

TECHNICAL DATA DOCUMENT

High-Pressure Pump

General Pump EP Series
Models EP1812S17 • EP1508S34



KEY SPECIFICATIONS

Type	Triplex plunger
Drive	Belt & pulley
Shaft	Solid, right-hand
Pump Speed	1750 / 3400 RPM
Manifold	Forged brass
Plungers	Solid ceramic
Inlet Port	1/2"-14 BSP-F
Discharge Port	3/8"-19 BSP-F
Oil Capacity	15 oz
Max Fluid Temp	165°F (73°C)
Weight	15.4 lbs
Op. Pressure	1000 psi

Specifications

01 • Specifications

The EP Series is a General Pump triplex plunger pump with a solid shaft and forged brass manifold — the standard high-pressure pump on every FanMist Pump Station. Belt-driven by the station motor, it raises supply water to the 1000 psi operating pressure needed for atomization at the stainless-steel misting nozzles.

Key Functions Summary

- Pressurizes supply water to 1000 psi for fine-mist atomization
- Three plungers deliver smooth, continuous high-pressure flow
- Belt-driven from the station motor through the pump pulley
- Started and stopped by the PLC in sequence with fans and valves
- High-Pressure Switch must confirm ≥ 550 psi within 25 seconds
- Replaces the older TX series (right-hand shaft)

Core Pump Assembly



High-Pressure Pump

EP1812S17 (1750 RPM) or **EP1508S34** (3400 RPM)
— General Pump EP Series triplex plunger pump.



Electric Motor

Pulley-driven motor matched to the pump;
typically 0.5–2.0 HP



Drive Belt & Pump Pulley

Belt-and-pulley system connecting motor to pump. Inspected and replaced during 500-hour maintenance.



Pump Oil Fill Port

Oil reservoir fill point. 15 oz capacity — GP Series 30-weight non-detergent oil.

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Model Specifications

02 • Model Specifications

FanMist Pump Stations use one of two EP Series models. General Pump rates both for pressures far above the FanMist 1000 psi operating point.

FanMist Models Compared

	EP1812S17	EP1508S34
Rated Speed	1750 RPM	3400 RPM
Max Volume	4.0 GPM	3.4 GPM
Max Pressure	2,900 psi	3,045 psi
Horsepower	6.6 HP	7.1 HP
Plunger Bore	0.709 in / 18 mm	0.591 in / 15 mm
Plunger Stroke	0.472 in / 12 mm	0.315 in / 8 mm
Crankshaft	63021665 (12 mm)	63020865 (8 mm)
Packing Kits	K274 • K277 • K229	K273 • K276 • K276H • K312H
GP Data Sheet	Ref 300919 Rev. M	Ref 300920 Rev. M

Horsepower is General Pump's rating at maximum volume and pressure.

Common to Both Models

Inlet Pressure	Flooded to 70 psi	Max Fluid Temp	165°F (73°C)
Oil Capacity	15 oz	Shaft Diameter	0.945 in / 24 mm
Inlet Port	1/2"-14 BSP-F	Discharge Port	3/8"-19 BSP-F
Weight	15.4 lbs	Dimensions	9.5 x 8.38 x 5.1 in

Features

- Forged brass manifold — 4,000 psi
- Solid ceramic plungers, dual guides
- Optimized outlet valves
- Patent-pending guide bushing
- Dual-diameter plunger guide
- Dual-lip oil seal

Breakdown of the EP Model Code

Reading (EP1812S17)

EP	18	12	S	17
Series	Bore (mm)	Stroke (mm)	Solid shaft	1750 RPM

EP1508S34 reads the same way: 15 mm bore • 8 mm stroke • solid shaft • 3400 RPM ("34").

