Innovation In and Out of Parlour

Milk Meter Installation Manual

Version - 1.2

Date - December 2014

Part Number - 39-0062

Index

Manual Version..... 4
Good Installation Practice..... 5
The Milk Meter Flask..... 7
Milk Meter Flask and Solenoid Box Mounting..... 8
Milk Meter Control and Wash Box Mounting..... 9
Connection Box Mounting..... 10

Milk Meter System Wiring Overview..... 11
Switch Mode Power Supply Wiring Connections..... 12
Solenoid Box Installation..... 13
Solenoid Box Installation (with Pulsation Stop)..... 14
Interpuls ACR Ram and Cv20 Control Valve Connections to Solenoid Box..... 15
Solenoid Box Wiring on Pulsation Stop Systems..... 16
Interpuls ACR Ram and Cv20 Control Valve Connections to Milk Meter Control..... 17
Lift to Start AC Connections to Milk Meter Control..... 18
24vAC or 24vDC ACR Ram and Solenoid Connections..... 19
Milk Meter Control Wiring..... 20
Connection Box Wiring..... 21

Setting Up the Milk Meter Control

The Parlour Type Setting..... 22
The Control Address Setting..... 22
The Micro Setting..... 22
The Drop Value Setting..... 23
The Automatic Cluster Removal (ACR) Setting..... 23
The ACR Hold Off Setting..... 23
The Vacuum Delay Setting..... 23
The Purge Setting..... 24
The Purge Hold Off Setting..... 24
The Swingover Control Setting..... 24
The Swing to Start Setting..... 24
The Kick Off Enable Setting..... 25
The Kick Off Delay Value Setting..... 25
The Key Delay Enable Setting..... 25
The Key Delay Value Setting..... 25

Checking the Software Version of the Milk Meter Display..... 26

Index

MicroM3S Setup for Milk Meters..... 27

Wash Box Wiring..... 29
Wiring the Wash Box into the Connection Box..... 30

Setting Up the Wash Box

The Wash Time..... 31
The Type of Milk Meter System..... 31
Setting the Number of Milking Points on a Stand-Alone System..... 31
Setting the Cumulative Milk Yield to Automatically Zero on a Stand-Alone System..... 32
The Wash Slug Air Blast Setting..... 32
Setting the Air Blast Channel 1 On Time..... 32
Setting the Air Blast Channel 1 Off Time..... 32
Setting the Air Blast Channel 2 On Time..... 33
Setting the Air Blast Channel 2 Off Time..... 33
The Milk Delivery Line Drain Valve Setting..... 33
Setting the Milk Delivery Line Drain Valve Timeout..... 33
The Dump Line Enable Setting..... 34
Setting the Milk Line Wash Time..... 34
Setting the Dump Line Wash Time..... 34
The Compressed Air Purge of the Delivery Line Setting..... 35
The Compressed Air Purge Delay Setting..... 35
The Compressed Air Purge Time Setting..... 35
The Milk Pump Control Setting..... 35
The Milk Pump Air Blast Hold Off Setting..... 36

Testing the Milk Meter and MPC Communications (IDS) on a Stand-Alone System..... 36

Checking the Software Version of the Wash Box..... 37

Calibrating the Milk Meter System - Method 1..... 38
Calibrating the Milk Meter System - Method 2..... 43
Calibrating Milk Meter Systems integrated with the MicroM3S Control..... 44

Additional Items Required to Install ACR System..... 45

Manual Versions

Version 1.0 - December 2013.....First Version of Manual

Version 1.1 - February 2014.....Added lift to start ACR, wash slugger and delivery line drain valve wiring

Version 1.2 - December 2014.....Added milking time, kick off and rotary cluster drop

Good Installation Practice

Mains Supply

- A separate mains supply and earth running directly from the customers distribution board 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.
- All mains work should be referred to a Qualified Electrician.

