

# TECHNICAL BROCHURE

## FOR CP4203-0636

### FUEL BULK STORAGE AND FILTRATION UNIT



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## 1. INTRODUCTION

The Fuel Bulk Storage and Filtration unit CP4203 is designed to manage the transfer of diesel between rail traction fuel reservoirs and a bulk storage system with the added facilities of filtration of the diesel fuel during, either the transfer process or the fuel stored in the storage system or the rail traction fuel reservoir.

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.

## 2. FILTRATION SYSTEM FEATURES

### a) Filtration Unit

- i) **Filter Assembly**  
Part of the unique range of element types & sizes, the Chainings filter medium is housed in a 4off corrosion resistant filter housings & sealed to provide the maximum efficiency for contamination control.  
Designed specifically for ease of element replacement.
- ii) **Pump and Motor Assembly**  
Consisting of a 400V 1.5Kw motor, close coupled to a Triple Screw pump. This assembly has been selected to produce laminar circulation of fluid at 50Lpm with the minimum revolutions of the pump's rotating parts, to aid the efficiency of the filters in removal of fluid contamination. The pump is fully protected with a mechanical relief valve set to discharge fluid back to the pump's suction feed should the system's High Pressure electrical switching system fail and undue pressure is generated above 12Bar.
- iii) **Pressure Gauge**  
A 0-25 Bar pressure gauge located in the filter circuit to provide a visual indication of the pressure generated during the transfer and filtering of the fuel.
- iv) **High pressure Pressure Switch**  
Located between the Pump outlet port and the Chainings filter circuit and factory set to 9 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 provide an electrical signal to the Control Cabinet to isolate operation of the system and illuminate the "Filter Blocked" Lamp.
- v) **Low pressure Pressure Switch**  
Located between the Pump outlet port and the Chainings filter circuit and factory set to 1 Bar. It's function is to sense the presence of circulating diesel fuel to ensure that the pump does not suffer from "Dry running".  
Should there be insufficient pressure to activate the switch once the pump has been started, after a set period of time, an electrical signal will be sent to the Control Cabinet to initiate the "Priming Control"  
(Refer to Sequence of operation section)
- vi) **24V DC Electrically Actuated 1.25"BSP "L" Ported Ball Valve**  
Located on the Pump suction line to divert the flow of diesel flow from either the Rail traction fuel reservoir or the Storage tank dependent on the sequence of operation.
- vii) **24V DC Electrically Actuated 3/4"BSP "L" Ported Ball Valve**  
Located on the Filter return line to divert the flow of diesel fuel to either the Rail traction fuel reservoir or the Storage tank dependent on the sequence of operation.
- viii) **Hose Reels**  
Set of fully retractable hose reels with 10 Metre Length of 1.25"BSP Hose for connection to the rail traction fuel reservoir "take-off" point via Snap-On couplings for easier fitting and 3/4"BSP Hose for connection to fuel reservoir supply. End of hose fitted with standard "Flyte" type Bulk Fuel fill coupler.

## **2. FILTRATION SYSTEM FEATURES Cont.**

### b) Storage Reservoir

- i) **Main Vessel**  
Constructed of Stainless Steel inner skin with convex top and bottom surfaces welded to a middle cylindrical section to provide storage capacity of 10CuM (10000Litres). Middle and bottom section fully insulated all round with 10cms insulating material layered between the inner skin and a Stainless Steel outer skin. Access hatch included and welded ports for Storage Reservoir ancillaries as listed below. 8off feet with flanges welded to the underside of the vessel for securing to bund area floor. Features 1.5”BSP Take-off port on end of Stainless steel pipe welded to the very underneath of the reservoir and a ¾”BSP Return port on end of Stainless Steel pipe attached to the outside of the vessel and fixed on to an internal “Down” pipe located inside the reservoir with the end below the normal minimum level of the stored diesel. (i.e. To prevent aeration of diesel being transferred into the reservoir)  
Total dimensions not exceeding 260cms Diameter \* 320cms height.
- ii) **Air Breather Assembly**  
Fitted to top of storage reservoir via 2.5”BSP port. Cellulose filter media fitted to provide Air filtration of 10Micron.
- iii) **Level Gauge Assembly**  
Series of Chainings standard design gauges fitted together to provide a visual means of viewing stored diesel in the reservoir. Port size ¾”BSP
- iv) **Minimum/Maximum Level Float Sensors**  
Ultrasonic Gap sensors fitted to 1”BSP ports and manufactured from Stainless Steel. Supplied with 24V DC to energise the ultrasonic frequency. Changes in the frequency caused by diesel fuel covering the gap on the upper mounted float sensor or the lack of diesel fuel on the gap of the lower float sensor will send a signal to the Control Cabinet to isolate operation of the system and illuminate the High Level Lamp or Low Level Lamp respectively.

## **2. FILTRATION SYSTEM FEATURES Cont.**

### c) Electrical Control Cabinet

Main steel fabricated frame cabinet with weather protection to IP67 fitted inside a painted steel constructed cowl to offer extra protection from outside exposed environments.

Selector Switch, Lamps and Counters mounted on an inner locked door opened only for maintenance purposes.

Outer glazed door fitted to offer protection of the above items and only opened when the Mains Isolation is switched or the "Mode of Operation" Selector switch is operated.

Features include;

- i) Mains Isolation On/Off Switch
- ii) Power On Lamp (Green)
- iii) Pump Running Lamp (Green)
- iv) "Mode of Operation" Selector Switch
  - 0 = (Only selected when reset of Filters blocked alarm)
  - 1 = Transfer fuel from HST to Storage
  - 2 = Purge fuel in HST reservoir
  - 3 = Purge fuel in Storage reservoir
  - 4 = Transfer fuel from Storage to HST
- v) Filters Blocked Alarm Lamp (Yellow)
- vi) High Level Alarm Lamp (Yellow)
- vii) Low Level Alarm Lamp (Yellow)
- viii) Filters Expired Alarm Lamp (Yellow)
- ix) No Fuel Flow Alarm Lamp (Yellow)
- x) HST to Tank Session Count Meter
- xi) HST to Tank Total Count Meter
- xii) Tank to HST Session Count Meter
- xiii) Tank to HST Total Count Meter

Mounted next to the Electrical Control Cabinet is an Auxillary Panel which features the following;

- i) Green System Start Push Button Unit (PBU)
- ii) Red System Stop PBU
- iii) "Filters Blocked" and "No Fuel Flow" Alarm Keyed Reset Switch
- iv) "Filters Expired" Keyed Reset Switch (Bottom position)

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

#### **Installation of System**

##### **Filtration Unit**

The filtration unit should be mounted on the “Wet” side of the Diesel Fuel Storage Bunded wall.

Consideration is to be given to the ergonomic handling of the Connection hoses when unwinding from the Hose reels and the replacement of the elements from the Chainings Filter Housings.

Sufficiently designed mounting brackets and an adjustable support strut are provided to strap the unit to the bunded wall.

To prevent movement, holes in the mounting brackets are provided for using appropriately sized fixings to secure the unit to the Bunded wall.

(See Sht8)

5 Metre long 1.25”BSP and ¾”BSP Hoses are supplied to connect the unit to the Storage reservoir.

##### **Storage Reservoir**

Using the central lift point on top of the tank, position the storage reservoir into the “Wet” side of the Diesel storage Bunded area. (Approximate Weight 1500Kgs empty) Position in a manner where the fuel sight level glass can be viewed from the Control Cabinet position and the “Take-off” and “Return” Stop valves are pointing towards the position of the filtration unit.

Ensure that the feet of the reservoir are sitting on firm ground and use shims, if required, to ensure that the reservoir is placed in level and upright position.

Once positioned, secure the reservoir to the floor by using appropriately sized fixings through the holes provided on each reservoir foot.

##### **Electrical Control Cabinet Assembly**

The Electrical Control Cabinet assembly should be mounted next to the Filtration Unit but on the “Dry” side of the Diesel fuel Bunded wall.

Consideration should be given to the optimum height at which to operate the electrical controls and switches. (See Diagram below)

Once positioned, secure the Cabinet assembly to the Bunded wall by using appropriately sized fixings through the holes provided in the Cabinet framework.

