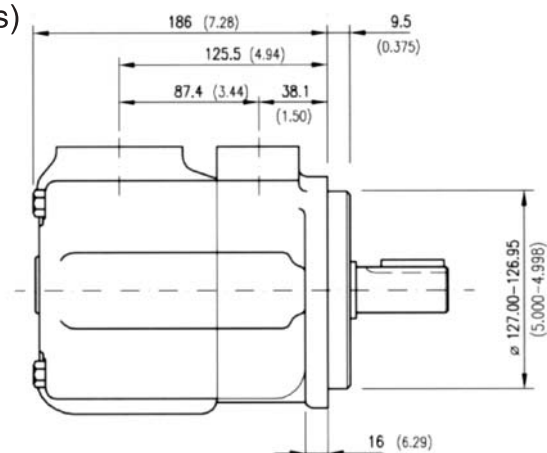
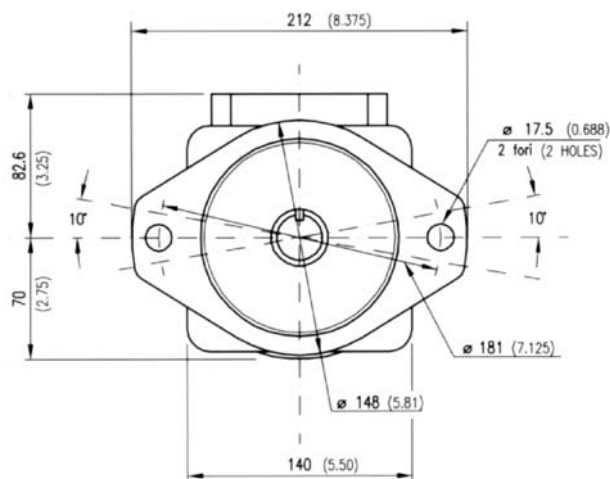
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A04-38



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

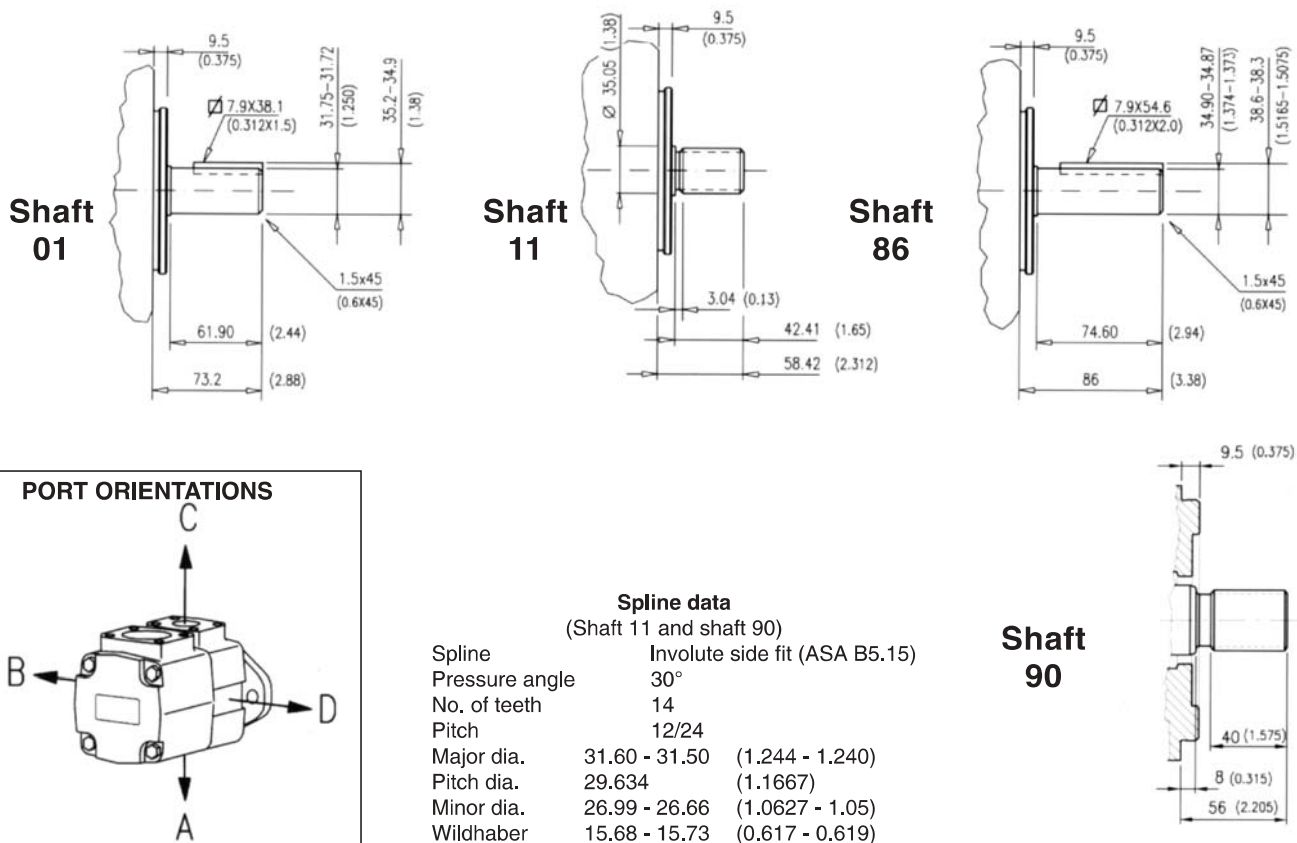


Approx. weight: 23 Kg. (50 lbs.)

Model code breakdown

BQ	04	G	*	*	*	*	*	(L)	*	(A)
Pump series		Design								Mounting (omit if not required)
Pump type										Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)
Cartridge type										Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)
21	25	30	35	38						Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE C
Outlet port positions (outlet viewed from cover end)										
A = Outlet opposite end B = Outlet 90° CCW from inlet C = Outlet in line with inlet D = Outlet 90° CW from inlet										

Shaft options mm (inches)



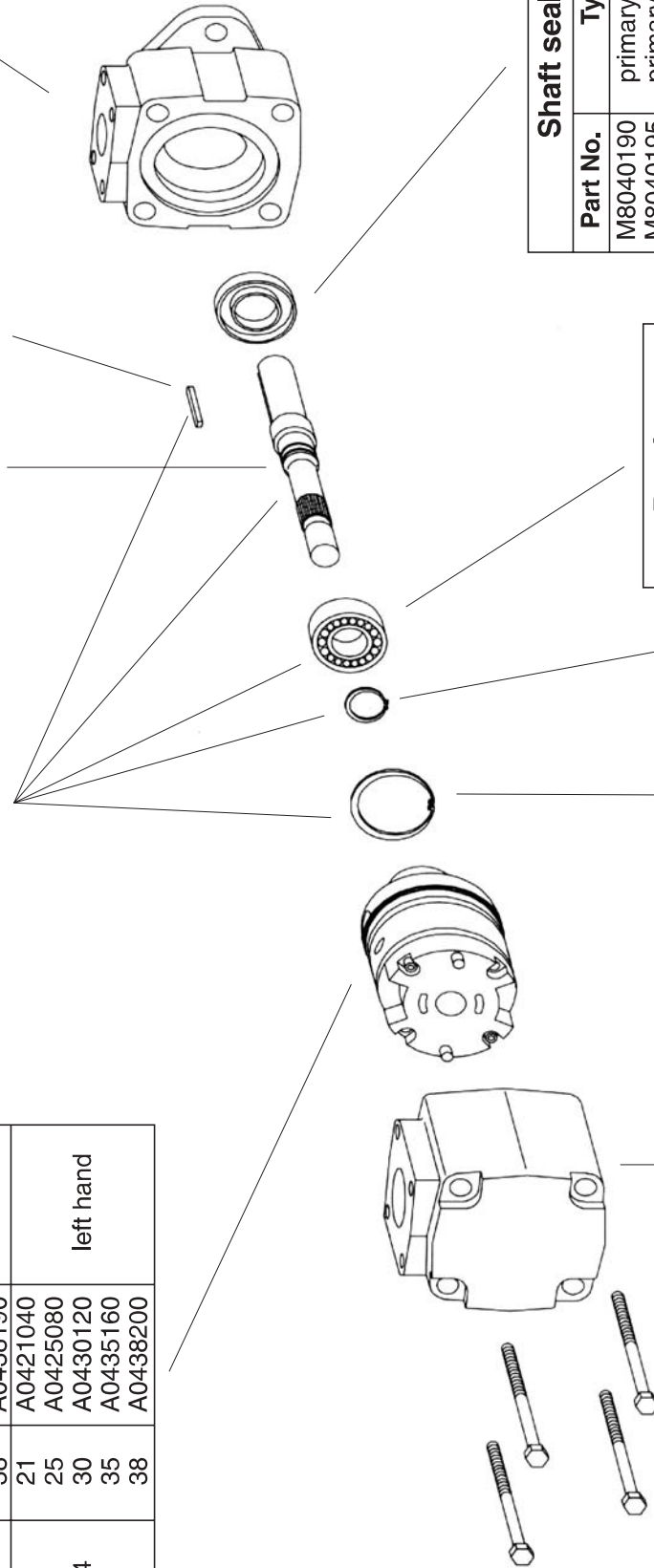
Id. codes of pump components

Cartridge			
Series	Model	Part No.	Pump rotat.
A04	21	A0421030	right hand
	25	A0425070	
	30	A0430110	
	35	A0435150	
	38	A0438190	
A04	21	A0421040	left hand
	25	A0425080	
	30	A0430120	
	35	A0435160	
	38	A0438200	

Shaft kit	
Model	Part No.
01	M8040601
11	M8040611
86	M8040686
90	M8040690

Shaft		Key
Model	Part No.	Part No.
01	K0401000	M8040100
11	K0411000	-
86	K0486000	M8048600
90	K0490000	-

Body	
Part No.	Part No.
M8040140	



Shaft seal	
Part No.	Type
M8040190	primary in NBR
M8040195	primary in FPM
M8040191	secondary in NBR
M8040196	secondary in FPM

Bearing	
Part No.	Part No.
M8040160	

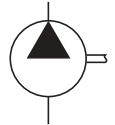
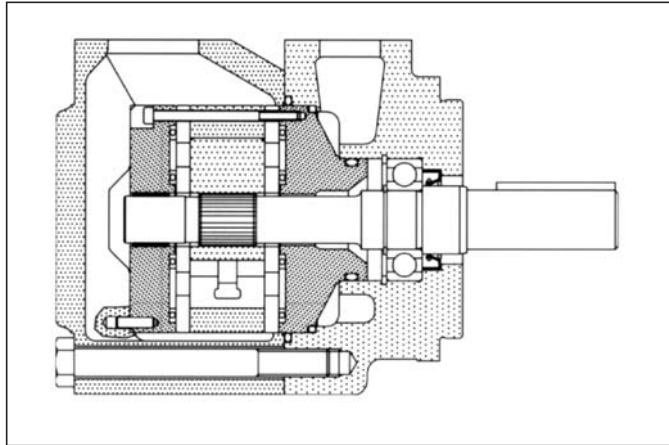
Seeger	
Part No.	Part No.
M8040180	

Seeger	
Part No.	Part No.
M8040170	

Cover	
Part No.	Part No.
M8040150	

Screw	
Part No.	Part No.
M8040200	
Torque to 225 Nm (2010 lb. in.)	

Pump seal kit		
Part No.	Parts	Type
M8040241	seals + 1 shaft seal	NBR
M8040242	seals + 2 shaft seals	NBR
M8040243	seals + 1 shaft seal	FPM (Viton®)
M8040244	seals + 2 shaft seals	FPM (Viton®)



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the type of cartridge used and the speed of rotation. The pump is available in five versions with capacities from 164 to 230 l/min (*from 42 to 60 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A05-42	138,6	(8.46)	164	(42)	203,4	(53.7)	175	(2538)	600	2200
A05-47	153,5	(9.4)	180	(47)	222,7	(58.8)	175	(2538)	600	2200
A05-50	162,2	(9.9)	189	(50)	234	(61.8)	175	(2538)	600	2200
A05-57	183,4	(11.2)	217	(57)	267	(71.2)	175	(2538)	600	2200
A05-60	193,4	(11.8)	230	(60)	285	(75.3)	175	(2538)	600	2200

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

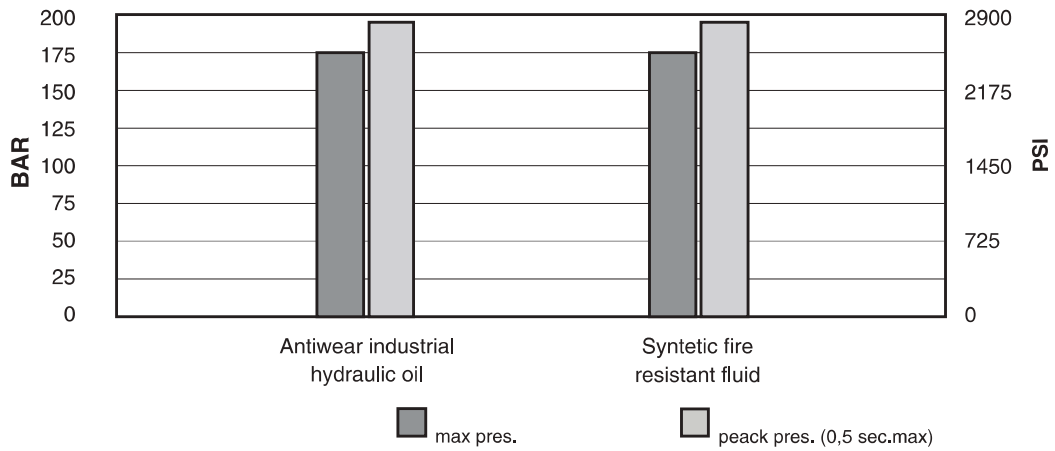
Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

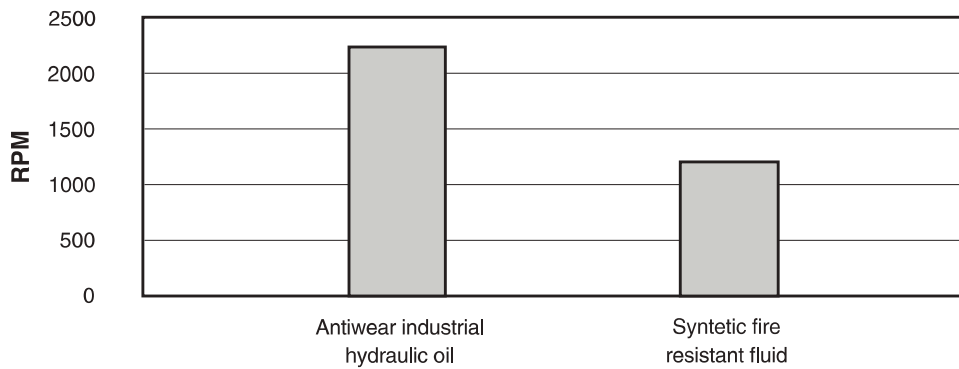
Drive: direct and coaxial by means of a flexible coupling.

Main operating data

max pressure / hydraulic fluid

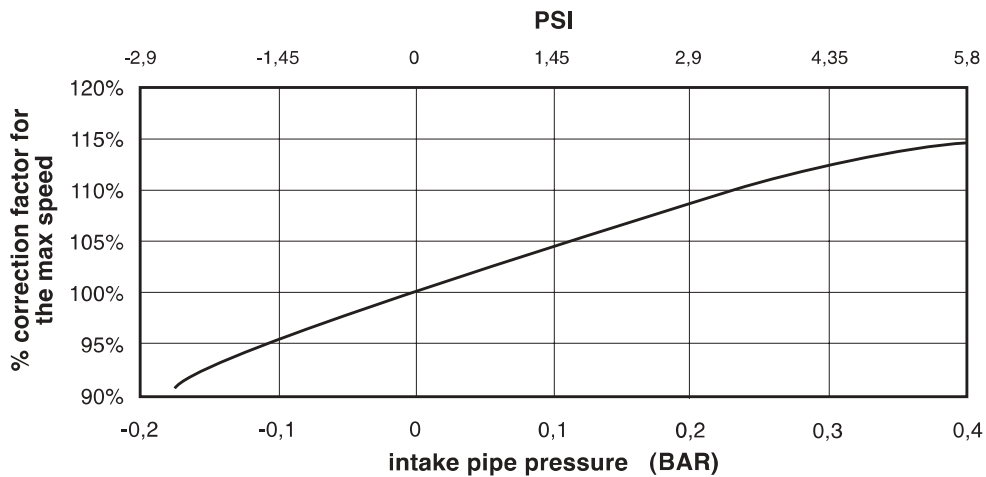


max speed / hydraulic fluid (with 0 bar in the intake pipe)

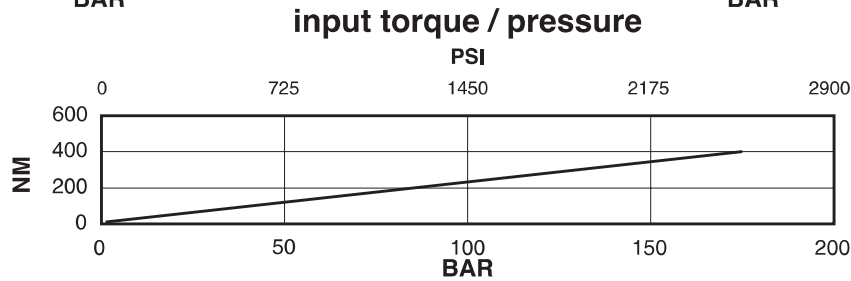
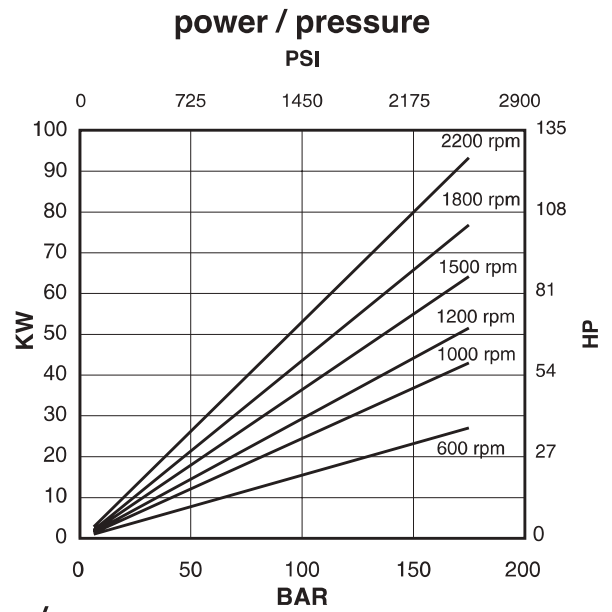
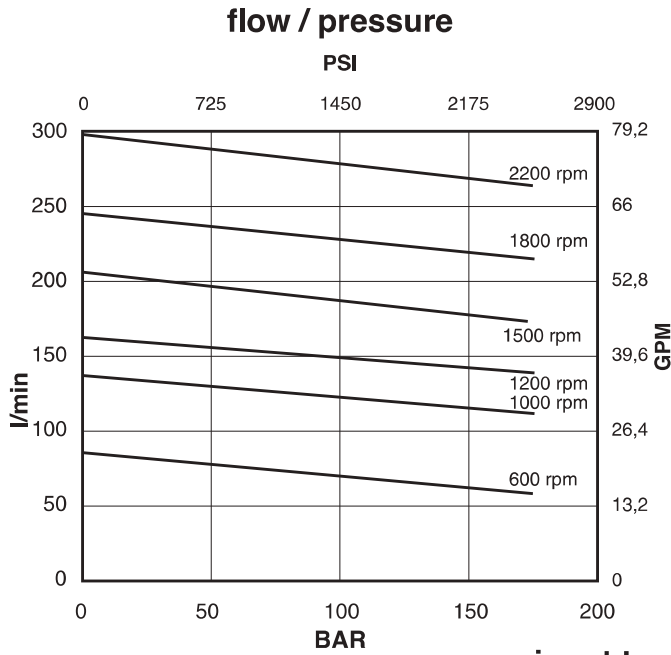


If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

max speed / intake pipe pressure

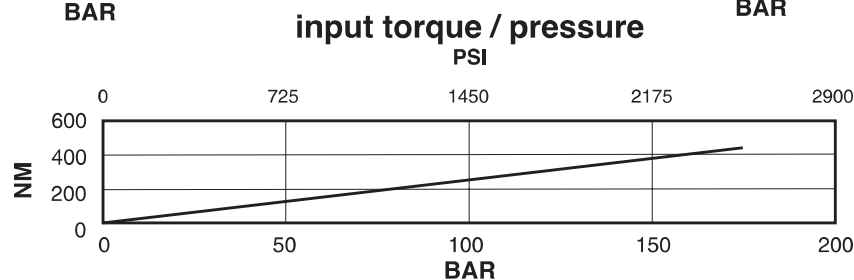
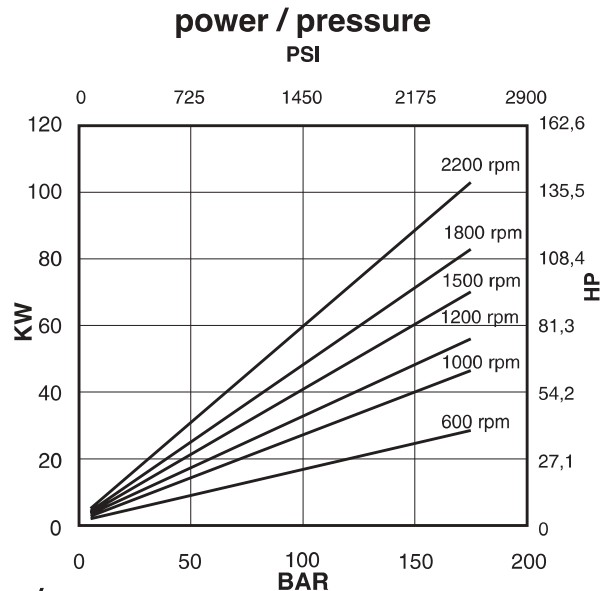
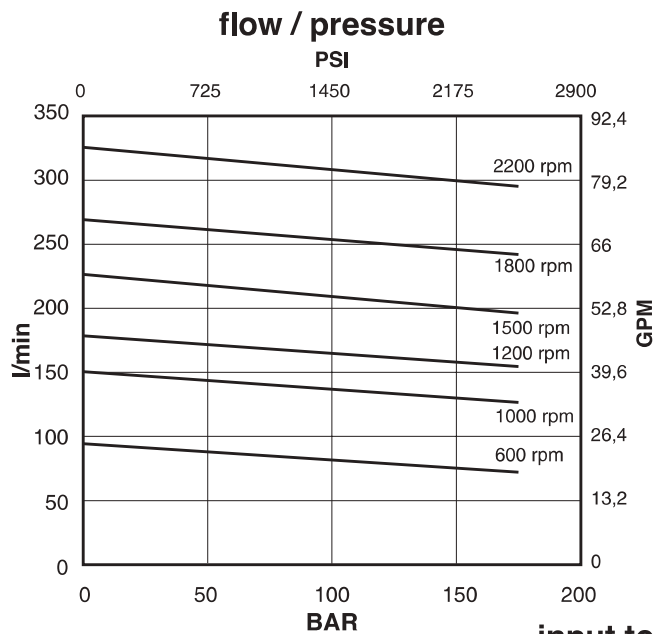


Cartridge A05-42



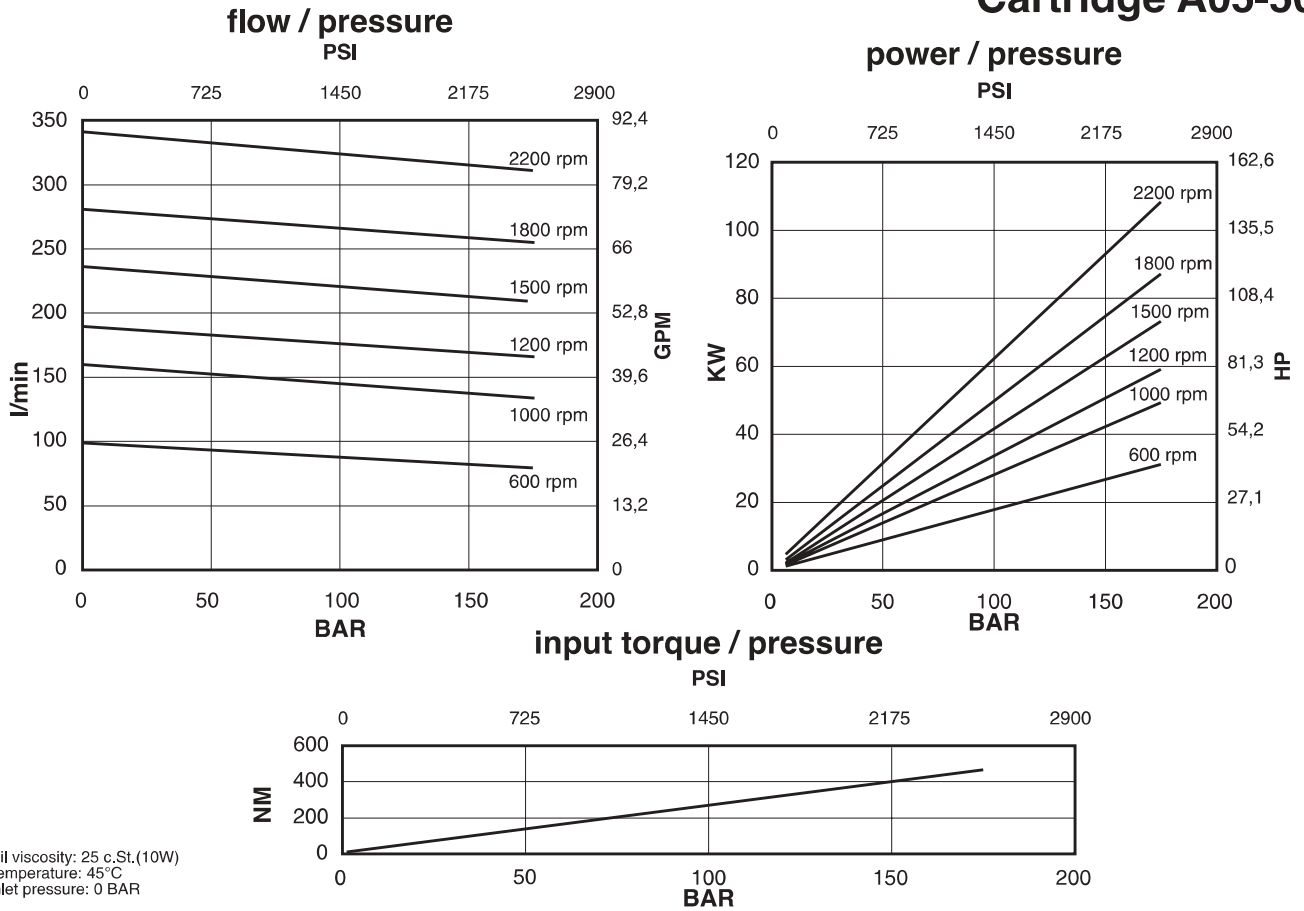
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cartridge A05-47

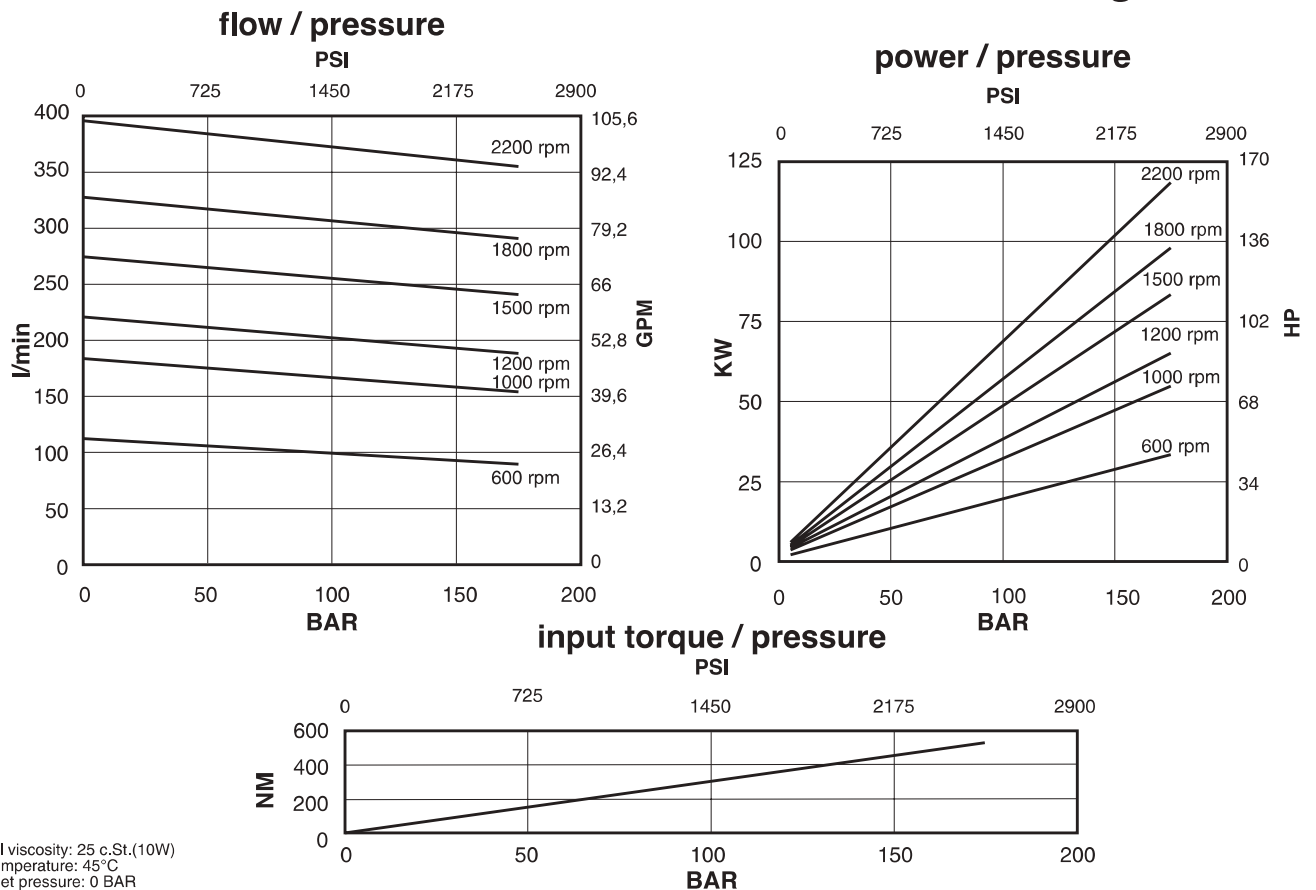


Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

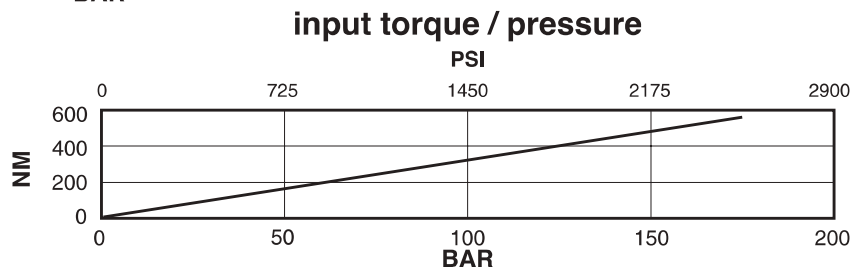
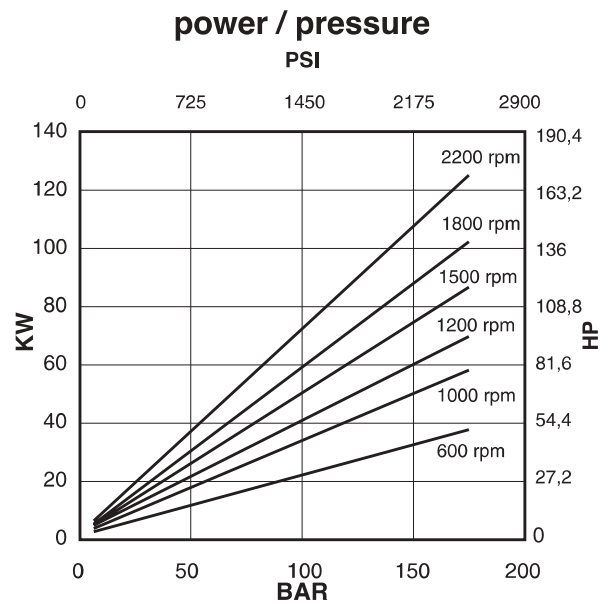
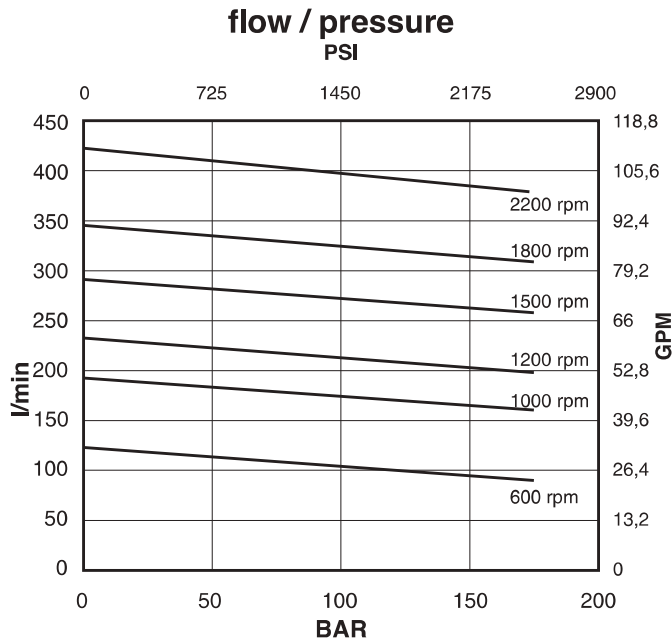
Cartridge A05-50



Cartridge A05-57

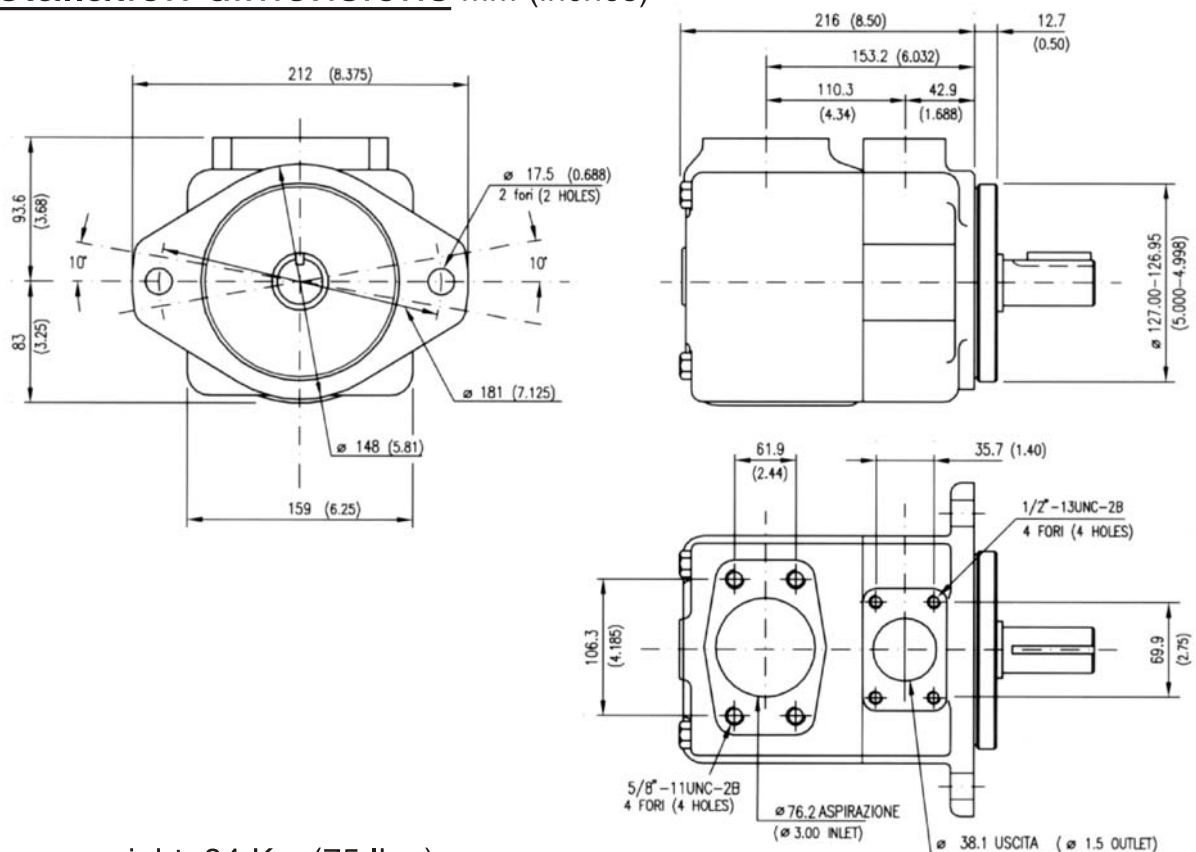


Cartridge A05-60



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

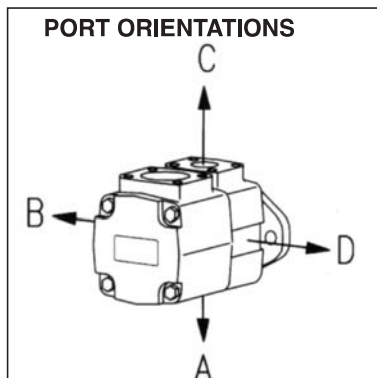
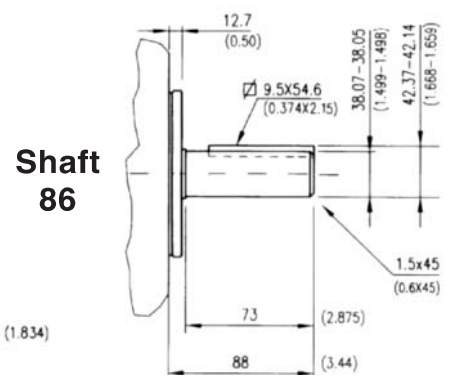
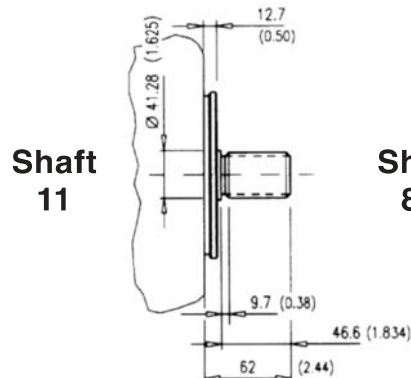
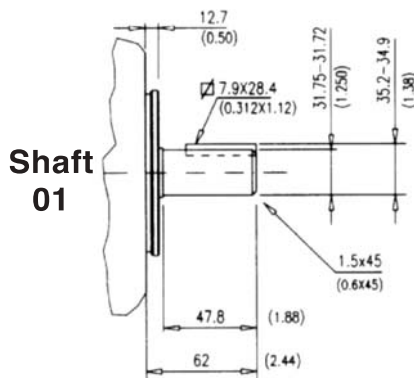


Approx. weight: 34 Kg. (75 lbs.)

Model code breakdown

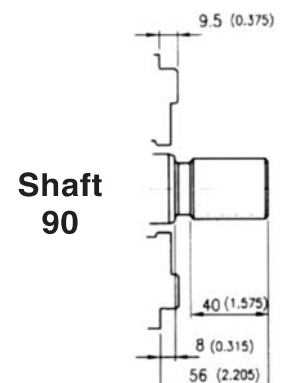
BQ	05	G	*	*	*	*	(L)	*	(A)
Pump series		Design						Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)	Mounting (omit if not required)
Pump type									
Cartridge type									
42	47	50	57	60					
Outlet port positions (outlet viewed from cover end)								Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)	
A = Outlet opposite end B = Outlet 90° CCW from inlet C = Outlet in line with inlet D = Outlet 90° CW from inlet					Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE C				

Shaft options mm (inches)



Spline data
(Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)
Pressure angle	30°
No. of teeth	14
Pitch	12/24
Major dia.	31.60 - 31.50 (1.244 - 1.240)
Pitch dia.	29.634 (1.1667)
Minor dia.	26.99 - 26.66 (1.0627 - 1.05)
Wildhaber	15.68 - 15.73 (0.617 - 0.619)



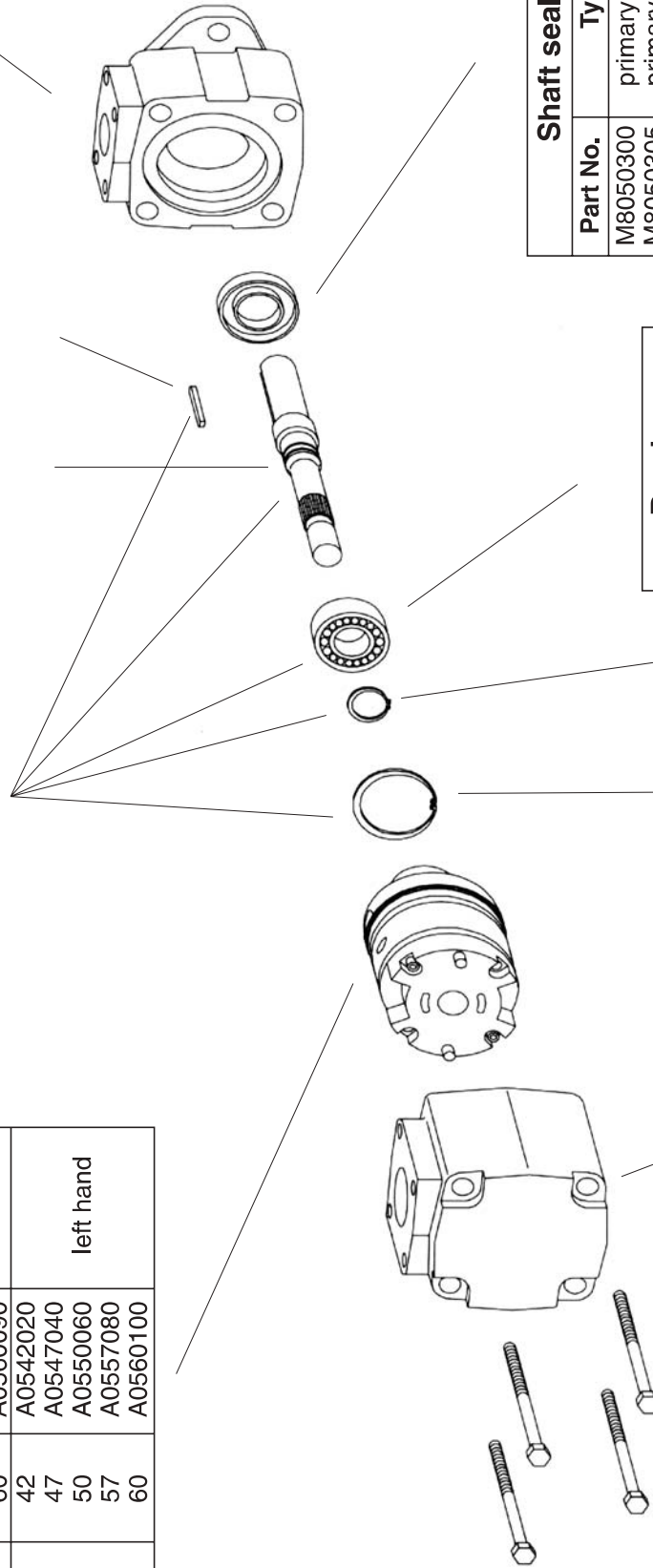
Id. codes of pump components

Cartridge			
Series	Model	Part No.	Pump rotat.
A05	42	A0542010	right hand
	47	A0547030	
	50	A0550050	
	57	A0557070	
	60	A0560090	
A05	42	A0542020	left hand
	47	A0547040	
	50	A0550060	
	57	A0557080	
	60	A0560100	

Shaft kit	
Model	Part No.
01	M8050601
11	M8050611
86	M8050686
90	M8050690

Shaft		Key
Model	Part No.	Part No.
01	K0501000	M8050100
11	K0511000	-
86	K0586000	M8058600
90	K0590000	-

Body	
Part No.	M8050250



Shaft seal	
Part No.	Type
M8050300	primary in NBR
M8050305	primary in FPM
M8050301	secondary in NBR
M8050306	secondary in FPM

Bearing	
Part No.	M8050270

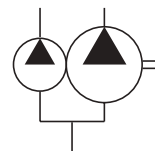
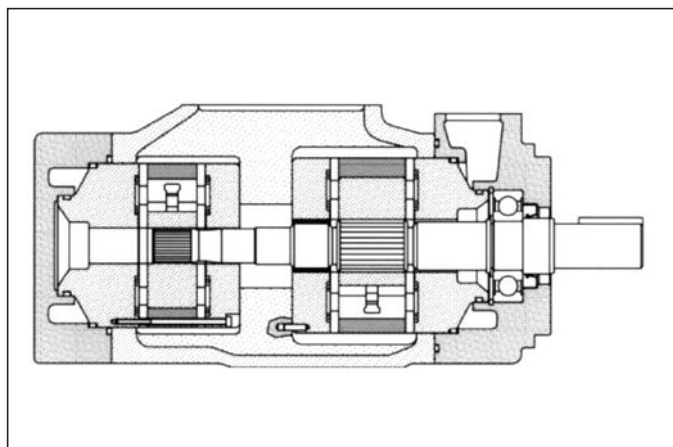
Seeger	
Part No.	M8050290

Seeger	
Part No.	M8050280

Cover	
Part No.	M8050260

Screw	
Part No.	M8050310
Torque to 398 Nm (3550 lb. in.)	

Pump seal kit		
Part No.	Parts	Type
M8050411	seals + 1 shaft seal	NBR
M8050412	seals + 2 shaft seals	NBR
M8050413	seals + 1 shaft seal	FPM (Viton®)
M8050414	seals + 2 shaft seals	FPM (Viton®)



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 55 to 134 l/min (*from 14 to 35 gpm*) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A02-12	40,1	(2.45)	46,9	(12)	58,8	(15.5)	210	(3050)	600	2700
A02-14	45,4	(2.77)	52,7	(14)	65,7	(17.4)	210	(3050)	600	2700
A02-17	55,2	(3.37)	64,2	(17)	80,2	(21.2)	210	(3050)	600	2500
A02-19	60,0	(3.66)	71,0	(19)	88,7	(23.4)	210	(3050)	600	2500
A02-21	67,5	(4.12)	79,0	(21)	99,8	(26.4)	210	(3050)	600	2500
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A01-02	7,2	(0.44)	8,3	(2)	10,4	(2.8)	210	(3050)	600	2700
A01-05	18,0	(1.10)	20,8	(5)	26,1	(6.9)	210	(3050)	600	2700
A01-08	27,4	(1.67)	31,8	(8)	39,4	(10.4)	210	(3050)	600	2700
A01-09	30,1	(1.83)	35,1	(9)	44,1	(11.7)	210	(3050)	600	2700
A01-11	36,4	(2.22)	42,4	(11)	52,6	(13.9)	210	(3050)	600	2700
A01-12	39,5	(2.41)	46,9	(12)	58,7	(15.5)	160	(2300)	600	2700
A01-14	45,9	(2.79)	54,9	(14)	69,6	(18.4)	140	(2030)	600	2700

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (*with mineral oil*): from 13 to 860 cSt. (*13 to 54 cSt. recommended*).

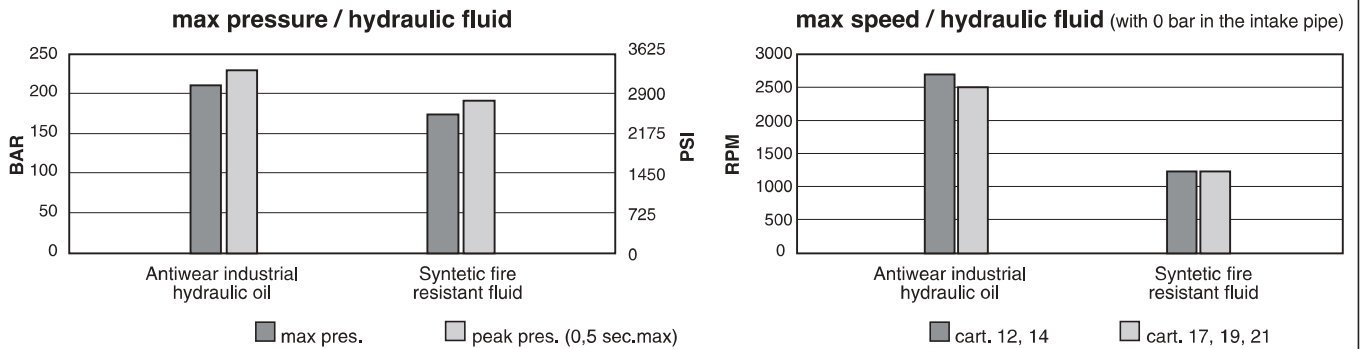
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (*with synthetic fluids: for the return line - 10 micron abs. or better*).

