

OPERATION & MAINTENANCE MANUAL

DDF2-2-50-WM-EKO-SG



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INTRODUCTION

Scope and Definition

This manual provides operation and maintenance instructions for the DDF-MFR Diesel Polishing Unit. You must use the unit as described in this manual. Read this manual before you install, operate and maintain the unit.

IMPORTANT: The unit is available in various forms which include stainless steel or mild steel enclosures, frame mounted, or wall mounted without enclosures. The images included in this manual are representative of the unit only, and the final unit may differ to the images shown. However, the operational instructions remain the same for every variant.

Important safety information is highlighted as **WARNING** and **CAUTION** instructions. Warnings are given where failure to observe the instruction could result in injury or death to people. Cautions are given where failure to observe the instructions could result in damage to the equipment, associated equipment or process.

Warning Labels

Labels are located on the unit to identify potential hazards as well as help identify safe working procedures. The below examples are some of the labels located on this unit. Please note other labels other than what is shown below may be present. It is the end user's responsibility to ensure the unit is used in a safe way.



SPECIFICATIONS

SPECIFICATION	DETAIL
Dimensions	(H) 1730 mm (W) 693 mm (D) 418 mm
Weight	98 kg
Voltage	230 VAC (±10%)
Nominal Frequency	50Hz
Nominal Motor Current	3.5A
Motor Protection	Automatic thermal protection switch
Pump	Self - Priming Vane Type
Duty Cycle	Continuous
Noise Level	<85dB @ 1 Metre
Fluid Compatibility	Diesel & mineral oils
Filtration	Particulate - 1, 3, 5, 10 or 25 Micron or Water
Filter Blocked Indicator	Electronic via Control Panel LED
Pressure	Nominal Working Pressure - 1 bar (14.7 psi)
Operating Conditions*	-20°C to +60°C
Pump Capacity	Up to 100 litres/min
Environment	Control Box IP44
Connections	1" BSPP Male Coned Inlet & Outlet

*This is dependent on media conditions, and this can affect performance.

**Specifications above indicate the version shown. Other variants will differ depending on configuration.

***If in doubt, please contact your IPU Representative.

General System Requirements

Positioning	<p>The difference in height between the pump and the fluid level must be kept as small as possible and, at any rate, within the 2 meters anticipated for the priming phase. If this height is exceeded, it will always be necessary to install a foot valve to allow for the filling of the suction tube and provide tubing of wider diameter. It is recommended that the pump not be installed at a difference in height greater than 3 meters.</p> <p>In the case that the suction tank is higher than the pump, it is advisable to install an anti-siphon valve to prevent accidental diesel fuel leaks. Dimension the installation in order to control the back pressures due to water hammer</p>
Pump Inlet Pressure	When the system is functioning, the pump can work with pressure at the inlet as high as 0.5 bar, beyond which cavitation phenomena can begin, with a consequent loss of flow rate and increase of system noise and pump damage
Permitted Use	<p>Diesel fuel at a viscosity of between 2 and 5.35 cSt (@ 37.8°C)</p> <p>Minimum Flash Point (PM): 55°C</p>
NOT PERMITTED	RELATED DANGERS
Gasoline	Fire- Explosion
Inflammable Liquids with Flash Point <55°C	Fire- Explosion
Liquids with Viscosity >20cSt	Motor Overload
Water	Pump Oxidation
Food Liquids	Contamination of the same
Corrosive Chemical Products	Pump Corrosion
Solvents	<p>Injury to persons</p> <p>Fire- Explosion</p> <p>Damage to gasket seals</p>

Health, Safety & Environmental Considerations

Caution/Warning

WARNING: Inappropriate use of this equipment can cause serious injury. Only competent and authorised persons should be permitted to operate this equipment. Children/minors should NEVER be permitted to operate or move this equipment.

WARNING: This product should only be used for its intended purpose. Using this product for any other than its intended purpose could result in serious injury or death.

Always use appropriate safety equipment e.g. safety glasses, protective gloves, safety shoes etc. Observe local health and safety requirements.

Prolonged contact with diesel fuel can damage the skin. The use of safety glasses and protective gloves is recommended.

Only use this product with DIESEL FUELS having a viscosity of between 2 & 5.35 cSt (@ 37.8°C) and a minimum Flash Point (PM) of 55°C. It must NOT be used for any other liquids.

Never start or stop the pump by connecting or disconnecting the unit from the mains power supply or any other plugs or switches that will isolate the power supply to the unit.

DO NOT run the pump dry, this can cause serious damage to its components.

WARNING: Always disconnect the equipment from the mains electrical supply before carrying out any routine maintenance or repairs.

DO NOT operate switches with wet hands.

Periodically check the power supply cable for damage.

Observe local environmental requirements and ensure there is appropriate equipment available to clear up any accidental diesel fuel spills.

Special consideration should be given when this equipment is used in a marine environment.

Appropriate equipment should be available to clean up any accidental diesel fuel spills and always ensure that any used filters or coalesced water removed from the filter bowl are disposed of according to local environmental requirements.

WARNING: Do not open, or attempt to open, the control panel unless you are qualified to do so – increased risk of electric shock and death.

Unit Identification

Basic Description

Diesel fuel is known to be inherently unstable. Particulate contamination such as rust and dirt enters the fuel, condensation introduces water and this in turn encourages microbial growth. These 3 forms of contamination will eventually clog engine filters and potentially damage fuel injection equipment leading to unplanned maintenance and potential engine failure.

The on-tank fuel polishing system can be used in conjunction with a suitable biocide and a rigorous fuel management program. The system will condition and stabilise the fuel, remove water and solid particulates.

WARNING: The unit is designed to be used as a static “on tank” polishing system and should be permanently mounted either on a suitable wall or stand within the bund of the tank to which it is operating on. The system is NOT designed to be mobile and should not be used as such. It should only be installed by suitably qualified personnel.

