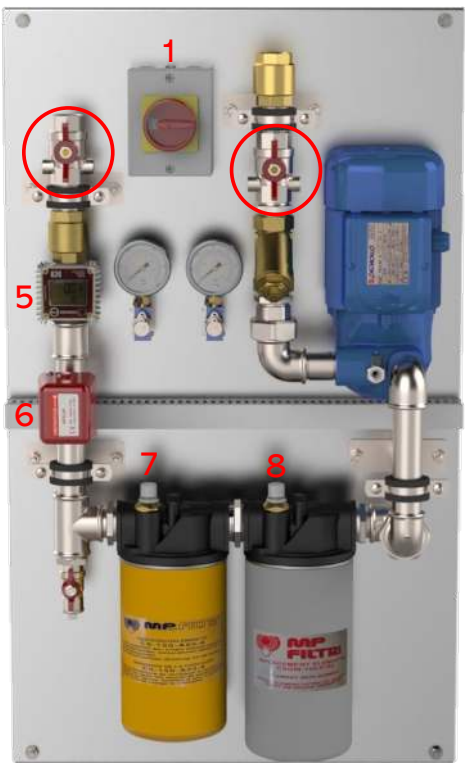
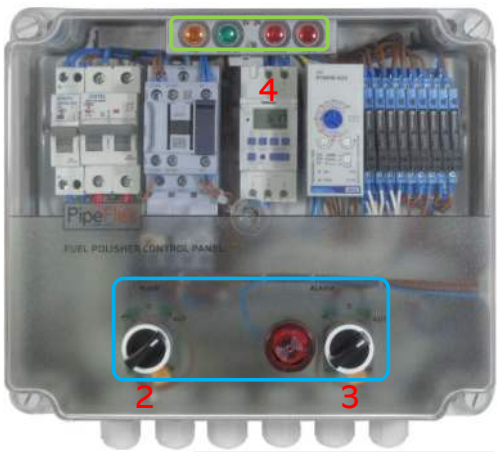
1. Operation Overview

1. To operate the Polisher the valves on the inlet and outlet **(as circled)** need to be in the **OPEN** position:

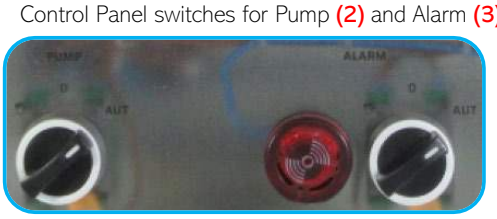


General Arrangement



Locally Mounted Control Panel

2. Isolator Switch **(1)** to be in the **ON** position.
3. Control Panel switches for Pump **(2)** and Alarm **(3)** to be in the **"AUT"** position.



- 'PUMP' rotary selector switch:
  Manual '✋' | OFF '0' | Automatic 'AUT'
- 'ALARM' rotary selector switch for control of dual buzzer and red beacon:
  Test '✋' | OFF '0' | Automatic 'AUT'

4. The pump will **START** in accordance with the programmed schedule on the timer **(4)**. See section 2. on Page 2 for operation.
5. Flow rate and volume transferred can be displayed on the Flow Meter **(5)**.
6. The pump will **STOP** when scheduled program ends.
7. Pump will also **STOP** if:
   - No flow on outlet of Pumps – signal received from Flow Switch **(6)**
   - Leak detected by drip tray Float Switch (not pictured).
8. The Pump can be stopped by turning switch **(2)** to the OFF '0' position.
9. The Pump can be run manually by turning switch **(2)** to the manual '✋' (Hand mode) position.
   CAUTION: The Pump will run regardless of the state of the Start/Stop signals and safety controls. In this mode the switch is retractive and will return to '0' (OFF) unless held in place.
10. The differential pop up blockage Indicators **(7)** and **(8)** should be periodically checked. If the red indicator has popped up the filter will require replacement. See section 4. on Page 4 for items codes.
11. Top row Control Panel indicators from left to right:

- Power Supply '~' 🟠 (amber lamp)
- Pump Running 🟢 (green lamp)
- Pump Overload / Trip 🔴 (red lamp)
- Alarm running indicator 🔴 (red lamp)

12. The Control Panel has Volt free outputs for integration with BMS / external devices. Please refer to section 3. on Page 4 for additional information.

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2. Digital Programmable Timer Operation

2.1. Setting Display Time (Present Time)

If there is no display for the first time, press **RESET**. Press both **D+** and **H+** for 3 seconds, the timer will be turned off and all settings will be lost. Day correction parameters, accumulated operating times and action times are retained.

