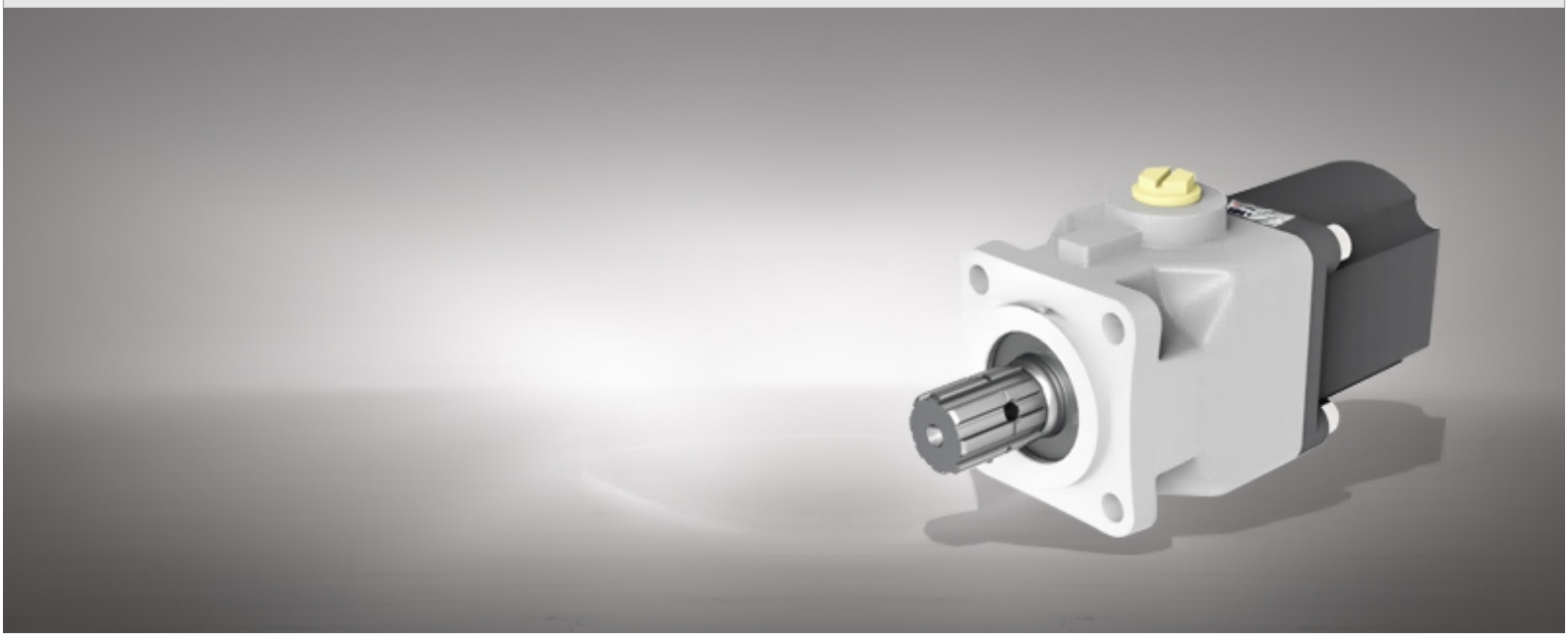
ÇELEBİ HİDROCEL®
HİDROLİK PİSTONLU POMPA & MOTOR

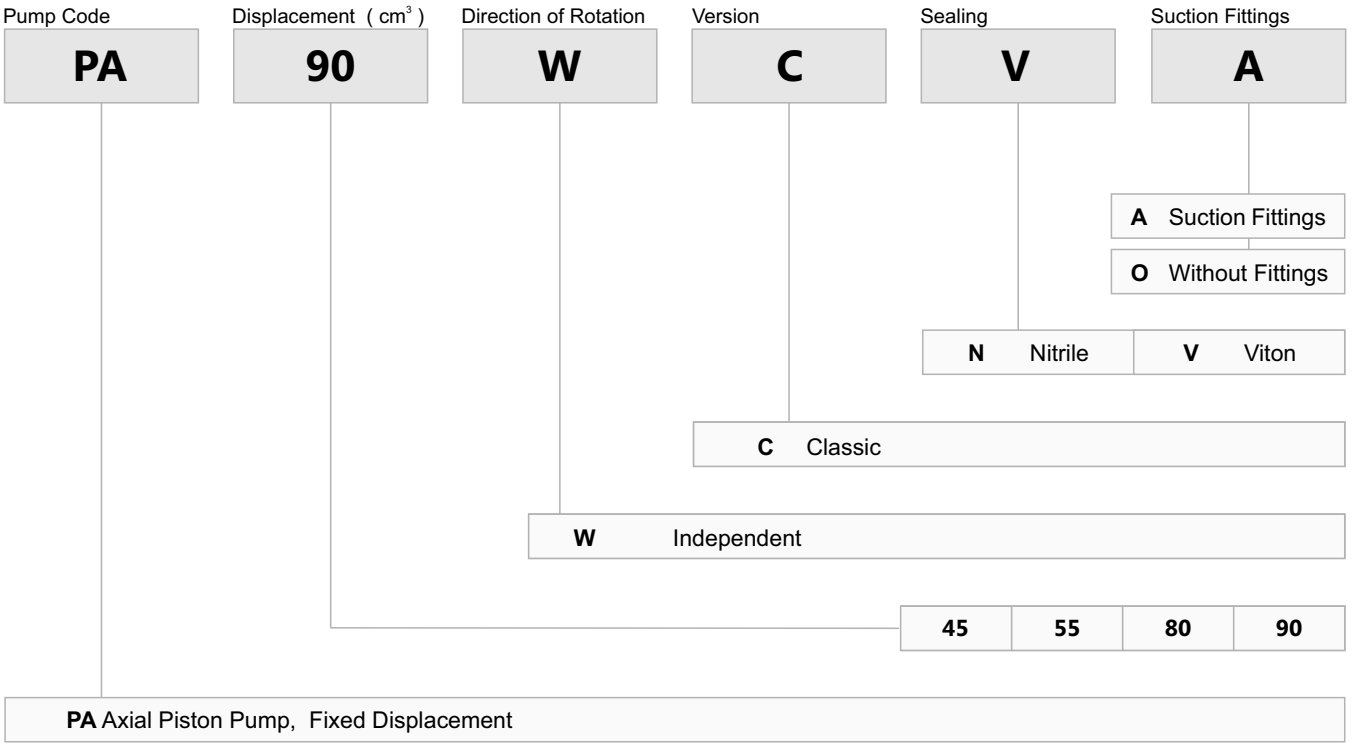
PA
Axial Piston Pump



PA Pumps have the following advantages ;

- Simple to use,
- Economical Conception,
- High Rotating Speeds,
- High Output Pressure,
- 350 bar Cont. Work. Pressure,
- 400 bar Peak Pressure,
- From 40cc to 90cc,
- Low Noise Level,
- High Efficiency
- Special Cast Iron with Raw Materials.

Ordering Code of PA Pumps



Formulas			
Pump Output Flow	GPM	GPM = (Speed (rpm) × disp. (cu. in.)) / 231	GPM = (n ×d) / 231
Pump Input Horsepower	HP	HP = GPM × Pressure (psi) / 1714 × Efficiency	HP = (Q ×P) / 1714 × E
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	Eoverall = HPOut / HPIn X 100
		Overall Efficiency = Volumetric Eff. × Mechanical Eff.	EOverall = EffVol. × EffMech.
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) × 100	EffVol. = QAct. / QTheo. X 100