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 Supply: Output Voltages

- ATL power supply outputs are factory set and should not be adjusted. For a 230volt mains supply the DC outputs should be:

  Milk Meter Display Unit Control Supply: Nominal 12volts.
  Connections Box Supply: Nominal 12volts
  Solenoid Box Supply: Nominal 12volts
  Micro Wash Control Supply: Nominal 12volts

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

Control, Cables and Conduit

- Cables are supplied pre-cut, with all connectors and glands.
- Entries must be made into the bottom of power supply or control casings but never into the top. This will invalidate the warranty.
- 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.

Data Cable

The data cable supplied is a 'twisted pair' configuration especially designed for communications. No other cables should be used as replacements. Ensure it is connected exactly as shown in the diagrams and keep the cable run as short as possible.

- Do not run near or parallel to, or cross over AC mains supplies or wires carrying switched current- milk pumps for example.
- Generally, avoid flourescent lighting or radio wave sources.
- Data cable should be run through suitable conduit by itself, especially if it is exposed to the weather. Sharing conduit with mains or low power, pulsator and/or feeder motor cables invariably corrupts data.

Good Installation Practice Continued

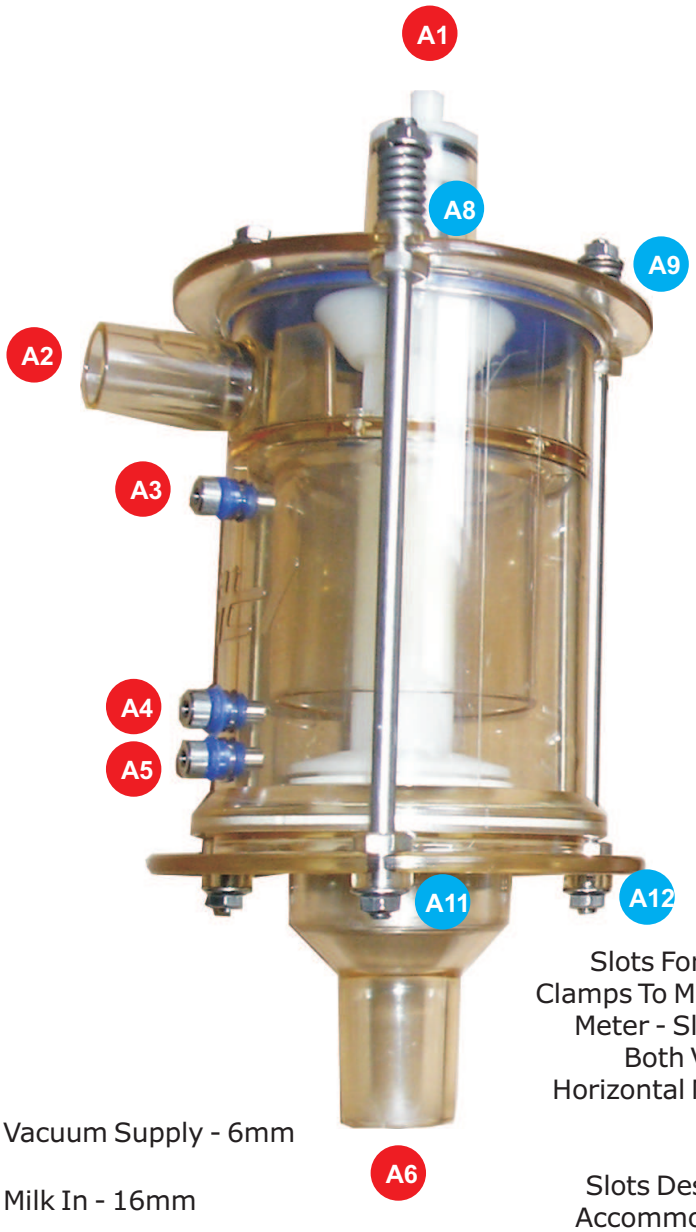
Adopting good engineering practice during installation will avoid most problems with electronic control systems. The following should be considered when installing milk meter systems:

- Check the existing wiring carefully. Do not assume that it will be up to the required standard. It may have been extended with thinner wire and be unable to carry the current without a volt drop.
- Termination of cables in enclosures. Do not coil excess cable in enclosures. Loops are good transmitters of interference.
- Do not use a single aperture gland for several cables. Moisture can migrate through the gaps between the cables and cause damage to internal electronic components. Moisture damage caused in this way is not covered under warranty.
- Never run cables which are connected to ATL control units alongside mains cables. Even if they have been disconnected, they can still be carrying and transmitting interference.
- Do not place data or coaxial cables connected to ATL control units within existing conduits with other cables connected to other systems; especially unsmoothed power cables. This is a prime source of interference especially if connected to pulsators or feeder motors without diodes installed. NB - When a solenoid coil is switched off the reverse voltage is generally 10 times the peak supply voltage, with a 24vDC supply, this can be in excess of 300 volts.
- Interference is most likely on mains electricity systems which exhibit volt drops when the parlour load is switched on.
- Variable speed drives are becoming very common. Make sure that they are installed to the manufacturers instructions. Screened cable must be used between the drive and any motors, if not electronic systems can be affected.
- RFID antennas are looking for signals around 130Khz. Variable speed drives often operate at frequencies around this value. Good installation of the variable speed drive circuit is essential to prevent interference.
- Mains earth supplies can be a source of interference. Check the voltage between the mains earth and the neutral. If there is a voltage above 3-4volts, there is a possibility that interference will be present. Earth problems of this nature can usually be avoided by fitting earth trips and separate earth electrode, which is isolated from the mains earth system.

The Milk Meter Flask

The milk meter is despatched from ATL with the top bracket attached and milk inlet to right-hand side. Fit the milk meter onto the main bracket by releasing the M6 wing nut and slotting the top bracket onto the M6 stud. Locate the M5 flange nuts on the base of the milk meter into the 2 holes in the base of the main bracket. Make sure it is seated properly and tighten the wing nut.

NB - The milk meter flask used with sheep and goats in the same but the probe positions are different (A3, A4 and A5).

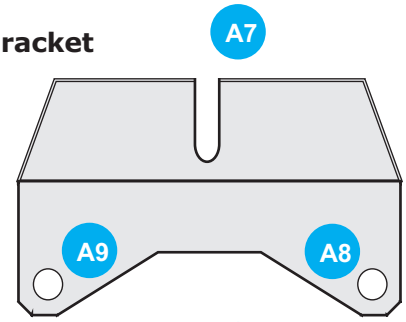


- **A1** Vacuum Supply - 6mm
- **A2** Milk In - 16mm
- **A3** Top Probe
- **A4** Bottom Probe
- **A5** Ground Probe
- **A6** Milk Out - 19mm

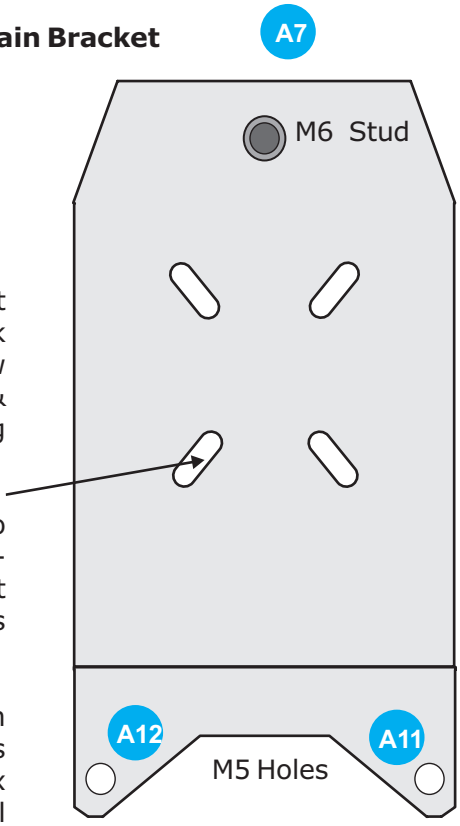
IMPORTANT

- Always install the milk meter level as the performance will be effected if not.
- The milk meter should be mounted above the milk pipe.
- Do not leave any dip in the milk out pipe - an air lock may form and performance of the milk meter may be affected if the milk meter cannot drain easily.

