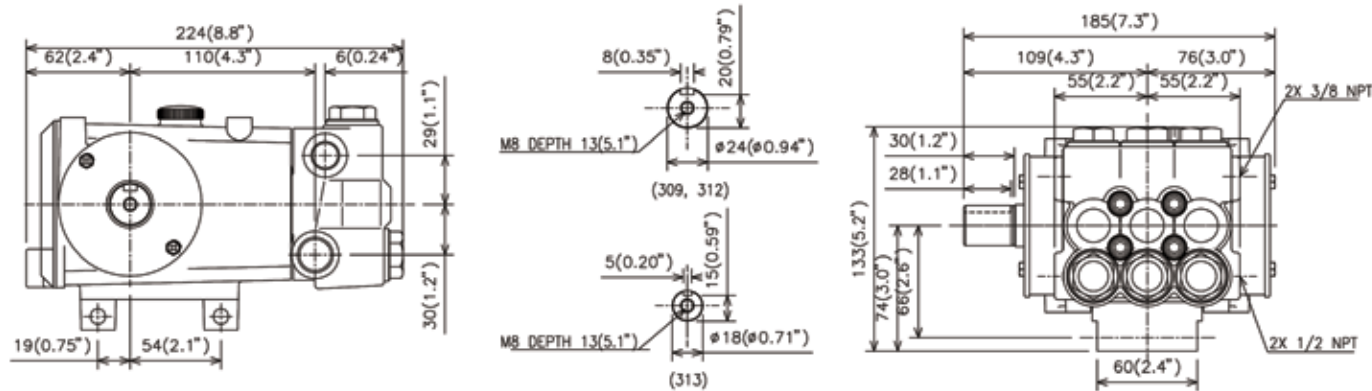
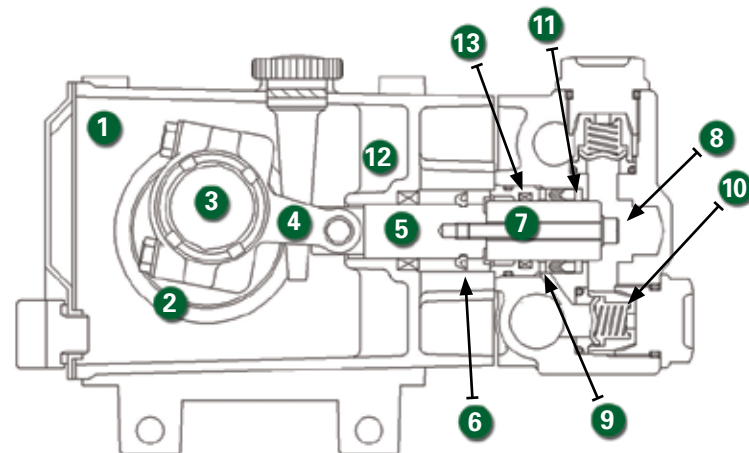


DIMENSIONS (mm/in.)



CUTAWAY

- 1 High strength, lightweight die cast crankcase
- 2 Oversized crankshaft bearings for long life and quiet operation
- 3 Forged crankshaft is machined for low friction, quiet operation and high efficiency
- 4 High strength connecting rods are tolerance matched for extended life and low friction operation
- 5 High polish stainless steel plunger rods for smooth operation and even wear
- 6 Zero clearance, polymer exclusionary seal protects pump crankcase from fluid entry and will not corrode
- 7 Proprietary blend, solid ceramic plungers for long wear and increased thermal shock resistance
- 8 Forged brass manifolds for strength and corrosion resistance, machined to optimize fluid flow and performance while extending useful life
- 9 Liquid-cooled, low drag seals provide long life, extended run-dry ability and increased suction lift
- 10 Stainless steel valves with polished valve seats and hardened seating surfaces for efficient operation
- 11 Mechanically-loaded seals require no adjustment and self-compensate for wear
- 12 Balanced flow crankcase ensures lubrication and quiet operation
- 13 Slide-in seal cases mean no special tools are required, making seal replacement easy



3 Series Models 309, 312 and 313



FEATURES

- Triplex pumps provide smooth liquid flow
- Liquid cooled, low drag seals provide long life, improved suction, higher efficiency and longer dry running without damage
- Balanced flow crankcase design and precision machining ensure uniform lubrication and quiet operation
- Manifold is designed and machined to guarantee superior fluid flow
- Interchangeable valves for maintenance ease
- Zero-clearance exclusionary seals protect crankcase

QUALITY

- Stainless steel valves with polished valve seats and hardened seating surfaces for efficient operation
- Precision ground ceramic plungers utilize a proprietary material blend for long life and increased thermal shock resistance
- Forged brass manifolds offer strength and corrosion resistance
- Proprietary, proven seal blend maximizes life and lengthens maintenance intervals
- Oversized crankshaft bearings for long life and quiet operation

MAINTENANCE

- No special tools required for repair or maintenance
- Fluid end is easily serviced without entering crankcase
- Easy access seal case and valve assemblies
- Seals self-compensate for wear

