## ATL

**Innovation In and
Out of Parlour**

**Auto Wash Pro Manual**

Version - 1.2

Date - July 2018

**Part Number -** 39-5710

# Index

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## Manual Versions

## About the Auto Wash Pro

The Auto Wash Pro from ATL is a simple and easy to use wash controller that washes the parlour automatically after each milking. It provides more consistent and efficient cleaning using less chemical than manual washing irrespective of the operator. The system is programmable and it's versatility provides an excellent wash to any type of small to medium size milking parlour.

## Control Features

- Programmable settings to be optimised for every milking parlour;
- Large LED display showing washing status;
- Full numeric key pad, allowing easy entry of complex program information;
- 9 wash programs, including dedicated pre-milking key.
- Auto wash key allowing programs to be started based on time of day;
- Variable speed vacuum pump control

## Pump Unit Features

- Separate pump unit keeps electronics and chemicals apart;
- Peristaltic pumps accurately dispenses chemicals at up to 2.5 litres per minute - up to a maximum of 4 pumps;
- Automatic chemical dispensing reduces operator handling of chemicals to a minimum;
- Large bore hot and cold external water valves.

## Other Features

- Up to 3 temperature sensors, including dedicated sensors for wash trough and return water;
- Pressure level sensor in wash trough;
- Conductivity sensor in wash trough, allows for checking of chemical;
- Controls up to 3 fixed speed or variable speed vacuum pumps;
- Compressed air operated 3 way diversion valve in return line for diverting to drain or wash trough;
- Vacuum sensor
- 22 individual 12vDC outputs to control all aspects of the milking parlour;
- 2 Solid State Relay outputs to switch a maximum of 24v AC or DC;
- 2 switched inputs allowing control of programs via external inputs;

## Benefits

- Easy to use - just push the Auto Wash button and the unit will automatically clean the milking parlour for you based on the wash program for the time of day;
- Electronic system - optimise settings to suit any sized parlour;
- Consistent cleaning control - temperature, chemical dosing and time are all automatically controlled irrespective of the operator;
- Automatic dosing of liquid detergents - maximises operator safety and prevents excessive use of detergents;
- Wash safety lock - prevents wash start up if milk delivery line connected to milk tank;
- Vacuum pumps - staggered vacuum pump switch on.

## Front Cover

Program 1-6
start keys

Info Key
*Shift Function*
*- Clear*

Number Entry Keys
*Setup Functions:*
*Shift + Key 1 - Inset when in edit Programs or edit Tasks*
*Key 2 & Key 6 - Move up in any menu*
*Shift + Key 3 - Delete when in edit Programs or edit Tasks*
*Key 4 & Key 8 - Move down in any menu*

Wash Program Keys
*Auto Key: Starts the time selected program*
*Pre Milking: Starts the Pre-Milking Wash Program*
*Milk: Starts the Milking program*
*Milk Stone: Starts the dedicated Milk Stone program*

Auto Wash Pro

Innovation In
and Out of

Prog 4 | Prog 1
Prog 5 | Prog 2
Prog 6 | Prog 3
Clear | Info

Delete | 3
↑ | 6
9
Setup | Enter

↑ | 2
5
→ | 8
0

Insert | 1
↓ | 4
7
Shift

Auto
Pre Milking
Milk
Milk Stone

Reset | Cancel
Pause
Back | Skip
Stop

Enter Key
*Shift Function*
*- Setup*

Shift Key

Cancel Key

Pause Key

Skip Key
*Shift Function*
*- Back*

Stop Key

CE
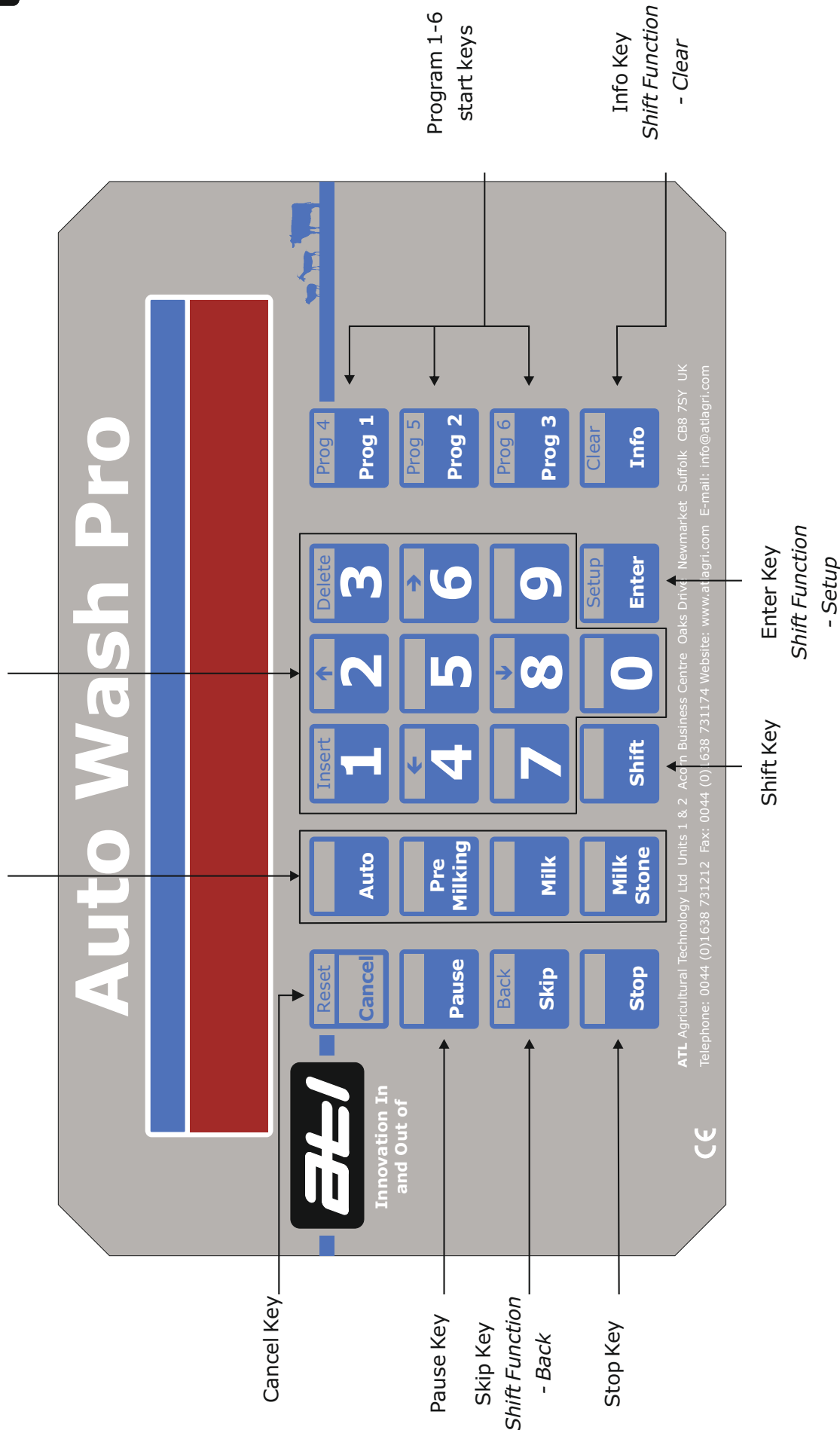
## Installing the Auto Wash Pro Control Unit and Pump Unit

The Auto Wash Pro system consists of a control unit, pump unit and power supply unit.

All of the units should be mounted on the wall to the side of the wash trough to avoid chemical gases and hot water vapour damaging the unit.

**Good Practice During the Installation**

■ 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.

Power Supply: Siting

■ Fix the power supply to a wall  or suitable brackets in a well ventilated area sufficiently high to avoid physical contact or damage, leaving a gap of at least 250mm (10") between the top of the power supply casing and the ceiling.

■ Position the power supply so that the output (low DC voltage) cables are as short as possible even if this means extending the mains supply.

ATL Power Supplies: Output Voltages

■ ATL power supply outputs are factory set and should not be adjusted.

| | |
|---|---|
| 396 Watt 12vDC PSU | 60 Watt 12vDC PSU |
| Input: 100 - 240vAC | Input: 100 - 240vAC |
| Output: Nominal 12vDC | Output: Nominal 12vDC |

■ The 396 Watt 12vDC and 60 Watt 12vDC power supplies have a thermal cutout and overload protection which removes power from the outputs in the event of an overload.

■ There are two indicators fitted to the base of the power supply casing; red indicates that the mains is present and green that the output supply is available.

Control and Feeder Cables and Conduit

■ Cables must be kept as short as possible running directly from point to point. Cut out any excess cable rather than leaving it coiled.

■ Wherever possible cables should be contained in a waterproof conduit using the correct csa cable specified in the diagrams.

■ **Entries must be made into the bottom of power supply or control casings but never into the top. This will invalidate the warranty.**

■ Strip existing cables back to bright copper before connection.

■ Keep multicore cables away from other cables especially those carrying mains or heavy currents. Cross only at 90°where necessary and do not enclose in conduit with other cables.

## Auto Wash Pro Control PCB Wiring Connections

The Auto Wash Pro Control PCB wiring connections are shown in the diagram and table below.
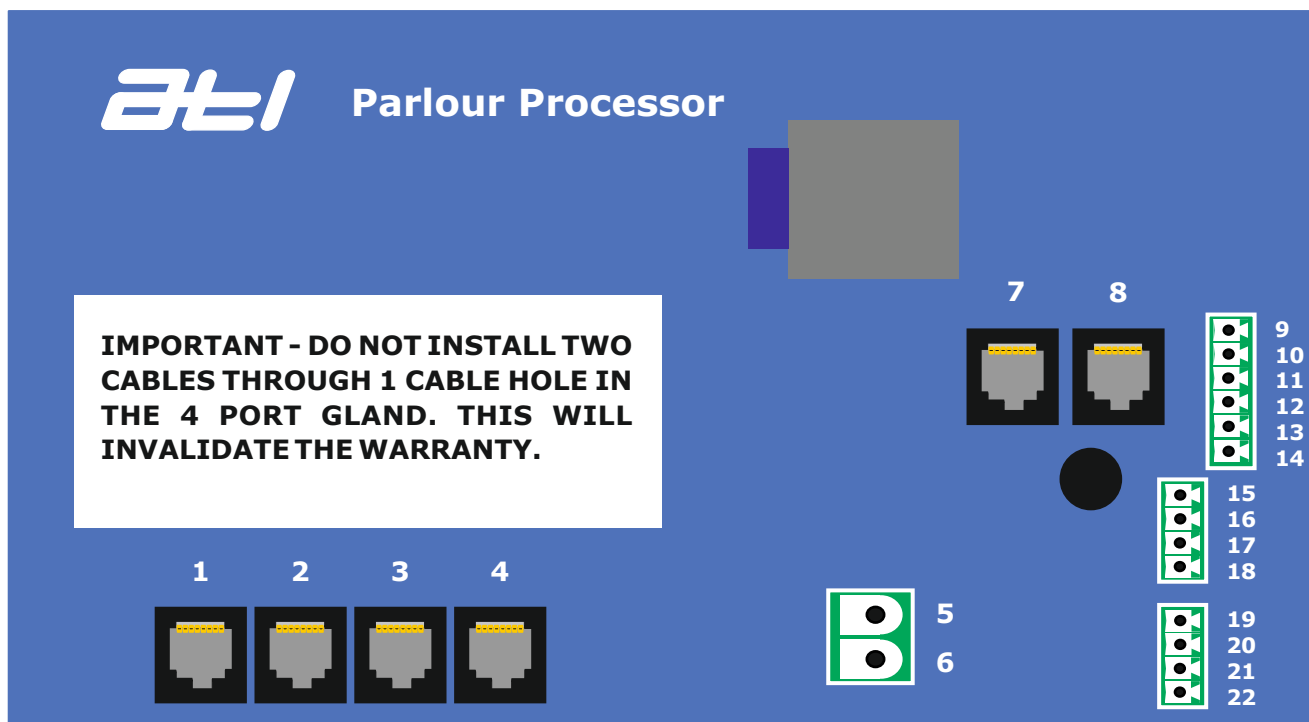


| Number | Connects To | Cable Specification |
|--------|-------------|---------------------|
| 1 | Ethernet Cat5e - Input/Output PCB | Yellow Cat5e Cable |
| 2 | Ethernet Cat5e - Spare | Unused |
| 3 | Ethernet Cat5e - Spare | Unused |
| 4 | Ethernet Cat5e - Spare | Unused |
| 5 | Power In -12vDC | Unused |
| 6 | Power In +12vDC | Unused |
| 7 | RS485 Cat5e Connection | Red Cat5e Cable |
| 8 | RS485 Cat5e Connection | Red Cat5e Cable |
| 9 | +ve RS485 Power | Unused |
| 10 | Data A | Twisted Pair - Red |
| 11 | Data B | Twisted Pair -Black |
| 12 | EOL Link | Only Connect When Instructed by ATL |
| 13 | Screen | Twisted Pair Screen |
| 14 | -ve RS485 Power | Unused |
| 15 - 22 | Unused | Unused |