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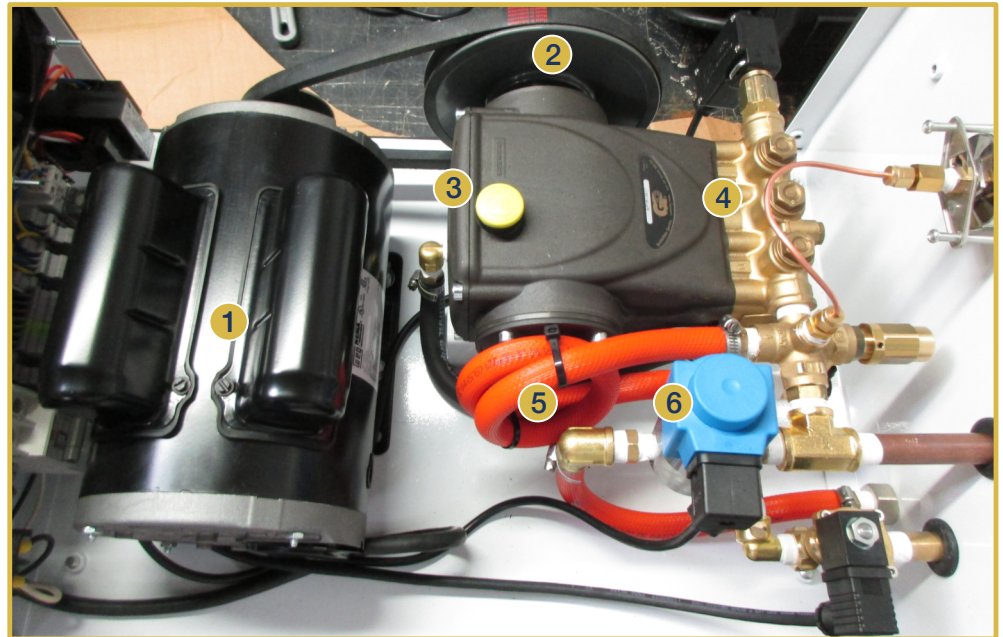
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Installation & Integration

03 • Installation

The pump mounts inside the FanMist Pump Station enclosure beside the electric motor, which drives it through the drive belt and pump pulley. Supply water enters the 1/2" inlet port; high-pressure water leaves through the 3/8" discharge port.

Fig. 1 — EP Series Pump in the Pump Station Enclosure

- | | |
|----------------------------------|-------------------------------------|
| 1 Electric Motor | 2 Drive Belt & Pump Pulley |
| 3 Oil Fill Cap / Dipstick | 4 Brass Manifold (Pump Head) |
| 5 By-pass Hose | 6 Electric Drain Valve (EDV) |

Installation Requirements

- Pressure-feed the pump to prevent cavitation — inlet flooded, up to 70 psi.
- Size feed plumbing at least equal to the 1/2" inlet port; keep runs short, straight and rising so air bubbles purge naturally.
- Install an inlet filter rated 4 to 5 times pump flow (16–20 GPM for a 4 GPM pump) with 0.016" (0.4 mm) mesh.
- Fit a pressure switch on the suction side, downstream of the filter, to stop the pump if feed pressure drops 20%.
- Keep water temperature through the pump at or below 165°F (73°C).

General Pump Warning

High-pressure systems require a primary pressure-regulating device (regulator or unloader) and a secondary pressure-relief device (pop-off or relief valve). Improper installation can cause personal injury or damage to the pump or property.

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Lubrication & Oil

04 • Lubrication

The crankcase holds 15 oz of oil. Keeping it clean and dry prevents premature wear of moving parts and oil seals.

Oil Specification

Capacity	15 oz
Oil Type	GP Series 100, 30-weight-non-detergent
Level Check	Oil dipstick (item 50) / oil level indicator (item 44)
Change Condition	Pump stopped, oil still warm
Water in Oil	Must not exceed 20%

Oil Change Intervals

50 hrs

FIRST CHANGE

Removes impurities from the running-in phase — not because the oil has worn out.

500 hrs

ROUTINE CHANGE

Every 500 operating hours or every three months, whichever comes first.

As Needed

MILKY OIL

Condensation in the crankcase — change oil more frequently.

Milky Oil & Condensation

In high humidity with sharp temperature swings, condensation can form inside the crankcase and mix with the oil, turning it white and milky. If the packings are not leaking heavily and the oil turns milky, shorten the oil change interval. Milky, foamy oil together with packing leakage points to high-pressure seal failure — see page 14.

Compatible Oils

Brand	Product
General Pump	Series 100
BP	Visco 2000
Castrol	CWX
Mobil	Super
Shell	Helix Super
Total	Quartz 4000–5000

FanMist 500-Hour Maintenance

The PLC lights the amber MAINT indicator at 500 runtime hours for oil, filter and belt service. General Pump's routine oil interval — 300 hours or three months — is shorter.