Step	Button	Programming
1	Hold ◷ and then press **H+**	HOUR increases on the screen, press **H+** continuously, the hours increase
2	Hold ◷ and then press **M+**	MINUTE increases on the screen, continuously press **M+**, the minutes increase
3	Hold ◷ and then press **D+**	Mark of WEEK moves on the screen, press **D+** continuously to choose the week

The default clock format is 24 hour system. Press ◷ for 5 seconds to change to 12 hour system. "AM" will be displayed on the upper left comer. Hold ◷ for 5 seconds again to revert to 24 hour clock. "AM" on the upper left corner will disappear.

2.2. Timing settings (2.2.1, 2.2.2 and 2.2.3 functions cannot be used at the same time)

2.2.1. 20 Groups Setting Of On/Off Function.

Step	Button	Programming
1	Press Ⓟ	Enter into timing ON setting (display 1 ON)
2	Press **H+** and **M+**	Set ON time, press **H+** to set the hour, press **M+** to set the minute
3	Press **D+**	Same setting every day, MO-FR, MO-SA, SA-SU, MO-WE, TH-SA, MO WE FR, TU TH SA (if it is same every day, do not press D+ and skip this step)
4	Press Ⓟ	Enter into timing OFF setting (displays 1 OFF)
5	Press **H+**, **M+**	Set OFF time, press **H+** to set the hour, press **M+** to set the minute
6	Press **D+**	Same setting every day, MO-FR, MO-SA, SA-SU, MO-WE, TH-SA, MO WE FR, TU TH SA (if it is same every day, do not press **D+** and skip this step)
7	Repeat steps 1-6	Set the ON/OFF time of 2nd to 20th groups (or press ◷ to exit)

a. When setting is finished, press Ⓟ to view the set number of ON/OFF routines and the time.
b. Press Ⓟ to enter the ON or OFF program, press "MANUAL" to clear the ON or OFF time of current group. Display changes to "-- : --".

2.2.2. 20 Pulsation Function Setting ("P" flashes on screen when opening).

Step	Button	Programming
1	Hold both **H+** and **M+** for 3 seconds	Enter into the pulse width setting, display as 0:00 and **P**
2	Press **H+**, **M+** and ◷ at the same time	Set the pulse width: min / s (max 59 min 59 sec)
3	Press both ◷ and **Manual**	The pulse width setting is completed, the "**P**" on the screen flashes
4	Press Ⓟ	Enter into timing pulsation ON (Display 1 ON). Press again for the second pulse time
5	Press **H+**, **M+**	Set ON time
6	Press **D+**	Same setting every day, MO-FR, MO-SA, SA-SU, MO-WE, TH-SA, MO WE FR, TU TH SA (if it is same every day, do not press **D+** and skip this step)
7	Repeat steps 4-6	Set the pulsation time of 2nd to 20th groups (or press ◷ to exit)
	Press both **H+** and **M+**	Exit the pulsation function, the display "**P**" will disappear

a. When setting is finished, press Ⓟ to view the set number of pulsation and the time.

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b. Press Ⓟ to enter the interface pulsation program, press **"MANUAL"** to clear the pulsation time of current group and then display **"-- : --"**

2.2.3. Countdown Function Setting ("d" displayed at bottom left corner of screen).

Step	Button	Programming
1	Hold both Ⓟ and ◷ for 3 seconds	Enter into the countdown setting, "d" displayed at bottom left corner, displayed as 0:00
2	Press ◷ and **H+/M+** at the same time	Set the min and sec of countdown respectively (duration range: 1sec - 99min 59sec)
3	Press **MANUAL**	Start the countdown function
4	Press Ⓟ	Halfway reset and wait to start the countdown again
5	Hold both Ⓟ and ◷ for 3 seconds	Exit the countdown setting, "d" at bottom left corner will be disappear

2.3. Manual Daylight Saving Time (DST) Display Time Setting.

Step	Button	Programming
Setting	Hold both **D+** and **M+** for 3 seconds	The present time will increase 1 hour ("1h" displayed at the bottom left corner of the screen)
Cancel	Hold both **D+** and **M+** for 3 seconds again	DST will be cancelled and back to the present time

Note: This setting only changes the present time displayed. The ON/OFF time of program or pulsation does not change. If the ON/OFF program needs to run according to DST, set it in the setting program.

2.4. Automatic Correction Of Time Error Daily ("1d" display at bottom left comer of screen)

Step	Button	Programming
1	Press both **MANUAL** and Ⓟ	Enter into time correction, screen display: 1d-00 (setting range -3-3sec)
2	Press **D+**	Set the number of seconds to compensate each day. The program is incremented or decremented by 1 second (e.g displayed as '05' refers to increase 0.5 seconds, '-20' refers to reduction of 2 seconds)
3	Press ◷	The setting is confirmed and exit menu

2.5. Control ON Or OFF Manually (Press "MANUAL")

Screen Display	Work State
ON AUTO	Automatic control and in the ON state
AUTO OFF	Automatic control and in the OFF state
ON	Permanent ON and not controlled by the timer
OFF	Permanent OFF and not controlled by the timer

2.6. Check Accumulated Operating Time And Action Number

- Hold **M** and **MANUAL.** The screen display will alternate between operating time (h) and action number (p). The actual operating time and action number: multiply the displayed values by 10. (max:99990h & 99990t) e.g: "h0013" and "p0021" refer to accumulated operating time of 130 hours and action number of 210 times.
- Release **M** and **MANUAL**, display will automatically return to the clock interface.