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive × 100	EffMech = TTheo. / TAct. × 100
Pump Displacement	CIPR	Dsplcmnt (In.3 / rev.) = Flow Rate (GPM) × 231 / Pump RPM	CIPR = GPM × 231 / RPM
Pump Torque	T	Torque = Horsepower × 63025 / RPM	T = 63025 × HP / RPM
		Torque = Pressure (PSIG) × Pump Displacement (CIPR) / 2π	T = P × CIPR / 6.28

Horsepower for driving a pump : For every 1 hp of drive, the equivalent of 1 gpm @ 1500 psi can be produced.

Horsepower for idling a pump : To idle a pump when it is unloaded will require about 5% of it's full rated power

Wattage for heating hydraulic oil : Each watt will raise the temperature of 1 gallon of oil by 1° F. per hour.

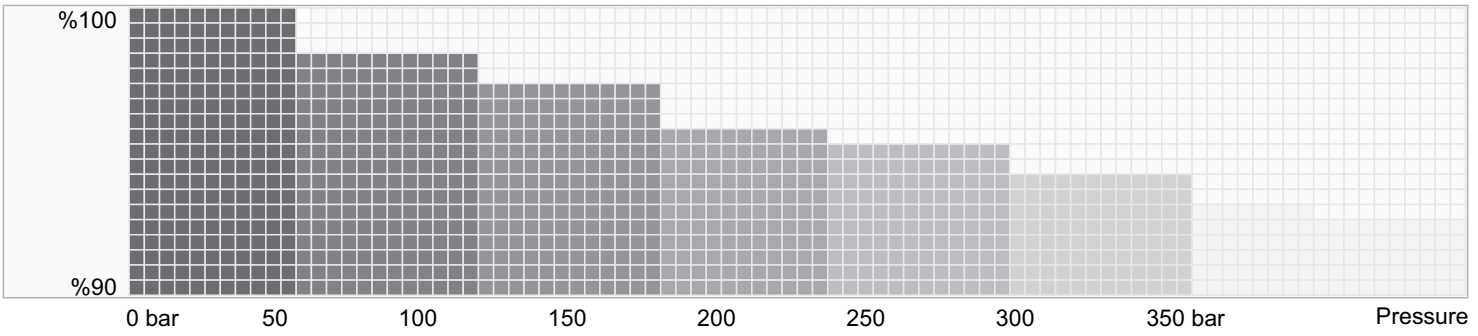
Flow velocity in hydraulic lines : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 to 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