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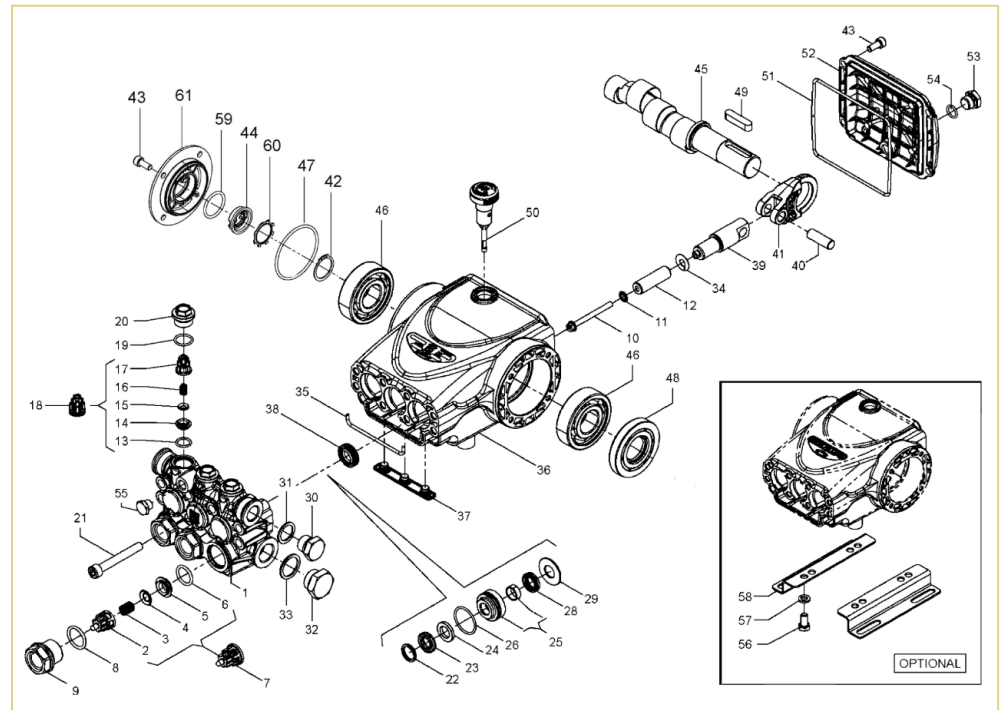
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Parts List

Fig. 2 — EP Series Exploded View (item numbers apply to both models)



Model-Specific Parts

Item	Description	EP1812S17 Ø18	EP1508S34 Ø15	Qty
1	Manifold	58120141	58120141	1
4	Inlet Valve / Poppet	36711501 Valve	36200176 Poppet	3
12	Plunger	58040209 Ø18×42	58040109 Ø15×42	3
22	Head Ring	63101151	63101051	3
23	Packing, HP	90265300	90261100	3
23	Packing, HP — hot kit	710033 K229	710031 K276H, K312H	3
24	Anti-Extrusion Ring	90511150	90508990	3
25	Intermediate Ring	58605801	58605701	3
28	Seal, LP	90265000	90260800	3
28	Seal, LP — hot kit	710032 K229	710030 K276H, K312H	3
29	Support Ring	58210770	58210770	3
42	Stop Ring, Ø25	90063500	— not listed	2 / —
43	Screw, M6×14	99183700	99183700	12 / 8
45	Crankshaft	63021665 12 mm	63020865 8 mm	1
59	Stop Ring / O-ring Ø25.07×2.62	90385900 Stop Ring	90385900 O-ring	1

Part numbers are General Pump numbers from data sheets Ref 300919 and Ref 300920 (Rev. M). All other parts are common to both models — see page 6.

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Parts List (cont.)

Parts common to EP1812S17 and EP1508S34. Item numbers refer to Fig. 2 on page 5.

