



PULSE-8: MASTER PULSATION CONTROL

Version - February 2006
For Software Version V1.02



Part Number - 39-0020



PULSE-8 MASTER PULSATION CONTROL: **INDEX**

GOOD PRACTICE: Mains Supply.

- A separate mains supply and earth running directly from the consumer meter is essential.
- Avoid routing the mains cable to the power supply close to other supplies especially those providing intermittent current- motors that are starting and stopping continually or high power heaters with thermostatic control.
- Terminate in a sealed, fused, double pole switched outlet fitted with a 13Amp (Type 1362) fuse or trip. A 3-pin ring main socket is not suitable in parlour conditions. All mains cabling must be contained in a firmly secured durable conduit.

INDEX

	Index
Good Practice:	
Siting & Initial Switch On:	1
Parlour Layouts:	2
Pulse-8 Features:	3
Pulse-8 Operation :	4



PULSE-8 MASTER PULSATION CONTROL: 1

Siting:

The PULSE-8 unit should be sited to allow easy access and minimal cable runs to the solenoid valves. The common (+) supply should be taken from either of the 2 connector block terminals and looped to all of the solenoids. Use 2.5csa red cable.

The appropriate (-) switched supply is taken from the 8-way plug-in (see below) to each solenoid valve depending upon the parlour configuration. Use 2.5csa black cable.

The PULSE-8 requires a 240 or 220volt 50Hz AC supply from a switched, fused outlet, not a 13amp plug and socket. Use a 5Amp fuse.

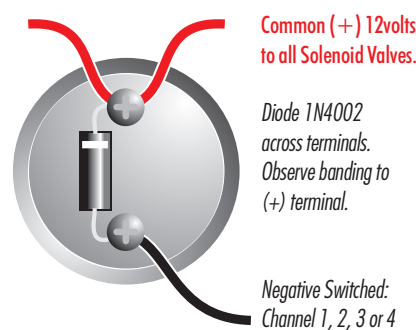
12, 15, 18 or 24volt solenoid valves either normally open or normally closed may be used. The solenoid output voltage is selected by connecting the 'flying' secondary tap (Black wire) to the appropriate terminal on the connector block. See opposite. The control is shipped with 12volt solenoid valves selected.

A negative supply wire (blue) and two control supply wires (red + yellow) are pre-fitted to the plug-in connector. Ensure that the plug-in is firmly located in the socket on the circuit board.

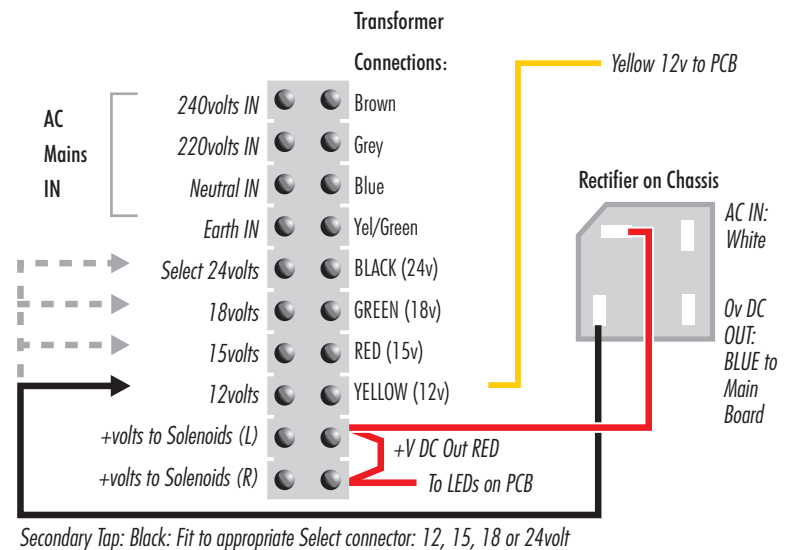
Initial Switch ON

With the MODE SELECT SWITCH in the up (Stand-by) position, power up the unit. The four channel indicators should begin to flash; the digital displays will remain unlit. Move the SELECT switch to the ON position and the Frequency and Ratio displays together with the Reset indicator should illuminate. The unit is now running with the default settings (see Page 4) as shown on the displays and the solenoid valves should be operating.