## Auto Wash Pro Input/Output PCB Wiring Connections

The Auto Wash Pro Input/Output PCB wiring connections are shown in the diagram and corresponding table below.
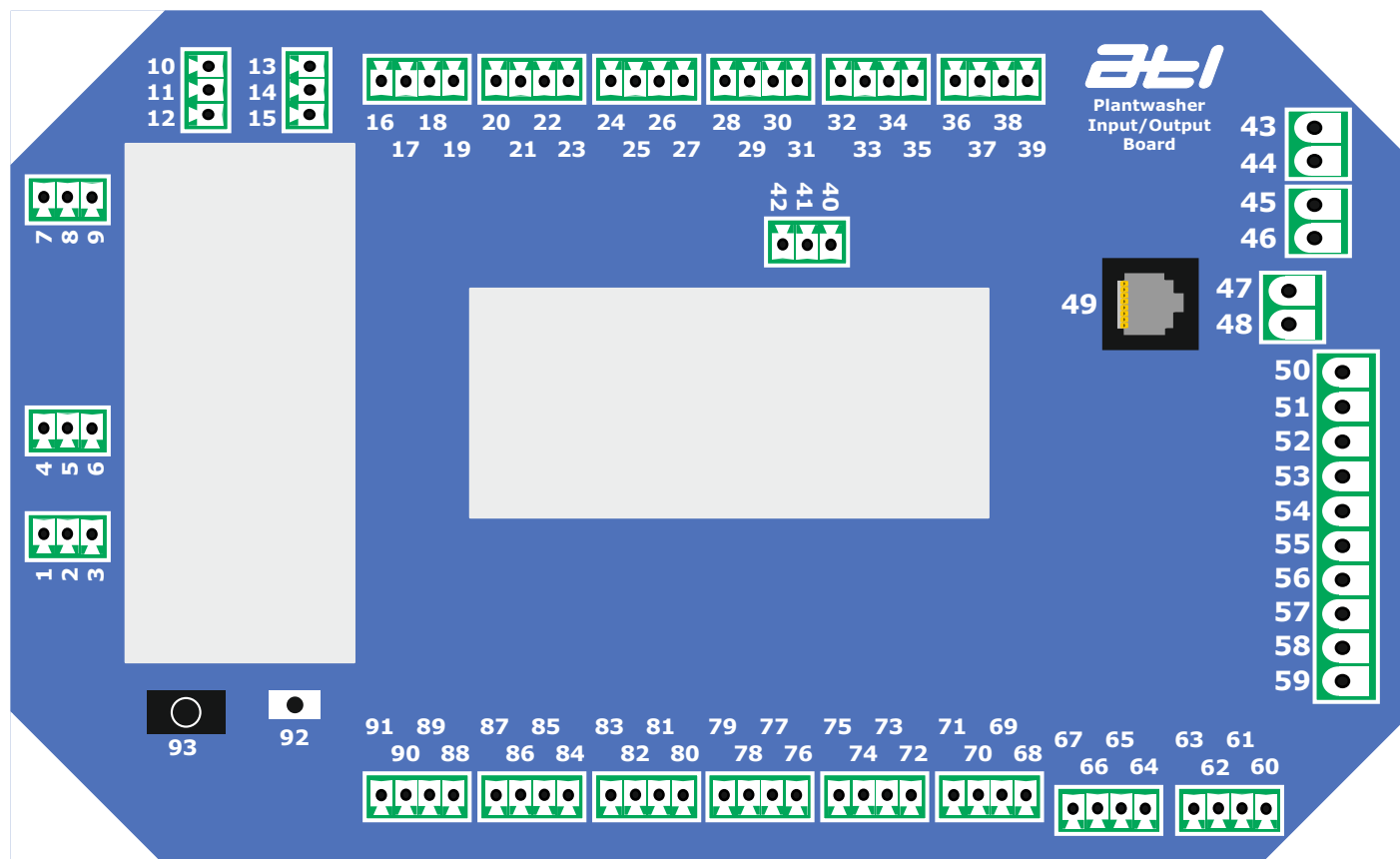


| Number | Connects To | Cable Specification |
|--------|-------------|---------------------|
| 1 | NA | For use by ATL only |
| 2 | NA | For use by ATL only |
| 3 | NA | For use by ATL only |
| 4 | Conductivity Probe Screen | Screened Twisted Pair Provided |
| 5 | Conductivity Probe -ve | Screened Twisted Pair Provided |
| 6 | Conductivity Probe +ve | Screened Twisted Pair Provided |
| 7 | Temperature Probe 3 Screen | Screened Twisted Pair Provided |
| 8 | Temperature Probe 3 -ve | Screened Twisted Pair Provided |
| 9 | Temperature Probe 3 +ve | Screened Twisted Pair Provided |
| 10 | Return Water Temp Probe Screen | Screened Twisted Pair Provided |
| 11 | Return Water Temp Probe -ve | Screened Twisted Pair Provided |
| 12 | Return Water Temp Probe +ve | Screened Twisted Pair Provided |
| 13 | Wash Trough Temp Probe Screen | Screened Twisted Pair Provided |
| 14 | Wash Trough Temp Probe -ve | Screened Twisted Pair Provided |
| 15 | Wash Trough Temp Probe +ve | Screened Twisted Pair Provided |
| 16 | Hot Water Valve 1 +ve Common | 0.5mm CSA |

## Auto Wash Pro Input/Output PCB Wiring Connections

| Number | Connects To | Cable Specification |
|:---:|:---:|:---:|
| 17 | Hot Water Valve 1 -ve Switched Output | Blue in 0.5mm 10 way Cable Provided |
| 18 | Hot Water Valve 2 +ve Common | 0.5mm CSA |
| 19 | Hot Water Valve 2 -ve Switched Output | 0.5mm CSA |
| 20 | Cold Water Valve +ve Common | 0.5mm CSA |
| 21 | Cold Water Valve -ve Switched Output | Gray in 0.5mm 10 way Cable Provided |
| 22 | Wash Line Vac Build Up +ve Common | 0.5mm CSA |
| 23 | Wash Line Vac Build Up -ve Switched | Yellow/Green in 0.5mm 10 way Cable Provided |
| 24 | Drain Valve +ve Common | 0.5mm CSA |
| 25 | Drain Valve -ve Switched Output | 0.5mm CSA |
| 26 | Diverter Valve +ve Common | 0.5mm CSA |
| 27 | Diverter Valve -ve Switched Output | Brown in 0.5mm 10 way Cable Provided |
| 28 | Separation Valve +ve Common | 0.5mm CSA |
| 29 | Separation Valve -ve Switched Output | 0.5mm CSA |
| 30 | End Of Wash  +ve Common | 0.5mm CSA |
| 31 | End Of Wash -ve Switched Output | 0.5mm CSA |
| 32 | Vac Pump 1 +ve Common | 0.5mm CSA |
| 33 | Vac Pump 1 -ve Switched Output | 0.5mm CSA |
| 34 | Vac Pump 2 +ve Common | 0.5mm CSA |
| 35 | Vac Pump 2 -ve Switched Output | 0.5mm CSA |
| 36 | Vac Pump 3 +ve Common | 0.5mm CSA |
| 37 | Vac Pump 3 -ve Switched Output | 0.5mm CSA |
| 38 | Vac Pump Stop +ve Common | 0.5mm CSA |
| 39 | Vac Pump Stop -ve Switched Output | 0.5mm CSA |
| 40 | RS232 /485 Vac Pump Inverter Screen | Not Used |
| 41 | RS232 / 485 EOL | Not Used |
| 42 | RS232 /485 Vac Pump Inverter Rx / A | Not Used |
| 43 | RS232 /485 Vac Pump Inverter Tx / B | Not Used |
| 44 | +12vDC IN | 2.5mm CSA |
| 45 | -ve 12vDC IN | 2.5mm CSA |
| 46 | +12vDC OUT (to pump box) | Red in 1.0mm 10 way Cable Provided |
| 47 | -ve 12vDC OUT (to pump box) | Black in 1.0mm 10 way Cable Provided |
| 48 | +ve Peristaltic Pump Supply | 2.5mm CSA |
| 49 | -ve Peristaltic Pump Supply | 2.5mm CSA |
| 50 | Ethernet Cat5e - Parlour Processor | Yellow Cat5e Cable |
| 51 | +ve Peristaltic Pump 1 (Acid) | Brown in 1mm 10 way Cable Provided |
| 52 | -ve Peristaltic Pump 1 (Acid) | Orange in 1mm 10 way Cable Provided |
| 53 | +ve Peristaltic Pump 2 (Alkaline) | Yellow/Green in 1mm 10 way Cable Provided |

## Auto Wash Pro Input/Output PCB Wiring Connections

| Number | Connects To | Cable Specification |
|:---:|:---:|:---:|
| 54 | -ve Peristaltic Pump 2 (Alkaline) | Blue in 1mm 10 way Cable Provided |
| 55 | +ve Peristaltic Pump 3 (Detergent) | Purple in 1mm 10 way Cable Provided |
| 56 | -ve Peristaltic Pump 3 (Detergent) | Gray in 1mm 10 way Cable Provided |
| 57 | +ve Peristaltic Pump 4 | White in 1mm 10 way Cable Provided |
| 58 | -ve Peristaltic Pump 4 | Pink in 1mm 10 way Cable Provided |
| 59 | -ve Peristaltic Pumps | 1mm CSA |
| 60 | -ve Peristaltic Pumps | 1mm CSA |
| 61 | Input 2 +ve Switch Input | 0.5mm CSA |
| 62 | Input 2 -ve Switch Common | 0.5mm CSA |
| 63 | Input 1 +ve Switch Input | 0.5mm CSA |
| 64 | Input 1 -ve Switch Common | 0.5mm CSA |
| 65 | Milk Tank Lockout Input | Screened Twisted Pair Provided |
| 66 | Milk Tank Lockout Common | Screened Twisted Pair Provided |
| 67 | Wash Trough Lockout Input | Screened Twisted Pair Provided |
| 68 | Wash Trough Lockout Common | Screened Twisted Pair Provided |
| 69 | Solid State Relay Output 2b | Use Appropriate Cable |
| 70 | Solid State Relay Output 2a | Use Appropriate Cable |
| 71 | Solid State Relay Output 1b | Use Appropriate Cable |
| 72 | Solid State Relay Output 1a | Use Appropriate Cable |
| 73 | Output 5 +ve Common | 0.5mm CSA |
| 74 | Wash LED -ve Switched | Red 0.5mm CSA in 10 Way Cable |
| 75 | Output 4 +ve Common | 0.5mm CSA |
| 76 | Milk LED -ve Switched | Black 0.5mm CSA in 10 Way Cable |
| 77 | Output 3 +ve Common | 0.5mm CSA |
| 78 | Output 3 -ve Switched | 0.5mm CSA |
| 79 | Output 2 +ve Common | 0.5mm CSA |
| 80 | Output 2 -ve Switched | 0.5mm CSA |
| 81 | Output 1 +ve Common | 0.5mm CSA |
| 82 | Output 1 -ve Switched | 0.5mm CSA |
| 83 | Auto Drain +ve Common | 0.5mm CSA |
| 84 | Auto Drain -ve Switched | White 0.5mm CSA in 10 Way Cable |
| 85 | Pulsation +ve Common | 0.5mm CSA |
| 86 | Pulsation -ve Switched | 0.5mm CSA |
| 87 | AirBlast +ve Common | 0.5mm CSA |
| 88 | AirBlast -ve Switched | 0.5mm CSA |
| 89 | Milk Pump 2 +ve Common | 0.5mm CSA |
| 90 | Milk Pump 2 -ve Switched | 0.5mm CSA |

## Auto Wash Pro Input/Output PCB Wiring Connections

| Number | Connects To | Cable Specification |
|--------|-------------|---------------------|
| 91 | Milk Pump 1 +ve Common | |
| 92 | Milk Pump 1 -ve Switched | 0.5mm CSA |
| 93 | Wash Trough Level Input | Tubing Provided |
| 94 | Vacuum Level Input | Tubing Provided |

## Auto Wash Pump Box 2500 Connections

The Auto Wash Pump Box connections are shown in the diagram below.