MODEL SPECIFICATIONS

Model 309	US	METRIC
Flow	3.7 gpm	14 lpm
Pressure	1500 psi	105 bar
RPM	1725	1725
Shaft	.945"	24mm
Inlet Pressure	Flooded to 70 psi	0 to 5 bar
Model 312		
Flow	5 gpm	19 lpm
Pressure	1500 psi	105 bar
RPM	1725	1725
Shaft	.945"	24mm
Inlet Pressure	Flooded to 70 psi	0-5 bar
Model 313		
Flow	4 gpm	15 lpm
Pressure	1500 psi	105 bar
RPM	1050	1050
Shaft	.709"	18mm
Inlet Pressure	-5 to 70 psi	0-5 bar
Common Specifications		
Inlet	1/2"	1/2"
Outlet	3/8"	3/8"
Oil Requirement	17 oz	.5 liter
Max Liquid Temp.	175°F	80°C
Shaft Location	L or R	L or R
Weight	17 lbs	7.5 kg

Parts List

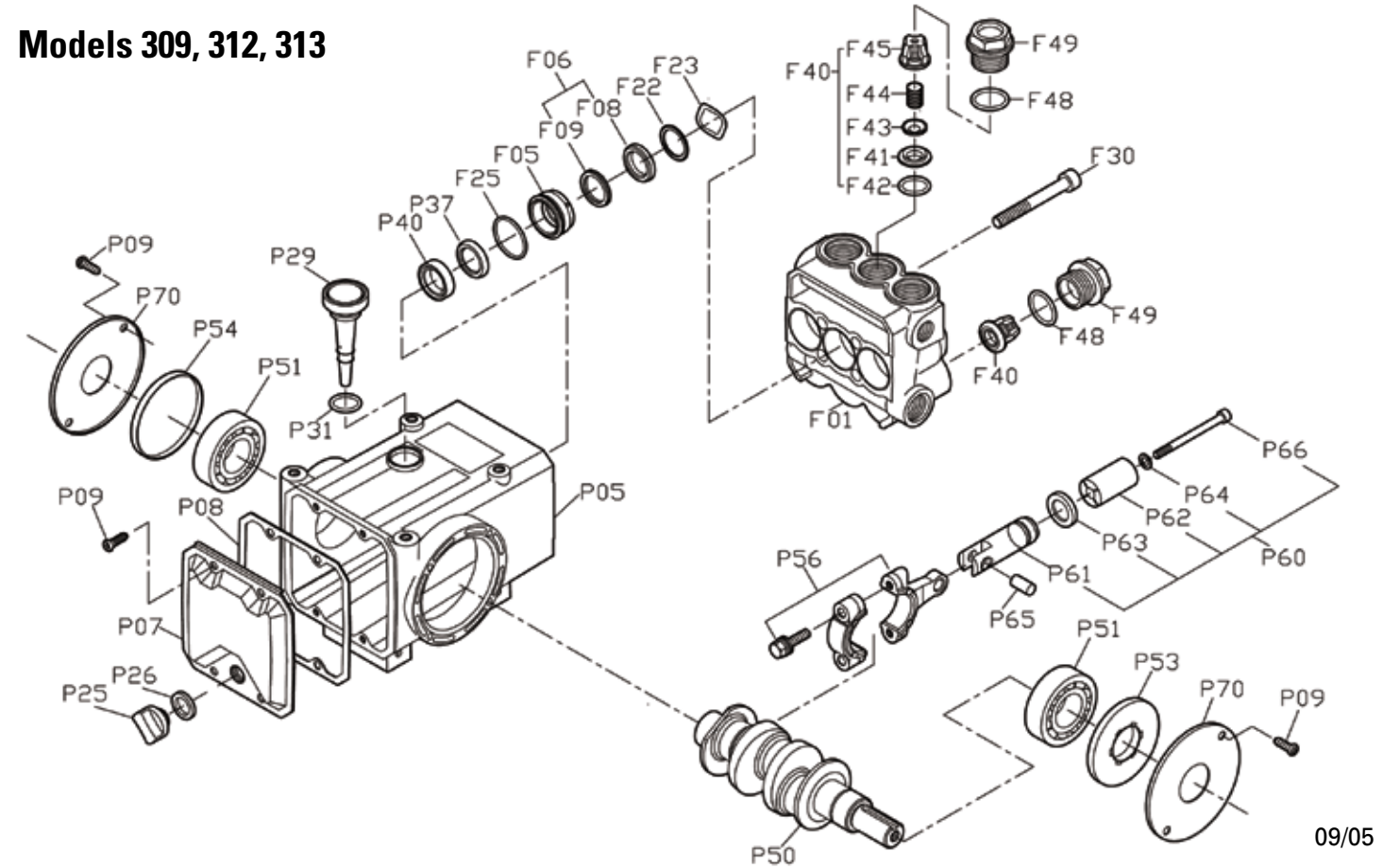
REF. #	PART NUMBER	PART NAME	MATERIAL	QTY
F01	0121001010	MANIFOLD	FORGED BRASS	1
F05	0122211200	SEAL RETAINER	BRASS	3
F06	01222014000A	SEAL ASSEMBLY		3
F08	(included in F06)	V-PACKING	NBR/TEXTILE	3
F09	(included in F06)	VACUUM SEAL	NBR	3
F22	0122711430	SPREADER	BRASS	3
F23	0122201450	WAVE WASHER	STAINLESS	3
F25	9203B15026	O-RING, RETAINER	NBR	3
F30	0121001130	BOLT, 6MM	PLATED STEEL	4
F40	0121003300	VALVE ASSEMBLY		6
F41	(included in F40)	SEAT	STAINLESS	6
F42	0362003340	O-RING	NBR	6
F43	(included in F40)	POPPET	STAINLESS	6
F44	(included in F40)	SPRING	STAINLESS	6
F45	(included in F40)	CAGE	STAINLESS	6
F48	9201F20020	O-RING, VALVE CAP	NBR	6
F49	0120003230	VALVE CAP	FORGED BRASS	6
P05	0122052010	CRANKCASE	ALUMINUM	1
P07	01220020401	BACK COVER	PLATED STEEL	1
P08	0120002050	GASKET	BONDED PAPER	1
P09	9138A05015	SCREW, PHILLIPS	PLATED STEEL	8
P25	0090002320	DRAIN PLUG	FP	1
P26	0090002340	GASKET, DRAIN PLUG	NBR	1
P29	01300026000A	OIL DIPSTICK ASSEMBLY	FP	1
P31	9201B20016	O-RING, DIPSTICK	NBR	1
P37	0122051730	WATER SLINGER	NBR	3
P40	01200024001A	OIL SEAL ASSEMBLY	NBR	3
P50	0122844010	CRANKSHAFT (309)	STEEL	1
	0122454010	CRANKSHAFT (312)	STEEL	1
	0122140101	CRANKSHAFT (313)	STEEL	1
P51	9180630500	BEARING, BALL	STEEL	2
P53	0256004030	OIL SEAL, SHAFT SIDE	NBR	1
P54	0256104430	OIL SEAL, COVER	NBR	1
P56	0122004600	CON-ROD ASSEMBLY	ALUMINUM	3
P60	01220547S0	PLUNGER ASSEMBLY		3
P61	(included in F60)	ROD	STAINLESS	3
P62	(included in F60)	PLUNGER	CERAMIC	3
P63	(included in F60)	SPACER	BRASS	3
P66	(included in F60)	BOLT	STAINLESS	3
P64	0121114852	GASKET	COPPER	3
P65	0030004900	PIN, PLUNGER	STEEL	3
P70	02560044201	COVER, BEARING	PLATED STEEL	2
P80	0150008050A	SHAFT KEY, STEPPED	STEEL	1