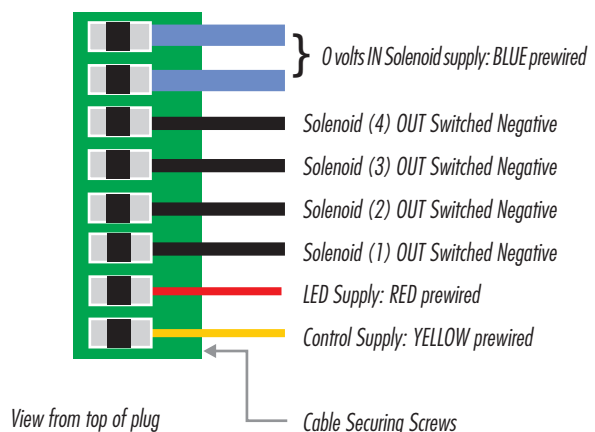
Solenoid Valve: Diode connections



Connector Block: Mains Input, Solenoid Valve Operating Voltage Select and (+) Common Output.



Circuit Board Plug In Connector: Check orientation before fitting to Control Board



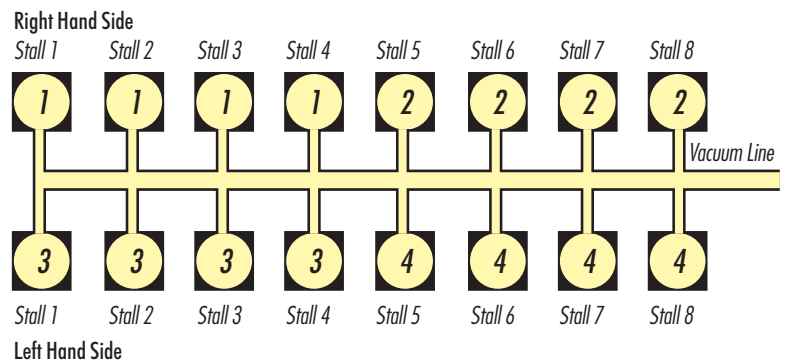


PULSE-8 MASTER PULSATION CONTROL: 2

Parlour Layouts

The illustration right shows a 16/16 parlour with the PULSE-8 in 4/1 configuration.

The parlour is divided into 4 quadrants each of four stalls with one PULSE-8 channel driving each quadrant. There is only one solenoid valve to each stall, so all four teat cups on a cluster are pulsed together.



A 16/16 parlour with PULSE-8 2/2 configuration is illustrated below. Every stall has two solenoid valves fitted, one for each pair of teat cups on the cluster.

The teat cup pairs may be arranged either diagonally or front-to-back and because they are connected to different PULSE-8 channels, will pulse alternately.

The numbers in circles represent the PULSE-8 channels.

