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High Capacity Pressure Powered Pump Package Unit

Description :

HIGH CAPACITY Pressure Powered Pump Package Unit is positive displacement pump unit operated by steam, compressed air or pressurised gas. The unit is specifically designed to pump hot condensate and liquids of specific gravity 1.0 down to 0.9. High capacity pump has two mechanical seals in a single shell which is compact in size giving high discharge capacities.

Sizes & Pipe Connections:

Size: 80 x 50NB PPPPU-HC Condensate inlet : 80 NB S/O flange Table 'E' Condensate outlet : 80NB Tab F flange BTS 50 NB Vent Outlet : 100 NB S/O flange Table 'F'

Limiting Conditions:

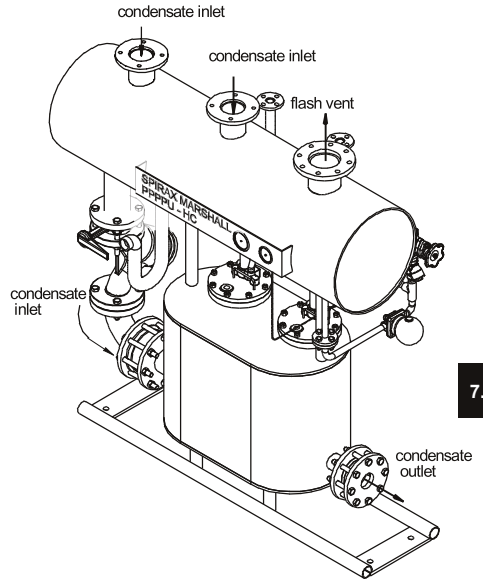
Body design - 10 bar g at 220° C Operating inlet motive pressure - steam, compressed air or pressurised gas 0.34 to 10 bar g.

Pump Discharge per cycle- 60 litres Steam consumption : 3 kg of steam per 1000 kg liquid pumped.

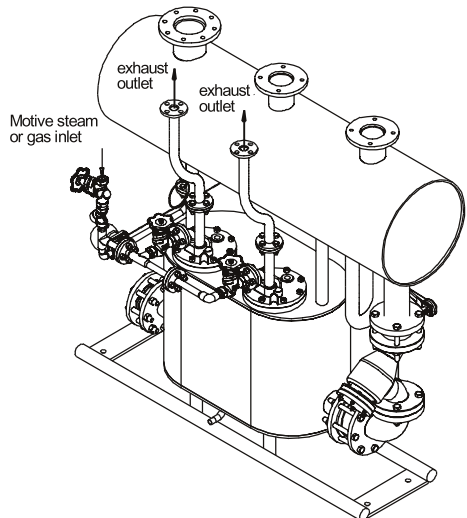
Air Consumption : 220 SCF per 1000 kg liquid pumped.

Standard Accessory:

Condensate flowmeter (CFM1) Insulation jacket

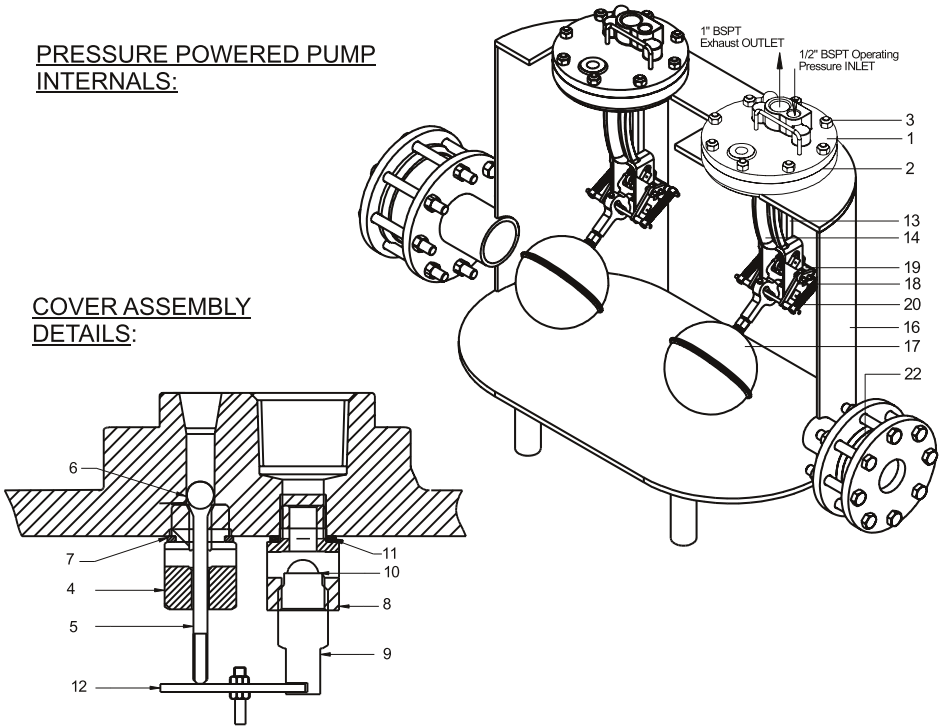


7.1



**PRESSURE POWERED PUMP
INTERNALS:**

**COVER ASSEMBLY
DETAILS:**

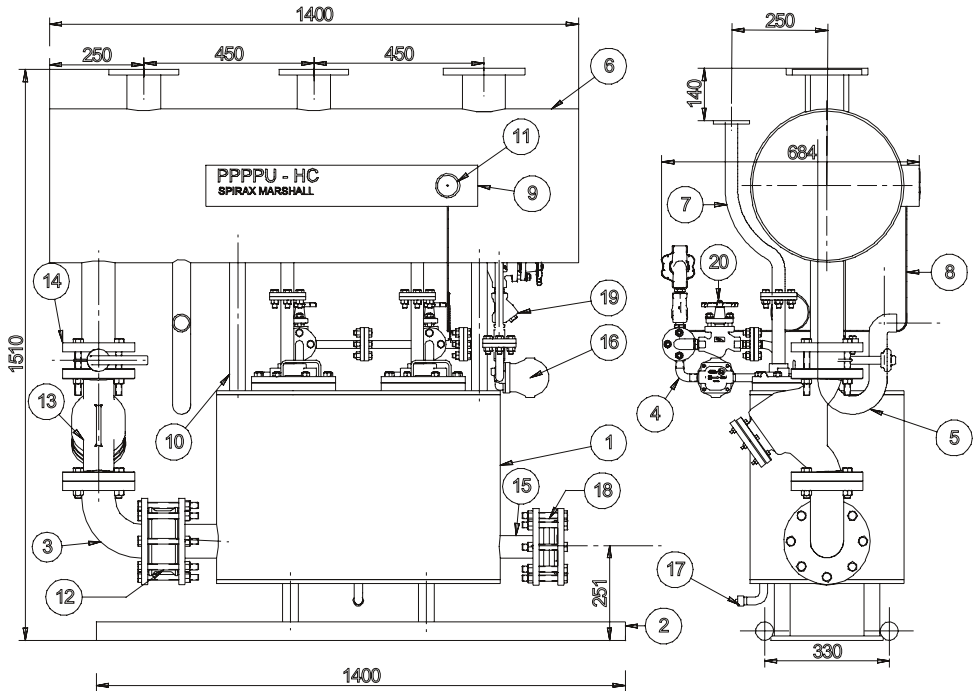


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Materials:

Sr. No.	DESCRIPTION	MATERIAL	STANDARD	Sr. No.	DESCRIPTION	MATERIAL	STANDARD
1	COVER	C.I.	IS 210	12	VALVE ACTUATOR DISC	S.S.TYPE 304	ASTM A 276
2	COVER GASKET	ASBESTOS FREE SYNTHETIC FIBRE	-----	13	PUSH ROD	S.S.TYPE 304	ASTM A 276
3	STUD & NUT M-12	C.S.	-----	14	MECHANISM YOKE	C.I.	IS 210 FG 260
4	INLET VALVE SEAT	S.S. TYPE 304	ASTM A 276	15	MECHANISM SCREWS, M-12 (not shown)	S.S.TYPE 304	IS 1364
5	INLET VALVE STEM	S.S. TYPE 304	ASTM A 276	16	PUMP SHELL	C.S.	IS 3589
6	INLET VALVE HEAD	S.S.	-----	17	FLOAT	S.S.TYPE 304	ASTM A 240
7	SEAT GASKET	Cu	-----	18	LINKAGE MECHANISM	S.S.	-----
8	EXHAUST SEAT	S.S. TYPE 304	ASTM A 276	19	PUSH ROD ACTUATOR	S.S.TYPE 304	ASTM A 351 CF8
9	EXHAUST VALVE	S.S. TYPE 304	ASTM A 276	20	SPRING	S.S.	-----
10	EXHAUST VALVE HEAD	S.S.	ASTM A 276	21	PLUG 1/2" BSPT (not shown)	C.S.	ASTM A 105
11	SEAT GASKET	Cu	-----	22	DISC CHECK VALVE	S.S.	S.S.