Unit Identification

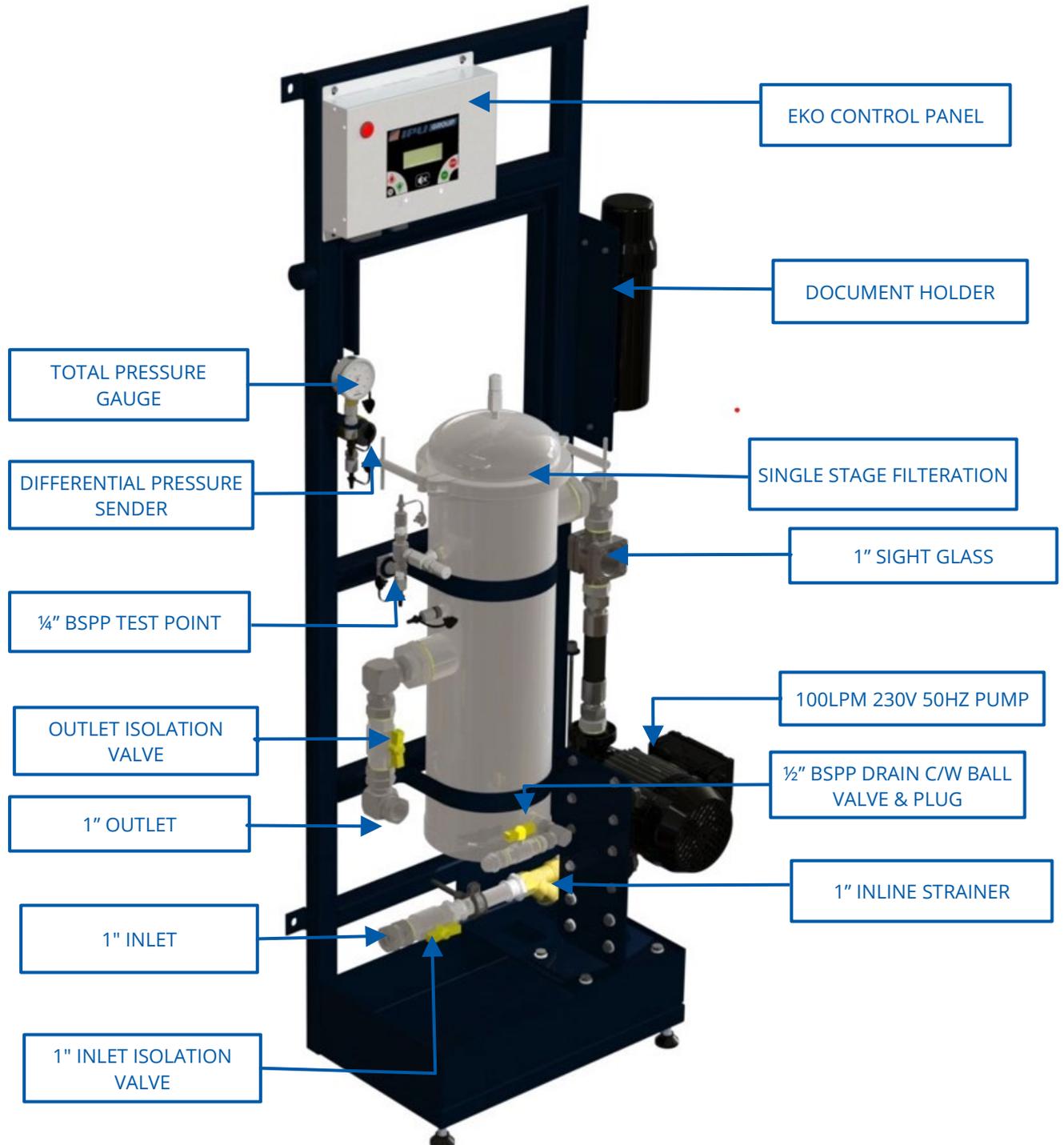
Each unit carries a unique serial number together with a model part number. This can be found on the front of the electrical panel inside the cabinet.

Always quote the Part number and serial number when requesting spare parts, service or warranty assistance.

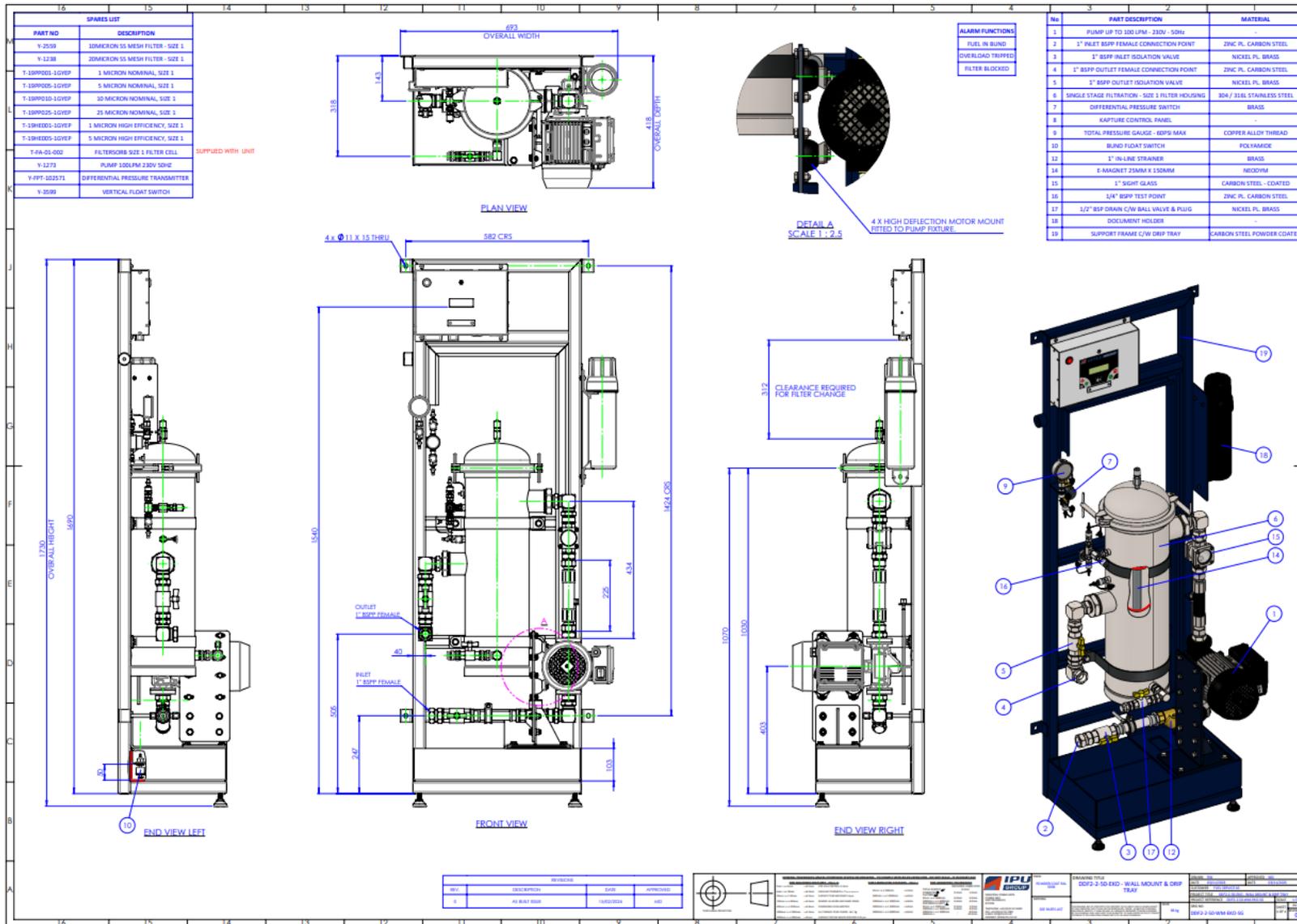
Unit Ref:	XXX-XXX-XXX
Serial No:	AXXXXX
Weight (kg):	XX
	INDUSTRIAL POWER UNITS LTD, CYGNUS WAY, WEST BROMWICH, WEST MIDLANDS, B70 0XB, UK t: +44 (0) 121 511 0400 e: ipu@ipu.co.uk
	 YEAR OF MANUFACTURE 2017 30/07/2018

The main part number identifies the units flow rate, operating voltage, filter ratings and control option.