* Material listed may be a proprietary version. Parts names without part numbers are only available within complete assemblies.

* Material codes: FP=Flouropolymer, NBR=Medium Nitrile (Buna-N), STAINLESS=Stainless Steel (300 Series)

Exploded View

Models 309, 312, 313



REF. #	PART NUMBER	PART NAME	MATERIAL	QTY
	30114	SEAL KIT, (F06, F25)	NBR	1
	30108	VALVE KIT, (F40)	STAINLESS/FP	2
	30102	RAIL, STANDARD	PLATED STEEL	2
	30113	RAIL, 310/5CP REPLACEMENT (SET)	PLATED STEEL	1
	30103	OIL, BOTTLE (32 OZ) ISO 100		1
Recommended Accessories (309 & 312 only)				
	70201	CLUTCH KIT, 7" SINGLE GROOVE, 24mm	STEEL	1

Horsepower Requirements

	RPM			Pressure (psi)				
	GPM	LPM		800	1000	1200	1400	1500
309	600	1.3	5.1	0.7	0.9	1.1	1.2	1.3
	1400	3.0	11.9	1.6	2.0	2.5	2.9	3.1
	1725	3.7	14.6	2.0	2.5	3.0	3.5	3.8
312	1000	3.0	11.8	1.6	2.0	2.4	2.8	3.0
	1350	4.0	15.9	2.2	2.7	3.3	3.8	4.1
	1725	5.1	20.3	2.8	3.5	4.2		
313	950	3.6	14.3	2.0	2.5	3.0	3.5	3.7
	1050	4.0	15.8	2.2	2.7	3.3	3.8	4.1
	1450	5.5	21.9	3.0	3.8	4.5		

Formulas

$$\text{Determining Pump RPM} = \frac{\text{Rated GPM}}{\text{Rated RPM}} = \frac{\text{"Desired" GPM}}{\text{"Desired" RPM}}$$

$$\text{Determining Required HP} = \frac{\text{GPM} \times \text{PSI}}{1460} = \text{Electric Brake H.P. Required}$$

$$\text{Determining Motor Pulley Size} = \frac{\text{Motor Pulley OD}}{\text{Pump RPM}} = \frac{\text{Pump Pulley OD}}{\text{Motor RPM}}$$