Common Parts — Both Models

Item	Part No.	Description	Qty	Item	Part No.	Description	Qty
2	36202551	Valve Cage	3	35	58210582	Gasket, Ø3×94	1
3	94737600	Spring, Ø9.4×14.8	3	36	58010022	Crankcase	1
5	36200366	Valve Seat	3	37	58210451	Drip Cover	1
6	701115	O-ring, Ø17.13×2.62	3	38	90156550	Oil Seal, Ø15×24×5.7	3
7	36711501	Valve Assembly	3	39	58050066	Piston Guide	3
8	701002	O-ring, Ø20.24×2.62	3	40	97734000	Piston Pin, Ø10×29.5	3
9	98222600	Valve Cap M24×1.5×16.7	3	41	58030022	Connecting Rod	3
10	99169000	Plunger Bolt, M5×55	3	44	53210851	Oil Level Indicator*	1
11	96690500	Washer, Ø5×11.5×0.4	3	46	91833100	Bearing, Premium	2
13	701014	O-ring, Ø12.42×1.78	3	47	90389800	O-ring, Ø56.82×2.62	1
14	36211366	Outlet Valve Seat	3	48	90164100	Oil Seal, Ø25×62×10	1
15	36211276	Outlet Valve Poppet	3	49	91489200	Key	1
16	94733300	Spring, Ø6.2×10.4	3	50	98210500	Oil Dipstick	1
17	36211151	Outlet Valve Cage Guide	3	51	90392550	O-ring, Ø113.97×2.62	1
18	36719301	Complete Outlet Valve	3	52	58160022	Rear Cover	1
19	701016	O-ring, Ø15.6×1.78	3	53	98204100	Plug, 1/4" × 9	1
20	98213700	Outlet Valve Cap, M18×1.5×10	3	54	701013	O-ring, Ø10.82×1.78	1
21	99317500	Screw, M8×60	8	55	98196600	Plug, 1/8" × 8	1
26	701023	O-ring, 26.7×1.78	3	56	99303700	Screw, Hex Head †	4
30	98210000	Plug, 3/8" × 13	1	57	96701600	Washer, Ø8.4 †	4
31	96738000	Gasket, 17.5×23×1.5	1	58	50200074	Pump Foot †	2
32	98217600	Plug, 1/2" BSP × 10	1	60	90067100	Stop Ring	1
33	96751400	Gasket, Ø21.5×27×1.5	1	61	58150122	Side Cover	1
34	96698000	Washer, Ø7.5×15×0.5	3				

*53150001 Oil Level Indicator is also available assembled, without screws and O-ring. † Items 56–58 belong to the optional pump foot.

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Op. Pressure	1000 psi

Repair Kits & Torque

06 • Kits & Torque

General Pump repair kits for the two FanMist models. K269, K270 and K271 fit both; packing kits are bore-specific.

Repair Kits

Kit	Contents	Assy's	Cyl.	Fits
K269	Valve kit — items 2, 3, 4, 5, 6, 13–17, (7), (18)	6	3	Both
K270	Valve caps & O-rings — items 8, 9, 19, 20	6	3	Both
K271	Oil seals — item 38	3	3	Both
K274	Packings & rings — items 22, 23, 24, 26, 28	3	3	EP1812S17
K277	Packings & rings — items 22–26, 28, 29	1	1	EP1812S17
K229¹	Hot kit — items 23, 28	3	3	EP1812S17
K273	Packings & rings — items 22, 23, 24, 26, 28	3	3	EP1508S34
K276	Packings & rings — items 22–26, 28, 29	1	1	EP1508S34
K276H¹	Hot kit — items 22–26, 28, 29	3	3	EP1508S34
K312H¹	Hot kit — items 23, 28	3	3	EP1508S34

¹ Seal tool included. K277 and K276 service one cylinder — a full pump needs three.

Torque Specifications

Item	Fastener	Ft-lb	Nm
9	Valve Cap, M24×1.5	96	130
10	Plunger Bolt, M5×55	4.5	6
20	Outlet Valve Cap, M18×1.5	44.3	60
21	Screw, M8×60 (head)	14.8	20
30**	Plug, 3/8"	30	40
32	Plug, 1/2" BSP	30	40
43	Screw, M6×14	7.4	10
53	Plug, 1/4"	14.8	20
55**	Plug, 1/8"	9.6	13
56	Screw, Hex Head (foot)	14.8	20

Decrease torque by 20% if threads are lubricated.

** Use Loctite 542 Red.

Torque Sequence for Tightening Head

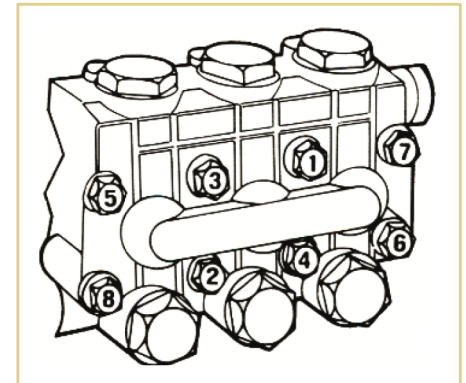


Fig. 3 — Tighten the eight M8×60 head screws (item 21) in order 1–8 to 14.8 ft-lb (20 Nm).