Inlet pressure: (*with mineral oil*): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

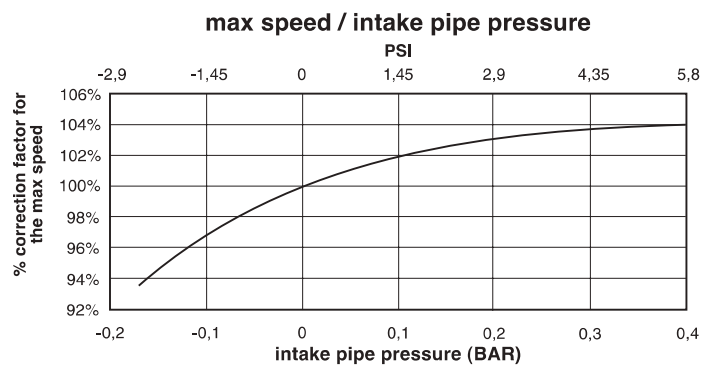
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

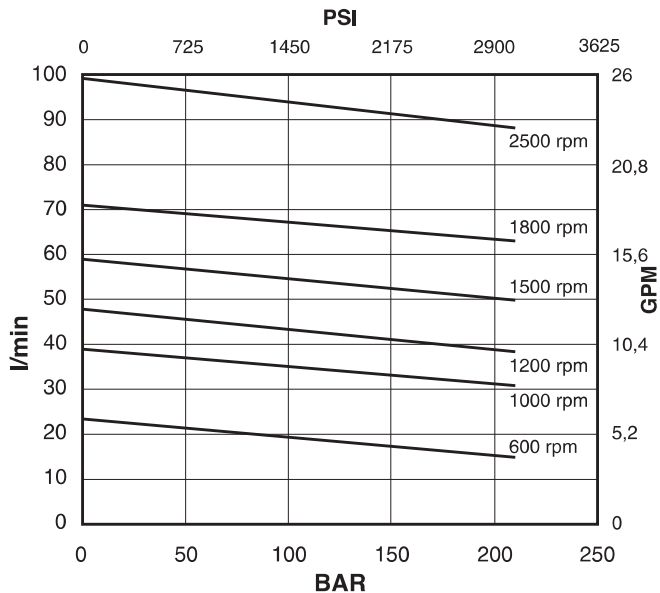
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

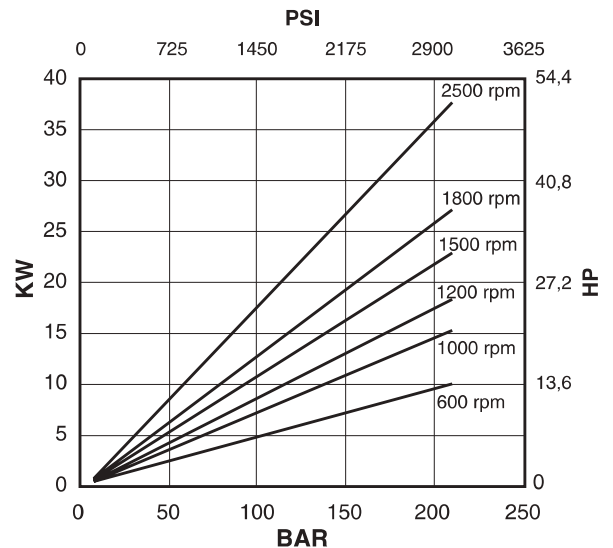


flow / pressure

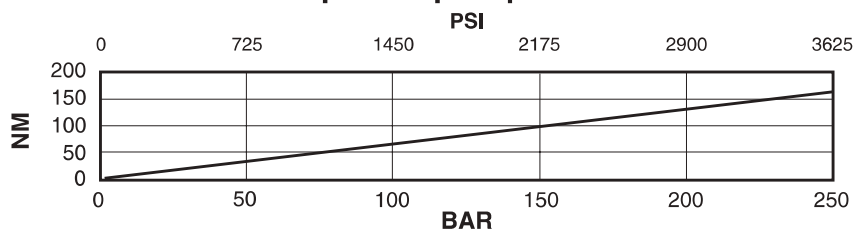


Shaft end cartridge A02-12

power / pressure

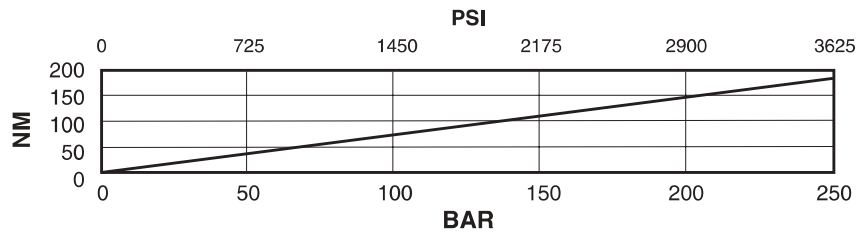
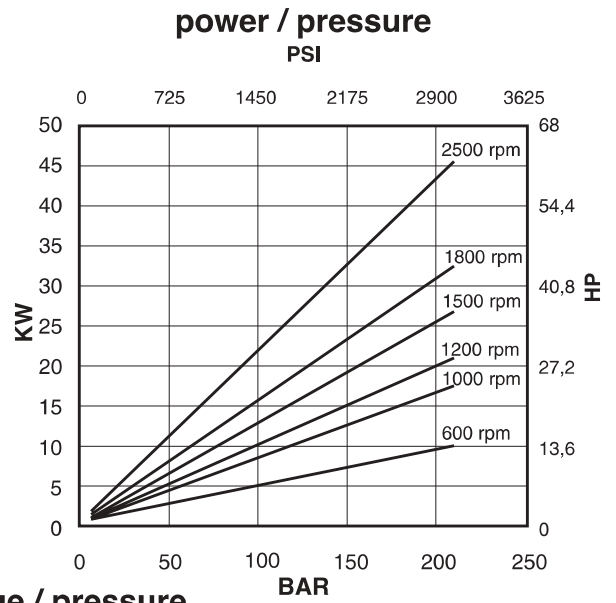
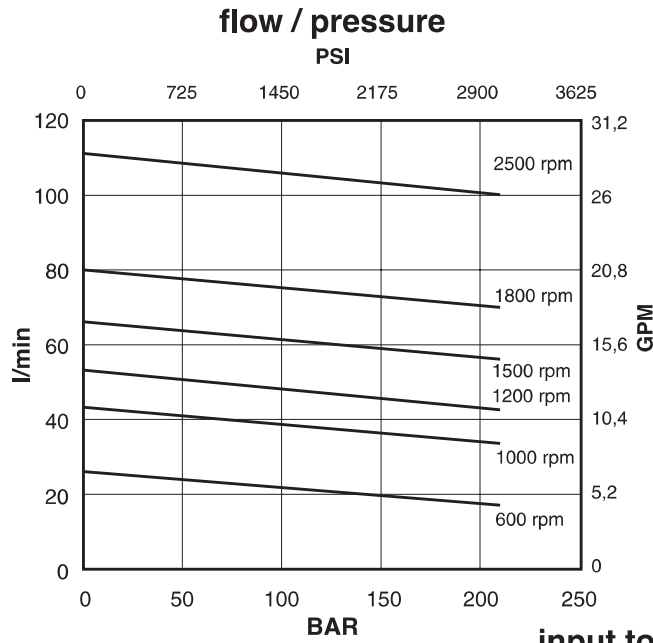


input torque / pressure



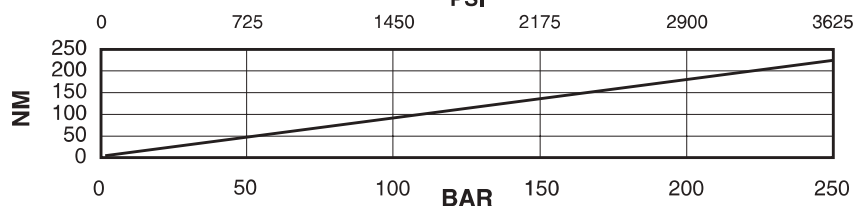
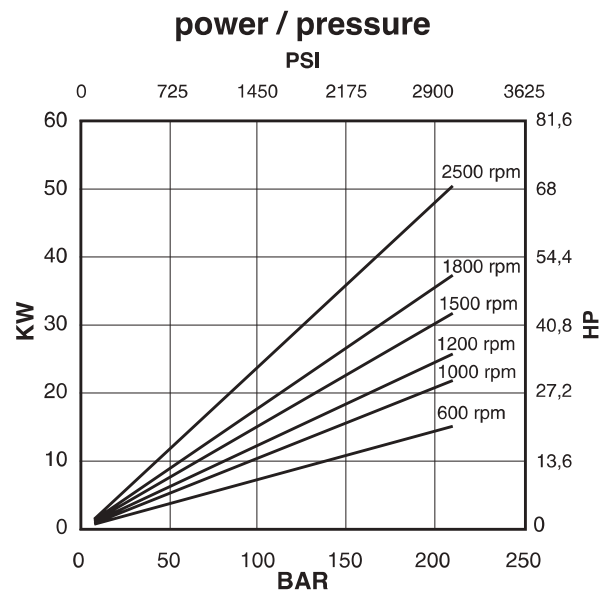
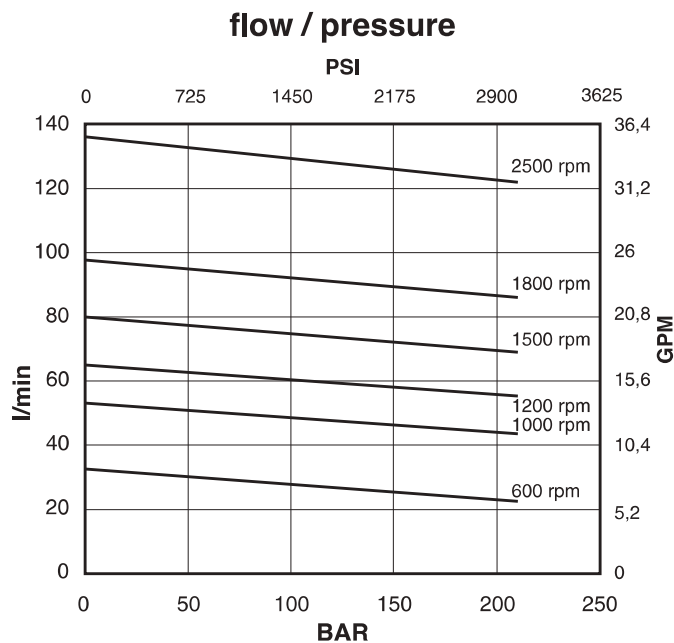
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A02-14



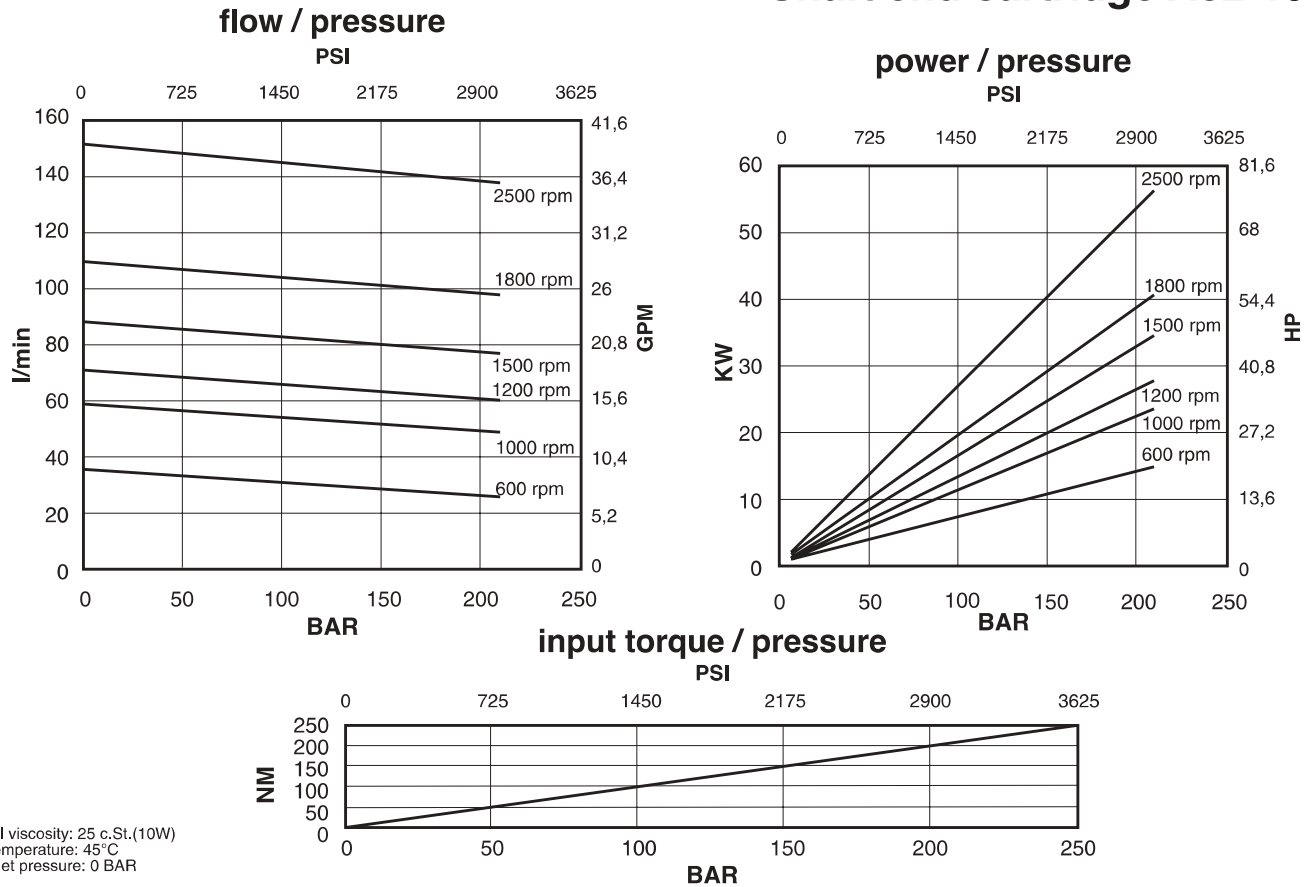
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A02-17

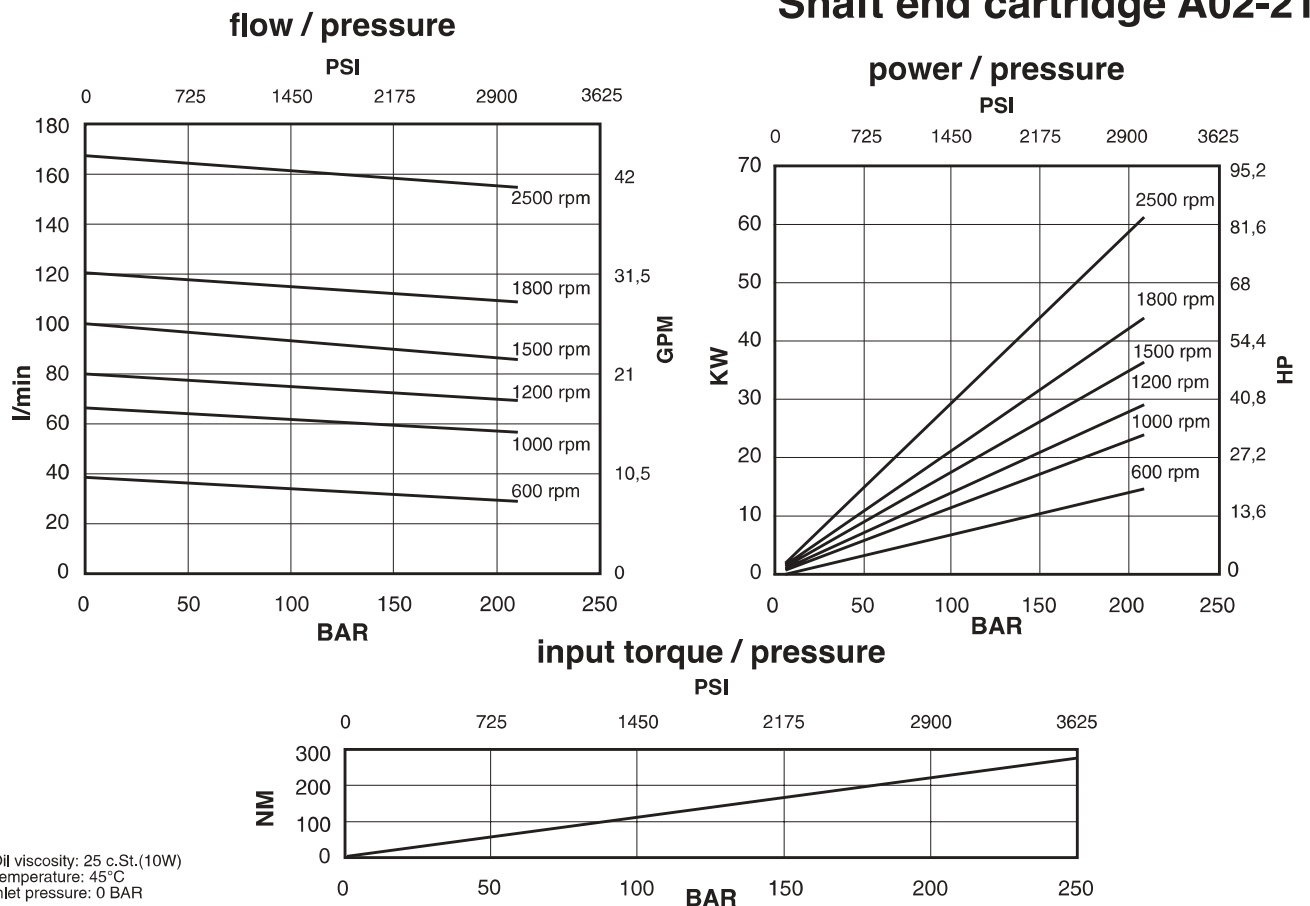


Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

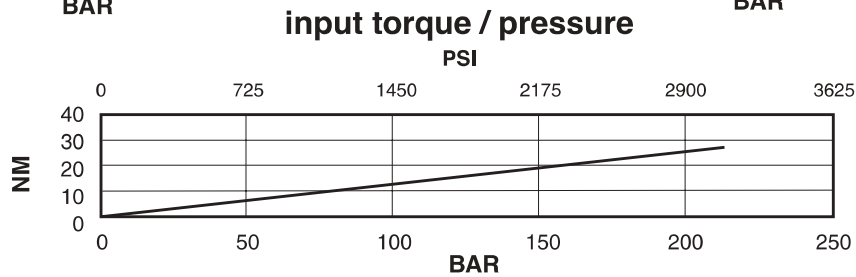
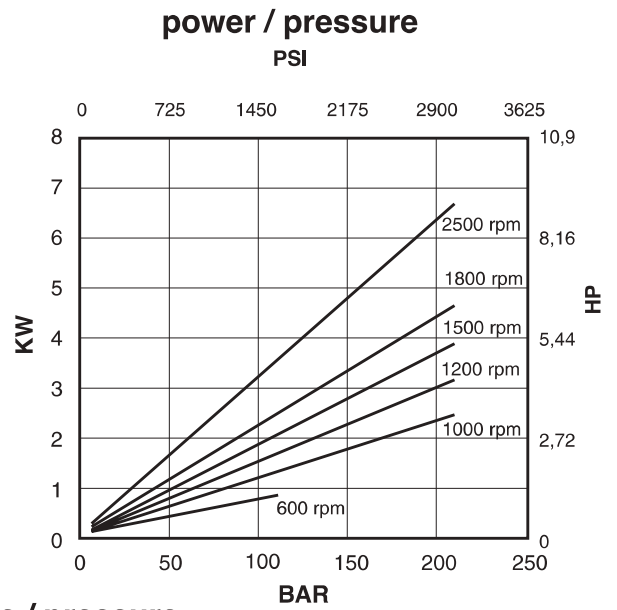
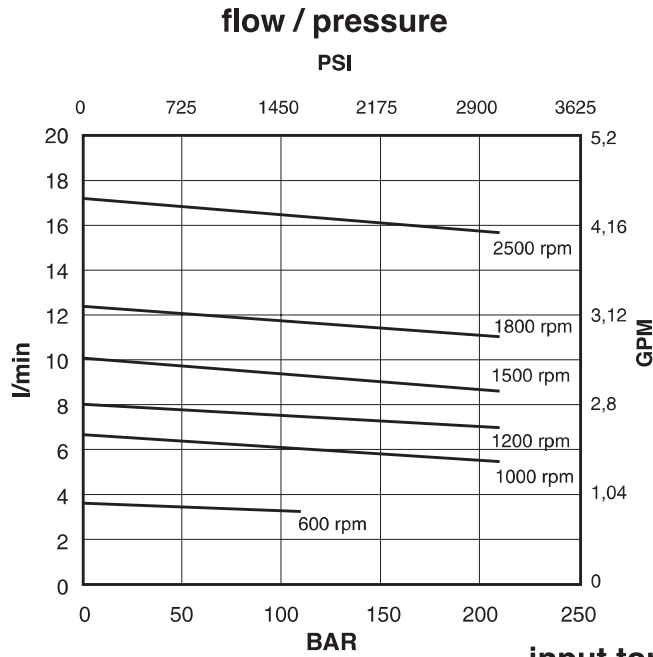
Shaft end cartridge A02-19



Shaft end cartridge A02-21

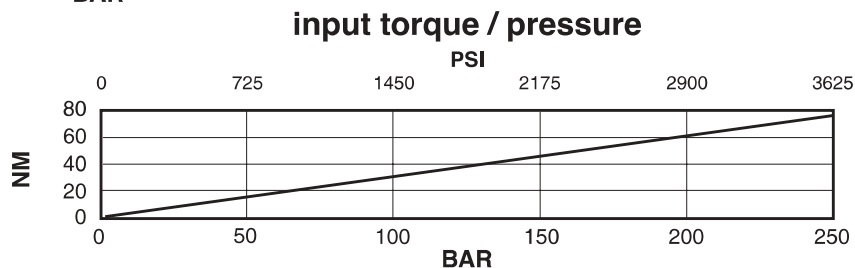
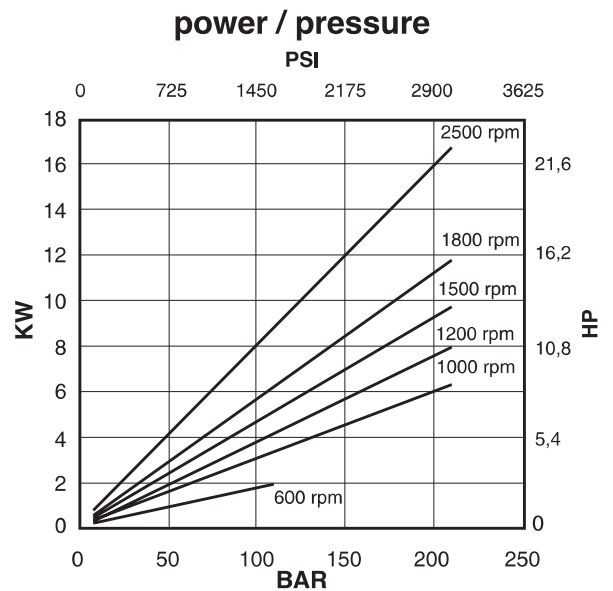
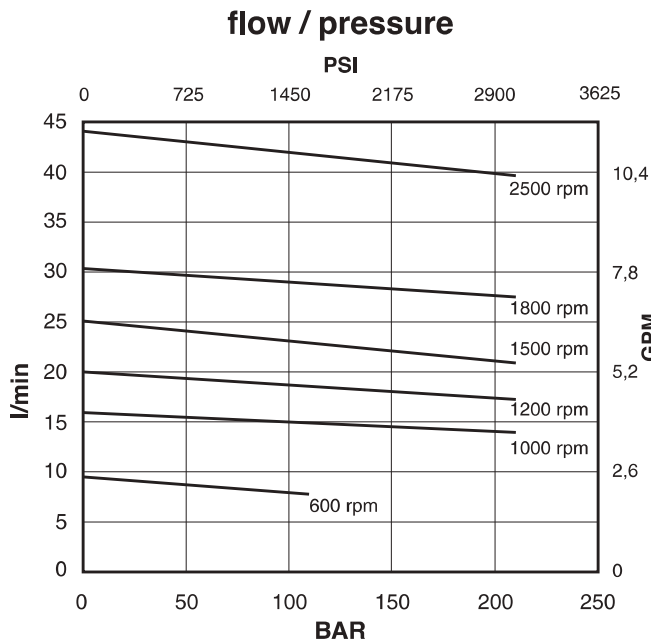


Cover end cartridge A01-02



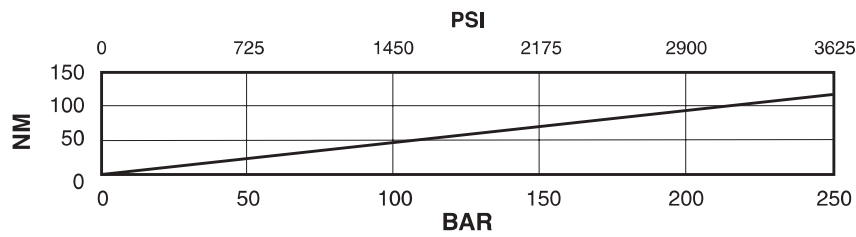
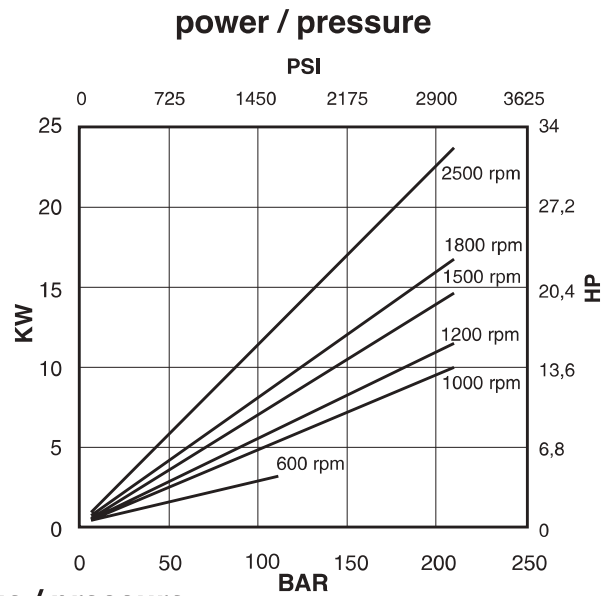
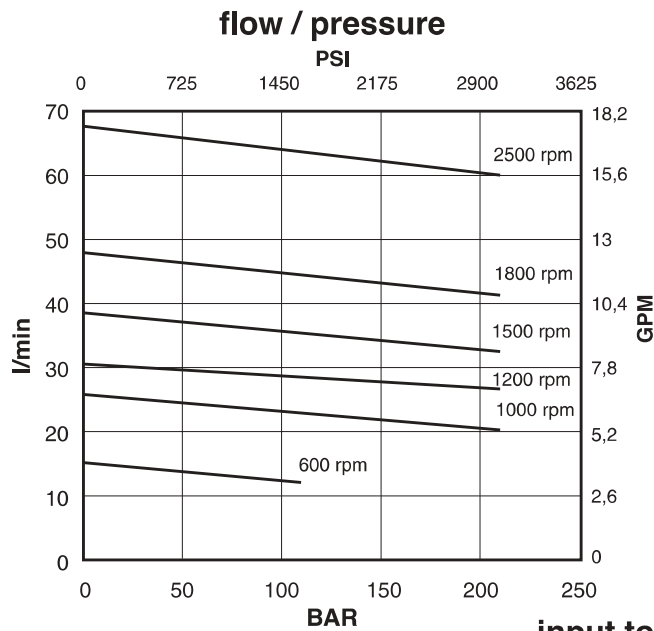
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-05



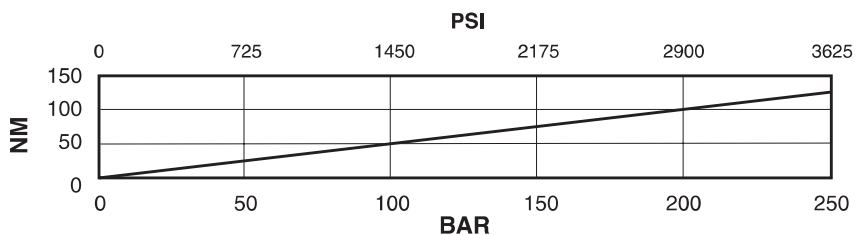
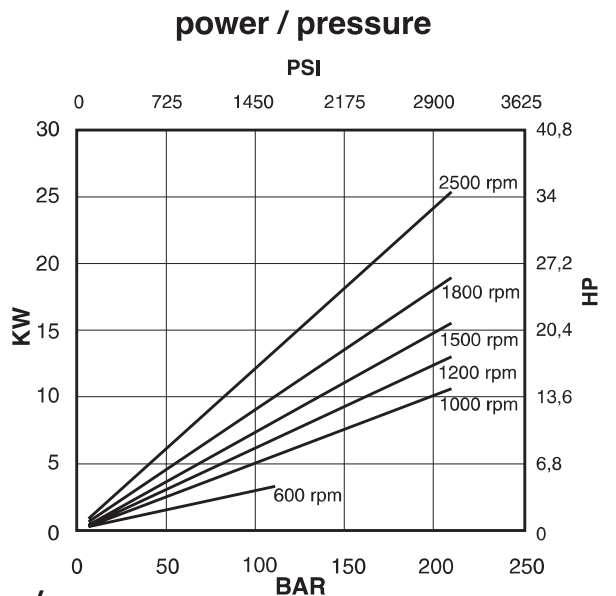
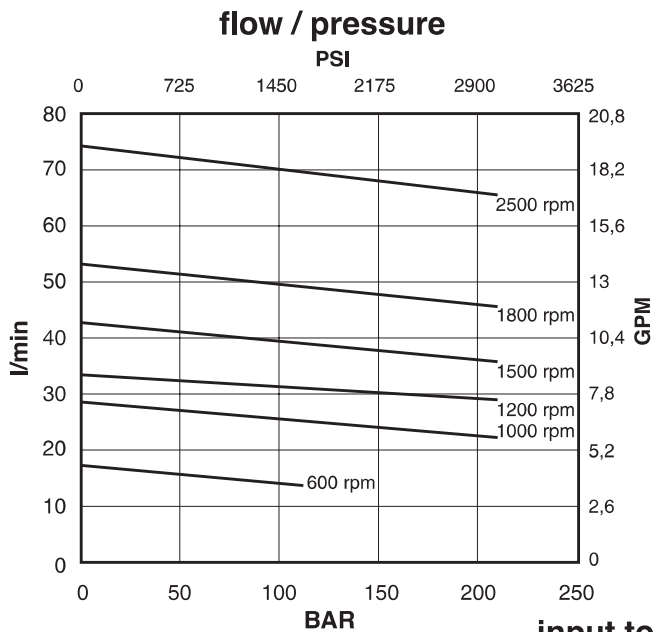
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-08



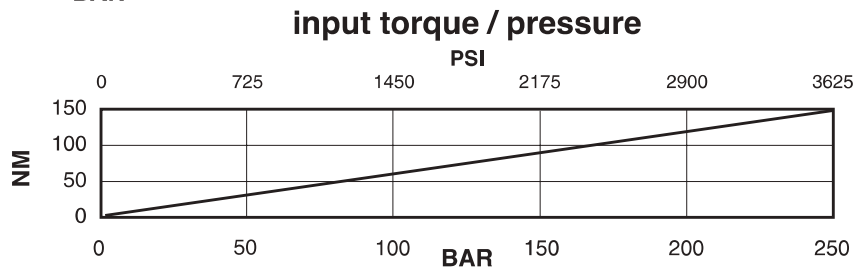
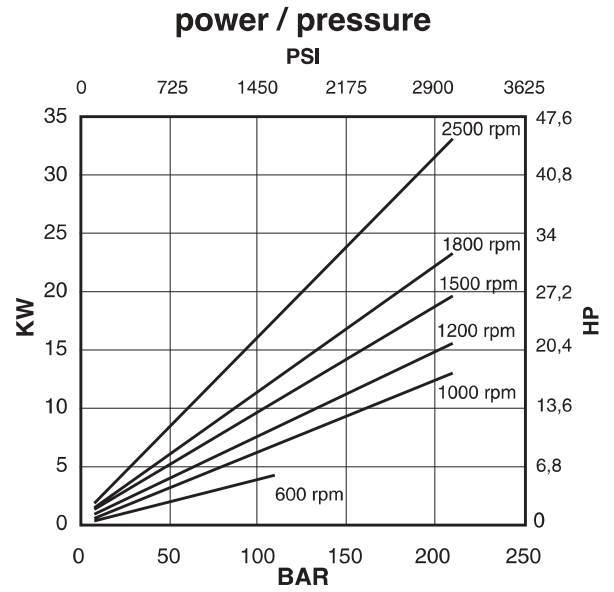
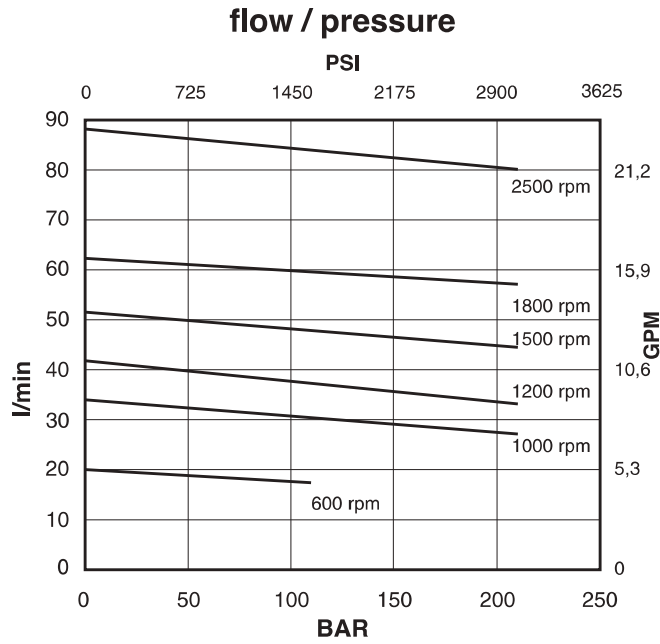
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-09



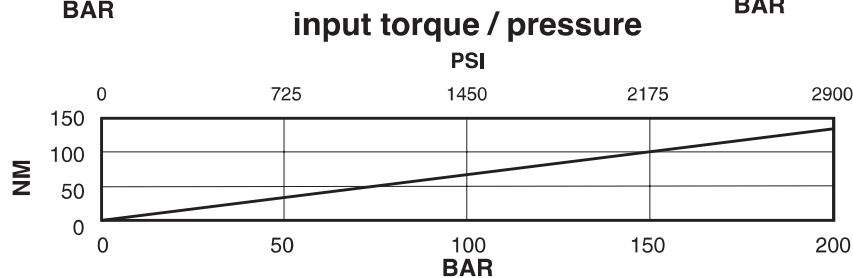
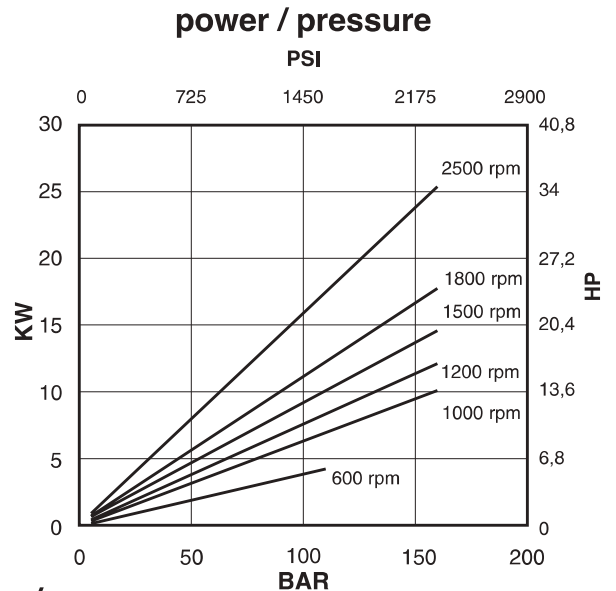
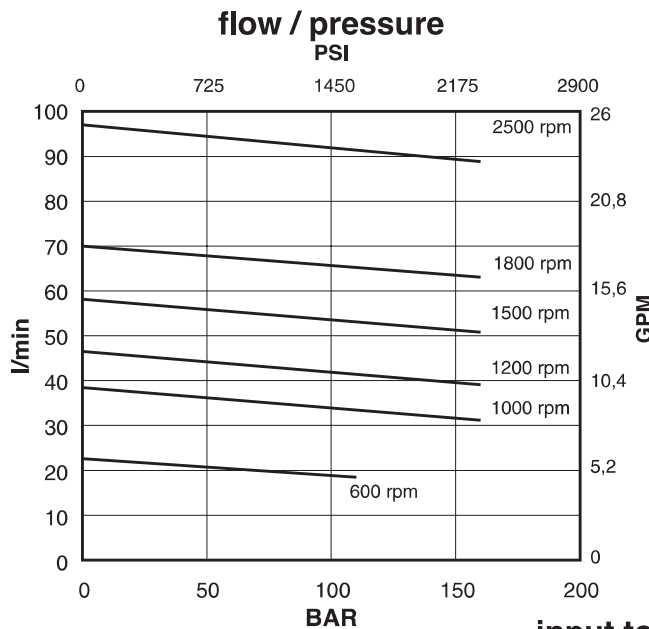
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-11



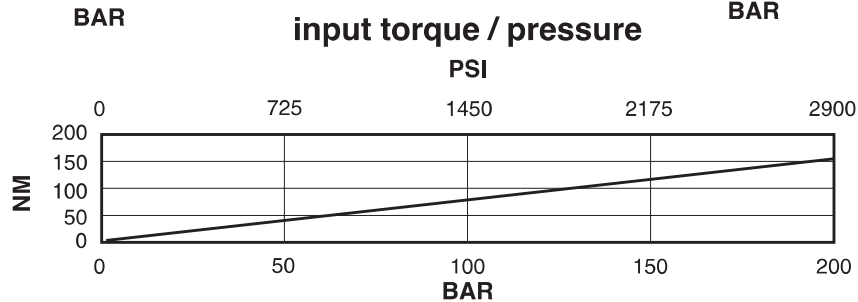
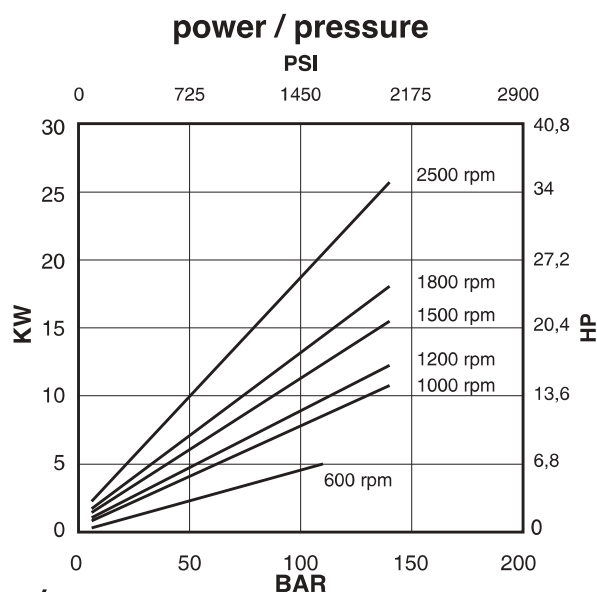
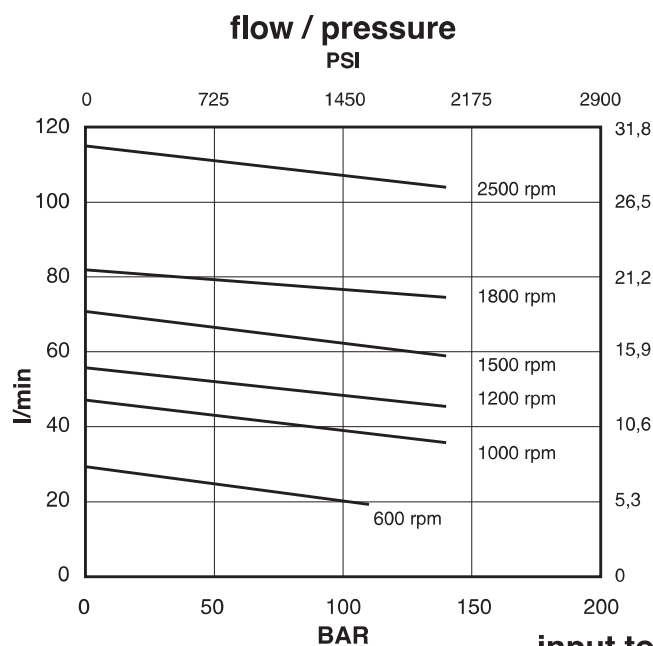
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-12



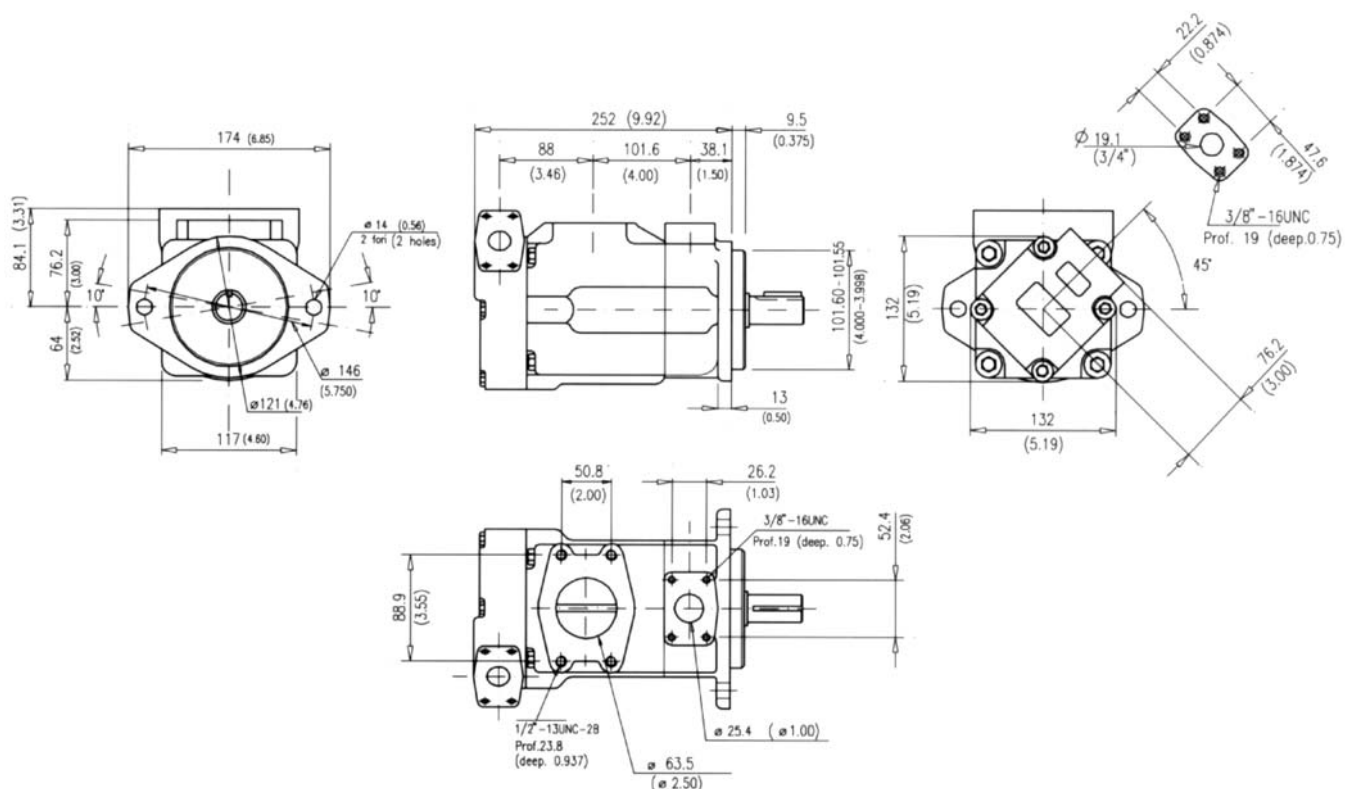
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-14



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)



Approx. weight: 20,5 Kg. (45 lbs.)

Model code breakdown

BQ	21	G	**	**	*	*	**	(L)	*	(A)	
Pump series		Design							Mounting (omit if not required)		
Pump type											
Cartridge types											
-shaft end	12	14	17	19	21					Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)	
-cover end	02	05	08	09	11	12	14				
Body outlet port positions (Outlet viewed from cover end)											
A = Outlet opposite end B = Outlet 90° CCW from inlet C = Outlet in line with inlet D = Outlet 90° CW from inlet											
Cover outlet port positions (Outlet viewed from cover end)											Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)
A = Outlet 135° CCW from inlet B = Outlet 45° CCW from inlet C = Outlet 45° CW from inlet D = Outlet 135° CW from inlet											
Shaft end options											
01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE B											

Seals

(omit with standard seals and one shaft-seal in NBR)

V = seals and shaft-seal in FPM (Viton®)

D = standard seals and double shaft-seals in NBR

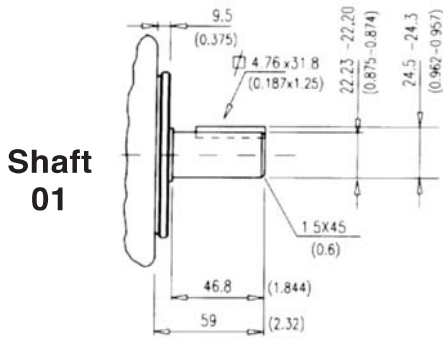
F = seals and double shaft-seals in FPM (Viton®)

Rotation

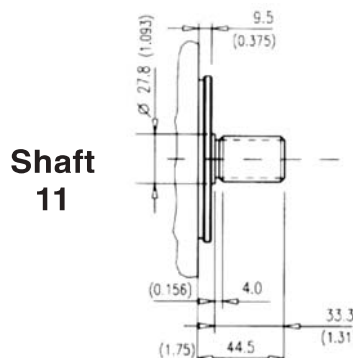
(viewed from shaft end)

L = left hand rotation CCW (omit if CW)

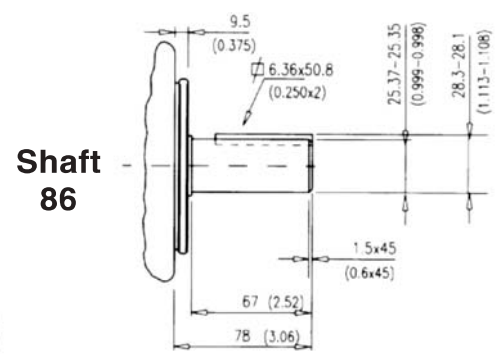
Shaft options mm (inches)



max. torque capability : 320 Nm (2800 lb.in.)

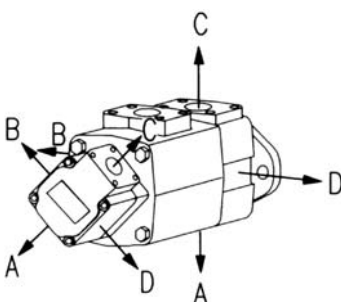


max. torque capability : 320Nm (2800 lb.in.)



max torque capability: 400 Nm (3560 lb. in.)

PORT ORIENTATIONS

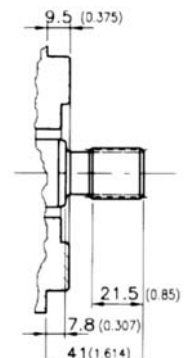


Spline data

(Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	13	
Pitch	16/32	
Major dia.	22.00 - 21.90	(0.866 - 0.862)
Pitch dia.	20.638	(0.8125)
Minor dia.	18.63 - 18.35	(0.733 - 0.722)
Wildhaber	11.67 - 11.70	(0.459 - 0.461)

Shaft 90



max torque capability: 320 Nm (2800 lb. in.)

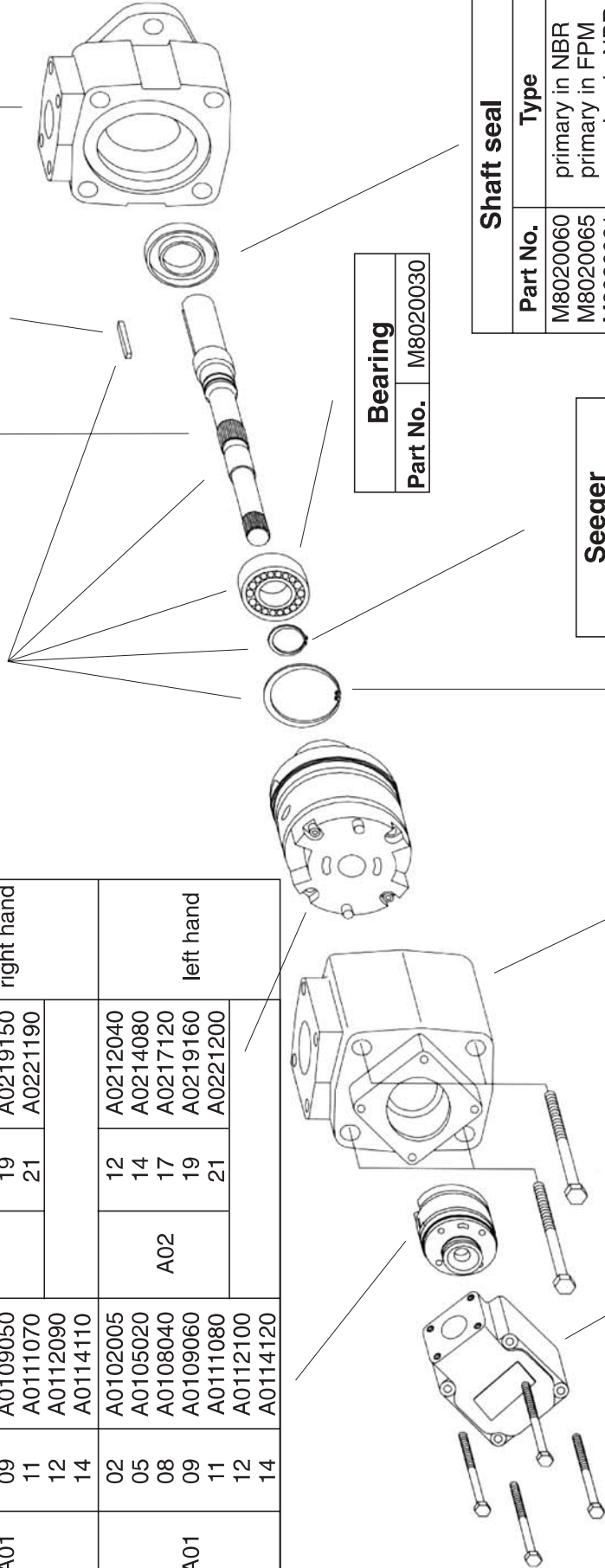
Id. codes of pump components

Cartridges					
Cover end		Shaft end		Pump rotation	
Series	Model	Part No.	Series	Model	Part No.
A01	02	A0102000	A02	12	A0212030
	05	A0105010		14	A0214070
	08	A0108030		17	A0217110
	09	A0109050		19	A0219150
	11	A0111070		21	A0221190
A01	12	A0112090	right hand		
	14	A0114110			
	02	A0102005			
	05	A0105020			
	08	A0108040			
A01	09	A0109060	A02	12	A0212040
	11	A0111080		14	A0214080
	12	A0112100		17	A0217120
	14	A0114120		19	A0219160
				21	A0221200
			left hand		

Shaft kit	
Model	Part No.
01	M8210601
11	M8210611
86	M8210686
90	M8210690

Shaft	
Model	Part No.
01	K2101000
11	K2111000
86	K2186000
90	K2190000

Body	
Part No.	M8020010



Bearing	
Part No.	M8020030

Shaft seal	
Part No.	Type
M8020060	primary in NBR
M8020065	primary in FPM
M8020061	secondary in NBR
M8020066	secondary in FPM

Seeger	
Part No.	M8020050

Intel body	
Part No.	M8020110

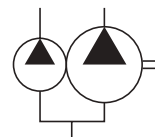
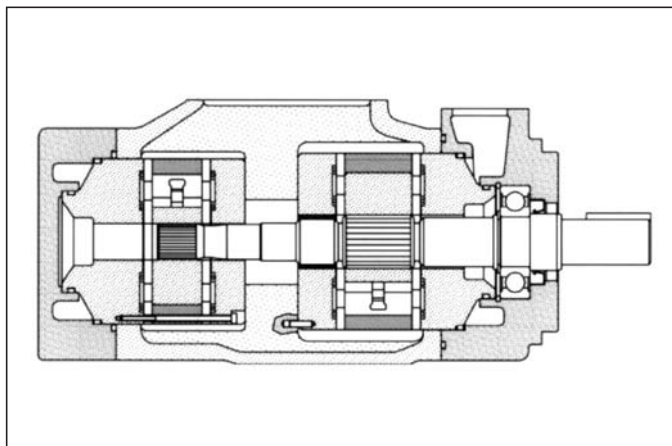
Cover	
Part No.	M8020120

Pump seal kit		
Part No.	Parts	Type
M8210411	seals + 1 shaft seal	NBR
M8210412	seals + 2 shaft seals	NBR
M8210413	seals + 1 shaft seal	FPM (Viton®)
M8210414	seals + 2 shaft seals	FPM (Viton®)

Screw	
Part No.	M8020130
Torque to 102 Nm (910 lb. in.)	

Screw	
Part No.	M8020420
Torque to 70 Nm (624 lb. in.)	

Seeger	
Part No.	M8020040



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 98 to 161 l/min (from 26 to 42 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity		Rated capacity		Maximum pressure		Speed range	
			at 1200 rpm 7 bar		at 1500 rpm 7 bar		with mineral oil		rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A03-24	78,3	(4.78)	90	(24)	115,3	(30.5)	210	(3050)	600	2500
A03-28	91,2	(5.56)	106	(28)	131,8	(34.8)	210	(3050)	600	2500
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A01-02	7,2	(0.44)	8,3	(2)	10,4	(2.8)	210	(3050)	600	2700
A01-05	18,0	(1.10)	20,8	(5)	26,1	(6.9)	210	(3050)	600	2700
A01-08	27,4	(1.67)	31,8	(8)	39,4	(10.4)	210	(3050)	600	2700
A01-09	30,1	(1.83)	35,1	(9)	44,1	(11.7)	210	(3050)	600	2700
A01-11	36,4	(2.22)	42,4	(11)	52,6	(13.9)	210	(3050)	600	2700
A01-12	39,5	(2.41)	46,9	(12)	58,7	(15.5)	160	(2300)	600	2700
A01-14	45,9	(2.79)	54,9	(14)	69,6	(18.4)	140	(2030)	600	2700

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

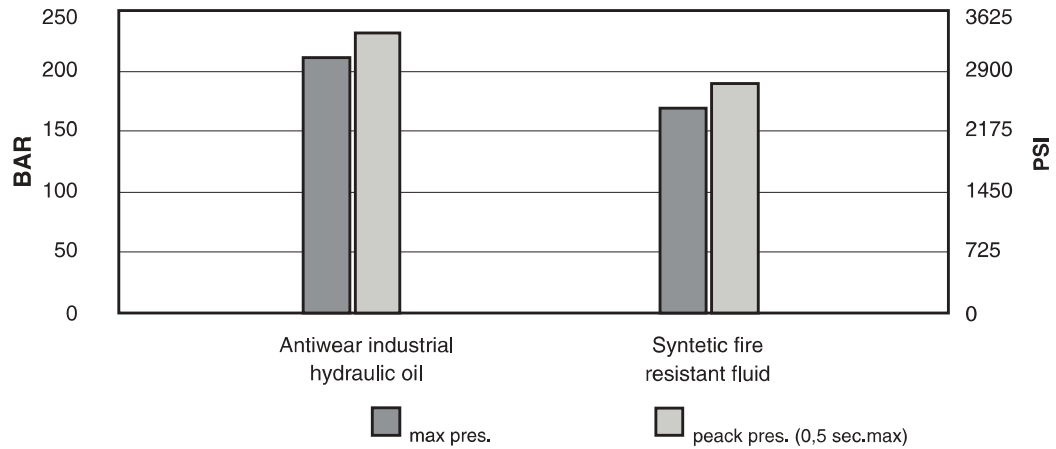
Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

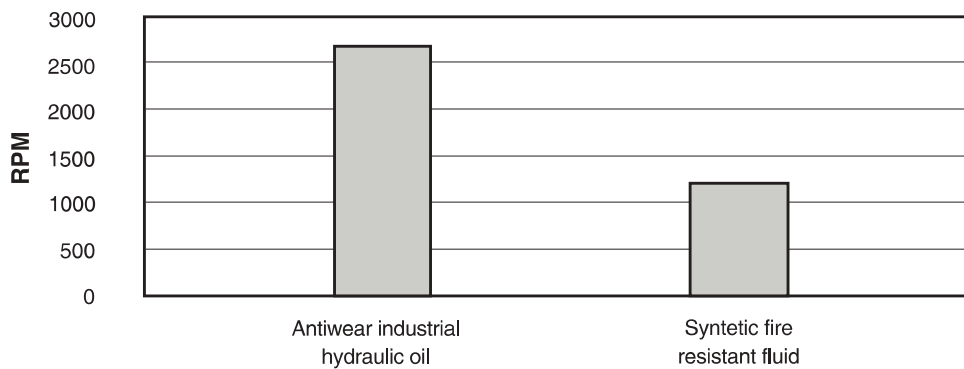
Drive: direct and coaxial by means of a flexible coupling.