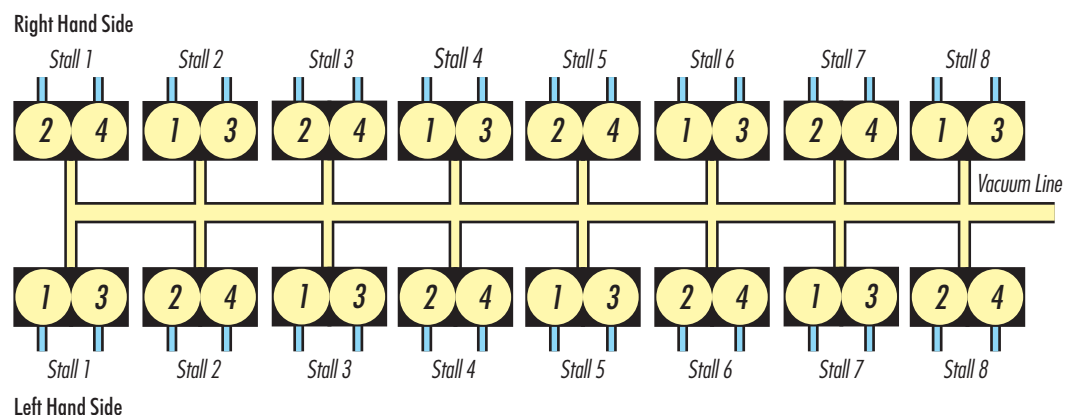
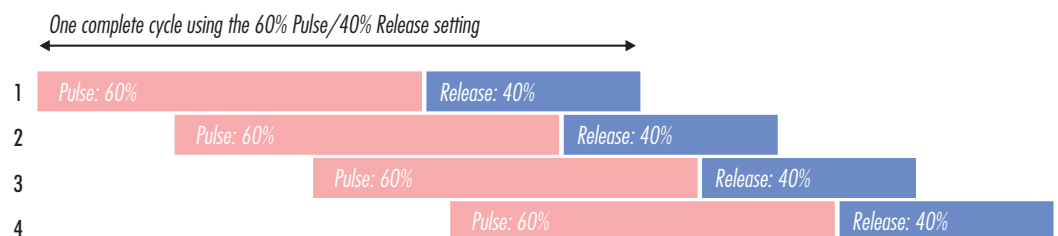


Diagram showing the timing relationship between the 4 channels during a cycle start and finish.





PULSE-8 MASTER PULSATION CONTROL: 3

Frequency Display:

Displays the frequency setting in the range 30 to 120 pulses per minute (ppm). The default setting is 40ppm.

Frequency Button:

Press and hold whilst using the Up/Down buttons to increase or decrease the frequency in Access mode. Select STAND-BY, hold the Frequency button down and select ON to revert to default settings.

Reset Indicator:

Illuminates during a manual reset or if programmed data is lost.

Access Mode Indicator:

Illuminates during ACCESS mode whilst the machine parameters are being entered.

Split Indicator:

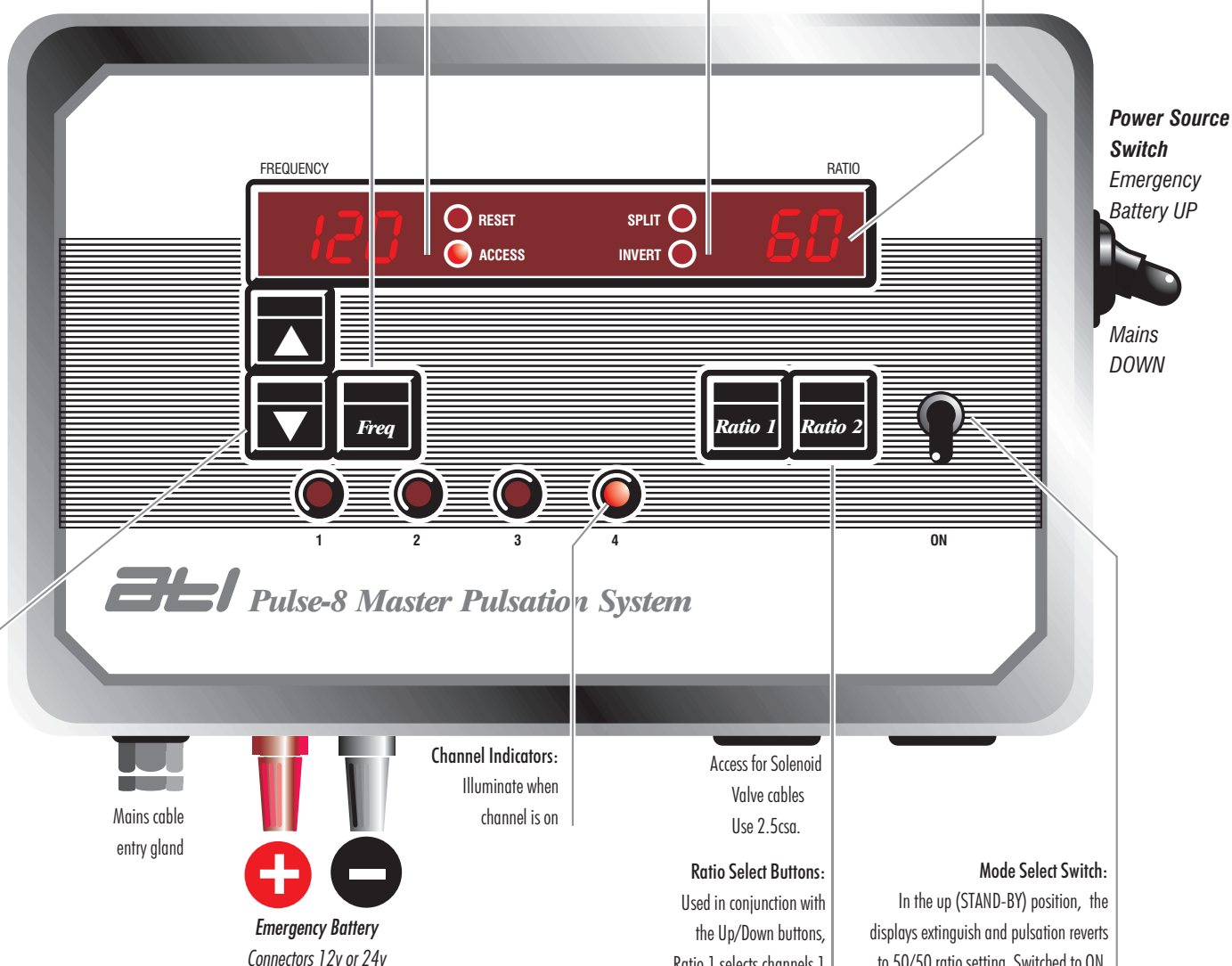
Illuminates when different ratios have been selected for channel pairs 1 + 3 and 2 + 4.

Invert Indicator:

Illuminates when the On and OFF periods within a cycle have been swapped. Used for normally ON solenoid valves.

Ratio Display:

Displays the ON period of a cycle as a percentage of the complete cycle. For example, if the display shows 60, the appropriate channel will be ON for 60% of the cycle and OFF for 40%.



Power Source

Switch

Emergency

Battery UP

Mains

DOWN

Channel Indicators:

Illuminate when channel is on

Access for Solenoid Valve cables
Use 2.5csc.

Ratio Select Buttons:

Used in conjunction with the Up/Down buttons, Ratio 1 selects channels 1 and 3, whilst Ratio 2 selects channels 2 and 4. Hold both buttons down and switch from up (STAND-BY) to ON to enter the Access mode.

Mode Select Switch:

In the up (STAND-BY) position, the displays extinguish and pulsation reverts to 50/50 ratio setting. Switched to ON, the displays illuminate and pulsation starts using the data setup. Use the switch in combination with other buttons to select different program-ming modes are available.

Up and Down Buttons: Used to increase or decrease the frequency and ratio settings. Held down together whilst switching the Mode Select Switch from up (STAND-BY) to ON, the duty cycle is inverted.



PULSE-8 MASTER PULSATION CONTROL: 4

Operating the PULSE-8: Changing the Frequency:

The frequency is measured in pulses per minute (ppm) and can be set in the range 30 to 120ppm in single steps. Before the frequency can be changed, the unit must be in Access mode. With the power on, move the MODE SELECT switch up (STAND-BY). The displays will extinguish, but the channel indicators will continue to flash. Press and hold both the RATIO 1 and RATIO 2 buttons and, at the same time move the MODE SELECT switch to ON. The displays will re-illuminate together with the RESET and ACCESS indicators. The unit is now in Access mode.

