The environmental solution
to protect
oil & fuel systems

CHAININGS Filtration

Chainings Limited
Units 1 & 2 Harrow Park, Harrow Road, Hereford, HR4 0EN, United Kingdom
Telephone: + 44 (0) 1432 356318 Fax: +44 (0) 1432 360808
Email: info@chainings.com

TECHNICAL BROCHURE

FOR CP4202-0635

FUEL FILTRATION UNIT

(240V 50Hz Single Phase Supply)

CONTENTS

1. INTRODUCTION

The Filtration unit CP4202 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.

All features are mounted on a flat bed trolley with fixed & swivel solid tyres to aid mobility.

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

2. FILTRATION UNIT FEATURES

2.1 Trolley Assembly. Used to mount all of the unit features within the area of the trolley with no components protruding. **Handle stowage clamp fitted to position handle in upright position when unit is in stationary position.**

2.2 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) Filters Expired (Amber Lamp)
h) Hours counter reset Key
i) High vacuum indicator (amber lamp)

Mounted on top of the cabinet is an flashing beacon to indicate filters are blocked

Inside the cabinet is an Hours Counter to record life left in the filters.

2.3 Filter Assembly; Part of the unique range of element types & sizes, the Chainings filter medium is housed in a corrosion resistant pot & sealed to provide the maximum efficiency for contamination control. Designed specifically for ease of element replacement.

2.4 Pump & Motor; Consisting of a 240v 1.5Kw motor, close coupled to a Triple Screw pump. This assembly has been selected to produce laminar circulation of fluid 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 fitted with a mechanical relief valve set to discharge fluid back to the pump's suction feed should the generated pressure exceed 6 Bar.

2. FILTRATION UNIT FEATURES Cont.

2.5 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.

2.7 Pressure Switch; Located in the filter circuit & factory set to 6 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.

2.8 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

2.9 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 there is an initial high volume of fuel contamination which repeatedly isolates the unit during start-up. The valve is opened to reduce the pressure on the filters until the high levels of contamination have ceased when the valve must be fully closed again.

3.0 Snap-On Couplings; “Quick Release” types used for;

a) Inlet port - Connection from system to Filtration Unit. (1” Probe)

b) Outlet port - Connection from Filtration Unit to the system. (3/4” Carrier)

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 240vac 50Hz supply. (Min. current rating 16Amps, with type 'B' overload protection).

Conductor colour codes are as follows;

Brown	**=**	**Live**	**(L)**
Blue	**=**	**Neutral**	**(N)**
Green/Yellow	**=**	**Earth**	**(E)**

Notes:

1. **Unit has been tested with diesel fuel. 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 Fuel reservoir to the Inlet Port of the Filtration Unit. Ensure that there are no restrictions on the connection port and ensure that the "Snap-On" Connector is fully assembled.

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

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 Valve to the On position. Place a suitable receptacle under the Bleed pipe to collect discharge fuel.
3. Press Green "Pump Start" Button.
4. Observe oil discharging from bleed pipe.
5. When a constant flow of fuel with no air entrapment is observed, press the Red "Pump Stop" Button and immediately turn the "Filter Drain" Stop Valve 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 fuel reservoir. Ensure that the port is free from restrictions and is below the Fuel level. (To prevent air entrapment) Ensure that the "Snap-On" Connector is fully assembled.

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 fuel 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 fuel 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 11 Bar. A preset switch will trip the pump running circuit to stop electrical supply to the pump's motor.
   d) The "Filters Expired" Lamp is on indicating that the preset value of 300 Hours filter life has ended. A Timer within the electrical circuit 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 reset hours counter turn "Hours Counter Reset" key and press "Pump Start" button.
   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

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 UNIT Cont.

3.4 Operation of Unit (Cont)

Average time taken to fully filter fuel in system. (Guidelines only)
Based on: Time = (Fuel System Capacity*10)/Filtration Unit Flow Rate

System Fuel Volume (Litres)	Time Taken (Hrs)
500	1.7
1000	3.3
1500	5
2000	6.7
2500	8.3
3000	10
3500	11.7
4000	13.3
4500	15
5000	16.7

