GENERAL PUMP *A member of the Interpump Group*

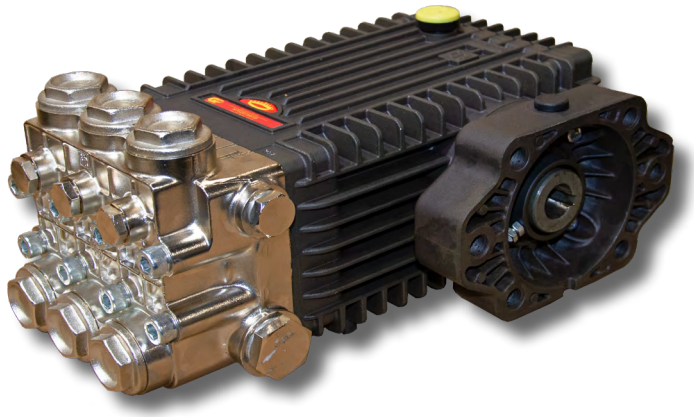
HTF Series
HYDRAULIC

Emperor
Pumps That Rule Any Environment

EMPEROR

FEATURES

- Features patent-pending “high tech” packings:
  -dynamic low-pressure seal retainer
  -superior low-pressure seal
  -innovative intermediate ring
  -superior high-pressure seal
- Ceramic plungers
- Patent-pending inlet/outlet valve cage
- Nickel-plated inlet/outlet valve plugs
- Nickel-plated forged brass manifold
- Designed for carpet cleaning and for use in industrial plant systems where hot water is required



SPECIFICATIONS

Pump Model	HTF2019HYD
Maximum Volume	7.5 GPM
Maximum Pressure	3600 PSI
Maximum RPM	1750 RPM
Maximum Inlet Pressure	125 PSI
Minimum Inlet Pressure	9 ft. water (7.9 in. Hg)
Maximum Fluid Temperature	185ºF
Bore (in / mm)	.787 in. / 20 mm
Stroke (in / mm)	.748 in. / 19 mm
Oil Capacity	40.6 oz.
Inlet Port Thread	3/4”-14 BSP-F
Discharge Port Thread	3/8”-19 BSP-F
Shaft Diameter	.945 in. / 24 mm
Weight	41 lbs.
Dimensions - Nominal	13.4” x 9.8” x 7.5” (with rails) 13.4” x 9.8” x 6.4” (no rails)

EMPEROR

Instructions and Recommendations for the Installation of *HTF Series Pumps*

The high-temperature pumps of the HTF series have been designed for use in applications where the water must be pre-heated, such as in carwash, food and pharmaceutical industries.

Maximum temperature of the water through the pump is 185°F (85°C).

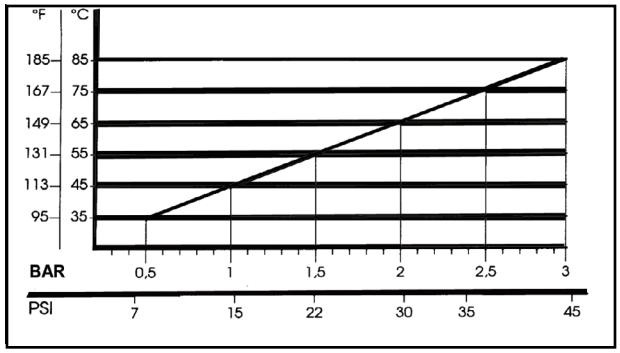
In order to obtain maximum performance in terms of duration of seals and valves, it is necessary to respect a few simple rules, as follows:

1) **In order to avoid damage caused by cavitation, the pump must be pressure fed.**

   The higher the inlet pressure, the longer the life of the wet end of the pump.

   When working at 185°F (85°C), the minimum feed pressure - measured directly in the inlet port of the pump when it is working - is 45 psi (3 bar).

   The minimum feed pressure according to the different temperatures are:



Naturally, if the application allows for feeding the pump with 45 psi (3 bar) even at low temperatures (for example: 115°F/45°C the life of the wet end of the pump will be even longer.

