E: sales@flowfitonline.com T: +44 (0) 1584 876033
MANUFACTURERS AND SUPPLIERS OF HYDRAULIC COMPONENTS

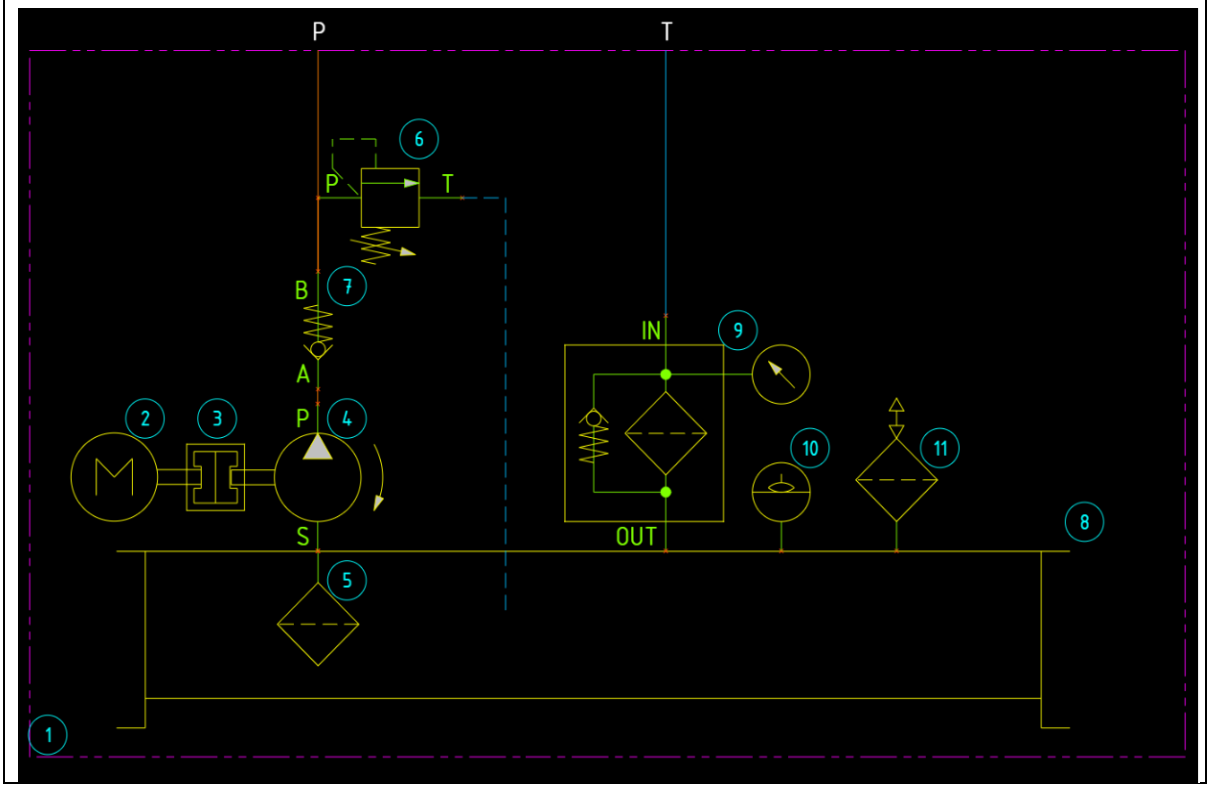
-AC P&T Circuit Industrial Power Unit

-Installation and Maintenance Manual





Circuit Diagram



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-Installation and maintenance details

This document is intended to advise on the installation and maintenance of Flowfit's AC industrial powerunits, this information is not intended to be application specific. Please contact Flowfit for any further information.

⚠ Warning

Only experienced competent/qualified personnel should work on the installation of this power unit.

Hydraulic Fluid

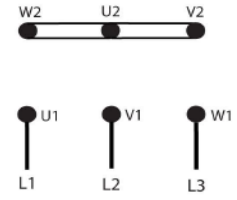
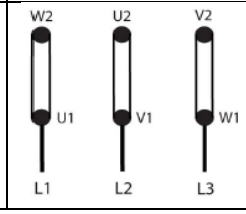
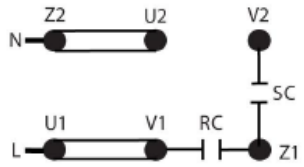
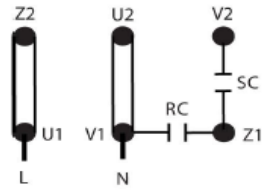
A high-quality mineral hydraulic oil is to be used in the system, always fill from a filtered clean source (ISO4406 18/16/13), ISO viscosity grade VG 32 or 46 is recommended. Leave a 25mm air gap at the top of the oil tank, larger gaps may be needed if the unit is subjected to tilting. Do not use water-based fluids, Phosphate Esters or oils such as Skydrol.

Electrical connection

Always use the wiring instructions under the lid of the terminal box on the electric motor, the fan of the electric motor must run in the direction of the arrow on the fan cowl.

Wiring Diagrams below are for reference only, always refer to the terminal box lid. Please note the rotation below refers to the direction of the motor shaft not the fan.