*Twin 0.5mm Cable to Cold Water Solenoid Valve*

*Optional Hot Water 2 Solenoid Valve*

*Hot Water 1 Solenoid Valve*

*Optional Vacuum Build Up Solenoid Valve*

*Diverter Solenoid Valve*

*Milk LED (white) Wash LED (blue)*

*LED Loom to front of box*

*0.5mm 10 Way Multi core cable for Solenoids*

*1mm 10 Way Multi core cable for Pumps*

Optional Pump 4

Pump 3 Detergent

Pump 2 Alkali

Pump 1 Acid
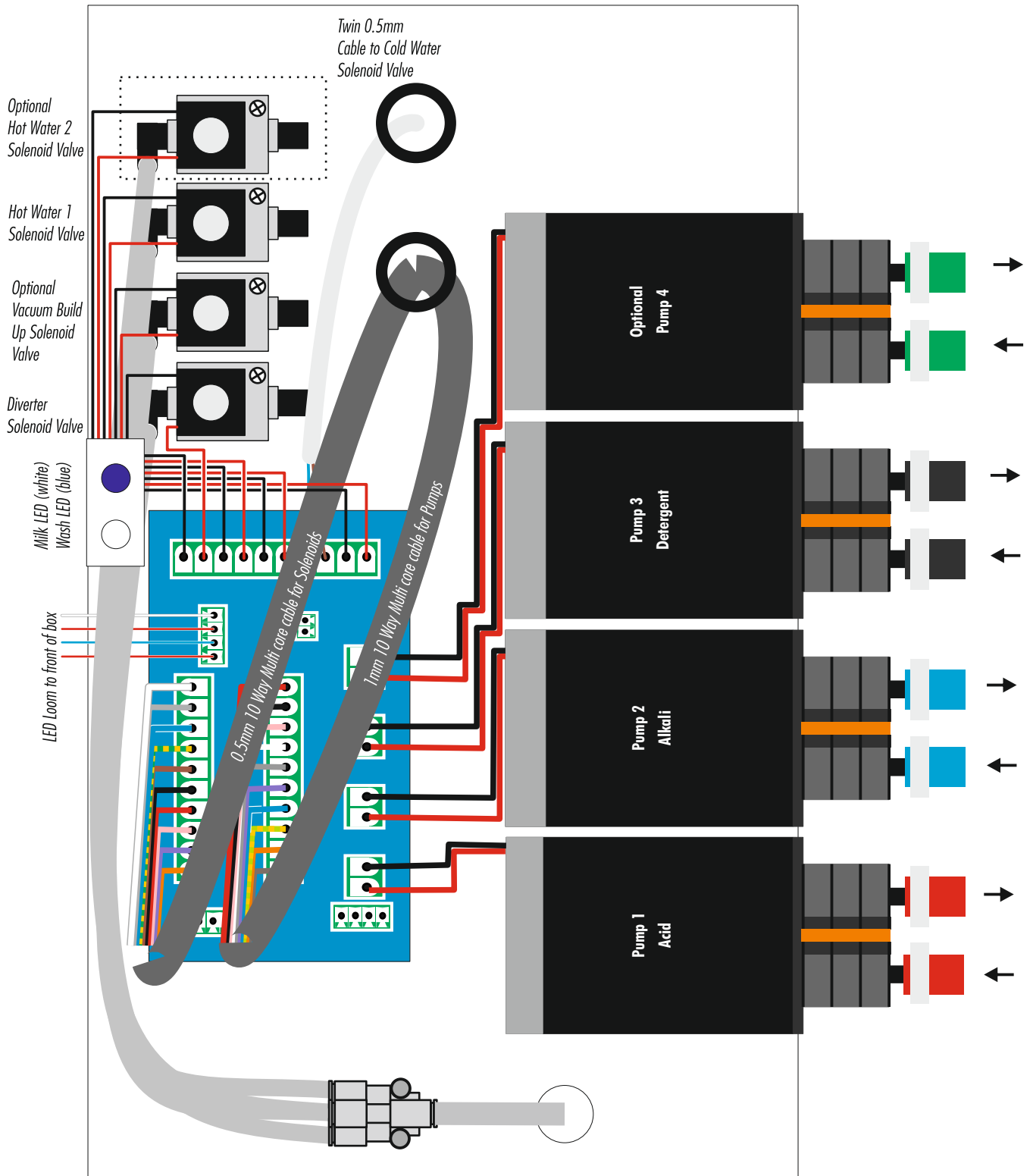
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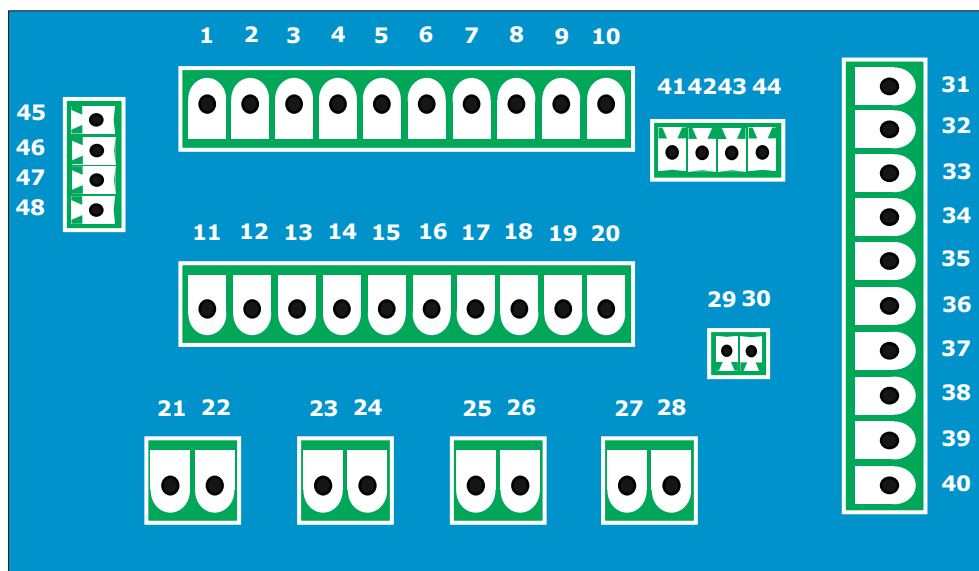


| Number | Connects To | Cable Specification |
|--------|-------------|---------------------|
| 1 | Unused | Orange from 0.5mm 10 way |
| 2 | Unused | Purple from 0.5mm 10 way |
| 3 | Unused | Pink from 0.5mm 10 way |
| 4 | Washing LED | Red from 0.5mm 10 way |
| 5 | Milking LED | Black from 0.5mm 10 way |
| 6 | Diverter Output | Brown from 0.5mm 10 way |
| 7 | Wash Line Vacuum Build Up Output | Yellow / Green from 0.5mm 10 way |
| 8 | Hot Water 1 Output | Blue from 0.5mm 10 way |
| 9 | Cold Water Output | Gray from 0.5mm 10 way |
| 10 | Optional Hot Water 2 Output | White from 0.5mm 10 way |
| 11 | Pump 1 (Acid) +ve Output | Brown from 1mm 10 way |
| 12 | Pump 1 (Acid) -ve Output | Orange from 1mm 10 way |
| 13 | Pump 2 (Alkali) +ve Output | Yellow / Green from 1mm 10 way |
| 14 | Pump 2 (Alkali) -ve Output | Blue from 1mm 10 way |
| 15 | Pump 3 (Detergent) +ve Output | Purple from 1mm 10 way |
| 16 | Pump 3 (Detergent) -ve Output | Grey from 1mm 10 way |

## Auto Wash Pro Pump Box PCB Wiring Connections

| Number | Connects To | Cable Specification |
|---|---|---|
| 17 | Pump 4 +ve Output | White from 1mm 10 way |
| 18 | Pump 4 -ve Output | Pink from 1mm 10 way |
| 19 | -ve System Power IN | Black from 1mm 10 way |
| 20 | +ve System Power IN | Red from 1mm 10 way |
| 21 | +ve Red Wire from Pump 1 | +ve Red Wire from Pump 1 |
| 22 | -ve Black Wire from Pump 1 | -ve Black Wire from Pump 1 |
| 23 | +ve Red Wire from Pump 2 | +ve Red Wire from Pump 2 |
| 24 | -ve Black Wire from Pump 2 | -ve Black Wire from Pump 2 |
| 25 | +ve Red Wire from Pump 3 | +ve Red Wire from Pump 3 |
| 26 | -ve Black Wire from Pump 3 | -ve Black Wire from Pump 3 |
| 27 | +ve Red Wire from Pump 4 | +ve Red Wire from Pump 4 |
| 28 | -ve Black Wire from Pump 4 | -ve Black Wire from Pump 4 |
| 29 | -ve System Power OUT | Unused |
| 30 | +ve System Power OUT | Unused |
| 31 | Diverter Solenoid -ve Switched Output | -ve Black Wire from Diverter Solenoid |
| 32 | Diverter Solenoid +ve Common | +ve Red Wire from Diverter Solenoid |
| 33 | Optional Vac Build Up -ve Switched  O/P | -ve Black Wire from Optional Vac Build Up Solenoid |
| 34 | Optional Vac Build Up +ve Common | +ve Red Wire from Optional Vac Build Up Solenoid |
| 35 | Hot Water 1 -ve Switched Output | -ve Black Wire from Hot Water 1 Solenoid |
| 36 | Hot Water 1 +ve Common | +ve Red Wire from Hot Water 1 Solenoid |
| 37 | Cold Water -ve Switched Output | -ve Blue Wire from Twin Wire to Cold Water Valve |
| 38 | Cold Water +ve Common | +ve Brown Wire from Twin Wire to Cold Water Valve |
| 39 | Optional Hot Water 2 -ve Switched O/P | -ve Black Wire from Optional Hot Water 2 Solenoid |
| 40 | Optional Hot Water 2 +ve Common | +ve Red Wire from Optional Hot Water 2 Solenoid |
| 41 | +ve LED Common | +ve Red Wire to Milking LED |
| 42 | -ve Washing LED Output | -ve Blue Wire to Milking LED |
| 43 | +ve LED Common | +ve Red Wire to Washing LED |
| 44 | -ve Milking LED Output | -ve White Wire to Washing LED |
| 45 | Unused | Unused |
| 46 | Unused | Unused |
| 46 | Unused | Unused |
| 47 | Unused | Unused |

## Auto Wash Pro Layout Diagram

Return Water Temperature Sensor

Delivery Line Connection With Milk Tank Lockout Switch

To Drain

Divertor Valve

Recirculation

Vacuum Build Up Valve

To Parlour Wash Line

Hot Water Valve

Cold Water Valve

Hot Water IN

Cold Water IN

0.5mm Twin Mains Flex

All 3 6mm Compressed Air Line

Wash Trough

Detergent

Alkali

Acid

Pump Box 2500

Compressed Air IN

2 x 10 Way Cables

Return Water Temperature Sensor Cable

Twisted Pair Cable to ATL CR or MM Systems (if no Micro M5)

Milk Tank Lockout Switch Cable

Temperature Sensor and Conductivity Sensor Conduit

Pressure Sensor for Water Level in Wash Trough Tube

Live
Neutral
Earth

Auto Wash Pro

396 Watt 12vDC Power Supply

RS485 Data Twisted Pair Cable to Micro M5 (integrated system) or Milk Pump Control (if only milk pump control on system)

## Connecting the Auto Wash Pro to Contactor Switched Vacuum Pumps

Connecting from the Plantwasher Input/Output Printed Circuit Board (PCB)

