



TECHNICAL BROCHURE

FOR CP8201-0653

OIL FILTRATION UNIT

(110V 50Hz Single Phase Supply)



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# **1. INTRODUCTION**

The Filtration unit CP8201 is designed to clean a wide range fuel tanks and storage units.

The unique Chainings 203mm-filter medium is fitted to the unit, which will remove water, acids, ethylene glycol and all other aqueous contaminants together with solids above 1 micron.

**Note:**

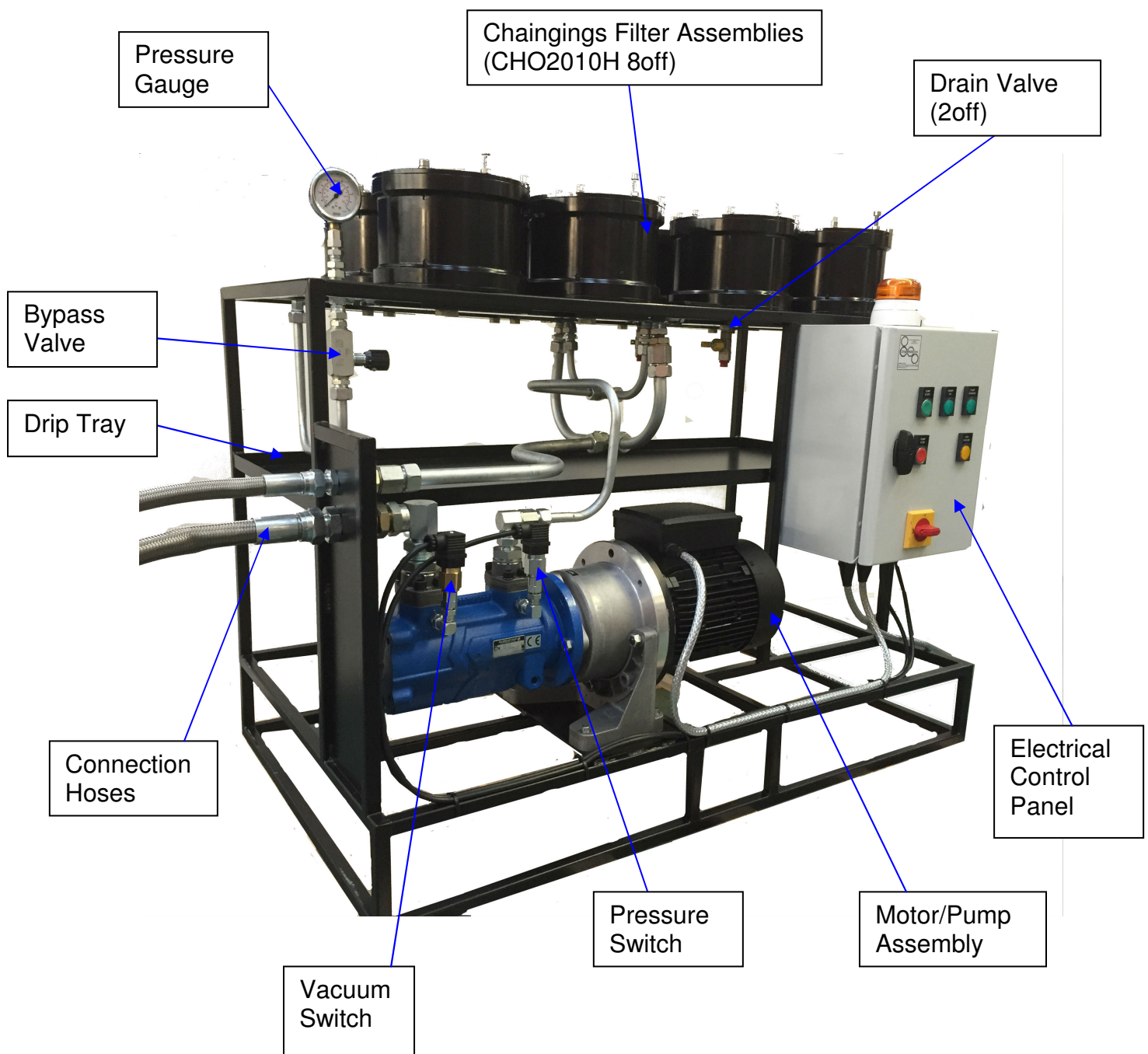
It is advisable to contact the manufacturer before cleaning fluids where the characteristics are not known.