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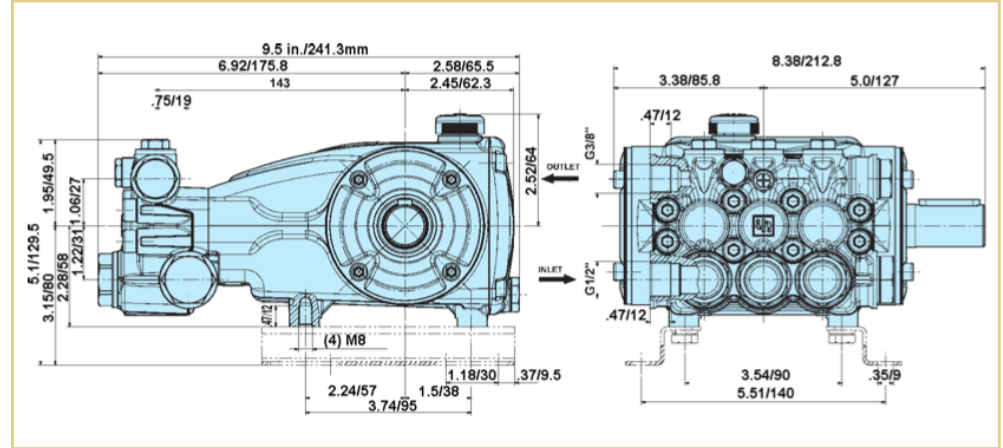
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Max Fluid Temp	165°F (73°C)
Weight	15.4 lbs
Op. Pressure	1000 psi

Dimensions

07 • Dimensions

EP1812S17 and EP1508S34 share the same crankcase, manifold envelope and mounting pattern. Dimensions are shown in inches / millimeters.

Fig. 4 — EP Series Dimensions (side and end views)



Key Dimensions & Connections

Overall Length	9.5 in / 241.3 mm
Overall Width	3.38 in / 85.8 mm
Overall Height	5.1 in / 129.5 mm
Shaft Diameter	0.945 in / 24 mm, keyed (item 49)
Shaft	Solid, right-hand
Mounting	4 × M8
Inlet Port	G 1/2 — 1/2"-14 BSP-F
Outlet Port	G 3/8 — 3/8"-19 BSP-F
Weight	15.4 lbs
Pump Foot	Optional — items 56, 57, 58

California Proposition 65

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov.

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Troubleshooting Guide

08 •

Mechanical and hydraulic faults of the EP Series pump, from General Pump's troubleshooting data.

Symptom	Possible Cause	Recommended Action
Pulsation	Valve stuck open	Check all valves; remove foreign matter.
	Faulty pulsation damper	Check precharge; recharge if low or install a new one.
Low pressure	Worn nozzle	Replace nozzle with one of proper size.
	Belt slippage	Tighten or replace; use correct belt.
	Air leak in inlet plumbing	Disassemble, reseal and reassemble.
	Relief valve stuck, partially plugged or improperly adjusted; valve seat worn	Clean and adjust relief valve; check for worn and dirty valve seats. Kit available.
	Inlet suction strainer clogged or improperly sized	Clean; use adequate size. Check more frequently.
	Worn packing; abrasives in pumped fluid; severe cavitation; inadequate water	Install proper filter. Suction lift at inlet must be less than 20 ft of water (–8.5 psi vacuum).
	Fouled or dirty inlet or discharge valves	Clean inlet and discharge valve assemblies.
	Worn, blocked or dirty inlet/discharge valve; leaky discharge hose	Replace worn valve seats and/or discharge hose.
Pump runs extremely rough, pressure very low	Restricted inlet or air entering inlet plumbing	Use proper size inlet plumbing; check for air-tight seal.
	Inlet restrictions and/or air leaks; stuck inlet or discharge valve	Replace worn cups; clean out foreign material; replace worn valves.
Slight water leakage under manifold	Worn packing	Install new packing.
	Cracked plunger	Replace plunger(s).
Oil leak between crankcase and pumping section	Worn crankcase piston rod seals; worn O-rings on plunger retainer	Replace crankcase piston rod seals and O-rings.
Oil leaking in area of crankshaft	Worn crankshaft seal or improperly installed oil seal O-ring	Remove oil seal retainer; replace damaged O-ring and/or seals.
	Bad bearing	Replace bearing and any spacer or cover damaged by heat.

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Troubleshooting Guide (cont.)