Wire connects to Vacuum Pump Starter Control Box

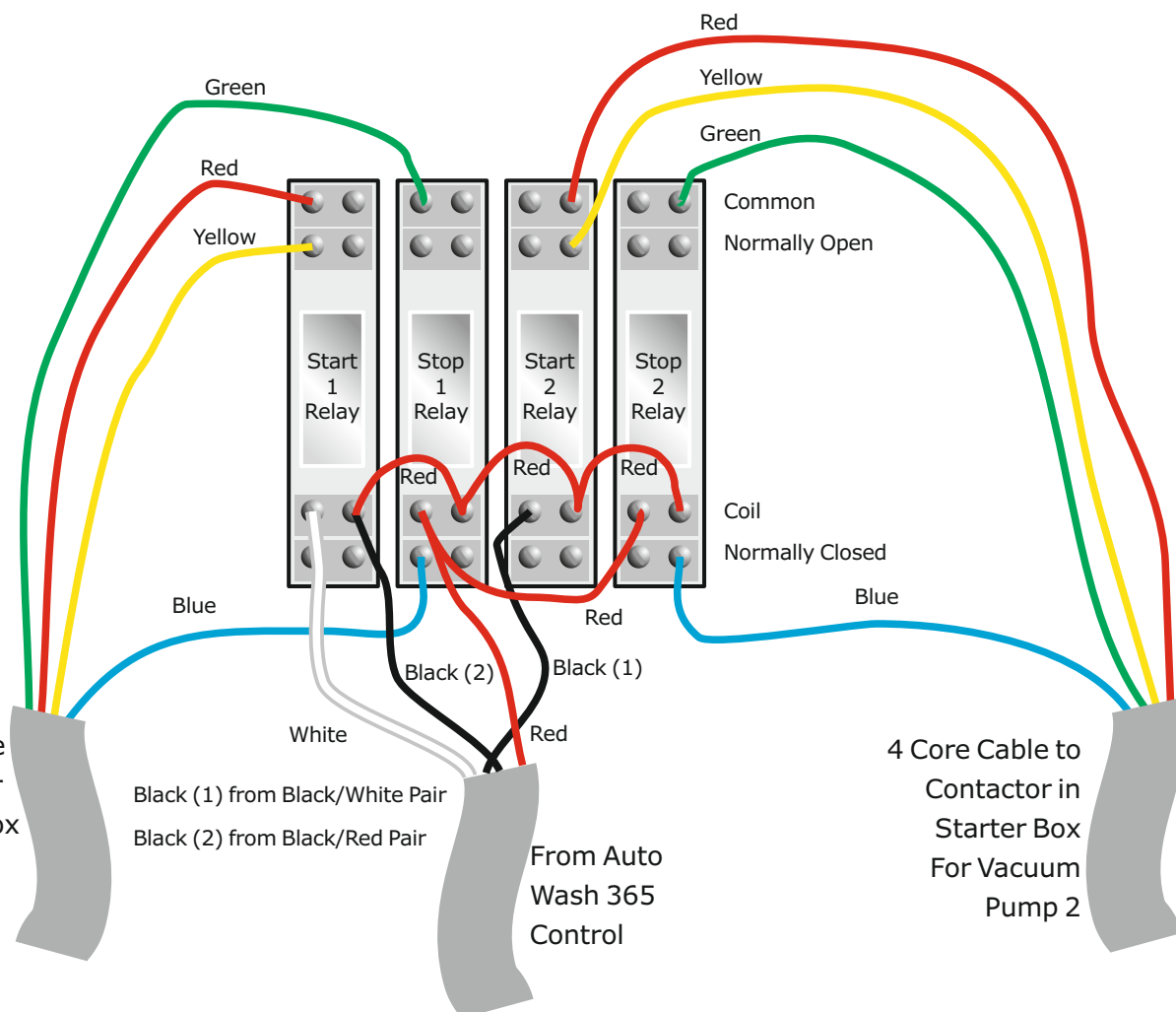Plantwasher Input/Output Board

32  34  36  38
33  35  37  39

Start 1 -ve - White - Connect into connection number 33

Start 2 -ve - Black (from Black/White pair) - Connect into connection number 35

Stop -ve - Red - Connect into connection number 39

Common + - Black (from Black/Red pair) - Connect into connection number 38

Connecting into the Vacuum Pump Starter Control Box

Red

Green

Red

Yellow

Yellow

Green

Common

Normally Open

Start 1 Relay

Stop 1 Relay

Start 2 Relay

Stop 2 Relay

Red

Red

Red

Coil

Normally Closed

Blue

Blue

Red

Black (2)

Black (1)

White

Red

4 Core Cable to Contactor in Starter Box for Vacuum Pump 1

Black (1) from Black/White Pair

Black (2) from Black/Red Pair

From Auto Wash 365 Control

4 Core Cable to Contactor in Starter Box For Vacuum Pump 2
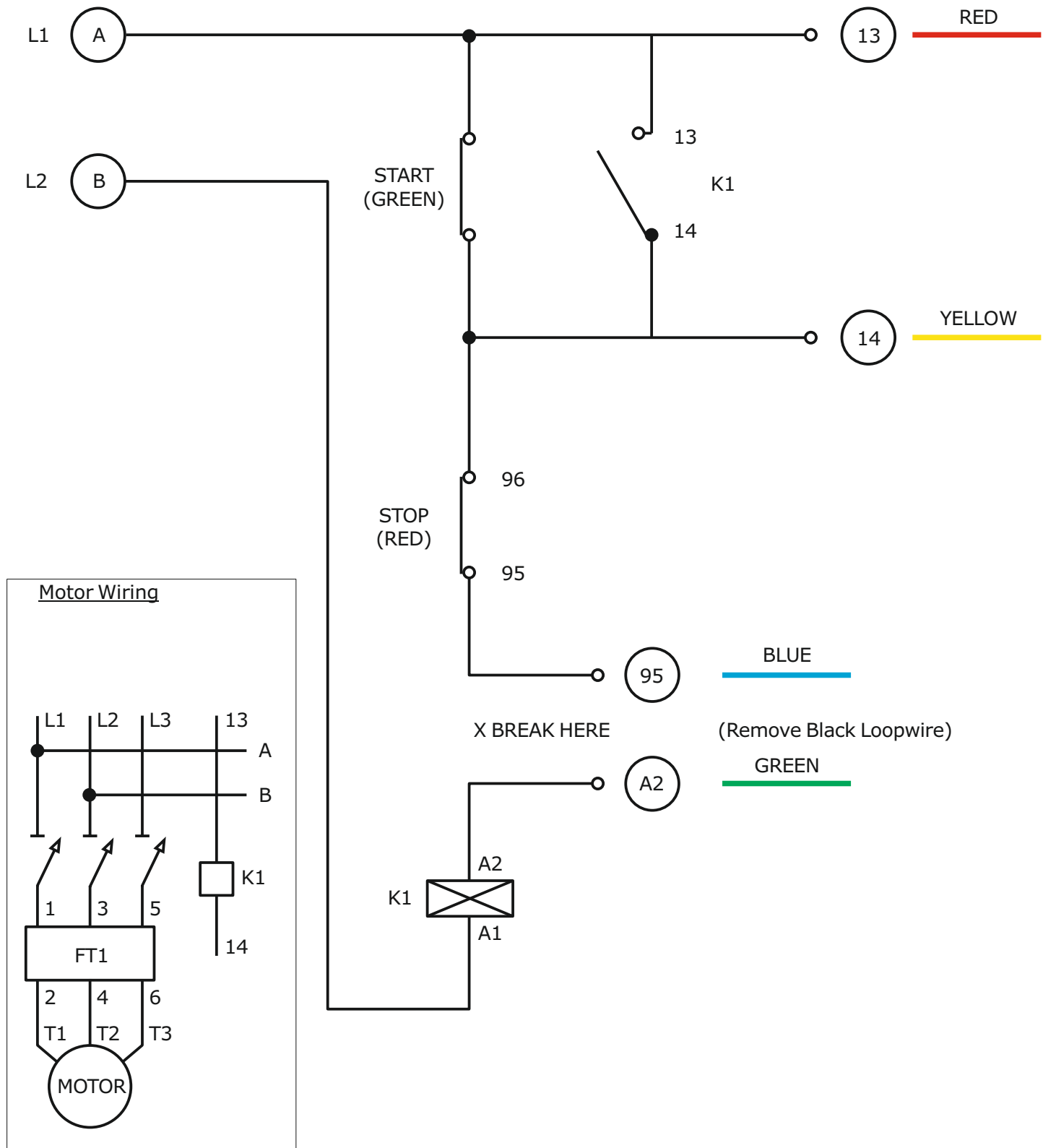
## Connecting the Auto Wash Pro to Contactor Switched Vacuum Pumps Continued

Connecting to the Vacuum Motor Starter Box

Red, yellow, blue and green wires are from the Vacuum Pump Starter Control Box.

L1 ─ (A) ─────────────────────●──────────────── ○ (13) ──── RED

13

START
(GREEN)

K1

14

○ (14) ──── YELLOW

96

STOP
(RED)

95

BLUE

○ (95)

X BREAK HERE          (Remove Black Loopwire)

GREEN

○ (A2)

L2 ─ (B)

### Motor Wiring

| L1 | L2 | L3 | 13 |
|----|----|----|----|
|    |    |    | A  |
|    |    |    | B  |

K1

1   3   5

FT1

14

2   4   6

T1  T2  T3

MOTOR

K1    A2
      A1

## Setting up the Auto Wash Pro

Before it can be used, the Auto Wash Pro must be setup. This is outlined in the following pages.

---

### The Keypad

There are 24 keys on the keypad. 5 are for washing programs - Pre-Milking, Milk Stone, Prog 1, Prog 2 and Prog 3 - the Milk key is for milking mode, the Auto key provides a simple single key which can be programmed to run different wash programs based on the time of day and day of week. The Info key provides information on the wash, and the remaining function keys are Stop, Pause, Skip, Enter and Shift.

There a number of keys that are dual function with the use of the Shift key - these provide the programming and user functions when a wash program is running. The other function of the key is shown in the grey box at the top of the key. The keys which have dual function are Cancel, 1, 2, 3, 4, 6, 8, Prog 1, Prog 2, Prog 3, Skip, Enter and Info.

| Reset | | Insert | ↑ | Delete | Prog 4 |
|-------|------|--------|---|--------|--------|
| **Cancel** | **Auto** | **1** | **2** | **3** | **Prog 1** |
| | | ← | | → | Prog 5 |
| **Pause** | **Pre Milking** | **4** | **5** | **6** | **Prog 2** |
| Back | | | ↓ | | Prog 6 |
| **Skip** | **Milk** | **7** | **8** | **9** | **Prog 3** |
| | | | | Setup | Clear |
| **Stop** | **Milk Stone** | **Shift** | **0** | **Enter** | **Info** |

The keypad is constructed from a tough membrane overlaying individual key switches. This is a proven, reliable construction which will last for many years provided it is cleaned only with warm soapy water and not hosed down at high pressure.

---

### The Display

Mode                    Function Window

IDLE    15--48--44

The display has two areas. The Mode area shows the current mode - either Idle when neither milking or washing, Milk when in Milking Mode or PRE, MST, PG1, PG2, PG3, PG4, PG5 or PG6 when in Washing Mode. The Function area shows where the control is in Wash Mode or displays the time in Milking or Idle Modes.

The Auto Wash Pro Control is very energy efficient; power saving was an important element of the design criteria.

## Entering Setup

During the setup process, it is necessary to enter and modify data. Before this can be achieved, the Auto Wash Pro Control has to be put into setup using this key sequence:

Press the Shift + Enter keys [ **Shift** ] **+** [ Setup **Enter** ] to enter setup.

SETUP

If the control is locked the Access Code is requested, if not after 2 seconds the key buzzer setting will be displayed.

## Entering the Access Code

The Access Code is 638, this will unlock the control when requested.

ACCESS ___

Enter the access code (638) by pressing the 6 key [ → **6** ] then the 3 key [ **3** ] then the 8 key [ ↓ **8** ]

To enter the access code and gain access to the settings press the Enter Key [ Setup **Enter** ]

Once the access code is entered, the setup menu items will be displayed.

## Navigating Through Menu Items

To navigate through menu items there are 8 keys which can be used. To navigate forward through a list of menu items press either the Skip key, the 2 key or the 6 key.

[ Back **Skip** ] **or** [ ↑ **2** ] **or** [ → **6** ]

To navigate backwards through a list of menu items, press the Shift + Skip, the 4 key or the 8 key.

[ **Shift** ] **+** [ Back **Skip** ] **or** [ ← **4** ] **or** [ ↓ **8** ]

To enter into a menu item press the Enter key, to exit from a menu item press the Cancel key

[ Setup **Enter** ] **and** [ Reset **Cancel** ]

## The Settings Menu Structure

The settings menu is structured as shown below;

Entry point into settings menu.

⬇

`KEY BUZZER OFF`

Key Buzzer: This setting controls whether the control beeps when a key is pressed.

⬇

`TIME      HH-MM-SS`

Time: This setting allows the user to change the time on the control.

⬇

`DATE      DD-MM-YY`

Date: This setting allows the user to change the date on the control.

⬇

`EDIT PROGRAMS`

Edit Programs: This menu item allows the user to change the programs.

⬇

`EDIT TASKS`

Edit Tasks: This menu item allows the user to edit the tasks for the control

⬇

`COND DIFF   XXX`

Cond Diff: This setting allows the user to set the minimum conductivity difference for detecting the addition of chemicals to the water in the wash trough.

⬇

`VAC PUMP SET-UP`

Vac Pump Setup: This setting allows the user to set the number of vacuum pumps and how they are started and controlled.

⬇

`WASH T LOCK   OFF`

Wash T Lock: This setting enables or disables the requirement for the wash trough lock input to be made before a wash program is allowed to start.

⬇

`MILK T LOCK   OFF`

Milk T Lock: This setting enables or disables the requirement for the milk tank lock input to be made before a milking is allowed to start.

⬇

`PUMP CALIBRATION`

Pump Calibration: This menu item allows the user to calibrate the chemical pumps.

⬇

## The Settings Menu Structure Continued

⬇

`TEST DISPLAYS`

Test Displays: This menu item allows the user to check that all the segments in the displays are working correctly.