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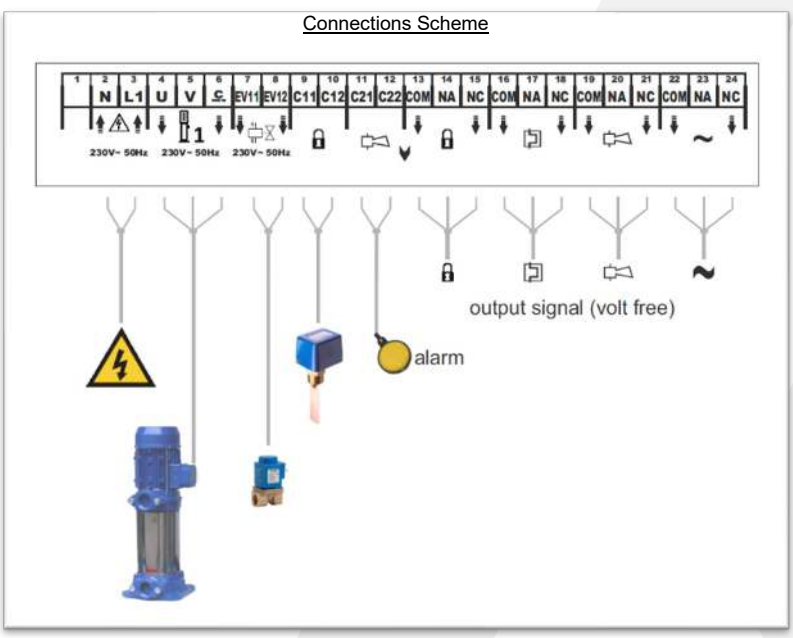
3. Control Panel

- Once all connections have been made, the overload relays must be adjusted to suit the motor's rating. When power is supplied the Power supply indicator '~' ● (amber lamp) will be illuminated. All other lights will remain off until Pump runs, trips or a safety alarm is present.
- With the 'PUMP' selector switch in automatic mode 'AUT', the Pump turns ON and OFF in accordance with the programmed schedule on the 7 day timer.
- If safety circuit 🔒 (C11-C12) opens during operation the Pump turns OFF and system goes into alarm.
- An adjustable RTMFM timer linked to the safety control circuit 🔒 (C11-C12) allows a programmable delay before shutting off the Pump. If a Flow Switch is part of the safety circuit this allows flow to be established on Pump startup and avoids false readings due to turbulent flow.
- The safety control 🔒 (C11-C12) must be linked out if not in use.
- When the Pump is running the 'Motor On' ● (green lamp) will be illuminated.
- Every time the Pump is activated the 230V output (EV11-EV12) energises.
- If, during operation, the safety control circuit 🔒 (C11-C12) opens or there is a trip of the motor circuit breaker due to an overload or short-circuit, the Pump will STOP. This overrides the START signal from the timer if in 'AUT' mode.
- If the 'ALARM' selector switch is in the 'AUT' position the dual buzzer and beacon will sound and illuminate in the event of the above scenarios and if the alarm input circuit (C21-C22) closes (if applicable).
- The buzzer can be muted by turning the 'ALARM' selector switch to the '0' position.
- The Alarm running ● (red lamp) at the top of the panel will remain illuminated regardless of the position of the 'ALARM' selector.
- To reset the trip of the safety control, the panel must be turned off and on again at the circuit breaker or mains isolator.
- In the event of an overload trip ● (red lamp) the Pump turns off.
- When the 'PUMP' switch is in Manual mode (✋) the Pump will turn on independently of the programmed timer. In this mode the switch is retractive and will return to '0' (OFF) unless held in place.
- The control panel has 4 volt free SPDT alarm contacts. From left to right: Safety circuit (🔒 13, 14, 15), overload / trip relay Pump (16, 17, 18), notification alarm (19, 20, 21) and power failure (~ 22, 23, 24).



4. Replacement Filters

Replacement spin-on cartridge filters from www.mpfiltri.co.uk.

Item code:

- CW150 P10A: First stage fuel filtration to 10 micron nominal with water absorption (white cartridge).
- CS150 A03A: Second stage fuel filtration to 3 micron absolute (yellow cartridge).

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