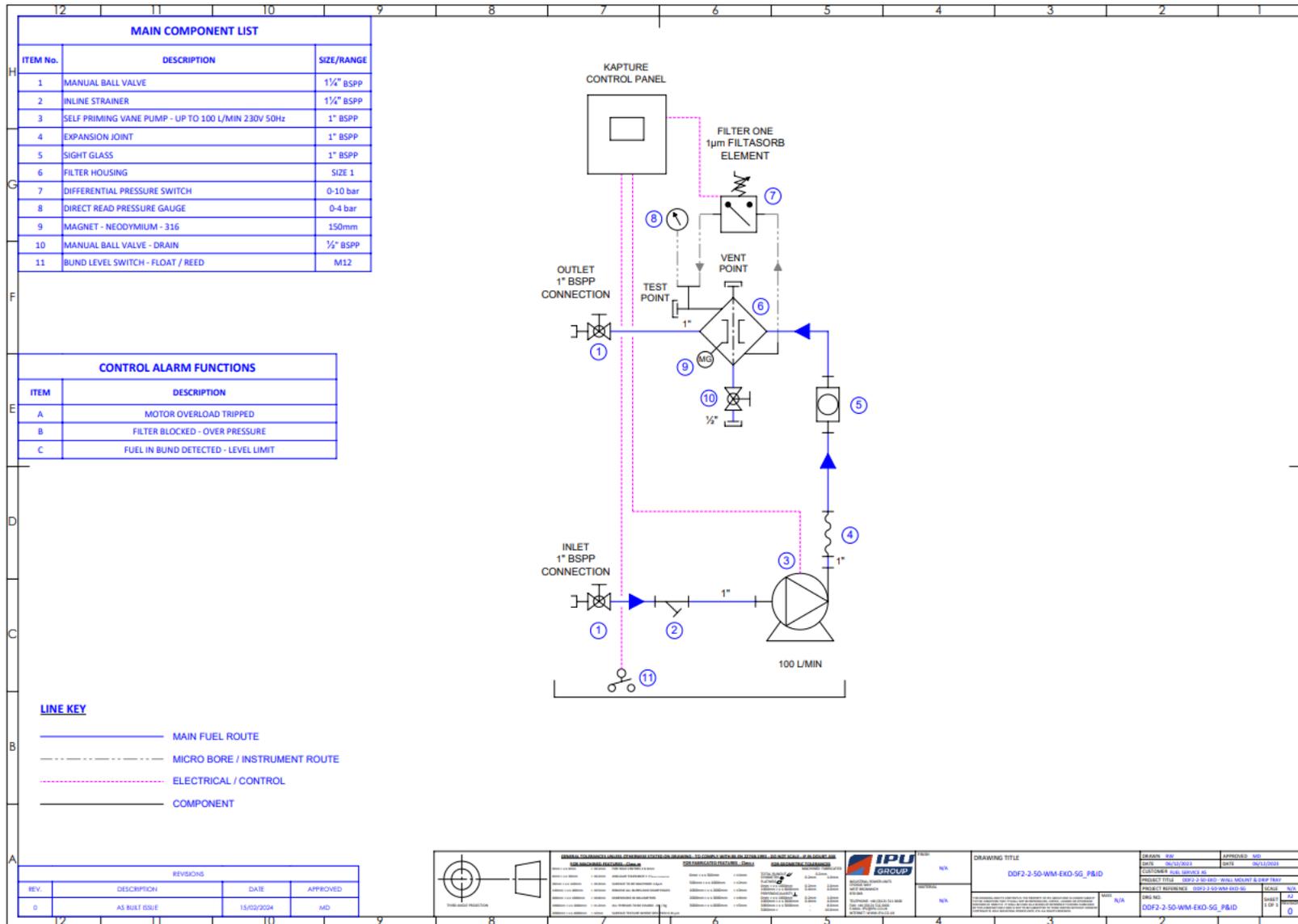
Annotated Illustration



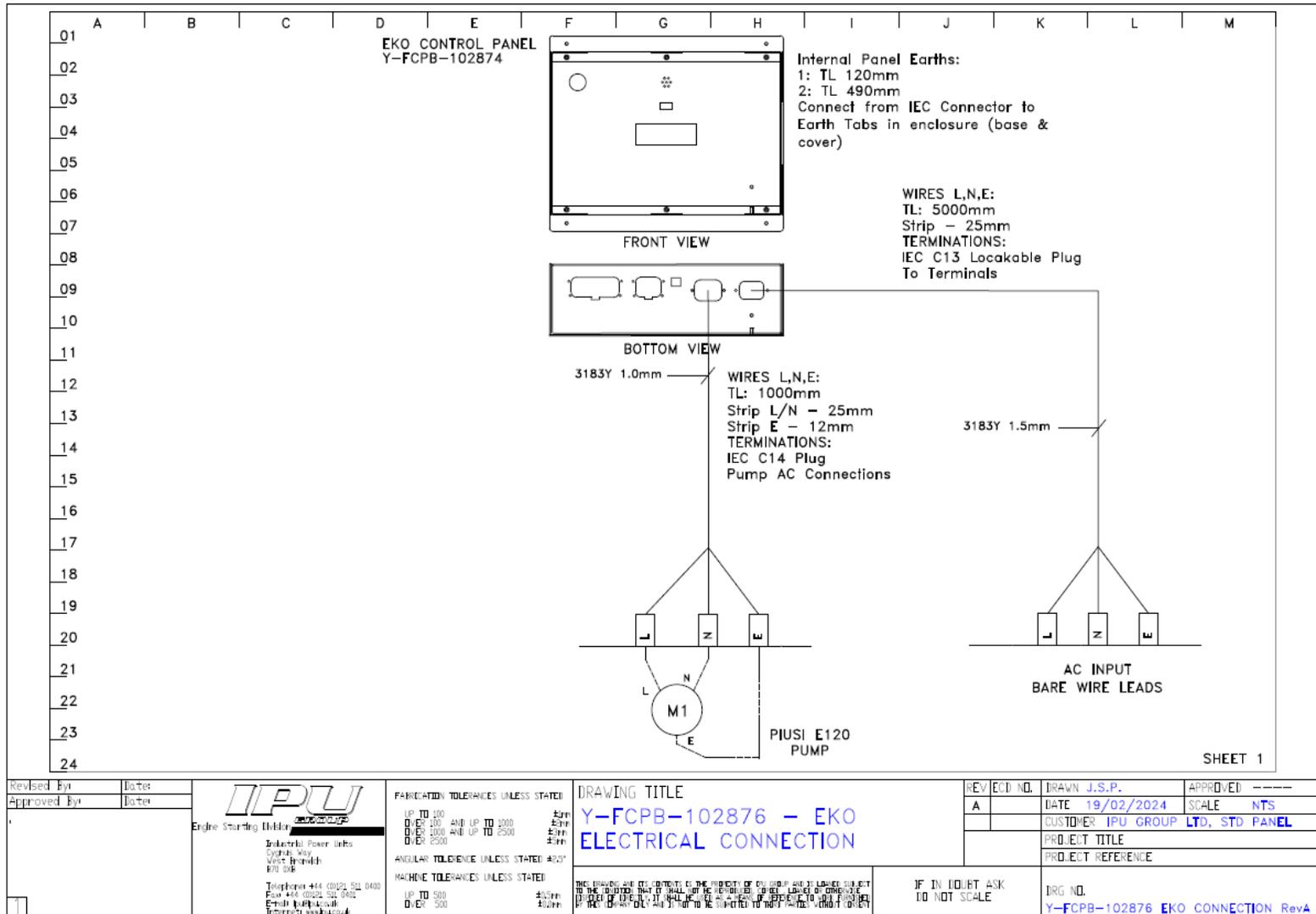
General Arrangement Drawing

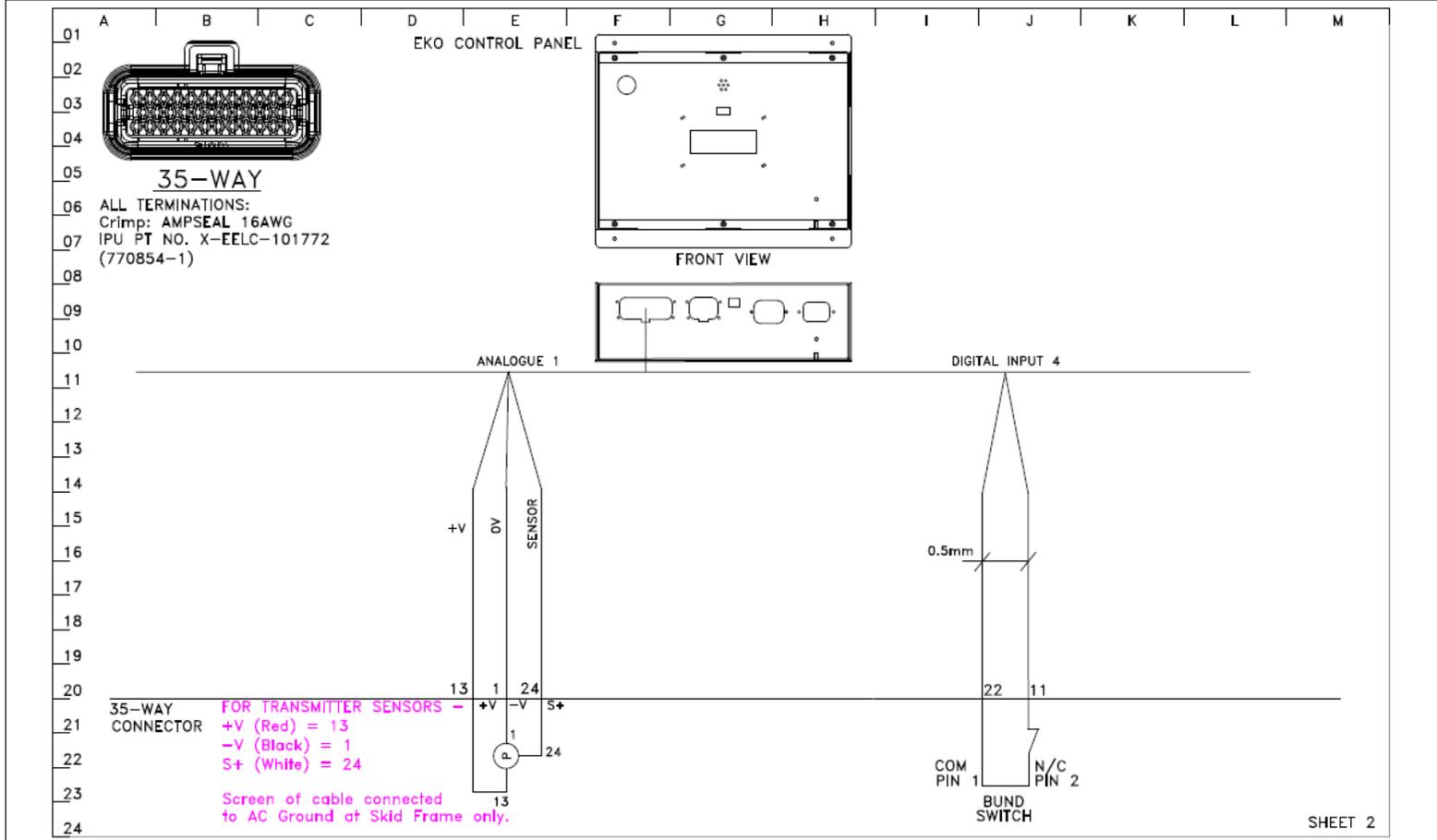


P&ID



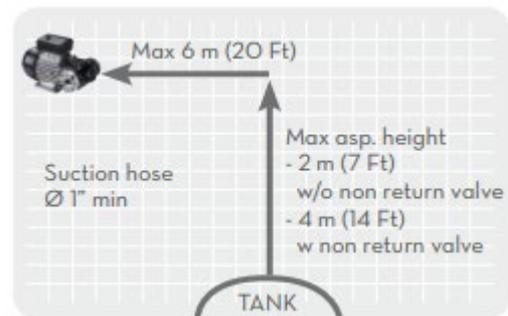
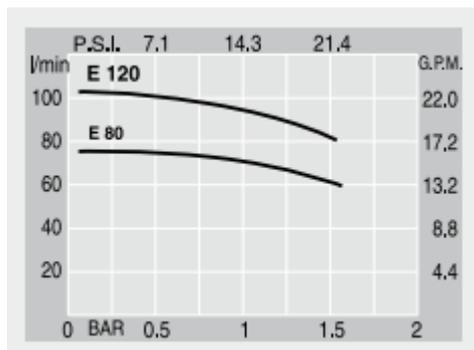
Electrical Drawings





Revised By	Date	 IPU Engine Starting Division Industrial Power Units 20000 1st Way West Branch MD 208 Telephone: 410 (410) 511 0400 Fax: 410 (410) 511 0402 Email: ipu@ipugroup.com Internet: www.ipugroup.com	FABRICATION TOLERANCES UNLESS STATED: UP TO 100 ±0.1mm OVER 100 AND UP TO 2500 ±0.2mm OVER 2500 AND UP TO 2500 ±0.3mm OVER 2500 ±0.5mm ANGULAR TOLERANCES UNLESS STATED ARE: MACHINE TOLERANCES UNLESS STATED UP TO 500 ±0.1mm OVER 500 ±0.2mm	DRAWING TITLE Y-FCPB-102876 - EKO ELECTRICAL CONNECTION	REV ECD NO.	DRAWN J.S.P.	APPROVED ----
Approved By	Date				A	DATE 19/02/2024	SCALE NTS
					CUSTOMER IPU GROUP LTD, STD PANEL		
					PROJECT TITLE		
					PROJECT REFERENCE		
					IRG NO.		Y-FCPB-102876 EKO CONNECTION RevA

Pump Performance



OPERATING INSTRUCTIONS

General Operation

In normal operation when the pump is running, the system will be triggered by either a local button press, a remote input/signal or by a preset schedule (timeclock)

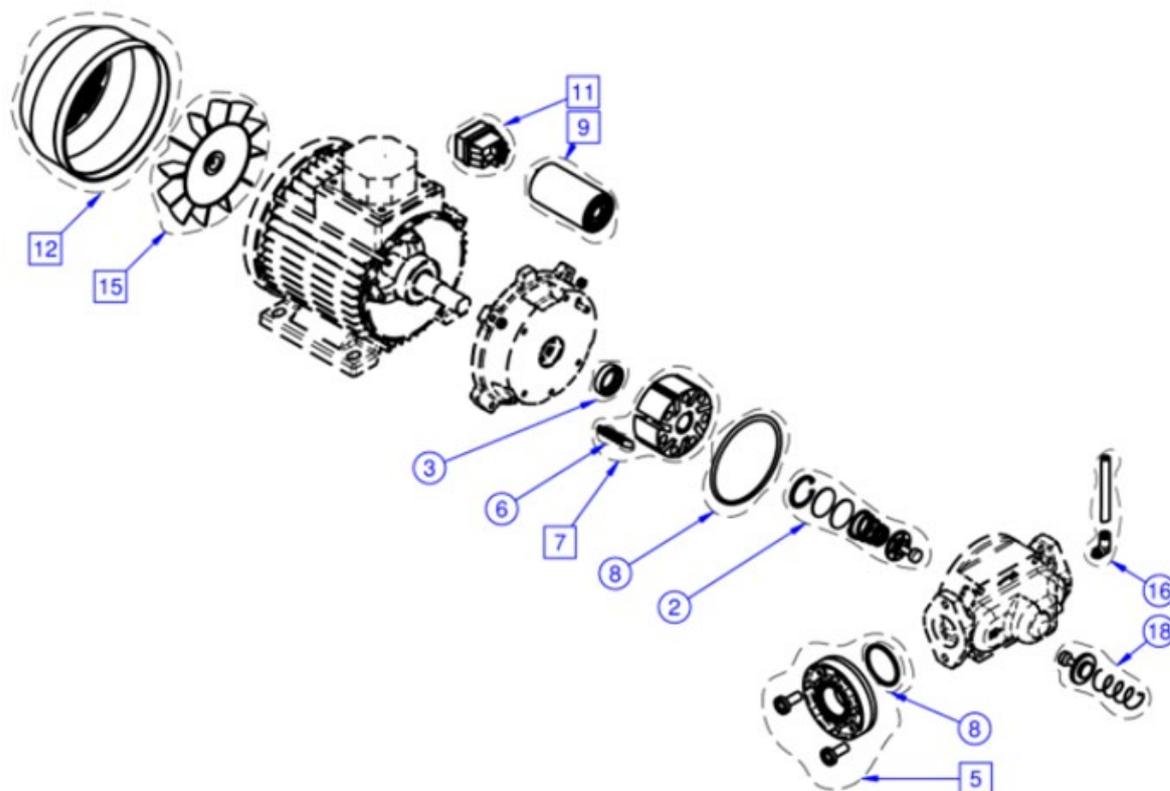
Fuel enters the system via the inlet and is drawn through the pump and is then pushed through the filter vessel to clean the fuel by removing water and particulates. The fuel then flows out of the machine and back into the tank. This cycle will repeat as defined by the schedule created via the control panel.

Before Starting the Unit

Ensure that the unit is standing on or fixed to a firm surface and that it is in a vertical position. Never operate the unit in any position other than vertical. Always double-check the general condition of the unit before use, paying special attention to electrical cables, valve connections and hoses. **WARNING:** If there are any signs of damage or excessive wear, DO NOT USE IT.

Before switching on the unit ensure pipework is connected to the inlet and outlet connections. Ensure inlet and outlet isolation valves are in the open position. It is important to check all connections and fittings to ensure they have not become loose in transit. Never run the pump dry, only start after it has been wetted. It is important to point out that the priming time can take up to one minute.

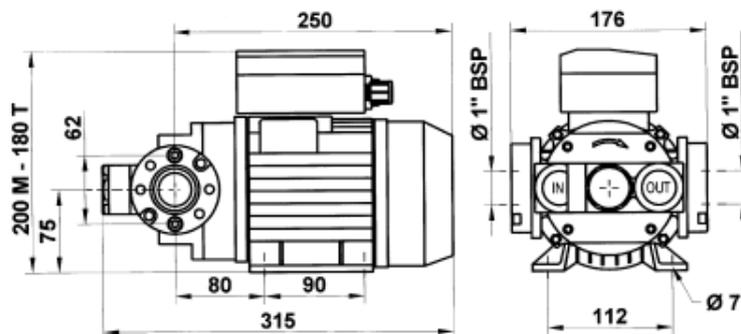
Pump Unit Exploded Diagram



SPARE PARTS		
PART NR	REF. NR	DESCRIPTION
R13851000	1	GROUP PLUG 1G + GASKET
T-8772	3	KIT SEAL BABSL 20/30/7 IN VITON
F0918000A	5	FIT FLANGE 1" PSB (2PCS)
R0700200A	6	KIT NR.7 PCS VANES E80/E120/S120
Y-FSK-102045	7	KIT ROTOR E80 WITH VANES
R08187000	10	KIT TERMINAL BOX 400 V/50
R08181000	12	KIT FAN COVER MOTOR MEC71
R15815000	2	KIT BYPASS E80/E120 - MADE IN ITALY
Y-FSK-102045	8	KIT GASEK O-RING
R08209000	15	FAN MOTOR 0.7 HPS
F1392000A	16	KIT ANTI-SYPHON FOR P56/72 E80/120

Dimensions

E120



Pump Noise Level

Under normal working conditions the noise emission from all models does not exceed the value of **70 dB at a distance of 1 meter** from the electric pump.

Maintenance based on pump manual

When installing the unit, consideration needs to be given to the pipework to minimise any back pressure.

For Pump unit, minimum recommended nominal diameter

Suction line 1"

Delivery line 1"

- On a weekly basis, check that the tubing joints have not loosened, to avoid any leakage.
- On a monthly basis, check the pump body and keep it clean of any impurities.
- On a monthly basis, check and keep the pump filter clean and any other filters installed.
- On a monthly basis, check that the electric power supply cables are in good condition.

The following must also be adhered to:

How often these pumps are inspected & serviced is very much dependant on how much fuel is passing through.

At a minimum we would expect the vanes and chamber seal to be replaced every **12 months**. Some customers choose to replace them @ 1million litres if it's not in a dispensing environment, however for DSEAR you should be checking the pump

regularly (up to the site owner / manufacturer who puts the machine on the market), as the pump is only a part-completed equipment for certification purposes.

The unit scheduling needs to be set as follows:

2 hour/day x 3 days/week.

This will be sufficient to turn over and polish the fuel.

IPU would not proactively change the shaft seal unless there is a failure.

This would likely be from the following:

- Excess motor heat
- Cavitation on the inlet
- Over running the pump in increased back pressure or if the shaft / seal interface has been affected by grits/sands/sediments which may have worn the interface area.
- Any time a shaft seal fails there is normally a cause behind it which would need investigating based on the above.

The shaft seal is a wearable seal and like the vanes may eventually fail – however if used within the design parameters of the pump should afford years of trouble free operation.

Filter change out times

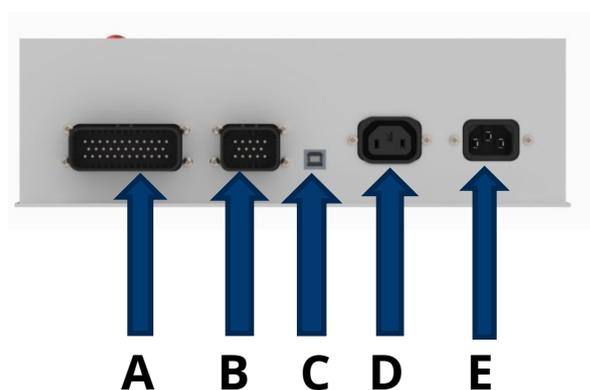
- 1) Alarm when filter blocked. Filterchange.
- 2) Alarm when 500.000 liters passed thorough filter. Filterchange.
- 3) Alarm 3 months use: Filterchange.

NOTE: IF ALARM SOUNDS CONTACT FUEL SERVICE- (PHONE: 02134)

On Piusi E 120 diesel pump, the following parts may experience wear and should be inspected and replaced as necessary:

1. Pump chambers seals: these should be inspected every 500 hours of operation and replaced if they show signs of wear or damage.
2. Pump vanes: These should be inspected every 500 hours of operation and replaced if they show signs of wear or damage.
3. Suction filters: This should be inspected every 100 hours of operation and cleaned or replaced if necessary
4. Delivery Filter: This should be inspected every 500 hours of operation and cleaned or replaced if necessary
5. Motor Brushes: These should be inspected every 500 hours of operation and replaced if they are worn down to the minimum length indicated on the brush.