## **2. FILTRATION UNIT FEATURES**

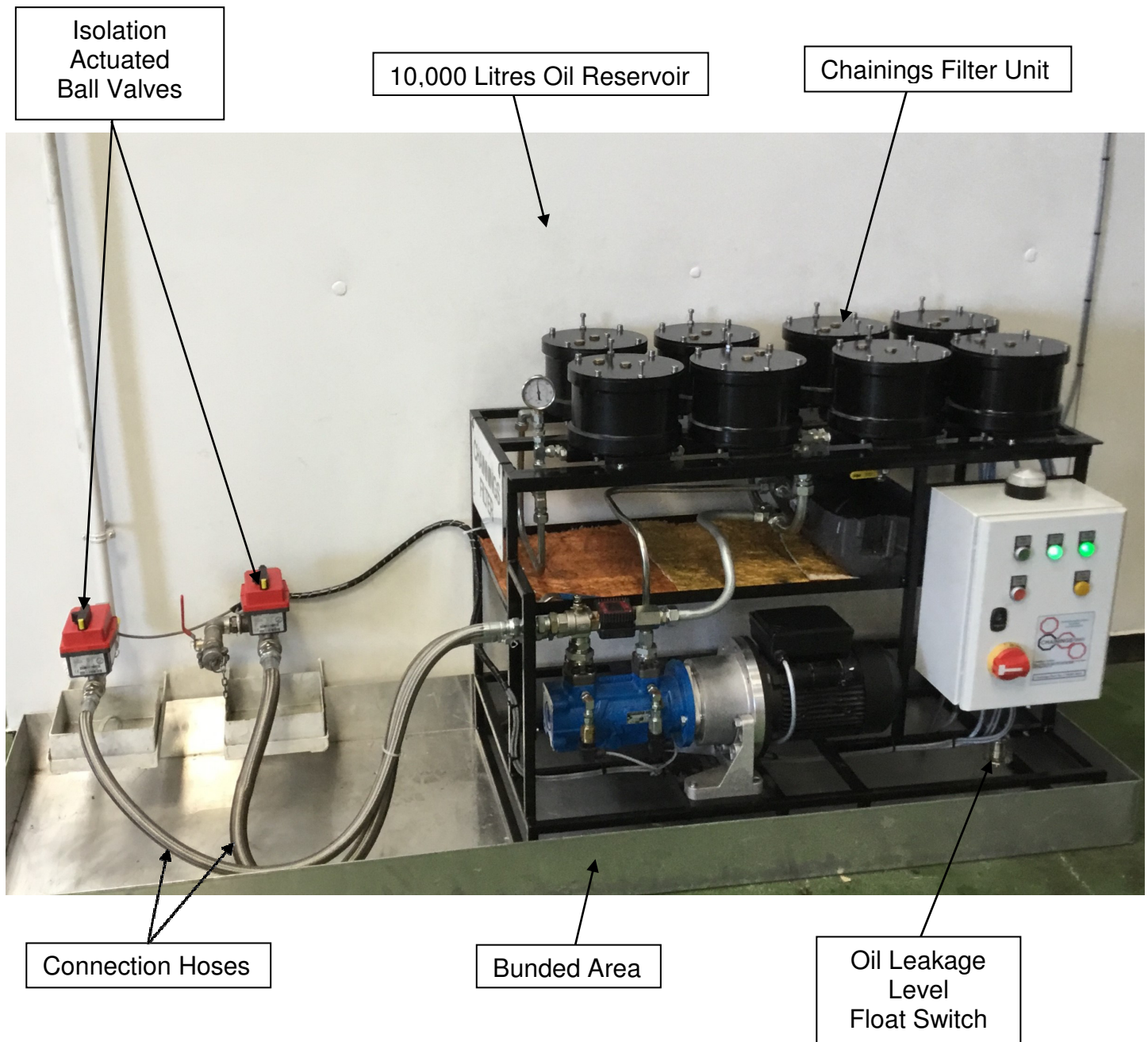
- 2.1 Electrical Panel; This houses all the electrical controls to & from the unit. All the components are secured in a weatherproof cabinet built to IP55 standard. The panel is provided with safety interlock, so that access cannot be gained unless electrically isolated.  
The following lamps & controls are mounted on the panel door;  
a) Pump, Start Button (Green)  
b) Pump Stop Button (Red)  
c) Power On Indicator (Green Lamp)  
d) Pump Running Indicator (Green Lamp)  
g) High vacuum indicator (Amber lamp)  
Mounted on top of the cabinet is a flashing beacon to indicate filters are blocked
- 2.2 Filter Assembly; Part of the unique range of element types & sizes, the Chainings filter medium is housed in 8off corrosion resistant housings & sealed to provide the maximum efficiency for contamination control. Designed specifically for ease of filter element replacement.
- 2.3 Pump & Motor; Consisting of a 110v 1.5Kw motor, close coupled to a Triple Screw pump. This assembly has been selected to produce laminar circulation of oil with the minimum revolutions of the pump's rotating parts, to aid the efficiency of the filters in removal of oil contamination. The pump is fitted with a mechanical relief valve set to discharge oil back to the pump's suction feed should the generated pressure exceed 9 Bar.
- 2.4 Pressure Gauge; A 0-25 Bar pressure gauge located in the filter circuit to provide a visual indication of the pressure generated during the cleaning cycle.
- 2.5 Pressure Switch; Located in the filter circuit & factory set to 12 Bar. Its function is to protect the filters from excess pressure due to filter element blockage. Should the pressure rise to the defined setting, the pressure switch will latch an electrical signal, automatically turning off the unit & activating the Amber Beacon.
- 2.6 Vacuum Switch; Located in pump suction side and factory set to ensure that the unit does not operate if the connection hose from the system supply is either restricted or not properly connected. Should the vacuum increase above the set value, the switch will latch an electrical signal, automatically turning off the unit & illuminating the "High Vacuum" Lamp
- 2.7 Filter Bypass Valve; Located between filter pressure and filter return circuit. Factory set in the normally closed position. It's function is to relieve undue pressure in the filters if the unit has not been used for a period of time and the filters have not been replaced upon restart. Once the pressure reduces as a regular and constant flow of oil passes through the filter, then the Bypass valve may be closed again.