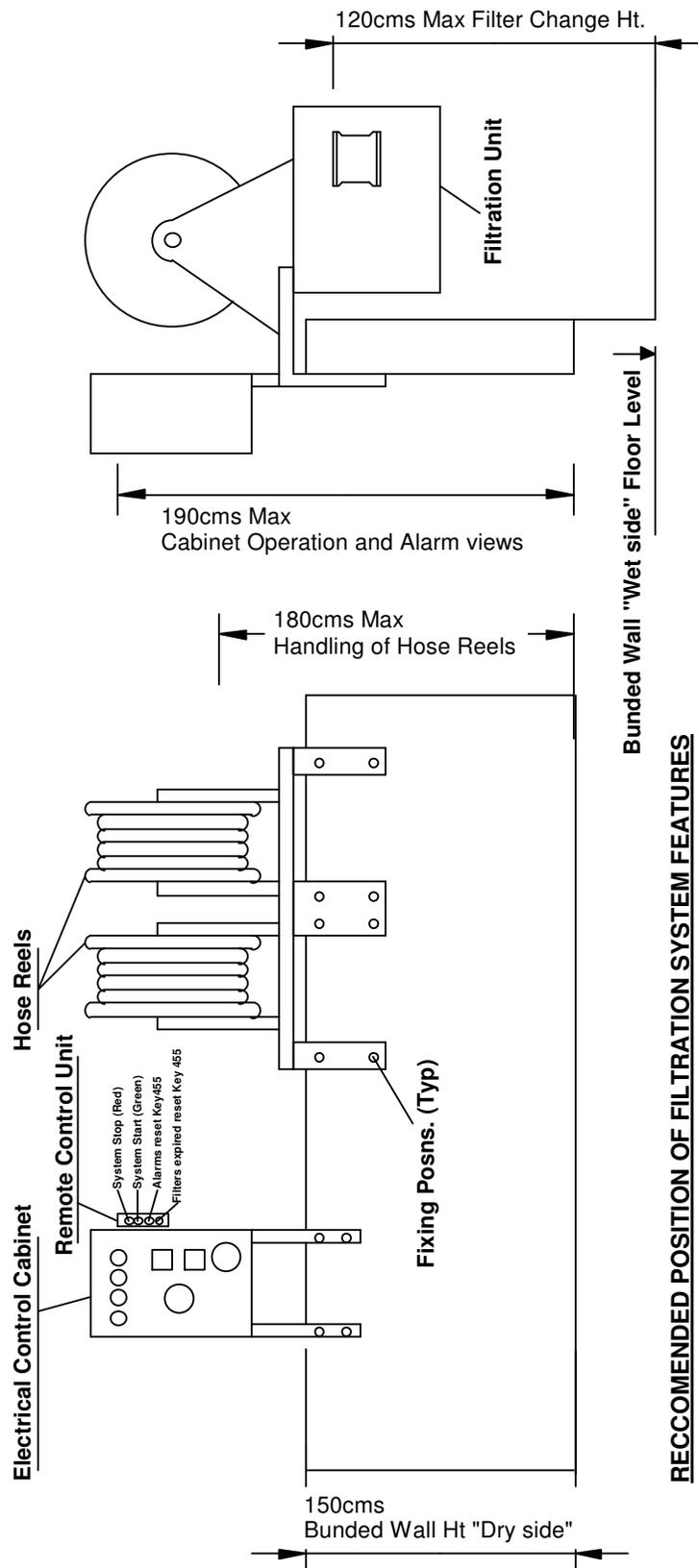
The electrical supply to the unit should be connected to a suitable Three-phase 380-415Vac 50Hz supply.

It is recommended to supply the electrical power via a suitable Isolation Switch located nearby so the Control cabinet can be isolated in the event of removal or maintenance of the whole unit.

Electrical cables leading to and from the Cabinet are to be protected by appropriately sized conduit or, alternatively, strapped together to prevent “snagging”

**Ensure that when the motor is rotating in the correct direction when electrical power is supplied**

### 3. INSTALLATION & OPERATION OF THE SYSTEM Cont.



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

#### **Operation of System**

##### **Notes:**

1. Before operation of the unit, ensure that filter elements are fitted into the Chainings Filter Housings.
2. Ensure the Filter Drain Stop Valves are in the closed position.
3. Ensure the Storage reservoir 1.5”BSP and ¾”BSP Stop Valves (Yellow Handles) are in the OPEN position.
4. For initial installation or if the system has not been used for an extended period of time and the storage reservoir is empty, carry out the following procedure;  
Remove 1.25”BSP hose from pump suction port and fill pump with diesel fuel. Refit 1.25”BSP hose.  
Fully unwind the 1.25”BSP hose from the Hose reel and connect to a rail traction reservoir which is full of diesel fuel.
5. Ensure there is an electrical supply to the Control Cabinet and the “Mains Isolation” is in the ON Position.
6. Select Position 1. On Selector Switch (HST to Storage) and press Green Start Button on Auxillary Panel. This will transfer diesel fuel from the traction reservoir to the storage tank as shown in the Sequence of Operation (See Sht15 ).
7. If the system is isolated because the “No Fuel Flow” Lamp has been illuminated, repeat the removal of the hose as described above and refill the pump. After refitting the hose, reset the “No Fuel Flow Alarm” by the Keyed Alarm reset and repeat operation 4.
8. If necessary, repeat this procedure until there is an uninterrupted operation. (Denoted by pressure being registered on the filter circuit pressure gauge.
9. During this process, the “Low Level” Alarm Lamp will be illuminated until the amount of fuel transferred to the Storage reservoir achieves the normal Minimum Level.  
Once filled to this level, it will not be possible to transfer fuel out of the tank when Position 4. “Transfer fuel from Storage to HST” is selected.

**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.

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

#### **GENERAL METHOD OF OPERATION**

1. HST set arrives at reception siding.
2. Operator fully unwinds 1.25”BSP Hose from system Hosereel and connects to 1<sup>st</sup> HST fuel tank.
3. Operator ensures that the “Drain” Stop valve on the HST fuel tank is fully open.
4. Operator ensures that all Isolating valves on the filter system are in the “Open” position, all the Drain valves are in the “Closed” position and the filters are fully assembled.
5. Operator opens Filter System Control Cabinet door and turns the Electrical Isolation switch to the “On” position and checks that the “Power On” lamp is illuminated.

**Note: As soon as electrical power is supplied, the Electrical cabinet’s Programme system will go through a self-diagnostic procedure which will be displayed by the flashing of all Lamps for a period of not more than 5 seconds. At the end of this procedure, if any of the Lamps remain illuminated then there is a fault with the corresponding circuit.**

**It is recommended to leave the electrical power on during the whole procedure.**

6. Operator turns the Selector switch on the filter control panel to Position 1. (Transfer Fuel from HST to Storage)
7. Operator closes the Filter System Control Cabinet door.
8. Operator pushes “Start” Button and after an initial flash period of 3 Seconds, the “Pump Run” lamp will be stay illuminated. The process of transferring fuel from HST tank to storage reservoir begins. Operator to observe the decreasing fuel level in the HST tank and press the System Stop button when the HST tank is emptied.
  - During this period, the system may automatically cease operating if any of the events described in Block sequence; “Debunkering Fuel from HST occur. (See Sht15 )
  - Estimated time to transfer fuel from fully filled HST tank to Storage reservoir is 1.5Hours. If operator is not present when HST tank is fully emptied , then the system will automatically cease operating and the “No Fuel Flow” Lamp will be illuminated.

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

9. Operator records the amount of Diesel fuel transferred in the HST to Storage Meter (Value given in amount of Litres)
10. Operator closes the HST tank “Drain” Stop valve and removes the 1.25”BSP Hose.
11. Operator connects the 1.25 Hose to the 2<sup>nd</sup> HST fuel tank and sequence numbers 3 to 10 are repeated.
12. When the 2<sup>nd</sup> HST tank has been emptied, operator records the amount of Diesel fuel transferred in the “HST to Storage” meter. Operator then removes and recoils the 1.25”BSP Hose back to the System Hosereel.
13. Operator turns the Selector switch on the filter control panel to Position 2. (Stored Fuel Purge)
14. Operator closes the Filter System Control Cabinet door.
15. Operator pushes “Start” Button and “Pump Run” lamp will be illuminated. The process of filtering the fuel in the storage reservoir begins.
  - During this period, the system may automatically cease operating if any of the events described in Block sequence: Stored Fuel Purge occur. (see Sht 17)
  - Estimated time to filter fuel to a high degree of cleanliness in the storage reservoir is 30Hours. (Based on full volume of 9000Litres and cleanliness levels achieved to 50ppm Water/Nas Class3 Particulate contamination.
16. Operation of this sequence can be stopped at any time by pressing the System Stop button.
17. When HST set has returned to reception siding and fuel tanks require refill, if purging sequence still running, operator must press the the System Stop button.
18. Operator fully unwinds  $\frac{3}{4}$  “BSP Hose Hosereel and connects to 1<sup>st</sup> HST fuel tank “Fill” port.
19. Operator ensures that all Isolating valves on the filter system are in the “Open” position, all the Drain valves are in the “Closed” position and the filters are fully assembled
20. Operator turns the Selector switch on the filter control panel to Position 3. (Transfer Fuel from Storage to HST) Operator closes the Filter System Control Cabinet door.

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

21. Operator pushes “Start” Button and “Pump Run” lamp will be illuminated. The process of transferring fuel from storage reservoir to HST tank begins. Operator to observe the increasing fuel level in the HST tank and press the System Stop button when the HST tank is full of fuel. Note: This operation is reliant on visual determination of fuel level only.

- During this period, the system may automatically cease operating if any of the events described in (Position 4 HST refill) occur. (see Sht18)
- Estimated time to transfer fuel from Storage reservoir to fully filled HST tank is 1.5Hours. Operator must be present when HST tank is being filled.