2) **The plumbing which feeds the pump must be of a diameter at least equal to the inlet port.** Also, follow the suggestions below:

   a) Make the plumbing as short and straight as possible, preferably in an upward direction to facilitate the expulsion of eventual air bubbles naturally if compatible with the requirements of the system.

   b) It is always useful to put a filter at the inlet with capacity of 4 to 5 times the flow of the pump, for example for a 4 gpm (15 l/min) pump, put a filter from 16 to 20 gpm (60-75 l/mi)The mesh size suitable for this application is 0.016" (.4 mm).

   c) It is extremely important to put a pressure switch on the suction port of the pump, and in any case downstream from the filter, so that it can stop the pump should the feed pressure drop by 20% due to the filter clogging or failure of the feed pump, etc.

3) **Change of oil**

   We recommend the ***first oil change after the first 50 hours***, with the ***pump stopped*** and the ***oil still warm***.

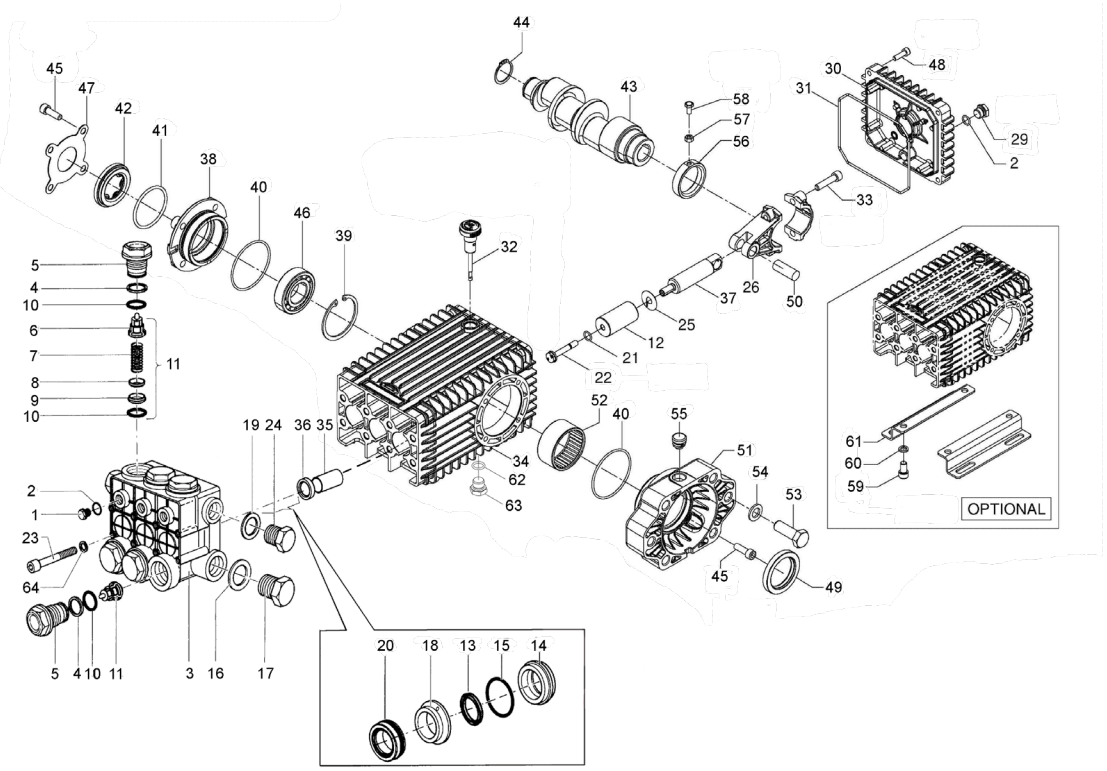
   This change is not recommended because the oil has lost its properties, but rather to eliminate the impurities that have gotten into the oil during the running-in phase. If these impurities are not removed, but are allowed to remain in the oil, they *may cause premature wear* to the moving parts and the oil seals. **After this initial change, the oil can then be changed every three months or 300 hours of operation thereafter.**

   Please note: If the pump works in conditions with high humidity and with sharp temperature changes, it is possible that condensation will appear inside the crankcase, which mixing with the oil can change its properties. This is easy to see because the oil changes to a white, milky color.

   If the pump does not have excessive water leaking from the packings, and the oil becomes milky, the oil has to be changed more frequently. The percentage of water in the oil must not exceed 20%.