Technical Data

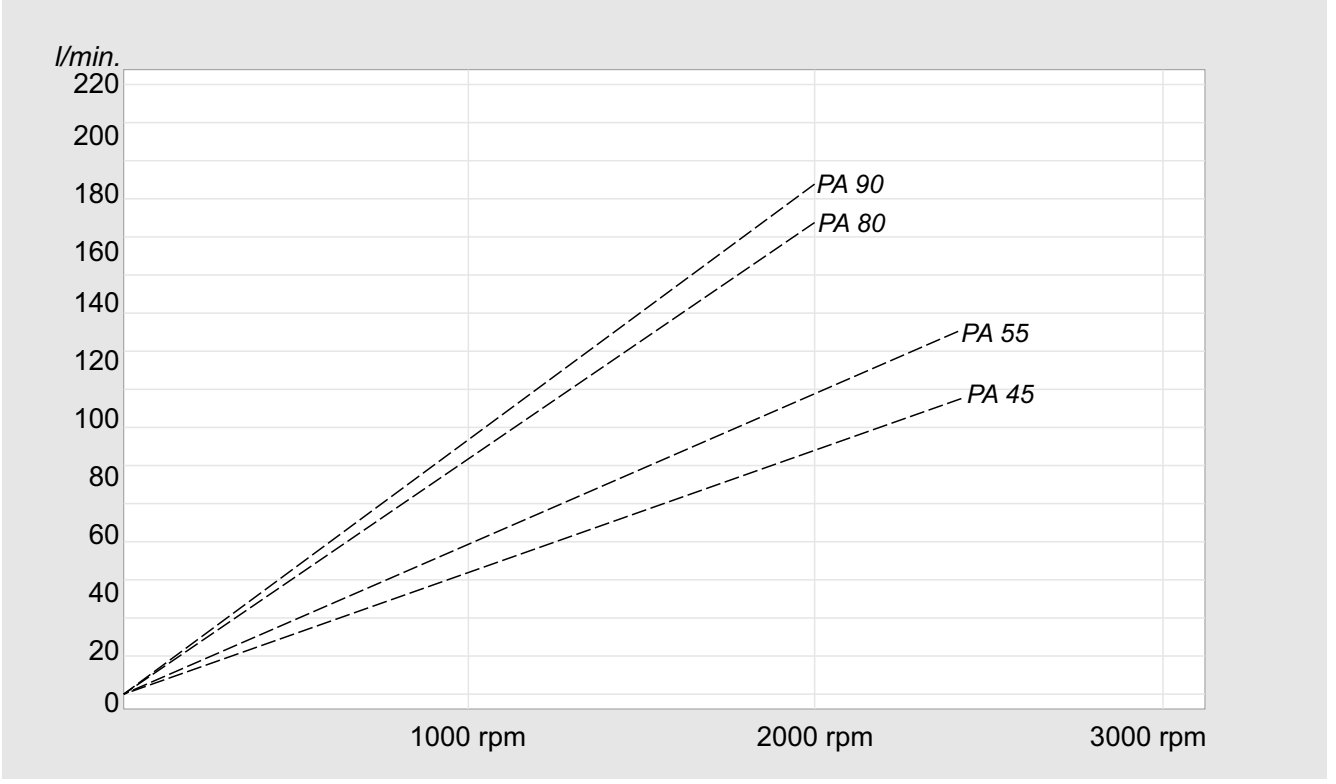
		45	55	80	90
Displacement	***cc***	46,70	54,60	84,50	92,20
Theoretical oil flow l/min at pump speed	***1000 rpm***	46,70	54,60	84,50	92,20
	1500 rpm	70,05	81,90	126,7	138,3
Maximum Pump Speed					
- Continuous	***rpm***	1800	1800	1500	1500
- Limited	***rpm***	2400	2400	2000	2000
Max. Continuous Pressure	***bar***	330	330	300	300
Max. Intermittent Pressure	***bar***	360	360	350	350
Max. Peak Pressure	***bar***	500	500	450	450
Weight					
- Without inlet fitting	***kg***	14,70	15,00	19,50	19,70
- With inlet fitting	***kg***	15,10	15,40	19,90	21,10
Rotation		Bi-Directional			
Fluid		Mineral Based Hydraulic Oils			
Inlet		R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"
Outlet		1 1/16 UNF	1 1/16 UNF	R 1"	R 1"

Performance

Efficiency Curves (1000 rpm)