Release the RATIO buttons and press the FREQ button together with either the UP or DOWN button depending upon whether an increase or decrease in frequency is required. The FREQUENCY display shows the frequency selected. To store the new setting, put the MODE SELECT up (STAND-BY) position and then back to the ON position. The unit will resume pulsing at the new frequency.

Changing the Ratios:

The ratio represents the percentage of the pulse length that the solenoid valve is energised. So, for example, a ratio of 60 displayed means that the solenoid valve will be on for 60% of the pulse duration and 40% off. Again, the unit must be in the Access mode to make changes to the ratio. To change the setting for channels 1 and 3, press and hold the RATIO 1 button and, at the same time press either the UP or DOWN button for an increase or decrease in the value. Channels 2 and 4 are altered in the same way but by pressing the RATIO 2 button instead. The new setting is displayed in the RATIO window. Store the new settings by switching MODE SELECT up (STAND-BY) and then back to ON. Ratios may be changed in single steps from 50% to 75%.

The Split Function:

It is often desirable to have different ratios for channels 1 + 3 and 2 + 4 since the variable pulsing spreads the load on the vacuum line. If the ratios are different, the SPLIT indicator will illuminate as a warning. However, if it is necessary to set all channels to the same ratio, put the unit into Access mode and examine the settings by pressing first the RATIO 1 button and then the RATIO 2 button. Choose whichever ratio is suitable by pressing the RATIO button for the setting NOT required together with either the UP or DOWN button until the SPLIT indicator is extinguished. All channels will now have the same ratio setting.

The Invert Function:

To save power, some solenoid valves are designed to be normally ON, which means that they are open and will pass a vacuum when unenergised; when power is applied to them they block the vacuum line. The PULSE-8 can accommodate these new valves by swapping the ratio values. So, for a conventional setting of say 60% on and 40% off, for normally on valves these are swapped to become 60% off and 40% on but for the duration of the 60% off time the valve

will still be passing the vacuum because it is normally open or on.

To invert the ratios, move MODE SELECT up (STAND-BY), press and hold both the UP and DOWN buttons and switch MODE SELECT back to ON. The INVERT indicator will now illuminate. To store the setting, move the MODE SELECT switch up (STAND-BY) and then back to ON.

Reset:

If the mains power is turned off or interrupted, the data battery backup inside the unit will retain the settings for about 48 hours. Beyond that time the data may be lost and when the power is restored the settings may have reverted to the defaults. This situation will be shown by the RESET indicator and the preferred settings will have to be reentered. Generally, a manual reset is not necessary, but can be achieved by switching MODE SELECT up (STAND-BY), pressing and holding the FREQ button and then switching MODE SELECT back to ON. The default settings will be displayed in the windows.

Emergency Battery Supply

If the mains supply fails, connect either a 12 or 24volt battery across the Emergency Battery Terminals taking care that the polarities are correct. Push up (OFF) the Power Source switch on the right hand end of the casing and the Pulse-8 will continue to operate. When mains is restored disconnect the battery and switch the Power Source to the ON position

SPECIFICATIONS:

Input Voltage:	220 or 240volts AC 50Hz
Output Voltage:	12, 15, 18 or 24volts selectable.
Output Current:	24amps at 12volts to 12amps at 24volts.
Solenoids:	48 at 12volts DC 0.5amp to 24 at 24volts DC 0.5amp.
Fuses:	5amp x 20mm Quickblow to each channel.
Outputs:	4 grouped as channels 1 + 3 and 2 + 4.
Frequencies:	30ppm to 120ppm in 90 single steps.
Ratios:	25 selectable 50:50 to 75:25 normal or 50:50 to 25:75 inverted.
Split Pulsation:	Available.
Stand-by:	Operates in 50:50 ratio and frequency set by: Prior February 1999: by rotary control. Post February 1999: by selectors 4 fixed frequencies.
Memory:	Functional for at least 48 hours.
Defaults:	Frequency: 40ppm/ Ratios: 60:40/ Split: OFF/ Invert: OFF
Emergency Battery:	12 or 24volt with Power Source Select Switch.