Main operating data

max pressure / hydraulic fluid

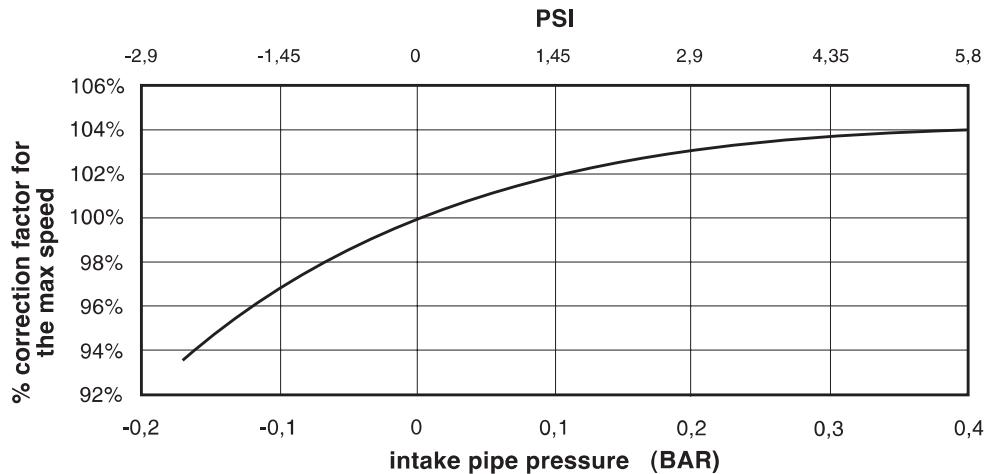


max speed / hydraulic fluid (with 0 bar in the intake pipe)

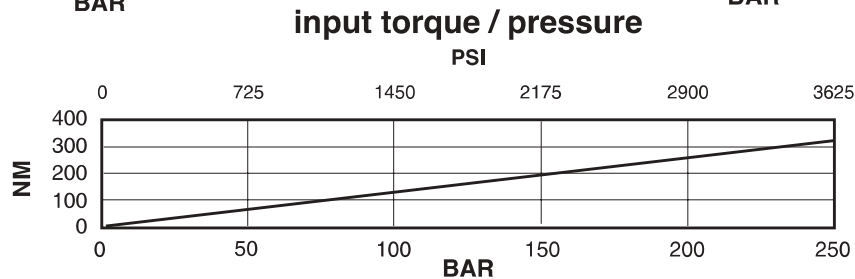
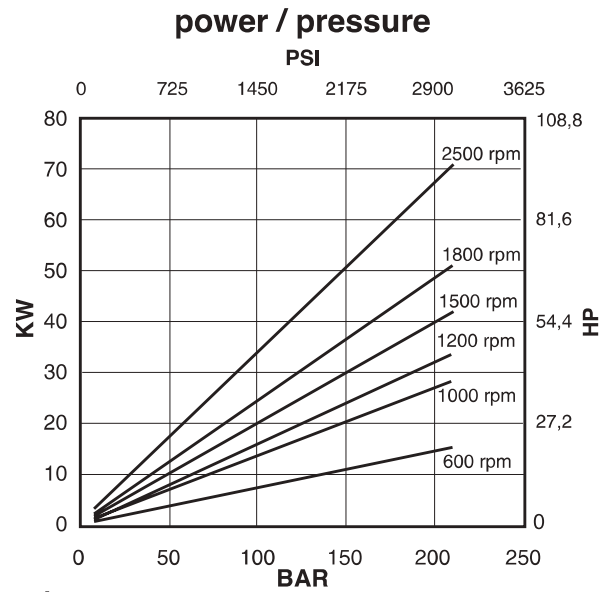
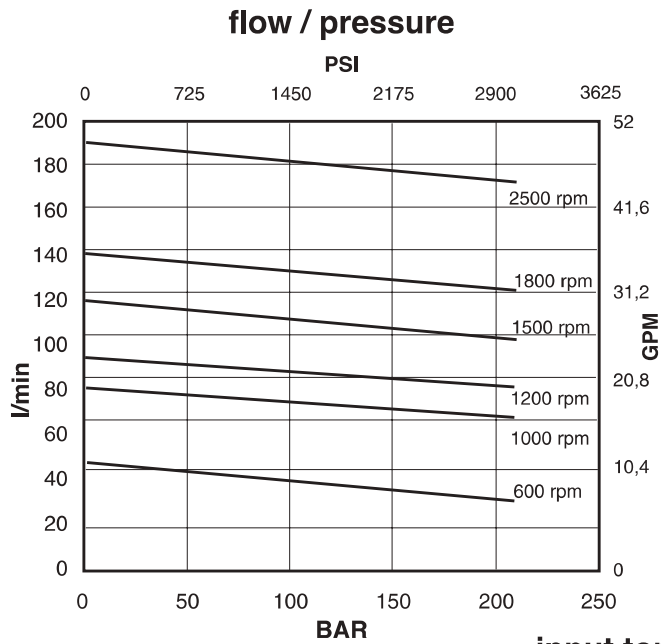


If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

max speed / intake pipe pressure

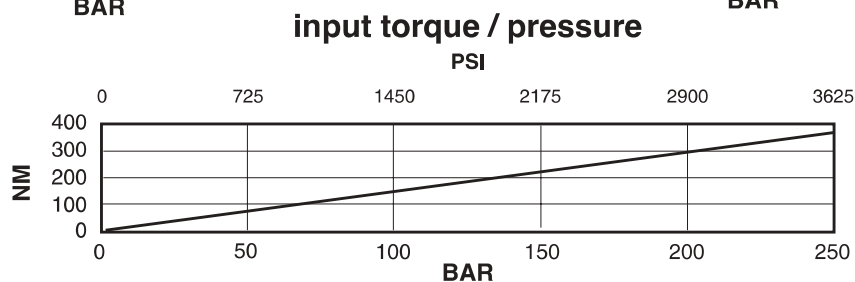
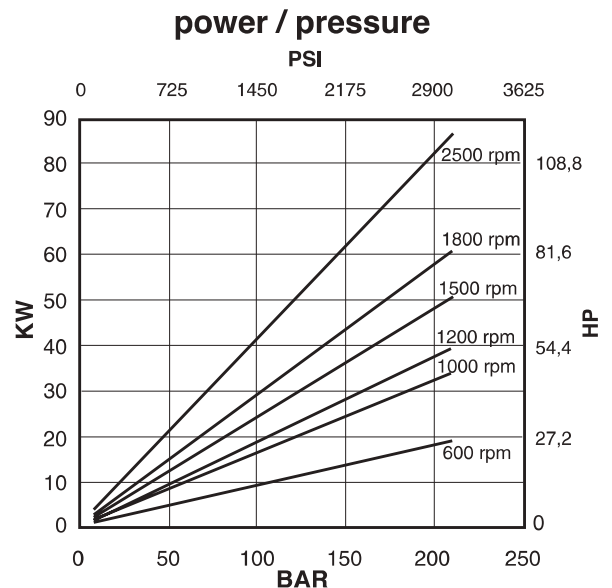
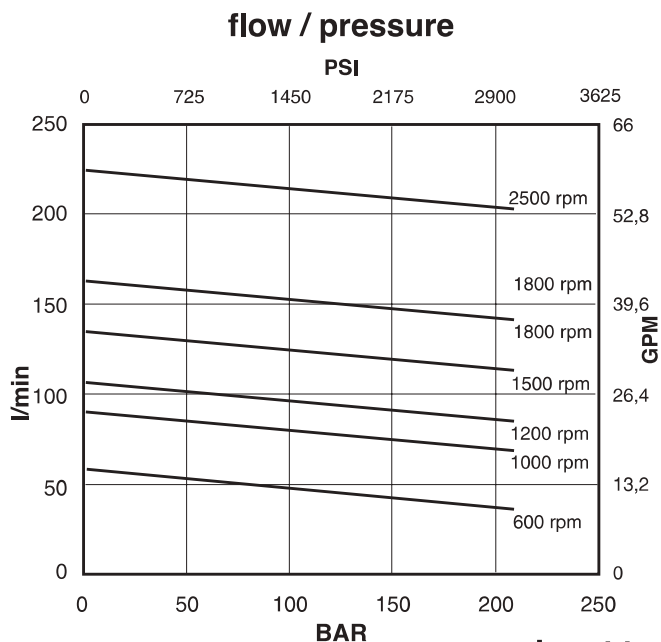


Shaft end cartridge A03-24



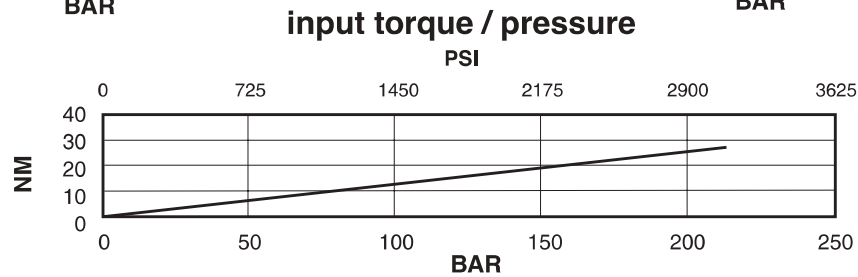
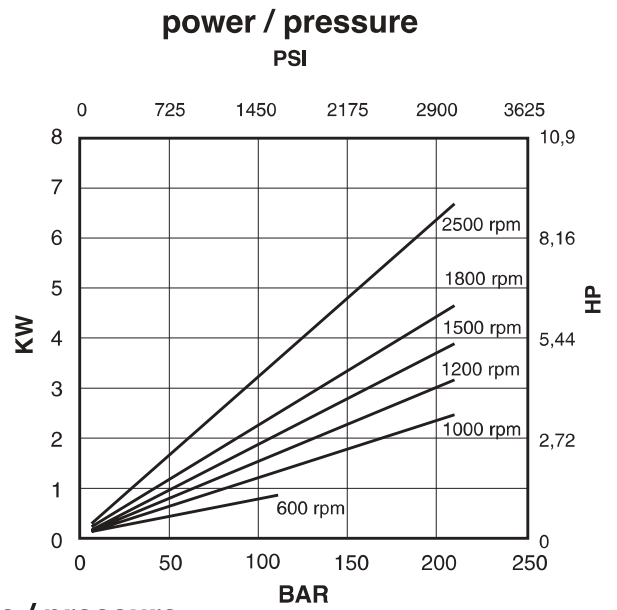
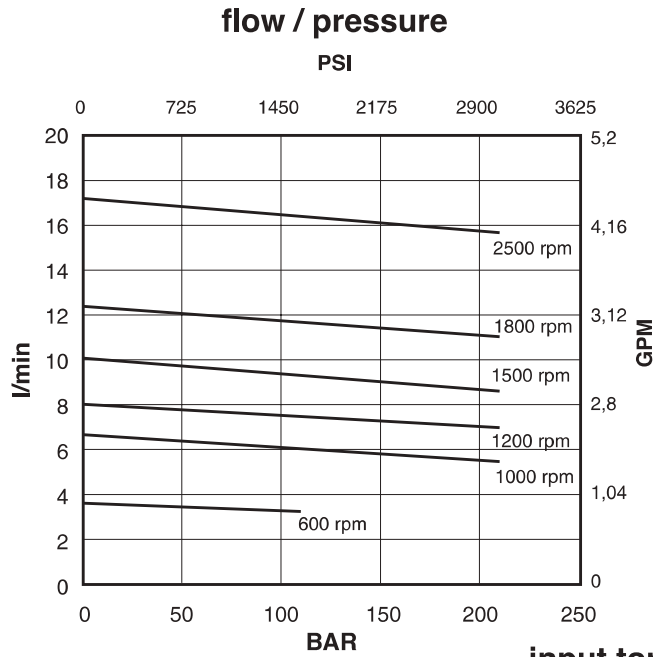
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Shaft end cartridge A03-28



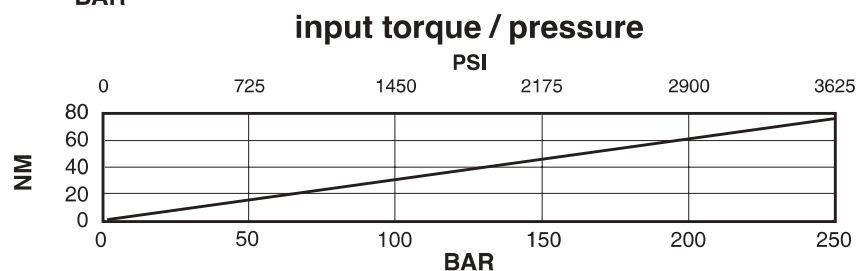
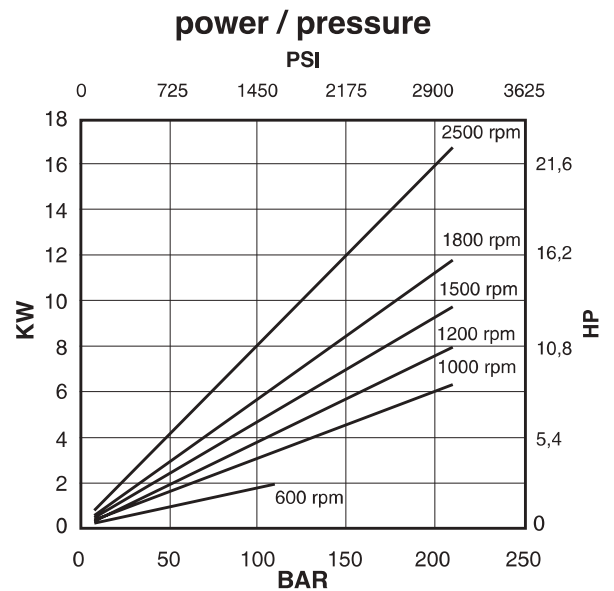
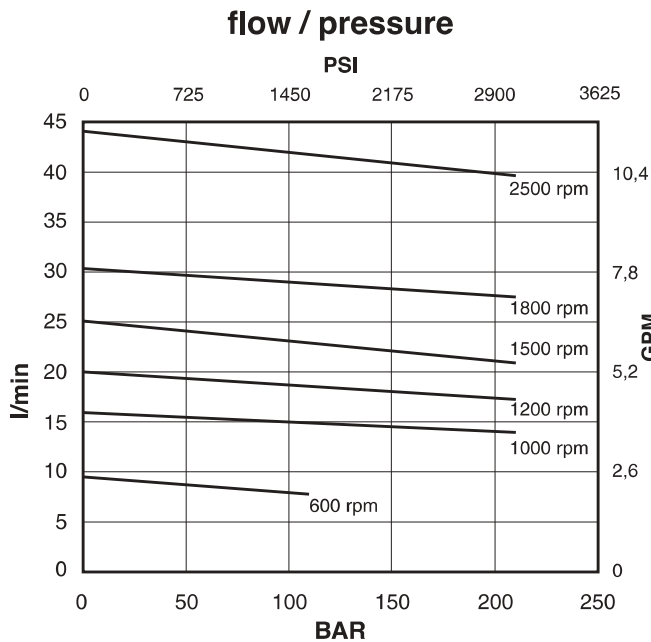
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-02



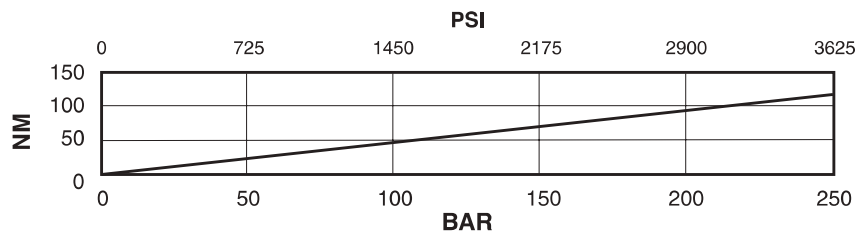
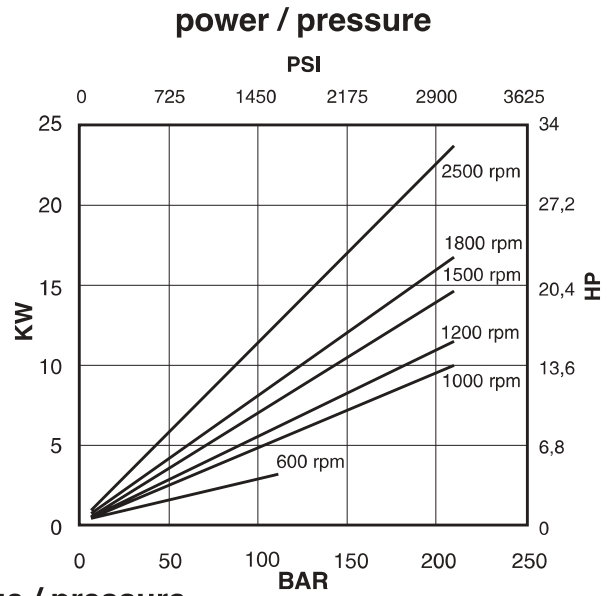
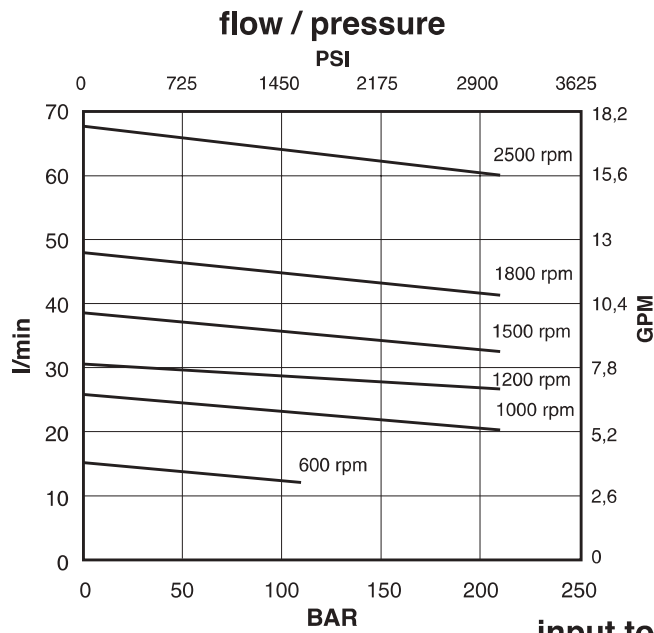
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-05



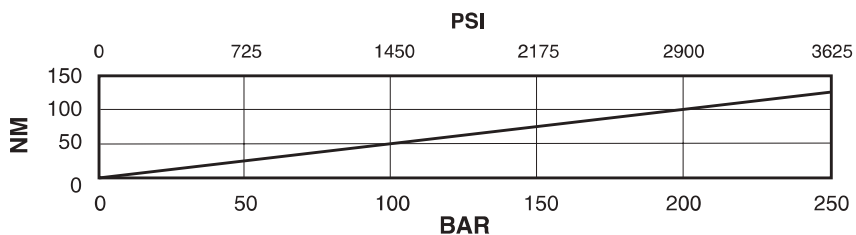
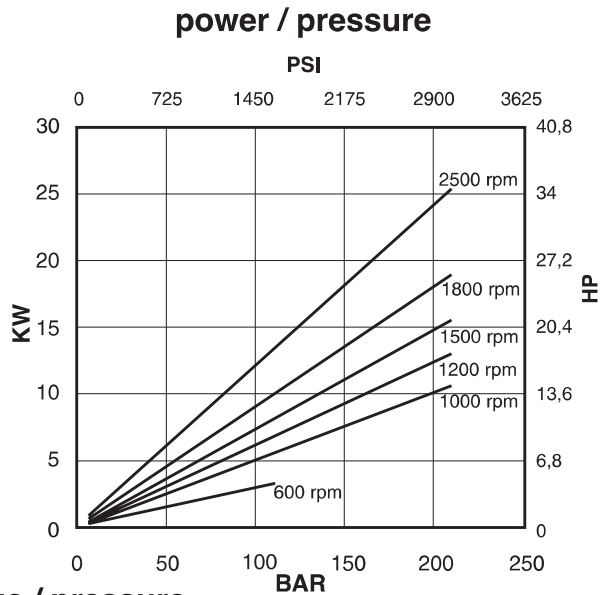
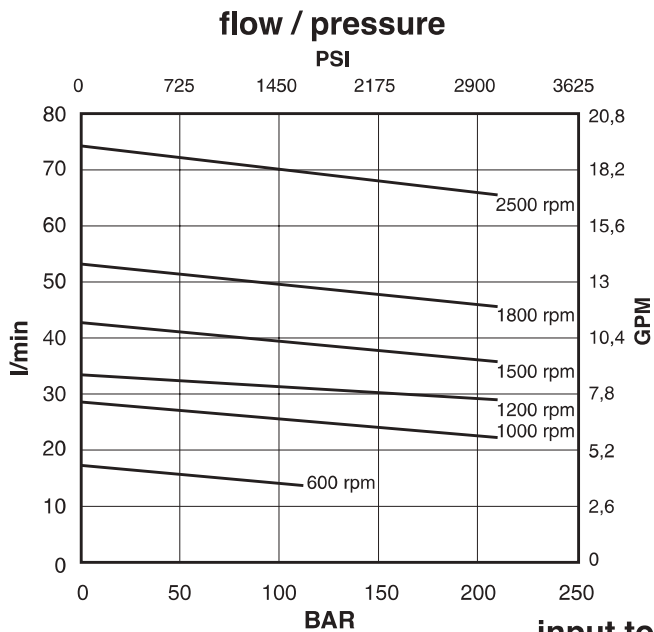
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-08



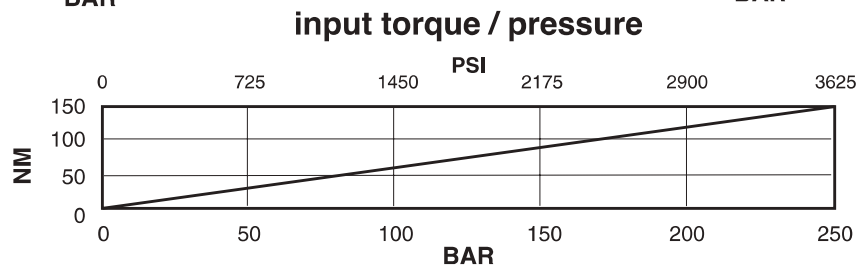
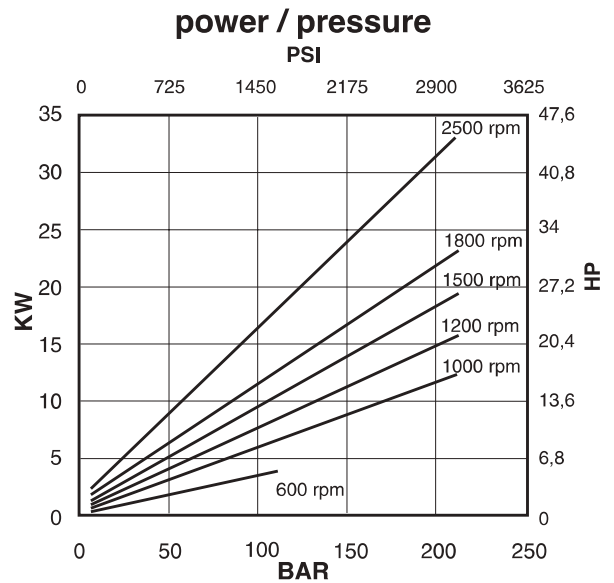
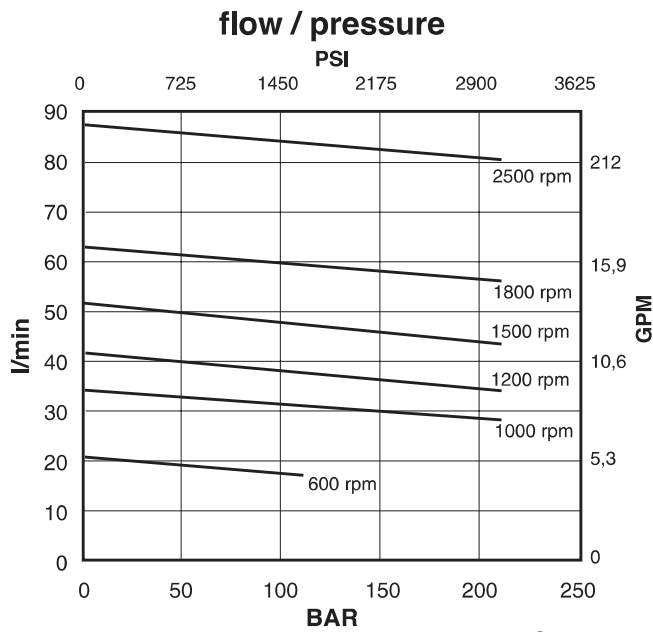
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-09



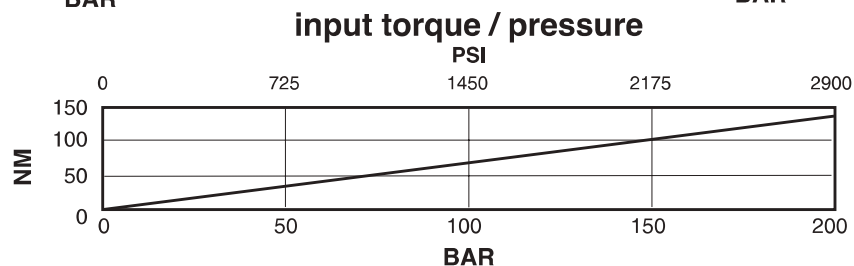
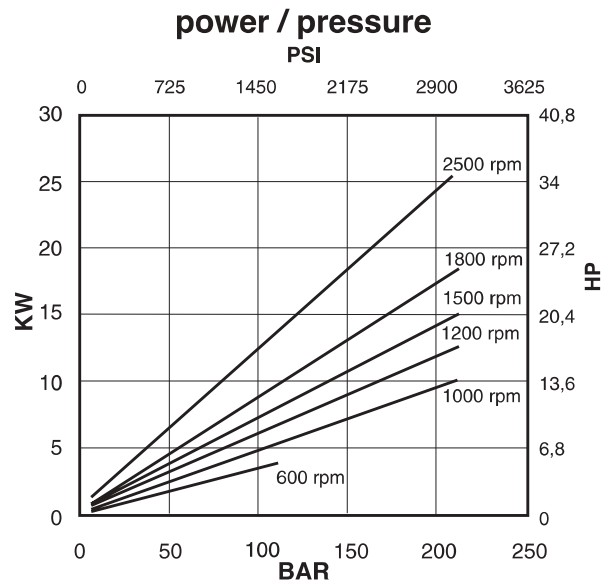
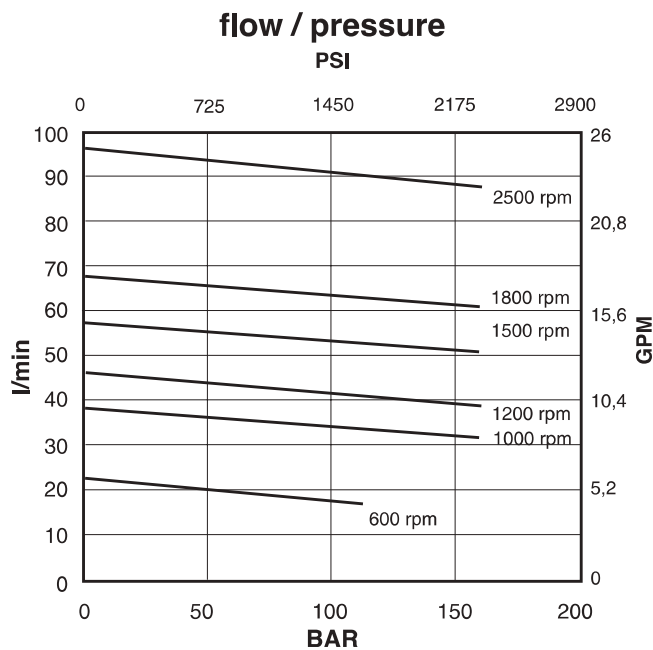
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-11



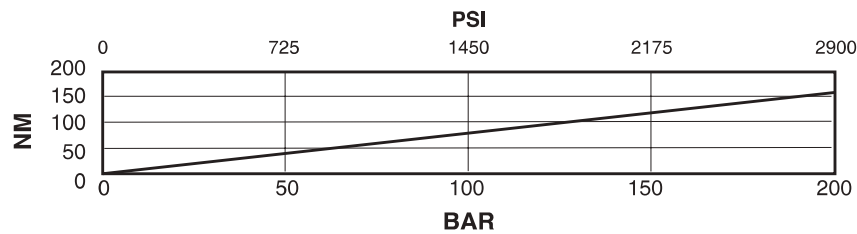
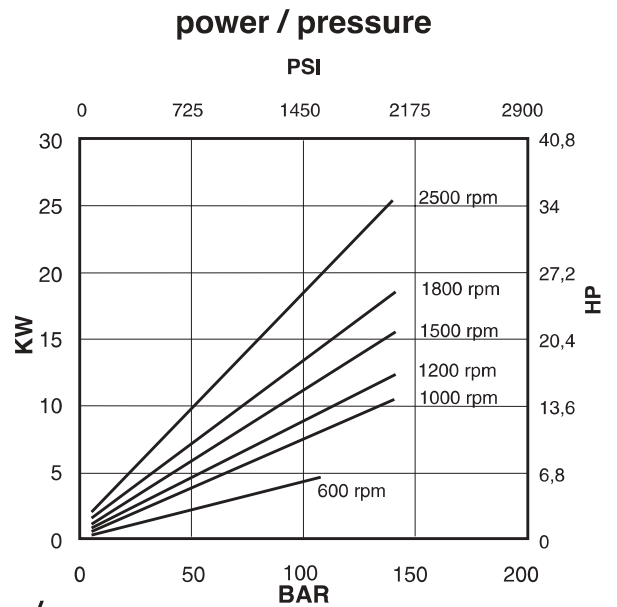
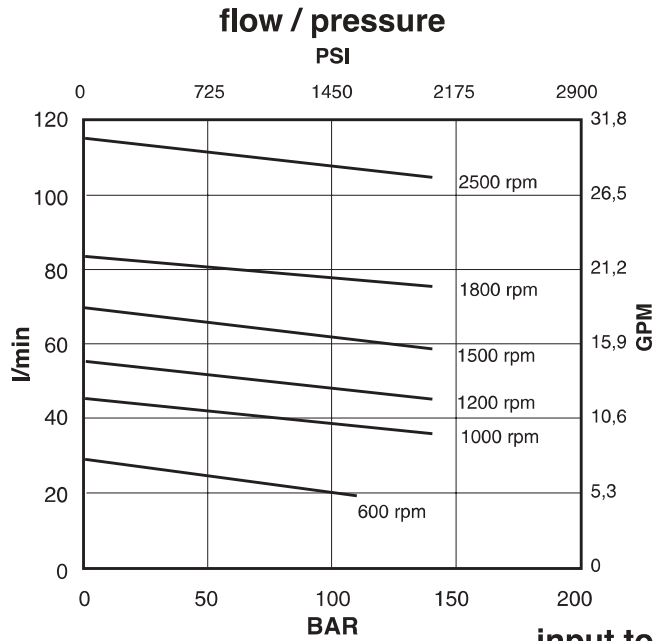
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-12



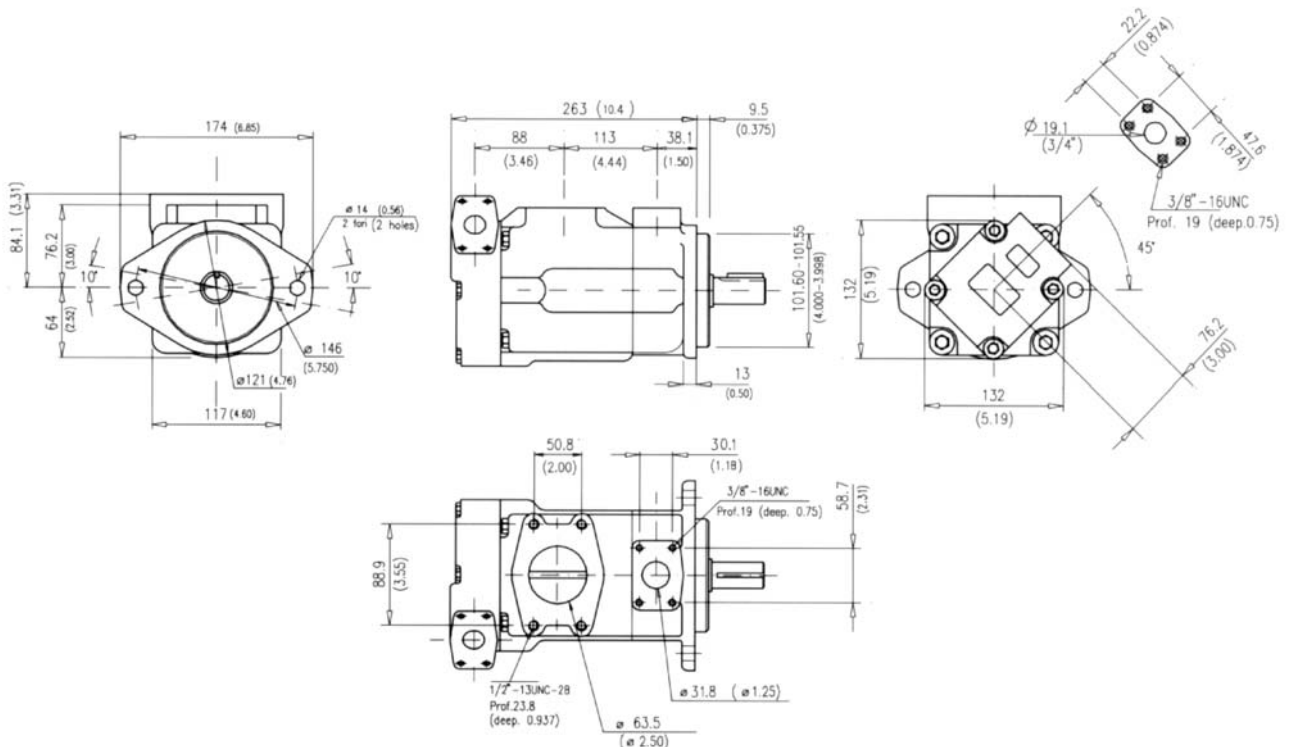
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-14



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

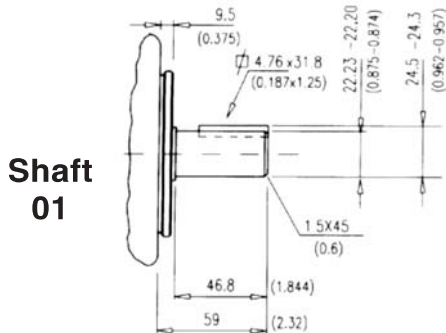


Approx. weight: 23 kg. (50 lbs.)

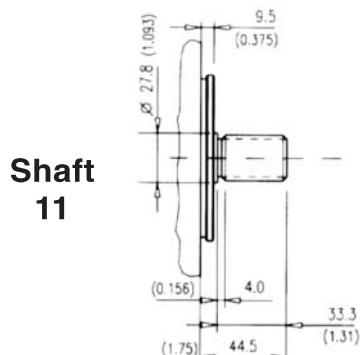
Model code breakdown

BQ	31	G	**	**	*	*	**	(L)	*	(A)
Pump series		Design							Mounting (omit if not required)	
Pump type										
Cartridge types										
-shaft end		24	28							
-cover end		02	05	08	09	11	12	14		
Body outlet port positions (Outlet viewed from cover end)										
A = Outlet opposite end										
B = Outlet 90° CCW from inlet										
C = Outlet in line with inlet										
D = Outlet 90° CW from inlet										
Cover outlet port positions (Outlet viewed from cover end)										
A = Outlet 135° CCW from inlet										
B = Outlet 45° CCW from inlet										
C = Outlet 45° CW from inlet										
D = Outlet 135° CW from inlet										
Rotation (viewed from shaft end)										
L = left hand rotation CCW (omit if CW)										
Shaft end options										
01 = Straight with key (standard), 11 = Splined										
86 = Heavy duty straight keyed, 90 = Splined SAE B										

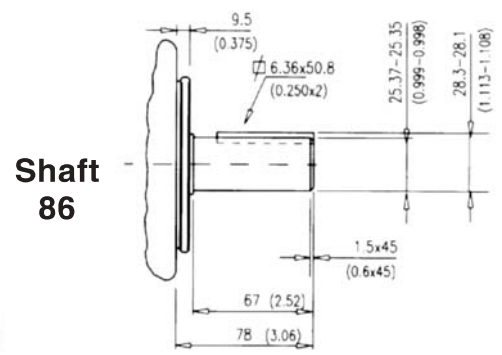
Shaft options mm (inches)



max. torque capability : 320 Nm (2800 lb.in.)

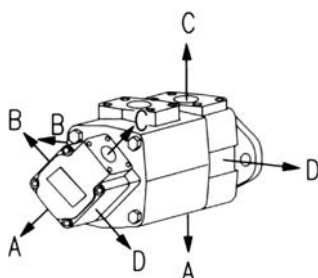


max. torque capability : 320Nm (2800 lb.in.)



max torque capability: 400 Nm (3560 lb. in.)

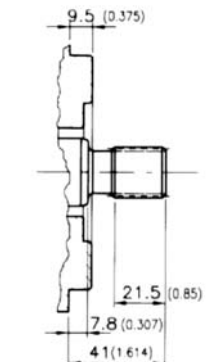
PORT ORIENTATIONS



Spline data (Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	13	
Pitch	16/32	
Major dia.	22.00 - 21.90	(0.866 - 0.862)
Pitch dia.	20.638	(0.8125)
Minor dia.	18.63 - 18.35	(0.733 - 0.722)
Wildhaber	11.67 - 11.70	(0.459 - 0.461)

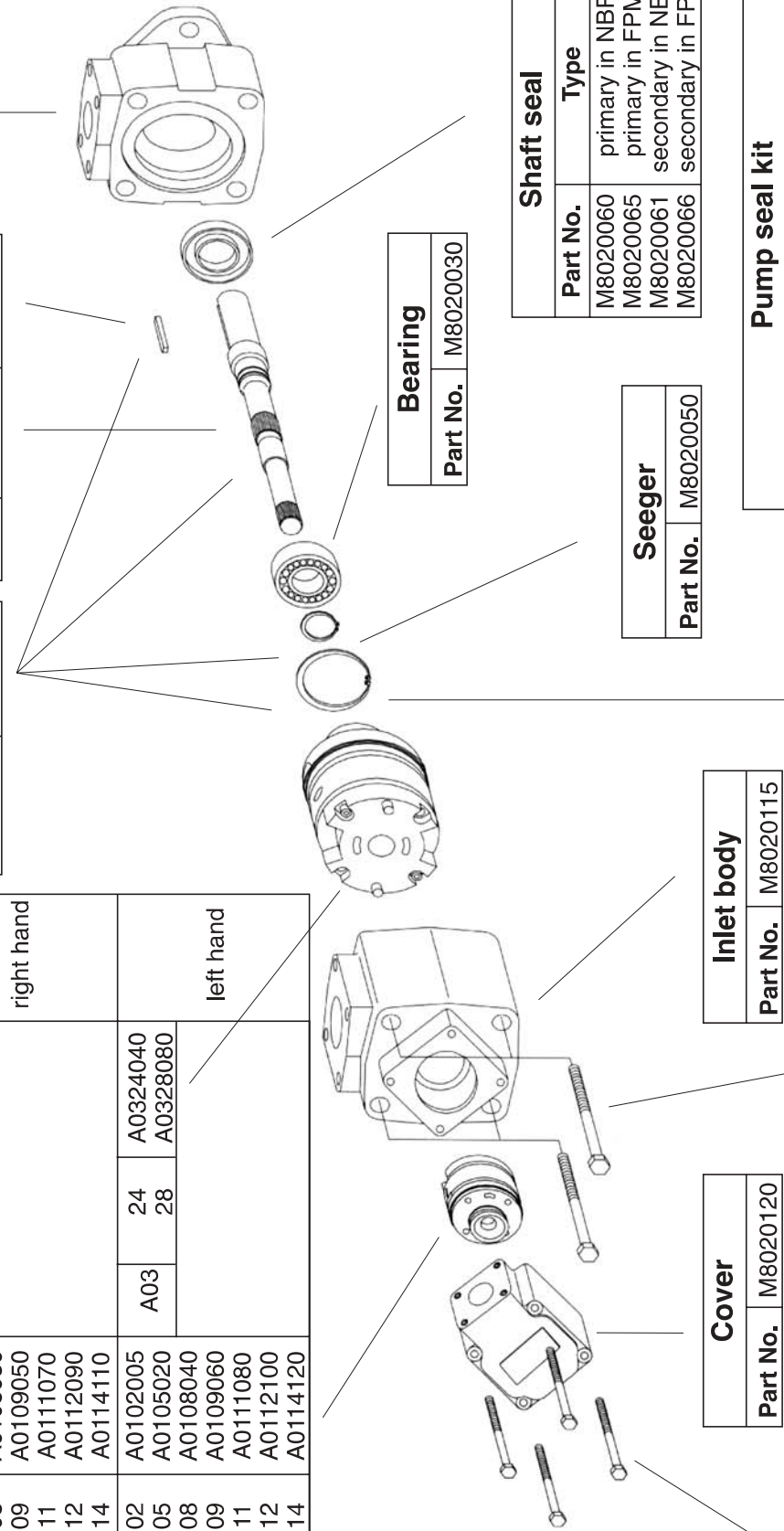
Shaft 90



max torque capability: 320 Nm (2800 lb. in.)

Id. codes of pump components

Cartridges					
Cover end			Shaft end		Pump rotation
Series	Model	Part No.	Series	Model	Part No.
A01	02	A0102000	A03	24	A0324030
	05	A0105010		28	A0328070
	08	A0108030			
	09	A0109050			
	11	A0111070			
A01	12	A0112090	A03		
	14	A0114110			
	02	A0102005		24	A0324040
	05	A0105020		28	A0328080
	08	A0108040			
A01	09	A0109060	A03		
	11	A0111080			
	12	A0112100			
	14	A0114120			



Body	
Part No.	M8030010

Shaft	
Model	Part No.
01	K3101000
11	K3111000
86	K3186000
90	K3190000

Shaft kit	
Model	Part No.
01	M8310601
11	M8310611
86	M8310686
90	M8310690

Cartridges					
Cover end			Shaft end		Pump rotation
Series	Model	Part No.	Series	Model	Part No.
A01	02	A0102000	A03	24	A0324030
	05	A0105010		28	A0328070
	08	A0108030			
	09	A0109050			
	11	A0111070			
A01	12	A0112090	A03		
	14	A0114110			
	02	A0102005		24	A0324040
	05	A0105020		28	A0328080
	08	A0108040			
A01	09	A0109060	A03		
	11	A0111080			
	12	A0112100			
	14	A0114120			

Bearing	
Part No.	M8020030

Shaft seal	
Part No.	Type
M8020060	primary in NBR
M8020065	primary in FPM
M8020061	secondary in NBR
M8020066	secondary in FPM

Seeger	
Part No.	M8020050

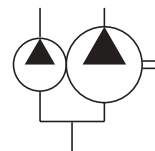
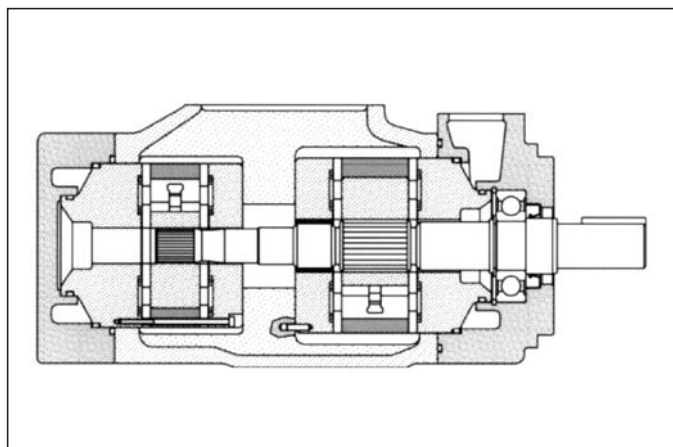
Pump seal kit		
Part No.	Parts	Type
M8210411	seals + 1 shaft seal	NBR
M8210412	seals + 2 shaft seals	NBR
M8210413	seals + 1 shaft seal	FPM (Viton®)
M8210414	seals + 2 shaft seals	FPM (Viton®)

Inlet body	
Part No.	M8020115

Seeger	
Part No.	M8020040

Screw	
Part No.	M6000130
Torque to 102 Nm (910 lb. in.)	

Screw	
Part No.	M8020420
Torque to 70 Nm (624 lb. in.)	



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 87 to 195 l/min (from 23 to 52 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A04-21	69,0	(4.2)	79,5	(21)	101,4	(26.8)	210	(3050)	600	2500
A04-25	81,6	(5)	94,0	(25)	120,1	(31.7)	210	(3050)	600	2500
A04-30	97,7	(6)	113,8	(30)	141,2	(37.3)	210	(3050)	600	2500
A04-35	112,7	(6.9)	131,6	(35)	167,2	(44.1)	210	(3050)	600	2400
A04-38	121,6	(7.4)	139,9	(38)	177,3	(46.8)	210	(3050)	600	2400

cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A01-02	7,2	(0.44)	8,3	(2)	10,4	(2.8)	210	(3050)	600	2700
A01-05	18,0	(1.10)	20,8	(5)	26,1	(6.9)	210	(3050)	600	2700
A01-08	27,4	(1.67)	31,8	(8)	39,4	(10.4)	210	(3050)	600	2700
A01-09	30,1	(1.83)	35,1	(9)	44,1	(11.7)	210	(3050)	600	2700
A01-11	36,4	(2.22)	42,4	(11)	52,6	(13.9)	210	(3050)	600	2700
A01-12	39,5	(2.41)	46,9	(12)	58,7	(15.5)	160	(2300)	600	2700
A01-14	45,9	(2.79)	54,9	(14)	69,6	(18.4)	140	(2030)	600	2700

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

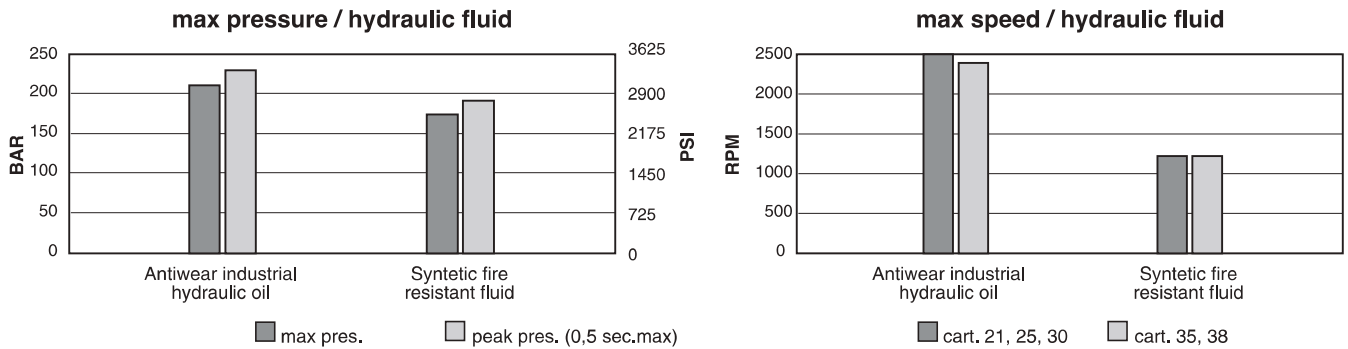
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

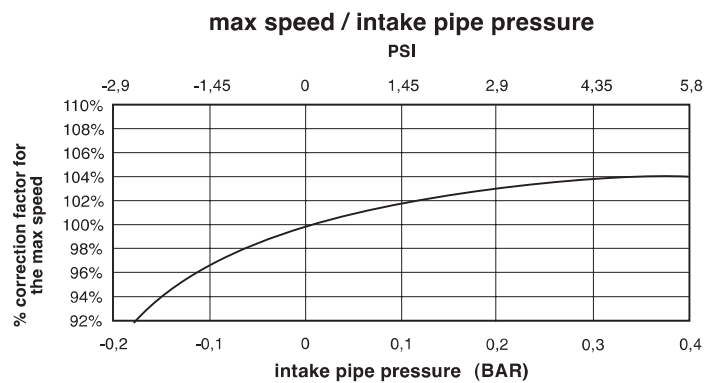
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

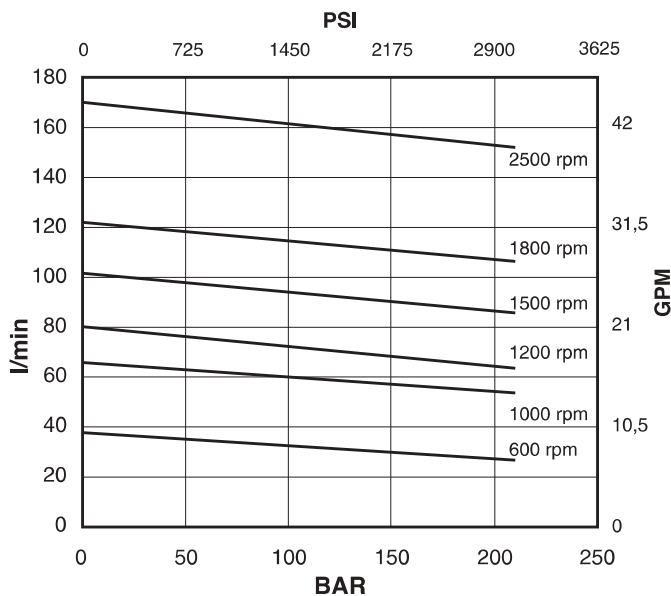
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

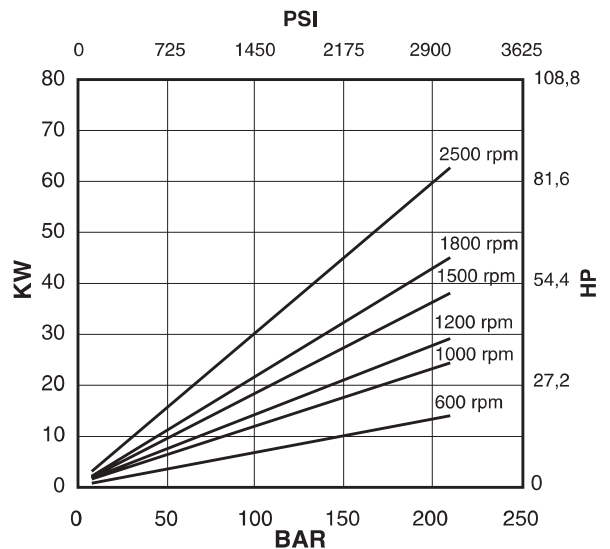


flow / pressure

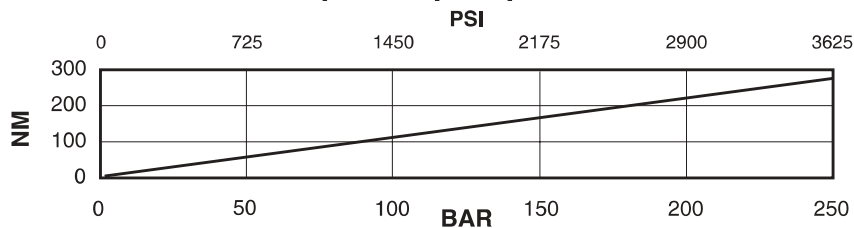


Shaft end cartridge A04-21

power / pressure

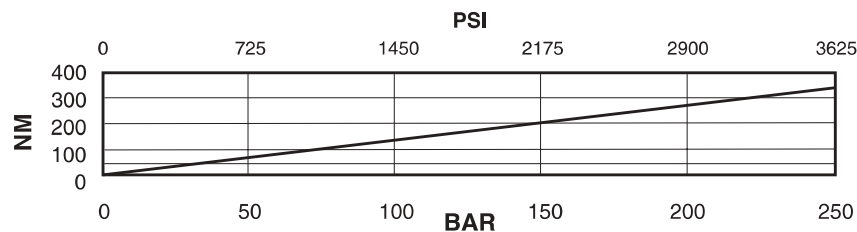
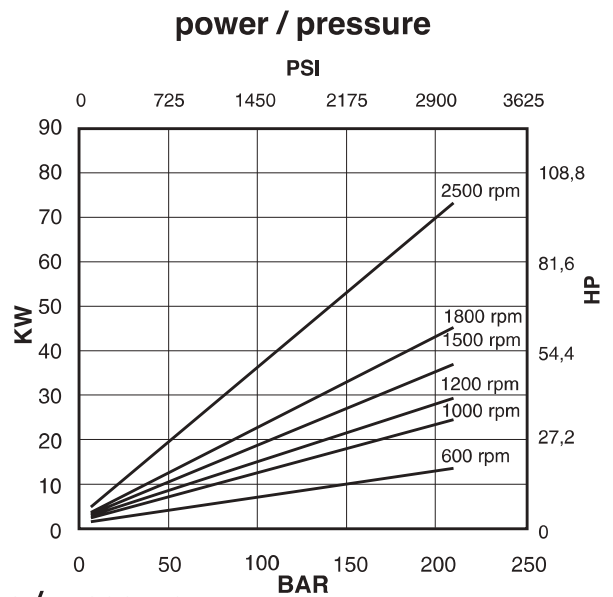
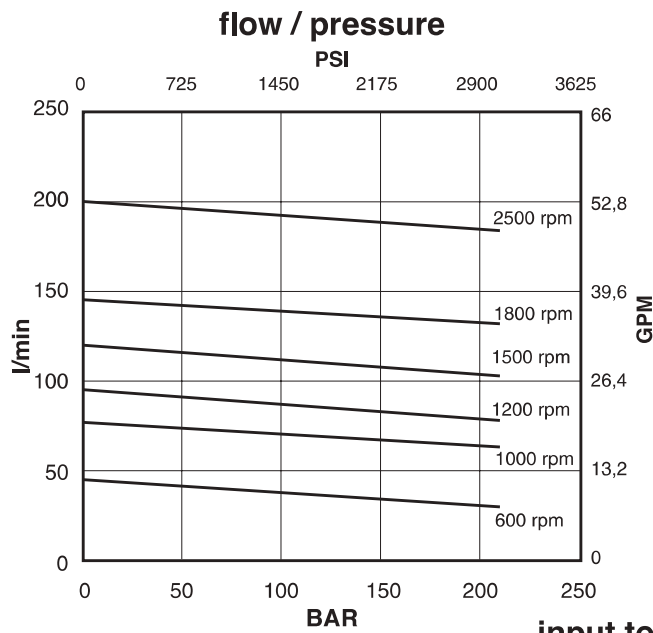


input torque / pressure



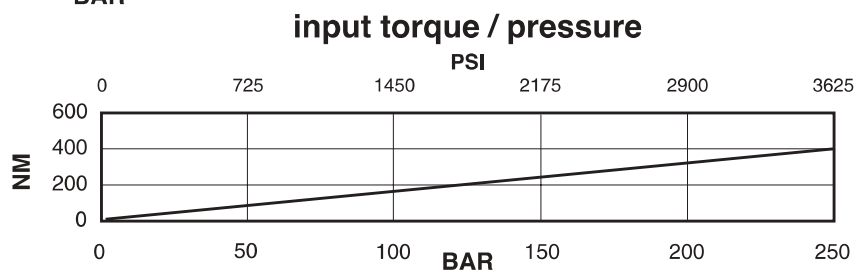
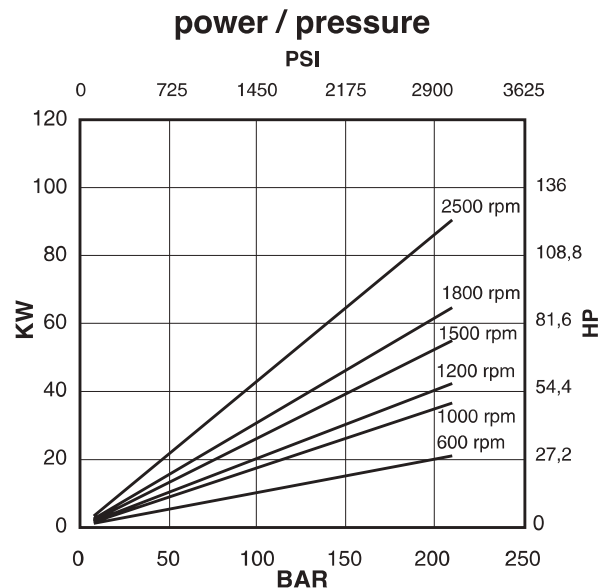
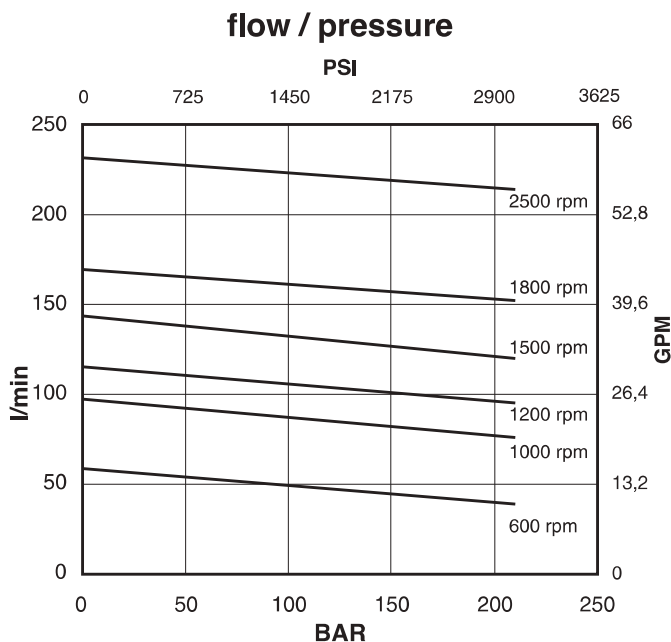
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-25



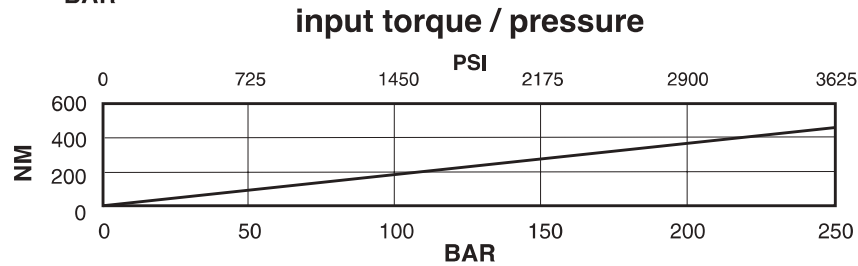
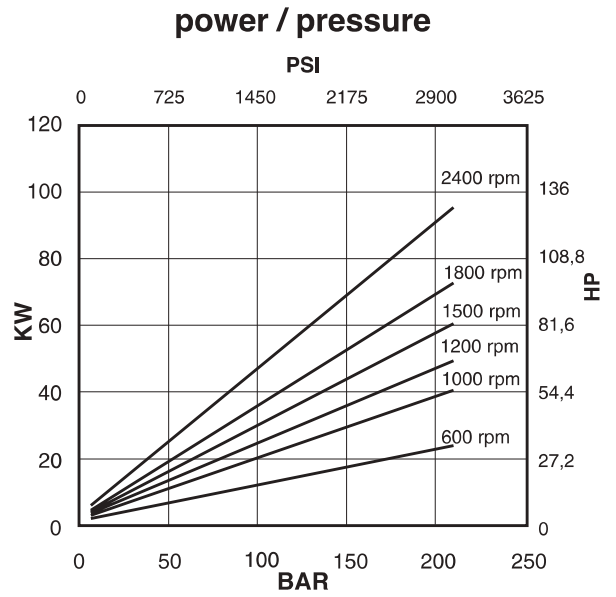
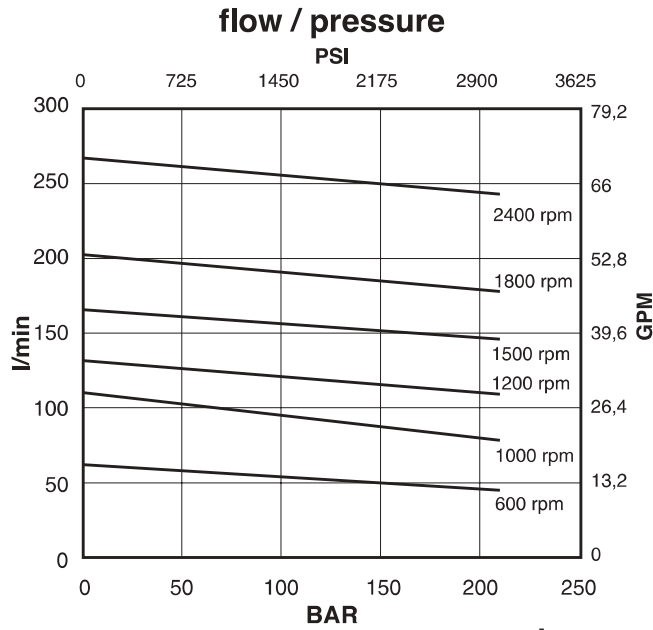
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Shaft end cartridge A04-30



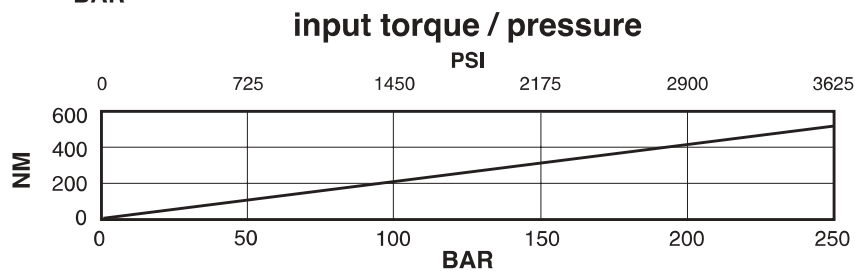
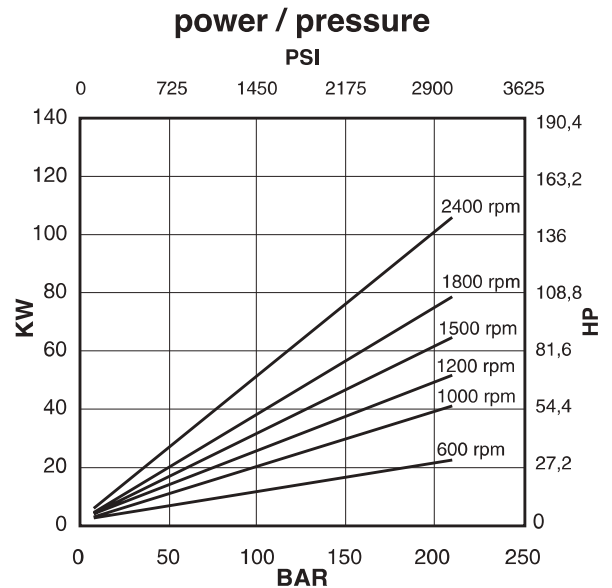
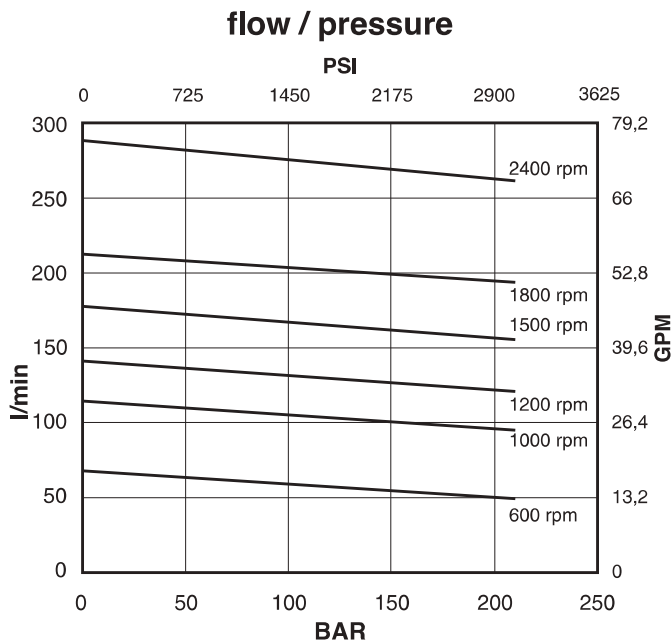
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Shaft end cartridge A04-35



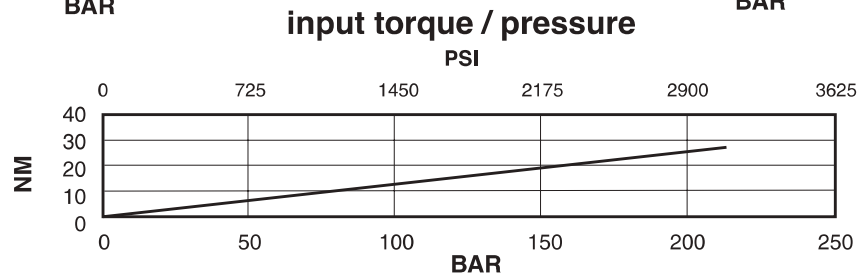
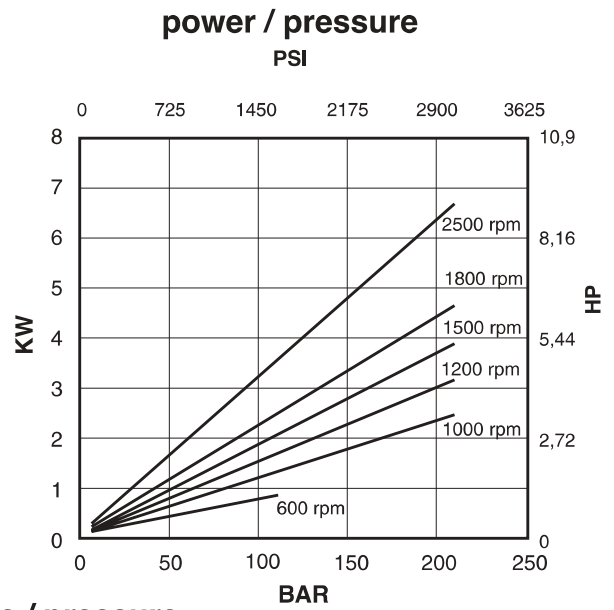
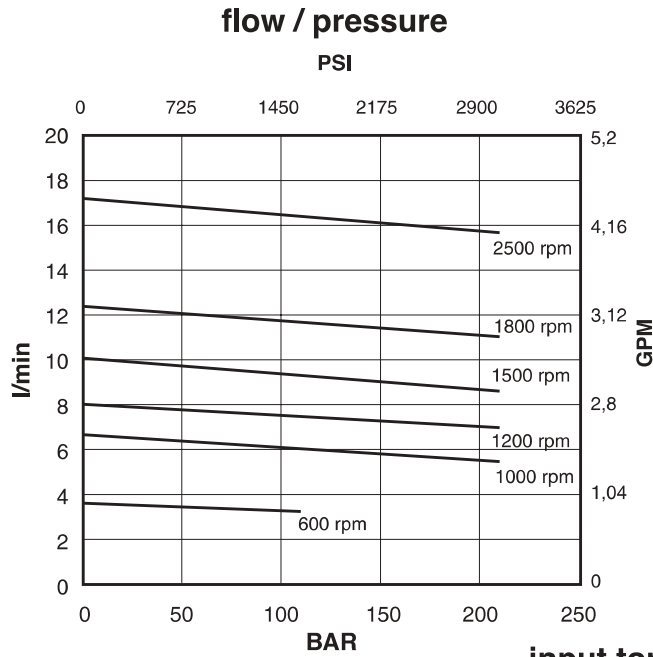
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-38



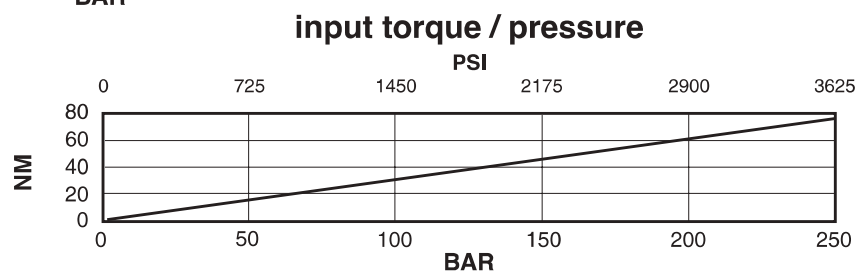
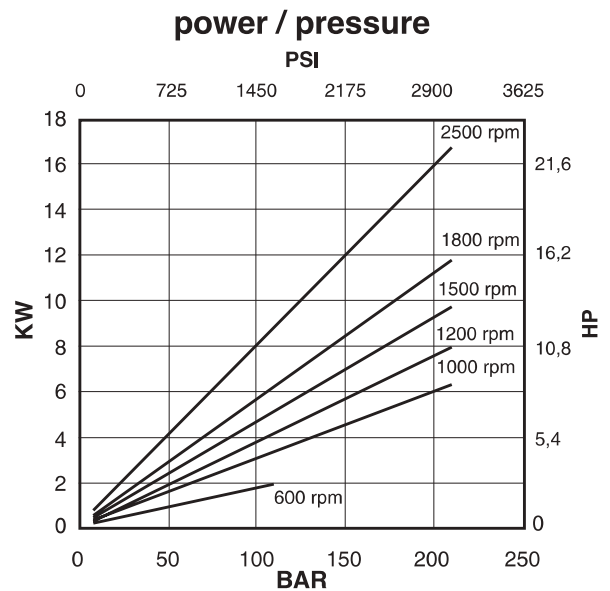
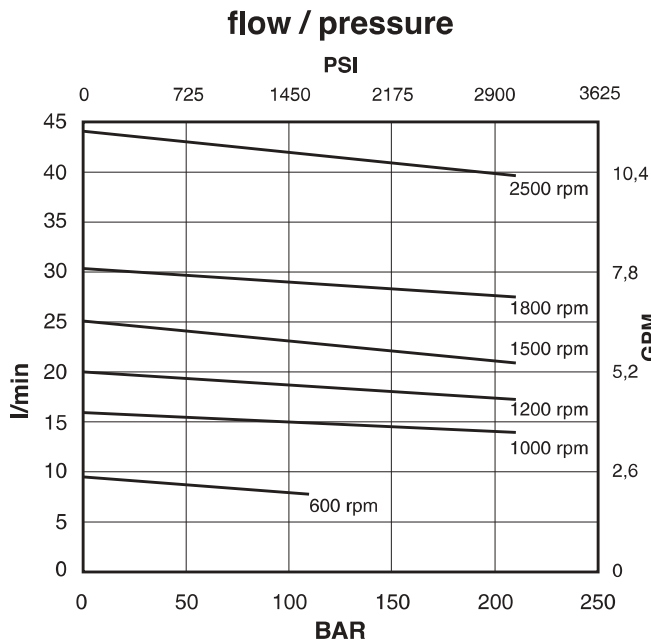
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-02



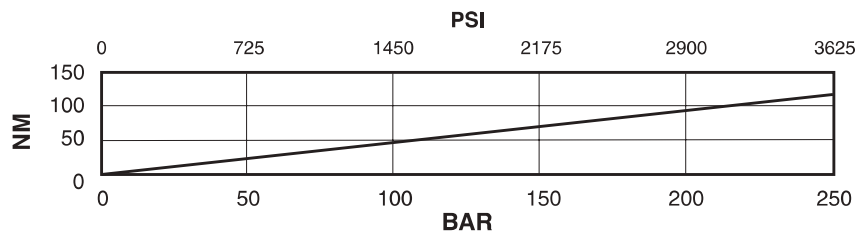
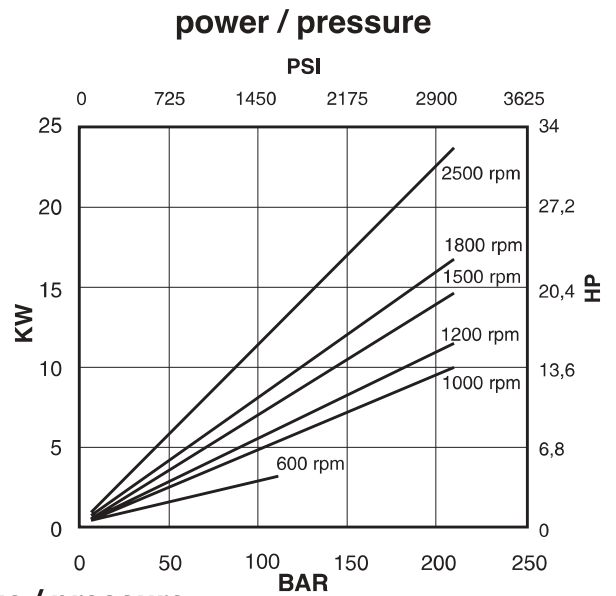
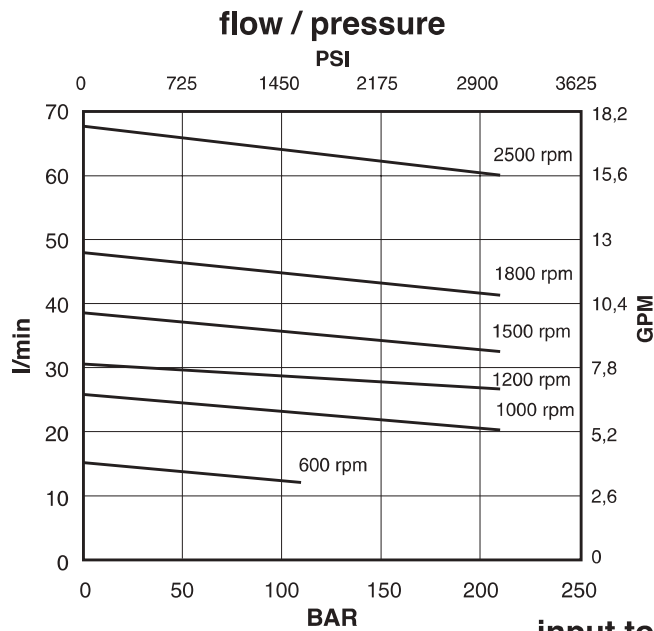
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-05



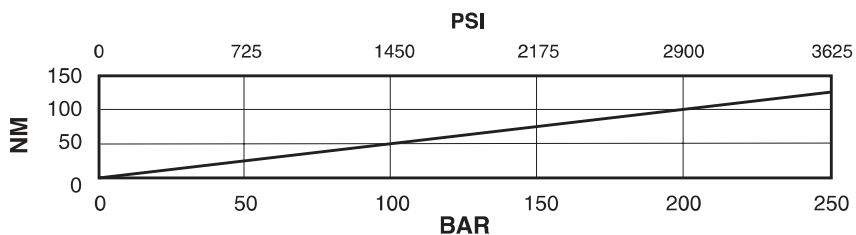
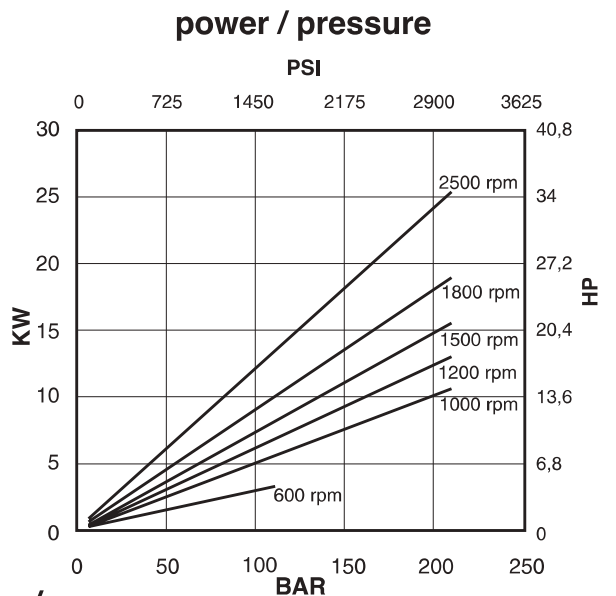
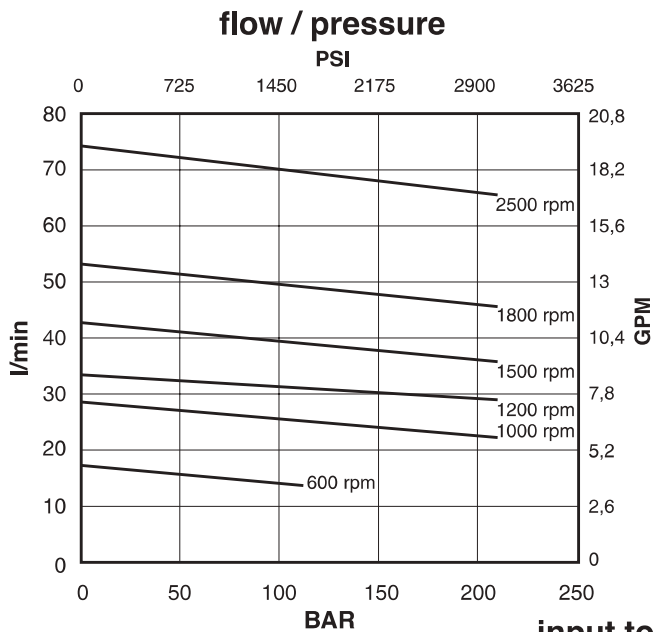
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-08



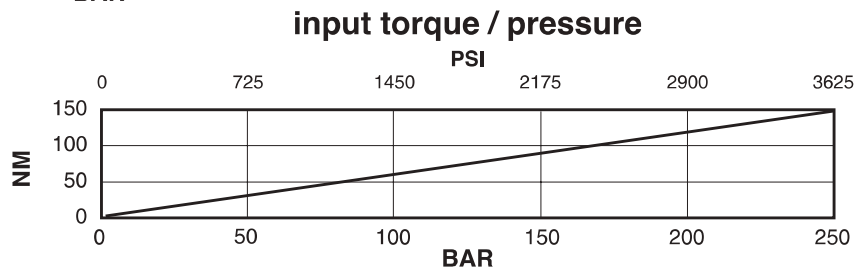
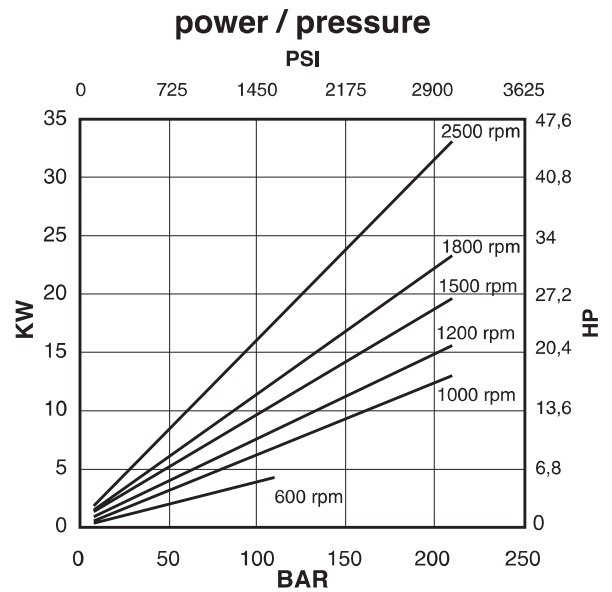
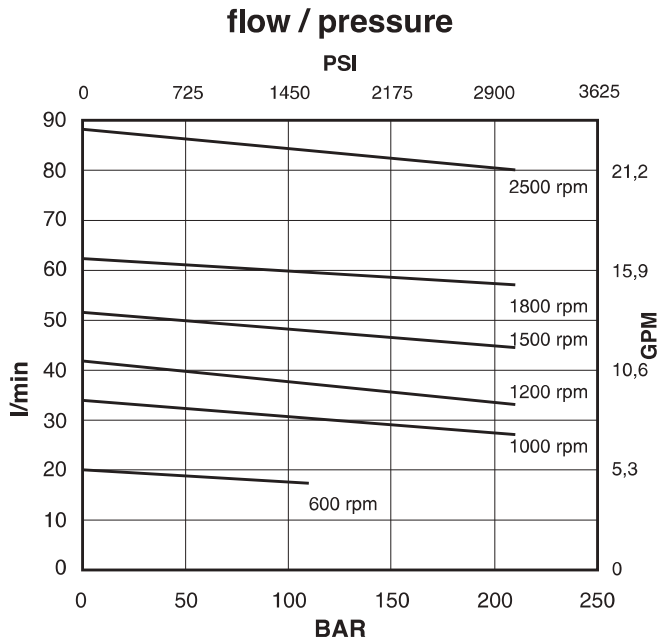
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-09



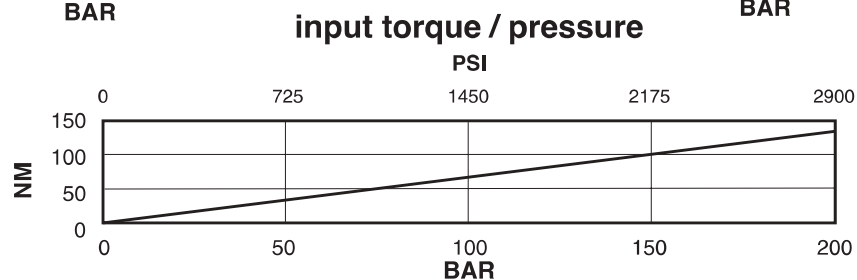
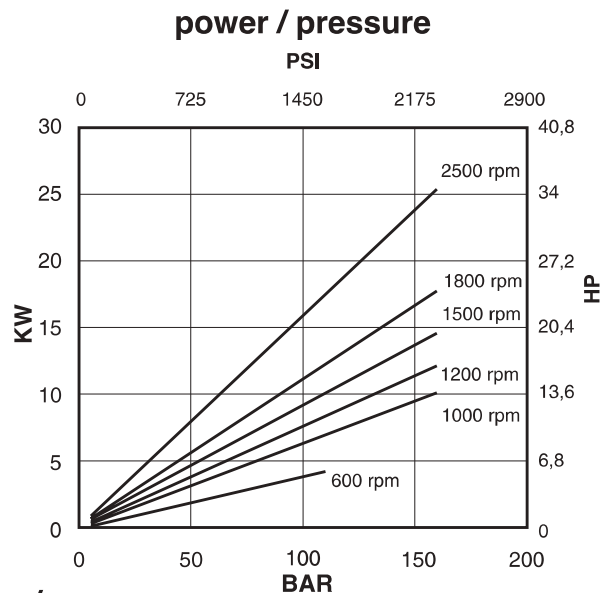
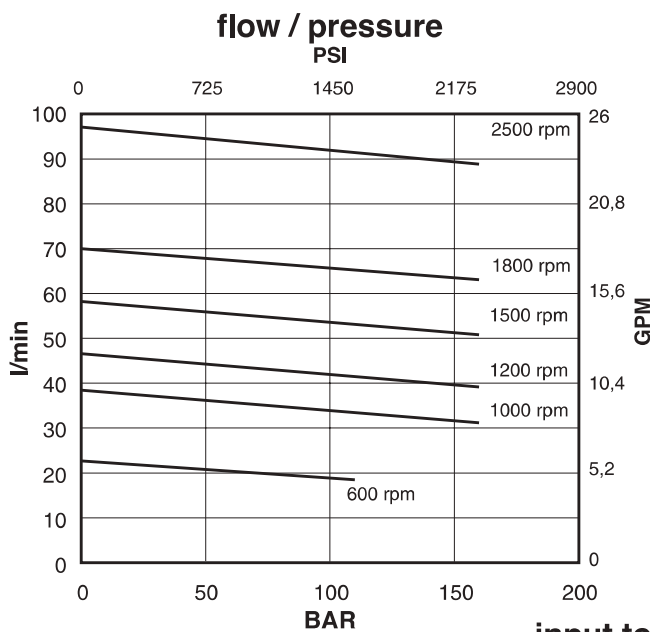
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-11



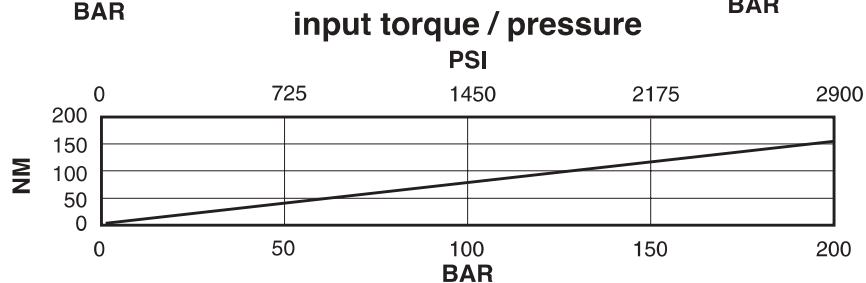
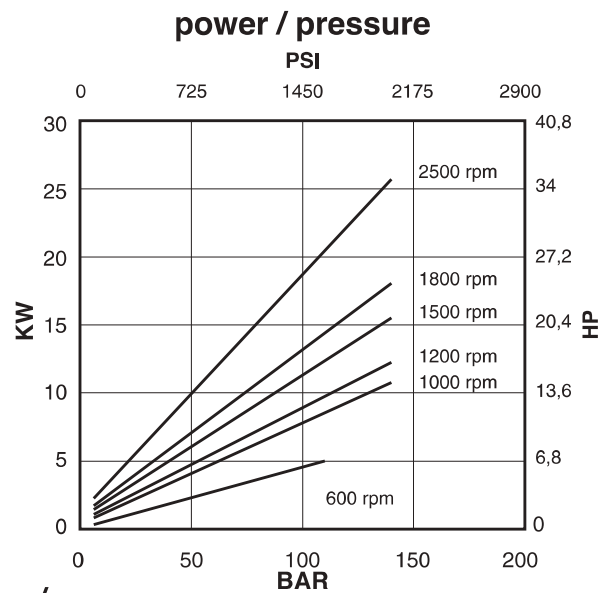
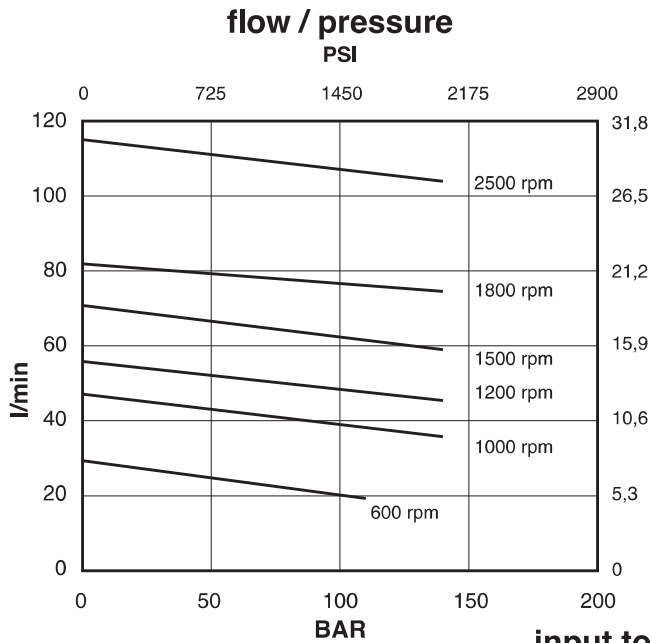
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-12



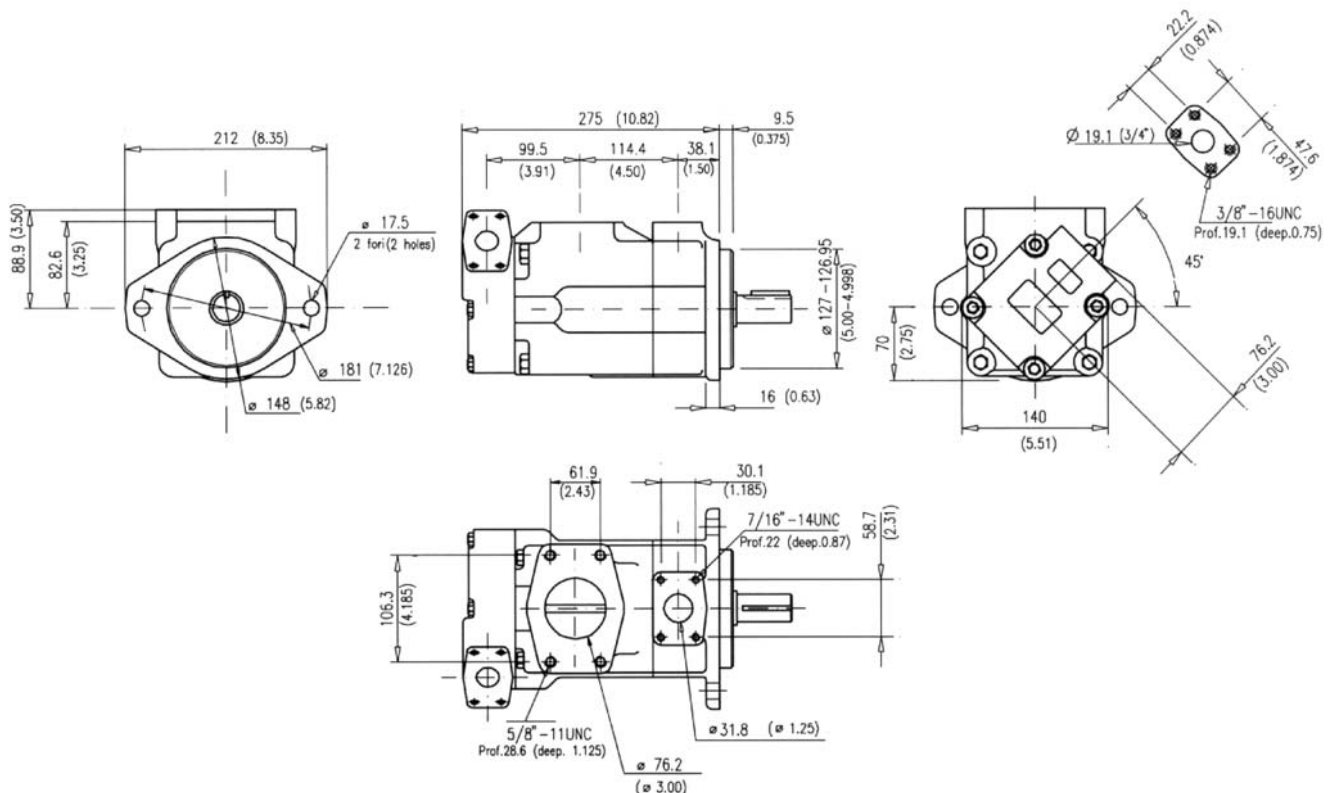
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-14



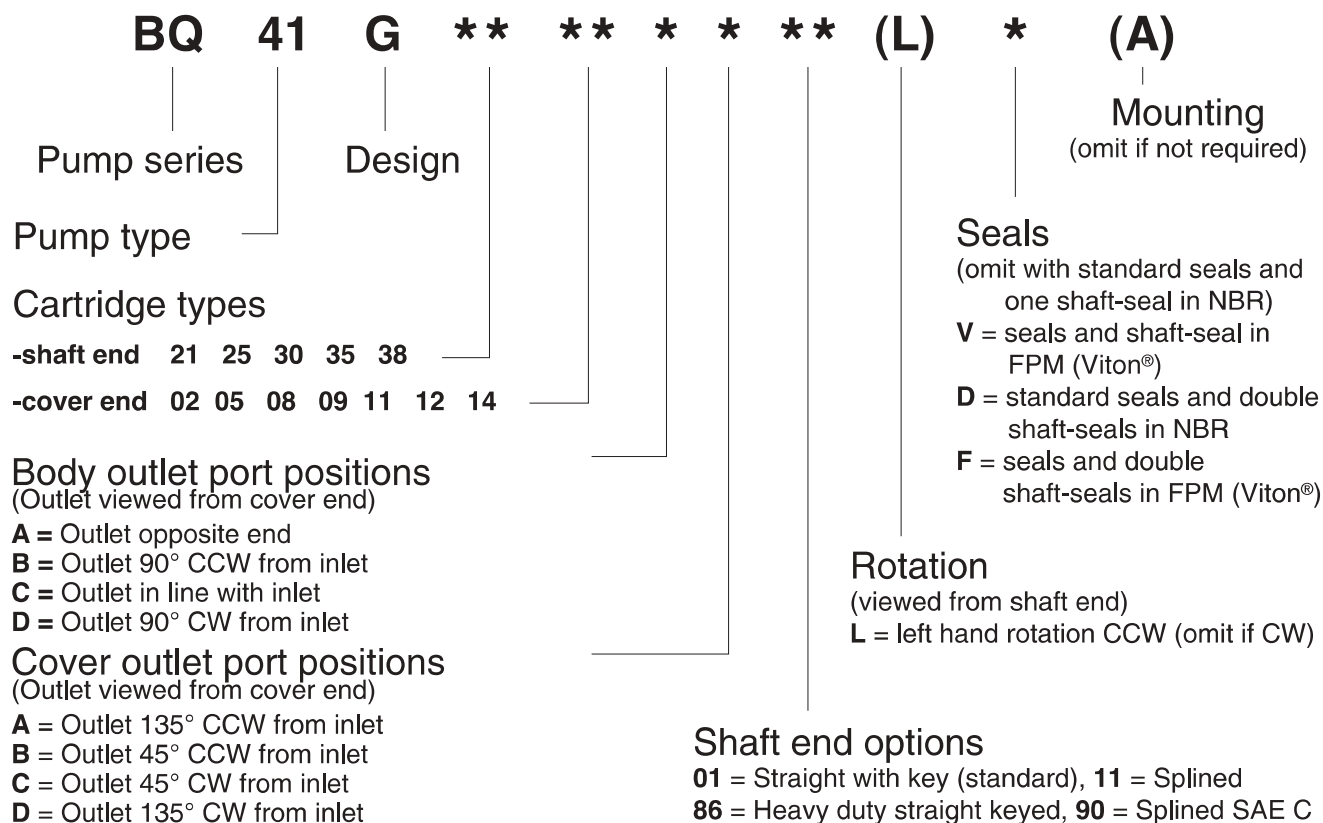
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

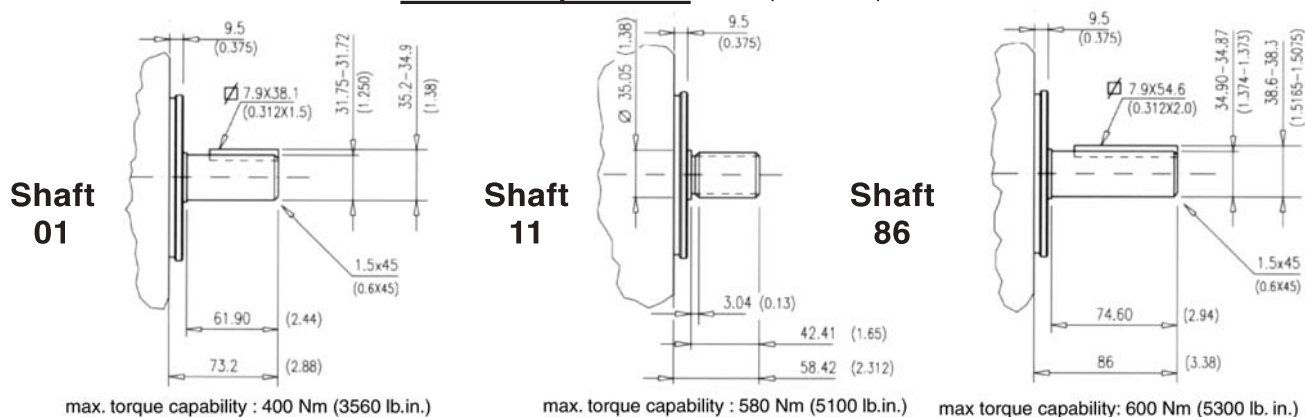


Approx. weight: 34 Kg. (75 lbs.)

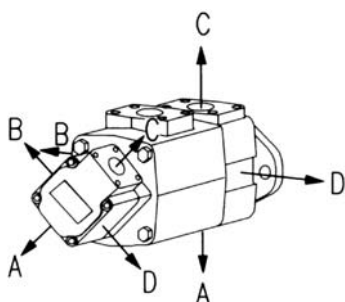
Model code breakdown



Shaft options mm (inches)



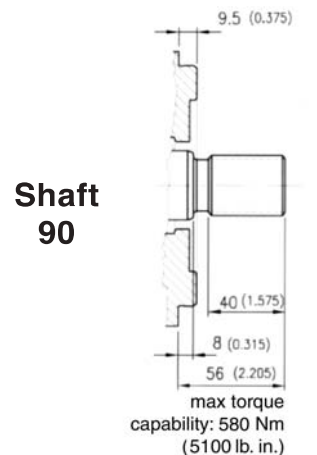
PORT ORIENTATIONS



Spline data

(Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	14	
Pitch	12/24	
Major dia.	31.60 - 31.50	(1.244 - 1.240)
Pitch dia.	29.634	(1.1667)
Minor dia.	26.99 - 26.66	(1.0627 - 1.05)
Wildhaber	15.68 - 15.73	(0.617 - 0.619)



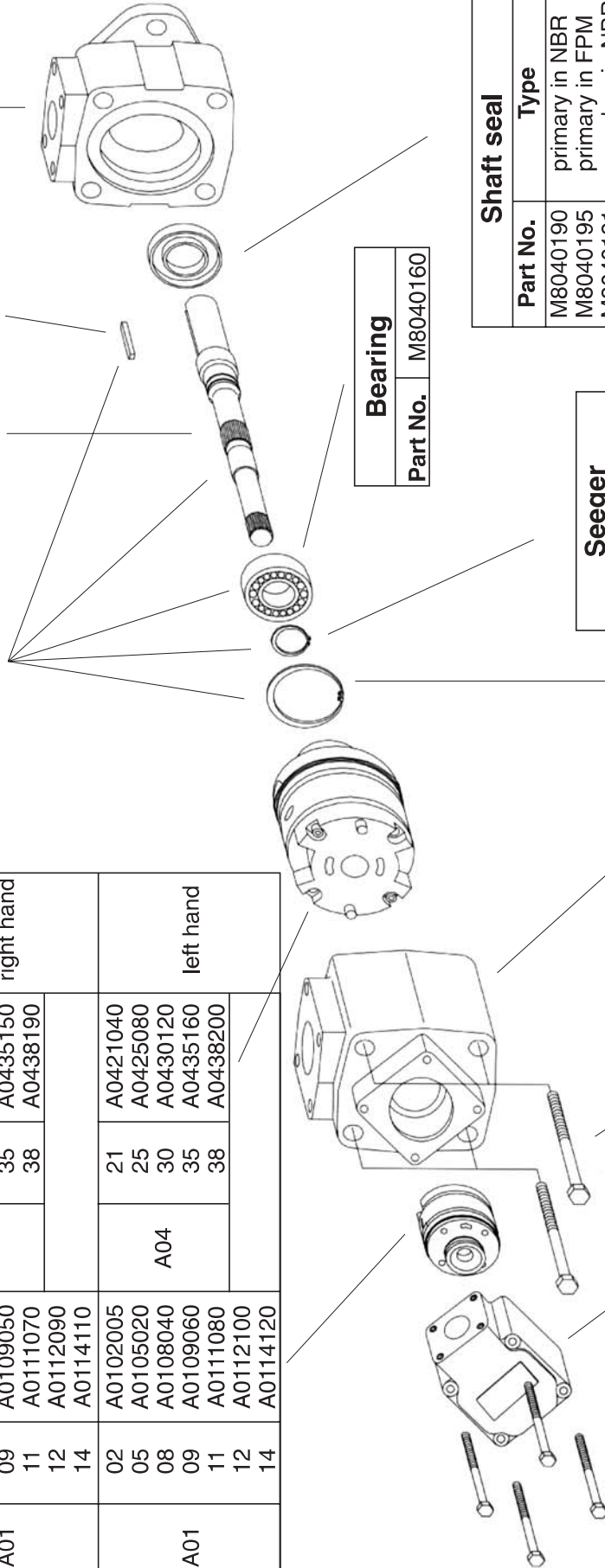
Id. codes of pump components

Cartridges					
Cover end			Shaft end		Pump rotation
Series	Model	Part No.	Series	Model	Part No.
A01	02	A0102000	A04	21	A0421030
	05	A0105010		25	A0425070
	08	A0108030		30	A0430110
	09	A0109050		35	A0435150
	11	A0111070		38	A0438190
	12	A0112090			
A01	14	A0114110	A04	21	A0421040
	02	A0102005		25	A0425080
	05	A0105020		30	A0430120
	08	A0108040		35	A0435160
	09	A0109060		38	A0438200
	11	A0111080			
	12	A0112100			
	14	A0114120			

Shaft kit	
Model	Part No.
01	M8410601
11	M8410611
86	M8410686
90	M8410690

Shaft	
Model	Part No.
01	K4101000
11	K4111000
86	K4186000
90	K4190000

Body	
Part No.	Part No.
M8040140	



Bearing	
Part No.	Part No.
M8040160	

Shaft seal	
Part No.	Type
M8040190	primary in NBR
M8040195	primary in FPM
M8040191	secondary in NBR
M8040196	secondary in FPM

Seeger	
Part No.	Part No.
M8040180	

Inlet body	
Part No.	Part No.
M8040430	

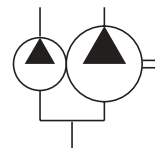
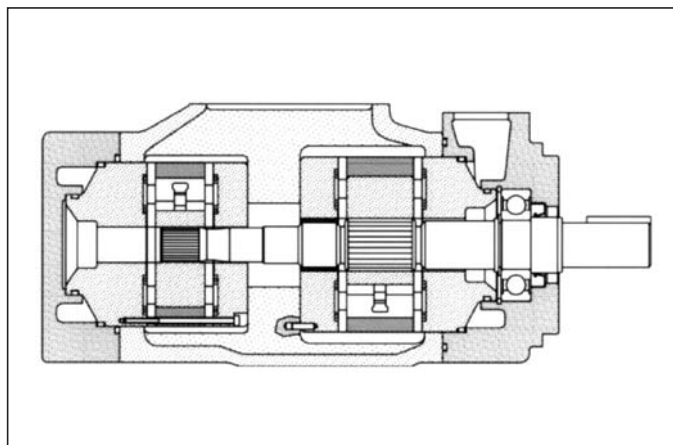
Cover	
Part No.	Part No.
M8020120	

Pump seal kit		
Part No.	Parts	Type
M8410241	seals + 1 shaft seal	NBR
M8410242	seals + 2 shaft seals	NBR
M8410243	seals + 1 shaft seal	FPM (Viton®)
M8410244	seals + 2 shaft seals	FPM (Viton®)

Seeger	
Part No.	Part No.
M8040170	

Screw	
Part No.	Part No.
M8040210	
Torque to 225 Nm (2010 lb. in.)	

Screw	
Part No.	Part No.
M8020420	
Torque to 70 Nm (624 lb. in.)	