08 • Troubleshooting

Symptom	Possible Cause	Recommended Action
Excessive play at end of crankshaft pulley	Worn main bearing from excessive drive-belt tension	Replace crankcase bearing and/or re-tension drive belt.
Water in crankcase	Humid air condensing inside the crankcase	Change oil at shorter intervals; use GP Series 30-weight non-detergent oil.
	Worn packing and/or piston rod sleeve; worn O-rings on plunger retainer	Replace packing and O-rings.
	Cracked plunger	Replace plunger(s).
Oil leaking from underside of crankcase	Worn crankcase piston rod seals	Replace seals.
	Scored piston rod	Replace piston rod.
Oil leaking at rear of crankcase	Damaged crankcase; rear cover, drain plug or sight-glass O-ring	Replace cover, drain plug or sight-glass O-ring.
Loud knocking noise in pump	Pulley loose on crankshaft	Check key and tighten screw.
	Broken or worn bearing on rod(s)	Replace bearing or rod(s).
	Valve stuck open or shut, or not opening enough	Replace bad valve.
Frequent or premature packing failure	Scored, damaged or worn plunger	Replace plungers.
	Overpressure to inlet manifold	Reduce inlet pressure.
	Abrasive material in pumped fluid	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of pumped fluid	Check pressures and inlet temperature; keep within specified range.
	Overpressure of pump	Reduce pressure.
	Running pump dry	Do not run pump without water.
	Upstream chemical injection	Use downstream chemical injection.

Control-Side Faults

For a pump that will not start, a red FAULT light, or a shutdown after 25 seconds, see the Omron PLC Controller document (IHC-TDD-PLC-0926-RevA). For nozzles dripping after shutdown, see the Electric Drain Valve document (IHC-TDD-EDV-0926-RevA).

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Maintenance

Service intervals and head-removal procedure for the EP Series pump on the FanMist Pump Station. Regular service protects the packings, valves and crankcase.

Recommended Maintenance Schedule

Task	Action Required	Frequency
First oil change	Drain and refill with pump stopped, oil warm	After first 50 hrs
Oil change	GP Series 100, 30-weight non-detergent, 15 oz	Every 500 hrs
Check oil condition	Milky or foamy oil indicates water in crankcase	Ongoing
Drive belt & pulley	Inspect; replace as needed	Every 500 hrs
Inlet filter	Inspect and service	Every 500 hrs
Check valves (6)	Inspect, clean; rebuild with K269	2,500 hrs / as needed
V-ring packings	Replace packings and seals	2,000–2,500 hrs / at first leak
Plungers	Inspect; replace if scored or cracked	At packing service

After 500-hour service, reset the PLC maintenance timer by pressing buttons 3 + 4 together until the amber light turns off.

Before Any Service

Stop the system and disconnect power. Isolate the water supply and confirm the high-pressure lines are depressurized — the EDV opens on shutdown to release pressure.

Removing the Manifold Head

- 1 Remove the eight M8×60 screws (item 21) retaining the head.
- 2 Separate the head from the crankcase. Tap lightly with a rawhide mallet if needed. **Caution:** slide the head off with extreme care to avoid damaging the plungers (Fig. 6, page 12).

Reinstalling the Manifold Head

- 1 Slide the head straight onto the plungers and seat it against the crankcase.
- 2 Tighten the eight screws in the Fig. 3 sequence (page 7) to 14.8 ft-lb (20 Nm).

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Maintenance: Valves

Service Interval: every 2,500 hours, or as needed when symptoms appear

Valve problems are usually caused by debris or mineral buildup and can result in heavy vibration, loss of pressure and loud knocking. Valve kits for both FanMist models are available from IHC.

Checking the Six Check Valves

Six check valves sit inside the brass manifold. **Tools:** 27 mm socket and breaker bar — the caps are very tight from the factory.

- 1 Remove the valve caps.
- 2 Use needle-nose pliers to remove each valve assembly (Fig. 5).
- 3 Inspect the spring assembly — it must close completely with no debris present.
- 4 Thoroughly clean the valves.
- 5 Flush the pump head: pour water into the top openings and let it drain from the bottom, or run the pump briefly with water connected.
- 6 Confirm the plastic housing of each valve is not broken.
- 7 Blow out the six ports with compressed air. **Caution:** do not lose the O-rings inside the ports below the valves.
- 8 Examine all O-rings for cuts, abrasion or distortion; replace if damaged.