   Use oil per the following chart:

BRAND	TYPE
GENERAL PUMP	**SERIES 220**
BP	ENERGOL HLP 220
CASTROL	Hyspin VG220, Magna 220
MOBIL	DTE OIL BB
SHELL	TELLUS C 220
TOTAL	CORTIS 220



PARTS LIST

No.	Part No.	Description	Qty
1	98204700	Plug, G1/4", Nickel-plated	3
2	90358500	O-ring	4
3	66120641	Manifold, Ø 20 mm	1
4	90516500	Anti-ext ring, Ø24.7x29x1.5	6
5	66130341	Valve Cap	6
6	36203551	Valve Guide	6
7	94738800	Valve Spring, Ø 10x18.5	6
8	36203476	Valve Poppet	6
9	36203366	Valve Seat	6
10	90385700	O-ring, Ø23.81 x 2.62	12
11	36712701	Valve Assembly, Complete	6
12	66040009	Plunger, Ø 20 mm	3
13	90269000	LP Seal, Ø 20 mm	3
14	66081270	Seal Retainer, Ø 20 mm	3
15	90361600	o-ring	3
16	96770000	Washer, Aluminum	1
17	98226900	Plug, G3/4", Nickel-plated	1
18	66216070	Intermediate Ring, Ø20mm	3
19	96738000	Washer, Aluminum	1
20	90226000	HP Seal, Ø20 mm	3
21	90358400	O-ring, Ø 10.82 x 1.78	3

No.	Part No.	Description	Qty
22	66219566	Plunger Bolt	3
23	99380100	Headbolt, M10 x 90	8
24	98209900	Plug, G3/8", Nickel-plated	1
25	96710100	Flinger Washer	3
26	66030001	Connecting Rod, Comp.	3
29	98204250	Plug, G 1/4"x9	1
30	66160022	Rear Cover	1
31	99392200	O-ring Ø 133.02 x 2.62	1
32	98210600	Dipstick	1
33	99309900	Con-rod Screw	6
34	66010022	Crankcase	1
35	90912600	Bushing, Ø 22.0 x 32.0 x 5.5	3
36	90162500	Plunger Oil Seal	3
37	66050066	Piston Guide	3
38	59150022	Side Cover	1
39	90085000	Stop Ring, Ø 62	1
40	701147	O-ring, Ø 67.95 x 2.62	2
41	90409700	O-ring, Ø 55.56 x 3.53	1
42	44211801	Sight Glass	1
43	F66021465	Crankshaft, C.19	1
44	90066700	Stop Ring, Ø 30	1

No.	Part No.	Description	Qty
45	99306900	Screw, M8 x 25	8
46	91837600	Roller Bearing	1
47	66150274	Side Cover	1
48	99188400	Screw, M6 x 20	4
49	90169000	Ring, Ø 45.0 x 62.0 x 8.0	1
50	99740500	Pin Ø 14 x 39	3
51	F10087222	Hydraulic Flange, SAE-B	4
52	91858700	Roller Pin Bushing	1
53	F99484800	Screw, M14 x 40	2
54	F96728200	Washer, Ø 15 x 24 x 2.5	2
55	F90206500	Plug, Ø 17	1
56	F71228971	Ring, Ø 40	1
57	92202500	Nut, M6 x 5	1
58	F70227034	Screw, M6 x 12	1
59	99364400	Screw, M10 x 18	4
60	96710600	Washer, Ø 12.2 x 16 x 2.5	4
61	47200074	Pump Feet	2
62*	90383300	O-ring, Ø 13.95 x 2.62	1
63*	98210050	Plug, G 3/8" x 13	1
64	96710400	Washer, M10	8