## 2. FILTRATION UNIT FEATURES Cont.

- 2.8 Leak Isolation Circuit; This optional circuit has been fitted with the filter unit been placed in a bunded area. An electrical oil float switch is mounted on the bottom of the filter unit framework which will sense any rise of oil that may collect in the bund. If the float switch is activated, the electrical supply to the pump/motor will be isolated and Actuated On/Off ball valves located in the oil connection lines will operate to isolate the filter unit from the oil storage reservoir.



## **2. FILTRATION UNIT FEATURES Cont.**



**View showing position of Chainings Filter Unit in Bund area with Leak isolation circuit**



### **3. INSTALLATION & OPERATION OF THE UNIT**

#### **3.1 Installation of Unit**

The electrical supply to the unit should be connected to a suitable Single-phase 110V 50Hz supply. (Min. current rating 25Amps, with type 'B' overload protection).

**Conductor colour codes are as follows;**

|                     |          |                |            |
|---------------------|----------|----------------|------------|
| <b>Brown</b>        | <b>=</b> | <b>Live</b>    | <b>(L)</b> |
| <b>Blue</b>         | <b>=</b> | <b>Neutral</b> | <b>(N)</b> |
| <b>Green/Yellow</b> | <b>=</b> | <b>Earth</b>   | <b>(E)</b> |

**Notes:**

- 1. This unit has been tested with transformer oil to BS148 IEC296. During initial operation, it is advisable to flush the system before using on intended application.**
- 2. It is important to ensure that the supply to & the delivery from the unit is free from restrictions otherwise malfunction may occur.**
- 3. Before operation of the unit, ensure that filter elements are fitted into the Chainings Filter Housings.**
- 4. Ensure the Filter Drain Stop Valve and Filter Bypass valve are in the closed position.**

Connect the supply hose from a suitable port on the bottom of the oil reservoir to the Inlet Port of the Filtration Unit. Ensure that there are no restrictions on the connection port and any Isolating valves are in the Open position.

Do not connect the other hose until the Air Bleed sequence has been completed.

The Leak isolation circuit is fitted by installing the electric actuated On/Off Ball valves direct to the access points on the oil storage reservoir. Connect the supply hose to the other end of the actuated Ball valve that is fitted to the port on the bottom of the reservoir. The feed hose can be connected to the other actuated Ball valve once the air bleed procedure has been completed. Ensure that all corresponding electrical connection leads are securely assembled onto each actuated Ball valve.