22. Operator records the amount of Diesel fuel transferred in the “Storage to HST” meter.

23. Operator removes the 3/4 Hose from the HST fuel tank “Fill”port.

24. Operator connects the 3/4 Hose to the 2<sup>nd</sup> HST fuel tank and sequence numbers 18 to 23 are repeated.

In the event that fuel in the HST tank requires purging only

25. HST set arrives at reception siding.

26. Operator fully unwinds 1.25 and 3/4 Hoses from system Hosereel and connects to 1<sup>st</sup> HST fuel tank.

27. Operator ensures that the “Drain” Stop valve on the HST fuel tank is fully open.

28. Operator ensures that all Isolating valves on the filter system are in the “Open” position and the filters are fully assembled

29. Operator opens Filter System Control Cabinet door and turns the Selector switch on the filter control panel to Position 2. (Purge HST Tank)

30. Operator closes the Filter System Control Cabinet door.

31. Operator pushes “Start” Button and “Pump Run” lamp will be illuminated. The process of purging the fuel from the HST tank begins.

- During this period, the system may automatically cease operating if any of the events described in (Position 2 Purging Fuel in HST) occur. (see Sht 16)
- Estimated time to filter fuel to a high degree of cleanliness in the HST tank is 15Hours. (Based on full volume of 4500Litres and cleanliness levels achieved to 50ppm Water/Nas Class3 Particulate contamination.

32. Operator pushes System Stop button before opening the Filter System Control Cabinet door and turning the Selector switch to the “0” position. Operator to close Control Cabinet door.

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

33. Operator closes the HST tank "Drain" Stop valve and removes/recoils the 1.25 and  $\frac{3}{4}$  Hoses.
34. Operator connects the 1.25 and  $\frac{3}{4}$  Hoses to the 2<sup>nd</sup> HST fuel tank and sequence numbers 28 to 33 are repeated.

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

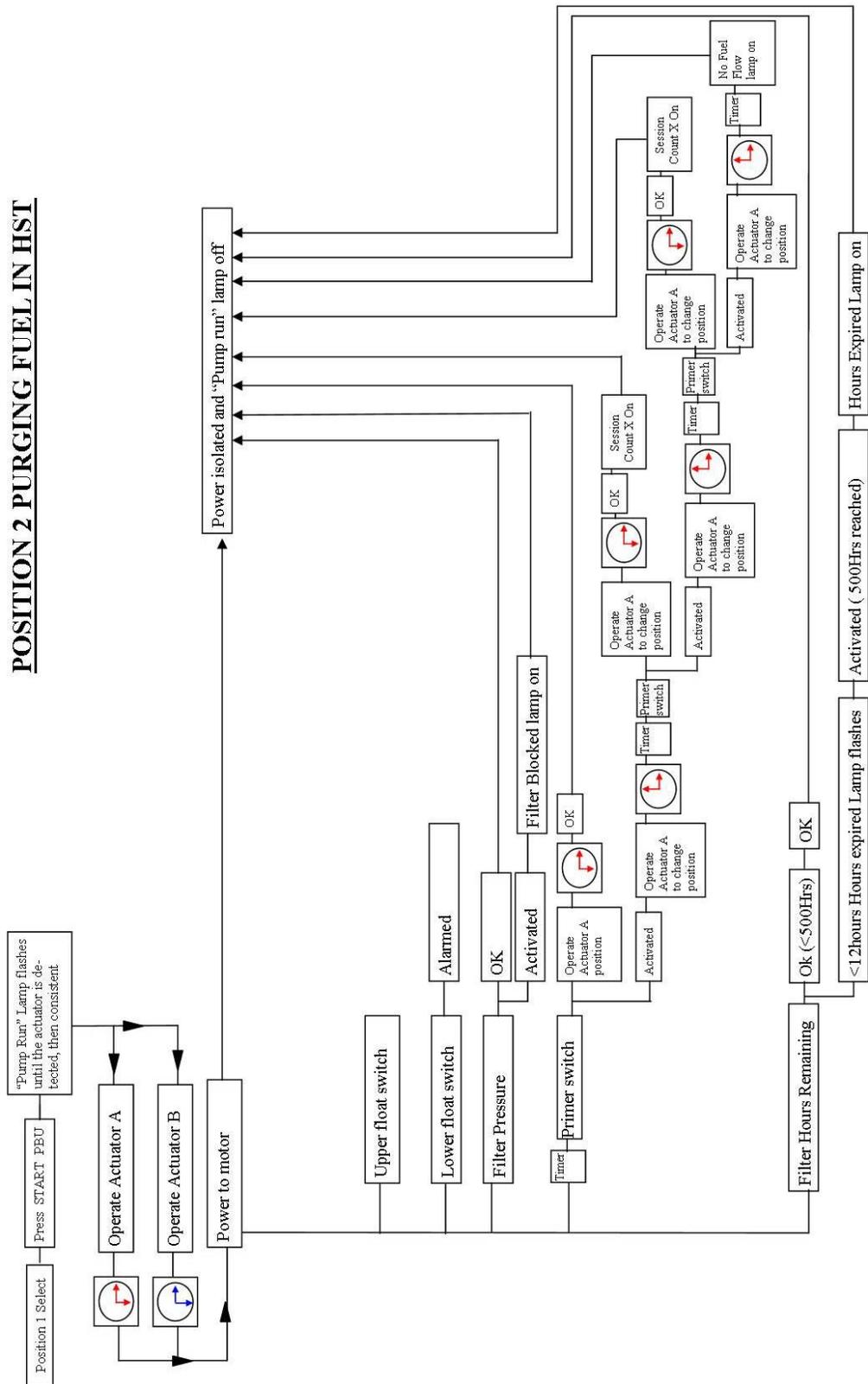
#### **Alarm and Fault Diagnostics**

<b>Ref</b>	<b>Indication</b>	<b>Alarm Description</b>	<b>Fault YES/NO</b>	<b>Action</b>
<b>1</b>	Yellow Filters Expired lamp starts flashing	20 Hours Filter element life left	NO	Order replacement Filter elements OCH2010 4off  Note: Lamp flash frequency increases as time reduces.
<b>2</b>	Yellow Filters Expired Lamp illuminated	0 Hours Filter element life left	NO	Replace Filter elements  Switch selector to position "0"  Press Green "Start" button whilst holding "Filters Expired" reset Key in switched position until "Filters Expired" Lamp is not lit
<b>3</b>	Yellow Filters Blocked Lamp illuminated	Filter Elements blocked	NO	Replace Filter elements  Key switch Alarm reset  "Filters Blocked" Lamp will not be lit
<b>4</b>	Yellow No Fuel Flow Lamp is illuminated	No flow of Diesel fuel during "HST to Storage" or "Storage to HST" operations	NO	Check there are no restrictions in selected fuel line circuit and all relative Isolating valves are in the "Open" position.  Check that there is sufficient fuel to be transferred in the selected storage facility  Key switch Alarm reset  "Filters Blocked" Lamp will not be lit
<b>5</b>	Yellow "High Level" Lamp is illuminated	Maximum Diesel fuel level in Storage reservoir has been sensed	NO	Lamp will not be lit when fuel level has dropped below maximum level.  Not able to operate "HST to Storage" selection
<b>6</b>	Yellow "Low Level Lamp" is illuminated	Minimum Diesel fuel level in Storage reservoir has been sensed	NO	Lamp will not be lit when fuel level has risen above minimum level.  Not able to operate "Storage to HST" selection
<b>7</b>	All Lamps on cabinet start to sequentially flash in Clockwise direction	Actuator faulty	YES	¾" BSP Actuator (Fuel to HST/Storage not operating correctly).  Contact manufacturer
<b>8</b>	All Lamps on cabinet start to sequentially flash in Anticlockwise direction	Actuator faulty	YES	1.25" BSP Actuator (Fuel from HST/Storage not operating correctly).  Contact manufacturer