⬇

`TEST KEYBOARD`

Test Keyboard: This menu item allows the user to check all the keys on the keyboard are working correctly.

⬇

`I/O DIAGNOSTICS`

I/O Diagnostics: This menu item allows the user to test communications with the I/O Board in the base of the box.

⬇

`I/O BOARD TEST`

I/O Board Test: This menu item allows the user to test individual inputs and output on the I/O Board in the base of the box.

⬇

`M2BUS SETTINGS`

M2BUS Settings: This menu item allows the user to set which devices are active on the M2 bus.

⬇

`M2BUS IDS`

M2BUS IDS: This menu item allows the user to test communications to various devices on the M2 bus.

⬇

`S/N XXXXXXXXXX`

S/N: This menu item display the serial number of the plant washer display pcb.

⬇

`S/W VERSION 1.10`

S/W Version: This menu item dispays the software version in the display pbc.

⬇

`FACTORY RESET`

Factory Reset: This menu item allows the user to clear all settings in the control and return it to the factory default settings.

⬇

`LOCK SETUP`

Lock Setup: This menu item allows the user to lock the setup, requiring the input of the access code when the next user tries to enter the setup menu.

## The Settings Menu Structure Continued

⬇

TEST DISPLAYS

Test Displays: This menu item allows the user to check that all the segments in the displays are working correctly.

⬇

The settings menu loops around onto the key buzzer setting

The following pages detail the specifics of each menu item.

---

## The Key Buzzer Setting

KEY BUZZER OFF

This sets whether the key buzzer sounds when the keys are pressed. It is an ON/OFF setting. The factory default is OFF.

Press the Enter key **Setup Enter** to toggle between ON or OFF.

Press the 2 key or the 6 key to move onto the time setting. **2** or **6**

.

## Setting the Time

**TIME    HH-MM-SS**

This sets the time on the control unit. Where HH-MM-SS will be the current system time.

Press the Enter key [Setup / **Enter**] to change the time.

The display will now show 'SET HOUR ___'.

**SET HOUR ___**

Enter the hour using the number keys [**0**] to [**9**]

Press the Enter key [Setup / **Enter**] to save or the Cancel key to cancel [Reset / **Cancel**]

If the Enter key is pressed, the display will now show 'SET MINUTE ___'.

**SET MINUTE ___**

Enter the minute using the number keys [**0**] to [**9**]

Press the Enter key [Setup / **Enter**] to save or the Cancel key to cancel [Reset / **Cancel**]

The time will now be set, and the Auto Wash Pro will return to the Time menu item.

## Setting the Date



This sets the date on the control unit. Where DD-MM-YY will be the current system date.

Press the Enter key **Enter** to change the date.

The display will now show 'SET DAY ___' for the day of the month.



Enter the day of the month using the number keys **0** to **9**

Press the Enter key **Enter** to save or the Cancel key to cancel **Cancel**

If the Enter key is pressed, the display will now show 'WDAY DDDDDDD' where DDDDDDD is the current day of the week.



Pressing the 2 key, 6 key or the Skip key will advance the weekday forwards

**2** or **6** or **Skip**

Pressing the 4 key, 8 key or Shift + Skip will advance the weekday backwards

**4** or **8** or **Shift** + **Skip**

Press the Enter key **Enter** to save or the Cancel key to cancel **Cancel**

If the Enter key is pressed, the display will now show 'SET MONTH ___'.

## Setting the Date Continued

**SET MONTH __ __**

Enter the month of the year using the number keys  **0** to **9**

Press the Enter key  **Setup / Enter**  to save or the Cancel key to cancel  **Reset / Cancel**

If the Enter key is pressed, the display will now show 'SET YEAR __'.

**SET YEAR __ __**

Enter the year using the number keys  **0** to **9**

Press the Enter key  **Setup / Enter**  to save or the Cancel key to cancel  **Reset / Cancel**

If the Enter key is pressed, the display will return to the menu, showing 'DATE DD-MM-YY' where DD-MM-YY is the current date.

## Editing Programs

# EDIT PROGRAMS

Press the Enter key **[Setup / Enter]** to edit the wash programs. See separate section on editing programs.

## Editing Tasks

# EDIT TASKS

Press the Enter key **[Setup / Enter]** to edit the tasks. See separate section on editing tasks.

## Conductivity Difference Setting

# COND DIFF 200

The conductivity difference setting allows the user to set a minimum conductivity difference when seeking to identify whether chemical has been added to the wash trough. The factory default setting is 200, this should be sufficient for all installations, but if required it can be increased or decreased.

Press the Enter key **[Setup / Enter]** to edit the value.

# SET COND DI _____

Enter the difference value using the number keys **[0]** to **[9]**

Press the Enter key **[Setup / Enter]** to save or the Cancel key to cancel **[Reset / Cancel]**

## Vacuum Pump Setup

# VAC PUMP SETUP

Press the Enter key **[Setup Enter]** to enter the vacuum pump setup menu.

## Vacuum Pump Type

# VP0 TYPE ON/OFF

This sets the type of signal required for controlling the vacuum pumps. ON/OFF leaves the outputs on for the entire time they are running. PULSED pulses the outputs sequentially and pulses the vac pump stop at the end of the program. RVS is used to communicate with a variable speed vacuum pump. The factory default is ON/OFF.

Press the Enter key **[Setup Enter]** to alternate between on/off, pulsed and rvs for vacuum pump 0.

VP0 TYPE PULSED    VP0 TYPE PULSED

Press the 6 key **[→ 6]** to step onto the setting for vacuum pump 1.

# VP1 TYPE ON/OFF

Press the Enter key **[Setup Enter]** to alternate between on/off, pulsed and rvs for vacuum pump 1.

Press the 6 key **[→ 6]** to step onto the setting for vacuum pump 2.

# VP2 TYPE ON/OFF

Press the Enter key **[Setup Enter]** to alternate between on/off, pulsed and rvs for vacuum pump 1.

Press the 6 key **[→ 6]** to step onto the vacuum minimum setting.

## Vacuum Minimum Setting

```
VAC MINIMUM  XX
```

The vacuum minimum setting is used to alert the operator if the vacuum drops below the entered value during a wash program or when milking. **Default Setting** - 0 kPa

Press the Enter key **[Setup Enter]** to edit the value.

```
SET VAC MIN ____
```

Enter the value using the number keys **[0]** to **[9]**

Press the Enter key **[Setup Enter]** to save or the Cancel key to cancel **[Reset Cancel]**

## Milking Vacuum Level Setting

```
MILK VAC   XX
```

The milking vacuum level setting is used as the vacuum level to aim for when using variable speed vacuum pumps connected to the Auto Wash Pro. **Default Setting** - 46 kPa

Press the Enter key **[Setup Enter]** to edit the value.

```
SET MILK VAC ____
```

Enter the value using the number keys **[0]** to **[9]**

Press the Enter key **[Setup Enter]** to save or the Cancel key to cancel **[Reset Cancel]**

Default Setting -

## Washing Vacuum Level Setting

WASH VAC          XX

The washing vacuum level setting is used as the vacuum level to aim for when using variable speed vacuum pumps connected to the Auto Wash Pro during any wash program. **Default Setting** - 46kPa

Press the Enter key    [Setup **Enter**]    to edit the value.

SET WASH VAC    ____

Enter the value using the number keys    [**0**] to [**9**]

Press the Enter key    [Setup **Enter**]    to save or the Cancel key to cancel    [Reset **Cancel**]

## Maximum Vacuum Level  Setting

VAC MAXIMUM    XX

The vacuum maximum setting is used to alert the operator if the vacuum rises above the entered value during a wash program or when milking. **Default Setting** - 99 kPa

Press the Enter key    [Setup **Enter**]    to edit the value.

SET VAC MAX    ____

Enter the value using the number keys    [**0**] to [**9**]

Press the Enter key    [Setup **Enter**]    to save or the Cancel key to cancel    [Reset **Cancel**]

## Setting the Wash Trough Lock Out

```
WASH T LOCK OFF
```

This sets whether the wash trough lock prevents a wash program starting if the wash line is not in the correct position (i.e. not attached to the wash line or still attached to the milk tank) and the wash safety switch engaged. It is an ON/OFF setting. The factory default is ON.

Press the Enter key **[Setup Enter]** to toggle between ON or OFF.

## Setting the Milk Tank Lock Out

```
MILK T LOCK OFF
```

This sets whether the milk tank lock prevents milking starrting if the milk delivery line is not in the correct position (i.e. attached to the milk tank) and the milk safety switch engaged. It is an ON/OFF setting. The factory default is OFF.

Press the Enter key **[Setup Enter]** to toggle between ON or OFF.

## Calibrating the Peristaltic Pumps

**PUMP CALIBRATION**

Press the Enter key **Setup Enter** to set the peristaltic pump calibration.

See separate section on calibrating the peristaltic pumps.

Press the 2 key or the 6 key to move onto the tasks setting. **2** or **6**

---

## Test Displays Diagnostic

**TEST DISPLAYS**

This turns on all the display LEDs so faulty LEDs can be diagnosed.

Press the Enter key **Setup Enter** to go into the test routine.

Press the Cancel key **Reset Cancel** to return to the setup menu.

**TEST DISPLAYS**

Press the 2 key or the 6 key to move onto the test keyboard diagnostic. **2** or **6**
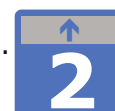
## Test Keyboard Diagnostic

**TEST KEYBOARD**

This enables the user to press each key individually to check they are functioning correctly.

Press the Enter key [Setup / Enter] to go into the diagnostic routine.

**KEY**

| | | | | |
|---|---|---|---|---|
| Reset / Cancel | Auto | Insert / 1 | ↑ / 2 | Delete / 3 | Prog 4 / Prog 1 |
| Pause | Pre Milking | ← / 4 | 5 | → / 6 | Prog 5 / Prog 2 |
| Back / Skip | Milk | 7 | ↓ / 8 | 9 | Prog 6 / Prog 3 |
| Stop | Milk Stone | Shift | 0 | Setup / Enter | Clear / Info |

Press any of the keys and the display will show the key pressed. If a key does not show on the display, the key is more than likely faulty. The display below shows what happens if the Info key is pressed.

**KEY INFO**

Press the Cancel key [Reset / Cancel] to return to the setup menu.

**TEST KEYBOARD**

Press the 2 key or the 6 key to move onto the time setting. [↑ / 2] **or** [→ / 6]

## Input/Output (I/O) Printed Circuit Board (PCB) Diagnostics

**I/O DIAGNOSTICS**

This enables to user to display diagnostic information on the Input/Output (I/O) PCB Diagnostics.

Press the Enter key **[Setup Enter]** to go into the diagnostic routine.

**I/O   OK  X BRDS** — Where X is the number of I/O PCBs

**or**

**I/O   ERR 0 BRDS** — Displays when no PCB responds

Press the Enter key **[Setup Enter]** to go into the diagnostics for the individual I/O PCB.

**I/O     VX.XX** — Displays software version of I/O PCB

Press the 8 key **[↓ 8]** to step through the diagnostic information.

**S/N XXXXXXXXXXX** — Displays serial number of I/O PCB

**WASH XXXXCM** — Where X is the wash trough level in cm

**WASH T XXX.X°C** — Where XXX.X is the wash trough temperature

## Input/Output (I/O) Printed Circuit Board (PCB) Diagnostics Continued

The wash temperature screen will not display if there is an error with the temperature measurement chip. If this occurs, the screen below will display.

WASH T ERROR

The wash temperature screen will also not display if the temperature measured is over 1000°C as it is clearly an error . If this occurs, the screen below will display.

WASH T VAL ERROR

Press the 8 key **↓ 8** to step onto the wash trough level measurement.

RTRN W XXX.X°C

Where XXX.X is the return water temperature

TEMP 3 XXX.X°C

Where XXX.X is the temp probe 3 temperature

VACUUM XXX.XKPA

Where XXX.X is the current vacuum level.

COND XXX.X

Where XXX.X is the current conductivity level.

RAW COND XXX.X

Internal Setting

## Input/Output (I/O) Printed Circuit Board (PCB) Diagnostics Continued

| W P1 | XXXXX | Internal setting |
|------|-------|------------------|
| W P2 | XXXXX | Internal setting |
| W VREF | XXXXX | Internal setting |
| W OFFSET | XXXXX | Internal setting |
| C P1 | XXXXX | Internal setting |
| C OFFSET | XXXXX | Internal setting |
| V OFFSET | XXXXX | Internal setting |

## Input/Output (I/O) Printed Circuit Board (PCB) Test Routines

`I/O BOARD TEST`

This enables to user to test individual outputs by turning them on or off.

Press the Enter key **Setup Enter** to go into the diagnostic routine.

Press the 2 key or 8 key **2** or **8** to step through the different outputs.

Press the Enter key **Setup Enter** to toggle to output ON or OFF.