Electrical Connections



CONNECTION	DESCRIPTION
A - Input/Output Connections (35-Way AMPSEAL 776163-1)	Refer to Table 2 below
B - Input/Output Connections (14-Way AMPSEAL 776267-1)	Refer to Table 1 below
C - USB Type B Female Connection	USB Connection to PC for configuration and log downloading
D - C14 IEC Pump Power Connection	AC Connection to Pump
E - C13 IEC AC Inlet Connection	AC Inlet connection

14-Way Input/Output Connector

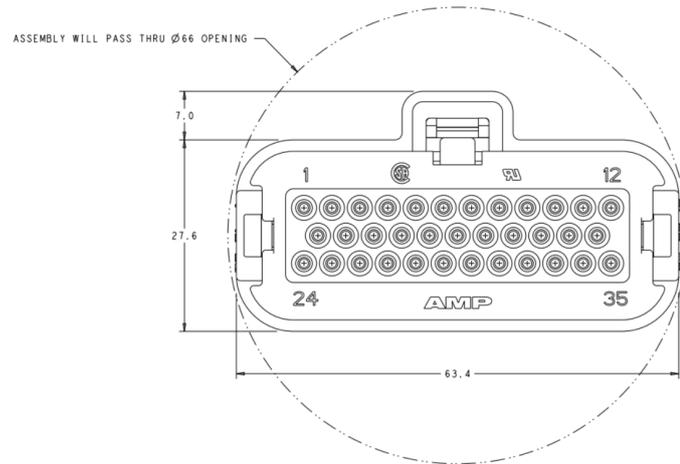


PIN	DESCRIPTION	PIN	DESCRIPTION
1	+24Vdc	8	DI3: Digital Input, Close to +V input. Not configured
2	External Emergency Stop Return (open circuit on fault)	9	RS485 Data A
3	+24V Output	10	BMS1 Common signal
4	+24V Output	11	BMS1 N/O Change over signal (System Running, energise on run)
5	DI1: Digital Input, Close to +V input. Not configured	12	BMS2 Common signal
6	+24Vdc Output	13	BMS2 N/O Change over signal (System Fault, energise on fault)
7	DI2: Digital Input, Close to +V input. Not configured	14	RS485 Data B

Table 1: 14-Way Connector.

Notes: Mating connector (supplied if required) is AMPSEAL 776164-1, crimps to be used are 770854-1, maximum wire \varnothing 1.5mm.

35-Way Input/Output Connector



PIN	DESCRIPTION	PIN	DESCRIPTION
1 - 6	0Vdc	26	Analogue Input 3 (0-5V, 0-10V, 4-20mA or Close to +V)
7	Output 3 Common Signal	27	Analogue Input 4 (0-5V, 0-10V, 4-20mA or Close to +V)
8	Output 4 Common Signal	28	Analogue Input (0-5V, 0-10V, 4-20mA or Close to +V)
9	Output 5 Common Signal	29	Analogue Input 6 (0-5V, 0-10V, 4-20mA or Close to +V)
10	Output 6 Common Signal	30	BMS3 N/O Change over signal Function not defined
11	DI4: Digital Input, Close to +V input. Bund Switch Input	31	BMS4 N/O Change over signal, Function not defined
12	DI5: Digital Input, Close to +V input. Not configured	32	BMS5 N/O Change over signal, Function not defined
13-23	+24V Output	33	BMS6 N/O Change over signal, Function not defined
24	Analogue Input 1 (0-5V, 0-10V, 4-20mA or Close to +V)	34	Output 7: AC Live Output (Max 3A)
25	Analogue Input 2 (0-5V, 0-10V, 4-20mA or Close to +V)	35	Output 7: AC Neutral Output (Max 3A)

Table 2: 35-Way Connector. 35-Way Connector.

Notes: Mating connector (supplied as standard) is AMPSEAL 776164 series. Consult IPU for further information. Crimps to be used are 770854-1, maximum wire \varnothing 1.5mm

Front Panel Terminals

The EKO Kapture panel has a 2-part screw terminal connection underneath the protective cover. Remove the M3 screws and remove the cover, as shown at G

Note: When not being used the cover plate should be securely attached to prevent exposure to the terminal and PCB and limit ingress of any moisture / dirt within the control panel.



Mating connector is supplied, if replacement is required use EBK-12-B ([EBK-12-B Multicomp, TERMINAL BLOCK, EUROSTYLE 12 POSITION 24-12AWG | Farnell UK](#)) or equivalent.

Terminal	Function
1	Modbus RTU. RS485 D+ / B
2	Modbus RTU. RS485 D- / A
3	0V DC (For RS485 if required)
4	Output 2, Normally Open Contact
5	Output 2, Common Contact
6	Output 2, Normally Closed Contact
7	Output 1, Normally Open Contact
8	Output 1, Common Contact
9	Output 1, Normally Closed Contact
10	Remote Input 2*
11	Remote Input 1*
12	+24Vdc Signal

Getting Started and Running the Unit

Real Time Clock

The EKO Kapture panel has a real time clock that is backed up by an internal supercapacitor. The Capacitor has enough power to hold real time clock memory for approximately 45 days. After this period the EKO Kapture clock settings will be lost and need to be reset.

If the EKO Kapture panel cannot read the real time clock, it will not pass the system initialising stage when powered from AC supply. To set the real time clock do 1 of the following, ensuring in both instances the unit is fully powered down before starting –

1. Apply power using the USB connector only.
Press & Hold the up and down buttons for >2 seconds
Navigate to the Clock Menu
Set the Date and Time from within the menu
Disconnect USB connection and re-apply AC power.
2. Apply power using the USB connector only.
With EARL for EKO application installed, navigate to the Clock option, and select “Sync Time”
Disconnect USB connection and re-apply AC power.

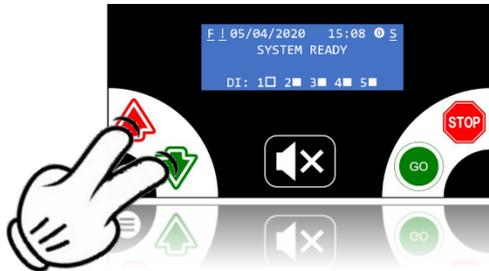
When the LCD display shows System Ready then the unit can be started.

Refer to separate EKO Kapture Panel manual for detailed instructions on all menu items and their function.

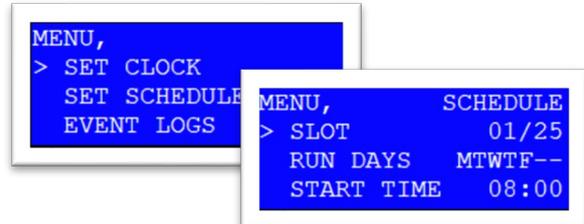
System Schedule

The units are factory configured to an alternating day schedule of Monday, Wednesday and Friday, to start at 09:00 and run for 2 hours.

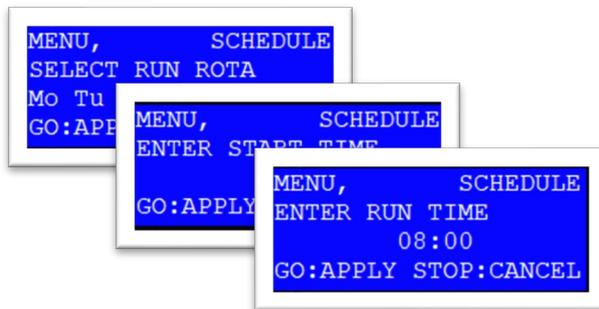
To setup or view the run schedules do the following -



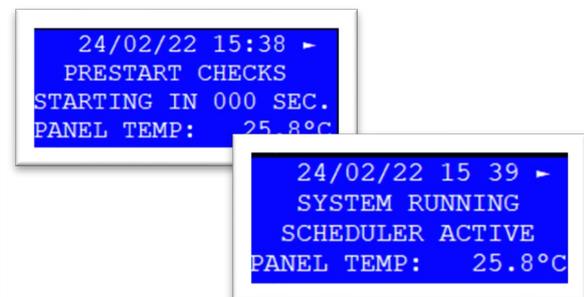
Hold **UP** and **DOWN** keys together to enter menu



Scroll down to **Set Schedule**, there are 25 configurable slots for settings different schedules, select one required.



Enter the Day Run Rota, the start time, and the run length time to set the system.



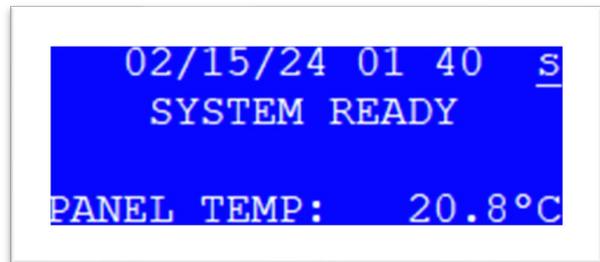
The system will warn it is about to start and countdown to turning on. Whilst running, the system will display reason for running.

Running the system

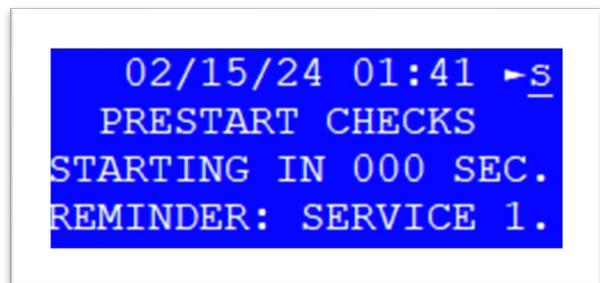
The system can be triggered in 1 of 3 ways.

1. Local Control by means of **START** button on panel.
2. Scheduler as outlined above.
3. Remote Signal Triggers, such as Modbus RTU or Input Triggered.

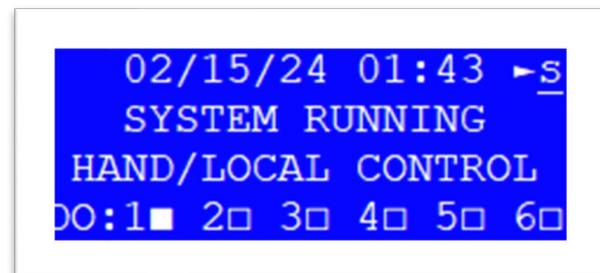
The system can only be started when the System State is in a "Ready State" as shown on line 2 of the LCD Display.



When the system is about to start, it will initially enter a Prestart Check State, the display will count down as a warning that it is about to start.



Once running, line 3 of the LCD will indicate the reason for the system to run.



Stopping the system

The system can be stopped by pressing the **STOP** button on the control panel. Depending on how the system has been triggered the STOP function will have different results –

1. Local Control by means of Start/Stop buttons on panel.
Pressing STOP will simply stop the manual running of the system.
2. Scheduler
Pressing STOP will cancel the current schedule and cause the system to stop.
3. Remote Signal Triggers
Pressing STOP will cancel the current trigger and cause the system to stop.

In the case of the system starting to reasons 2 or 3 above, the system will not then react to a schedule start or remote start unless first the schedule slot has ended, and the remote signal has been dropped.

Pump Output Protection and Reset

The EKO Kapture panel is equipped with an internal thermal overload for detecting a pump overload condition. There is an access port on the right-hand edge of the enclosure to allow reset in event of trip condition identified as F below.



Ac Power Should be isolated from the panel before resetting the switch.

Access the reset switch with a plastic tool with a maximum diameter of 4mm. Insert into hole into the microswitch clicks and resets.

NOTE: In the event of pump overload, the pump and electrical wiring should be checked to identify the root cause of the overload condition. Refer to troubleshooting guide at end of manual.

INLINE CONTAMINATION MONITOR

See separate manual (Y-3651)



MAINTENANCE

The unit has been designed to require minimal servicing and maintenance. The unit contains one filter unit, which has a replaceable filter element. The filter has a replaceable filter bag that will need to be replaced once the filter alarm detects a blockage. The frequency of this will depend on the condition of the fuel. There will also be a requirement to remove water collected in the filter bowl. **CAUTION:** PPE must be worn at all times when operating or servicing the machine.

To change the filter cell:

- Ensure that the pump has stopped running.
- Close the inlet & outlet ball valves. (See P&ID)
- Remove the drain point cap.
- Ensure secure connection to filter drain port.
- Place hose into suitable container.
- **CAUTION:** open all valves slowly to ensure fuel is not expelled quickly due to residual pressure in the system.
- Attach the sample hose to the vent valve on the top of the filter housing to allow for the pressure inside the canister to equalize.
- Open the drain port valve to allow for excess fuel to drain from the filter canister.
- Once the filter housing is fully drained, remove the sample hose and loosen the retaining clamp ring on the filter lid.
- Remove the filter lid with caution it may be heavy and have residual fuel on the inside surface.
- Remove the Retaining Brace.
- Carefully lift out the existing Filter cell.
- Fit the new Filter cell ensuring it has been securely pushed down and seated inside the housing
- Replace the Retaining Brace.
- Replace the Filter Lid
- Secure the filter lid using the filter housing clamp ring – see Fig 1 below, for the alignment

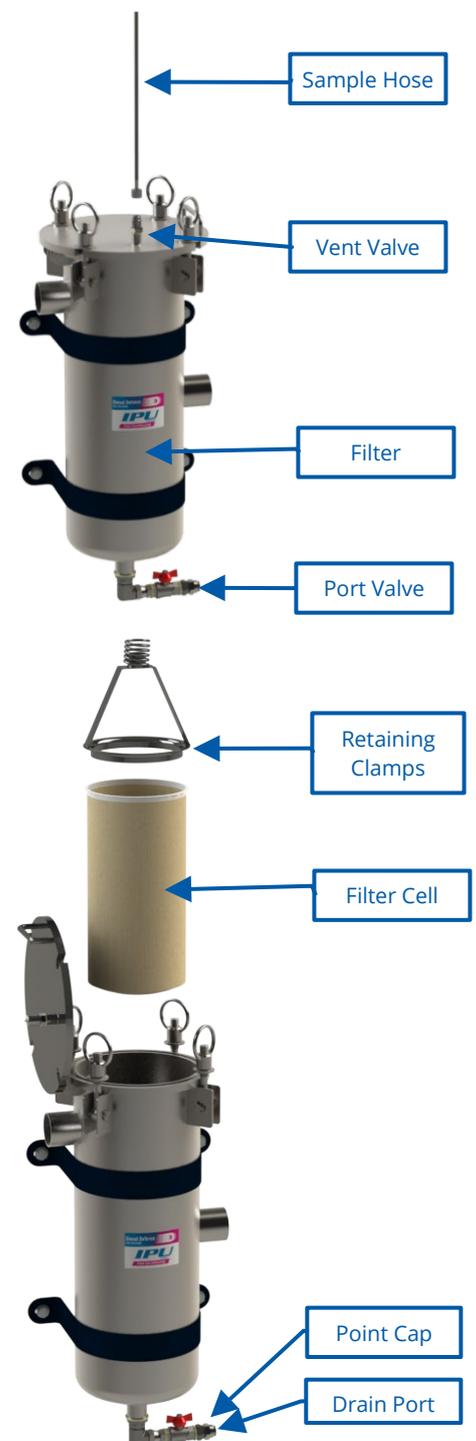




Fig 1.