- ⚠ **e.g., Clockwise wiring = anti-clockwise fan direction.**

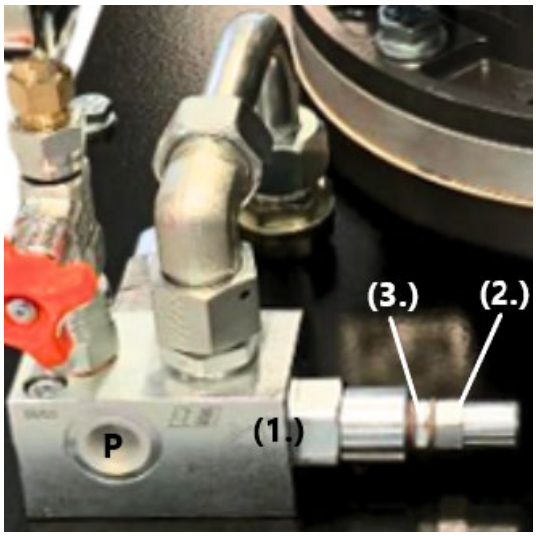
THREE PHASE MOTORS		SINGLE PHASE CAP START/CAP RUN MOTORS	
STAR CONNECTION	DELTA CONNECTION	CLOCKWISE	ANTI-CLOCKWISE
			

- ⚠ **Running the power unit in the wrong direction with oil in the tank may result in the failure of the pump shaft seal, it may be necessary to run the unit "dry" without oil in the tank to check the fan rotation on the electric motor matches the direction of the arrow, this must only be performed for a maximum of 2 seconds.**
- ⚠ **To reverse the rotation for three phase motors, swap any two of L1, L2 & L3.**
- ⚠ **Generally, for UK 3PH 400V 50Hz use Star connection for 0.18Kw to 3Kw and Delta connection for sizes 4KW and above.**

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Pressure setting

If the relief valve has been factory set then adjustment is not necessary, however if the main relief setting needs to be changed, please use the steps below:-



The picture shows the main pressure relief valve (1.) of the hydraulic powerunit. To adjust the relief valve pressure, remove the cap nut (2.); loosen locknut (3); the relief valve screw can now be adjusted. Using a suitable Allen key set the desired pressure turning the adjuster in a clockwise rotation (+) to increase the maximum pressure and anti-clockwise rotation (-) to decrease the maximum pressure. The pressure will be shown on the pressure gauge, once the desired pressure has been achieved re-tighten locknut (3.) and refit the cap nut (2.).

⚠ **Care should be taken not to raise the relief valve pressure above the intermittent pressure (P2) rating of the pump and should be set only for system requirements and not the maximum. Details below:-**

Displacement	Max Pressure			Max Speed	Min Speed	Dimensions	
						M	L
cm3 /rev	P1	P2	P3	r/min	r/min	mm	mm
0.8	250	270	290	6000	1000	73.5	32.8
1.1	250	270	290	6000	1000	74	33
1.3	250	270	290	6000	1000	75	33.5
1.6	250	270	290	6000	1000	76	34
1.8	250	270	290	6000	1000	77	34.5
2.1	250	270	290	6000	1000	78	35
2.7	250	270	290	6000	800	80	36
3.2	250	270	290	5000	800	82	37
3.7	250	270	290	4500	800	84	38
4.2	250	270	290	4000	800	86	39
4.8	230	250	270	3500	600	88	40
5.8	230	250	270	3000	600	92	42
7	210	230	250	2500	600	96	44
8	180	200	230	2100	600	100	46
9.8	150	170	190	2100	600	104	48

Displacement	Max Pressure			Max Speed	Min Speed	Dimensions	
						M	L
cm3 /rev	P1	P2	P3	r/min	r/min	mm	mm
4	270	285	300	4000	600	92.7	44.4
6	270	285	300	4000	600	96	46
8	270	285	300	3500	500	99.3	47.7
10	270	285	300	3000	500	102.6	49.3
12	270	285	300	3000	500	105.9	51
14	250	265	280	4000	500	109.3	52.7
16	250	265	280	4000	500	112.7	54.4
18	250	265	280	3600	400	116	56
20	220	235	250	3200	400	119.3	57.7
23	220	235	250	3000	400	122.6	59.3
25	200	215	230	3000	400	127.6	61.8
28	180	190	200	2500	400	132.6	64.3
30	160	170	180	2500	400	135.9	66

Displacement	Max Pressure			Max Speed	Min Speed	Dimensions		
						M	L	B
cm3 /rev	P1	P2	P3	r/min	r/min	mm	mm	mm
25	260	290	300	3000	500	123	59.3	118
28	260	290	300	3000	500	126	60.8	118
30	250	280	300	3000	500	129	62	118
32	250	280	300	300	500	131	63.3	118
36	250	280	300	2750	400	135	65.3	118
38	250	280	300	2750	400	137	66.3	118
40	250	280	300	2750	400	139	67.3	118
44	250	280	300	2750	400	144	69.5	118
50	220	240	260	3000	500	156	77	146
52	220	240	260	3000	500	158	78	146
55	220	240	260	2750	400	160	79	146
63	200	230	250	2750	400	168	83	146
71	180	200	220	2500	400	175	86	146
80	180	200	220	2500	400	189	96	146
90	180	200	220	2500	400	195	99	146
100	160	180	200	2500	400	201	102	146

Hydraulic Connections

Use only hoses and tube that have been pellet cleaned or nitrogen flushed, all fittings and hose ends must be tightened to the manufacturers torque setting.