`HOT WATER 1  OFF` — Hot water 1 valve output

`HOT WATER 2  OFF` — Hot water 2 valve output

`COLD WATER  OFF` — Cold water valve output

`VAC BUILD UP OFF` — Vacuum build up valve output

`DRAIN       OFF` — Drain valve output

`DIVERTER    OFF` — Diverter changeover valve output

`SEPARATION  OFF` — Separation valve output

## Input/Output (I/O) Printed Circuit Board (PCB) Test Routines Continued

| Display | Description |
|---|---|
| END OF WASH OFF | End of wash output |
| VAC PUMP 1 OFF | Vacuum Pump 1 output |
| VAC PUMP 2 OFF | Vacuum pump 2 output |
| VAC PUMP 3 OFF | Vacuum pump 3 output |
| VAC PMP STOP OFF | Vacuum pump stop output |
| MILK PUMP 1 OFF | Milk pump 1 output |
| MILK PUMP 2 OFF | Milk pump 2 output |
| AIR BLAST OFF | Air Blast output |
| PULSATION OFF | Pulsation output |
| AUTO DRAIN OFF | Auto Drain output |

## Input/Output (I/O) Printed Circuit Board (PCB) Test Routines Continued

| | |
|---|---|
| OUTPUT 1     OFF | Output 1 output |
| OUTPUT 2     OFF | Output 2 output |
| OUTPUT 3     OFF | Output 3 output |
| MILKING LED     OFF | Milking LED output |
| WASHING LED     OFF | Washing LED output |
| SSR 1     OFF | Soild State Relay 1 output |
| SSR 2     OFF | Solid State Relay 2 output |
| WASH LK     OFF | Wash Trough Lock input status |
| MILK LK     OFF | Milk Tank Lock input status |
| INPUT 1     OFF | Input 1 input status |

## Input/Output (I/O) Printed Circuit Board (PCB) Test Routines Continued

| | |
|---|---|
| INPUT 1     OFF | Input 2 input status |
| PUMP 1     OFF | Chemical Pump 1 output |
| PUMP 2     OFF | Chemical Pump 2 output |
| PUMP 3     OFF | Chemical Pump 3 output |
| PUMP 4     OFF | Chemical Pump 4 output |

Press the Cancel key [Reset / Cancel] to return to the setup menu.

I/O BOARD TEST

Press the 8 key [↓ 8] to move onto the control printed circuit board (pcb) serial number.

## Control Printed Circuit Board (PCB) Serial Number

```
S/N XXXXXXXXXXX
```

This displays the control printed circuit board (PCB) serial number.

Press the 8 key   **8**   to move onto the control printed circuit board (pcb) software version.

## Control Printed Circuit Board (PCB) Software Version

```
S/W VERSION X.XX
```

This displays the control printed circuit board (PCB) software version.

Press the 8 key   **8**   to move onto the factory reset function.

## Restore Factory Settings 💣

**FACTORY RESET**

Factory settings can be restored by running this function. This function clears ALL of the settings. The data is lost and is not recoverable so use with caution.

Press the Enter key **[Setup Enter]** to proceed with the factory reset.

**ARE YOU SURE?**

Press the Enter key **[Setup Enter]** to go to reset settings.

**RESET SETTINGS?**

Press the Skip key **[Back Skip]** to skip or press the Enter key **[Setup Enter]** to confirm reset settings.

**RESET PROGRAMS?**

Press the Skip key **[Back Skip]** to skip or press the Enter key **[Setup Enter]** to confirm reset programs.

**RESET TASKS?**

Press the Skip key **[Back Skip]** to skip or press the Enter key **[Setup Enter]** to confirm reset tasks.

**FACTORY RESET**

Press the 8 key **[↓ 8]** to move onto the Lock Setup screen.

## Exit Setup

**LOCK SETUP**

This enables to user to lock the setup routine and exit.

Press the Enter key [Setup **Enter**] to lock the setup routine and exit.

## Editing Programs

Press the Shift + Enter keys **Shift** **+** **Setup** **Enter** to enter setup.

Press the 2 key **↑ 2** until the Edit Programs menu item is reached.

### EDIT PROGRAMS

Press the Enter key **Setup** **Enter** to edit the programs.

### PRE--MILKING

Press the 2 key or 8 keys **↑ 2** **or** **↓ 8** or the program key **Pre Milking** to choose the program to edit.

The programs available are pre-milking, milking, milk stone and programs 1 through 6. This section will cover editing one step from the pre-milking program.

Press the Enter key **Setup** **Enter** to edit the pre-milking program.

Step number → **S01 T1 00--06--00.0**

Press the 2 key **↑ 2** to step forwards through the steps in the program.

Press the 8 key **↓ 8** to step backwards through the steps in the program.

Pressing the Auto key **Auto** toggles through the available step end conditions.

**Editing Programs Continued** - Available Step End Conditions

**S01 USER STOP**

User has to press skip or stop to terminate step

HH - hours    SS - seconds

**S01 T1 00-06-00.0**

Step will run for 6 minutes and then go onto next step

MM - minutes    T - tenths of seconds

**S01 PUMP1 2.00L**

Pump 1 delivers 2.00 litres of chemical and then go onto next step

Pump Number - 1, 2, 3 or 4

**S01 WT > 60°C**

Step will complete when wash trough temperature is greater than 60°C

Can be less than (<) or greater than (>) X temperature

**S01 RW > 60°C**

Step will complete when return water temperature is greater than 60°C

Can be less than (<) or greater than (>) X temperature

**S01 T3 > 60°C**

Step will complete when temp probe 3 temperature is greater than 60°C

Can be less than (<) or greater than (>) X temperature

**S01 WTL > 105CM**

Step will complete when wash trough level is greater than 105cm

Can be less than (<) or greater than (>) X cm

**S01 VAC > 46.0KPA**

Step will complete when vacuum level is greater than 46kPa

Can be less than (<) or greater than (>) X kPa

## Editing Programs Continued - Available Step End Conditions

# S01 CON > 150.0MS

Step will complete when conductivity level is greater than 150mS

Can be less than (<) or greater than (>) X temperature

# S01 INPUT 1 ON

Step will complete when input matches desired state

Input Number - 1 or 2    Setting can be ON or OFF

Pressing the Info key [Clear / Info] allows the user to edit which outputs are ON during each step - the same functionality as the I/O PCB test list. The outputs available are:

| Hot Water 1 | Vac Pump 3 | Milking LED |
|---|---|---|
| Hot Water 2 | Vac Pump Stop | Washing LED |
| Cold Water | Milk Pump 1 | Solid State Relay 1 |
| Vac Build Up | Milk Pump 2 | Solid State Relay 2 |
| Drain | Air Blast | Peristaltic Pump 1 |
| Diverter | Pulsation | Peristaltic Pump 2 |
| Separation | Auto Drain | Peristaltic Pump 3 |
| End Of Wash | Output 1 | Peristaltic Pump 4 |
| Vac Pump 1 | Output 2 | |
| Vac Pump 2 | Output 3 | |

## Maximum Step Run Time

Pressing the Stop key [Reset / Stop] shows the maximum step time and controls what happens when this time is completed.

HH - hours        SS - seconds

# MAX C 00-10-00.0

C = continue to next step
S = stop program and warn user

MM - minutes        T - tenths of seconds

The maximum step time is used to determine what happens if a condition is not met after the allowed time, the program can either continue, or stop on error.

## Conductivity Testing for Chemicals

To test if chemicals have been added to the wash trough the system needs to compare the water conductivity before and after the chemicals have been added. For this each step has the ability to store the conductivity or compare the conductivity.

To toggle the mode of the conductivity test for a step press the Shift key and 0 key together.

**Shift** + **0**

`S01 NONE` — Step will neither store the conductivity or compare it

`S01 STORE COND` — Step will store the conductivity

`S01 COMPARE CON` — Step will compare the conductivity to the previously stored one

## Inserting or Deleting Steps

Pressing the Insert key onto it to edit.

**Shift** + **Prog 2** (Insert) — will insert a copy of the current step after it and move

Pressing the Delete key **Shift** + **Prog 3** (Delete) — will delete the current step.

The final 2 steps Stop Block and Pause Block. They have the same outputs available, but are used when the Skip or Pause keys are pressed.

`STOP BLOCK`

`PAUSE BLOCK`

Press the Cancel key **Cancel** (Reset) to return to the setup menu.

## Editing Tasks

Press the Shift + Enter keys **Shift** **+** **Setup Enter** to enter setup.

Press the 2 key **2** until the Edit Tasks menu item is reached.

### EDIT TASKS

Press the Enter key **Setup Enter** to edit the tasks.

Task number **1 DISABLED**

Press the Enter key **Setup Enter** to toggle between Enabled and Disabled, tasks which are disabled will not run.

Press the 4 key or the 6 key **4** or **6** to step through the tasks settings.

### 1 PRE-MILKING

To change which program is to be run, press the corresponding key, for example, press the Milk Stone key **Milk Stone** for the Milk Stone program.

### 1 MILK STONE

Press the 6 key **6** to step through to the trigger.

## Editing Tasks Continued

The task trigger has two options, it can be 'AUTO KEY' or TIME AND DAY'. The Auto Key setting allows the user to set a time window when the task will be run when the Auto Key is pressed. The Time And Day setting is an automatically starting task at the time specified.

**1 AUTO KEY**

Press the Enter key **Setup Enter** to toggle between 'Auto Key' and 'Time And Day'.

**1 TIME AND DAY**

Press the 4 key or the 6 key **4** or **6** to step to the start time setting.

HH - hour of the day
↓

**1 START 15-00**

↑
MM - minute

Press the Enter key **Setup Enter** to edit the start time.

**1 START __-__**

Enter the time using the number keys **0 to 9** then press the Enter key **Setup Enter** to save the time.

Press the 4 key or the 6 key **4** or **6** to step to the next setting.

If the task trigger is set to Auto Key, the task will require an End Time, otherwise it will require only the days enabled.

## Editing Tasks Continued

The End Time setting controls when the Auto Key task is enabled until, if the task is triggered by Time And Day, this setting is not displayed.
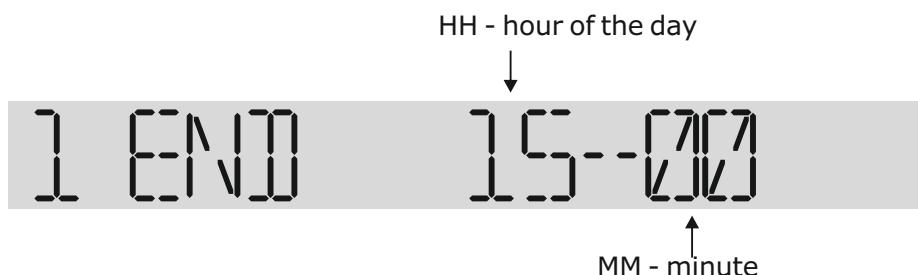
HH - hour of the day

`1 END    15--00`

MM - minute

Press the Enter key **Setup Enter** to edit the end time.

`1 END      --    `

Enter the time using the number keys **0 to 9** then press the Enter key **Setup Enter** to save the time.

Press the 4 key or the 6 key **4** or **6** to step to the Days setting.

The days of the week are displayed in the position shown below. The days the task is enabled are only visible when set ON otherwise, the are shown as a dash (_).

T = Tuesday    S = Saturday
S = Sunday    S = Sunday

`1 DAYS    SMTWTFS`

M = Monday    F = Friday
W = Wednesday
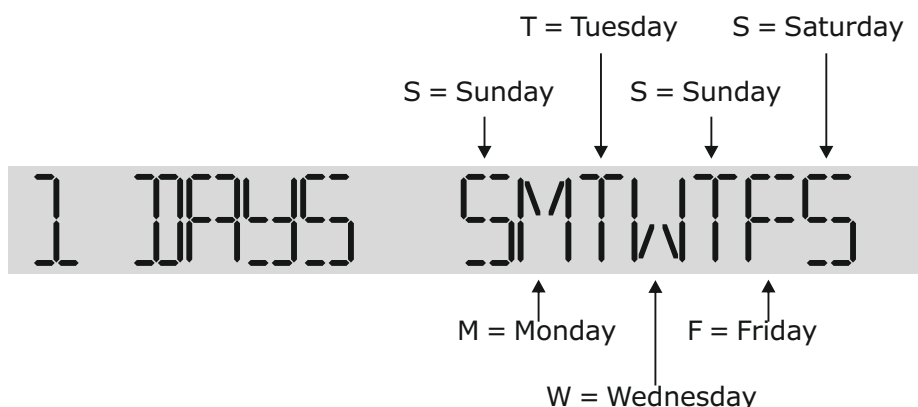
Press the Enter key **Setup Enter** to edit the days which the task is enabled, the selected day (Sunday) will flash.