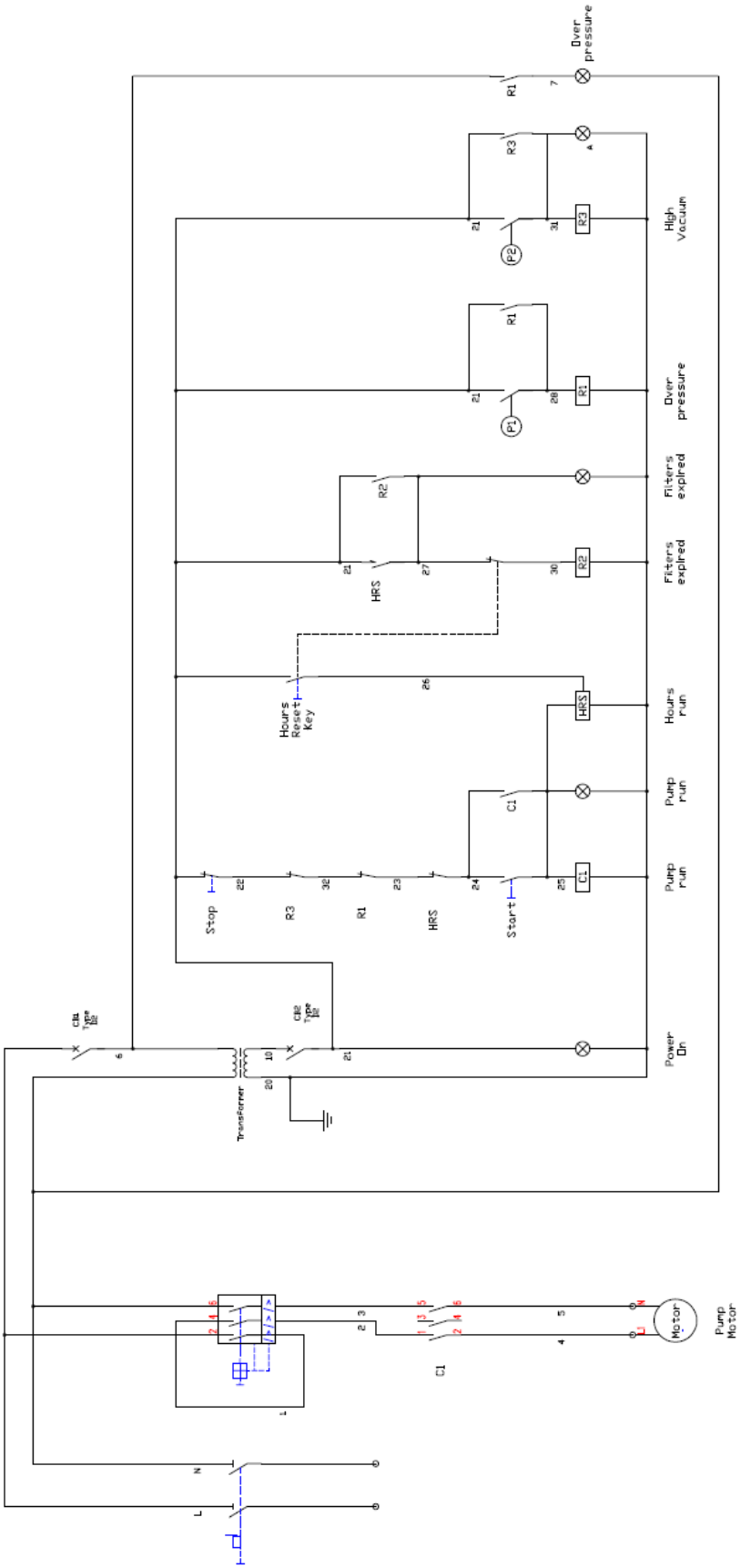
4. SPECIFICATIONS

1.	TYPE OF FILTRATION UNIT	CP4202
2.	TYPE OF FILTER HOUSING	ACHO2010H
3.	SIZE OF FILTER ELEMENT	OCH2010 *
4.	FILTER LIFE (Unless prematurely blocked)	300Hours
5.	POWER SUPPLY TO CABINET	240vac 50Hz 1Ph
6.	CONTROL SUPPLY	24vAc (Except supply to motor)
7.	PUMP/MOTOR SPEC.	Motor; 240V 9.3A 2HP 1.5Kw Pump:AFT40R54U19US-195
8.	FREQUENCY SETTING	50Hz
9.	MAXIMUM FLOW RATE	40.0Lpm
10.	INLET PORT SIZE	11/4" BSP (Male Flat Face)
11.	OUTLET PORT SIZE	¾" BSP (Female Flat Face)
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 9 Bar