Flow, Speed, Pressure List for Max. Limited Pump Speed



Quick Calculation

Flow rate

$$Q = \frac{V_g \cdot n \cdot \eta_v}{1000} \text{ (lpm)}$$

Torque

$$M = \frac{1{,}59 \cdot V_g \cdot \Delta p}{100 \cdot \eta_{mh}} \text{ (Nm)}$$

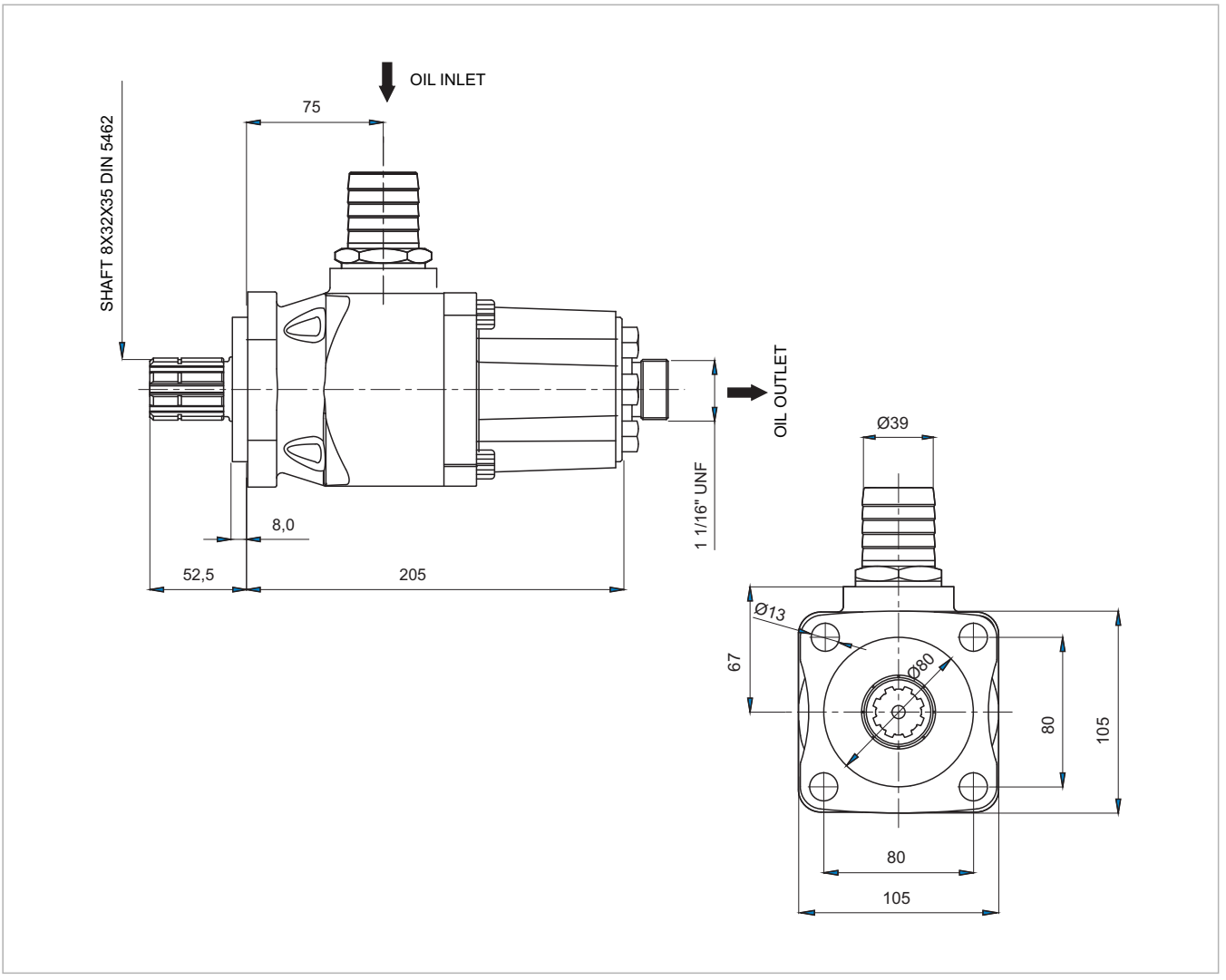
Power

$$P = \frac{2\pi \cdot M \cdot n}{60\,000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p}{600 \cdot \eta_t} \text{ (kW)}$$

V_g	= Geom. dicplacement (ccm/rev.)	η_v	= Volumetric efficiency
Δp	= Diff. pressure (bar)	η_{mh}	= Mechanical-hydraulic efficiency
n	= Speed (rpm)	η_t	= Total efficiency ($\eta_t = \eta_v \cdot \eta_{mh}$)

Dimensions Size;