Top Bracket



Main Bracket



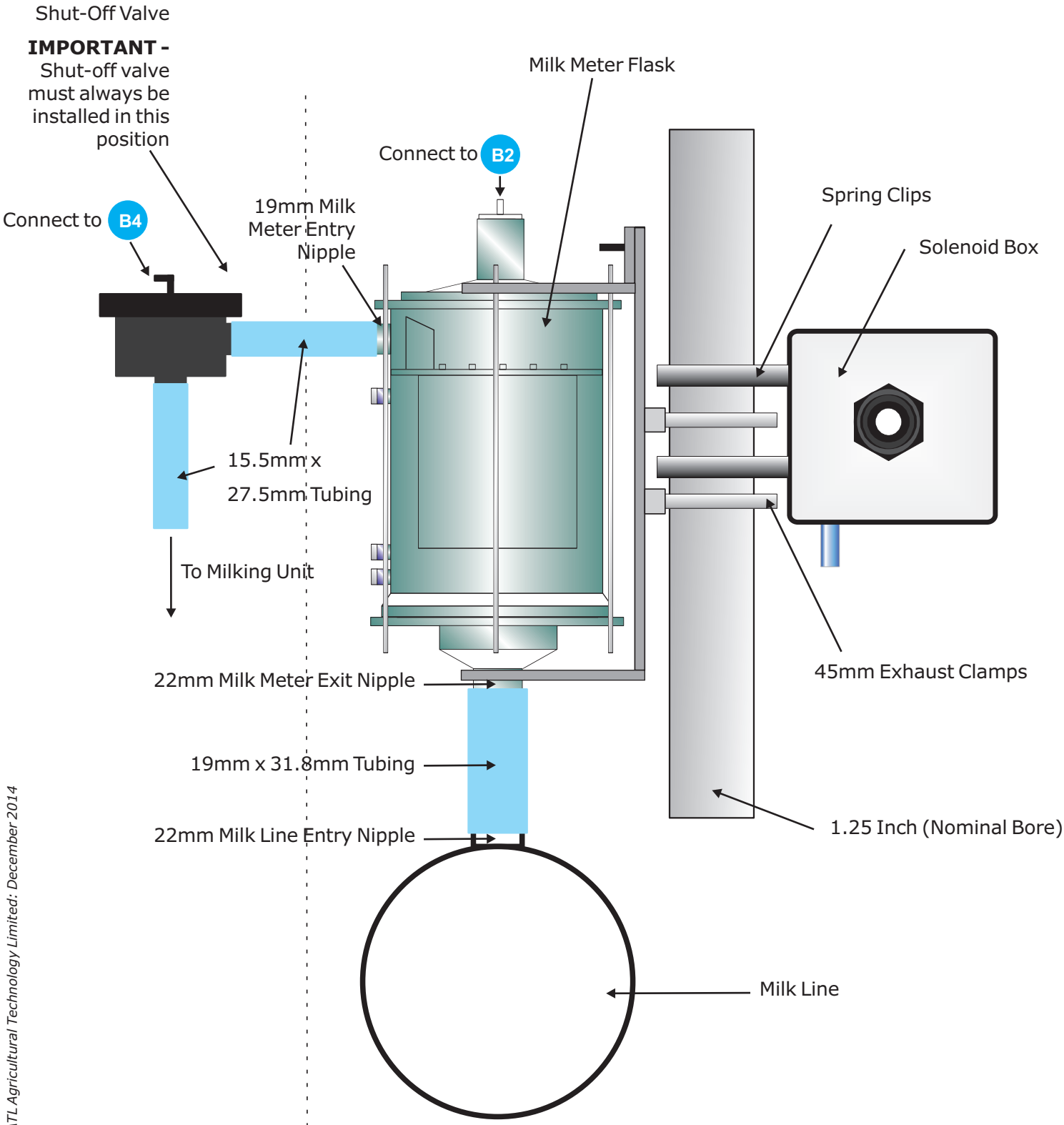
Slots For Exhaust Clamps To Mount Milk Meter - Slots Allow Both Vertical & Horizontal Mounting