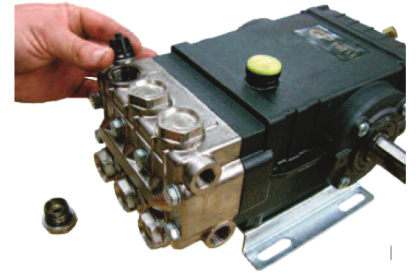


Fig. 5 — Valve cap removed; valve assembly lifted from its port.

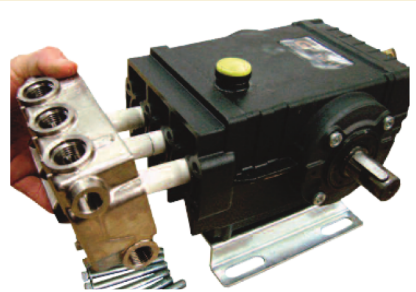


Fig. 6 — Manifold head separated from the crankcase, exposing the three ceramic plungers.

One Kit Services All Six Valves

Valve kit K269 contains six pre-assembled valves — O-rings, valve seat, poppet, spring and retainer — enough to rebuild every valve in the pump.

Reinstalling Valves

- 1 Install new O-rings in each valve cavity.
- 2 Insert the pre-assembled valve into the cavity.
- 3 Replace the caps and torque to specification (page 7):
 - Valve cap, item 9 — 96 ft-lb (130 Nm).
 - Outlet valve cap, item 20 — 44.3 ft-lb (60 Nm).

TECHNICAL DATA DOCUMENT

High-Pressure
Pump

General Pump EP Series

Models EP1812S17 • EP1508S34

KEY SPECIFICATIONS

Type	Triplex plunger
Drive	Belt & pulley
Shaft	Solid, right-hand
Pump Speed	1750 / 3400 RPM
Manifold	Forged brass
Plungers	Solid ceramic
Inlet Port	1/2"-14 BSP-F
Discharge Port	3/8"-19 BSP-F
Oil Capacity	15 oz
Max Fluid Temp	165°F (73°C)
Weight	15.4 lbs
Op. Pressure	1000 psi

Maintenance: Plungers

09 • Maintenance

The solid ceramic plungers are reached after removing the manifold head (page 11). Replace a plunger if it is scored, damaged, worn or cracked.

EP1812S17

58040209 — Plunger, Ø18×42 (item 12)

EP1508S34

58040109 — Plunger, Ø15×42 (item 12)

Replacing Plungers

- 1 Remove the stainless-steel plunger bolt (item 10) and plunger from the piston rod (Fig. 7).
- 2 If the slinger washer comes off with the plunger, replace it before installing the new plunger.
- 3 Separate the plunger bolt from the old plunger (Fig. 8).
- 4 Install the new O-ring and Teflon backup ring on the plunger bolt. Apply a thin film of grease to the outside of the O-rings for easier installation.
- 5 Carefully press the plunger bolt into the new plunger (Fig. 9).

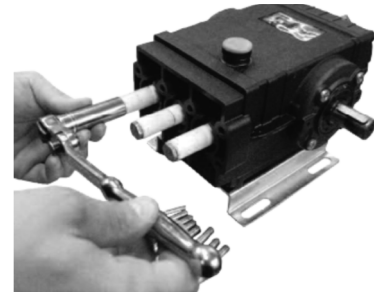


Fig. 7 — Removing the plunger bolt (item 10) with a socket wrench.

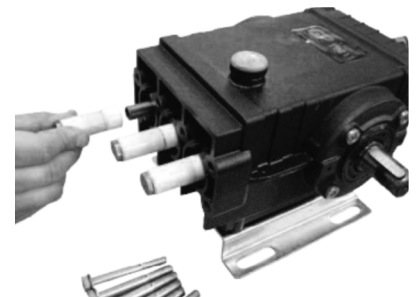


Fig. 8 — Plunger pulled from the piston rod; plunger bolts set aside.

Reassemble in reverse order. Torque the plunger bolt to 4.5 ft-lb (6 Nm) and all other fasteners to specification (page 7).