DIMENSIONAL DETAILS:



SR. NO	DESCRIPTION	MATERIAL	STANDARD
1	PRESSURE POWERED PUMP	REF. ATT.FIG	----
2	FRAME ASSLY	M.S.	IS 2062 IS 1239 CLASS C
3	CONDENSATE INLET LINE	M.S.	IS 1239 CLASS C
4	STEAM INLET LINE TO PUMP 15 NB	M.S.	IS 1239 CLASS C
5	OVERFLOW LINE 40 NB	M.S.	IS 1239 CLASS C
6	RECEIVER SHELL ASSEMBLY	M.S.	IS 1239 CLASS C
7	EXHAUST LINE 25 NB	M.S.	IS 1239 CLASS C
8	PRESSURE GAUGE CONNECTING PIPE	S.S.304	ASTM A 213
9	NAME PLATE ASSEMBLY	S.S.304	ASTM A 240
10	RECIEVER SUPPORT	M.S.	IS 1239 CLASS C

Sr.No.	DESCRIPTION	MA TERIAL	STANDARD
11	PRESSURE GAUGE	----	----
12	DISC CHECK VALVE (100NB)	S.S.	----
13	FIG 32 STRAINER	C.I.	IS 210 FG 260
14	BUTTERFLY VALVE	C.I.;S.S.	----
15	CONDENSATE RETURN LINE	M.S.	IS 1239 CLASS C
16	FT 10P TRAP	C.I.;S.S.	IS 210 FG 260
17	DRAIN 15 NB	C.S	IS 1239 CLASS C
18	DISC CHECK VALVE (80 NB)	S.S.	----
19	FIG 12 STRAINER	C.I.	IS 210 FG 260
20	PISTON VALVE 15 NB	C.S.;S	ASTM A 105

Table 1 Capacity chart:

When installed with recommended filling head above top of pump :- 340 mm For liquid specific gravity (0.9 to 1)

Sr.No.	OPERATING INLET PRESSURE (bar g)	BACK PRESSURE (bar g)	DISCHARGE CAPACITY (kg/hr)
1	8.7	1.0	9225
2	8.7	2.8	8655
3	8.7	4.2	8325
4	7.0	1.0	9145
5	7.0	2.8	8500
6	7.0	4.2	8090
7	5.25	1.0	9150
8	5.25	2.8	8000
9	5.25	4.2	6950
10	3.5	0.7	9000
11	3.5	1.75	8000
12	3.5	2.8	6700
13	1.75	0.35	8500
14	1.75	0.7	7850
15	1.75	1.0	7100
16	0.7	0.14	7100
17	0.7	0.35	5700
18	0.35	0.14	5050

For the same example if air is considered as motive fluid then

From Table 2 capacity factor chart :

Pump capacity using compressed air
 (% BP / MP = 2.4 / 7)
 = 34%

From table no.2, the approximate multiplying factor comes 1.08
 Capacity = 1.08 x 8500 = 9180.0 kg/hr

How to specify :

Example: 80NB SPIRAX MARSHALL
 HIGH CAPACITY PRESSURE POWERED PUMP
 PACKAGE UNIT (PPPU-HC)

Available Spares :

- Set of Internals
- Gasket Kit (pkt.of 5)
- Inlet Valve Kit
- Exhaust Valve Kit
- Float Assly.
- Spring Assly (pkt of 2)

Table2 Capacity Multiplying factor Chart:

Capacity multiplying Factors for motive gas supplies (other than steam)

% BACK PRESSURE VS. MOTIVE PRESSURE (BP / MP) :-

10%	20%	30%	40%	50%	60%	70%	80%	90%
1.04	1.06	1.08	1.10	1.12	1.15	1.18	1.23	1.28

Example :

Condensate Load..... 8500 kg/hr
 Vertical Lift from Pump to return piping 4 m
 Pressure in return Piping (piping friction negligible).. 2 bar
 Filling Head on Pump..... 0.340 m

Solution :

- Calculate !h", the total lift or back pressure against which the condensate must be pumped.
 = (4 m x 0.1) + 2
 = 2.4 bar
- From table no. 1, with 7.0bar operating inlet pressure and 2.8 bar back pressure goes to show, this pump would give 8500kg/hr capacity for given conditions.

How to Order Spares:

Always order spares by using the description given in the column headed !Available Spares " of User Manual for this product.