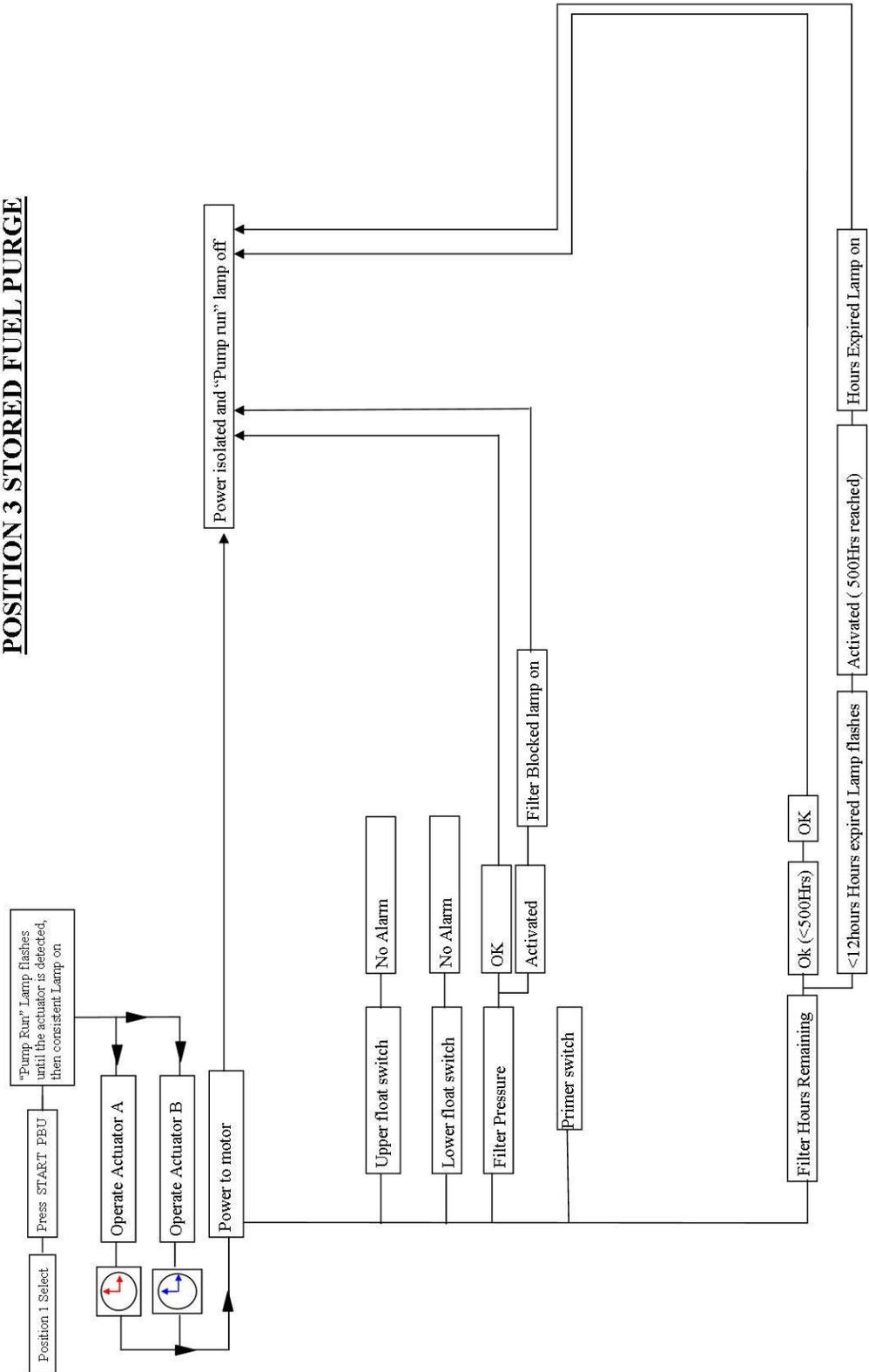
# 4. PROGRAMME SUMMARY Cont.

## POSITION 2 PURGING FUEL IN HST



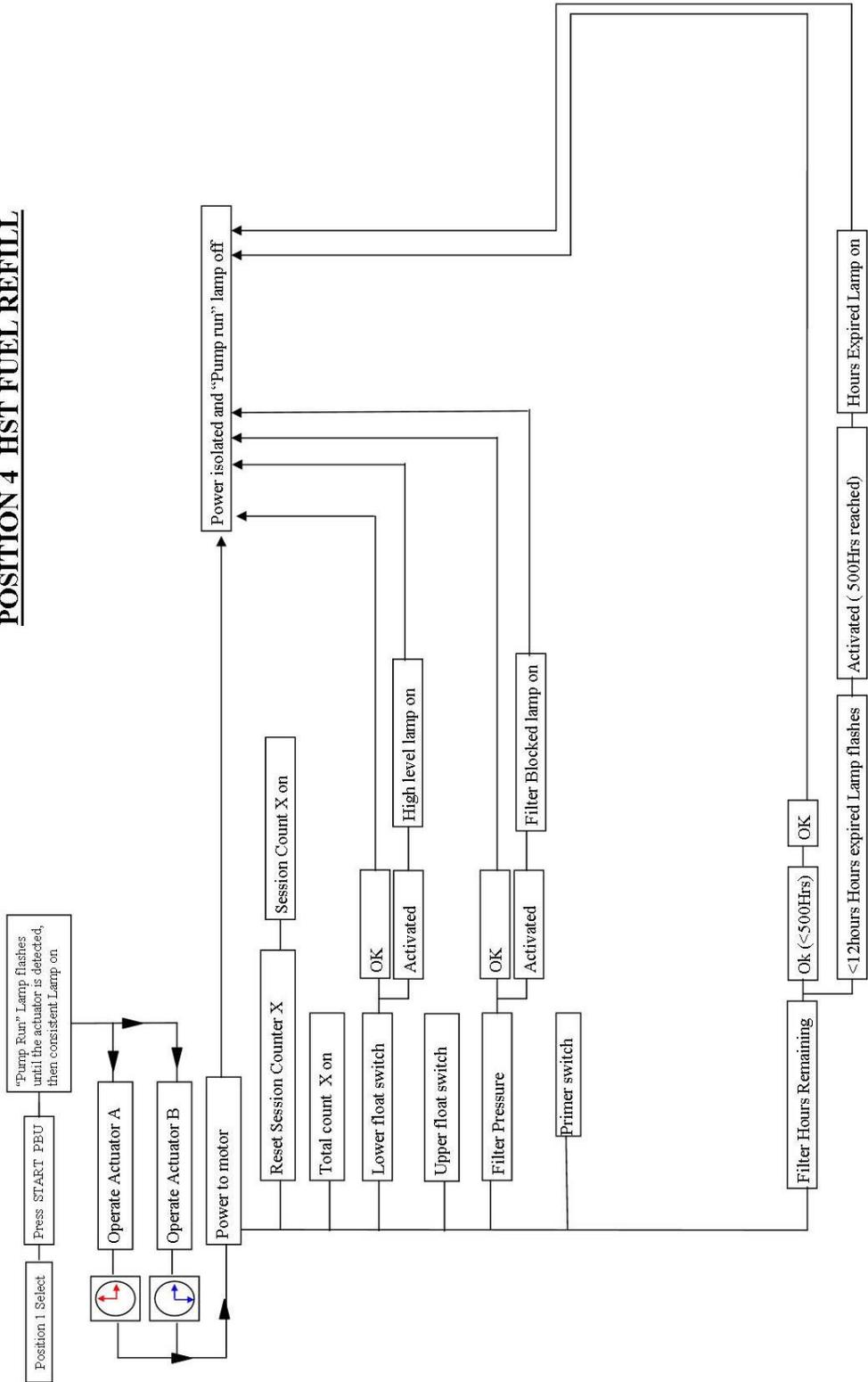
# 4. PROGRAMME SUMMARY Cont.