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 127 to 219 l/min (from 33 to 59 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A04-21	69,0	(4.2)	79,5	(21)	101,4	(26.8)	210	(3050)	600	2500
A04-25	81,6	(5)	94,0	(25)	120,1	(31.7)	210	(3050)	600	2500
A04-30	97,7	(6)	113,8	(30)	141,2	(37.3)	210	(3050)	600	2500
A04-35	112,7	(6.9)	131,6	(35)	167,2	(44.1)	210	(3050)	600	2400
A04-38	121,6	(7.4)	139,9	(38)	177,3	(46.8)	210	(3050)	600	2400
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A02-12	40,1	(2.45)	46,9	(12)	58,8	(15.5)	210	(3050)	600	2700
A02-14	45,4	(2.77)	52,7	(14)	65,7	(17.4)	210	(3050)	600	2700
A02-17	55,2	(3.37)	64,2	(17)	80,2	(21.2)	210	(3050)	600	2500
A02-19	60,0	(3.66)	71,0	(19)	88,7	(23.4)	210	(3050)	600	2500
A02-21	67,5	(4.12)	79,0	(21)	99,8	(26.4)	210	(3050)	600	2500

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

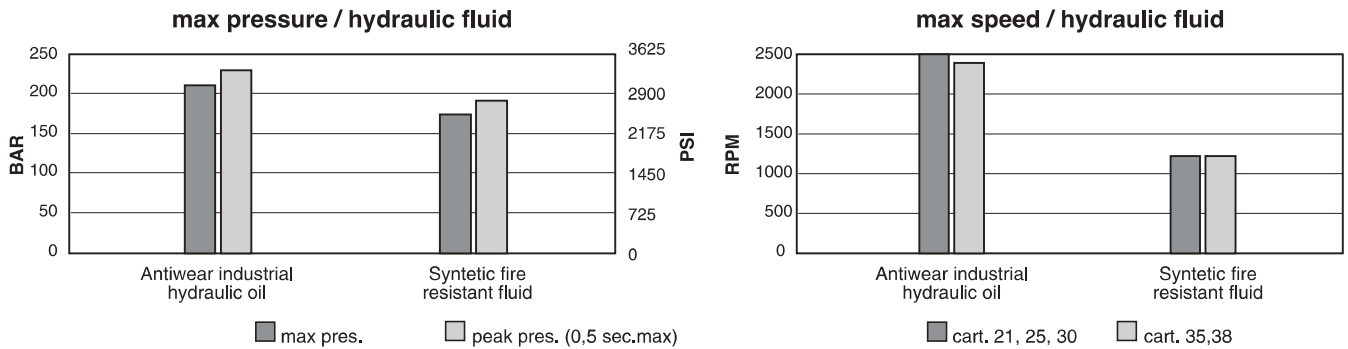
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

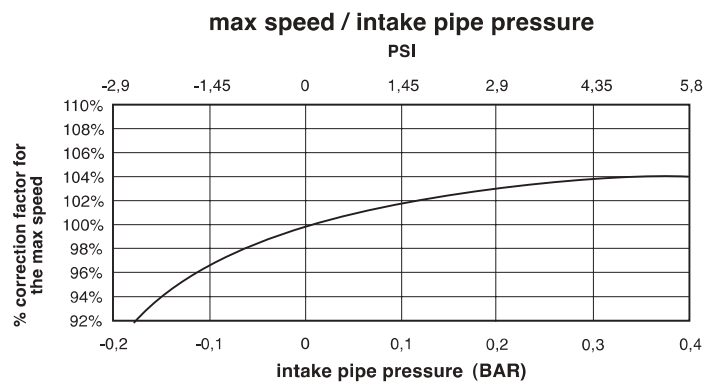
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

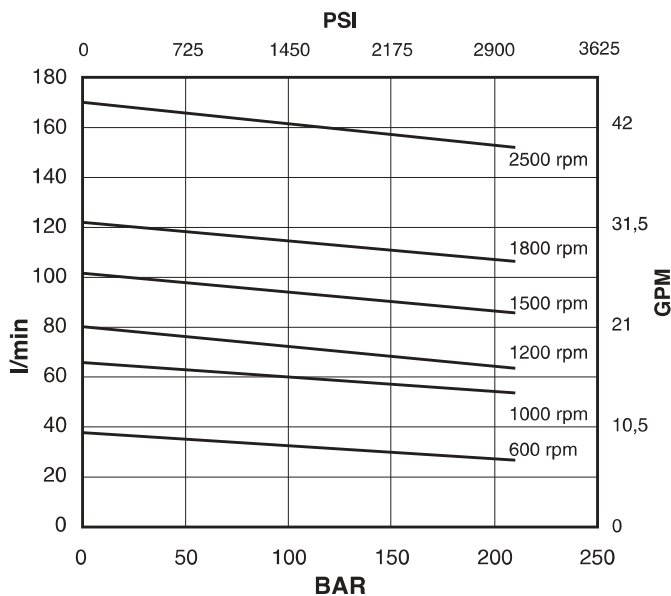
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

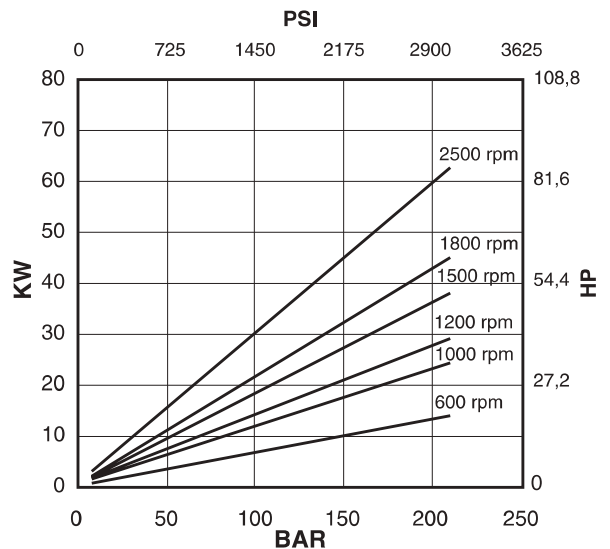


flow / pressure

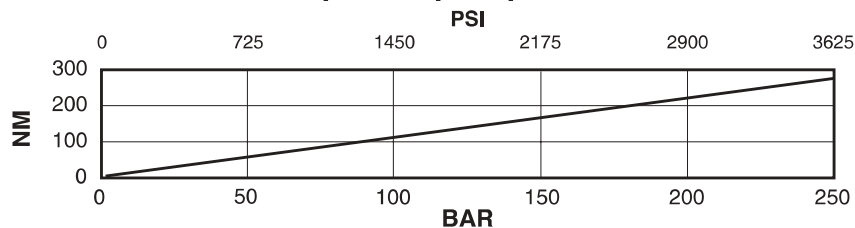


Shaft end cartridge A04-21

power / pressure

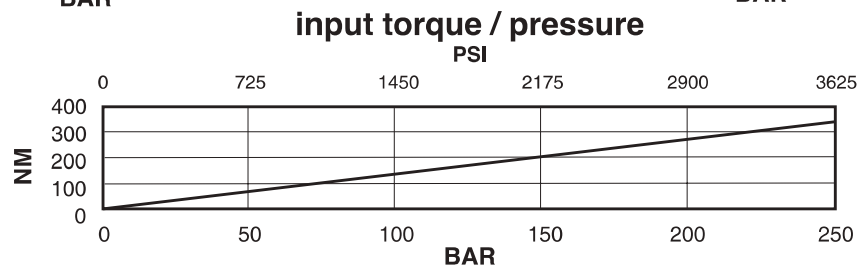
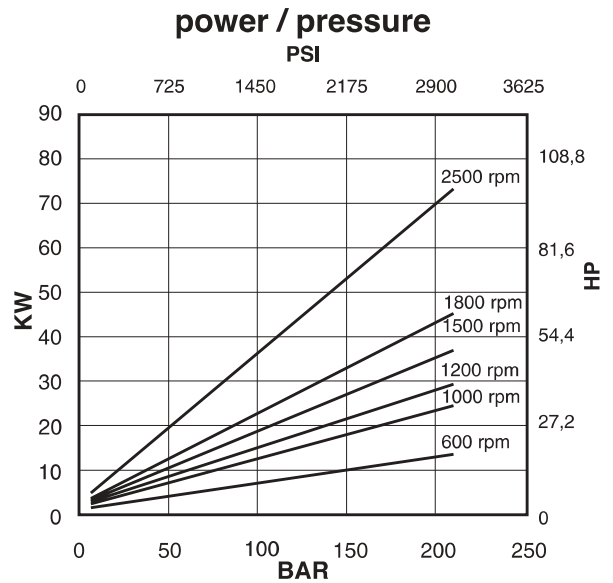
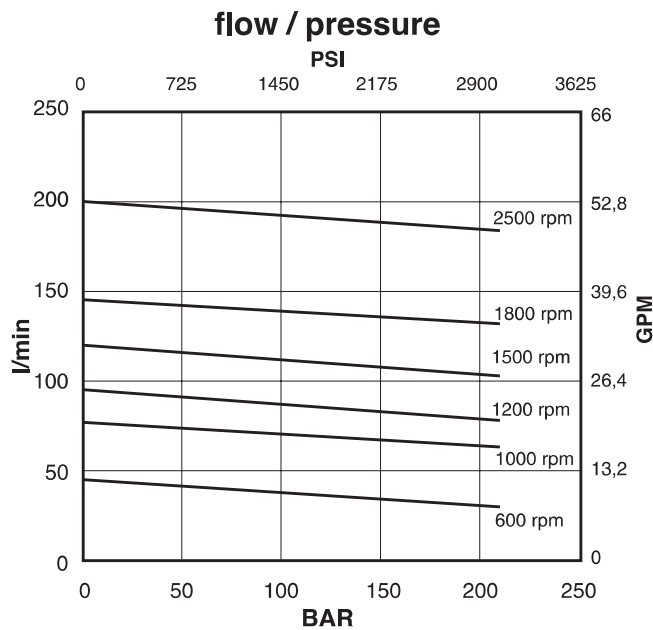


input torque / pressure



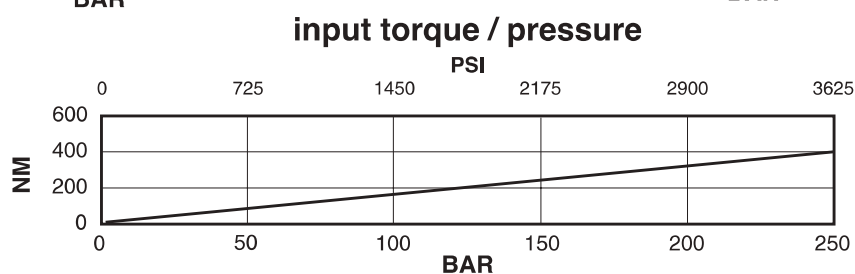
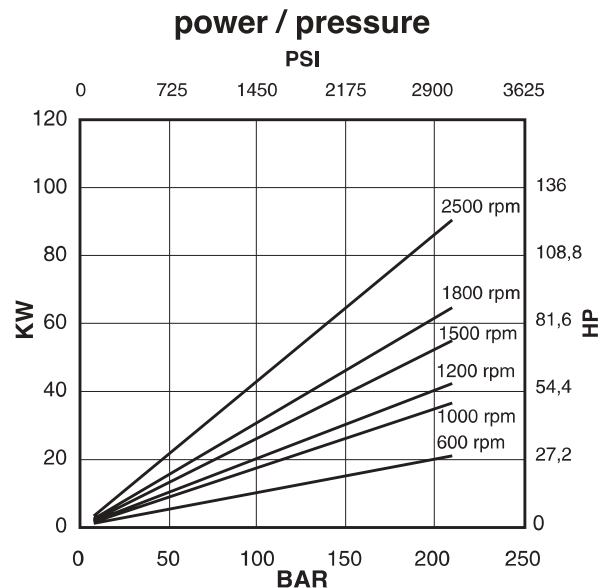
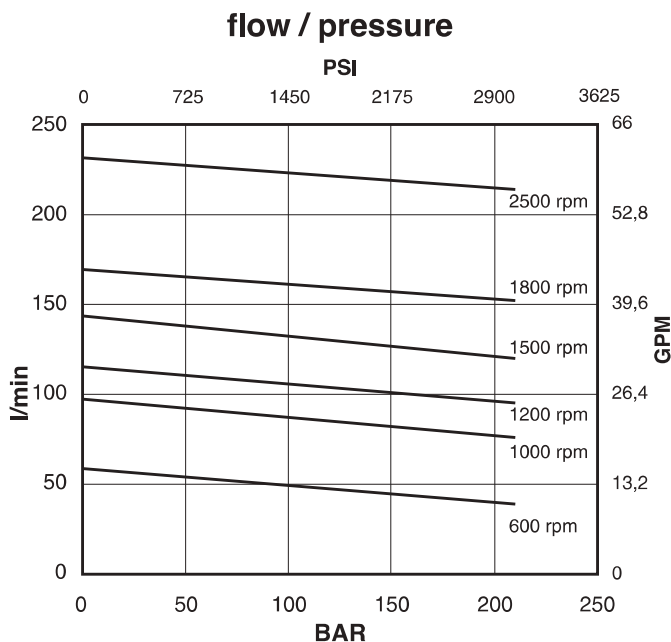
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-25



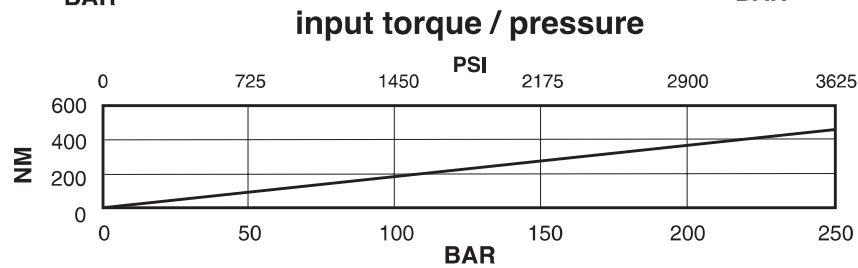
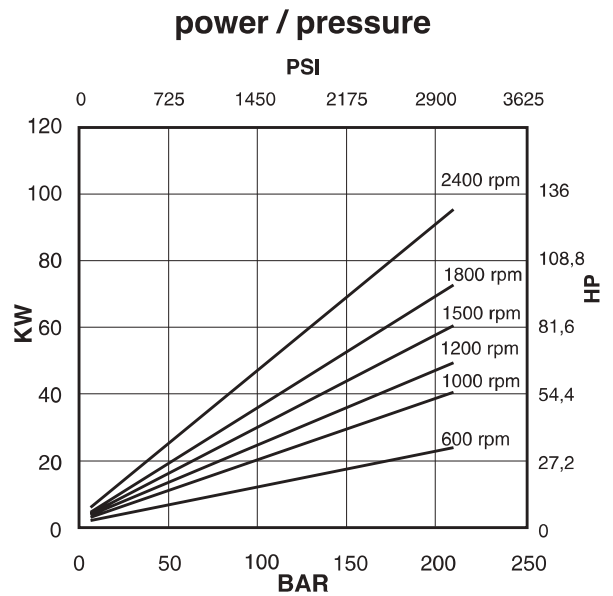
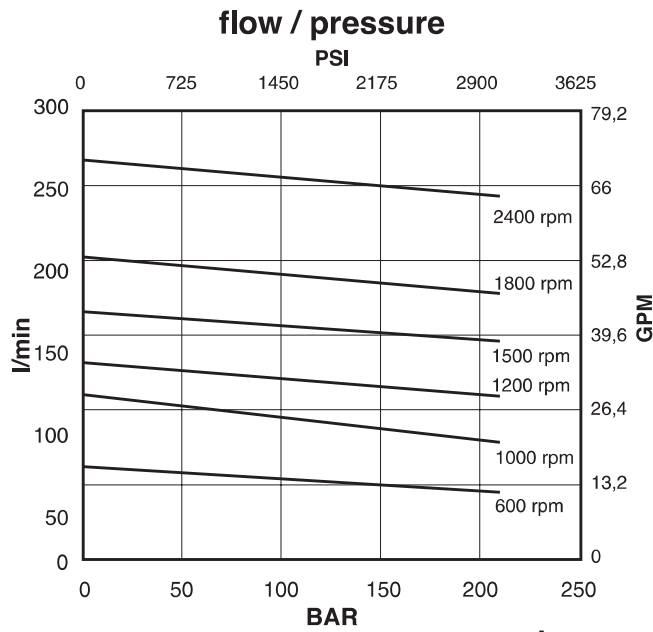
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-30



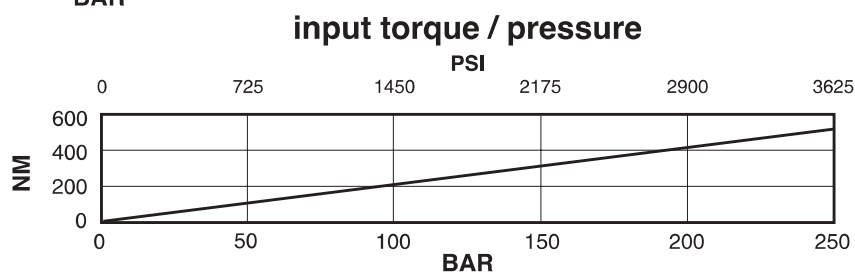
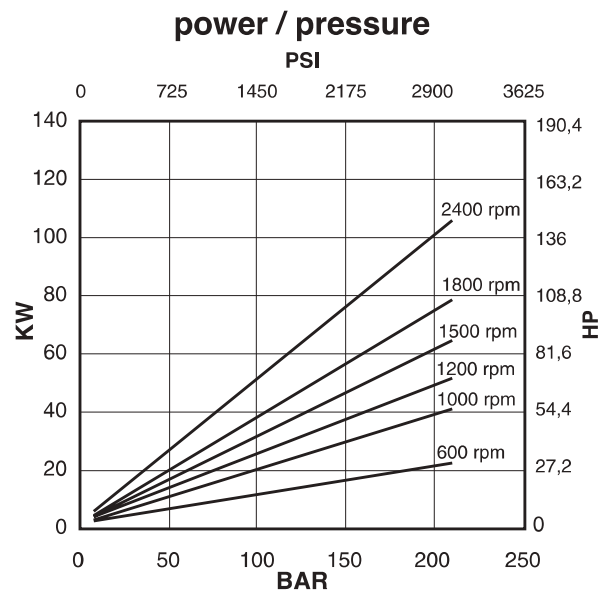
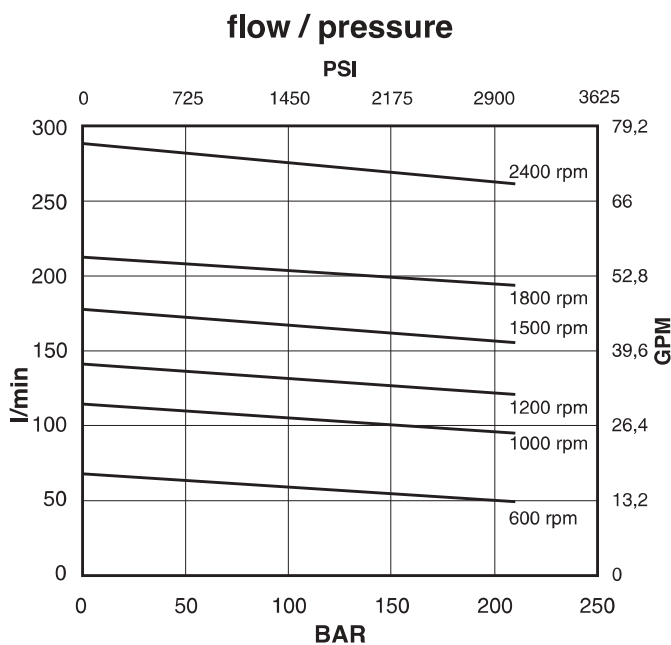
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-35



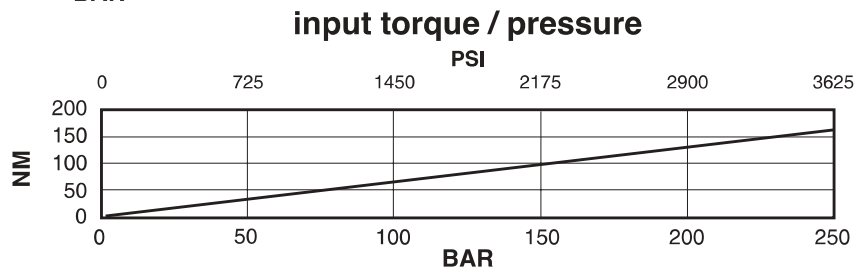
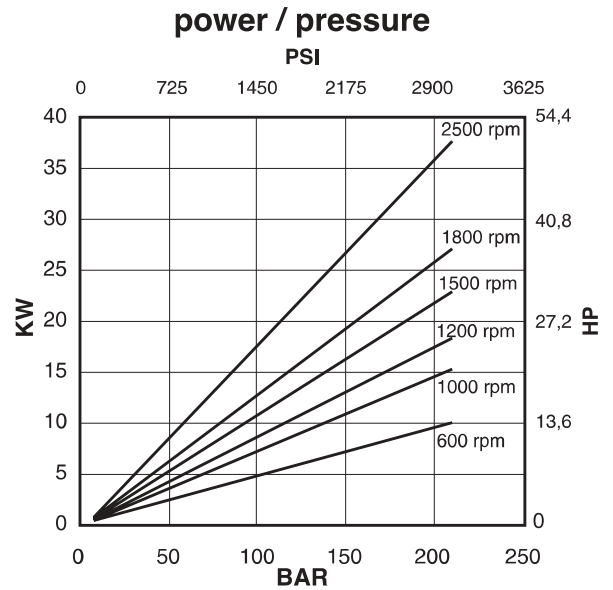
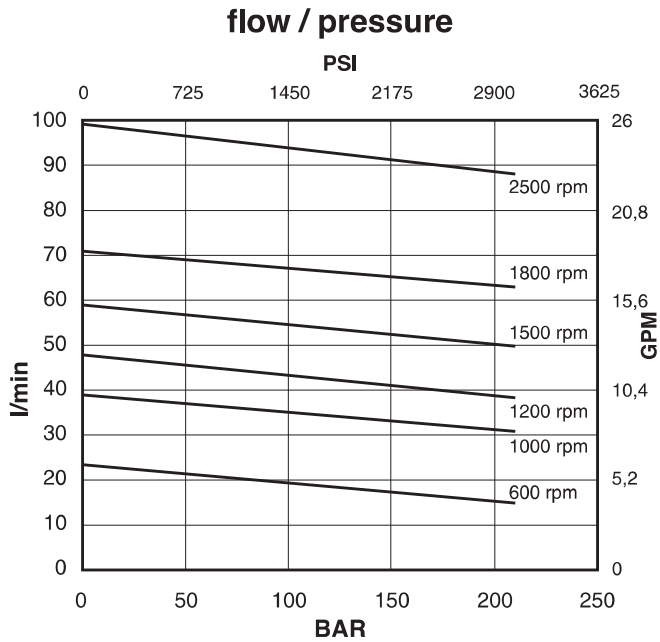
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A04-38



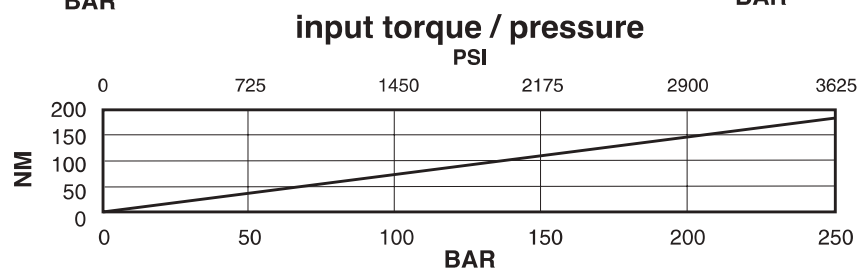
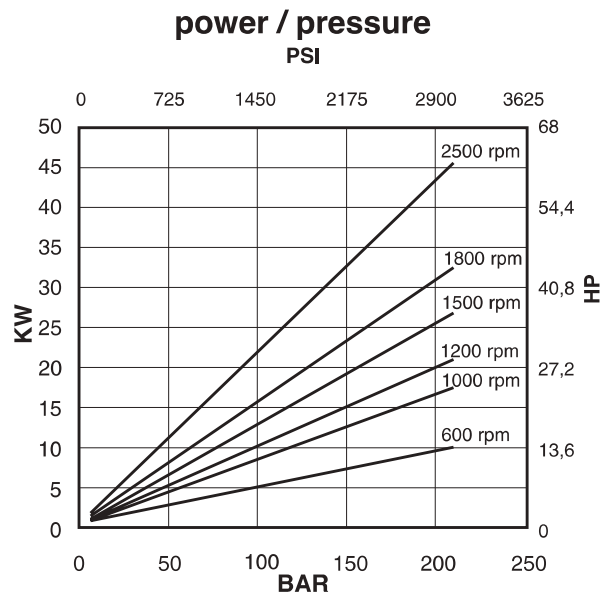
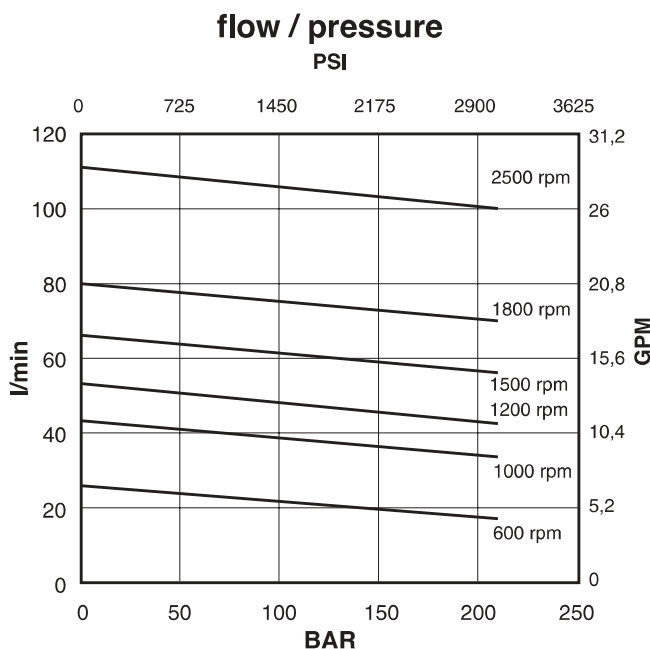
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A02-12



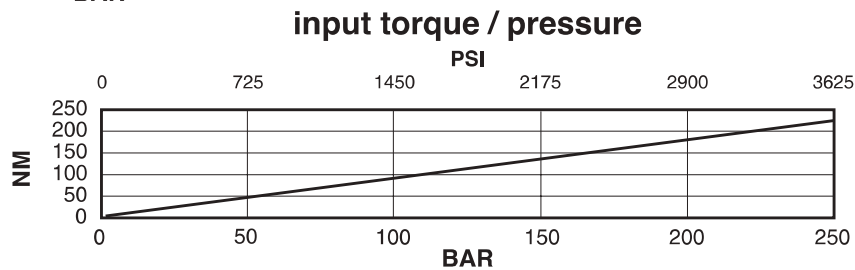
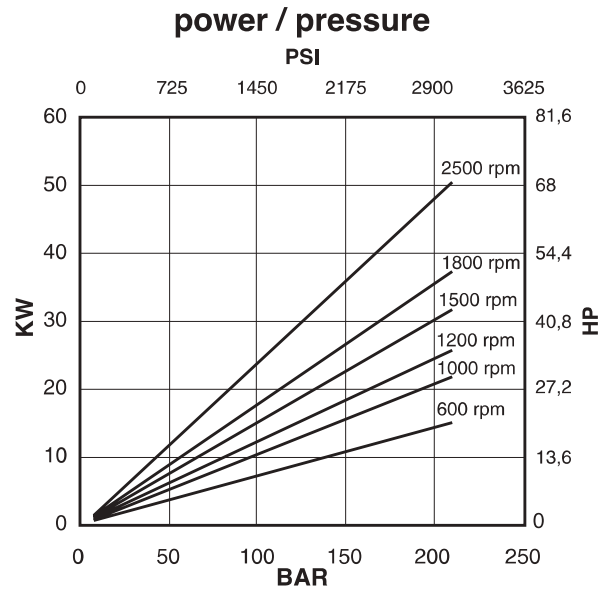
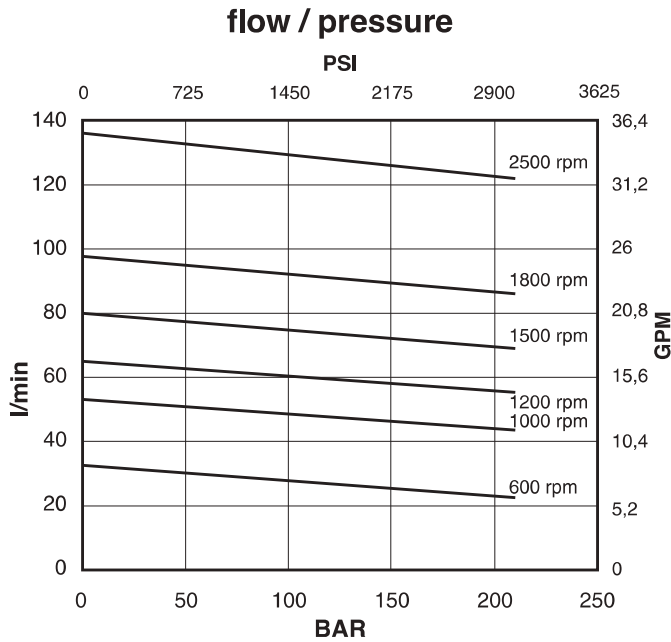
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-14



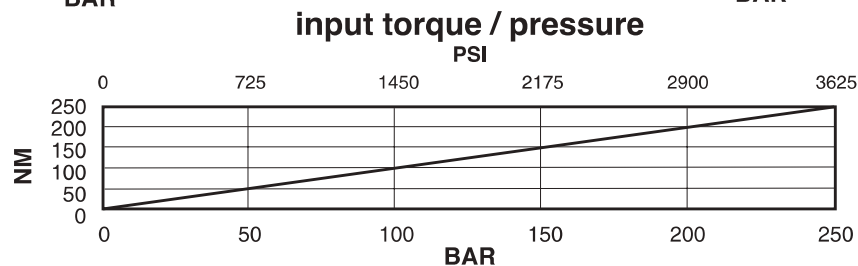
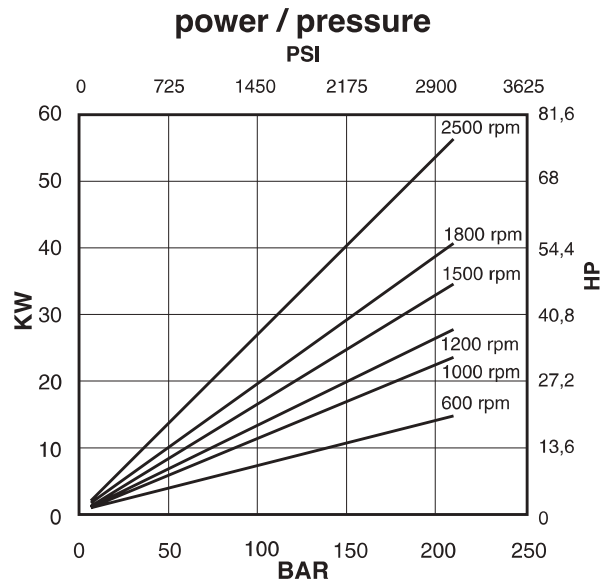
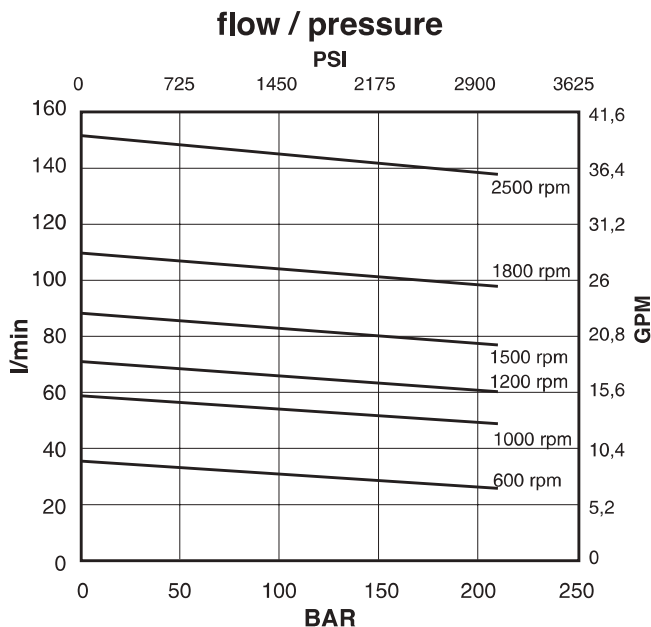
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-17



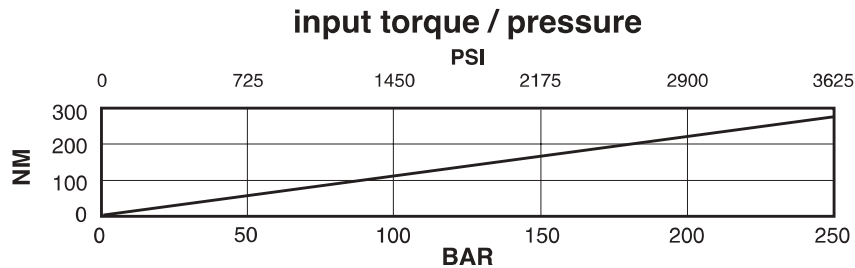
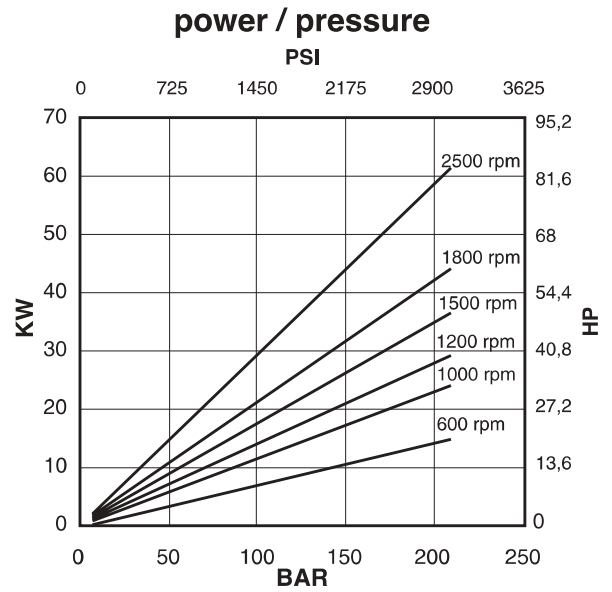
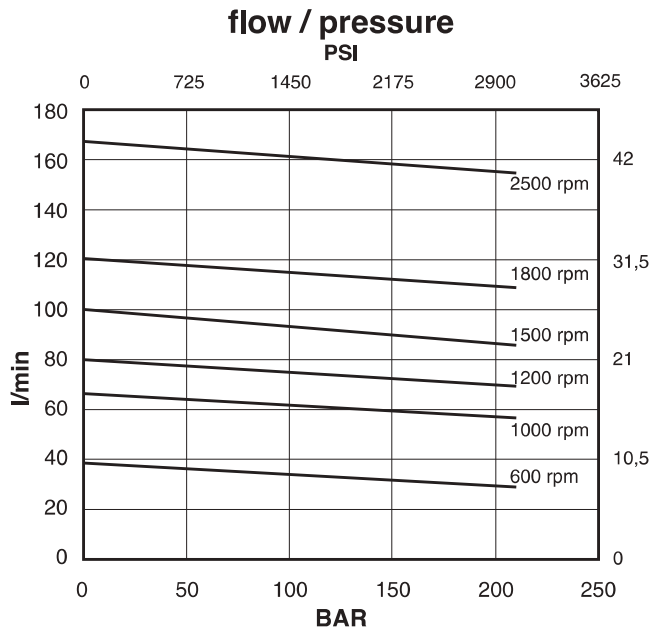
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-19



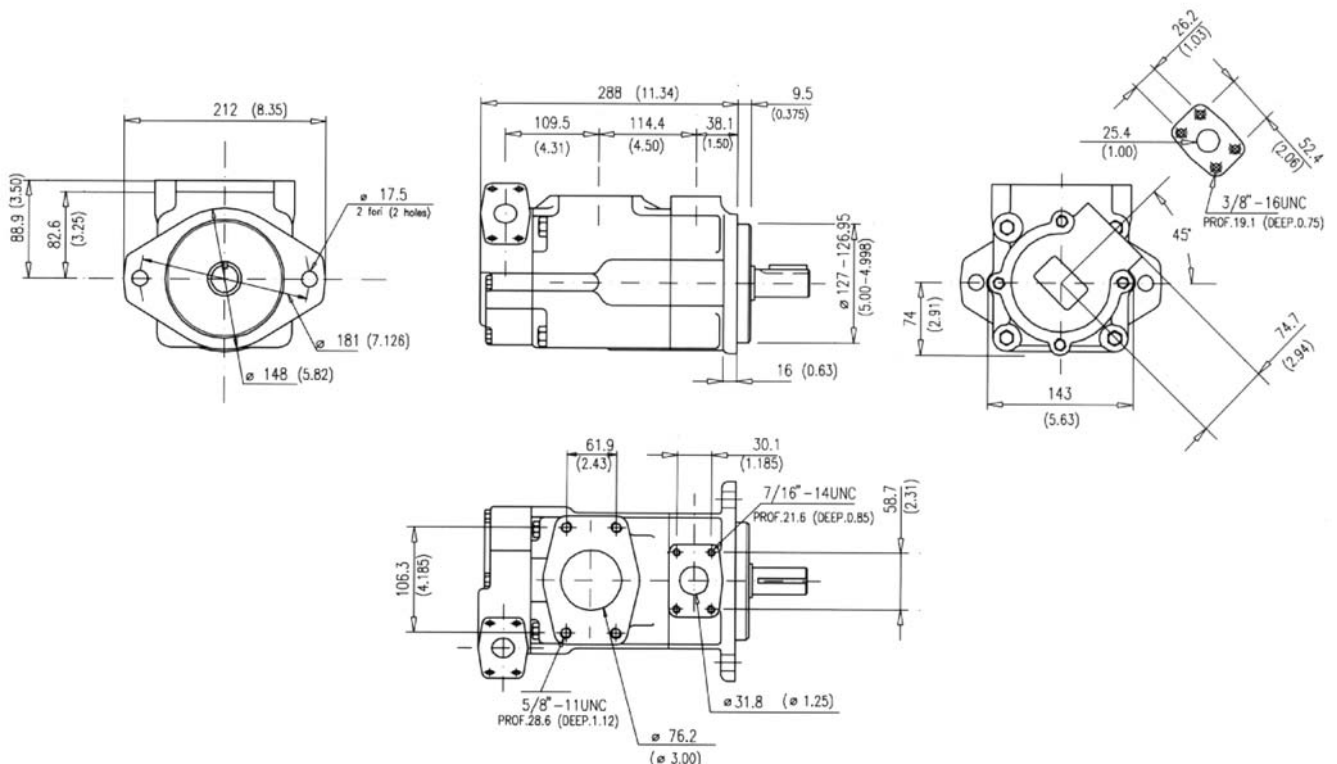
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-21



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)



Approx. weight: 34,5 Kg. (76 lbs.)

Model code breakdown

BQ	42	G	**	**	*	*	**	(L)	*	(A)
Pump series		Design								Mounting (omit if not required)
Pump type										Seals (omit with standard seals and one shaft-seal in NBR) V = seals and shaft-seal in FPM (Viton®) D = standard seals and double shaft-seals in NBR F = seals and double shaft-seals in FPM (Viton®)
Cartridge types										Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)
-shaft end	21 25 30 35 38									
-cover end	12 14 17 19 21									
Body outlet port positions (Outlet viewed from cover end)										
A = Outlet opposite end										
B = Outlet 90° CCW from inlet										
C = Outlet in line with inlet										
D = Outlet 90° CW from inlet										
Cover outlet port positions (Outlet viewed from cover end)										
A = Outlet 135° CCW from inlet										
B = Outlet 45° CCW from inlet										
C = Outlet 45° CW from inlet										
D = Outlet 135° CW from inlet										
Shaft end options										
01 = Straight with key (standard), 11 = Splined										
86 = Heavy duty straight keyed, 90 = Splined SAE C										

Seals

(omit with standard seals and one shaft-seal in NBR)

V = seals and shaft-seal in FPM (Viton®)

D = standard seals and double shaft-seals in NBR

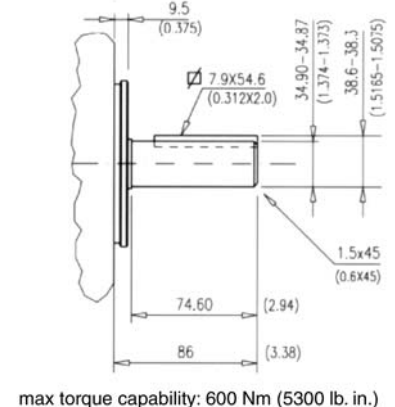
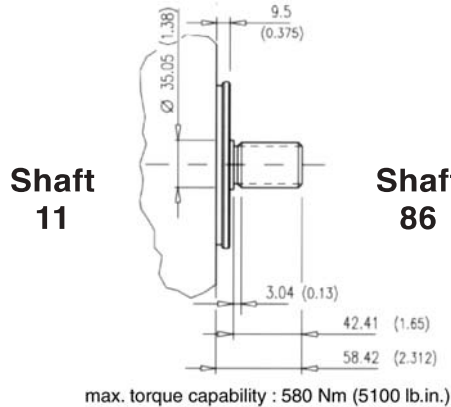
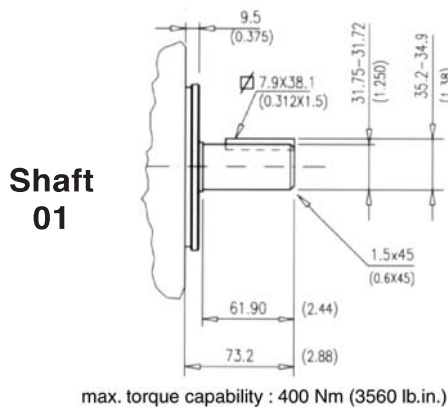
F = seals and double shaft-seals in FPM (Viton®)

Rotation

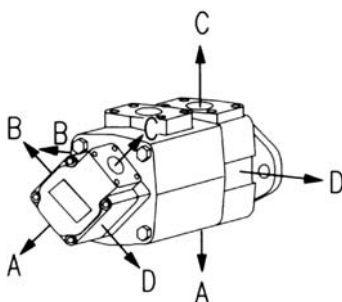
(viewed from shaft end)

L = left hand rotation CCW (omit if CW)

Shaft options mm (inches)

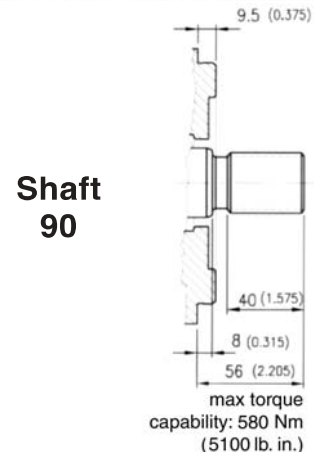


PORT ORIENTATIONS



Spline data
(Shaft 11 and shaft 90)

Spline	Involute side fit (ASA B5.15)
Pressure angle	30°
No. of teeth	14
Pitch	12/24
Major dia.	31.60 - 31.50 (1.244 - 1.240)
Pitch dia.	29.634 (1.1667)
Minor dia.	26.99 - 26.66 (1.0627 - 1.05)
Wildhaber	15.68 - 15.73 (0.617 - 0.619)



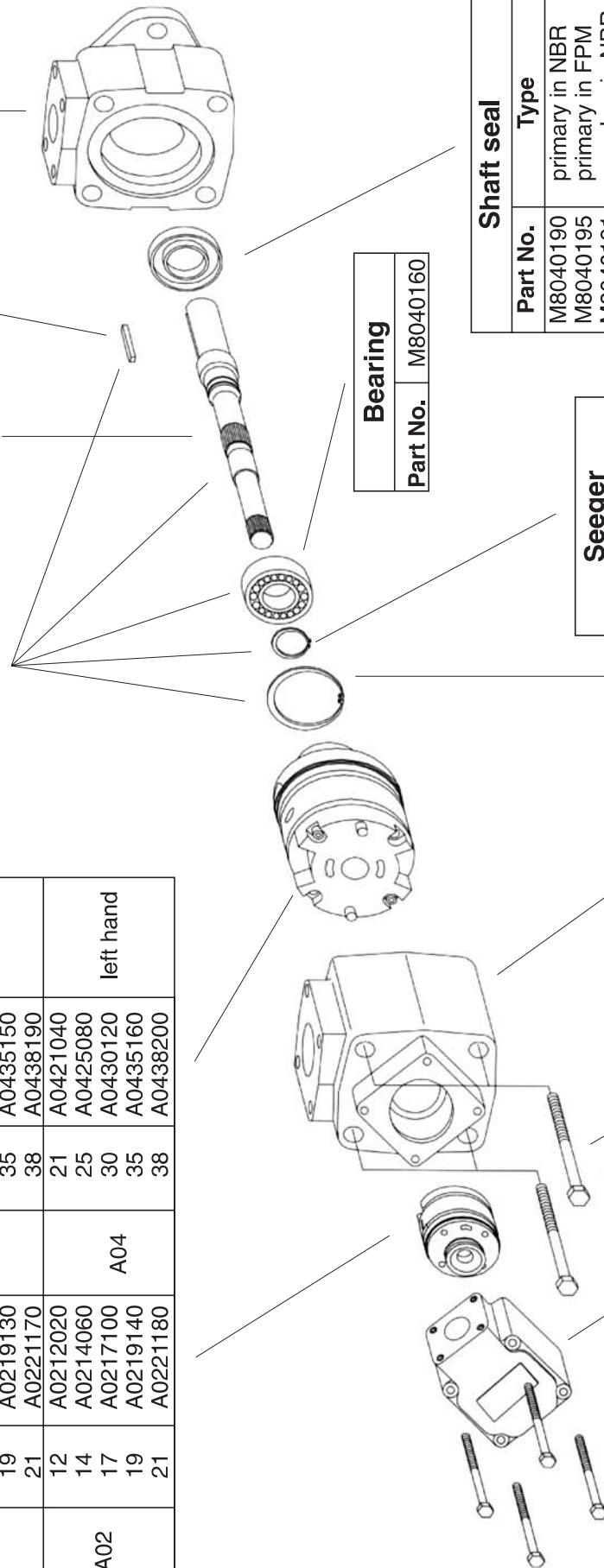
Id. codes of pump components

Cartridges				
Cover end		Shaft end		Pump rotation
Series	Model	Part No.	Series	
A02	12	A0212010	21	A0421030
	14	A0214050	25	A0425070
	17	A0217090	30	A0430110
	19	A0219130	35	A0435150
	21	A0221170	38	A0438190
A02	12	A0212020	21	A0421040
	14	A0214060	25	A0425080
	17	A0217100	30	A0430120
	19	A0219140	35	A0435160
	21	A0221180	38	A0438200
			right hand	
			left hand	

Shaft kit	
Model	Part No.
01	M8420601
11	M8420611
86	M8420686
90	M8420690

Shaft	
Model	Part No.
01	K4201000
11	K4211000
86	K4286000
90	K4290000

Body	
Part No.	M8040140



Bearing	
Part No.	M8040160

Shaft seal	
Part No.	Type
M8040190	primary in NBR
M8040195	primary in FPM
M8040191	secondary in NBR
M8040196	secondary in FPM

Seeger	
Part No.	M8040180

Inlet body	
Part No.	M8040240

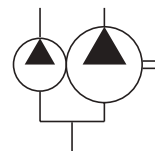
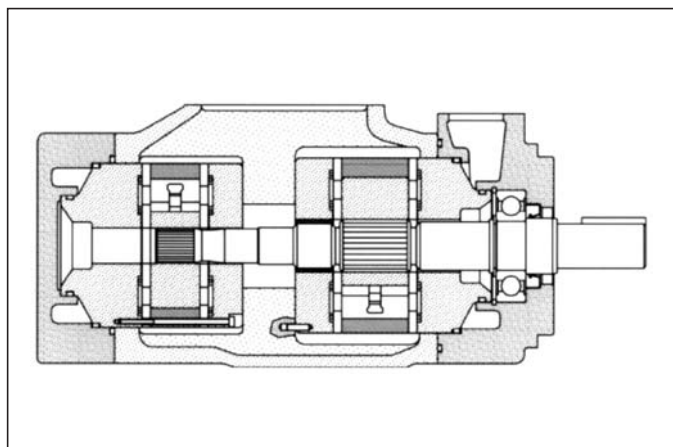
Cover	
Part No.	M8050350

Pump seal kit		
Part No.	Parts	Type
M8420371	seals + 1 shaft seal	NBR
M8420372	seals + 2 shaft seals	NBR
M8420373	seals + 1 shaft seal	FPM (Viton®)
M8420374	seals + 2 shaft seals	FPM (Viton®)

Seeger	
Part No.	M8040170

Screw	
Part No.	M8040220
Torque to 225 Nm (2010 lb. in.)	

Screw	
Part No.	M8040230
Torque to 102 Nm (910 lb. in.)	



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 172 to 285 l/min (from 44 to 74 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum Pressure with mineral oil		Speed range rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A05-42	138,6	(8.46)	164	(42)	203,4	(53.7)	175	(2538)	600	2200
A05-47	153,5	(9.4)	180	(47)	222,7	(58.8)	175	(2538)	600	2200
A05-50	162,2	(9.9)	189	(50)	234	(61.8)	175	(2538)	600	2200
A05-57	183,4	(11.2)	217	(57)	267	(71.2)	175	(2538)	600	2200
A05-60	193,4	(11.8)	230	(60)	285	(75.3)	175	(2538)	600	2200
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A01-02	7,2	(0.44)	8,3	(2)	10,4	(2.8)	210	(3050)	600	2700
A01-05	18,0	(1.10)	20,8	(5)	26,1	(6.9)	210	(3050)	600	2700
A01-08	27,4	(1.67)	31,8	(8)	39,4	(10.4)	210	(3050)	600	2700
A01-09	30,1	(1.83)	35,1	(9)	44,1	(11.7)	210	(3050)	600	2700
A01-11	36,4	(2.22)	42,4	(11)	52,6	(13.9)	210	(3050)	600	2700
A01-12	39,5	(2.41)	46,9	(12)	58,7	(15.5)	160	(2300)	600	2700
A01-14	45,9	(2.79)	54,9	(14)	69,6	(18.4)	140	(2030)	600	2700

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

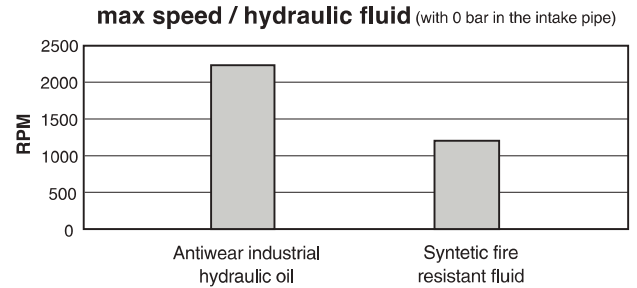
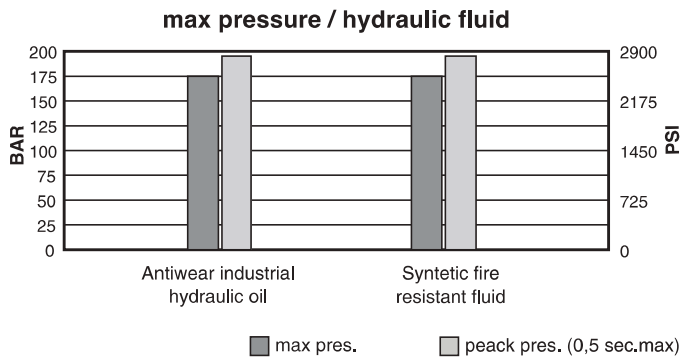
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

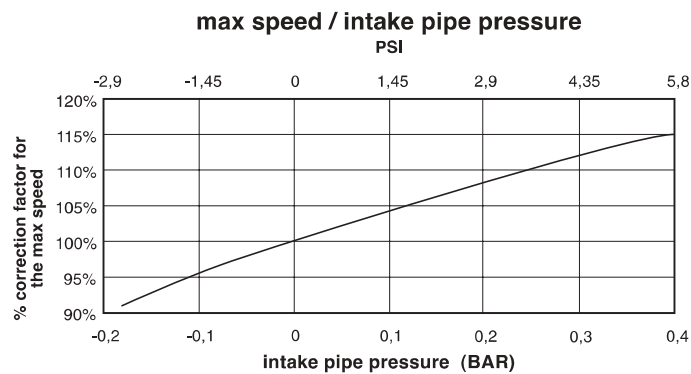
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

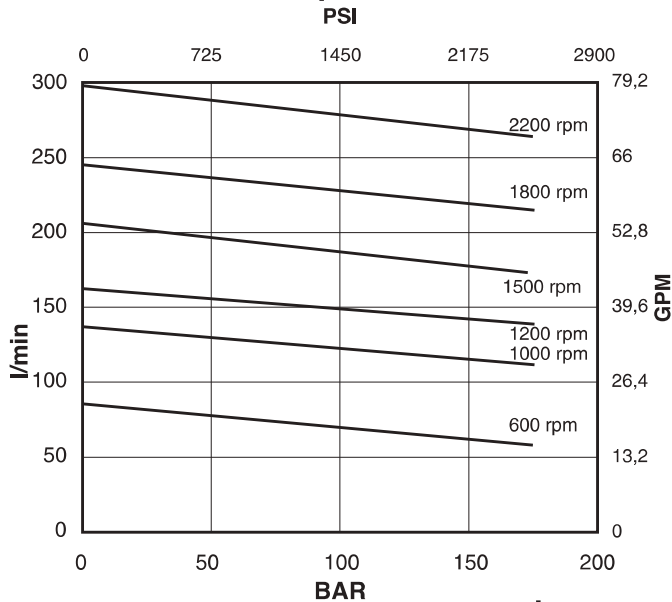
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

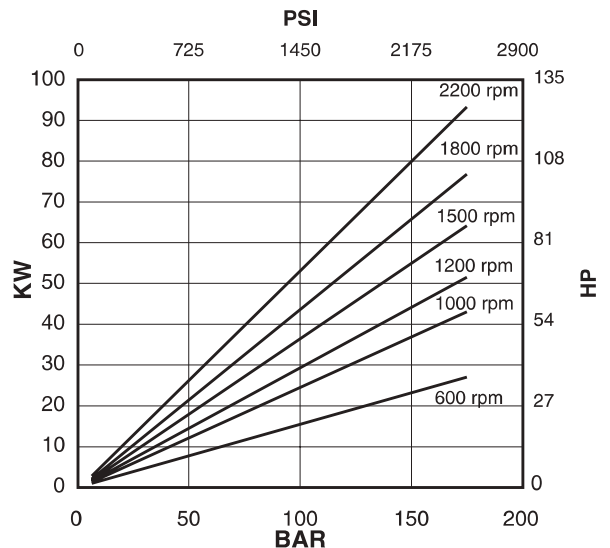


flow / pressure

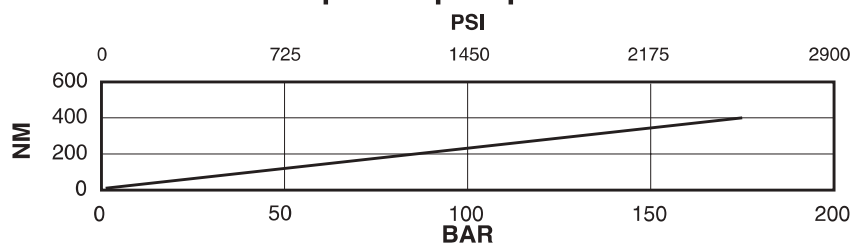


Shaft end cartridge A05-42

power / pressure

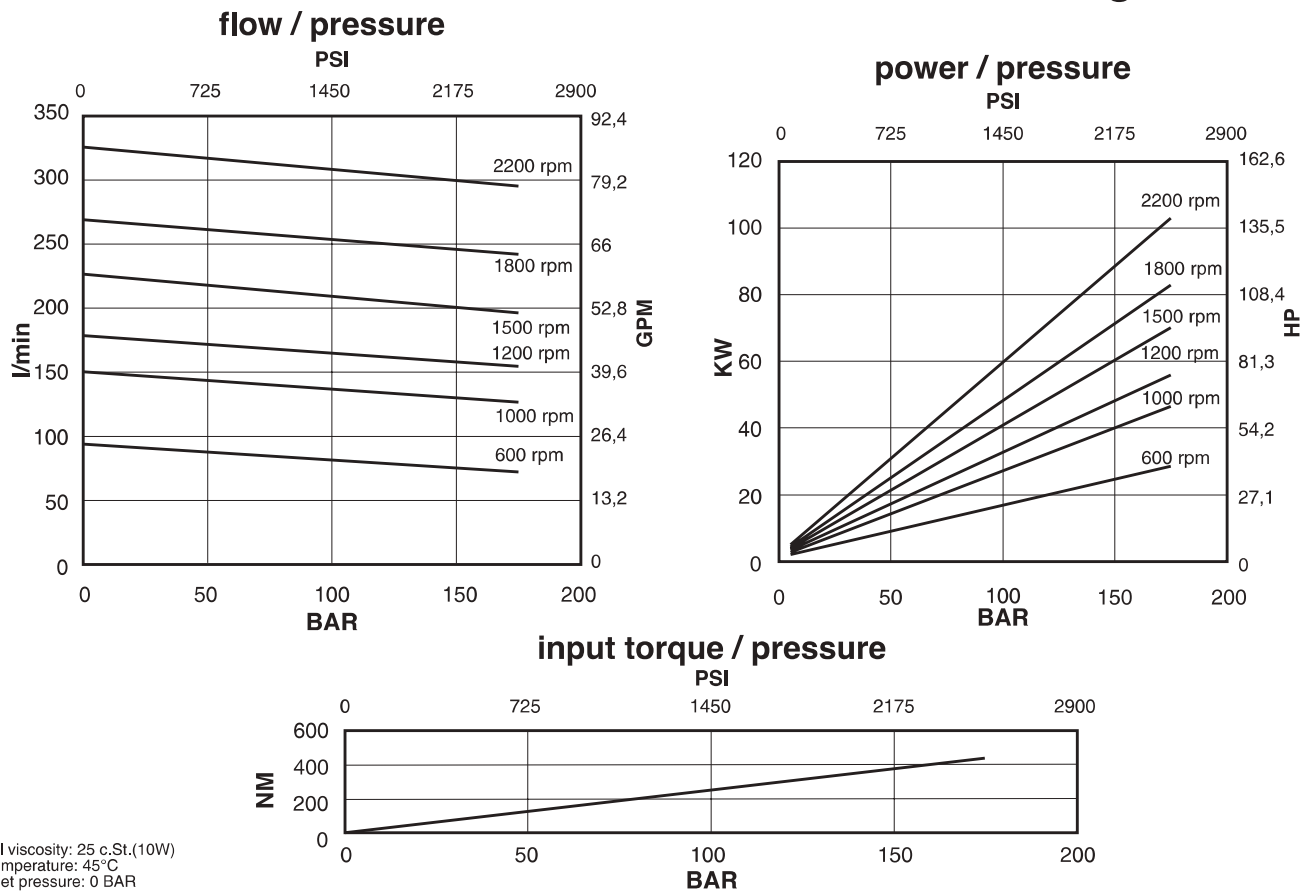


input torque / pressure

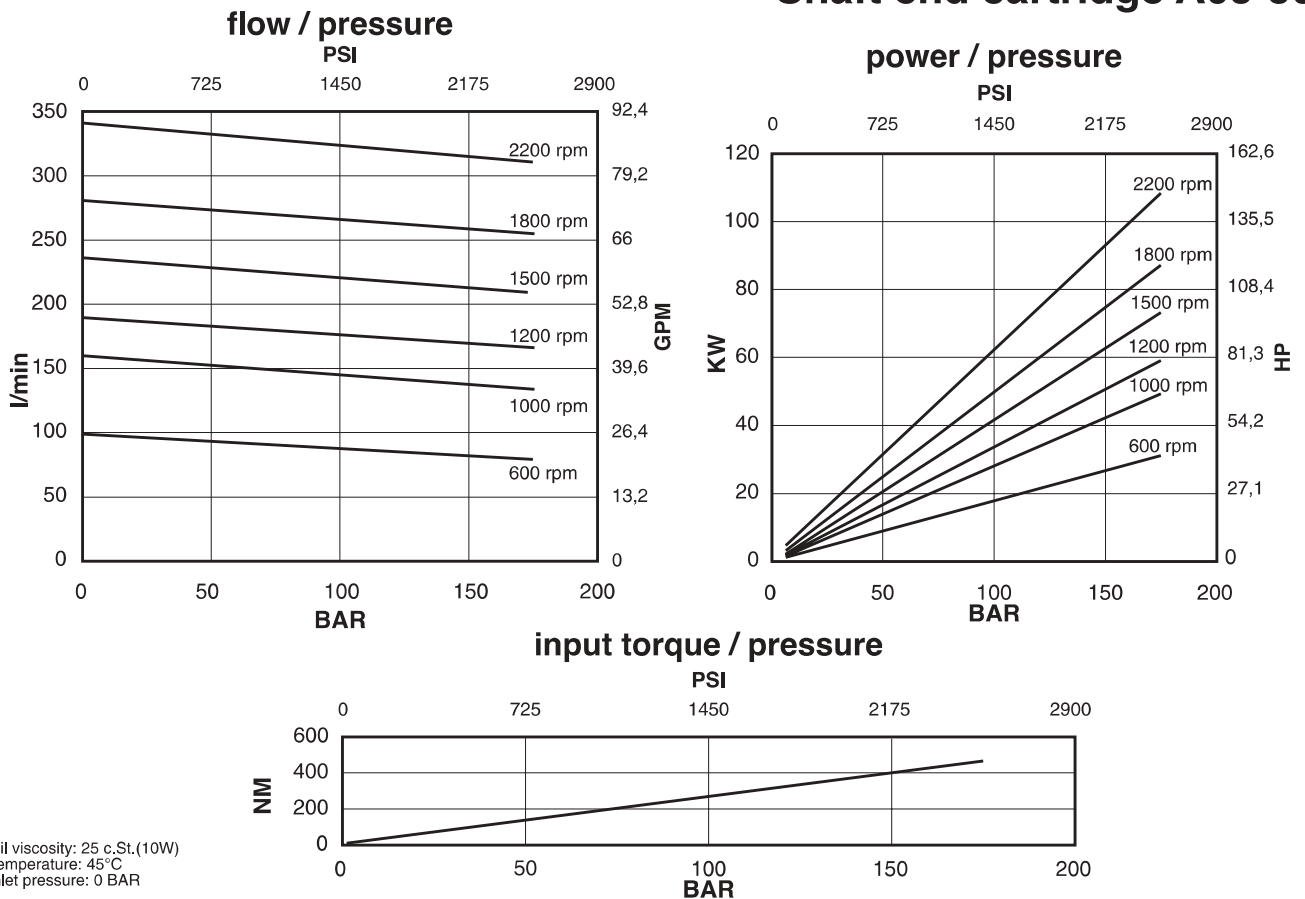


Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

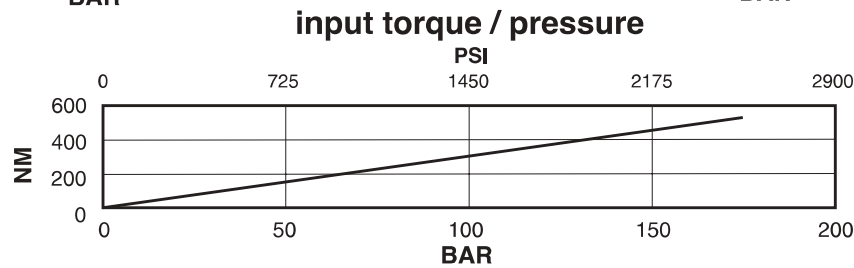
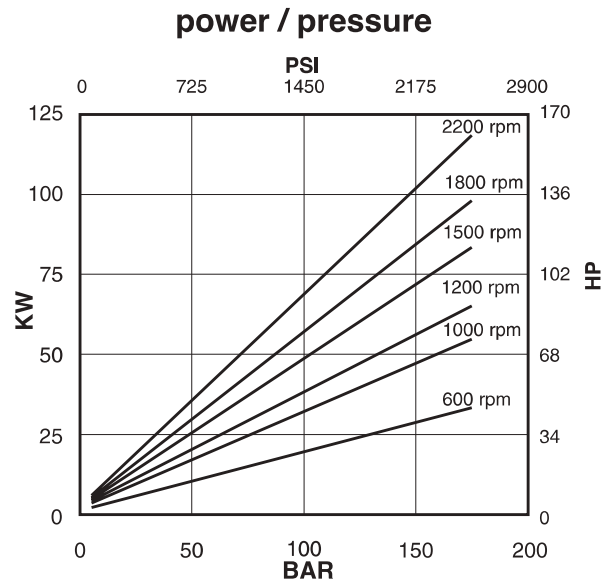
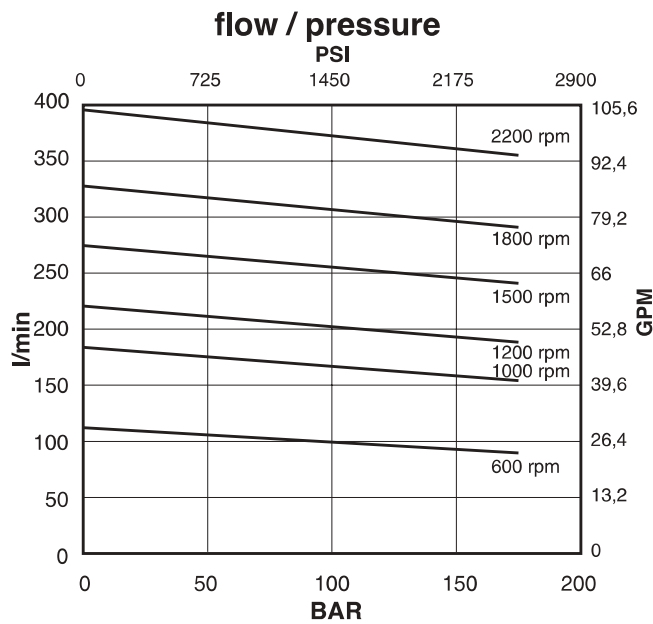
Shaft end cartridge A05-47



Shaft end cartridge A05-50

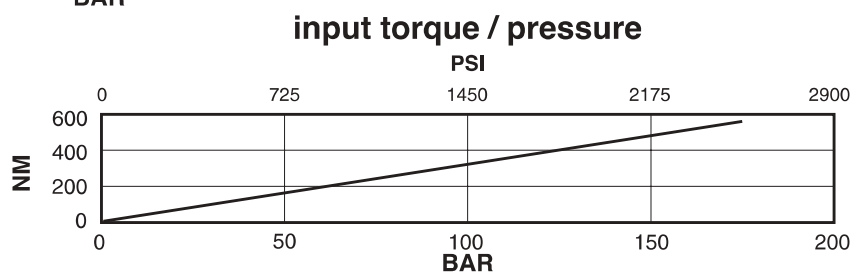
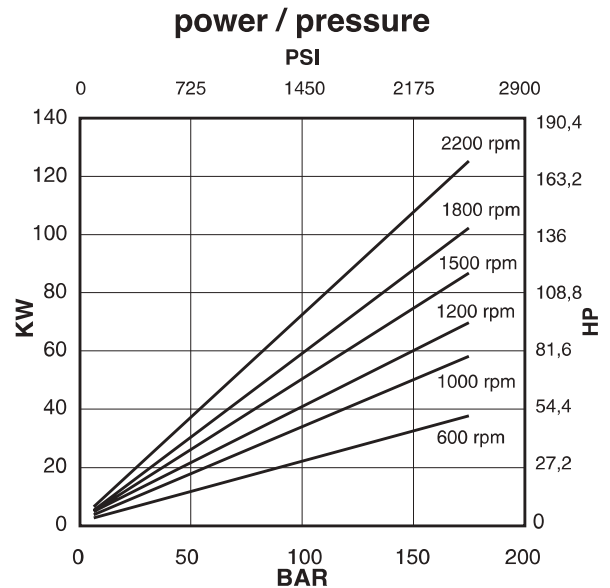
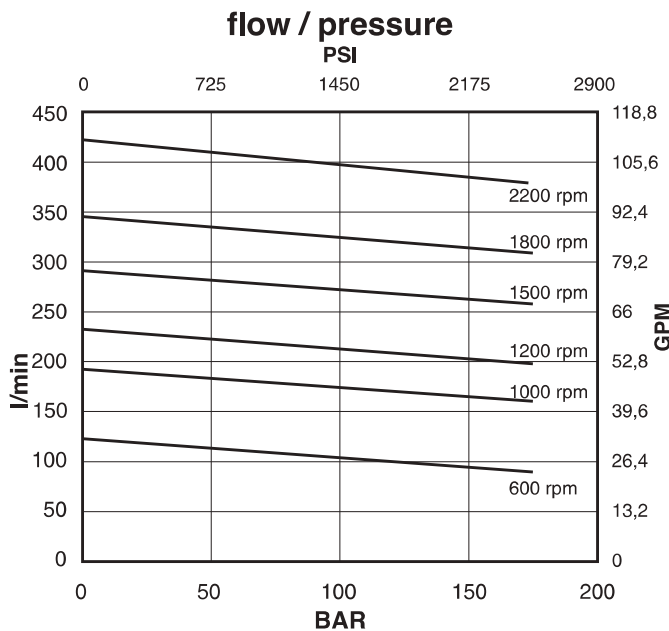


Shaft end cartridge A05-57



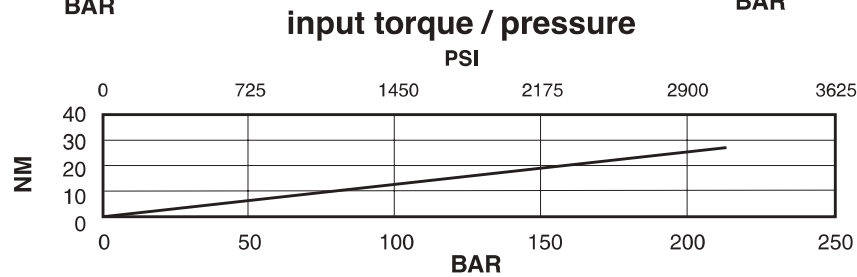
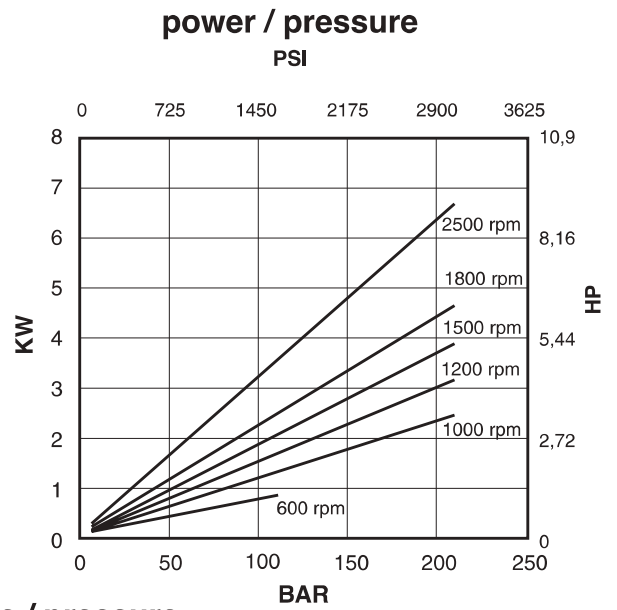
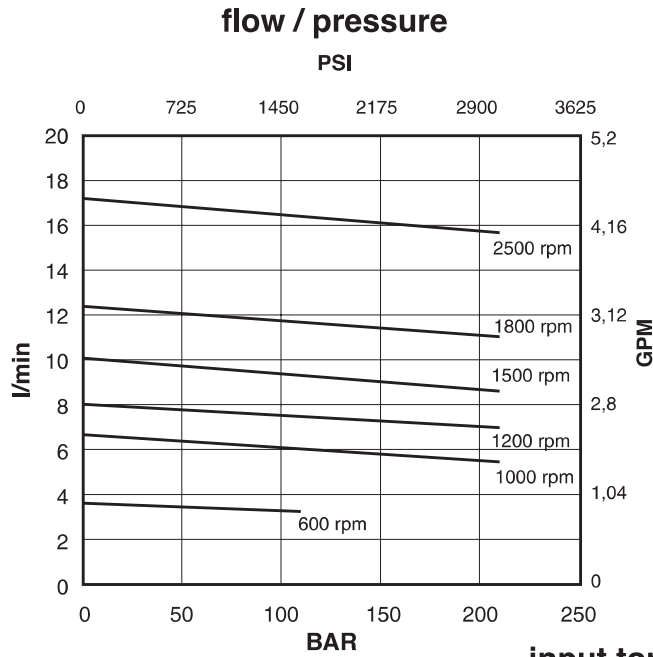
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Shaft end cartridge A05-60



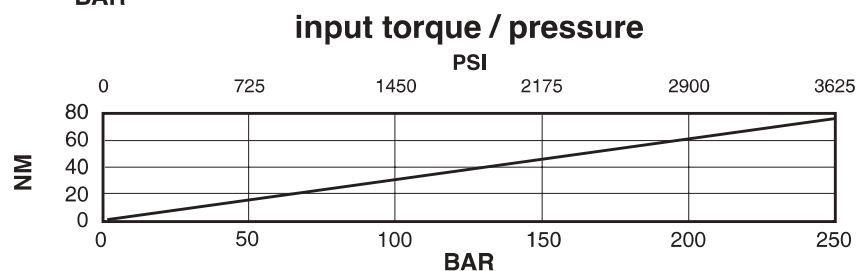
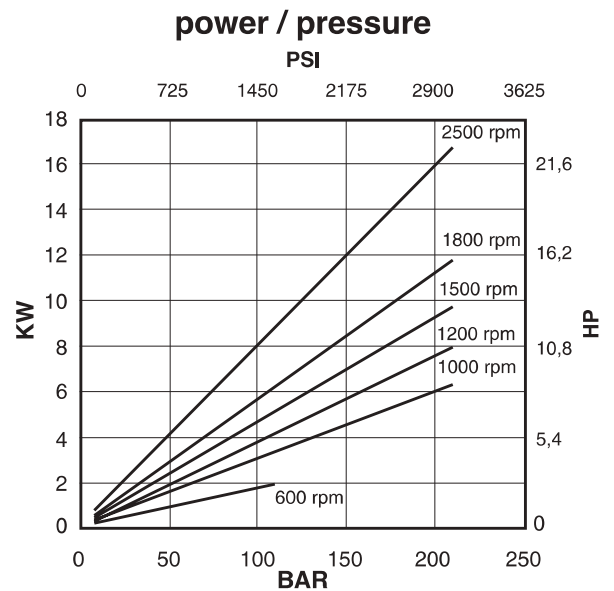
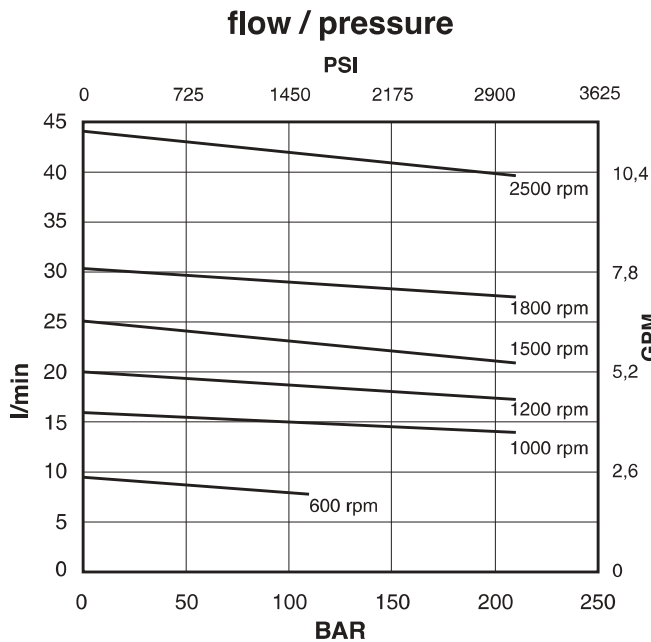
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A01-02



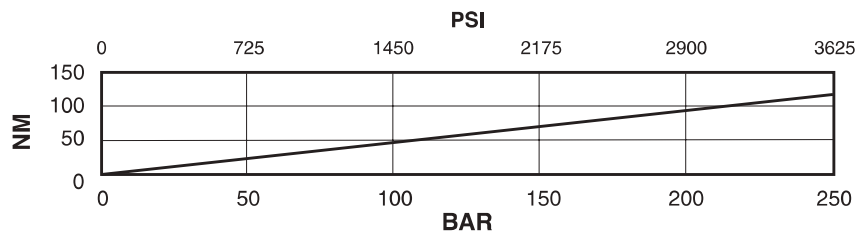
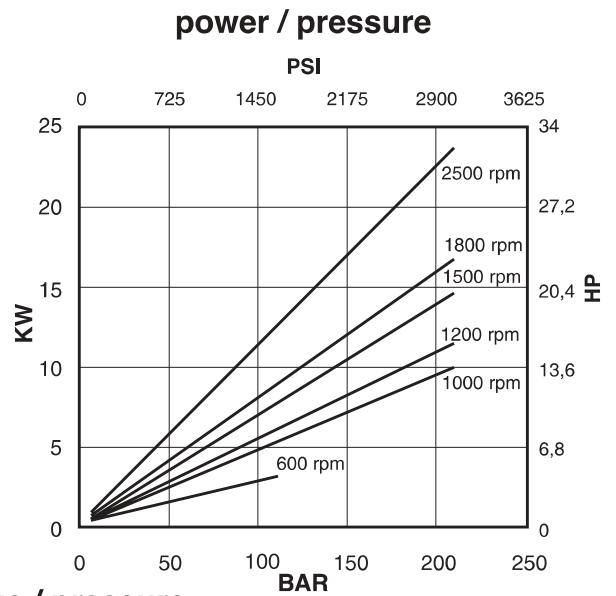
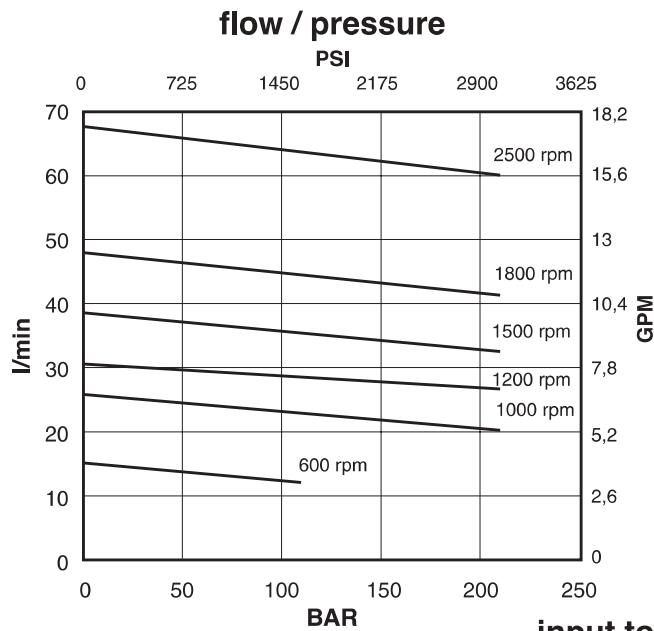
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-05



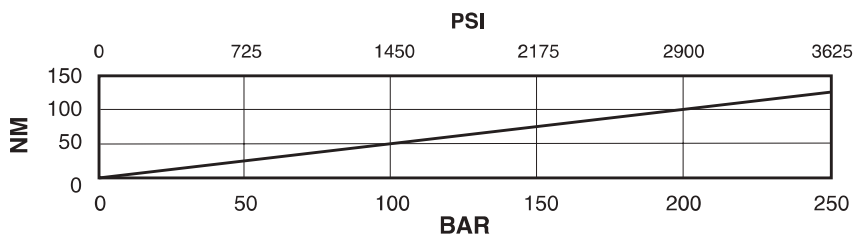
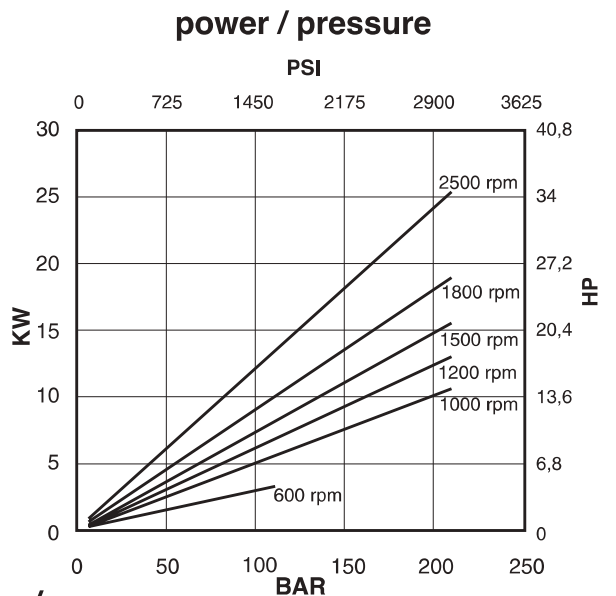
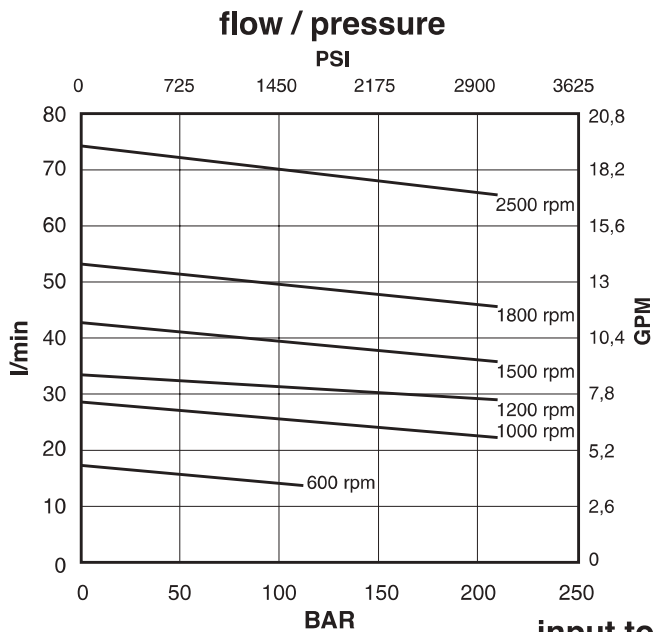
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-08



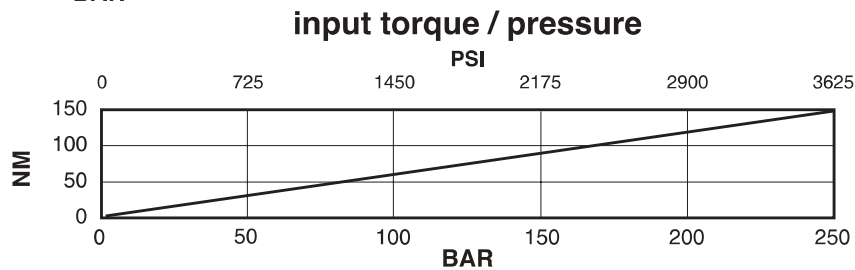
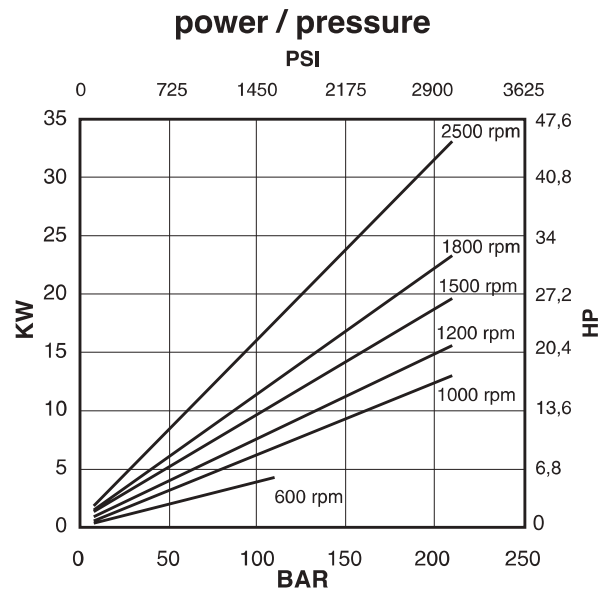
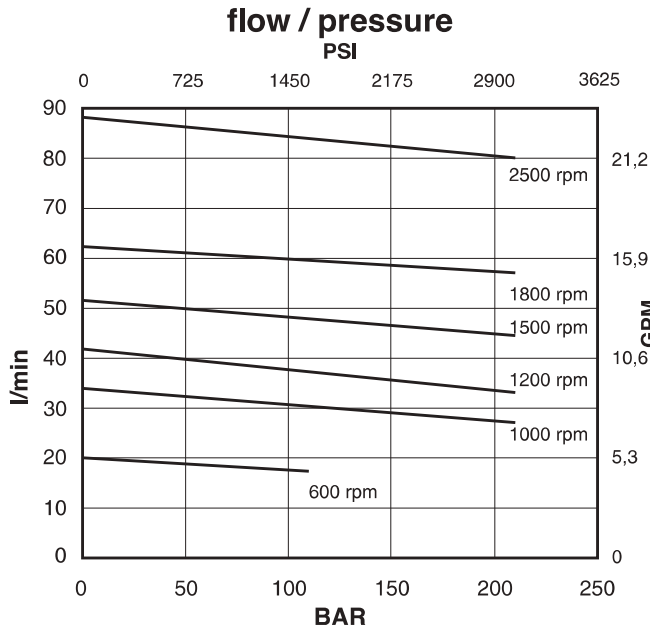
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-09



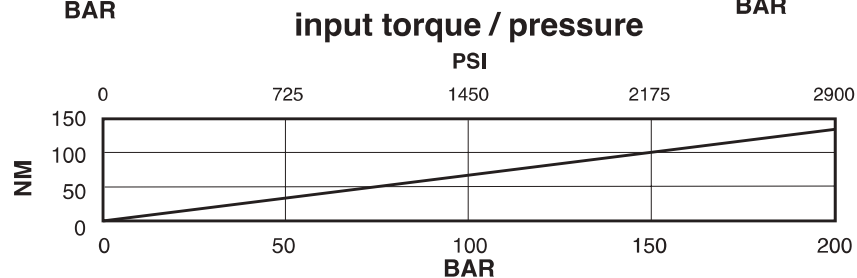
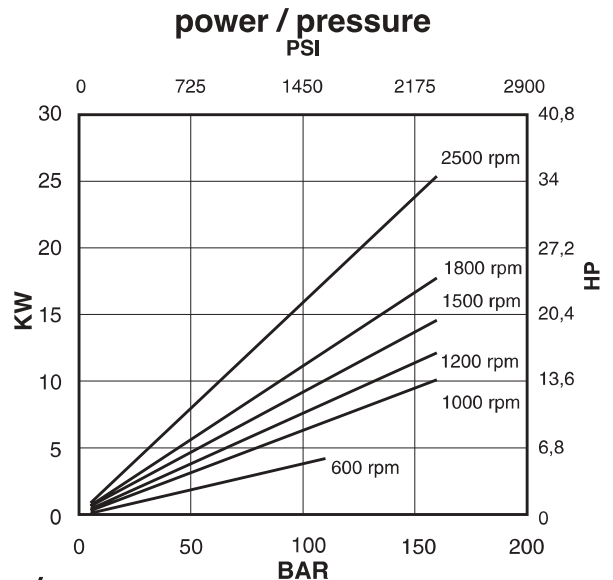
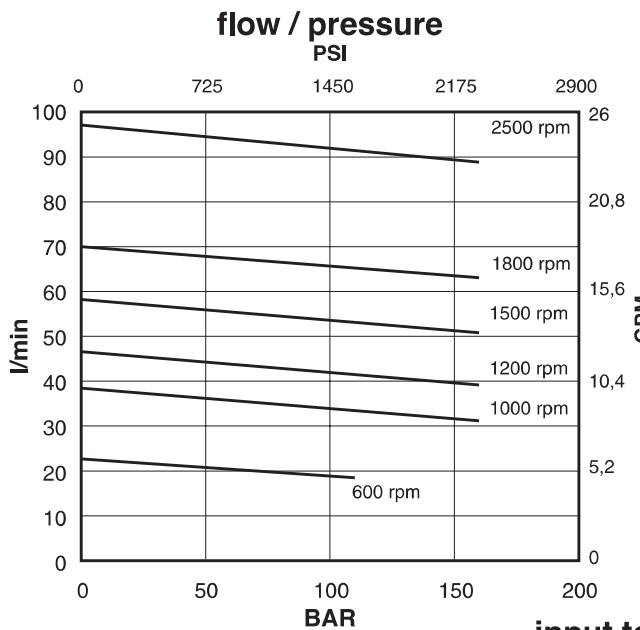
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-11



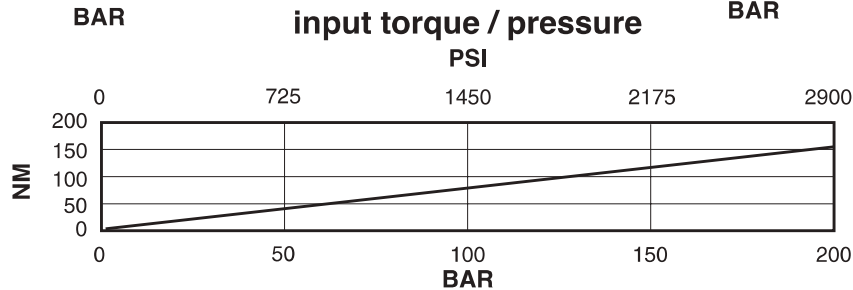
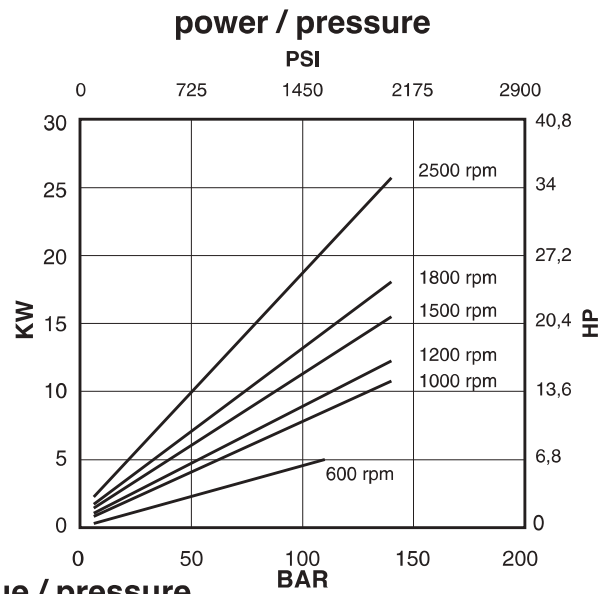
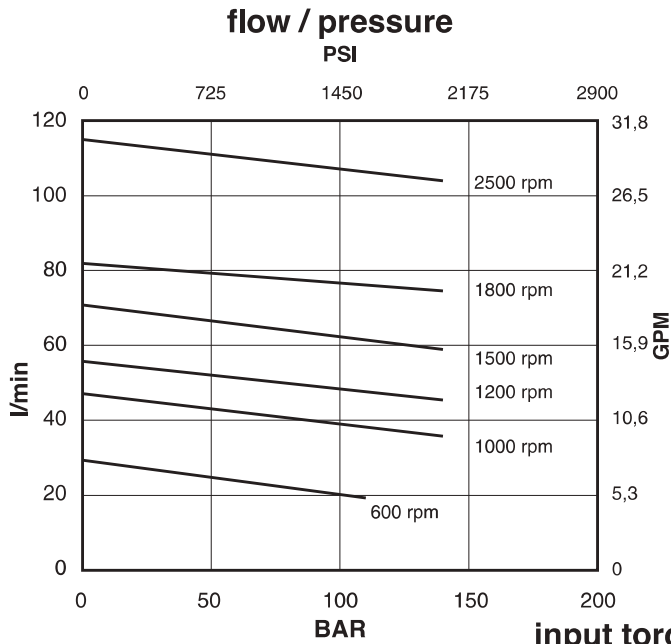
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-12



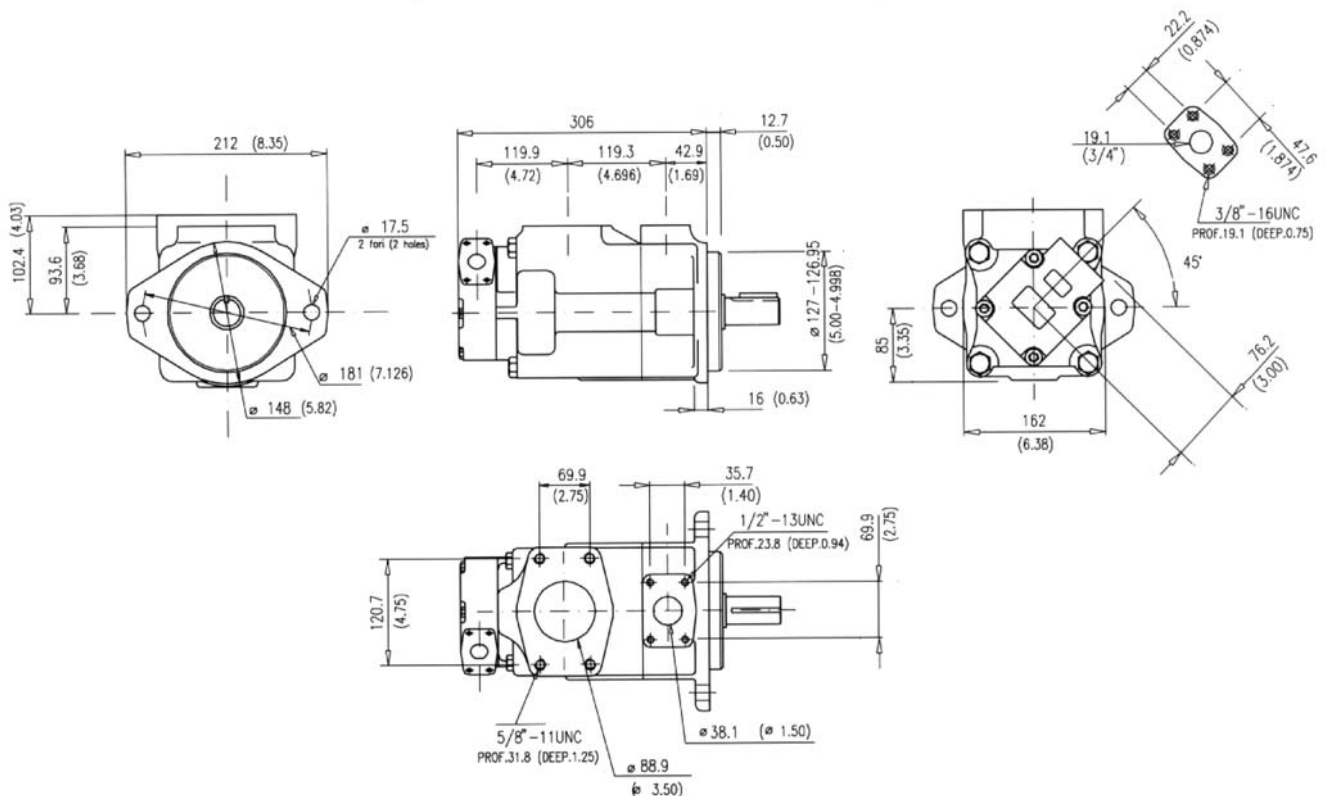
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A01-14



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)



Approx. weight: 43 Kg. (95 lbs.)

Model code breakdown

BQ 51 G ** ** * * ** (L) * (A)

Pump series

Pump type

Cartridge types

-shaft end 42 47 50 57 60

-cover end 02 05 08 09 11 12 14

Body outlet port positions
(Outlet viewed from cover end)

A = Outlet opposite end
B = Outlet 90° CCW from inlet
C = Outlet in line with inlet
D = Outlet 90° CW from inlet

Cover outlet port positions
(Outlet viewed from cover end)

A = Outlet 135° CCW from inlet
B = Outlet 45° CCW from inlet
C = Outlet 45° CW from inlet
D = Outlet 135° CW from inlet

Design

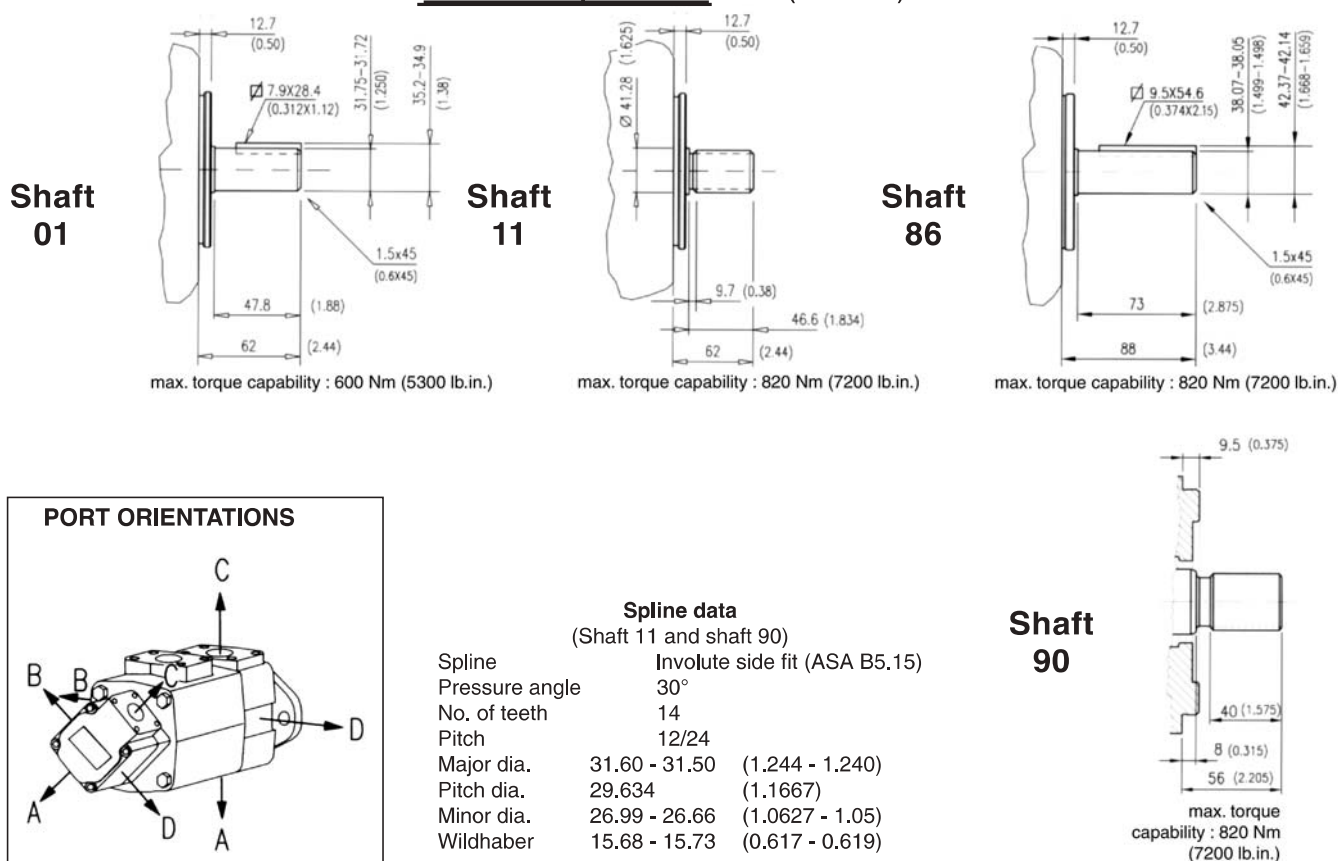
Mounting
(omit if not required)

Seals
(omit with standard seals and one shaft-seal in NBR)
V = seals and shaft-seal in FPM (Viton®)
D = standard seals and double shaft-seals in NBR
F = seals and double shaft-seals in FPM (Viton®)

Rotation
(viewed from shaft end)
L = left hand rotation CCW (omit if CW)

Shaft end options
01 = Straight with key (standard), **11** = Splined
86 = Heavy duty straight keyed, **90** = Splined SAE C

Shaft options mm (inches)



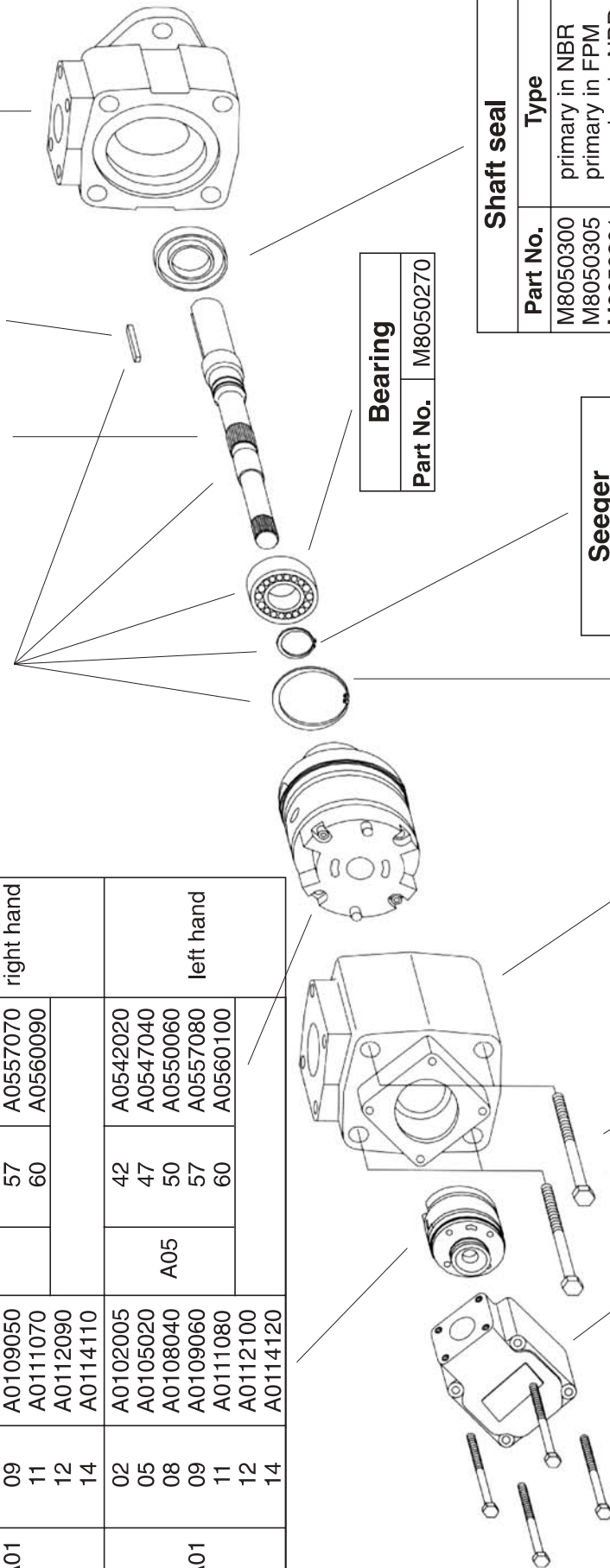
Id. codes of pump components

Cartridges					
Cover end		Shaft end			Pump rotation
Series	Model	Part No.	Series	Model	Part No.
A01	02	A0102000	A05	42	A0542010
	05	A0105010		47	A0547030
	08	A0108030		50	A0550050
	09	A0109050		57	A0557070
	11	A0111070		60	A0560090
	12	A0112090			
A01	14	A0114110	A05	42	A0542020
	02	A0102005		47	A0547040
	05	A0105020		50	A0550060
	08	A0108040		57	A0557080
	09	A0109060		60	A0560100
	11	A0111080			
	12	A0112100			
	14	A0114120			

Shaft kit	
Model	Part No.
01	M8510601
11	M8510611
86	M8510686
90	M8510690

Shaft	
Model	Part No.
01	K5101000
11	K5111000
86	K5186000
90	K5190000

Body	
Part No.	Model
M8050250	



Bearing	
Part No.	Model
M8050270	

Shaft seal	
Part No.	Type
M8050300	primary in NBR
M8050305	primary in FPM
M8050301	secondary in NBR
M8050306	secondary in FPM

Seeger	
Part No.	Model
M8050290	

Inlet body	
Part No.	Model
M8050390	

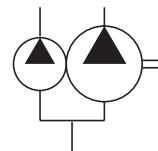
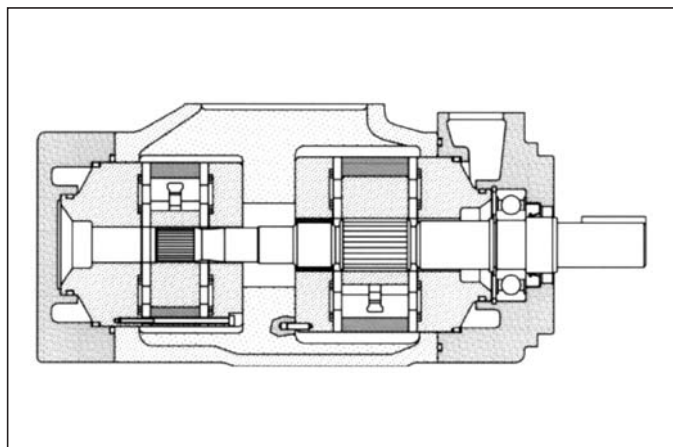
Cover	
Part No.	Model
M8020120	

Pump seal kit		
Part No.	Parts	Type
M8510411	seals + 1 shaft seal	NBR
M8510412	seals + 2 shaft seals	NBR
M8510413	seals + 1 shaft seal	FPM (Viton®)
M8510414	seals + 2 shaft seals	FPM (Viton®)

Seeger	
Part No.	Model
M8050280	

Screw	
Part No.	Model
M8050320	
Torque to 398 Nm (3550 lb. in.)	

Screw	
Part No.	Model
M8020420	
Torque to 70 Nm (624 lb. in.)	