#### **3.2 Air Bleed Procedure.**

- 1. With the electrical supply connected, turn the Mains Isolation Switch to the "On" Position. Power On Lamp will be illuminated.**
- 2. Turn the "Filter Drain" Stop Valves to the On position. Place a suitable receptacle under the Stop valves to collect discharged oil.**
- 3. Press Green "Pump Start" Button.**
- 4. Observe the oil discharging through the "Filter Drain" Stop Valves.**
- 5. When a constant flow of oil with no air entrapment is observed, press the Red "Pump Stop" Button and immediately turn the "Filter Drain" Stop Valves to the Closed Position.**

Connect the feed hose from the Outlet Port of the Filtration Unit to a suitable port on the top of the oil reservoir. Ensure that the port is free from restrictions and is below the oil level. (To prevent air entrapment)

### **3. INSTALLATION & OPERATION OF THE UNIT Cont.**

#### **3.3 Operation of Unit**

1. Once fully connected, the unit may be switched on by pressing the Green “Pump Start” Button and oil from the reservoir will be circulated through the filtration unit Chainings filters before returning back to the reservoir. Ensure that the filter Bypass valve is fully closed.
2. Optimum pressure generated by the filtration unit should be between 6 to 9 Bar.
3. Once Running the unit will continue to circulate oil until;
  - a) The Red “Pump Stop” button is pressed. This will stop electrical supply to the pump’s motor
  - b) The “High Vacuum” Lamp is on indicating that the supply to the filtration unit is not connected or restricted. A preset switch will trip the pump running circuit to stop electrical supply to the pump’s motor.
  - c) The Yellow beacon starts flashing indicating that the filter elements have become blocked. In this condition, the pressure in the unit has risen to a preset value of 9 Bar. A preset switch will trip the pump running circuit to stop electrical supply to the pump’s motor.
4. If the Yellow Beacon flashes, the filtration unit should be electrically isolated by turning the Mains Isolator to the Off position and the filter elements replaced (See Filter Change Procedure)
5. Once the filter elements have been replaced, the Air Bleed Procedure will need to be repeated before normal operation commences.

**To cancel Flashing Beacon, the Mains Isolator must be turned to the ‘Off’ position then back ‘On’ again, to recommence operation of the unit.**

**To cancel “High Vacuum” Lamp, ensure that the supply to the filtration unit is free from restrictions and the connection hose is correctly coupled to the system being filtered. Ensure that any stop valves in the system supply to the filtration unit are in the “Open” position. To restart the filtration unit, the Mains Isolator must be turned to the ‘Off’ position then back to ‘On’ position again before pressing the Green start button.**
6. This filtration unit is fitted with the Leak isolation circuit, whereby the unit will operate as normal until any volume of oil leakage collecting in the bund is sufficiently high enough to operate the mechanism of the float switch. Once activated, the unit will cease operation and both Actuated Ball valves will move to the closed position to stop any flow of oil to and from the unit. The Yellow Beacon will also start flashing. To recommence operation of the filtration unit, the oil must be removed from the bund, any oil leakage repaired and the Mains Isolator turned “Off” and “On” as described in 5.

**NOTE: Once Mains Isolation is turned back to the “ON” position, wait until the Actuated Ball valves have fully returned to the open position before pressing the Green “Pump Start” button.**



## **4. SPECIFICATIONS**

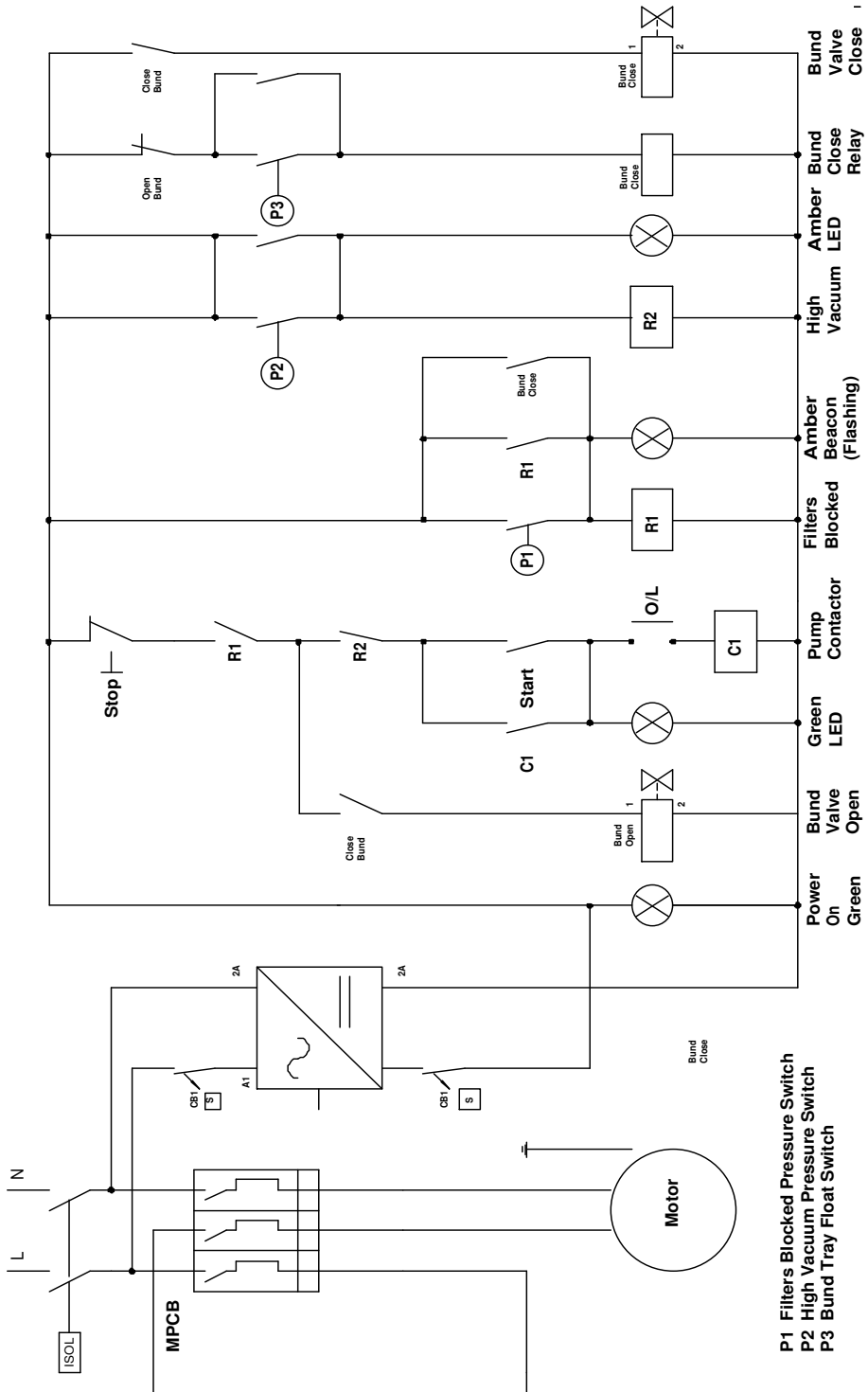
|     |                                    |  |
|-----|------------------------------------|--|
| 1.  | TYPE OF FILTRATION UNIT            | CP8201   |
| 2.  | TYPE OF FILTER HOUSING             | CHO2010H                                       |
| 3.  | SIZE OF FILTER ELEMENT             | OCH2010 *                                      |
| 5.  | POWER SUPPLY TO CABINET            | 110vac 50Hz 1Ph                                |
| 6.  | CONTROL SUPPLY                     | 24vAc (Except supply to motor)                 |
| 7.  | PUMP/MOTOR SPEC.                   | Motor; 110V18A 1.5Kw<br>Pump:AFT40R54U19US-197 |
| 8.  | FREQUENCY SETTING                  | 50Hz   |
| 9.  | NOMINAL FLOW RATE                  | 30.0Lpm  |
| 10. | INLET PORT SIZE                    | 1" BSP   |
| 11. | OUTLET PORT SIZE                   | ¾" BSP   |
| 12. | WEIGHT                             | 300Kgs (Approx)                                |
| 13. | SIZE                               | 112-65-100cm                                   |
| 14. | MIN & MAX OPERATING TEMP (AMBIENT) | 10 – 50 Deg C                                  |
| 15. | MIN & MAX OPERATING TEMP           | 10 – 80 Deg C                                  |
| 16. | MAXIMUM PRESSURE TO THE UNIT       | 0.5 Bar  |
| 17. | MAXIMUM SUCTION LIFT               | 5 Metres                                       |
| 18. | MIN OPERATING PRESSURE             | 2Bar   |
| 19. | MAX OPERATING PRESSURE             | Press. Switch setting 12 Bar                   |

- **For re-ordering Filter Elements quote 8off OCH2010.**

**NOTE; This product is fully tested to specification before it leaves the factory. Should any queries or problems arise, then the manufacturer should be contacted immediately. Adjustments made to the product without the prior knowledge of the manufacturer may invalidate any warranty claims.**

## 5. DRAWINGS

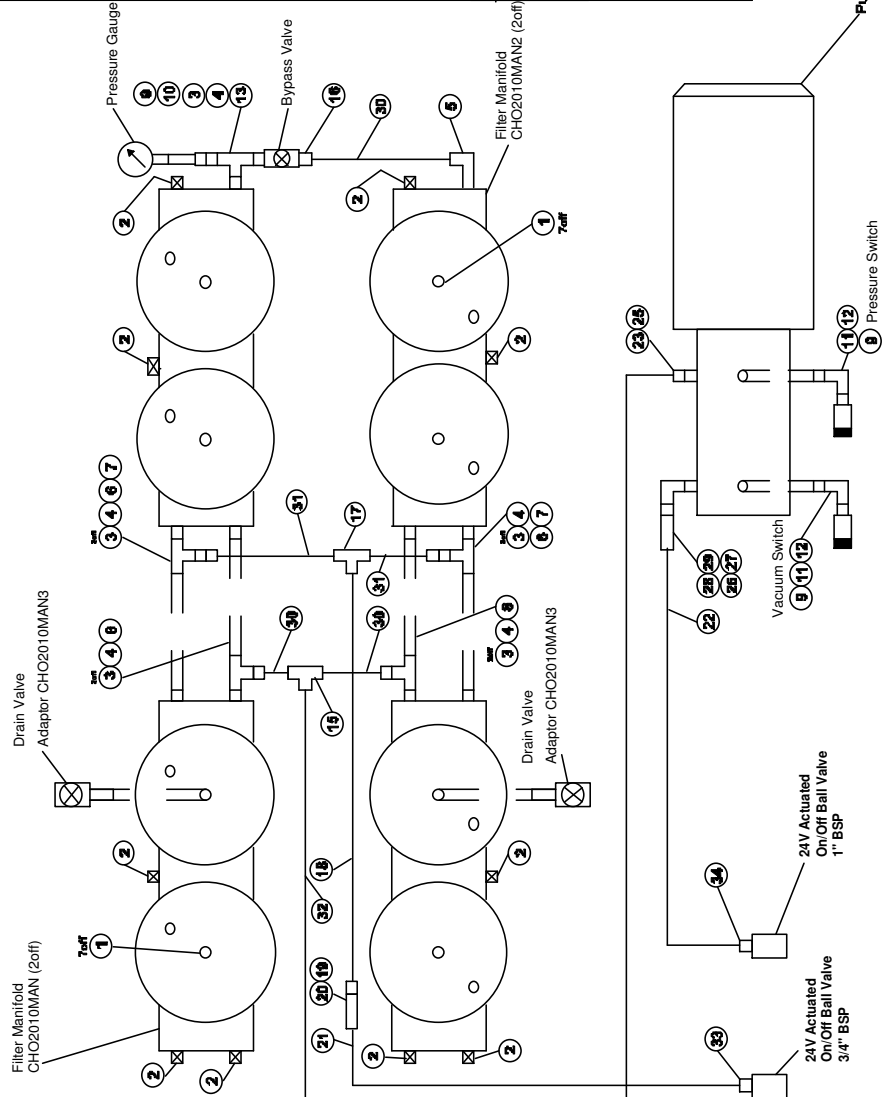
## ELECTRICAL CIRCUIT DIAGRAM CP8201-0653-01



# 5 DRAWINGS Cont.

## Piping Diagram CP8201-0653-03

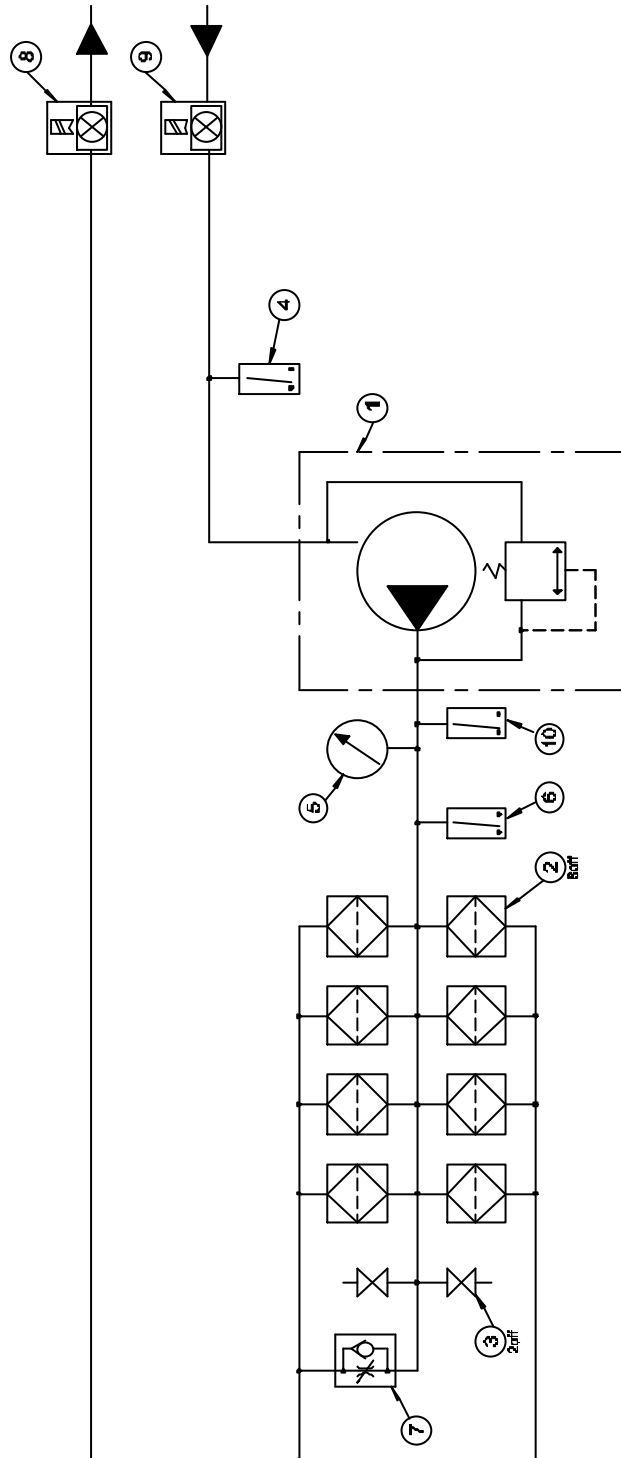
| Item | Part No          | Description                      | Qty |
|------|------------------|----------------------------------|-----|
| 1    | CRX04BMG         | 1/4 Special Banjo Bolt           | 14  |
| 2    | BA06BM           | 3/8 Blank Plug                   | 19  |
| 3    | BA06BMT06BM      | 3/8BSPT-3/8BSP M-M Adptr         | 9   |
| 4    | BA06BF06BF06BF   | 3/8 Tee Fem                      | 6   |
| 5    | WE15LR 3/8       | 15.90M Taper 3/8                 | 2   |
| 6    | BA06BM08BF       | 3/8M - 1/2Fem BSP Adptr          | 1   |
| 7    | GE08LR22         | 1/2 - 22 Pipe Adptr              | 2   |
| 8    | GE08LR15         | 3/8 - 15 Pipe Adptr              | 2   |
| 9    | BA04BM04BF G     | 1/4 BSP Gauge Adptr              | 3   |
| 10   | BA06BM04BF       | 3/8M - 1/4Fem BSP Adptr          | 1   |
| 11   | BA04BMT04BM      | 1/4BSPT-1/4BSP M-M Adptr         | 2   |
| 12   | BA04BF90K04BF    | 1/4 Fem-Fem Elbow 90 Compact     | 2   |
| 13   | BA06BM08BM       | 3/8-1/2 M-M Adptr                | 1   |
| 14   | BA08BF08BF/Fixed | 1/2-1/2 Ext Fem-Fem Adptr Fixed  | 2   |
| 15   | T15L             | 15 Pipe Tee                      | 2   |
| 16   | GE08LR15         | 1/2 - 15 Pipe Adptr              | 1   |
| 17   | T22L             | 22 Pipe Tee                      | 1   |
| 18   | -                | 22 Pipe 200cms Lg                | 1   |
| 19   | BA12BM12BM BH    | 3/4 Bulkhead with Locknut        | 1   |
| 20   | GA12LR22         | 3/4" Fem - 22 Pipe Adptr         | 1   |
| 21   | -                | Hose PTFE110 3/4 Fem-Fem 1.8M Lg | 1   |
| 22   | -                | Hose PTFE110 1" Fem-Fem 1.8M Lg  | 1   |
| 23   | BA08BM16BM       | 1/2-1 M-M Adptr                  | 1   |
| 24   | -                | -                                | -   |
| 25   | GA08LR15         | 1/2"Fem - 15 Pipe Adptr          | 1   |
| 26   | BA20BM16BM       | 1 - 1.25 M-M Adptr               | 1   |
| 27   | BA16BF90K16BF    | 1" Fem-Fem Elbow 90 Compact      | 1   |
| 28   | BA16BM16BF       | 1" M-Fem Adptr                   | 1   |
| 29   | BA16BM16BM BH    | 1" Bulkhead with Locknut         | 1   |
| 30   | -                | 15 Pipe 20cms Lg                 | 3   |
| 31   | -                | 22 Pipe 20cms Lg                 | 2   |
| 32   | -                | 22 Pipe 40cms Lg                 | 1   |
| 33   | BA12BM12BM       | 3/4" M-M Adptr                   | 1   |
| 34   | BA16BM16BM       | 1" M-M Adptr                     | 1   |