## POSITION 3 STORED FUEL PURGE



# 4. PROGRAMME SUMMARY Cont.

## POSITION 4 HST FUEL REFILL



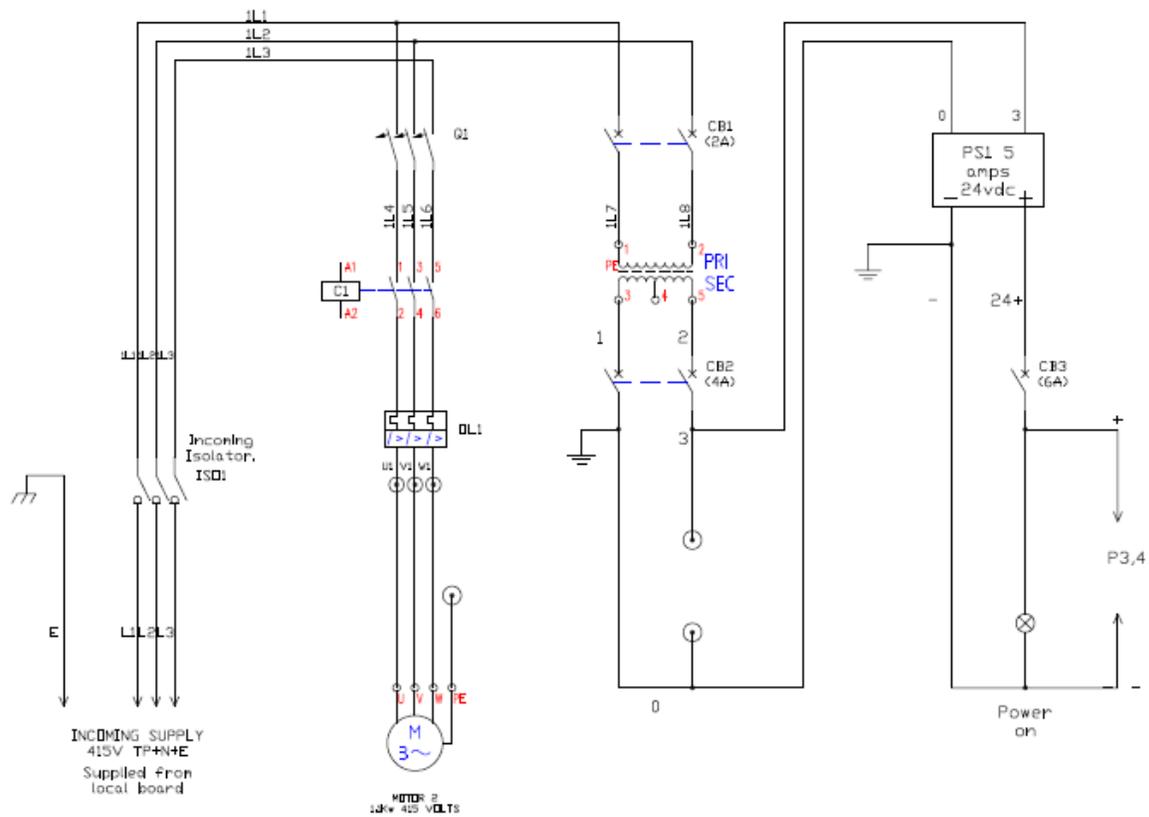
## **5. SPECIFICATIONS**

1.	TYPE OF FILTRATION UNIT	CP4203
2.	TYPE OF FILTER HOUSING	CHO2010H
3.	SIZE OF FILTER ELEMENT	OCH2010 *
4.	FILTER LIFE (Unless prematurely blocked)	300Hours
5.	POWER SUPPLY TO CABINET	360-415vac 50Hz 3Ph
6.	CONTROL SUPPLY	24vAc (Except supply to motor)
7.	PUMP/MOTOR SPEC.	Motor; 360/415V 9.3A 1.5Kw Pump:AFT40R54U19US-195
8.	FREQUENCY SETTING	50Hz
9.	MAXIMUM FLOW RATE	50.0Lpm
10.	INLET HOSE SIZE	1 1/4" BSP
11.	OUTLET HOSE SIZE	3/4" BSP
12.	WEIGHT	a) Filtration Unit 300Kgs (Approx) b) Storage Reservoir 1500Kgs (Approx Empty) c) Control Cabinet 50Kgs (Approx)
13.	SIZE	a) Filtration Unit b) Storage Reservoir c) Control Cabinet
14.	MIN & MAX OPERATING TEMP	-10 to 30Deg 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	High Press. switch setting 11 Bar

- **For re-ordering Filter Elements quote 4off OCH2010.**

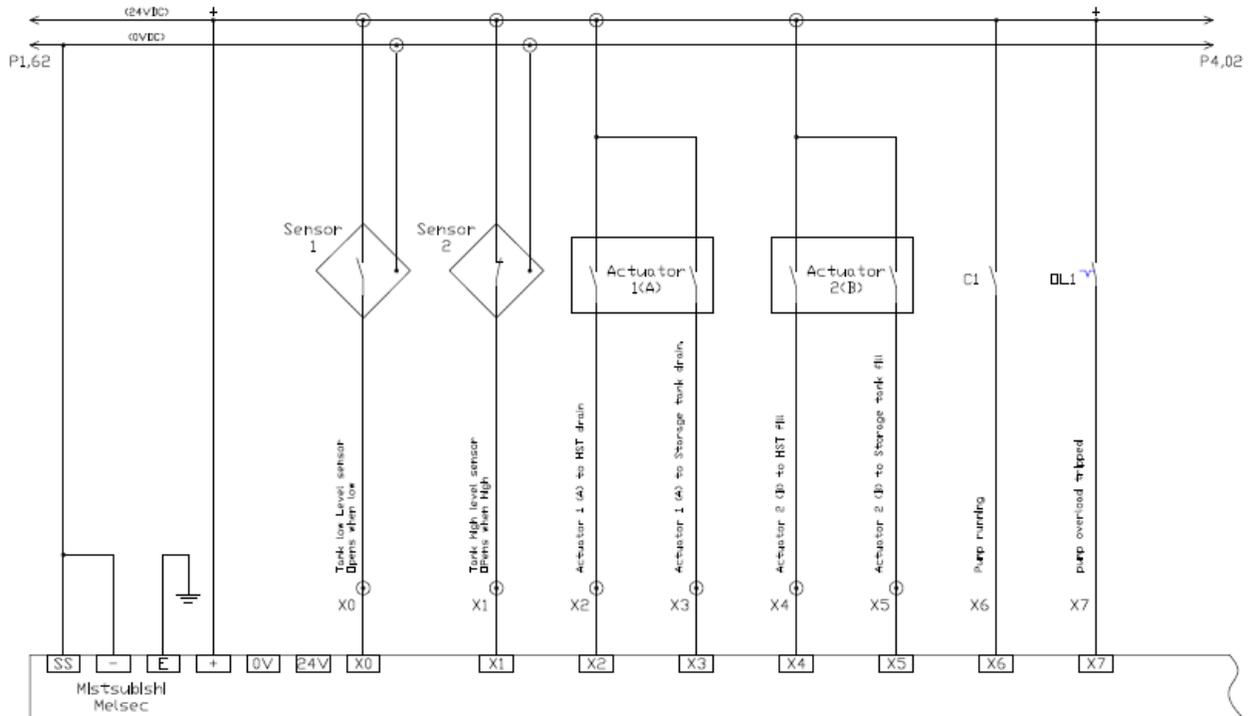
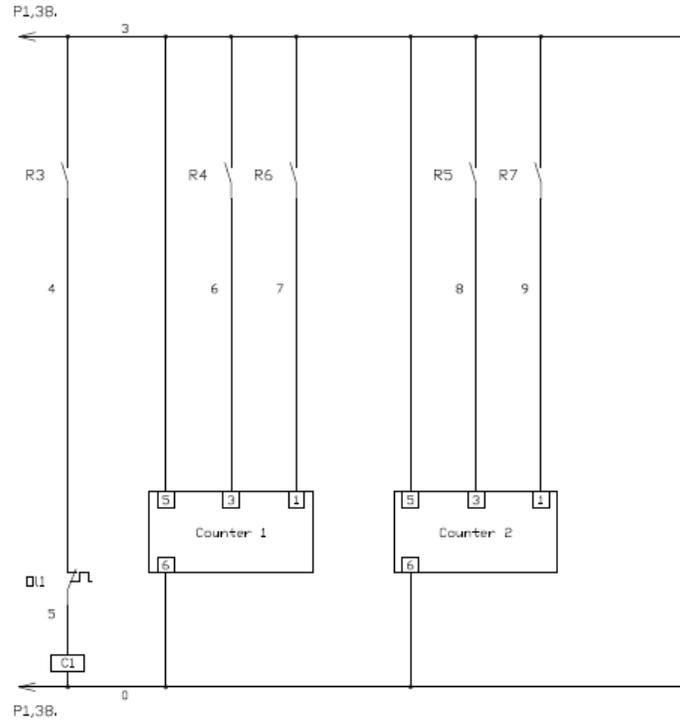
## 6. DRAWINGS