Slots Designed To Accommodate 35-45mm Exhaust Clamps

ATL Supplies 45mm Exhaust Clamps As Standard - These Fix To 1.25 Inch (Nominal Bore) Tube

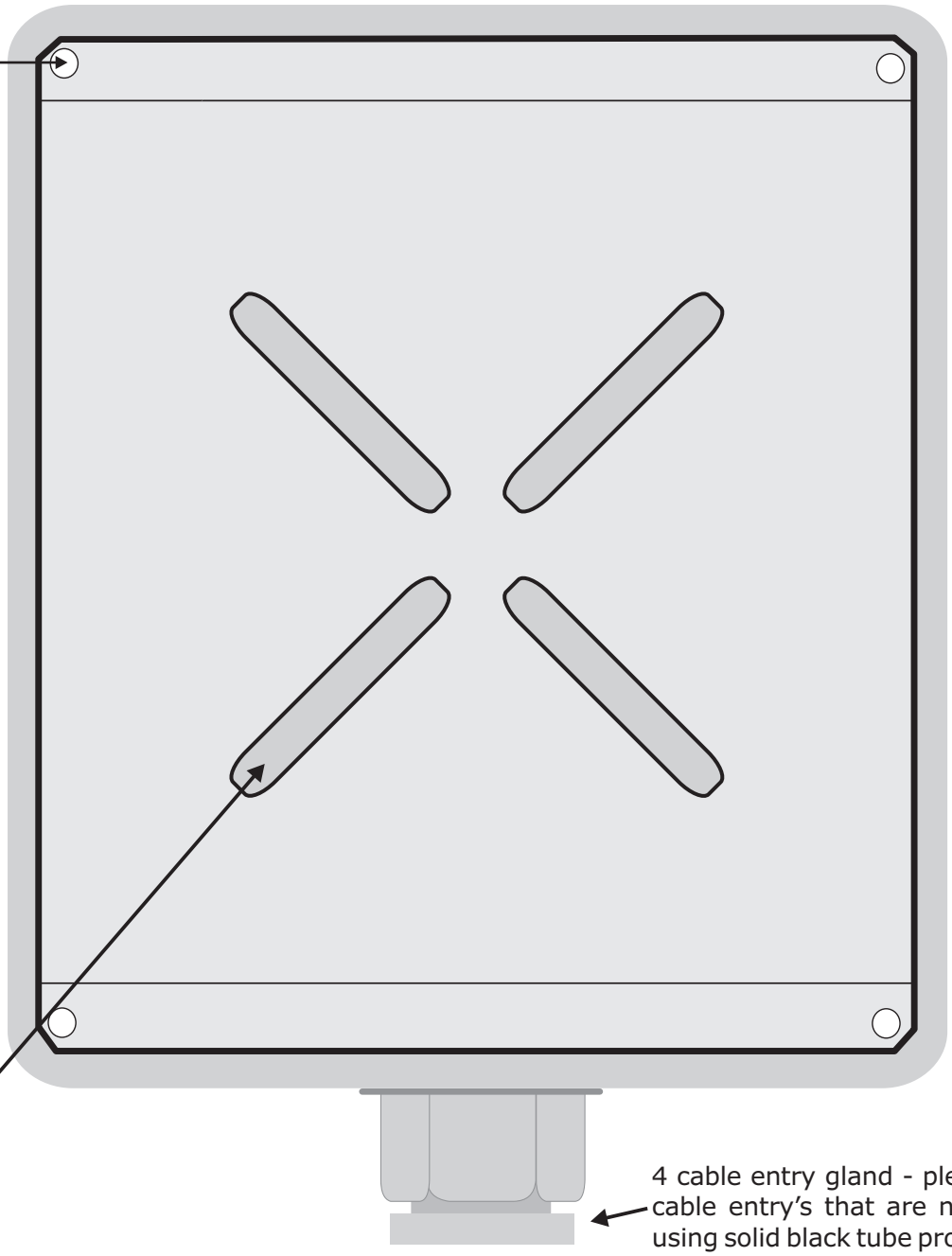
Milk Meter Flask and Solenoid Box Mounting - High Level