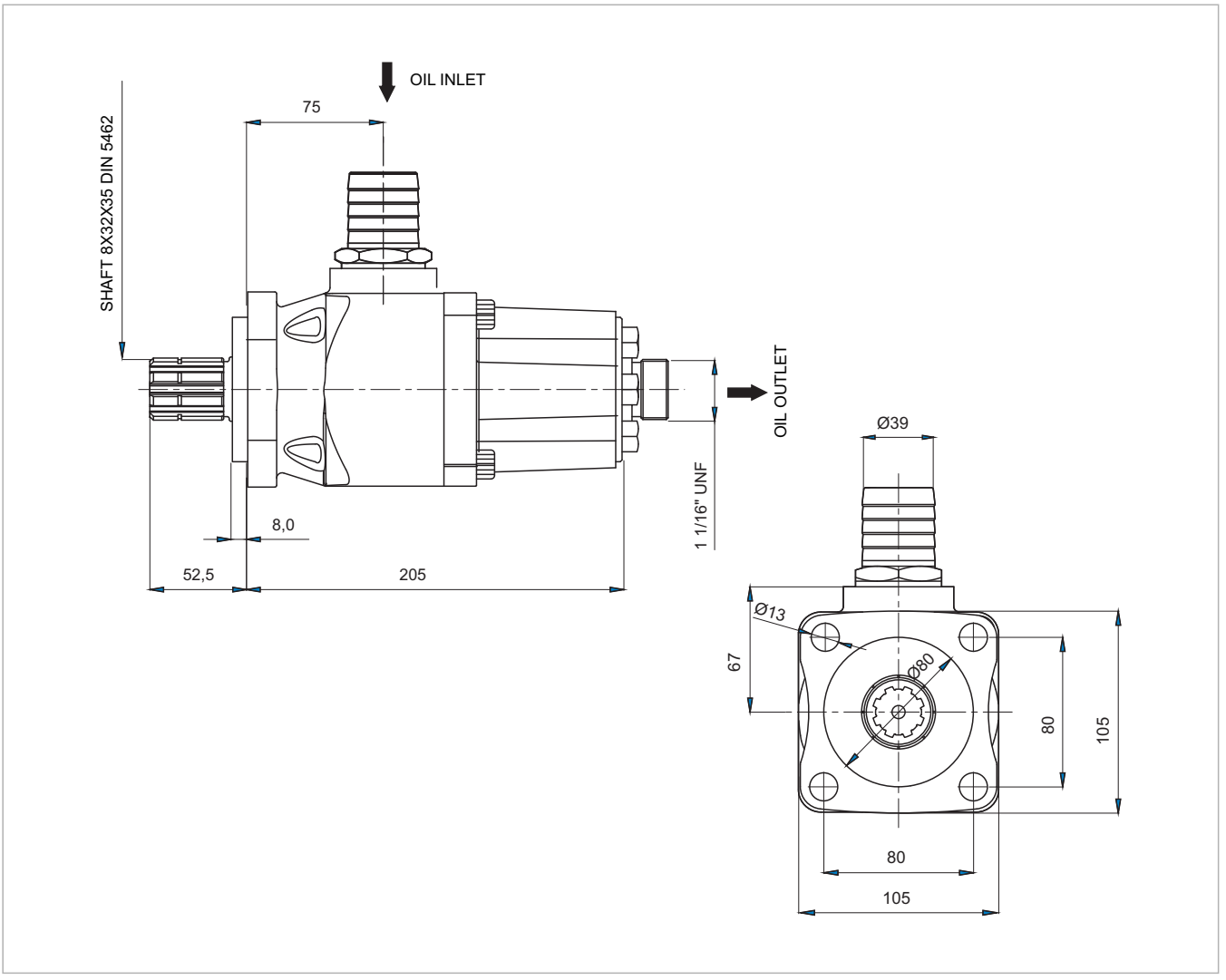
PA 45



x 1000 rpm	46,70 cc
x 1500 rpm	70,05 cc
Max. Continuous Pump Speed	1800 rpm
Max. Limited Pump Speed	2400 rpm
Max. Continuous Pressure	330 bar
Max. Intermittent Pressure	360 bar
Max. Peak Pressure	500 bar
Weight without inlet fitting	14,70 kg
Weight with inlet fitting	15,10 kg
Rotation	Bi-Directional
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	1 1/16 UNF

Dimensions Size;