### ELECTRICAL CIRCUIT DIAGRAM CP4203-0636-01



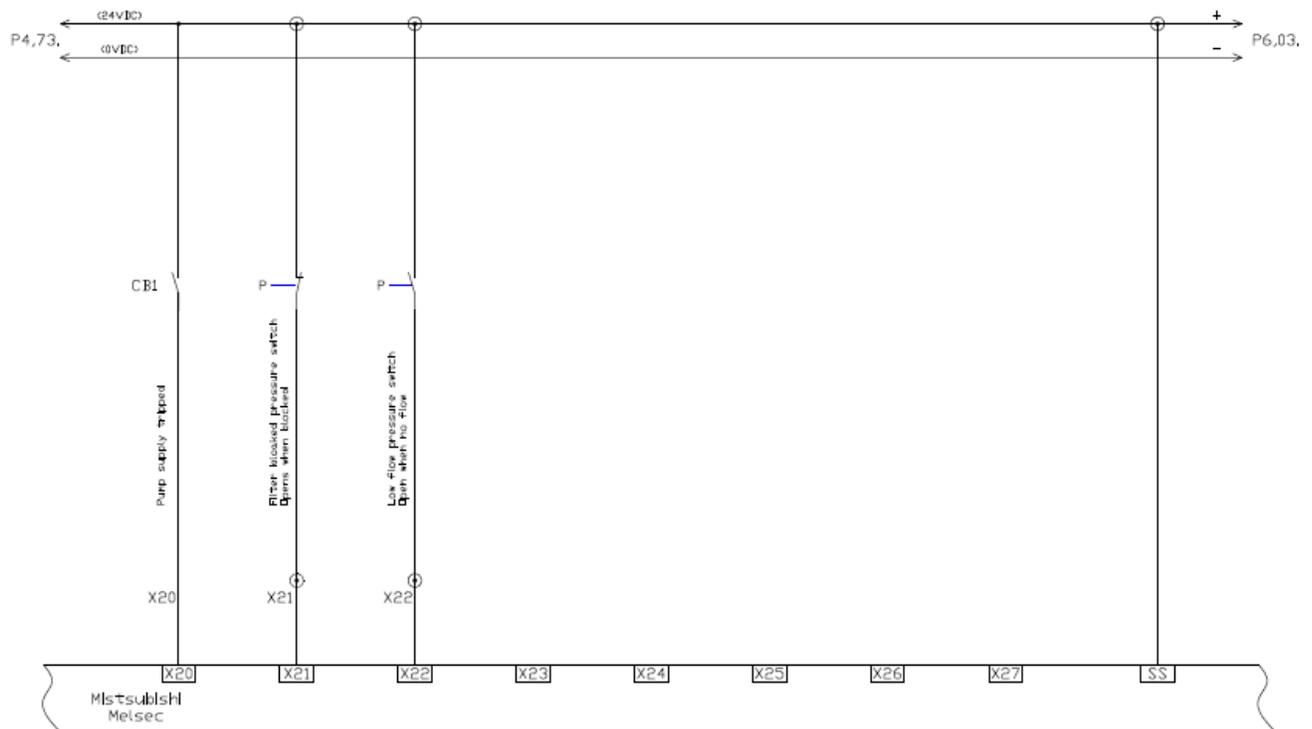
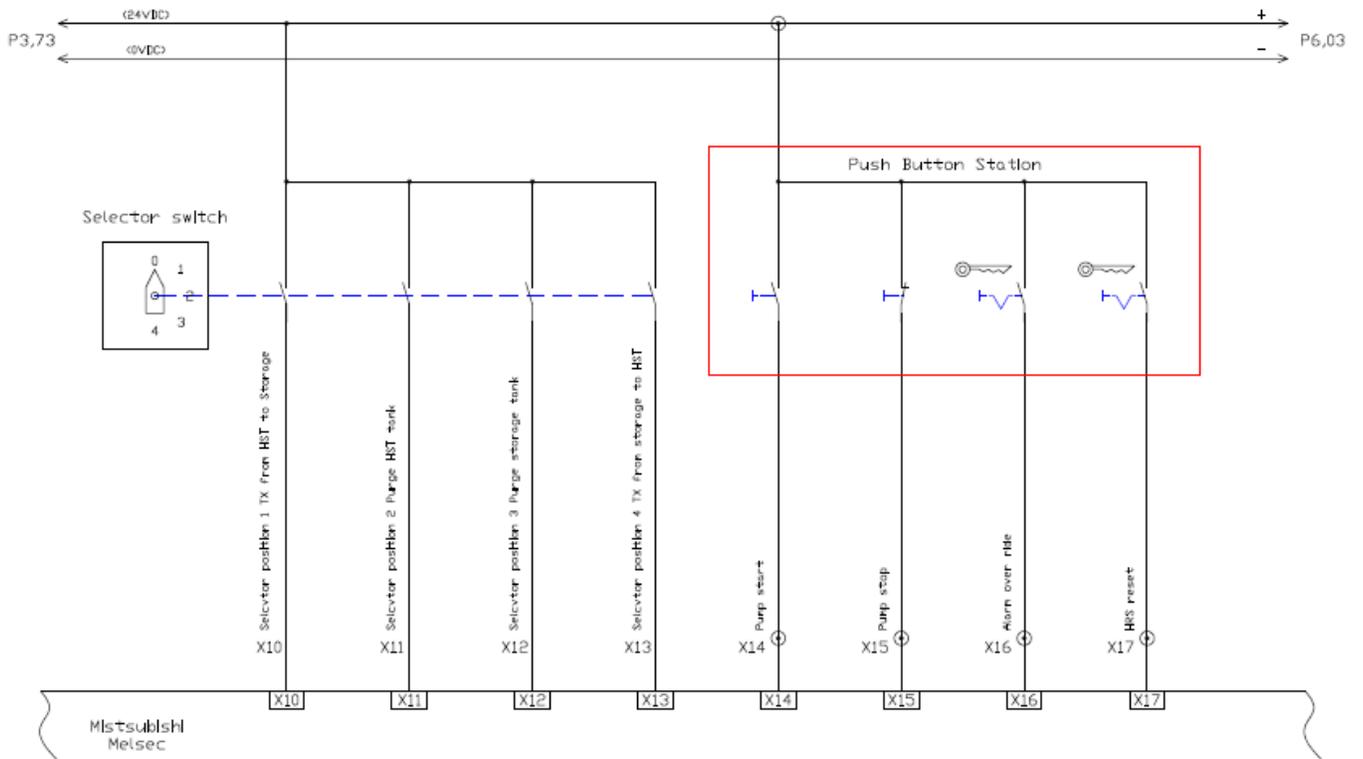
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### ELECTRICAL CIRCUIT DIAGRAM CP4203-0636-01



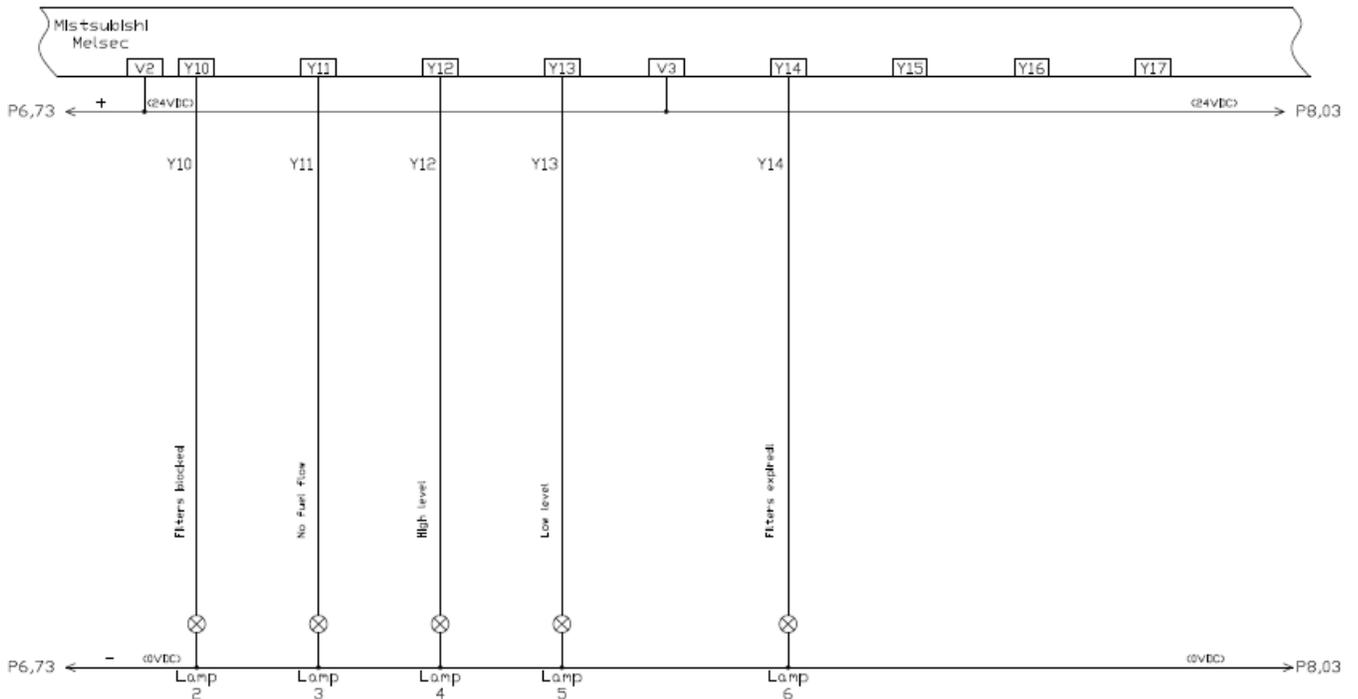
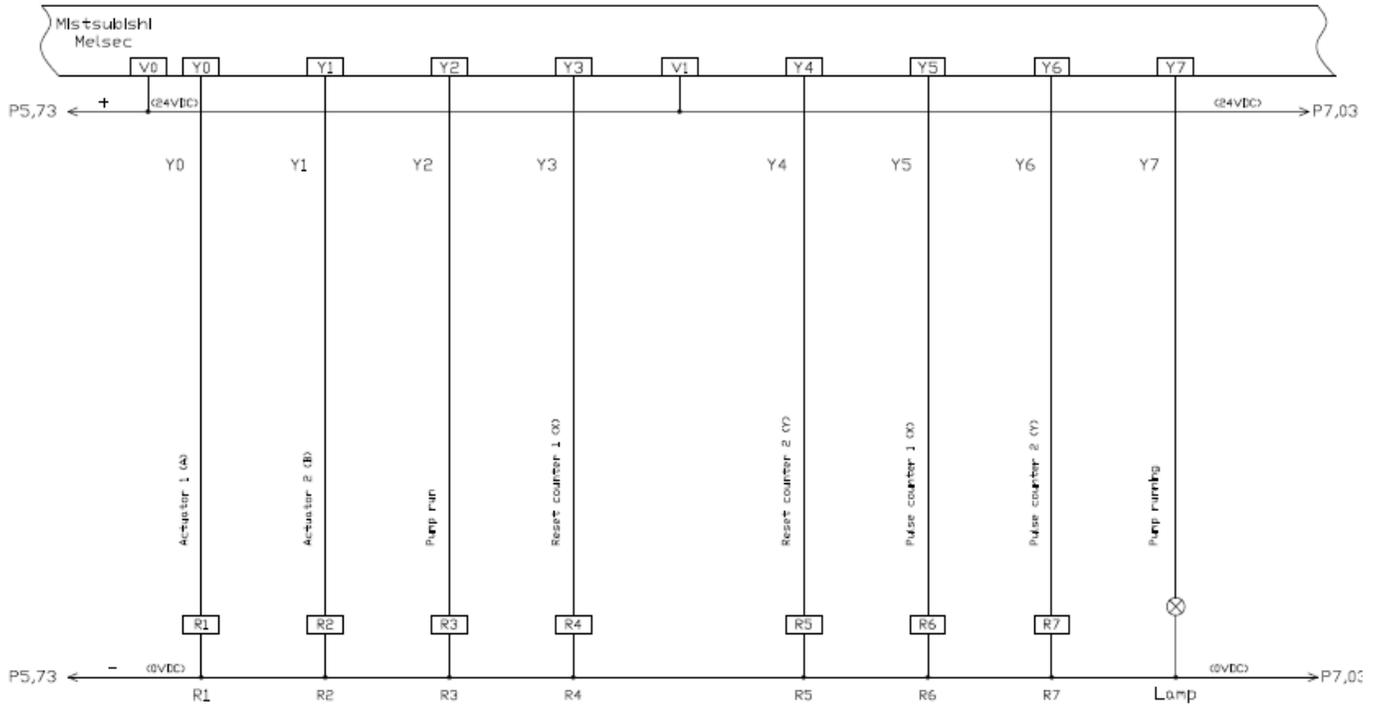
## 6. DRAWINGS Cont.