The milk meter and the solenoid box are mounted on the same 1.25” nominal bore tube. The diagram below shows the preferred mounting arrangement.



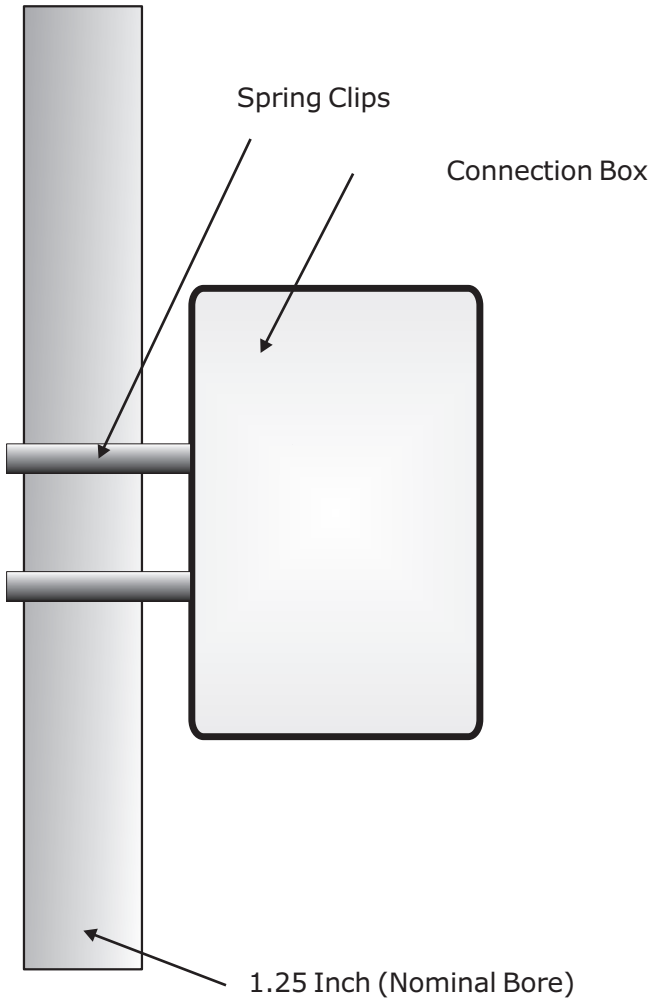
Milk Meter Control and Wash Box Mounting

The Control Box comes with a standard bracket which allows mounting on a 1.25 inch (nominal bore) tube either vertically or horizontally using exhaust clamps.