- ⚠ **Reusable, cast iron, brass, aluminium or any low-pressure fittings must not be used in the installation.**
- ⚠ **Ensure that all hose and fittings are selected for the required pressure and flow rate and that hoses are not twisted, or the bend radius exceeded.**

Installation checks

- ⚠ **Ensure that the orientation of the unit is correct for the tank breather position and specification. e.g. Vertical or horizontal mount.**
- ⚠ **The power unit should be mounted adequately using the mountings available with the tank supported if necessary.**
- ⚠ **Adequate space should be considered for easy access to the drain plug, breather and all adjustable valves and electrics.**
- ⚠ **The IP rating of the electric motor should be checked for the suitability of the environment it will be located in.**
- ⚠ **Avoid locating the unit in areas of high moisture, dust or extreme temperatures.**
- ⚠ **Ensure that all system actuators meet ISO4406 18/16/13 cleanliness standards.**
- ⚠ **The unit should be self-priming, if not; remove the pressure line and run this to tank; start and stop the motor 4/5 times until a continuous flow of oil can be seen.**
- ⚠ **When working with hydraulic fluids, strictly observe the safety instructions provided by the lubricant manufacturer.**
- ⚠ **Operating the unit above the permissible maximum pressure can cause components to burst and hydraulic fluid to escape under high pressure. If setting the relief, it is advisable to start the unit with the relief setting at its minimum and adjust until the desired setting is reached.**

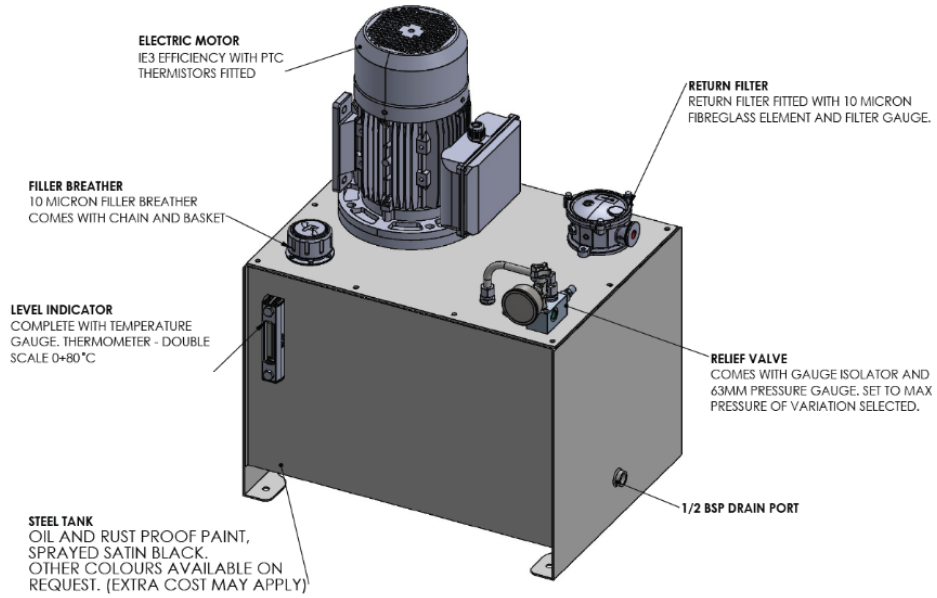
Maintenance

The following instructions are not exhaustive or specific to any particular application or installation and are intended for an appropriately qualified and experienced technician:-

- ⚠ **Ensure that before commencing any service work that equipment is mechanically and electrically isolated and that system pressure has been exhausted.**
- ⚠ **The general condition of the oil tank and all pipework should be inspected for leaks and damage.**
- ⚠ **Check that all electrical connections and fuses are in a good condition and are suitable for the application.**
- ⚠ **Inspect the tank oil level with all actuators in their closed position.**

To be inspected regularly

- ⚠ **Change the oil every 12 months with suitable new, clean filtered oil of at least 12 micron.**
- ⚠ **If changing the oil, it may be prudent to remove the tank lid and check the inside and the suction strainer for severe contamination. Recycle used oil responsibly.**
- ⚠ **Change the return line filter element every 6 months or if the indicator is showing red.**
- ⚠ **Check the filler breather for any airborne contamination and replace if necessary.**
- ⚠ **Observe if the general environment has changed from the last inspection for moisture, dust or temperature changes.**



For anything outside of the scope of this document please contact Flowfit or a qualified hydraulic engineer.

This document is for guidance only and is covered by Harrier Fluid Power Ltd T/A Flowfit's "Conditions of Sale" and "Terms of Warranty". This is provided in good faith and without liability and does not form part of any contract.

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