Signs a Plunger Needs Replacing

- Slight water leakage under the manifold
- Water in the crankcase oil
- Frequent or premature packing failure

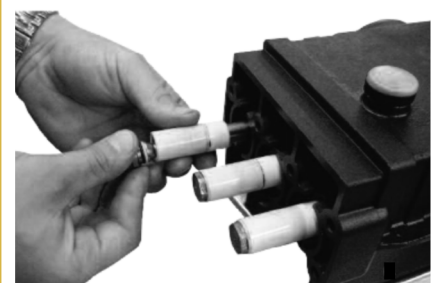


Fig. 9 — Pressing the plunger bolt, fitted with new O-ring and backup ring, into the new plunger.

TECHNICAL DATA DOCUMENT

High-Pressure
Pump

General Pump EP Series

Models EP1812S17 • EP1508S34

KEY SPECIFICATIONS

Type	Triplex plunger
Drive	Belt & pulley
Shaft	Solid, right-hand
Pump Speed	1750 / 3400 RPM
Manifold	Forged brass
Plungers	Solid ceramic
Inlet Port	1/2"-14 BSP-F
Discharge Port	3/8"-19 BSP-F
Oil Capacity	15 oz
Max Fluid Temp	165°F (73°C)
Weight	15.4 lbs
Op. Pressure	1000 psi

Maintenance: Packings

09 • Maintenance

Service Interval: every 2,000–2,500 hours, or as soon as leakage is observed

The V-ring packings are water seals that wear with normal use and are not a warranty item. They typically last 500–2,500 hours depending on water quality and operating conditions.

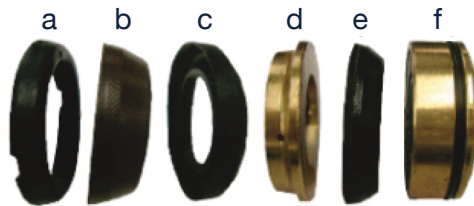
Signs of Seal Failure

- Water leaking from the bottom of the pump head → low-pressure seal wear
- Milky, foamy crankcase oil → high-pressure seal failure
- Running on after leakage begins causes lubrication failure and crankcase damage

Replacing V-Ring Packings

- **Kits:** EP1812S17 — K274 / K277;
EP1508S34 — K273 / K276.
- **Tools:** extractor collet and insertion tool.

- 1 Remove the manifold head (page 11).
- 2 Insert the extractor collet through the main seal retainer; tighten it and extract the retainers, V-packings and head rings (**Fig. 10a**).
- 3 With the insertion tool in the cylinder, install the front head ring, V-packing and long-life ring. Press firmly until they go no further (**Fig. 10b**).
- 4 Press in the intermediate seal retainer, then install the rear head ring, V-packing and main seal retainer (**Fig. 10c–d**).
- 5 Repeat for each cylinder.

Fig. 11 — Packing Stack,
in Installation Order

Left to right: **a.** head ring **b.** high-pressure seal **c.** restop ring **d.** intermediate ring **e.** low-pressure seal **f.** packing retainer with O-ring

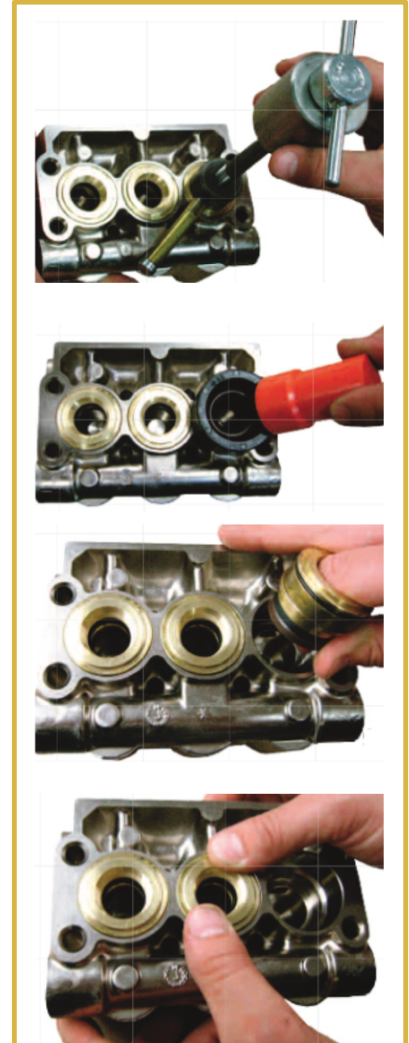


Fig. 10 — Replacing V-ring packings, top to bottom: (a) extractor collet pulling the old packings from the cylinder; (b) insertion tool seating the new head ring and V-packing; (c) main seal retainer, with O-ring, entering the cylinder; (d) retainer pressed firmly home.