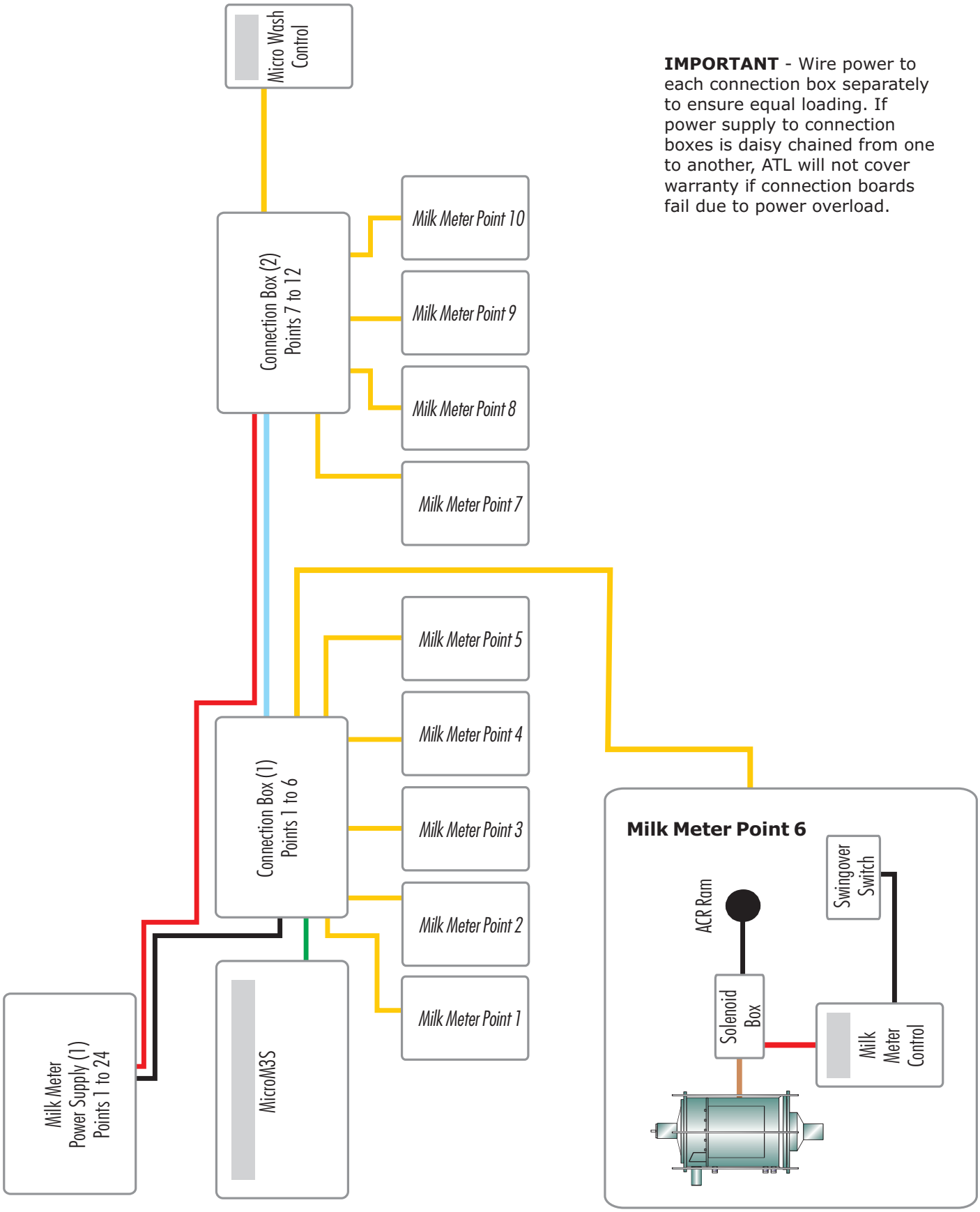


Connection Box Mounting

The connection box is mounted on the same 1.25” nominal bore tube. The diagram below shows the preferred mounting arrangement.