`1 DAYS    SMTWTFS`

S = Sunday Flashing

## Editing Tasks Continued

To toggle the day, press the Info key. [Clear / Info] The display will show the days starting letter if enabled, or a dash (_) if disabled.
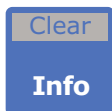
```
1 DAYS    SMTWTFS
```

↑
S = Sunday Enabled and Flashing

```
1 DAYS    _MTWTFS
```

↑
_ = Sunday Disabled and Flashing

Press the 4 key [← / 4] to move to the day on the left, or the 6 key [→ / 6] to move to the day on the right.

Press the Enter key [Setup / Enter] to save the changes, or the Cancel key [Reset / Cancel] to abandon the changes.

Press the Cancel key [Reset / Cancel] to return to the Setup menu.

## Calibrating the Peristaltic Pumps

Press the Shift key **Shift** then press the Enter key **Setup Enter** to enter the setup menu.

Press the 2 key **2** until the Pump Calibration menu item is reached.

PUMP CALIBRATION

Press the Enter key **Setup Enter** to calibrate the peristaltic pumps.

PUMP 1    300ML

Press the Up or Down arrow keys **2 or 8** to choose which peristaltic pump to calibrate.

Put the pipe from the selected peristaltic pump into a measuring beaker / jug to collect the pumped chemical. The measuring beaker / jug should be chemical resistant.

Press the Auto key **Auto** to run the selected peristaltic pump and measure the collected chemical.

Press the Enter key **Setup Enter** to enter the measured amount of chemical.

PUMP 1       ___ML

Enter the value using the number keys **0 to 9** then press the Enter key **Setup Enter** to save the measured value.

Press the Cancel key **Reset Cancel** to return to the Setup menu.

## Milking Mode

Press the Milk key | **Pause** / **Milk** | to put the system into Milk mode before milking.

HH - hours        SS - seconds

$$\text{MILK} \quad 01\text{--}06\text{--}32$$

MM - minutes
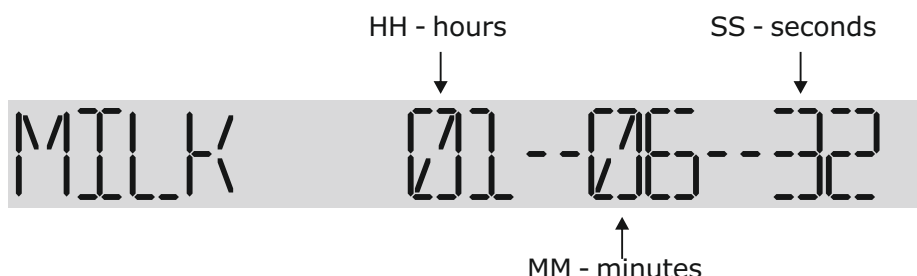
The display will show 'MILK' and the milking time.

If the Auto Wash Pro is connected to other ATL equipment (ie. AirBlast, Milk Pump Control, Pulse-8 Pulsation Control or Milk Meter System), these can be linked together so that when the milk key is pressed, they all go into milking mode.

Press the Info key | **Clear** / **Info** | to access information on the Milking program. See separate section.

Press the Stop key | **Reset** / **Stop** | to finish milking and return to Idle mode.

### Steps in the Milk Program

Steps can be added to the Milk program the same as the washing programs. This can be useful if for example, the vacuum pumps are required to be turned off after milking but before washing, and the automatic drain valves need to be kept closed.

Press the Shift and Prog 1 keys | **Back** / **Skip** | to skip to the next step in the Milk program.

## Washing Mode

Press either the Pre-Milking, Milk Stone or  Program 1 to 6 keys to start the system washing.

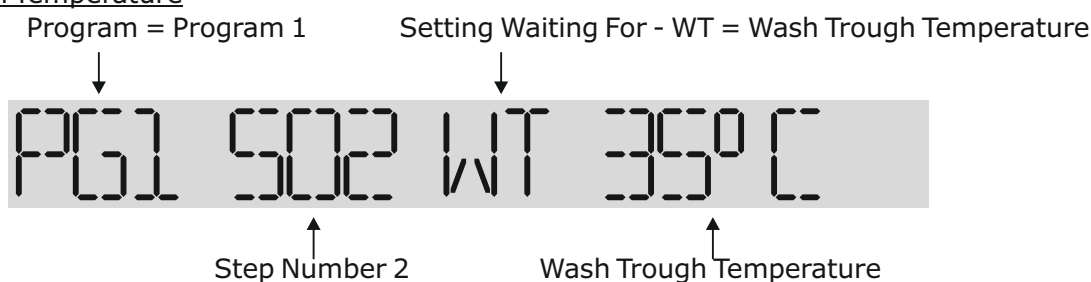| Pre Milking | **or** | Milk Stone | **or** | Prog 4 / Prog 1 | **to** | Prog 6 / Prog 3 |

The display will show the following during washing depending upon whether the control is waiting for wash trough level, wash trough temperature, time remaining in step, and user pressing stop key.
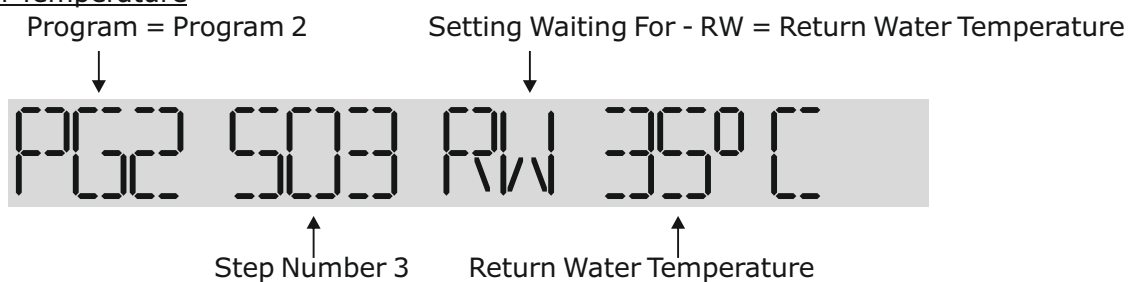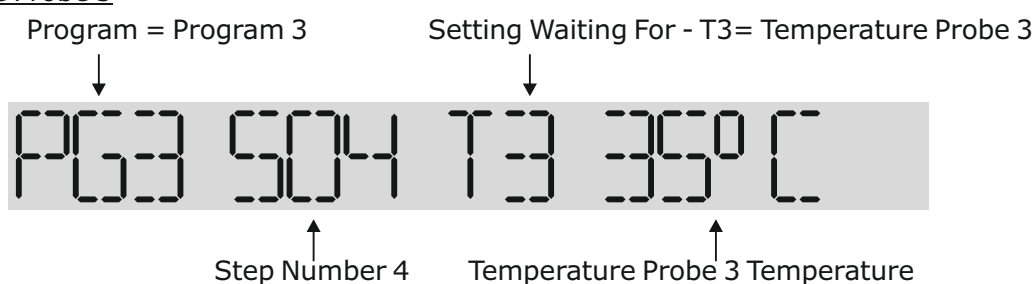
Wash Trough Level

Program = Pre-Milking          Setting Waiting For - WTL = Wash Trough Level

**PRE S01 WTL 84CM**

Step Number 1          Wash Trough Level in Centimetres

Wash Trough Temperature

Program = Program 1          Setting Waiting For - WT = Wash Trough Temperature

**PG1 S02 WT 35°C**
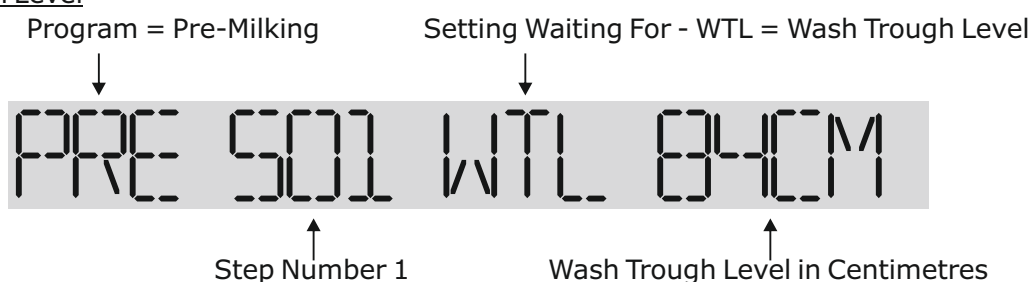
Step Number 2          Wash Trough Temperature

Return Water Temperature

Program = Program 2          Setting Waiting For - RW = Return Water Temperature

**PG2 S03 RW 35°C**

Step Number 3          Return Water Temperature

Temperature Probe 3

Program = Program 3          Setting Waiting For - T3= Temperature Probe 3

**PG3 S04 T3 35°C**

Step Number 4          Temperature Probe 3 Temperature

## Washing Mode Continued

### Time Remaining

Program = Program 2      Setting Waiting For - R = Time Remaining

**PG2 S03   R10.34**

Step Number 3    Time Remaining - MM.SS - MM = Minutes, SS = Seconds

### User Pressing Stop Key

Program = Program 3      Setting Waiting For - US = User Stop

**PG3 S04 US 10.34**

Step Number 4    Time Passed - MM.SS - MM = Minutes, SS = Seconds
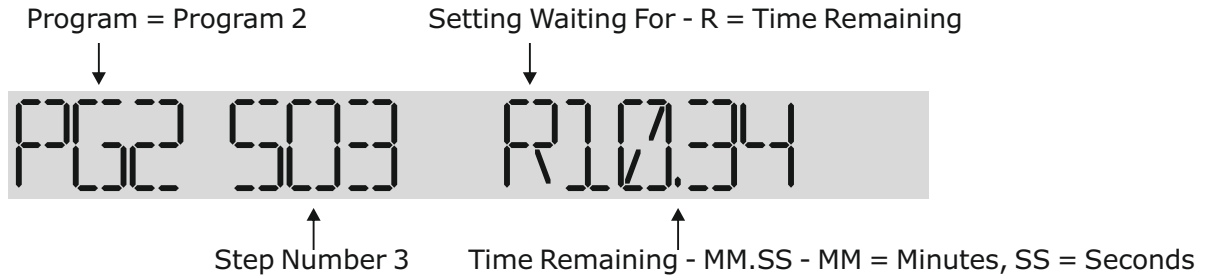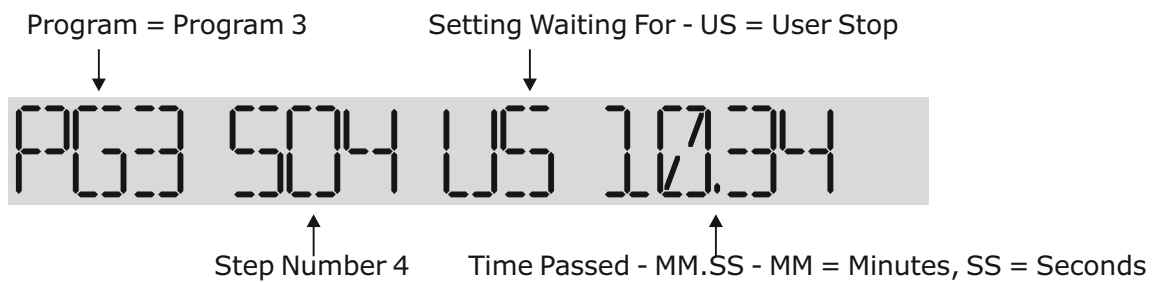
### Peristaltic Pump Running