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 211 to 309 l/min (from 54 to 81 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity		Rated capacity		Maximum pressure		Speed range rpm	
			at 1200 rpm 7 bar		at 1500 rpm 7 bar		with mineral oil			
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A05-42	138,6	(8.46)	164	(42)	203,4	(53.7)	175	(2538)	600	2200
A05-47	153,5	(9.4)	180	(47)	222,7	(58.8)	175	(2538)	600	2200
A05-50	162,2	(9.9)	189	(50)	234	(61.8)	175	(2538)	600	2200
A05-57	183,4	(11.2)	217	(57)	267	(71.2)	175	(2538)	600	2200
A05-60	193,4	(11.8)	230	(60)	285	(75.3)	175	(2538)	600	2200
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A02-12	40,1	(2.45)	46,9	(12)	58,8	(15.5)	210	(3050)	600	2700
A02-14	45,4	(2.77)	52,7	(14)	65,7	(17.4)	210	(3050)	600	2700
A02-17	55,2	(3.37)	64,2	(17)	80,2	(21.2)	210	(3050)	600	2500
A02-19	60,1	(3.66)	71,1	(19)	88,7	(23.4)	210	(3050)	600	2500
A02-21	67,5	(4.12)	79,3	(21)	99,8	(26.4)	210	(3050)	600	2500

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

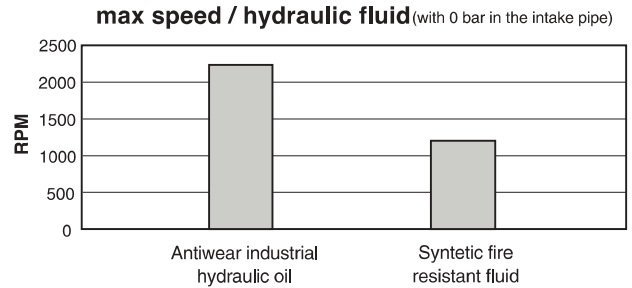
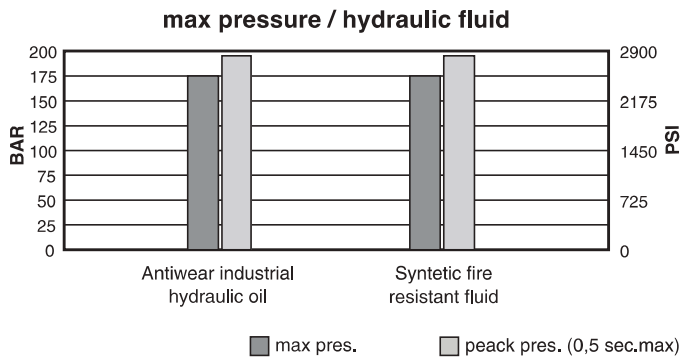
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

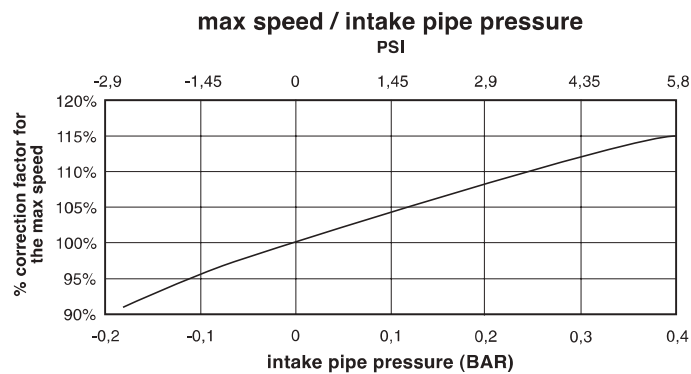
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

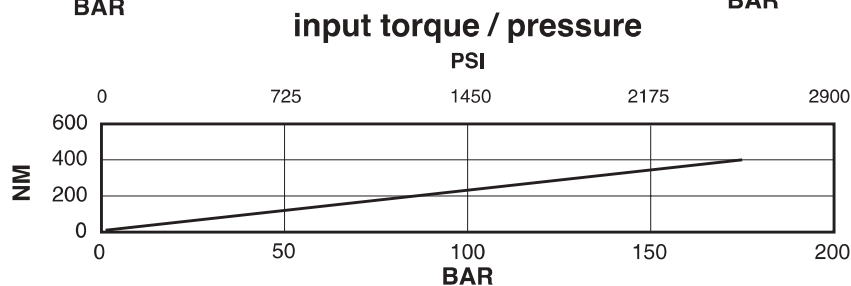
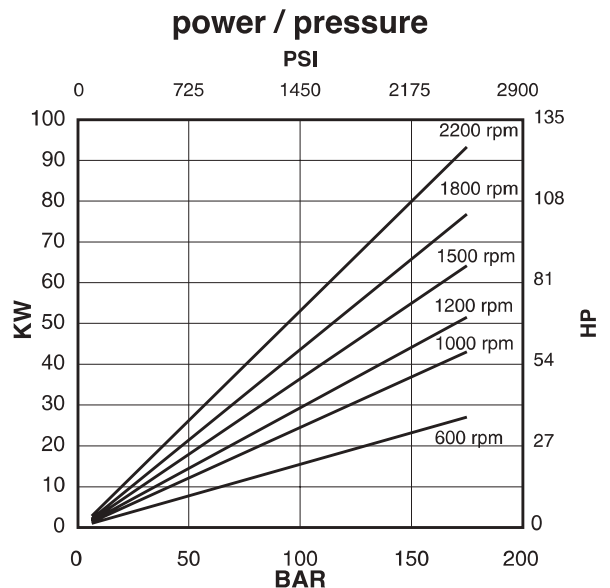
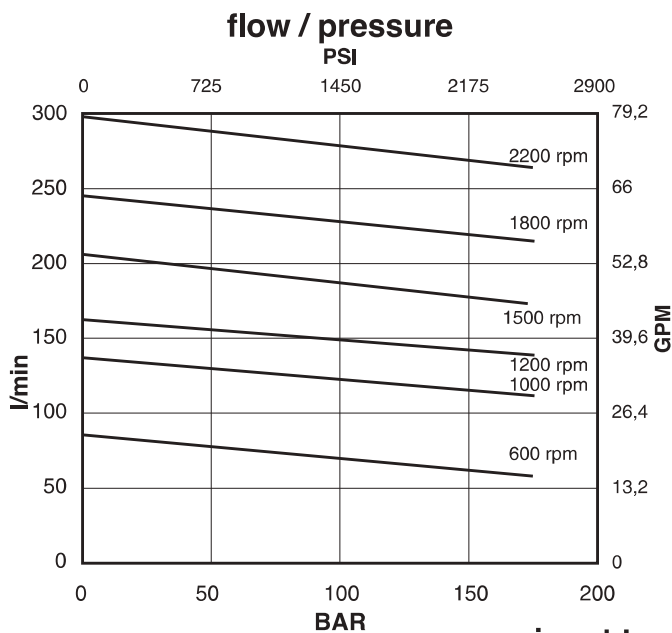
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

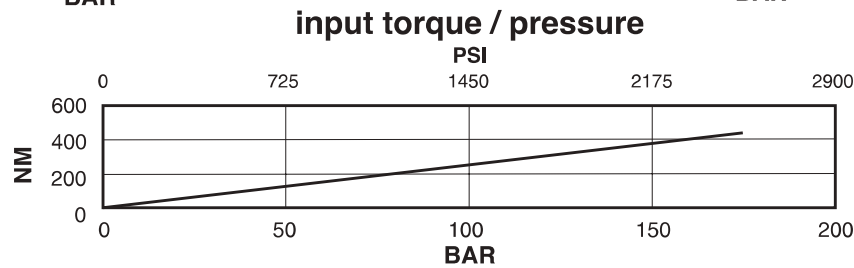
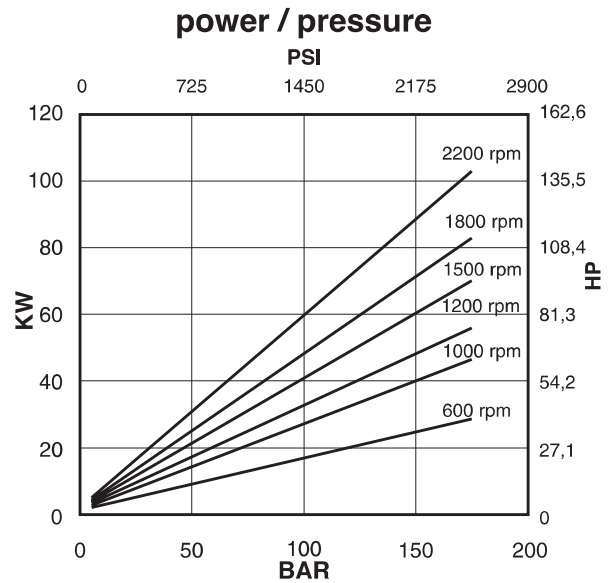
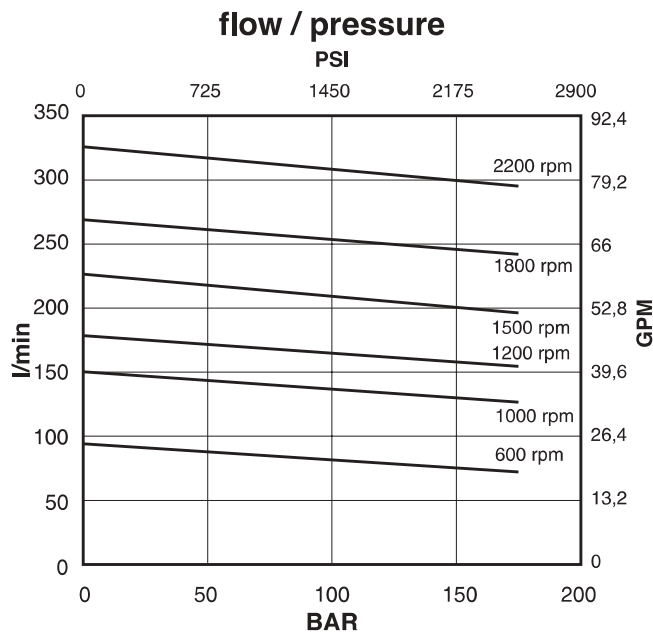


Shaft end cartridge A05-42



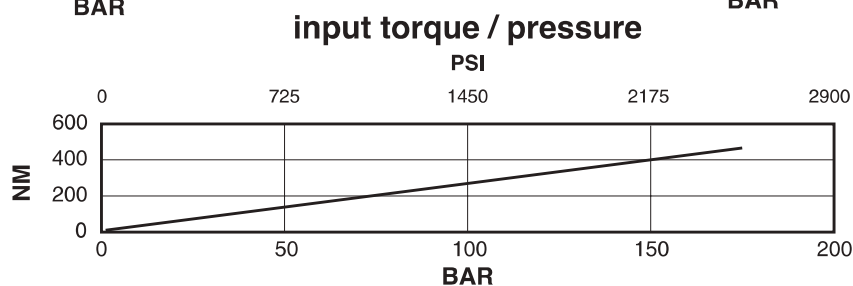
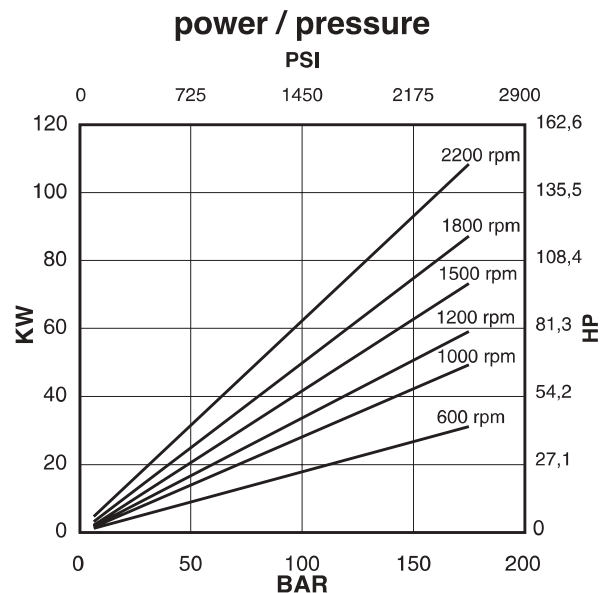
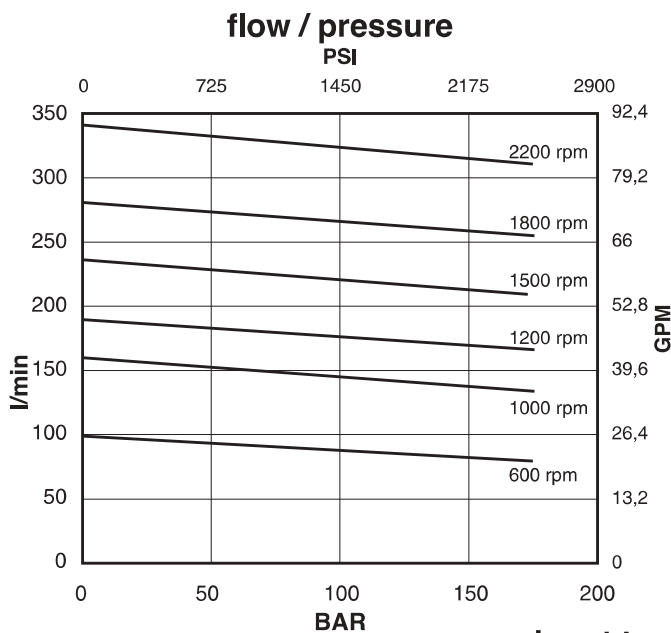
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-47



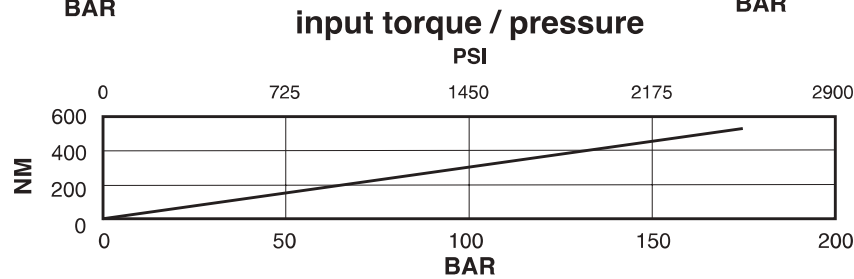
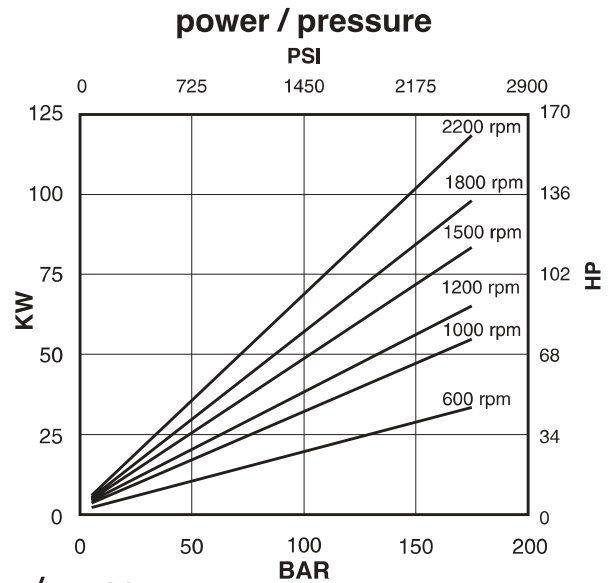
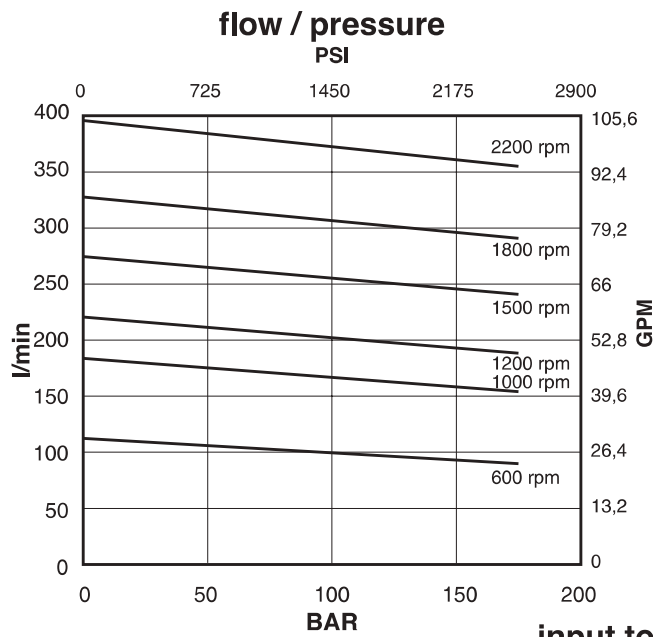
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-50



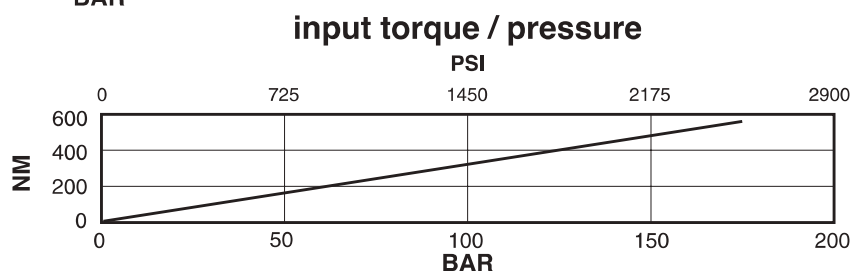
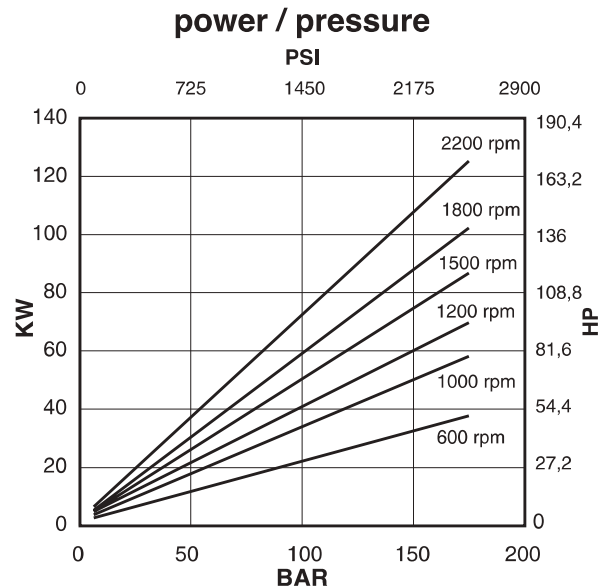
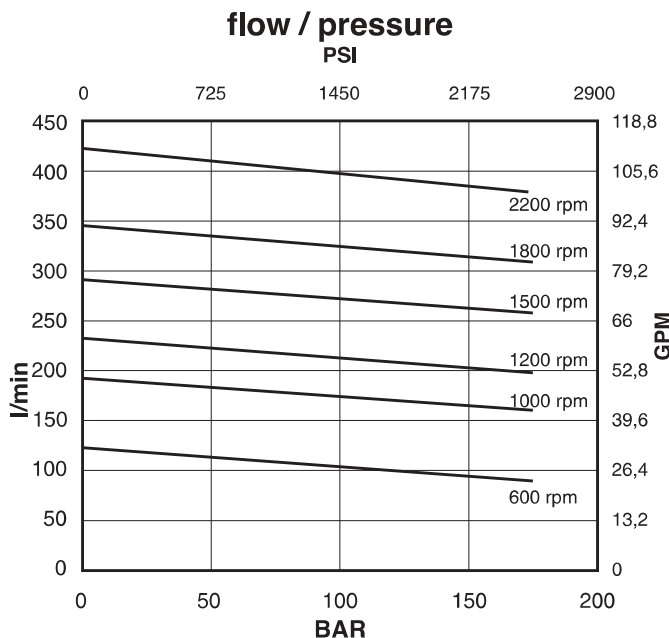
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-57



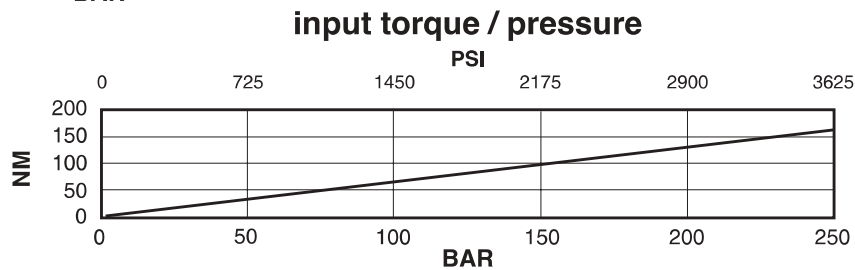
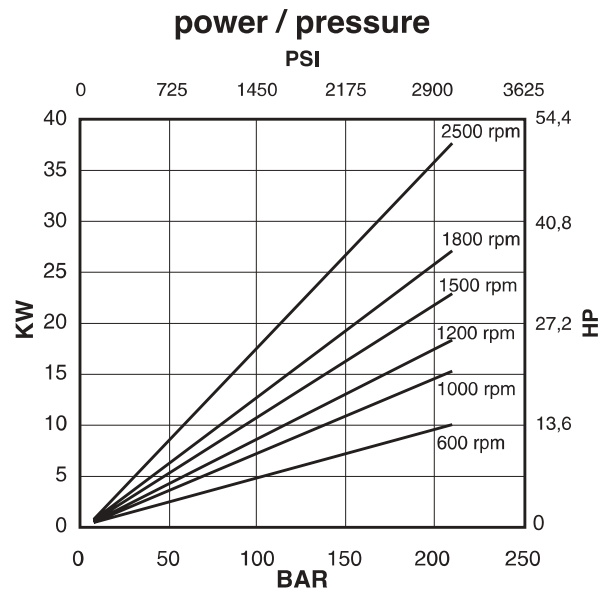
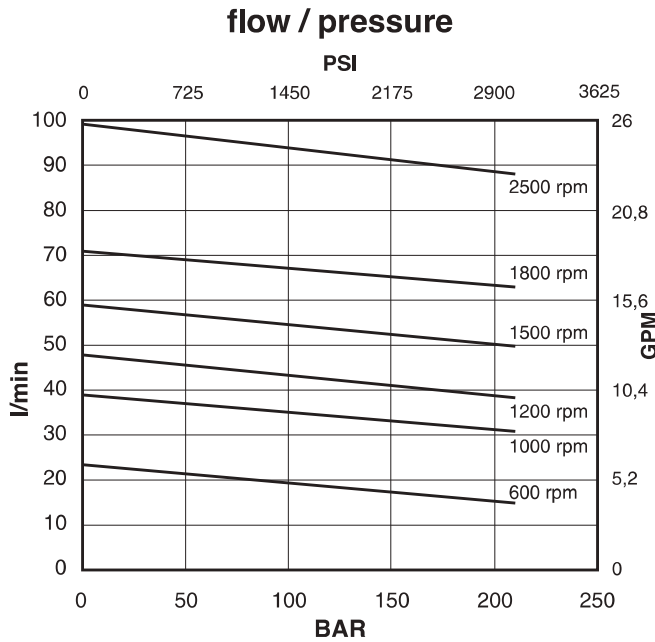
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-60



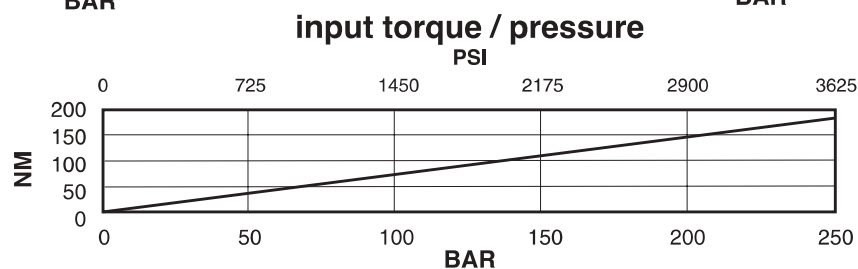
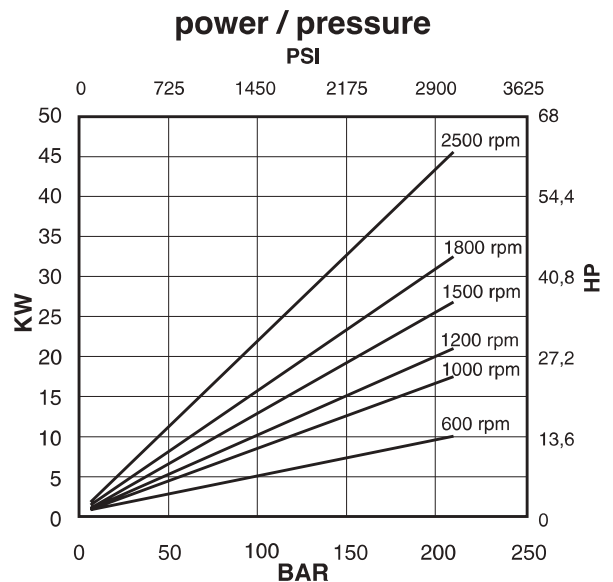
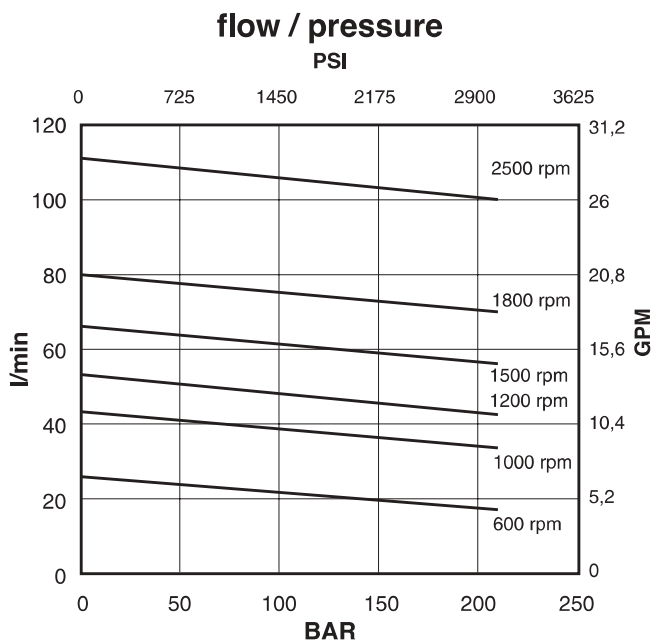
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A02-12



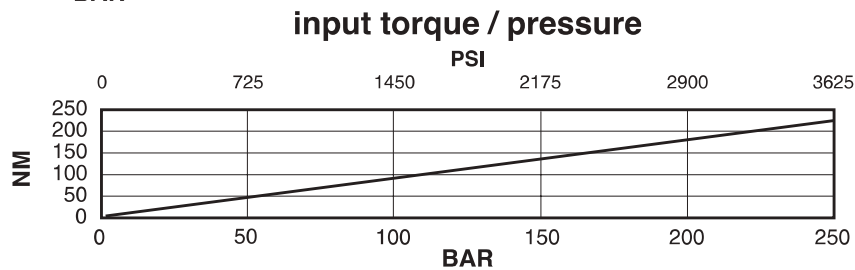
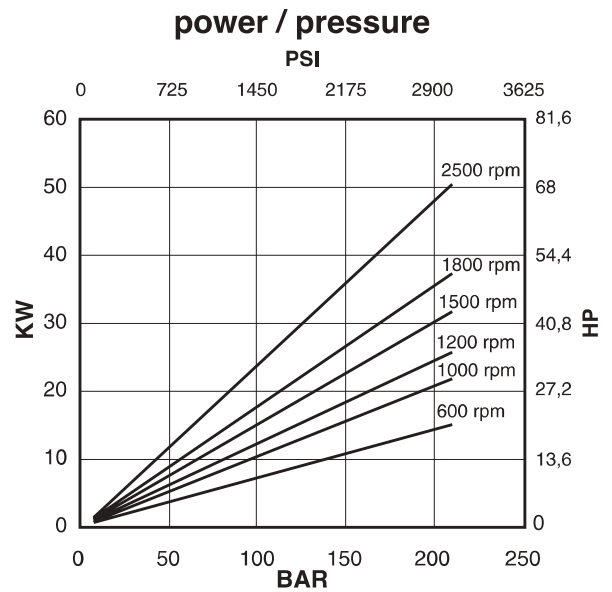
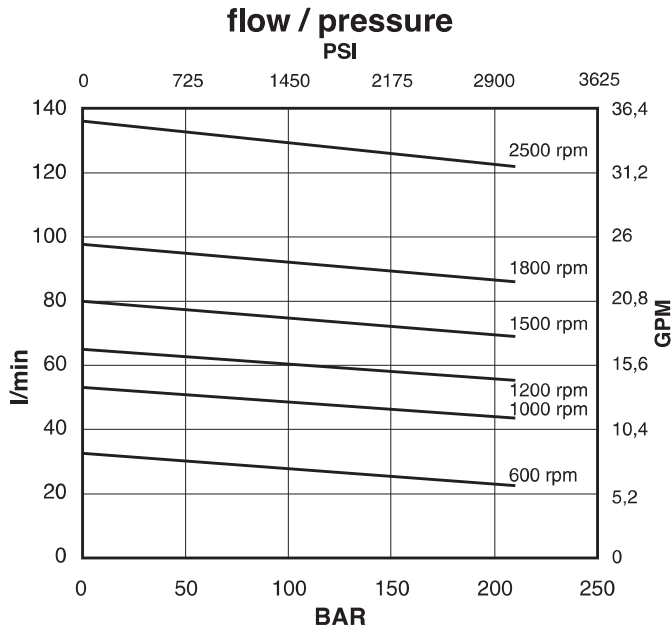
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-14



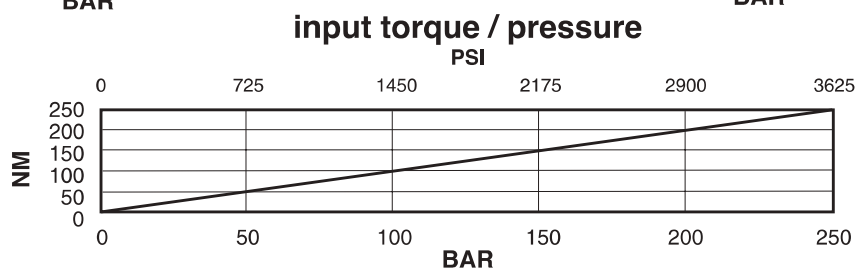
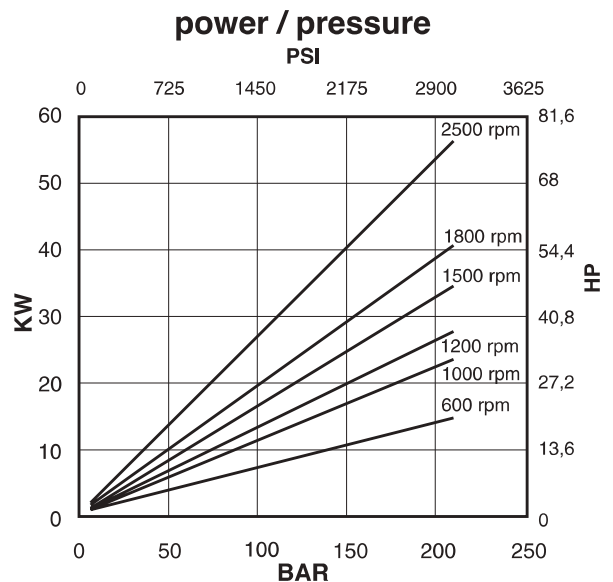
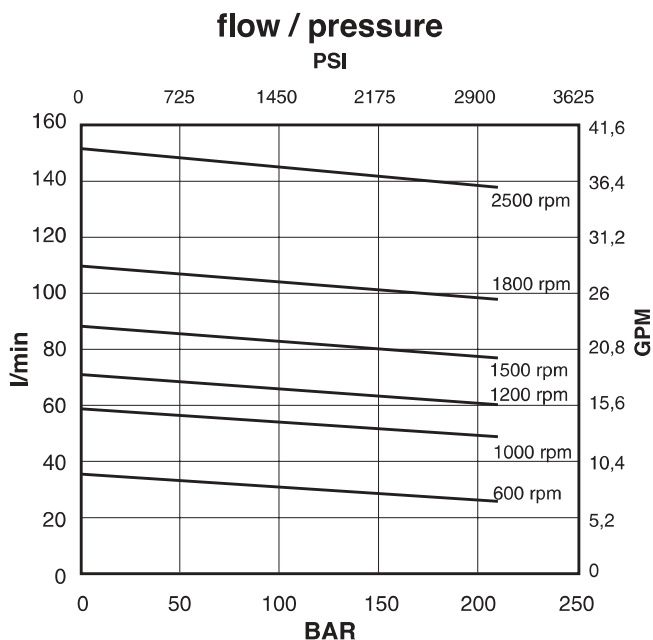
Oil viscosity: 25 c.St.(10W)
 Temperature: 45°C
 Inlet pressure: 0 BAR

Cover end cartridge A02-17



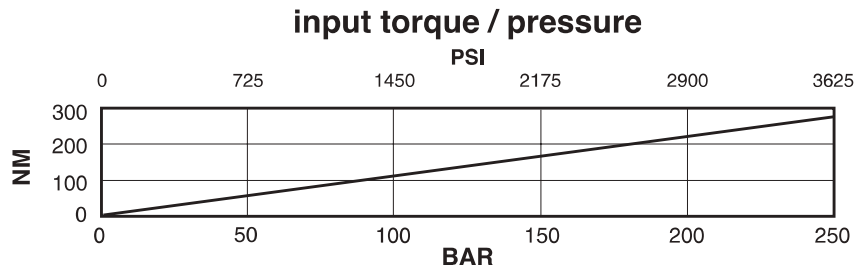
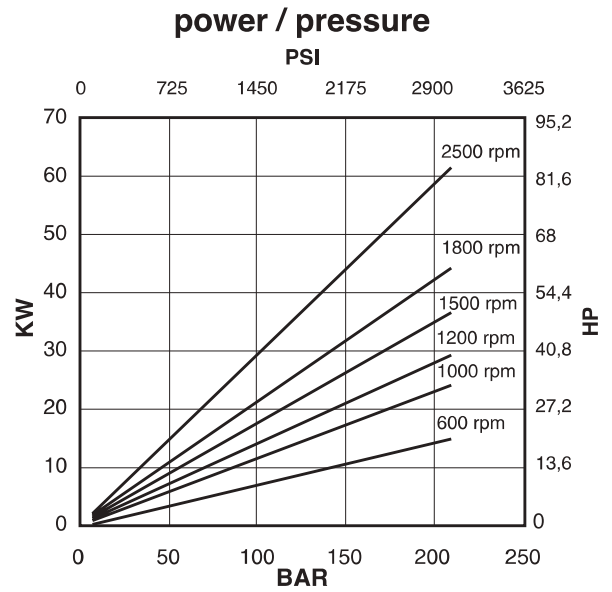
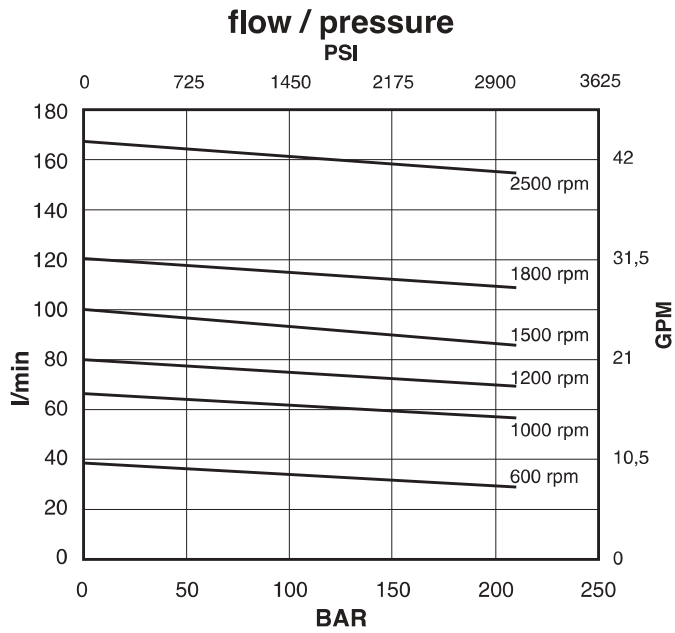
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A02-19



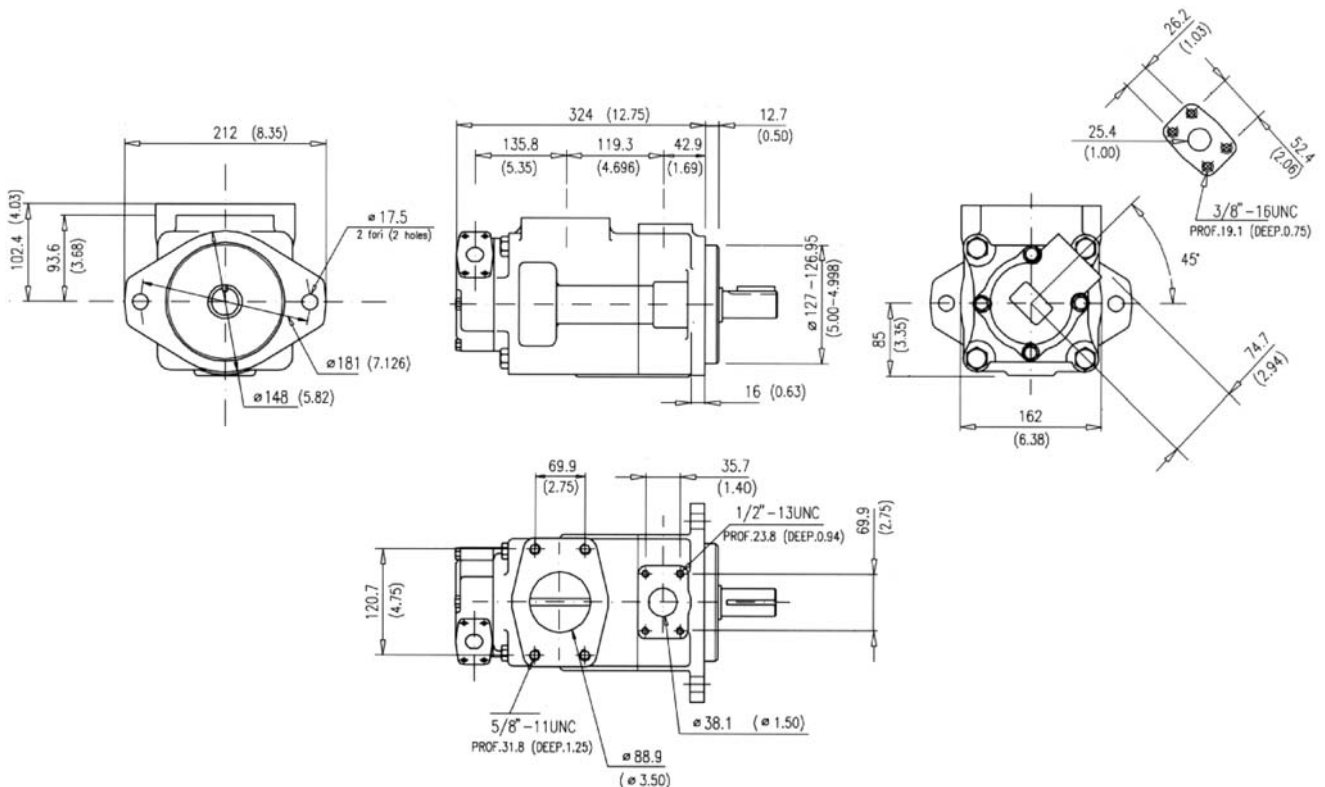
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A02-21



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

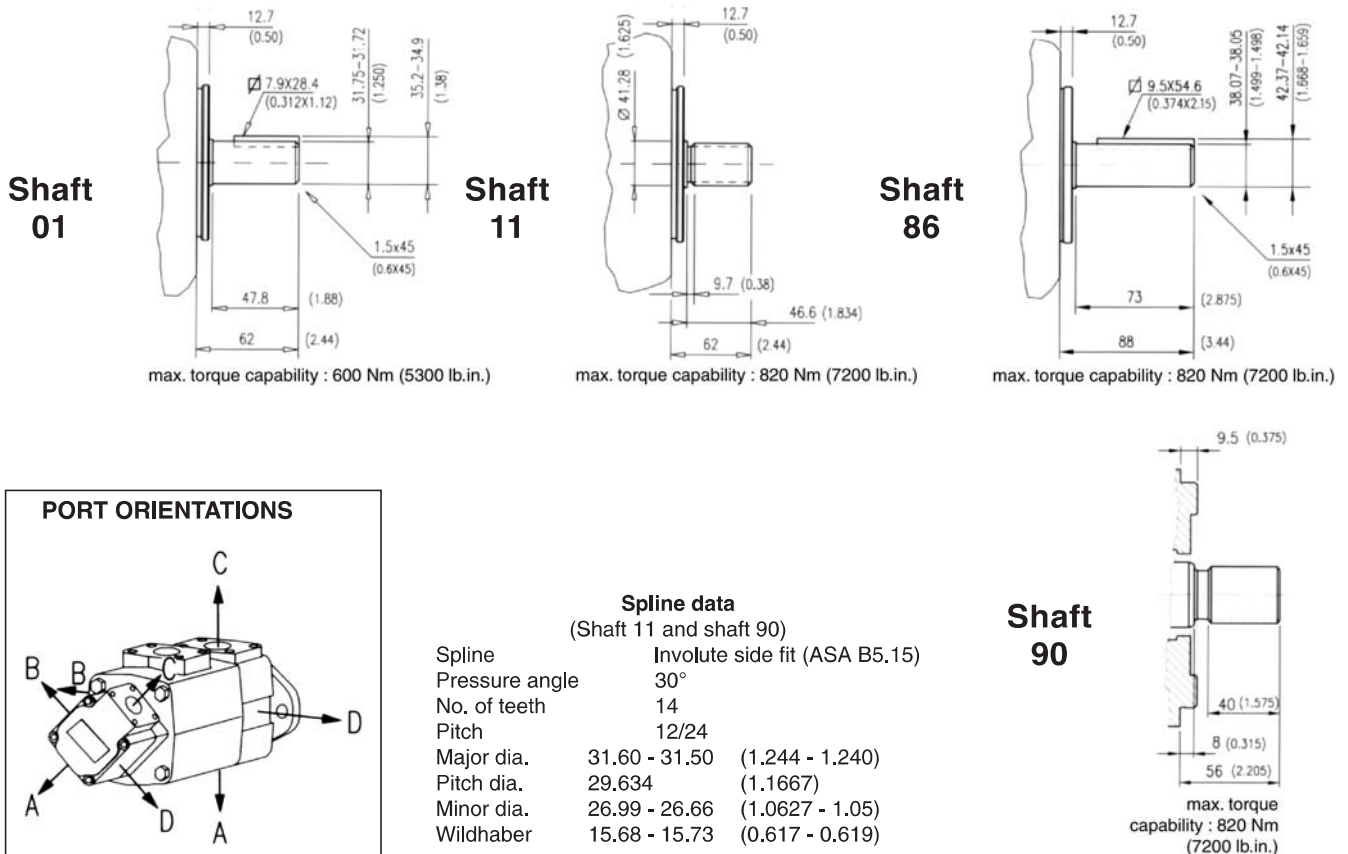


Approx. weight: 46 Kg. (101 lbs.)

Model code breakdown

BQ	52	G	**	**	*	*	**	(L)	*	(A)
Pump series		Design								Mounting (omit if not required)
Pump type										
Cartridge types										
-shaft end	42 47 50 57 60									
-cover end	12 14 17 19 21									
Body outlet port positions (Outlet viewed from cover end)										
A = Outlet opposite end										
B = Outlet 90° CCW from inlet										
C = Outlet in line with inlet										
D = Outlet 90° CW from inlet										
Cover outlet port positions (Outlet viewed from cover end)										
A = Outlet 135° CCW from inlet										
B = Outlet 45° CCW from inlet										
C = Outlet 45° CW from inlet										
D = Outlet 135° CW from inlet										
								Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)		
								Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE C		

Shaft options mm (inches)



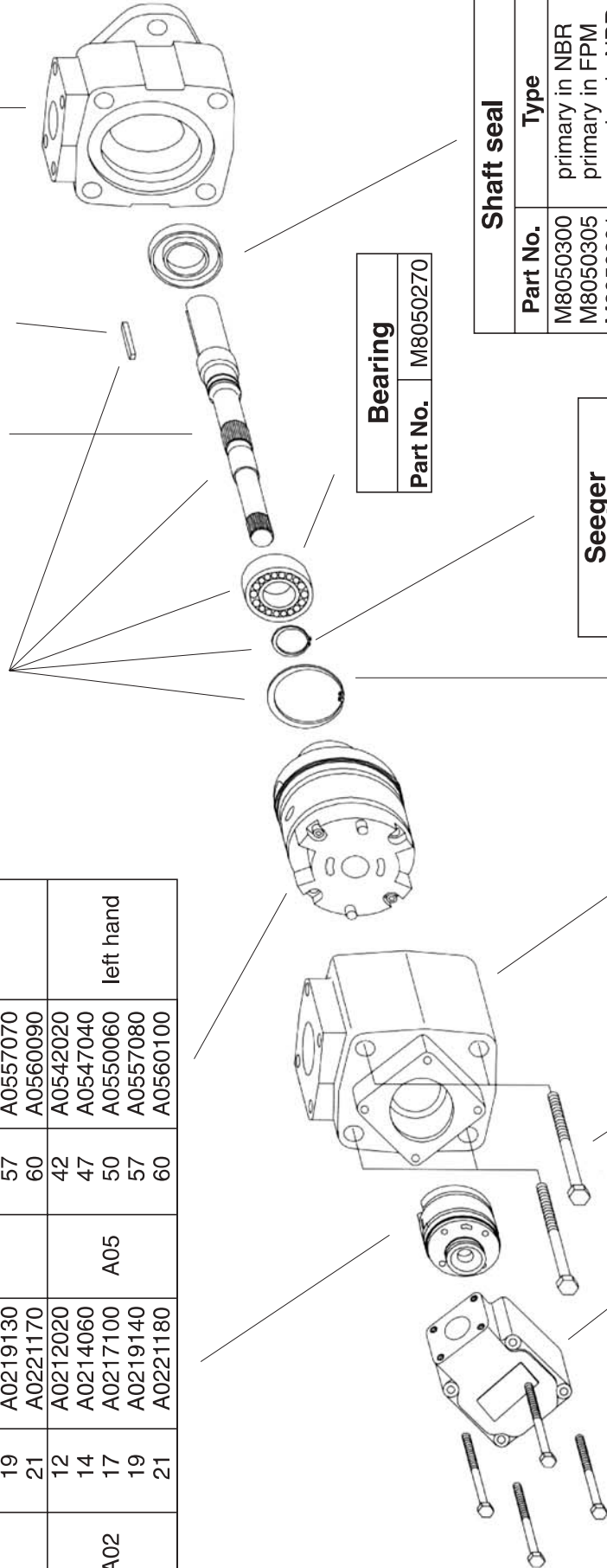
Id. codes of pump components

Cartridges					
Cover end		Shaft end		Pump rotation	
Series	Model	Part No.	Series	Model	Part No.
A02	12	A0212010	A05	42	A0542010
	14	A0214050		47	A0547030
	17	A0217090		50	A0550050
	19	A0219130		57	A0557070
	21	A0221170		60	A0560090
A02	12	A0212020	A05	42	A0542020
	14	A0214060		47	A0547040
	17	A0217100		50	A0550060
	19	A0219140		57	A0557080
	21	A0221180		60	A0560100

Shaft kit		Key	
Model	Part No.	Model	Part No.
01	M8520601	01	K5201000
11	M8520611	11	K5211000
86	M8520686	86	K5286000
90	M8520690	90	K5290000

Shaft		Key	
Model	Part No.	Model	Part No.
01	K5201000	01	M8050100
11	K5211000	11	-
86	K5286000	86	M8058600
90	K5290000	90	-

Body	
Part No.	M8050250



Bearing	
Part No.	M8050270

Shaft seal	
Part No.	Type
M8050300	primary in NBR
M8050305	primary in FPM
M8050301	secondary in NBR
M8050306	secondary in FPM

Seeger	
Part No.	M8050290

Inlet body	
Part No.	M8050400

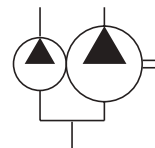
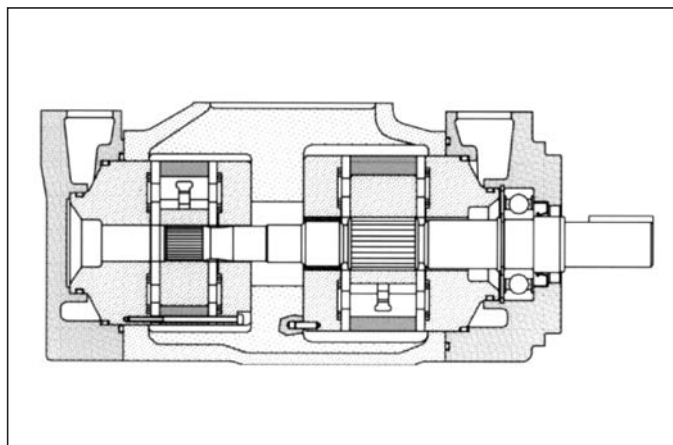
Cove	
Part No.	M8050350

Pump seal kit		
Part No.	Parts	Type
M8520431	seals + 1 shaft seal	NBR
M8520432	seals + 2 shaft seals	NBR
M8520433	seals + 1 shaft seal	FPM (Viton®)
M8520434	seals + 2 shaft seals	FPM (Viton®)

Seeger	
Part No.	M8050280

Screw	
Part No.	M8050330
Torque to 398 Nm (3550 lb. in.)	

Screw	
Part No.	M8040230
Torque to 102 Nm (910 lb. in.)	



General description

Fixed displacement vane pump, hydraulically balanced, with capacity determined by the cartridges used and the speed of rotation. The pump is available in several versions with rated capacities from 244 to 370 l/min (from 63 to 98 gpm) at 1200 rpm and 7 bar.

Technical characteristics

Cartridge model	Geometric displacement		Rated capacity at 1200 rpm 7 bar		Rated capacity at 1500 rpm 7 bar		Maximum pressure with mineral oil		Speed range rpm	
shaft end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A05-42	138,6	(8.46)	164	(42)	203,4	(53.7)	175	(2538)	600	2200
A05-47	153,5	(9.4)	180	(47)	222,7	(58.8)	175	(2538)	600	2200
A05-50	162,2	(9.9)	189	(50)	234	(61.8)	175	(2538)	600	2200
A05-57	183,4	(11.2)	217	(57)	267	(71.2)	175	(2538)	600	2200
A05-60	193,4	(11.8)	230	(60)	285	(75.3)	175	(2538)	600	2200
cover end	cm ³ /g	(in ³ /r)	l/min	(gpm)	l/min	(gpm)	bar	(psi)	min	max
A04-21	69,0	(4.2)	79,5	(21)	101,4	(26.8)	210	(3050)	600	2500
A04-25	81,6	(5)	94,0	(25)	120,1	(31.7)	210	(3050)	600	2500
A04-30	97,7	(6)	113,8	(30)	141,2	(37.3)	210	(3050)	600	2500
A04-35	112,7	(6.9)	131,6	(35)	167,2	(44.1)	210	(3050)	600	2400
A04-38	121,6	(7.4)	139,9	(38)	177,3	(46.8)	210	(3050)	600	2400

Hydraulic fluids: mineral oils, phosphate ester based fluids.

Viscosity range (with mineral oil): from 13 to 860 cSt. (13 to 54 cSt. recommended).

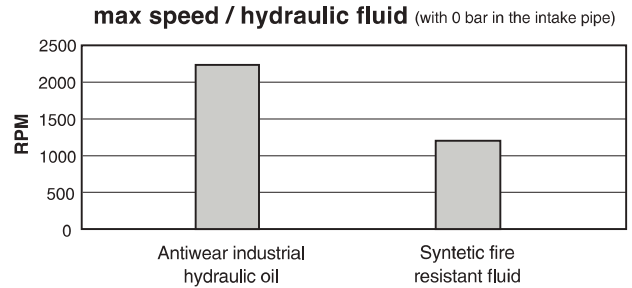
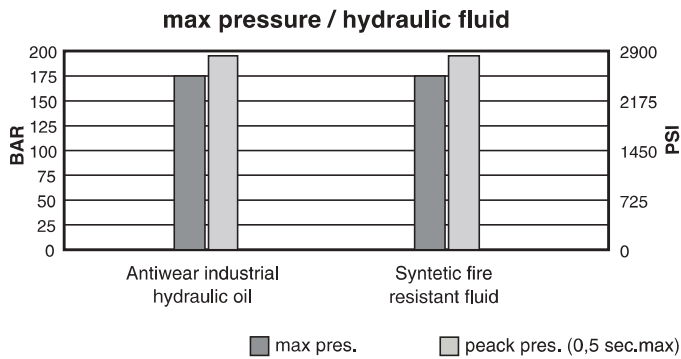
Filtration: for the inlet - 149 micron abs., for the return line - 25 micron abs. or better (with synthetic fluids: for the return line - 10 micron abs. or better).

Inlet pressure: (with mineral oil): from -0,17 to +1,4 bar (-2.5 to + 20 psi)

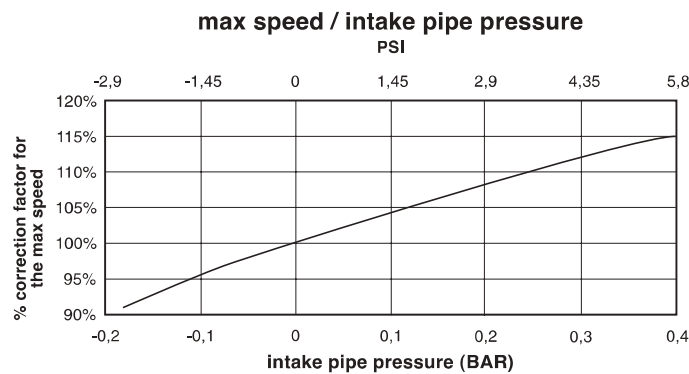
Operating temperature: with mineral oil -10°C +70°C (+30°C to +60°C recommended).

Drive: direct and coaxial by means of a flexible coupling.

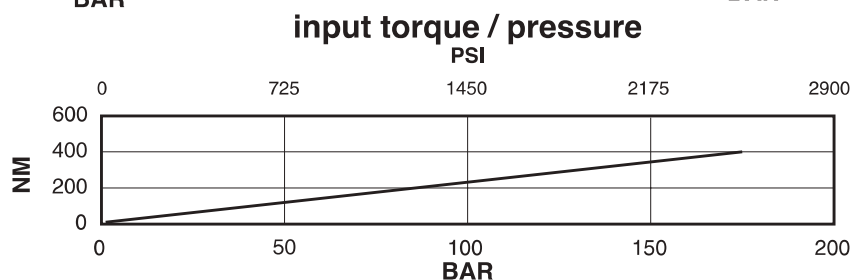
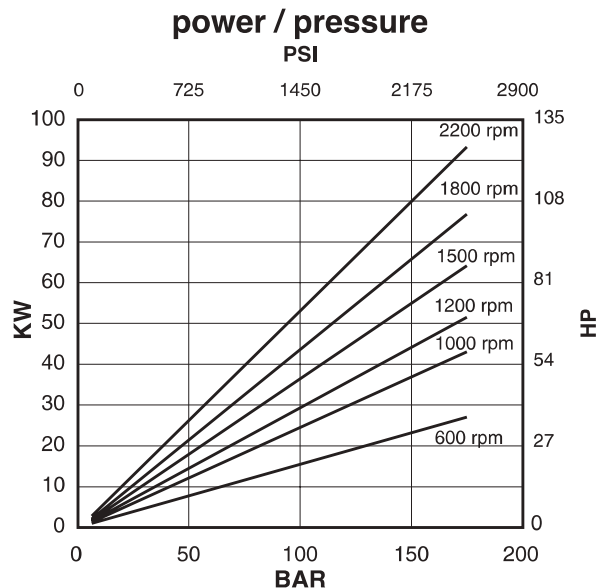
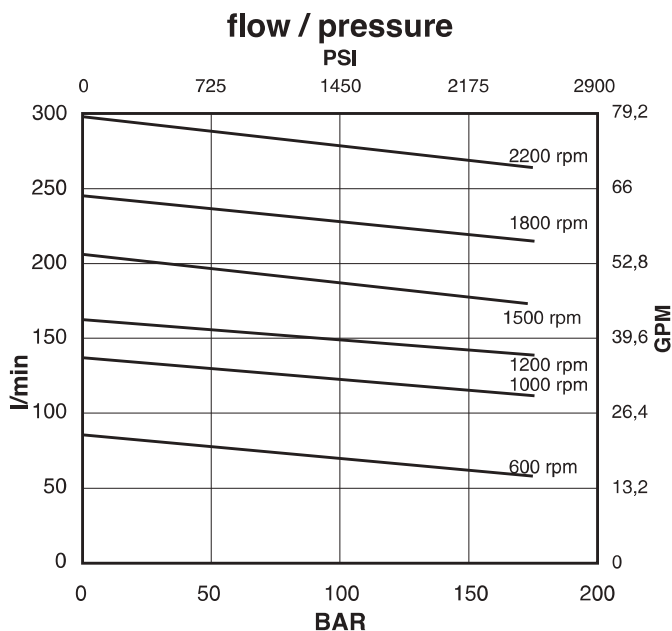
Main operating data



If the intake pressure is not zero bar, use the graph below to find the percentage correction factor to apply to the maximum speed

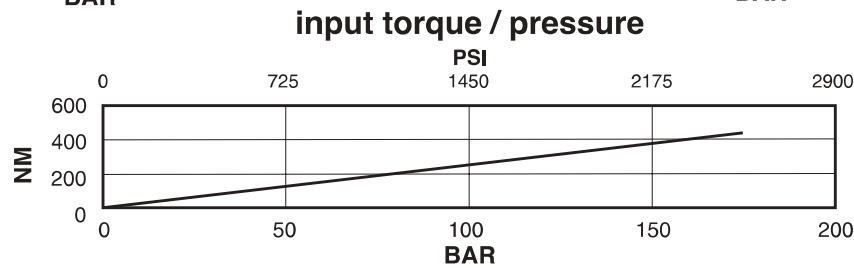
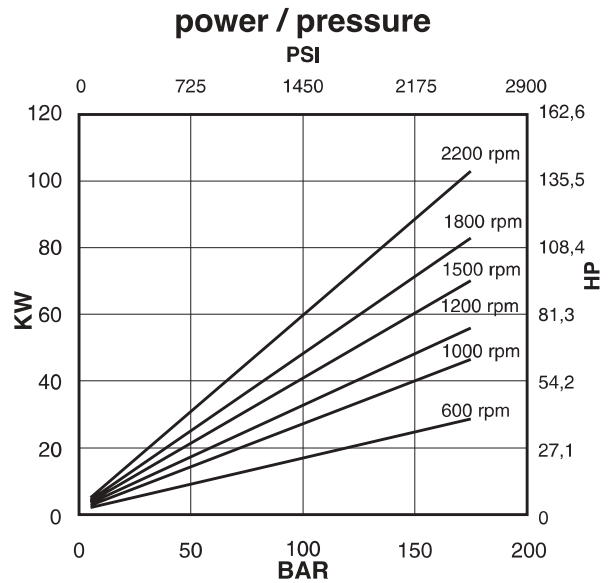
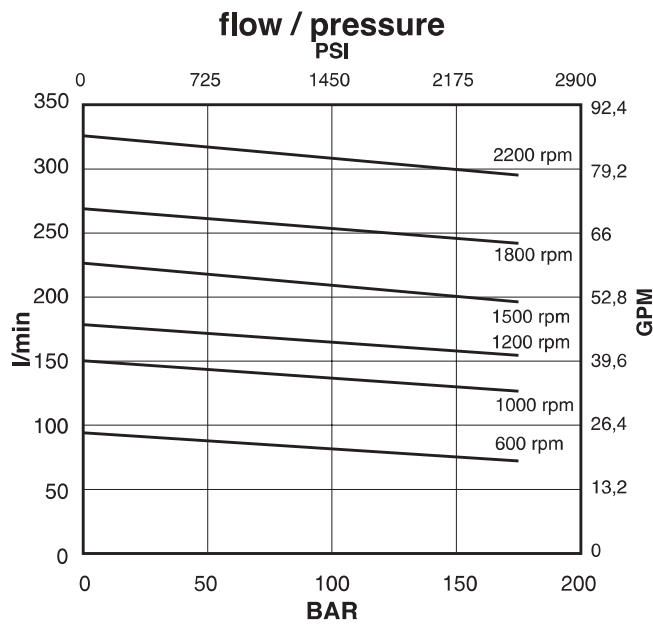


Shaft end cartridge A05-42



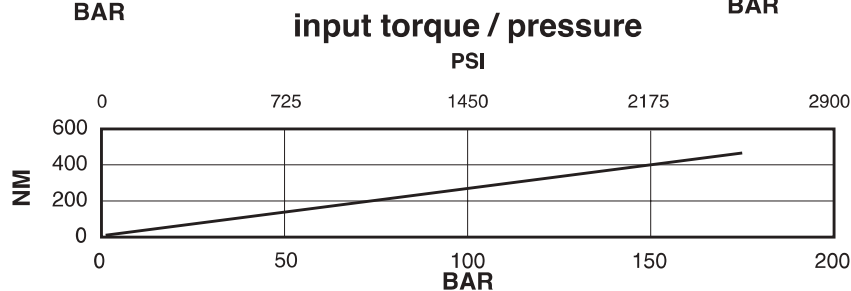
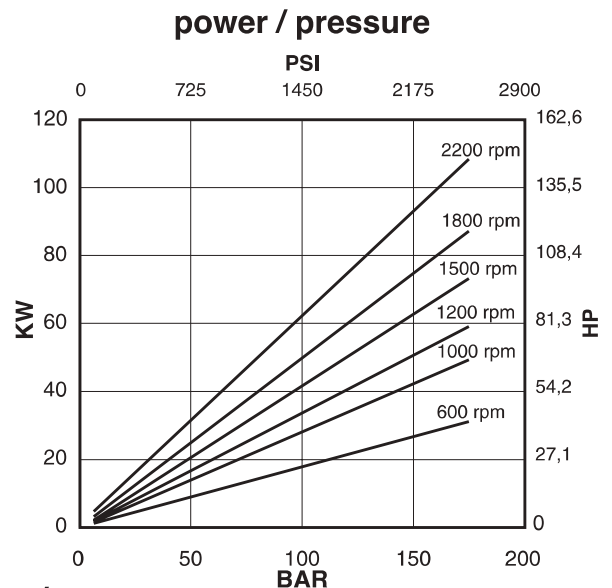
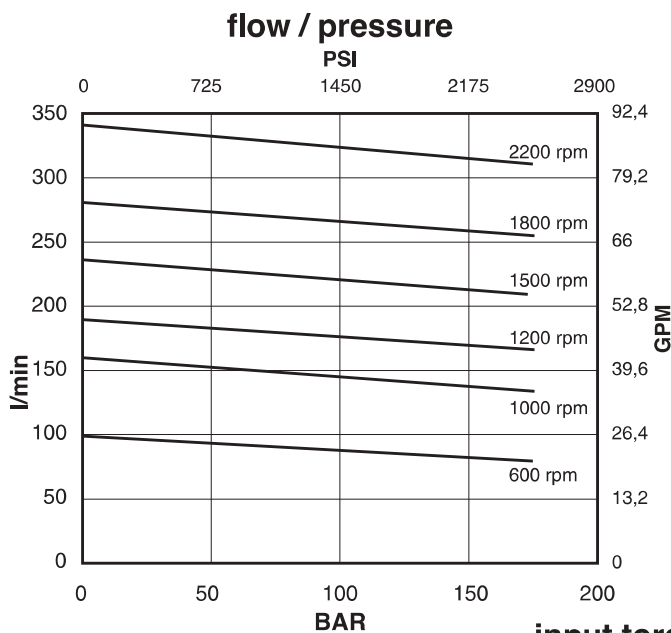
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-47



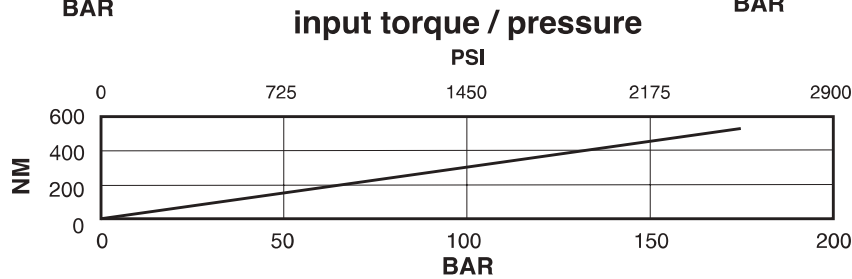
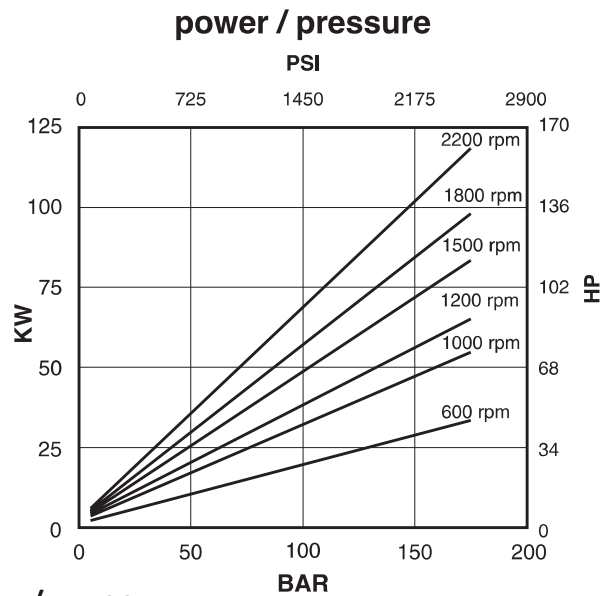
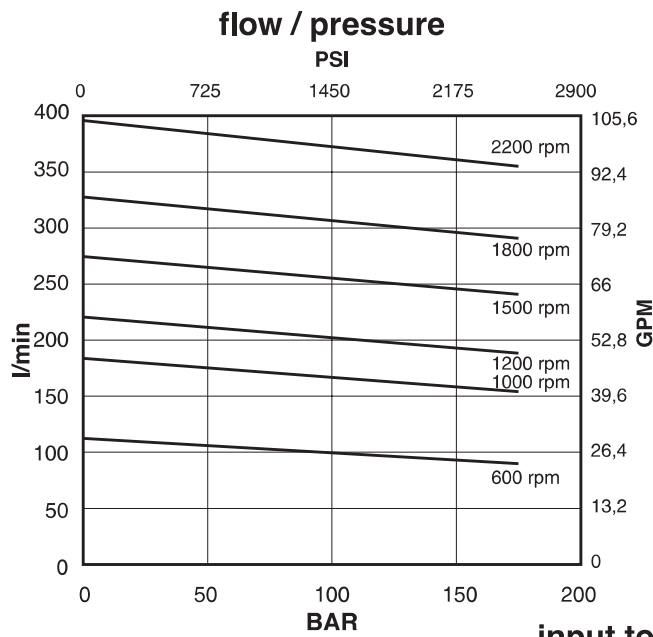
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-50



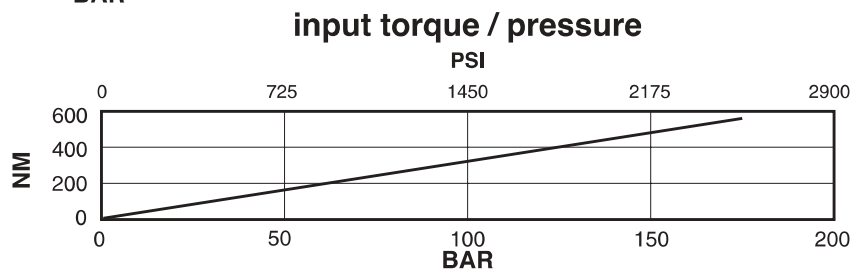
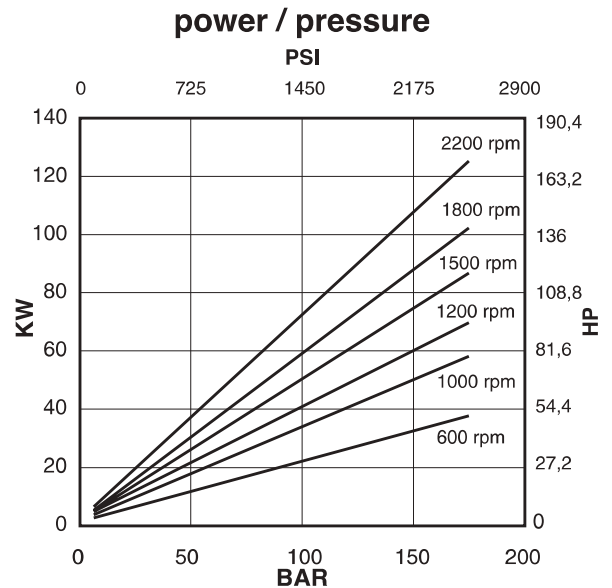
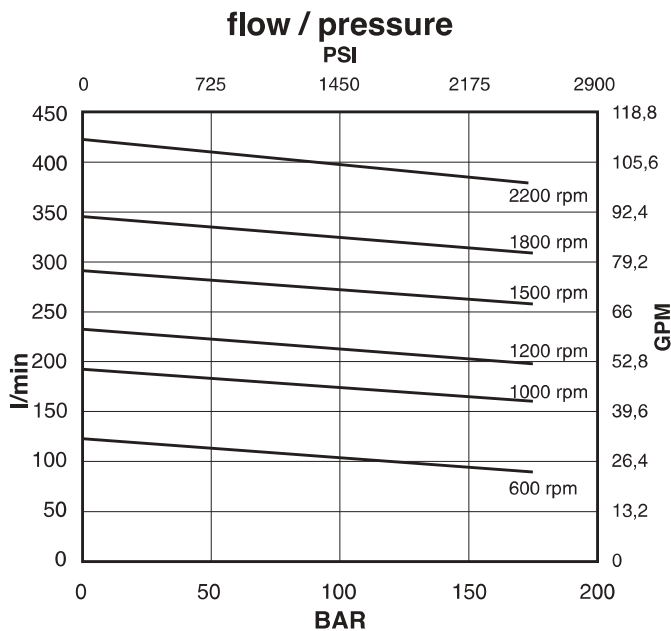
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-57



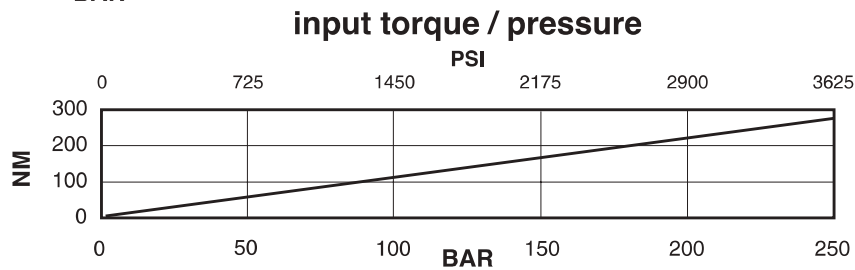
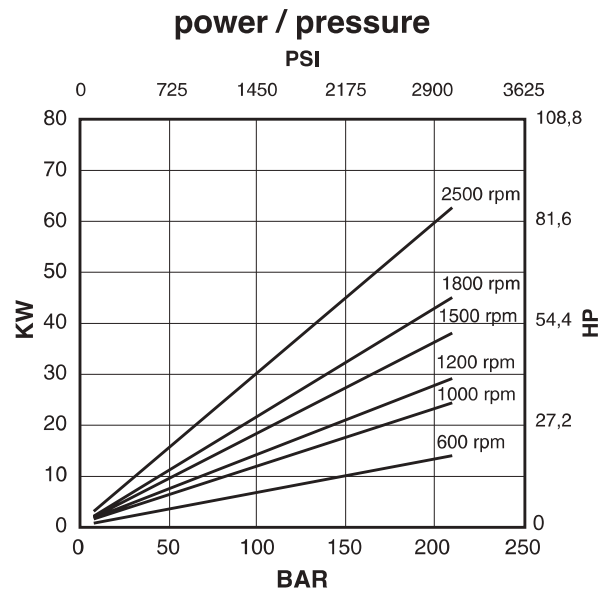
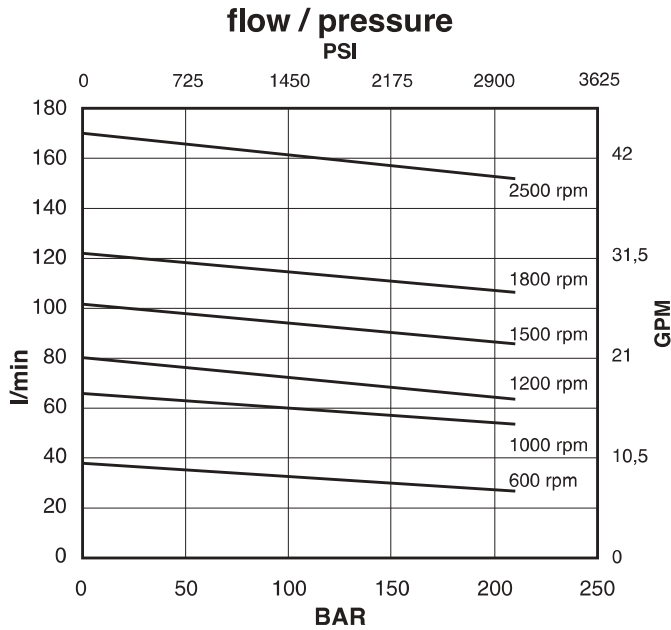
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Shaft end cartridge A05-60



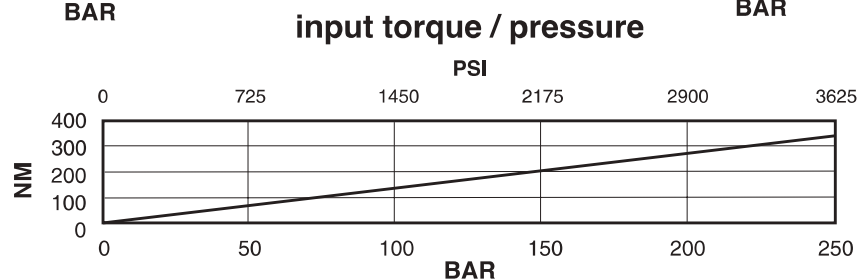
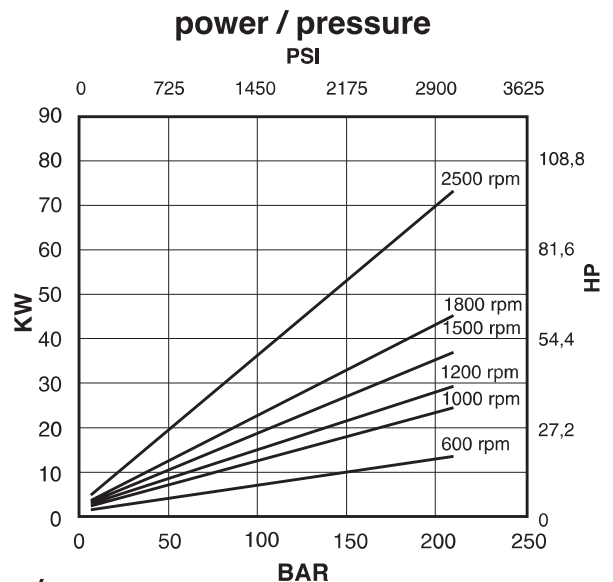
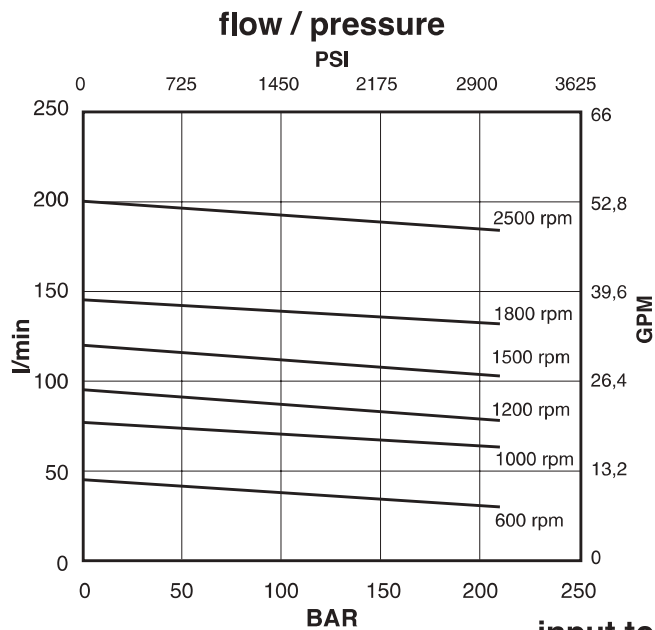
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A04-21



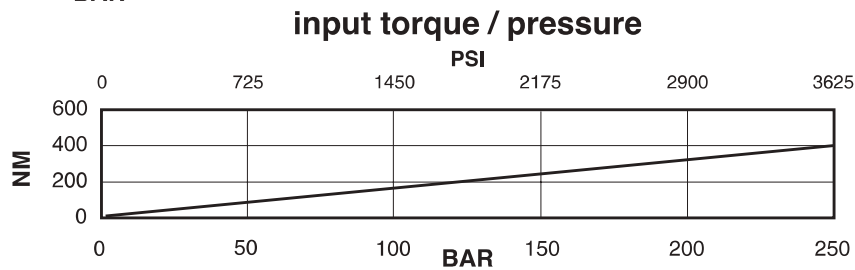
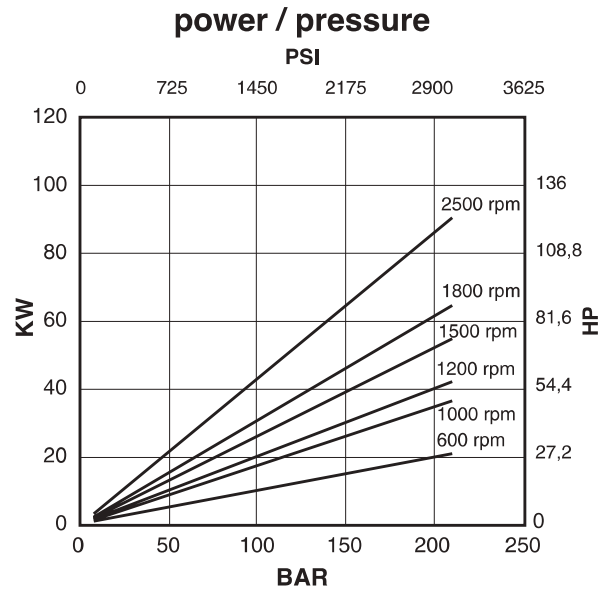
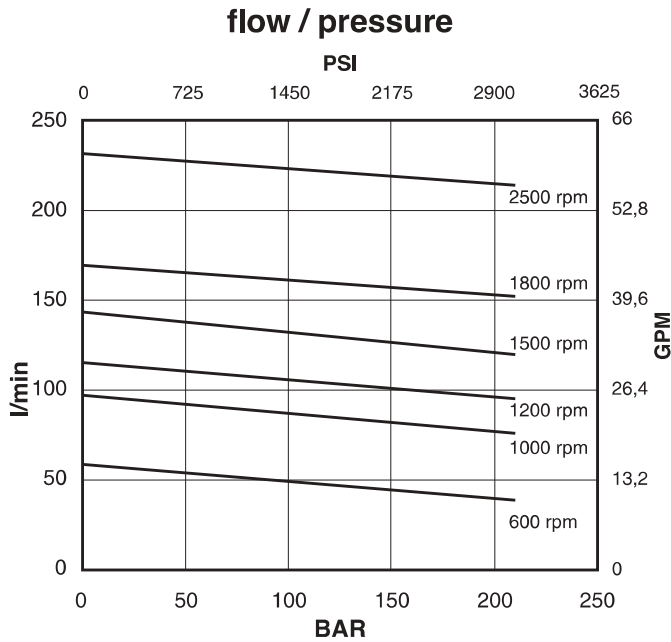
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A04-25



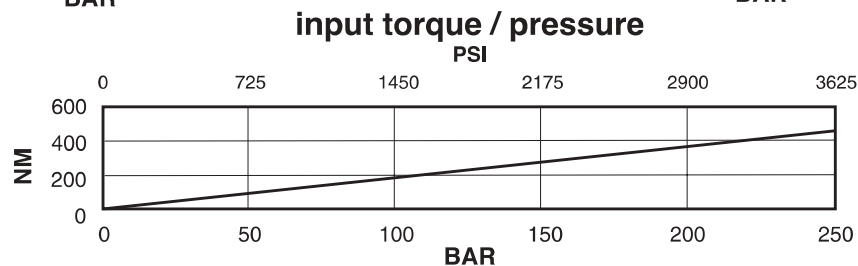
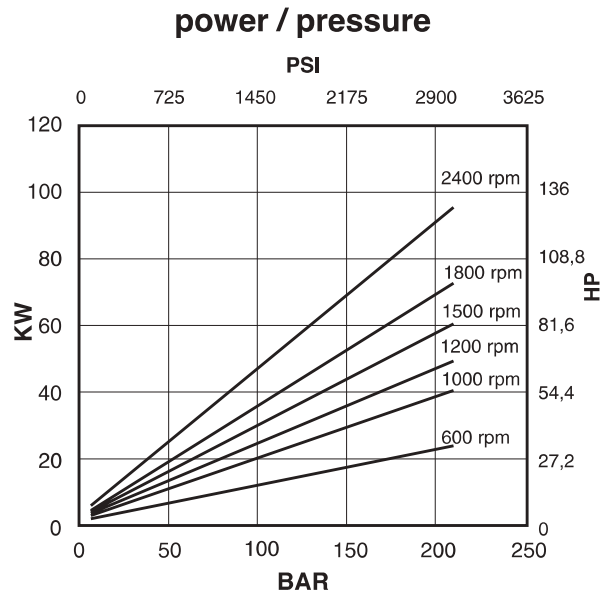
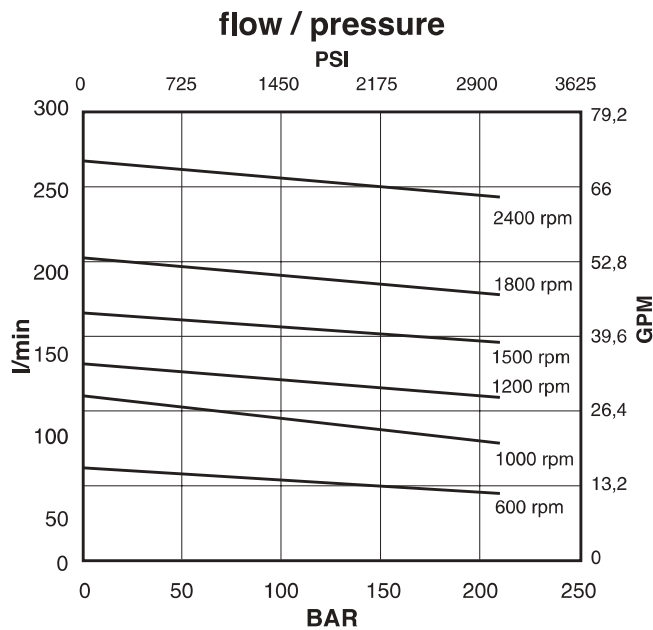
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A04-30



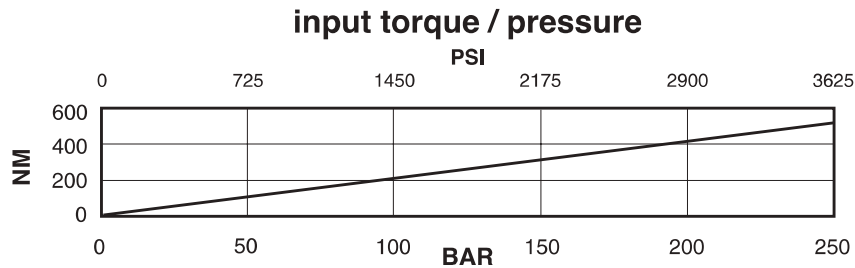
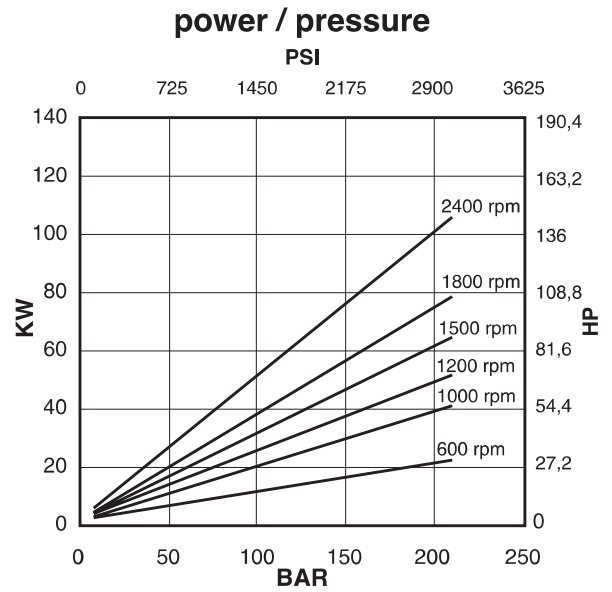
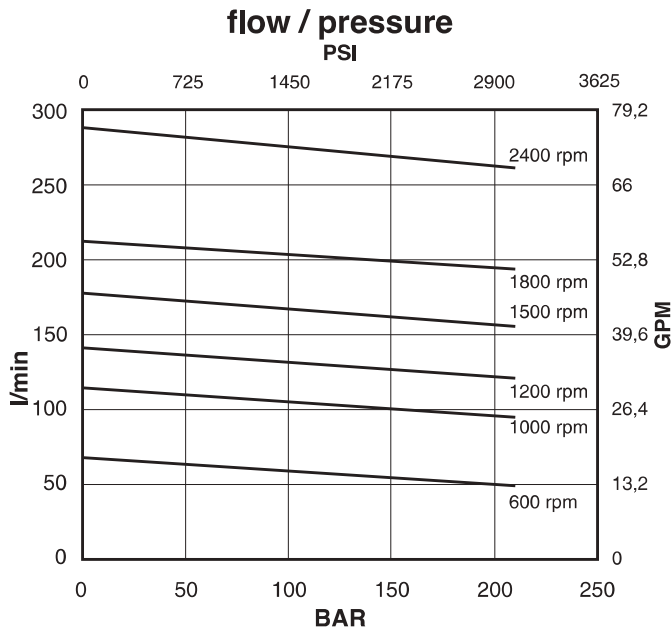
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A04-35



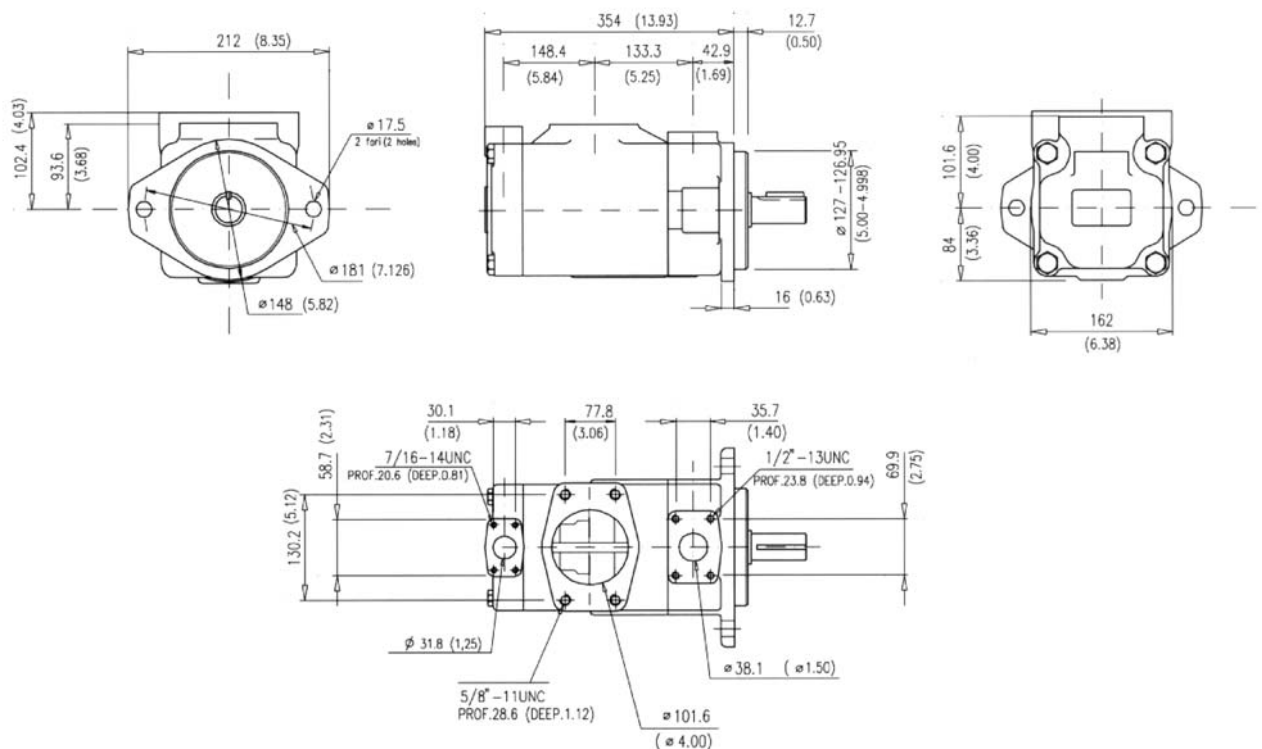
Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Cover end cartridge A04-38



Oil viscosity: 25 c.St.(10W)
Temperature: 45°C
Inlet pressure: 0 BAR

Installation dimensions mm (inches)

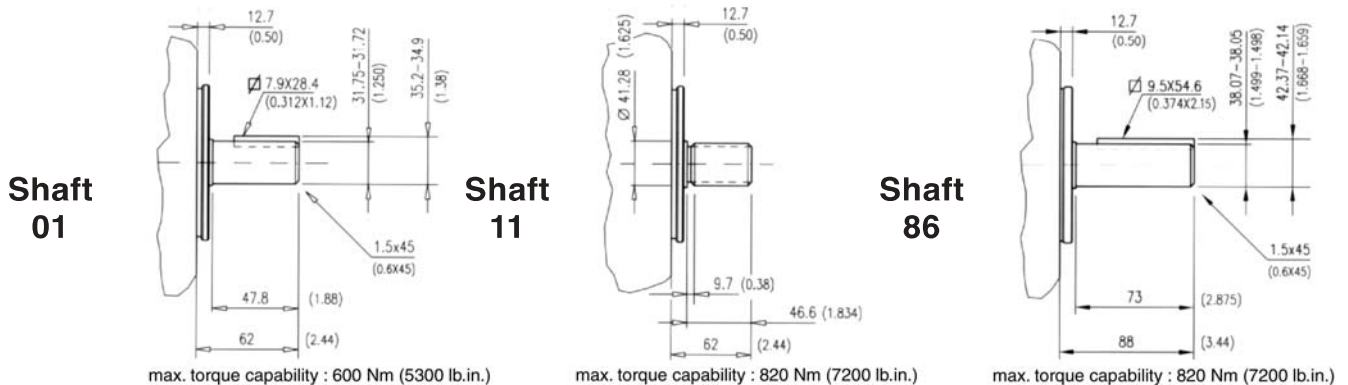


Approx. weight: 54 Kg. (118 lbs.)

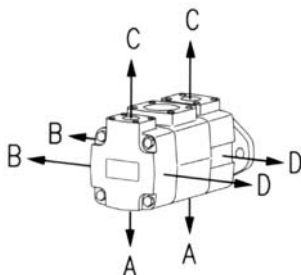
Model code breakdown

BQ	54	G	**	**	*	*	**	(L)	*	(A)
Pump series		Design								Mounting (omit if not required)
Pump type										
Cartridge types										
-shaft end	42 47 50 57 60									
-cover end	21 25 30 35 38									
Body outlet port positions (Outlet viewed from cover end)										
A = Outlet opposite end										
B = Outlet 90° CCW from inlet										
C = Outlet in line with inlet										
D = Outlet 90° CW from inlet										
Cover outlet port positions (Outlet viewed from cover end)										
A = Outlet opposite end										
B = Outlet 90° CCW from inlet										
C = Outlet in line with inlet										
D = Outlet 90° CW from inlet										
								Rotation (viewed from shaft end) L = left hand rotation CCW (omit if CW)		
								Shaft end options 01 = Straight with key (standard), 11 = Splined 86 = Heavy duty straight keyed, 90 = Splined SAE C		

Shaft options mm (inches)

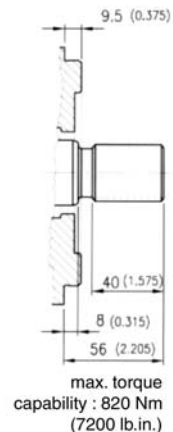


PORT ORIENTATIONS



Spline data		
(Shaft 11 and shaft 90)		
Spline	Involute side fit (ASA B5.15)	
Pressure angle	30°	
No. of teeth	14	
Pitch	12/24	
Major dia.	31.60 - 31.50	(1.244 - 1.240)
Pitch dia.	29.634	(1.1667)
Minor dia.	26.99 - 26.66	(1.0627 - 1.05)
Wildhaber	15.68 - 15.73	(0.617 - 0.619)

Shaft 90



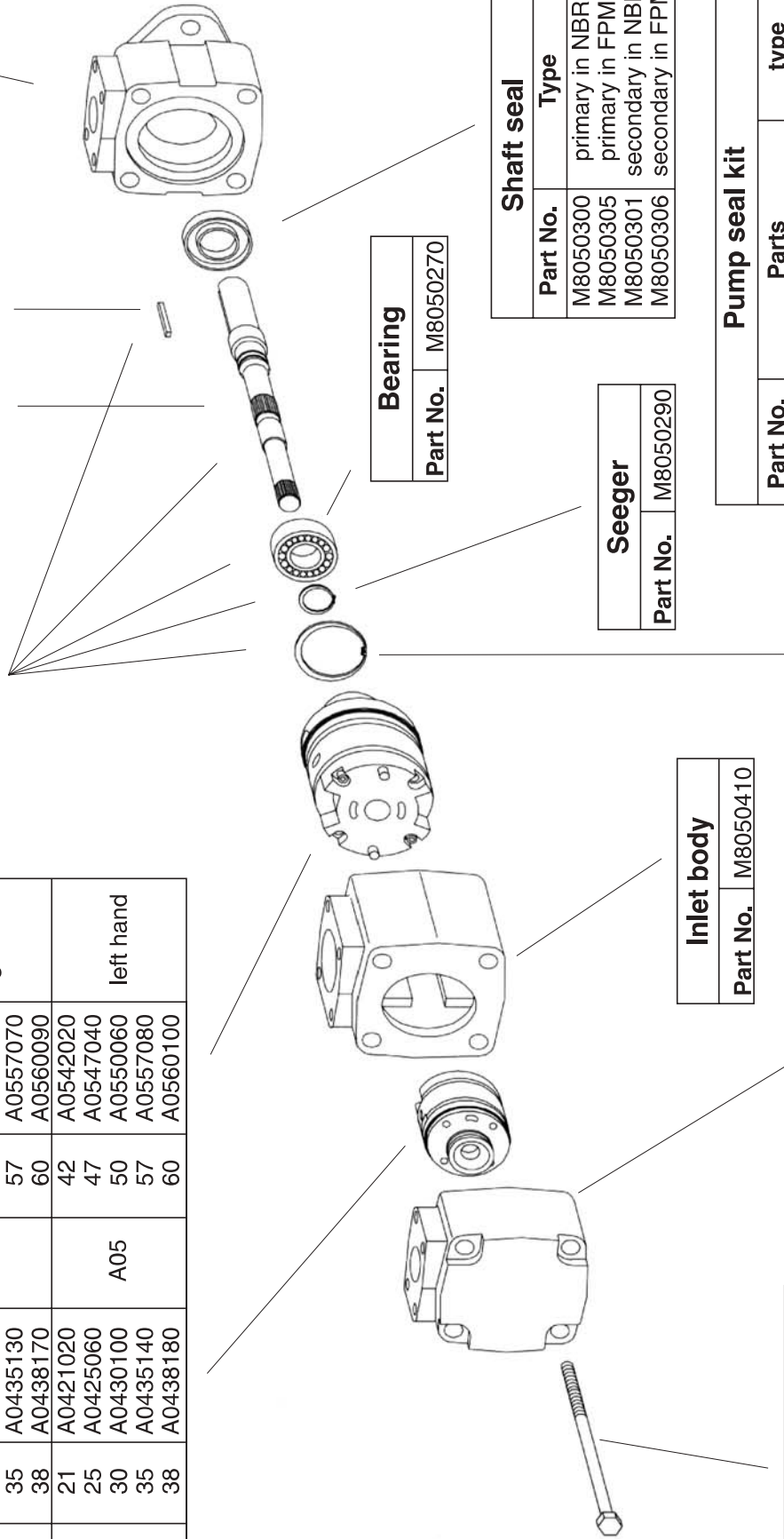
Id. codes of pump components

Cartridges					
Cover end			Shaft end		Pump rotation
Series	Model	Part No.	Series	Model	
A04	21	A0421010	A05	42	A0542010
	25	A0425050		47	A0547030
	30	A0430090		50	A0550050
	35	A0435130		57	A0557070
	38	A0438170		60	A0560090
A04	21	A0421020	A05	42	A0542020
	25	A0425060		47	A0547040
	30	A0430100		50	A0550060
	35	A0435140		57	A0557080
	38	A0438180		60	A0560100

Shaft kit	
Model	Part No.
01	M8540601
11	M8540611
86	M8540686
90	M8540690

Shaft	
Model	Part No.
01	K5401000
11	K5411000
86	K5486000
90	K5490000

Body	
Part No.	M8050250



Bearing	
Part No.	M8050270

Shaft seal	
Part No.	Type
M8050300	primary in NBR
M8050305	primary in FPM
M8050301	secondary in NBR
M8050306	secondary in FPM

Seeger	
Part No.	M8050290

Inlet body	
Part No.	M8050410

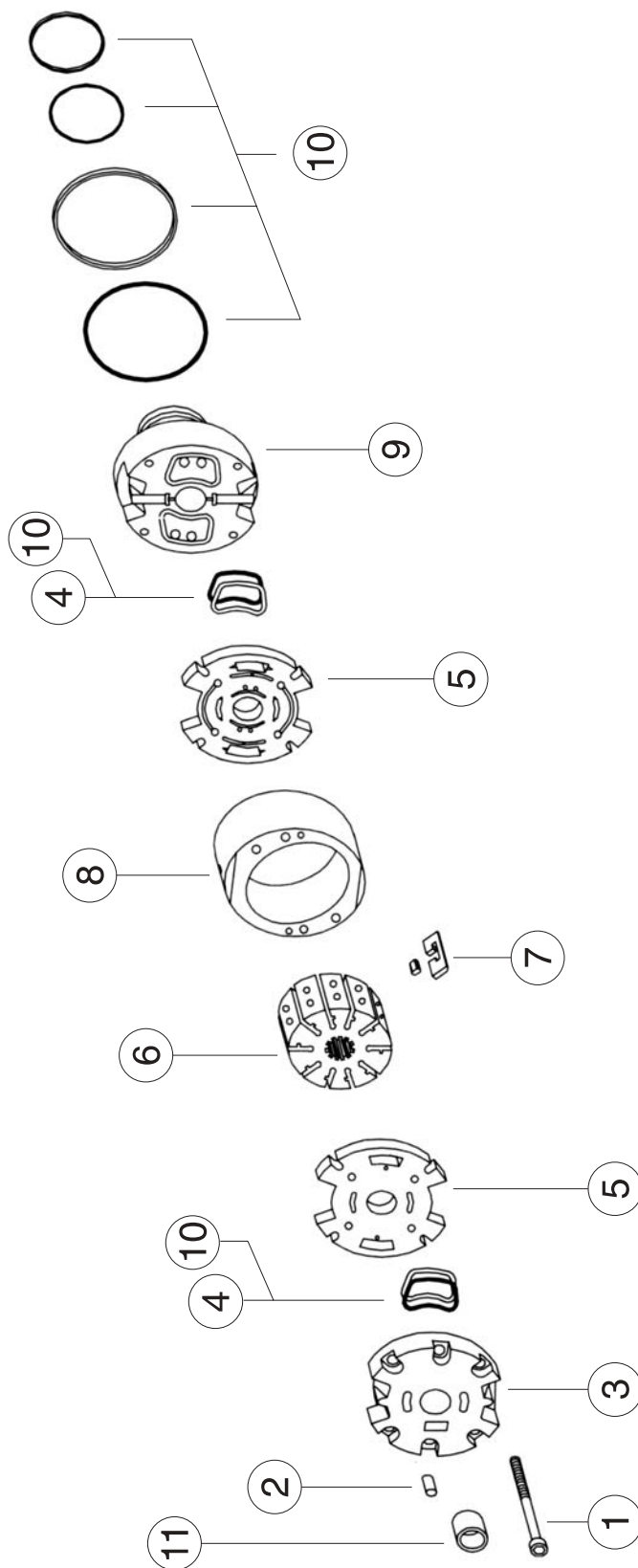
Cover	
Part No.	M8050360

Seeger	
Part No.	M8050280

Pump seal kit		
Part No.	Parts	type
M8540131	seals + 1 shaft seal	NBR
M8540132	seals + 2 shaft seals	NBR
M8540133	seals + 1 shaft seal	FPM (Viton®)
M8540134	seals + 2 shaft seals	FPM (Viton®)

Screw	
Part No.	M8050380
Torque to 398 Nm (3550 lb. in.)	

Id. codes of cartridge kit components



Cartridge	1	2	3	4	5	6	7	8	9	10	11
Series Model	Screw	Pin	Inlet support plate	Seal pack (4+4 pcs)	Flex. plate (2 pcs)	Rotor	Vane and insert kit (10+10 pcs)	Ring	Outlet support plate	Seal kit (12 pcs)	Bushing (*)
A01	02	L7200900	L7209200	L7201300	L7200715	L7209300	L7209300	L7209002	L7200100	L7201100 L7202100 (FPM)	L7200600
	05		L7209200			L7209300	L7209100	L7209005			
	08		L7209200			L7209300	L7209100	L7209008			
	09		L7209200			L7209300	L7209100	L7209009			
	11		L7200200			L7200300	L7201200	L7201011			
A02	12	3,6 Nm (32 lb. in.)	L7200200	L7201300	L7250715	L7200300	L7201200	L7201012	L7250100	L7251100 L7252100 (FPM)	L7250600
	14		L7200200			L7200300	L7201200	L7201014			
	17		L7250800			L7250300	L7251200	L7251017			
	19		L7250200			L7250300	L7251200	L7251019			
	21		L7250200			L7250300	L7251200	L7251021			
A03	24	L7300900	L7250800	L7251300	L7250715	L7300300	L7301200	L7301024	L7250100	L7251100	L7250600
	28		L7250200	L7251300	L7250715	L7300300	L7301200	L7301028	L7250100	L7252100 (FPM)	L7250600
	21		L7350800	L7351300	L7350715	L7350300	L7351200	L7351021	L7350100	L7351100	L7350600
A04	25	L7350900	L7350200	L7351300	L7350715	L7350300	L7351200	L7351025	L7350100	L7351100	L7350600
	30		L7350200	L7351300	L7350715	L7350300	L7351200	L7351030	L7350100	L7351100	L7350600
	35		L7350200	L7351300	L7350715	L7350300	L7351200	L7351035	L7350100	L7351100	L7350600
	38		L7350200	L7351300	L7350715	L7350300	L7351200	L7351038	L7350100	L7351100	L7350600
A05	42	L7450900	L7450800	L7451300	L7450715	L7450300	L7451200	L7451042	L7450100	L7451100	L7450600
	47		L7450200	L7451300	L7450715	L7450300	L7451200	L7451047	L7450100	L7451100	L7450600
	50		L7450200	L7451300	L7450715	L7450300	L7451200	L7451050	L7450100	L7451100	L7450600
	57		L7450200	L7451300	L7450715	L7450300	L7451200	L7451057	L7450100	L7451100	L7450600
	60		L7450200	L7451300	L7450715	L7450300	L7451200	L7451060	L7450100	L7451100	L7450600

(*) Note: the cover end cartridge of the double pump is without bushing

Operating instructions

Maximum speed: the maximum speeds given in this catalogue are valid for an atmospheric pressure of 1 bar (14.7 psi) and with ambient temperature in the range of +30°C to +50°C. Higher speeds than those given cause a reduction in the volumetric efficiency, due to cavitation phenomena in the inlet area inside the pump. Sustained excess speed causes a rapid deterioration of the internal components reducing the lifetime of the cartridge.

Minimum speed: In general, the min. speed for all pumps is 600 rpm. However, it is possible to operate at lower speeds with certain pump configurations and with appropriate operating temperatures.

Inlet pressure: the inlet pressure, measured at the inlet port, should remain within the prescribed limits. Note that pressures lower than minimum limit cause cavitation and pressures above the maximum limit cause abnormal loads on the shaft and the bearings. In both cases this causes a significant reduction in the lifetime of the cartridge.

Maximum outlet pressure: the maximum outlet pressure is different for each type of fluid used as can be seen from the corresponding diagrams. With optimal temperature and filtration conditions a pressure peak of +10% is permissible for a maximum time of 0.5 sec.

Mounting and drive connections: consider the following indications when preparing the installation drawings for the system:

- the pump is designed to operate with keyed shaft coupled axially and by means of a flexible coupling to the drive;
- the clearance between the keyed shaft and the corresponding sleeve coupling has to be between 0.004 and 0.030 mm;
- avoid axial and radial loads on the shaft;
- the mounting flange has to be perpendicular to the drive shaft, with a maximum error of 0.18 mm every 100 mm;
- when mounting onto a gearbox, or other component without a flexible coupling, it is advisable to order pumps with splined shaft. In this case the clearance between splines has to be between 0.013 and 0.051 mm on the pitch diameter.

Hydraulic circuit: always install a pressure relief valve on the supply line to prevent the pressure from exceeding the allowed maximum. Normally, it is set in accordance with the weakest component in the system. (In the case where it is the pump, set the valve to a pressure 15% higher than the maximum pressure rating of the pump.) Inlet line tubing should have a section equal to or greater than that of the inlet port of the pump. It is advisable to keep the tube connecting the pump to the reservoir as short possible. Particular care has to be taken with the inlet line which has to be hermetically sealed to avoid entraining air into the circuit; this varies the characteristics of the hydraulic fluid causing the operating parts to become damaged.

Filtration: the inlet line filter must have a flow rate capacity that is higher than that of the pump at its maximum operating speed. The filtration requirements for individual models are given in this catalogue. The use of a filter by-pass is recommended for cold starts and should the filter become clogged. Proper maintenance of the filter element is essential for the correct operation of the entire system. In normal conditions replace the filter element after the first 50 hours of operation. Subsequently, replace it at least every 500 hours. Regarding the filter on the return line, the same general conditions apply as for the inlet line and it should be positioned in an accessible location for ease of maintenance.

Tank: if possible, the reservoir should be positioned above the pump. Otherwise, ensure that the minimum level of the fluid contained in it is higher than the pump inlet line opening. It is important to avoid draining the inlet line with the pump at standstill. The opening of the return line into the reservoir must remain below the minimum level of the fluid in the reservoir. It must not be positioned too close to the opening of the inlet line to avoid the possibility of any air bubbles passing into the inlet line. Baffles inside the reservoir may be useful in avoiding the problem. Rapid temperature changes can cause condensation on the underside of the lid of the reservoir with the formation of droplets of water that can fall into the oil. To avoid this problem it is recommended that the lid should have small vents so that the air space in the reservoir is ventilated. The vents have to be screened, though, to prevent the entry of dust or the sudden expulsion of fluid.

Start-up: use the following procedure when the pump is started-up for the first time:

completely fill the pump and the inlet line with fluid;
start the engine for approximately one second a number of times at regular intervals of approximately 2 or 3 seconds until the noise level reduces, thereby confirming that it has been primed;
with a manometer check to ensure that the outlet pressure increases slightly;
once the pump has been primed, maintain low pressure levels activating all parts of the circuit a number of times until air bubbles disappear completely from the return line to the reservoir.
This procedure should be carefully as any residual air inside the pump can quickly cause the rotor to seize.

Cold starting: when starting the pump, especially with low ambient temperatures, operate with moderate speed and pressure until the average temperature in the entire circuit is within the given limits.

The information provided in this catalogue is subject to change without notice



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