* Only on older manufactured pumps

REPAIR KITS

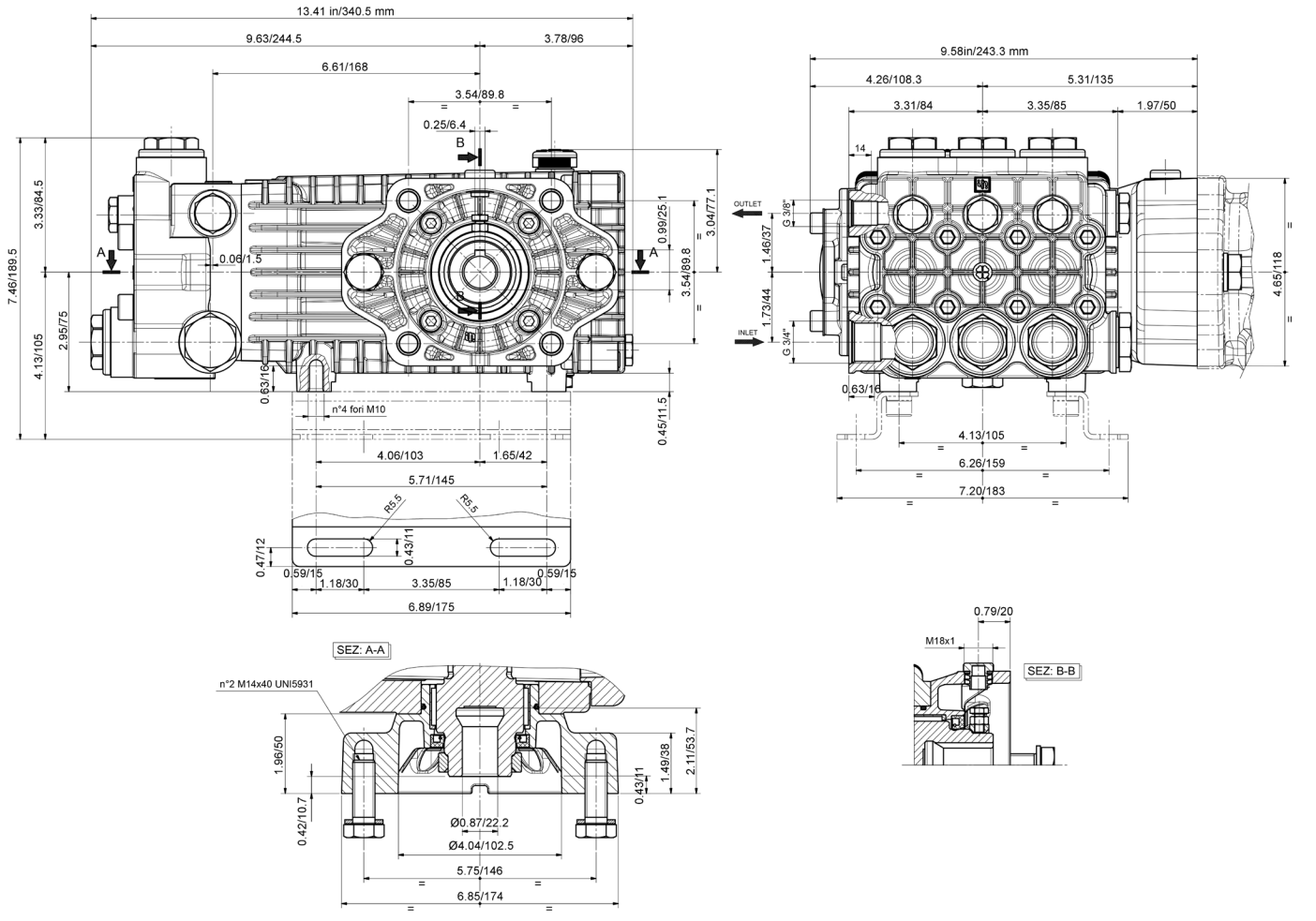
Kit No.	K02	K169	K206	K207
Item No's Included in Kit	36	6, 7, 8, 9, 10, (11)	13, 20	13, 14, 15, 18, 20
Number of Assemblies In Kit	3	6	3	1
Number of Cylinders Kit Services	3	3	3	1

TORQUE SPECS*

Position	Ft.-Lbs.	Nm.
5	95.9	130
17	51.6	70
22**	14.7	20
23	33.2	45
24	29.4	40
29	14.7	20
33	14.7	20
45	14.7	20
48	7.3	10
59	29.4	40
63	29.4	40

*Decrease torque by 20% if threads are lubricated.
**Use Loctite 542

DIMENSIONS



WARNING: High Pressure Systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices properly could result in personal injury or damage to pump or property. GP does not assume any liability or responsibility for the operation of the user's high pressure system.

WARNING: This product can expose you to chemicals including lead, which is know to the state of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

GENERAL PUMP 1174 Northland Drive • Mendota Heights, MN 55120
Phone: 651.686.2199 • Fax: 800.535.1745 • e-mail: sales@gpcompanies.com • www.generalpump.com

Ref 301131 Rev. A
11-22

GENERAL PUMP