On fitting of filter housing clamp ring please ensure that centre line of the clamp is aligned with arrow marked on filter housing (as shown on image above)

Fault Finding

The EKO system fuel polishing units have several alarm functions to protect itself.

When any alarm is activated, it is shown on the front of the control panel. Should the alarm trigger a system shut down, then this will need to be reset, follow LCD instructions.

Once the issue or fault has been resolved, to reset the alarm press the GO button on the front of the panel, the LCD display should read "System Ready".

The unit monitors all the process and safety interlocks. Faults resulting from this monitoring can be viewed in a number of ways:

- Faults are reported on the control panel display inside the panel and are displayed until cleared by operator intervention
- The unit can be connected to a Building Management System via volt free contacts
- The unit can be connected to a Building Management System via Modbus RTU over RS485 serial communication

General Maintenance

The unit has been designed to require a minimum amount of maintenance:

- On a weekly basis, conduct visual check of connections and joints to ensure they have not loosened. Visually check and then manually lift the float switch to ensure it is working correctly.
- Once a blockage has been detected, replace filters, as well as check and clean suction filter installed in the pump.

The pump requires minimal maintenance. The following are guidelines outlined by the pump manufacturer for pump the maintenance of the pump:

- On a weekly basis, check that the hydraulic fittings have not loosened, to avoid any leakage.
- On a monthly basis, check the pump body and keep it clean of any impurities.
- On a monthly basis, check and keep the pump filter clean and any other filters installed.
- On a monthly basis, check that the electric power supply cables are in good condition.

Troubleshooting

ISSUE	RESOLUTION
LCD DISPLAY IS NOT ON	<ul style="list-style-type: none"> Check power supply to the unit. <p>WARNING: Risk of shock - this level of check should ONLY be carried out by a suitably qualified person.</p>
NO FLOW ALARM	<ul style="list-style-type: none"> Check inlet and outlet Isolation valves are fully open. Check switch located on pump is set to on. Check pipe work and connections to the unit to ensure there are no leaks or blockages downstream and upstream. The placement of the unit from the tank and the length of hose will affect the flow rate coming into the system. Low level in the suction tank. Refill the tank. Check filters for blockages. Extreme operating conditions can raise the motor temperature and, consequently, cause the thermal protection switch to stop it. Wait for it to cool before resuming use. The thermal protection automatically turns off when the motor is sufficiently cool.
FILTER CHANGE ALARM	<ul style="list-style-type: none"> Pressure switch has detected pressure in the filter housing which indicates a blocked filter.
THE PUMP WILL NOT SELF PRIME	<p>The priming phase can last from several seconds to a few minutes, as a function of the characteristics of the system. If this phase is prolonged, stop the pump and verify:</p> <ul style="list-style-type: none"> That the pump is not running completely dry. That the suction tubing is not allowing air to leak in. That the suction filter is not clogged. That the suction height is not greater than 2 meters (if the height is greater than 2 meters, fill the suction tube with fluid). That the delivery tube is allowing the evacuation of the air. <p>The pump has run dry for too long a period/long periods of inactivity. In this case it is advisable to add liquid directly into the pump chamber before start-up. It is also advisable to add a drop of lubricating oil inside the pump only before running the pump.</p> <p>Air leak at the suction pipe due to the following reasons:</p> <ul style="list-style-type: none"> Possible cuts in the pipe, inadequate hose clamps, malfunctioning of the filter due to defective/worn seals or filter clogged. Air leak at the pump front plate cover due to the following reasons: Loose fixing screws or poor effectiveness of the seal.

ISSUE	RESOLUTION
	<ul style="list-style-type: none"> • The presence of obstructions or restrictions in the suction or delivery pipes.
THE MOTOR TURNS SLOWLY WHEN STARTING	<ul style="list-style-type: none"> • Low voltage in the electric power line.
INCREASED PUMP NOISE	<ul style="list-style-type: none"> • Cavitation occurring. Reduce suction pressure. • Irregular functioning of the by-pass. Dispense until the air is purged from the circuit. • Air present in the diesel fuel. Verify the suction connections.
LEAKAGE FROM THE PUMP BODY	<ul style="list-style-type: none"> • Check and replace the mechanical seals.

Spares Parts List

DESCRIPTION	PART NUMBER
1 µm DISPOSABLE POLYPROPYLENE	T-19PP001-1GYEP
5 µm DISPOSABLE POLYPROPYLENE	T-19PP005-1GYEP
10 µm DISPOSABLE POLYPROPYLENE	T-19PP010-1GYEP
25 µm DISPOSABLE POLYPROPYLENE	T-19PP025-1GYEP
50 µm DISPOSABLE POLYPROPYLENE	T-19PP050-1GYEP
100 µm DISPOSABLE POLYPROPYLENE	T-19PP100-1GYEP
200 µm DISPOSABLE POLYPROPYLENE	T-19PP200-1GYEP
10 µm RE-CLEANABLE NYLON	T-19NM010-1GYEP
25 µm RE-CLEANABLE NYLON	T-19NM025-1GYEP
50 µm RE-CLEANABLE NYLON	T-19NM050-1GYEP
75 µm RE-CLEANABLE NYLON	T-19NM075-1GYEP
100 µm RE-CLEANABLE NYLON	T-19NM100-1GYEP
200 µm RE-CLEANABLE NYLON	T-19NM200-1GYEP
300 µm RE-CLEANABLE NYLON	T-19NM300-1GYEP
400 µm RE-CLEANABLE NYLON	T-19NM400-1GYEP
600 µm RE-CLEANABLE NYLON	T-19NM600-1GYEP
800 µm RE-CLEANABLE NYLON	T-19NM800-1GYEP
1 µm FILTASOLID900 FILTER CELL	T-19HE001-1GYEP
5 µm FILTASOLID900 FILTER CELL	T-19HE005-1GYEP
1 µm FILTASORB2 WATER REMOVAL CELL	T-FA-01-002
VERTICAL FLOAT SWITCH NYLON	Y-3599
PIUSI E120 PUMP 100LPM 230V 50HZ	Y-1273
REPLACEMENT VANES AND SPRINGS	Y-FSK-102045
AMPSEAL 14-WAY PLUG	Y-FELC-101918
AMPSEAL 35W CONNECTOR	X-EELC-101804
FEMALE CRIMP TERMINAL CONTACT 16AWG	X-EELC-101772
IEC C14 PLUG, REWIRABLE	Y-FELC-101970
IEC C13 PLUG, LOCKABLE	Y-FELC-101969