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

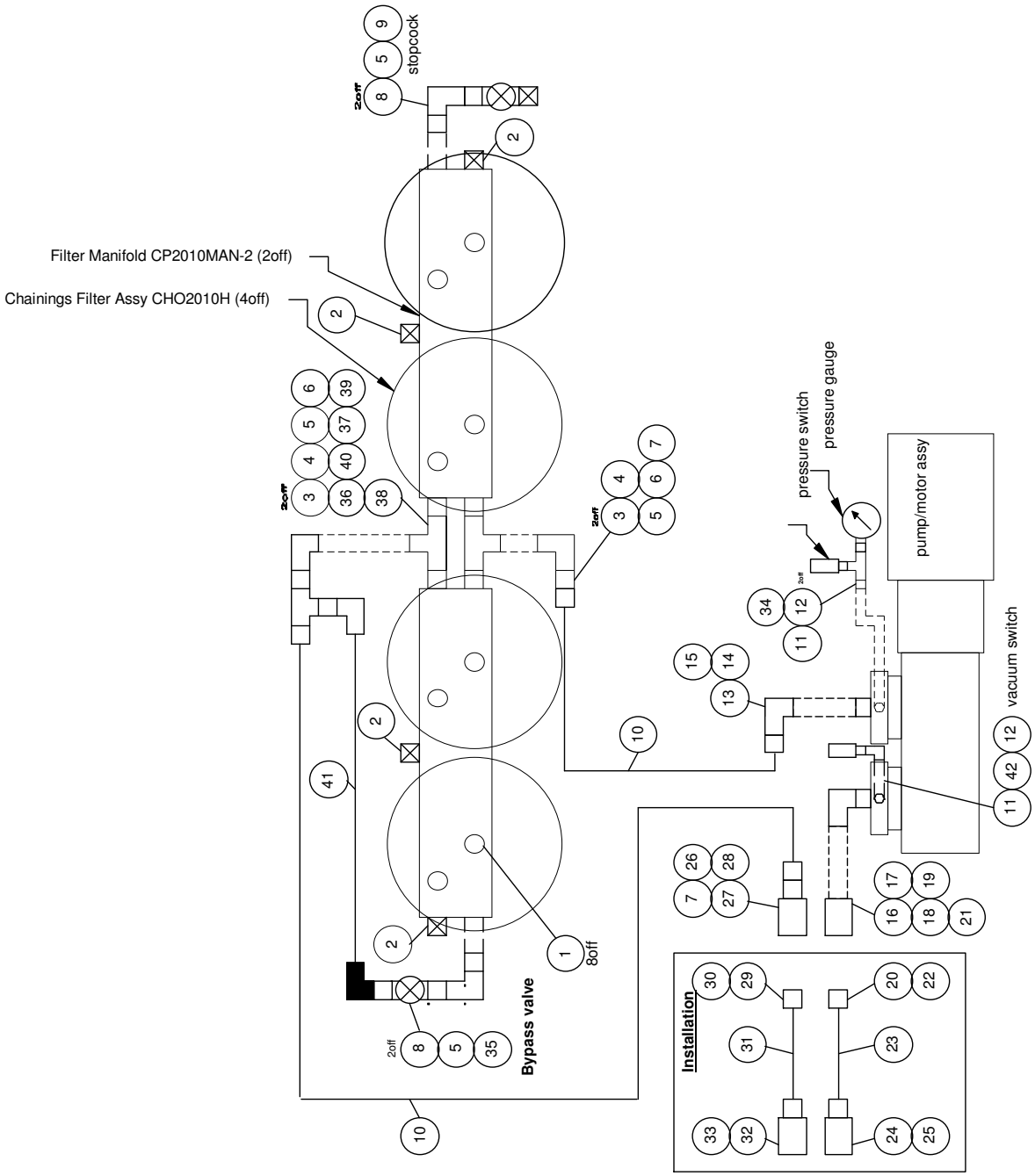
5. DRAWINGS

ELECTRICAL CIRCUIT DIAGRAM CP4202-0635-01



5 DRAWINGS Cont.

Piping Diagram CP4202-0635-03



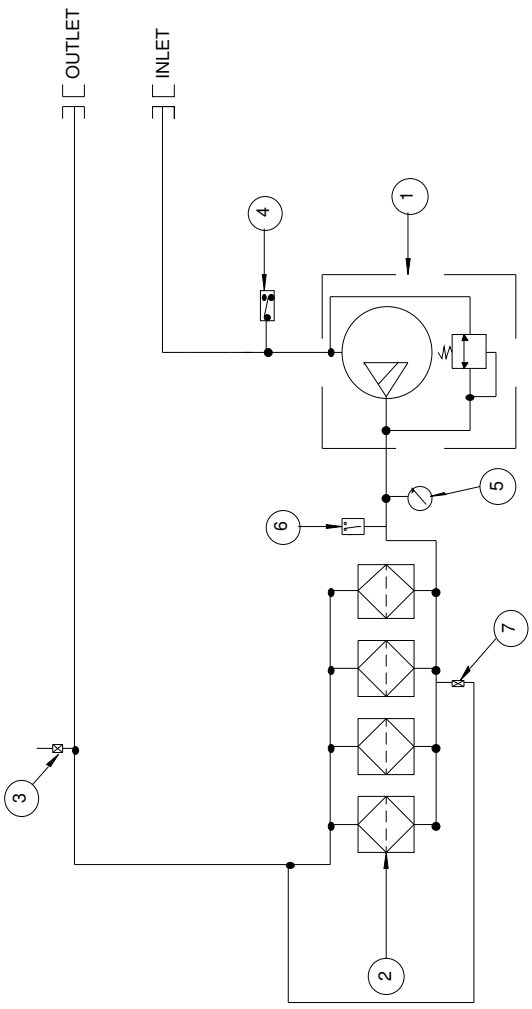
5 DRAWINGS Cont.

Parts list for piping diagram CP4202-0635-03

REF.	PART No.	DESCRIPTION	QTY
1	GB100407	Extended ¼ Banjo Bolt (CRX04BMG)	8
2	75011006	3/8BSPT Blank	4
3	70080606	3/8 – 3/8 M-F	4
4	74050606	3/8 Tee M	2
5	72150606	3/8 F – F 90	4
6	70010612	3/8BSP – ¾ BSP M-M Adaptor	2
7	GAI22LR3/4	¾ F -22	2
8	70010606	3/8 – 3/8 M-M	3
9	75010006	3/8 BSP M Blank	1
10	nd	Steel Pipe 22 1M Long	2
11	70120404	¼ BSPT – ¼ BSP M – M Adaptor	2
12	70040404	¼ Gauge Adaptor	2
13	70081616	1 - 1 M-F	3
14	72011616	1M – 1 F 90	1
15	60032216S	1M - 22	1
16	70012020	1 ¼ - 1 ¼ M - M	1
17	72152020	1 ¼ F – 1 ¼ F 90	1
18	70011620	1 ¼ - 1 M - M	1
19	55500216	Std QRC 1 Probe	1
20	55500316	Std QRC 1 Carrier	1
21	55500416	Std QRC 1 Probe Dust Cap	1
22	55500516	Std QRC 1 Carrier Dust Cap	1
23	H0026636	1” Hose Assembly OWB ENDs 1”M-1”FEM	1
24	70051612	1M-3/4Fem (Fixed) Adaptor	1
25	DP7100	Femco Fitting	1
26	70901212	¾ Bulkheads	1
27	55500312	Std QRC ¾ Carrier	1
28	55500512	Std QRC ¾ Carrier Dust Cap	1
29	55500212	Std QRC ¾ Probe	1
30	55500412	Std QRC ¾ Probe Dust Cap	1
31	H0026637	¾ “ Hose Assembly OWB ENDs ¾”M-3/4”FEM	1
32	70011224	¾” – 1½” M-M	1
33	CP-Flyte2	Flyte Fuel Coupling	1
34	BA04BF04BF04BF	¼ Fem Tee	1
35	70010406	3/8-1/4 M-M	1
36	74061212	3/4BSP Fixed Fem Tee	1
37	70450412	¾-1/4 M-F (Fixed)	1
38	72010404	1/4BSP M-F 90Elbow Compact	1
39	70010404	¼ - ¼ M-M	1
40	60032212	¾ M - 22	1
41	ND	Flex Hose Assy 1/4BSP Str Male – 90 Fixed Fem 100cm	1
42	72150404	1/4BSP Fem-Fem 90Elbow Compact	1

5. DRAWINGS Cont.

HYDRAULIC CIRCUIT DIAGRAM CP4202-0635-02



Ref	Part No.	Description	Qty
1	AFI40R54U19US-W195	Pump/Motor Assy	1
2	CHO2010H	Chainings Filter Assy	4
3	BKH-DN10-G3/8	Filter Drain Stop Valve	1
4	VCE1A14K	Vacuum Switch	1
5	MGR63G10	Press.Gauge 0-25 Bar	1
6	DPS2111612-Steel	Pressure Switch	1
7	NDRV-DN10-G3/8	Filter Bypass Valve	1

6. PARTS LIST

REF.	PART No.	DESCRIPTION	QTY
1	CP4202-0635-01	RIG FRAME ASSY	1
2	CP4202-0635-12	ELECTRICAL CABINET	1
3	CP4202-0635-01	ELECTRICAL CIRCUIT	1
4	CP4202-0635-02	HYDRAULIC CIRCUIT	1
5	CP4202-0635-03	PIPING DIAGRAM	1

7. FILTER CHANGE PROCEDURE

Removal of used elements;

1. Ensure the filtration unit is electrically isolated and the connection hoses removed.
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 fuel contacting the operator, in case of undue pressure being released.
   Use a suitable container to collect drained fuel from under the 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 handle of the Filter Drain Valve to the closed position and refit the blanking plug to the end of the valve.
10. The unit can now be restarted.

WARNING: ALWAYS USE GENUINE CHAININGS FILTER ELEMENTS.