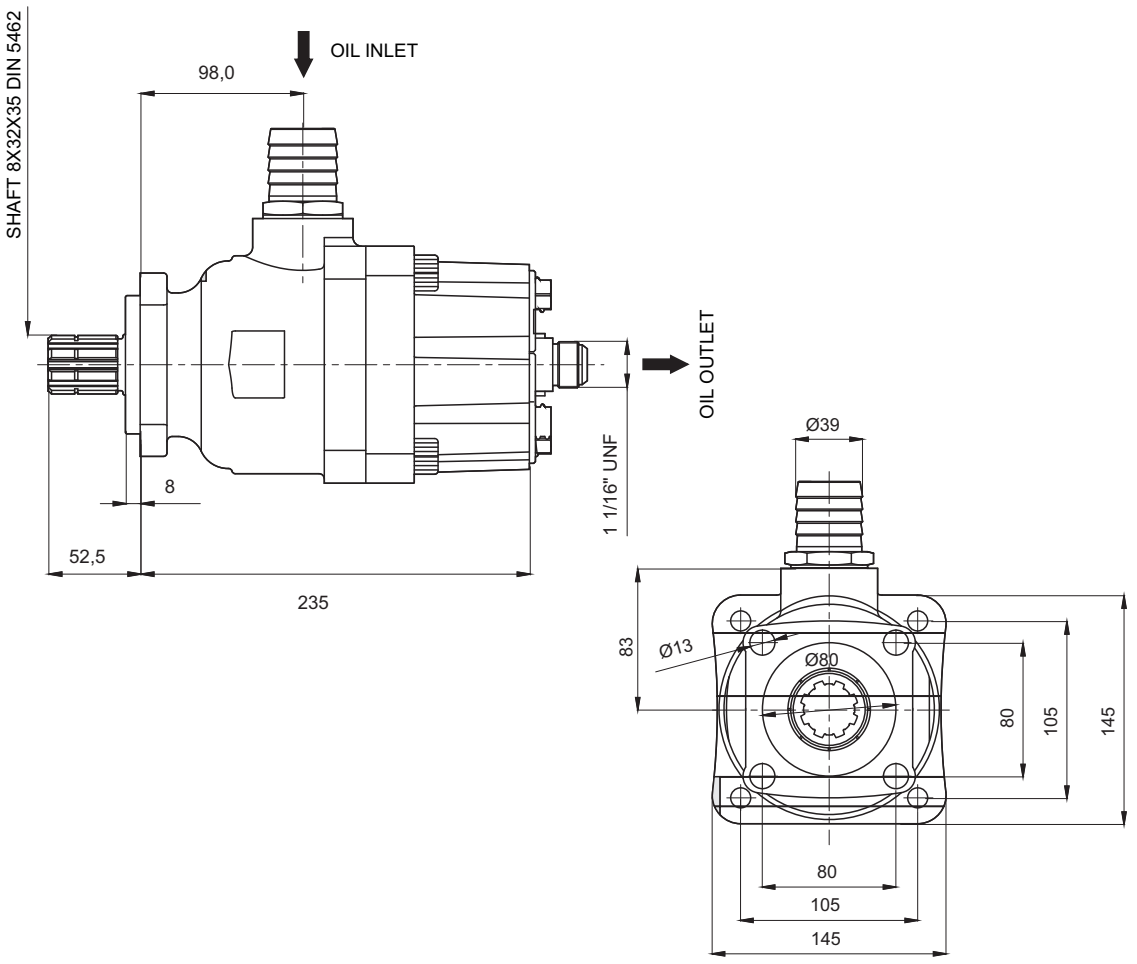
PA 55



x 1000 rpm	54,60 cc
x 1500 rpm	81,90 cc
Max. Continuous Pump Speed	1800 rpm
Max. Limited Pump Speed	2400 rpm
Max. Continuous Pressure	330 bar
Max. Intermittent Pressure	360 bar
Max. Peak Pressure	500 bar
Weight without inlet fitting	15,00 kg
Weight with inlet fitting	15,40 kg
Rotation	Bi-Directional
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	1 1/16 UNF

Dimensions Size;

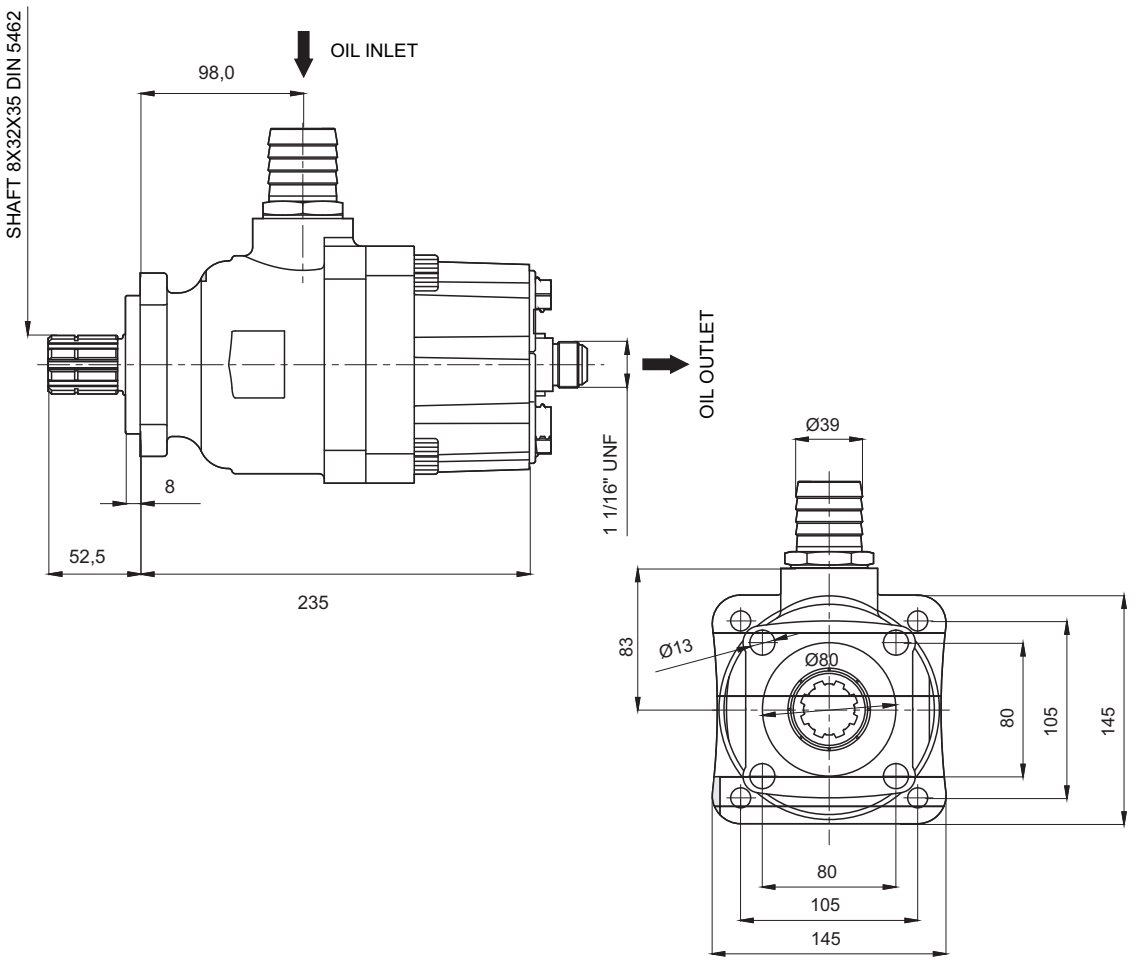
PA 80



x 1000 rpm	84,50 cc
x 1500 rpm	126,7 cc
Max. Continuous Pump Speed	1500 rpm
Max. Limited Pump Speed	2000 rpm
Max. Continuous Pressure	300 bar
Max. Intermittent Pressure	350 bar
Max. Peak Pressure	450 bar
Weight without inlet fitting	19,50 kg
Weight with inlet fitting	19,90 kg
Rotation	Bi-Directional
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R 1"

Dimensions Size;

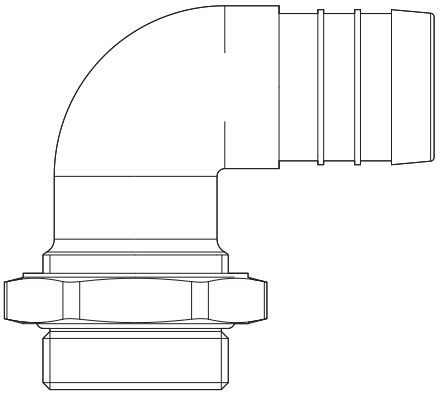
PA 90



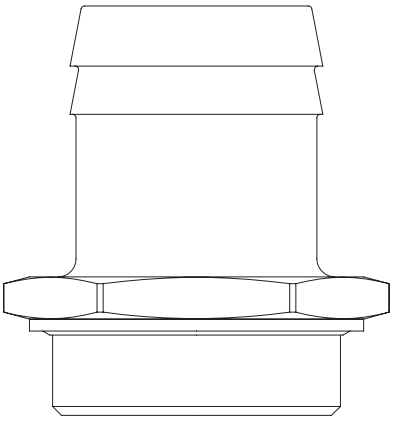
x 1000 rpm	92,20 cc
x 1500 rpm	138,3 cc
Max. Continuous Pump Speed	1500 rpm
Max. Limited Pump Speed	2000 rpm
Max. Continuous Pressure	300 bar
Max. Intermittent Pressure	350 bar
Max. Peak Pressure	450 bar
Weight without inlet fitting	19,70 kg
Weight with inlet fitting	21,10 kg
Rotation	Bi-Directional
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R 1"

Inlet Fittings, Accessories I

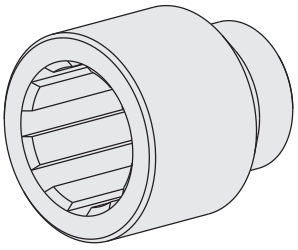
90° Elbow Fittings

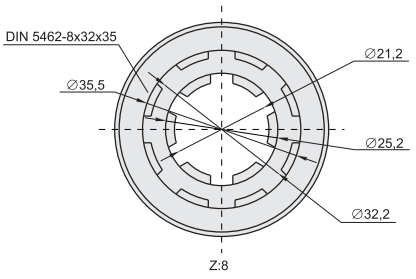


Straight Fittings

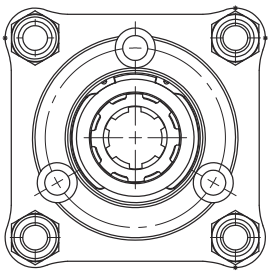


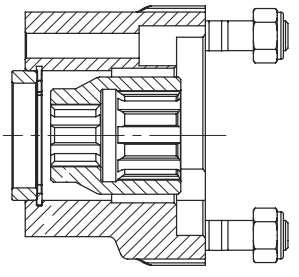
Couplars



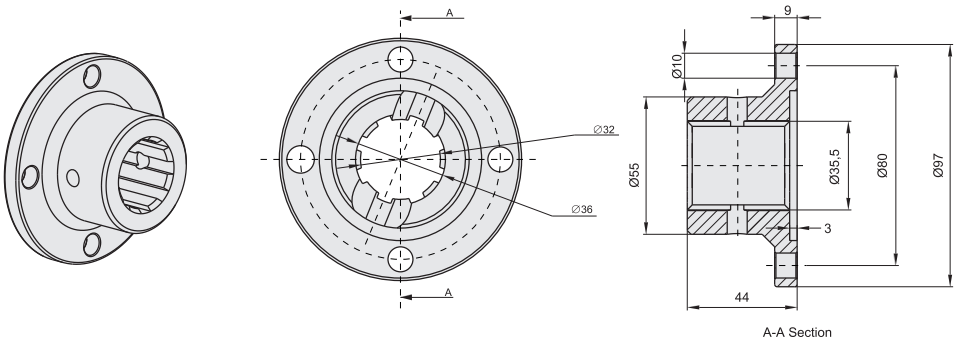


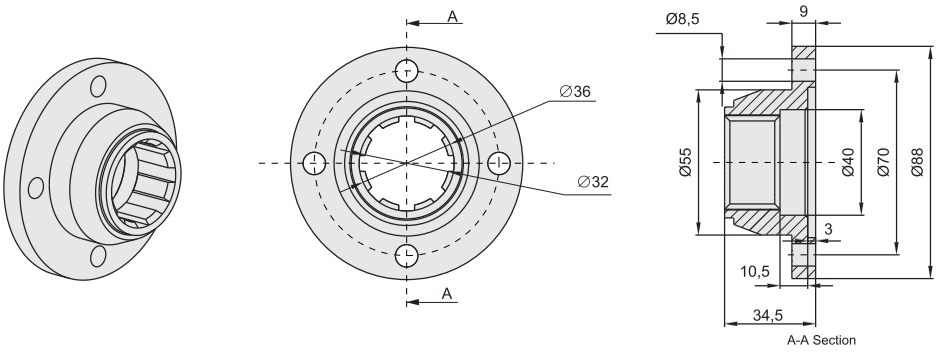
Hydraulic Adapters





Inlet Fittings, Accessories II





Hydraulic Adapters

- PTO Piston Pump Adapter
- PTO Gear Pump Adapter
- Long / Short Adapter

Flanges

- 1120 (6 Spline)
- 1120 (8 Spline)
- 1300 (6 Spline)
- 1300 (8 Spline)

Couplars

- 6 x 8 Couplar
- 6 x 8 Couplar (Long)
- 8 x 8 Couplar
- 8 x 8 Couplar (Long)

Installation & User Guide

The PA pumps fitted with a rubber front seal.

INSTALLATION
PA pumps are direct mounting on the PTO.
Grease the splined shaft before installation. Do not tap the gear wheel/driver into position.

Remove any mounted screws on the pump.
The PA was delivered with protective covers and plastic/threaded plugs.
It should be removed before of install.Please check seals and surfaces.If sealing or other surfaces damaged please contact your responsible Service Partner.

Start up and run the pump at medium speed (800 to 1000 rpm at the PTO) until the oil flowing out of the pump. (There are no more air bubbles.)

OIL SUPPLY
Oil and supply line should be clean, and the supply line is airtight.

SUCTION LINE
Connect the suction line, tighten the suction connection bolts in diametric pairs.
Connect the pressure line.

REPAIR
We offers a comprehensive range of services for the repair of our Axial Piston Pumps.
Repairs to the PA Axial Piston Pump may only be performed by authorized, skilled and instructed personnel.
Only use original and pre-installed our PA spare parts from supplied to Manufacturer..

Tested and pre-installed PA pumps successful repair requiring only little time.

SPARE PARTS
The spare parts list and the PA pump order specific.
When ordering spare parts, quote the material and complete Ordering code number of the PA Axial Piston Pump as well as the right numbers of the spare parts.

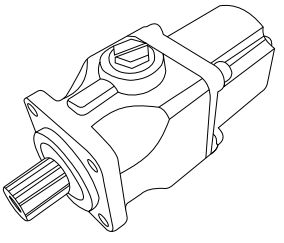
RISK OF DAMAGE!
Do not touch the drive shaft of the PA Axial Piston Pump.
Do not touch sensor, valves and fittings
Do not touch sealing surfaces.

DIMENSIONS & WEIGHTS

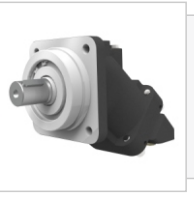
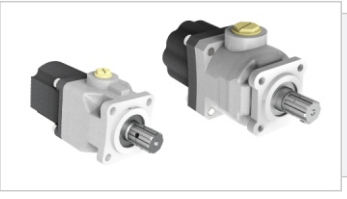
		45	**55**	**80**	**90**
- Without inlet fitting	***kg***	14,70	15,00	19,50	19,70
- With inlet fitting	***kg***	15,10	15,40	19,90	21,10

Address all questions regarding spare parts to your responsible Our Service Partner or the technical service department of the manufacture's plant / factory for the PA Axial Piston Pumps.

ÇELEBİ HİDROCEL OTOM. SAN. TİC. LTD. ŞTİ.
Fevziçakmak mh. Aslım Cd. No: 53 C Karatay / KONYA
Phone : +90 (332) 345 13 70 - +90 (332) 345 13 71
hidrocel@hidrocel.com.tr



Complete Product Range

		Piston Pumps	Piston Motors
DIN	DIN 5462 / ISO 14 8x32x35 8x32x36 DIN 6885	 **2PBA**	 **2PBM**
ISO	ISO 3019-2 (4 BOLTS) DIN 5480 -W25,30,35,40,45 DIN 6885 -Ø20,25,30,35,40,45	 **2PS**	 **2PM**
SAE	SAE B2 C4 - SAE D SAE J498b SAE J 744	 **2PE**	 **2PEM**
M2 Fixed Plug-in	DIN 5480 / ISO 3019-2 W30 - W35 - W40 M21 - M22 - M23		 **2PMS**
PA	DIN ISO 14 8x32x36	 **PA**	
PH	P2 Connection M8x125 Woodruff key 3x6,5 NF E 27-653 NF R 124-04 (2 BOLTS)	 **PH**	

Contact

ÇELEBİ HİDROCEL OTOM. SAN. TİC. LTD. ŞTİ.

Fevziçakmak mh. Aslım Cd.
No: 53 C Karatay / KONYA

Phone : +90 (332) 345 13 70
+90 (332) 345 13 71
Fax : +90 (332) 345 13 72

hidrocel@hidrocel.com.tr

www.hidrocel.com.tr