## 5. DRAWINGS Cont.

### HYDRAULIC CIRCUIT DIAGRAM CP8201-0653-02

| Ref | Part No.          | Description              | Qty |
|-----|-------------------|--------------------------|-----|
| 1   | AF40R54U19US-W197 | Pump/Motor Assy          | 1   |
| 2   | CHO2010H          | Chainings Filter Assy    | 8   |
| 3   | BKH-DN10-G3/8     | Filler Drain Stop Valve  | 2   |
| 4   | 3821229           | Vacuum Switch            | 1   |
| 5   | MGR63G10          | Press. Gauge 0-10 Bar    | 1   |
| 6   | 4920H22           | Pressure Switch          | 1   |
| 7   | NDRV-DN10-G3/8    | Filler Bypass Valve      | 1   |
| 8   | L10 6400 05       | Actuated Ball Valve 3/4" | 1   |
| 9   | L10 6400 06       | Actuated Ball Valve 1"   | 1   |
| 10  | 1242555           | Float Switch             | 1   |



## **6. FILTER CHANGE PROCEDURE**

### **Removal of used elements:**

1. Ensure the filtration unit is electrically isolated and the connection hoses to the filtration unit isolated.
2. Remove the blanking plugs from the end of the Filter Drain Stop Valve and turn handle to the Open position. Gradually loosen the Bleed plug fitted on each Filter Lid, to decay any residual pressure.

**WARNING: Care should be taken to avoid the risk of oil contacting the operator, in case of undue pressure being released.**

Use a suitable container to collect drained oil from under each Drain valve.

3. Loosen & remove the M8 clamping screws, spring washers & plain washers, securing the lid to the filter housing.
4. Unlock the nuts fitted to the underside of the two M8 bolts located on the Filter Lid & screw the bolts downward to assist removal of the lid.
5. Once the Filter Lid has been removed, pull the Filter Element upwards & away from the Filter Housing.
6. Dispose of the Filter Element in accordance with any legislative procedures that may be applicable.

### **Installation of new element:**

1. Ensure that the Filter Housing is clean & free from contaminates. Ensure that the 'O' Ring on the Centre Tube is correctly positioned & not damaged.
2. Install the replacement Filter Elements & ensure that it is seated firmly at the bottom of the Filter Assembly.
3. Ensure that the 'O' Ring on the Filter Lid is correctly fitted & Not damaged.
4. Apply a film of clean oil around the 'O' Ring on the Filter Lid & ensure that the ends of the two bolts for extraction purposes, are not protruding through the bottom of the Filter Lid.
5. Line up the holes in the Filter Lid with the tappings in the Filter Housing & press down to locate the lid.
6. Replace the clamping screws, spring washers & plain washers & Torque tighten each screw in a diagonal fashion, to 20Nm.
7. Hand tighten the two bolts on the Filter Lid & lock to the Lid with the nuts fitted to the underside of each bolt. **Note; The Filter Element has been designed to compress as the lid is being tightened down.**
8. Tighten the Bleed plugs into each filter lid. (Note: Maximum Torque 20Nm)
9. Turn the handles of the Filter Drain Valves to the closed position and refit the blanking plug to the end of the valve.
10. Refer to Section 3. To recommence operation of the unit.

**WARNING: ALWAYS USE GENUINE CHAININGS FILTER ELEMENTS.**