### ELECTRICAL CIRCUIT DIAGRAM CP4203-0636-01



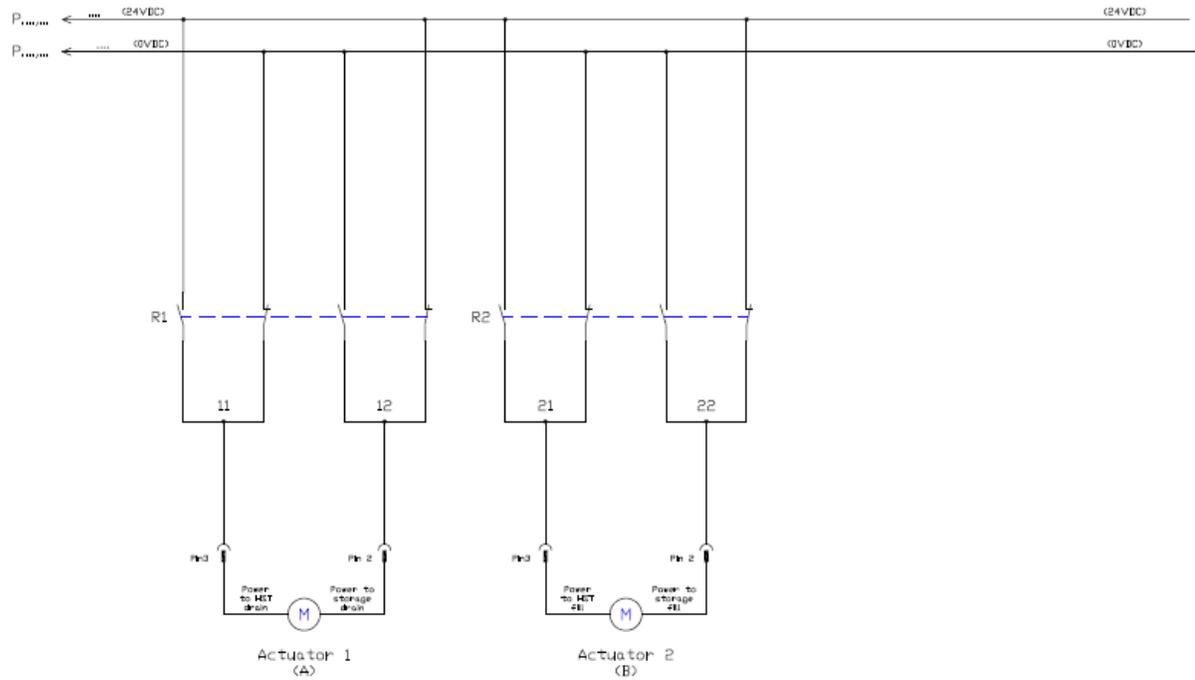
## 6. DRAWINGS Cont.

### ELECTRICAL CIRCUIT DIAGRAM CP4203-0636-01



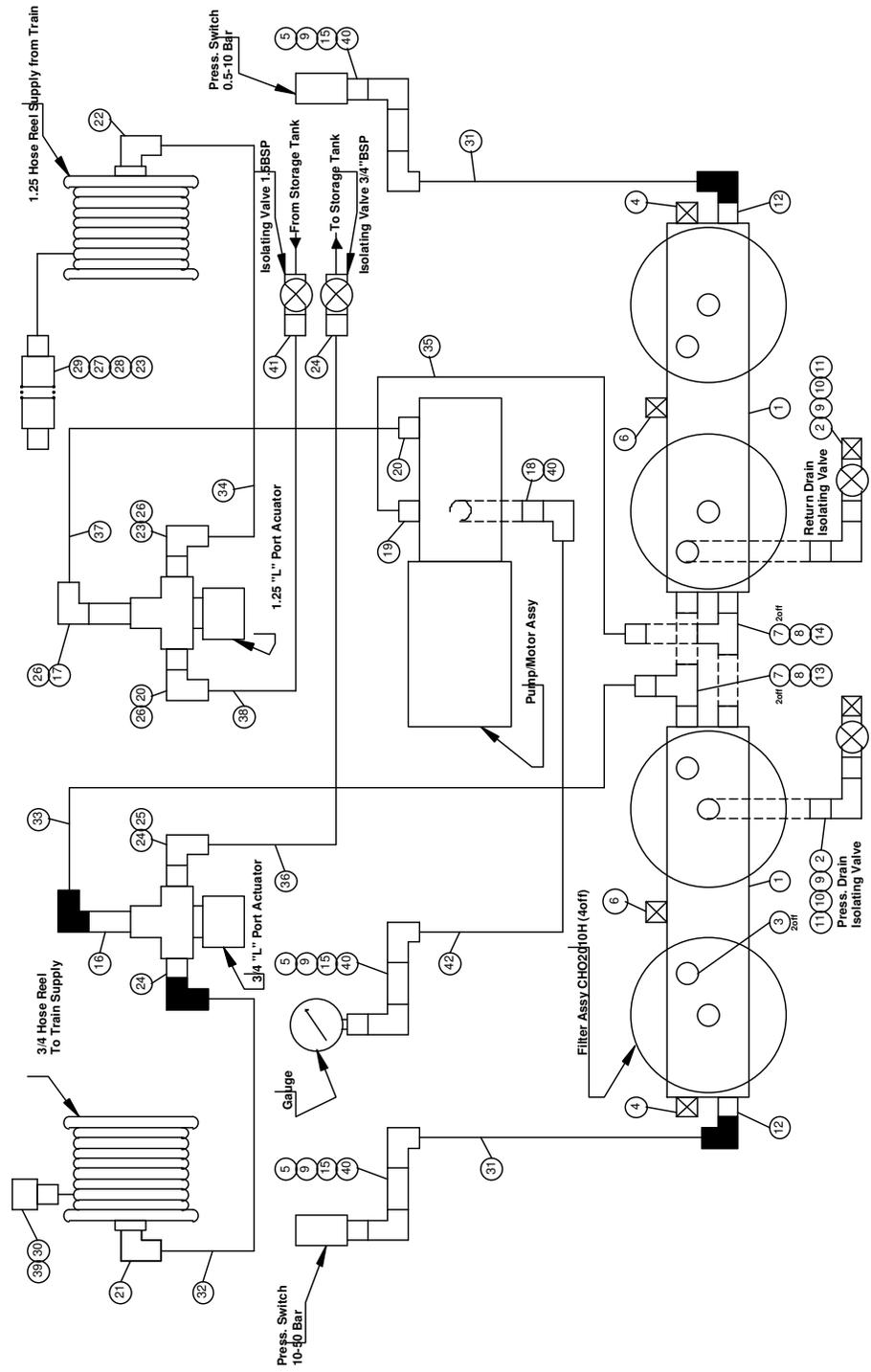
## 6. DRAWINGS Cont.

### ELECTRICAL CIRCUIT DIAGRAM CP4203-0636-01



# 6. DRAWINGS Cont.

## Piping Diagram CP4203-0636-03



## **6. DRAWINGS Cont.**

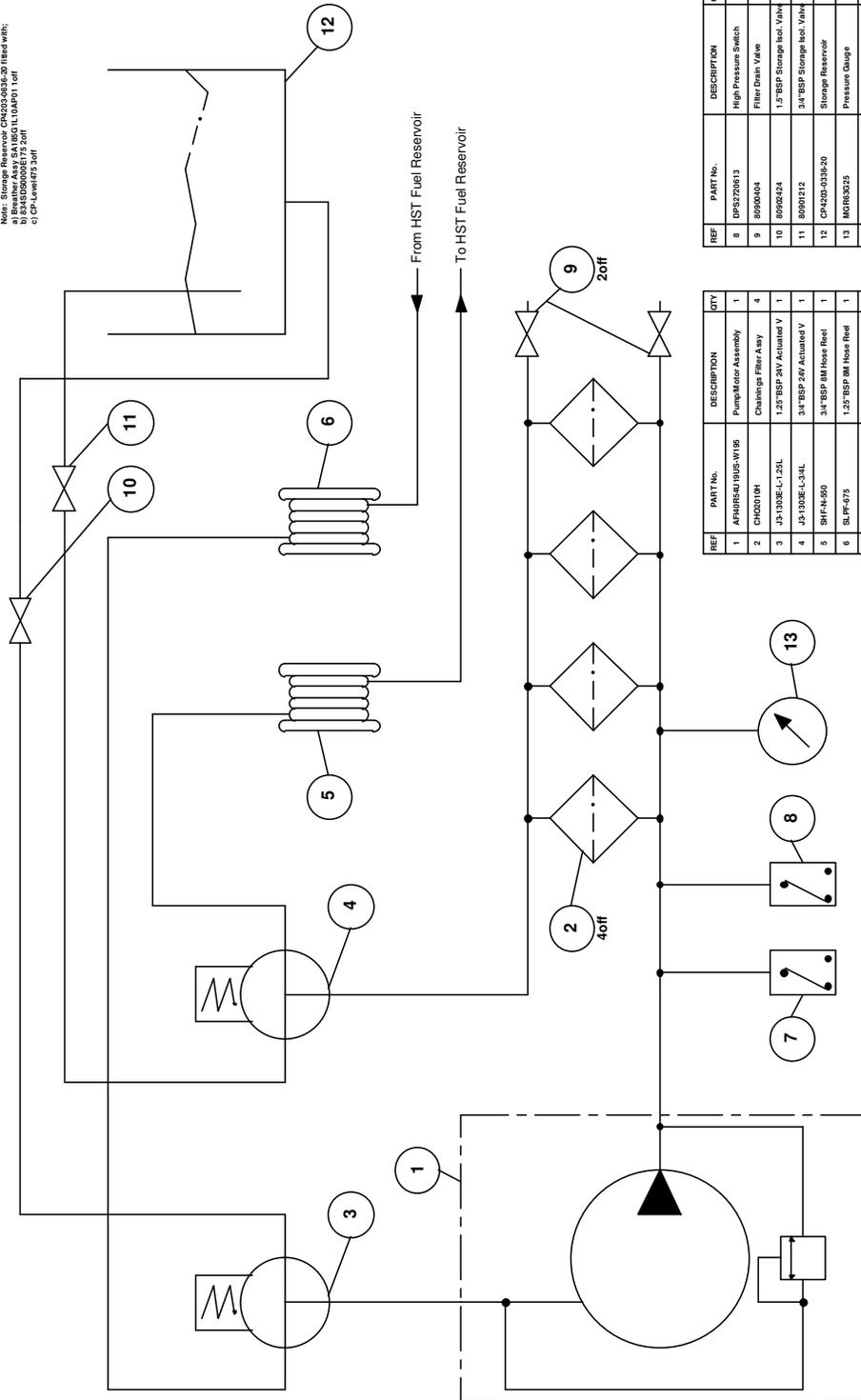
### **Parts list for piping diagram CP4202-0636-03**

Ref	Part No.	Description	Qty
1	CP2010MAN2	Filter Manifold	2
2	CP2010MAN3	Special Manifold Bolt	2
3	GB100407	1/4"BSP Extended Banjo Bolt	6
4	7501106	3/8"BSPT Blank	2
5	70040404	1/4"BSP Gauge Adptr	3
6	75010006	3/8"BSP Blank	2
7	70120806	3/8"BSPT – 1/2"BSP M-M Adptr	4
8	74020808	1/2"BSP Fem-Fem-Fem Tee Swivel	2
9	72150404	1/4" BSP Fem-Fem 90 Compact Swivel	5
10	70010404	1/4"BSP M-M Adptr	2
11	75010004	1/4" BSP Blank	2
12	70010606	3/8"BSP- 1/4"BSP M-M Adptr	2
13	70010812	1/2"BSP-3/4"BSP M-M Adptr	1
14	70010816	1/2"BSP-1"BSP M-M Adptr	1
15	70900404	1/4"BSP Bulkhead Adptr with Lock Nut	3
16	70901212	3/4"BSP Bulkhead Adptr with Lock Nut	1
17	70901616	1.25"BSP Bulkhead Adptr with Lock Nut	1
18	70120404	1/4"BSPT-1/4"BSP M-M Adptr	1
19	70011616	1"BSP M-M Adptr	1
20	70012020	1.25"BSP M-M Adptr	2
21	GB101240	3/4"BSPT-3/4"BSP M-M 90 Compact Adptr	1
22	GB101241	1.5BSPT-1.5BSP M-M 90 Compact Adptr	1
23	70012024	1.25"BSP-1.5BSP M-M Adptr	3
24	70011212	3/4"BSP M-M Adptr	3
25	72011212	3/4"BSP M-Fem 90 Compact Swivel	1
26	72012020	1.25"BSP M-Fem 90 Compact Swivel	3
27	55580224	ISO A Probe 1.5"BSP Quick Release Coupling	1
28	55580324	ISO A Carrier 1.5"BSP Quick Release Coupling	1
29	70052424	1.5"BSP M-Fixed Fem Adptr	1
30	70011224	3/4"BSP-1.5"BSP M-M Adptr	1
31	nd	Hose Assy 1200mm Lg 1/4"BSP Str/Fem-1/4"BSP 90C/Fem	2
32	H0033763	Hose Assy 2000mm Lg 3/4"BSP Str/Fem-3/4"BSP 90C/Fem	1
33	H0033764	Hose Assy 1200mm Lg 3/4"BSP Str/Fem-3/4"BSP 90C/Fem	1
34	H0033765	Hose Assy 1800mm Lg 1.5"BSP Str/Fem-1.5"BSP Str/Fem	1
35	H0033973	Hose Assy 1600mm Lg 1"BSP Str/Fem-1"BSP Str/Fem	1
36	H0033976	Hose Assy 5000mm Lg 3/4"BSP Str/Fem-3/4"BSP Str/Fem	1
37	H0033972	Hose Assy 1200mm Lg 1.25"BSP Str/Fem-1.25"BSP Str/Fem	1
38	H0033974	Hose Assy 5000mm Lg 1.25"BSP Str/Fem-1.25"BSP Str/Fem	1
39	CP-FLYTE2	Bunker Fuel Fill Assembly	1
40	72010404	1/4" BSP M-Fem 90 Compact Swivel	4
41	nd	Hose Assy 800mm Lg 1/4"BSP Str/Fem-1/4"BSP Str/Fem	1

# 6. DRAWINGS Cont.

## HYDRAULIC CIRCUIT DIAGRAM CP4202-0632-02

Note: Storage Reservoir CP4202-0632-02 filled with:  
 a) MIL-HYD 810 (MIL-PRF-1161)  
 b) B3145250000015172 20FT  
 c) CP-4202-0632-02



REF	PART No.	DESCRIPTION	QTY
8	DF52720613	High Pressure Switch	1
9	80906404	Filter Drain Valve	2
10	80906424	1.5" BSP Storage Res. Valve	1
11	80906212	3/4" BSP Storage Res. Valve	1
12	CP4202-0336-20	Storage Reservoir	1
13	MOR93025	Pressure Gauge	1
14			

REF	PART No.	DESCRIPTION	QTY
1	AF1005-4J BUS-W/BS	Pump/Motor Assembly	1
2	CH202101	Changeover Filter Assy	4
3	J3-1308E-L-123L	1.25" BSP 2-W Actuated V	1
4	J3-1308E-L-34L	3/4" BSP 2-W Actuated V	1
5	SHF-N-500	3/4" BSP 3M Hose Reel	1
6	SL-PR-075	1.25" BSP 3M Hose Reel	1
7	DF52720612	Low Pressure Switch	1

## **7. PARTS LIST**

<b>REF.</b>	<b>PART No.</b>	<b>DESCRIPTION</b>	<b>QTY</b>
1	CP4203-0636-01	RIG FRAME ASSY	1
2	CP4203-0636-12	ELECTRICAL CABINET	1
3	CP4203-0636-01	ELECTRICAL CIRCUIT	1
4	CP4203-0636-02	HYDRAULIC CIRCUIT	1
5	CP4203-0636-03	PIPING DIAGRAM	1

## **8. FILTER CHANGE PROCEDURE**

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

1. Ensure the filtration unit is electrically isolated and the connection hoses are removed from the HST (If applicable).
2. Close the storage reservoir supply and return Isolating Valves.
3. Remove the blanking plugs from the end of the Filter Drain Stop Valves and turn handles 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 fuel contacting the operator, in case of undue pressure being released.**

Use a suitable container to collect drained fuel from under the Drain valves.

4. Loosen & remove the M8 clamping screws, spring washers & plain washers, securing the lid to the filter housing.
5. 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.
6. Once the Filter Lid has been removed, pull the Filter Element upwards & away from the Filter Housing.
7. 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 handle of the Filter Drain Valves to the closed position and refit the blanking plug to the end of the valve.
10. Open the storage reservoir supply and return Isolating Valves.
11. Reconnect the Connection Hoses to the HST (If applicable).
12. After restoring electrical power, the unit can now be restarted.

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