Program = Pre-Milking

**PRE P1    2.198L**

Peristaltic Pump Number    Chemical Dispensed in Litres from Pump

### Vacuum Level

Program = Program 3      Setting Waiting For - V =Vacuum Level

**PG3 S04 V46KPA**

Step Number 4    Vacuum Level in kPa

### Conductivity Level

Program = Program 3      Setting Waiting For - C =Conductivity Level

**PG3 S04 C46MS**

Step Number 4    Conductivity Level in mS
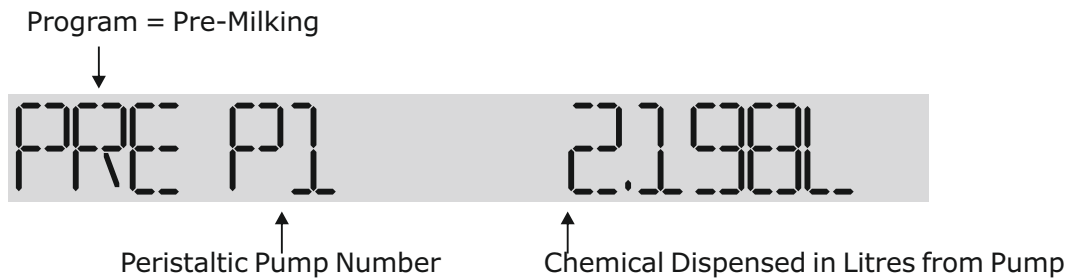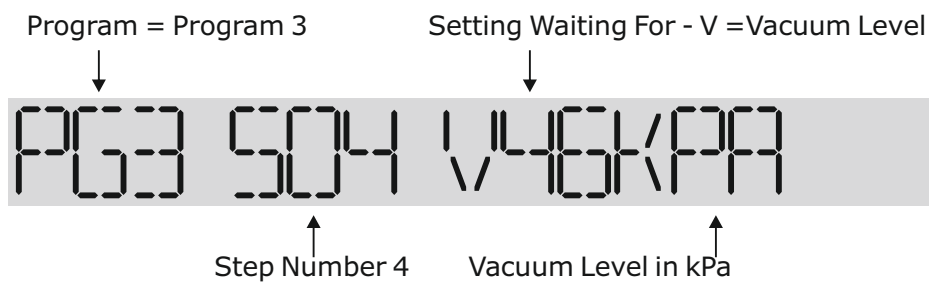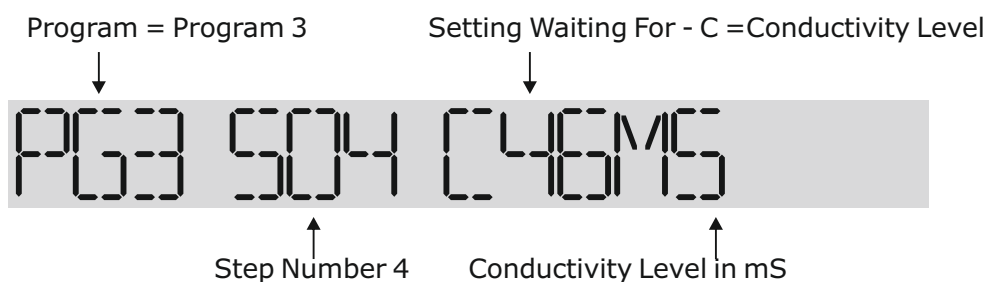
## Washing Mode Continued

Functionality during Washing

Press the Skip key [Skip] to skip to the next step in the Wash program or to acknowledge user stop.

Press the Pause key [Pause] to pause the current step in the Wash program.

Press the Info key [Info] to access information on the Washing program. See separate section.
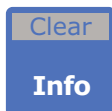
Press the Stop key [Stop] to stop washing and return to Idle mode.

## Info Function

The info function provides information on milking and washing programs. The information is available all of the time (i.e. both when milking and washing programs are running or when the control is in idle).

Press the Info key [Clear **Info**] to access the info function.

Milking Start Time - Reports last milking start time

Milking Start     HH - hours     SS - seconds

**MILK ST 06--36--48**

Milking start time stamp in HH-MM-SS time format

**or**

MM - minutes

**NOT MILKED**

Will only report this before first milking after power up

Milking Length (Time) - Reports last milking length

Milking Length (Time)     HH - hours     SS - seconds

**MILK TI 00--46--21**

Milking length in HH-MM-SS time format

**or**

MM - minutes

**MILK TI UNKNOWN**

Will only report this before first milking after power up

Washing Start Time - Reports last washing start time

Washing Start     HH - hours     SS - seconds

**WASH ST 07--49--10**

Washing start time stamp in HH-MM-SS time format

**or**

MM - minutes

**WASH ST UNKNOWN**

Will only report this before first washing after power up

## Info Function Continued

Washing Length (Time) - Reports last washing length

Washing Length (Time)          HH - hours          SS - seconds

WASH TI 00-15-53          Washing length in HH-MM-SS time format

**or**          MM - minutes

WASH TI UNKNOWN          Will only report this before first washing after power up

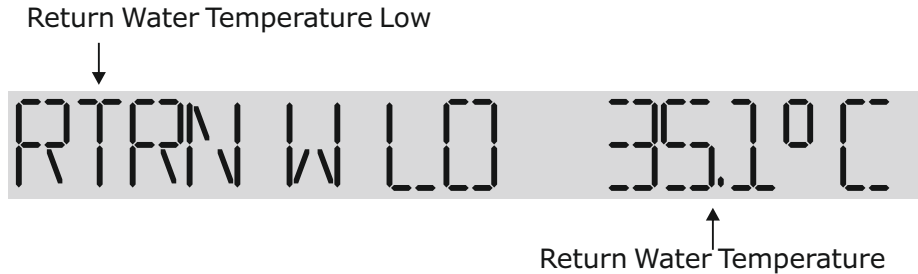Wash Trough Lowest Temperature - Reports the lowest temperature of the water in the wash trough during last washing.

Wash Trough Temperature Low

WASH T LO 35.1°C

Wash Trough Temperature

Wash Trough Current Temperature - Reports the current temperature of the water in the wash trough.

Wash Trough Temperature

WASH T 55.2°C

Wash Trough Temperature

Wash Trough Highest Temperature - Reports the highest temperature of the water in the wash trough during the last washing.

Wash Trough Temperature High

WASH T HI 85.9°C

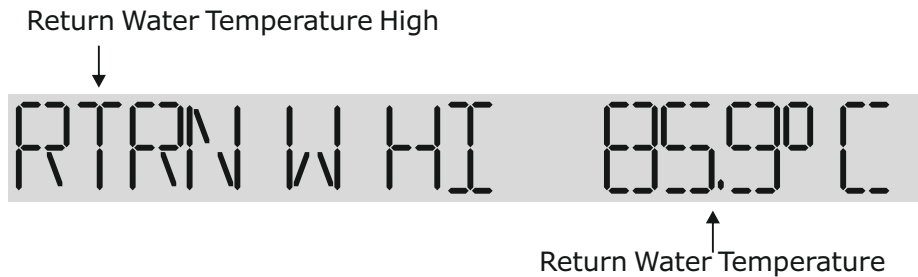Wash Trough Temperature

## Info Function Continued

Return Water Lowest Temperature - Reports the lowest temperature of the return water during last wash.

Return Water Temperature Low
↓

`RTRN W LO    35.1°C`

↑
Return Water Temperature

Return Water Current Temperature - Reports the current temperature of the return water.

Return Water Temperature
↓

`RTRN W        55.2°C`

↑
Return Water Temperature

Return Water Highest Temperature - Reports the highest temperature of the return water during the last wash.

Return Water Temperature High
↓

`RTRN W HI    85.9°C`

↑
Return Water Temperature

Temp Probe 3 Lowest Temperature - Reports the lowest temperature of Temp Probe 3 during the wash.

Temp Probe 3 Temperature Low
↓

`TEMP 3 LO    35.1°C`

↑
Temp Probe 3 Temperature
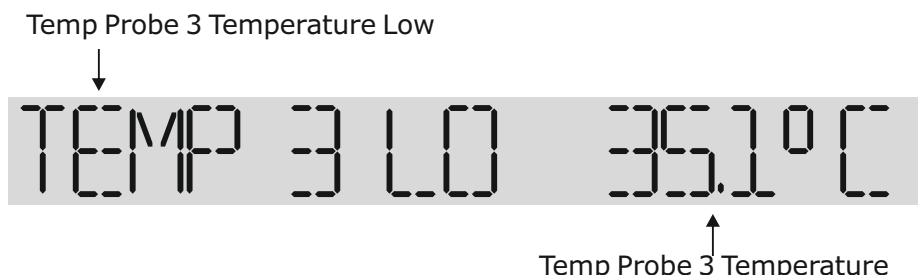
Temp Probe 3 Current Temperature - Reports the current temperature of Temp Probe 3.

Temp Probe 3 Temperature          Temp Probe 3 Temperature
↓                                 ↓

`TEMP 3        55.2°C`
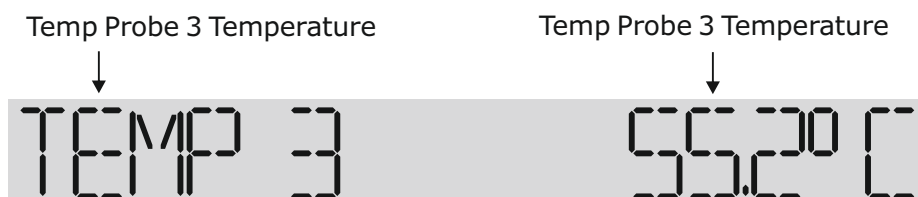
## Info Function Continued

<u>Temp Probe 3 Highest Temperature</u> - Reports the highest temperature on temp probe 3 during last wash.

Temp Probe 3 Temperature High        Temp Probe 3 Temperature
↓                                    ↓

TEMP 3 HI    85.9°C

<u>Current Vacuum Level</u> - Reports the current vacuum level.

Current Vacuum Level        Vacuum Level
↓                           ↓

CUR VAC    46.2KPA

<u>Minimum Vacuum Level</u> - Reports the lowest vacuum level during the wash.

Minimum Vacuum Level        Vacuum Level
↓                           ↓

MIN VAC    45.8KPA

<u>Maximum Vacuum Level</u> - Reports highest vacuum level during the wash.

Maximum Vacuum Level        Vacuum Level
↓                           ↓

MAX VAC    46.8KPA

<u>Wash Trough Water Level</u> - Reports current wash trough level

Wash Trough Water Level        Water level in centimetres
↓                              ↓

WASH LEVEL 118CM

Press the Cancel key [Reset / Cancel] to exit the info function.

## Monthly / Six Monthly / Yearly Routine Maintenance

■ Visually inspect the Auto Control box for damage. Any damage will admit water causing the premature failure of the electronics and should be fixed as soon as possible.

## Parlour Wash Down

■ The Auto Wash Pro control enclosure is IP65 rated. However, no indirect or direct pressure washing should be used to wash the Auto Wash Pro Control, as this will cause the seals to fail and water to ingress and damage the electronic components. Please note that water damage is not covered under warranty.

## Troubleshooting

■ The Auto Wash Pro reports errors to the user, when a error occurs the control will 'Beep', pressing the Info key will show the user what the error is.

The list is a list of the errors which may occur on the Auto Wash Pro, with possible resolutions.

| Error | Fault Information |
|---|---|
| XXXXXXXXX FUSE | Output electronic fuse has blown, check output for faults, where XXXXXXXXX is the output name. |
| SYSTEM PSU FAIL | The power supply for the control electronics on the Auto Wash Pro I/O Board has failed, check the power supply. |
| PUMP PSU FAIL | The power supply for the pump outputs on the Auto Wash Pro I/O Board has failed, check the power supply. |
| VAC LEVEL LOW | The vacuum level fell below the warning level during the milking or washing program. |
| VAC LEVEL HIGH | The vacuum level rose above the warning level during the milking or washing program. |
| CHECK CHEMICAL | The conductivity failed to change when adding the checmical, check the chemical drums. |
| IO BOARD ERROR | The control board failed to correctly communicate with the I/O board, check the wiring between the two. |
| WASH T INPUT ERROR | The wash trough input was not made when the control was put into a wash program, the program cannot start. |
| MILK T INPUT ERROR | The milk tank input was not made when the control was put into the milking program, the program cannot start. |
| IO BRD COMM ERR | The I/O Board communications failed, check the wiring between the control and the I/O board. |
| WASH T LEVEL SXX | The wash trough failed to fill to the required level during the step XX of the previous program. |
| RTRN W TEMP SXX | The return water failed to reach the required temperature during step XX of the previous program. |
| WASH T TEMP SXX | The wash trough failed to reach the required temperature during step XX of the previous program. |

cows icon

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## Troubleshooting Continued

| Error | Fault Information |
|---|---|
| TEMP 3 TEMP SXX | The temp probe 3 failed to reach the required temperature during step XX of the previous program. |
| MILK PUMP COM ERR | The control failed to communicate with the Milk Pump Control over RS485 communications. Check the cable and Milk Pump Control. |
| AIRBLAST COM ERR | The control failed to communicate with the Air Blast Control over RS485 communications. Check the cable and Air Blast Control. |
| P8   XX COM ERR | The control failed to communicate with the Pulse8 Control over RS485 communications, where XX is the control number.  Check the cable and Pulse8 Control. |
| PF CTRL COM ERR | The control failed to communicate with the Power Flush Control over RS485 communications. Check the cable and Power Flush Control. |
| PG N XX COM ERR | The control failed to communicate with a Power Flush Node over RS485 communications, where XX is the node number. Check the cable and Power Flush Node. |
| SD CARD LOCKED | The SD Card has the lock switch enabled, check the card, turn the lock switch off. |
| SD CARD REMOVED | Check SD card is correctly inserted. |
| SD CARD FAIL | Check SD card is correctly inserted and no damage has occurred to it. |
| SD CARD FILE ERR | The SD Card has been removed, check the card is seated correctly. |
| SD CARD INIT ERR | The SD Card failed to initialise correctly, check the card is seated correctly and there is nothing stopping the card from connecting to the circuit board. |