Milk Meter System Wiring Overview



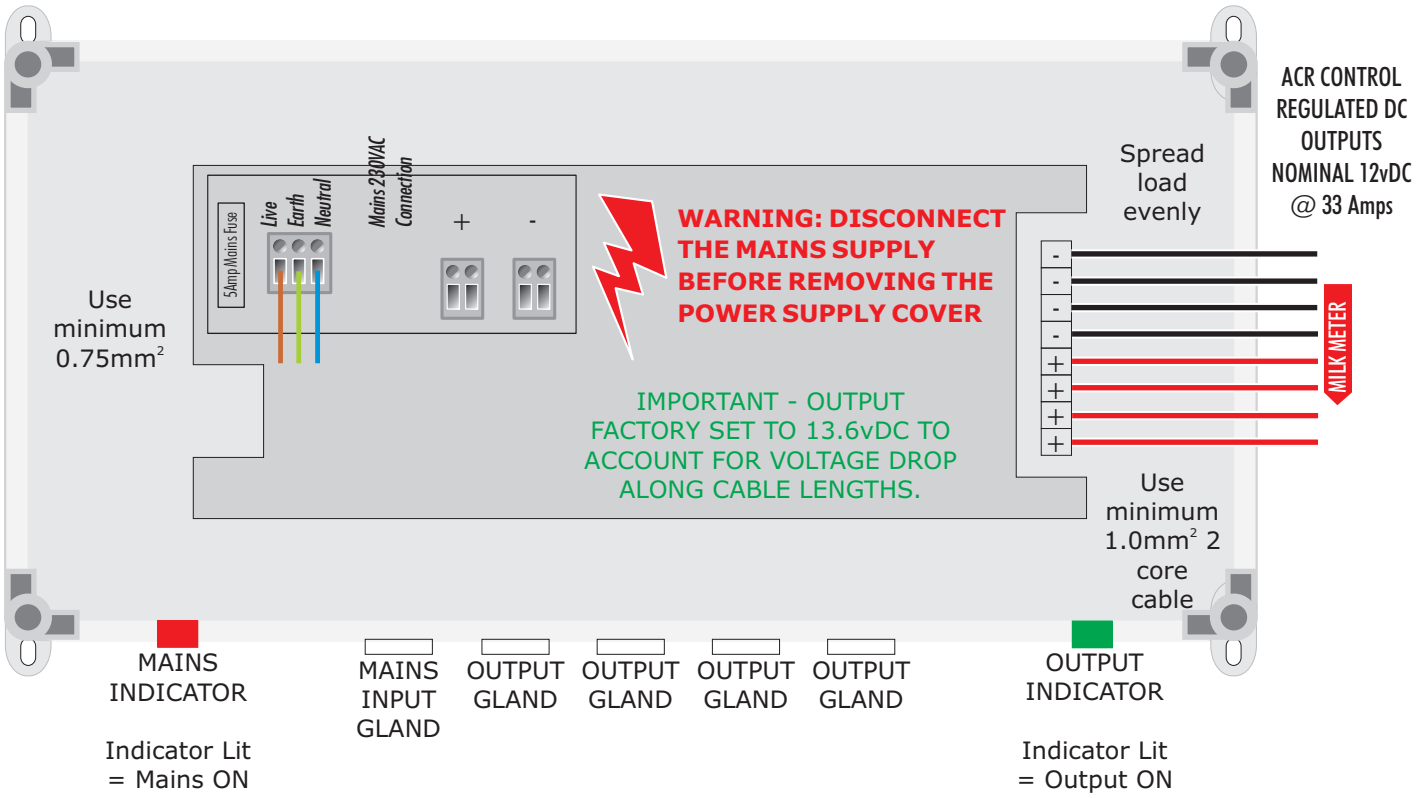
IMPORTANT - Wire power to each connection box separately to ensure equal loading. If power supply to connection boxes is daisy chained from one to another, ATL will not cover warranty if connection boards fail due to power overload.

Switch Mode Power Supply Wiring Connections

- Mains Voltage: 100-240volt AC
- Output Voltage: Nominal 13.6volt DC
- Mains Fuse: 5 Amp
- