

Ordering Code of NPX 12S Pumps

Pump Code	Displacement (cm ³)	Direction of Rotation	Version	Sealing	Inlet Fittings
NPX 12S	108	L	S	N	A
					A Suction Fittings Included
				N Nitrile	V Viton
			S Special Version	C Classic Version	
		L Rotation : Left / CCW	R Rotation : Right / CW		
	5 12 18 25 32 40 50 56 63 80 108 130				

NPX 12S Bent Axis Piston Pump, Fixed Displacement, 350 @ 400 bar.

Special Version ; BRONZE EDITION

Formulas			
Pump Output Flow	GPM	$GPM = (Speed \text{ (rpm)} \times disp. \text{ (cu. in.)}) / 231$	$GPM = (n \times d) / 231$
Pump Input Horsepower	HP	$HP = GPM \times Pressure \text{ (psi)} / 1714 \times Efficiency$	$HP = (Q \times P) / 1714 \times E$
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	$E_{overall} = HP_{out} / HP_{in} \times 100$
		Overall Efficiency = Volumetric Eff. $\times$ Mechanical Eff.	$E_{overall} = EffVol. \times EffMech.$
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) $\times$ 100	$EffVol. = Q_{act.} / Q_{theo.} \times 100$
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive $\times$ 100	$EffMech = T_{theo.} / T_{act.} \times 100$
Pump Displacement	CIPR	$Displcmnt \text{ (In.}^3 \text{ / rev.)} = Flow \text{ Rate (GPM)} \times 231 / Pump \text{ RPM}$	$CIPR = GPM \times 231 / RPM$
Pump Torque	T	Torque = Horsepower $\times$ 63025 / RPM	$T = 63025 \times HP / RPM$
		Torque = Pressure (PSIG) $\times$ Pump Displacement (CIPR) / 2π	$T = P \times CIPR / 6.28$

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.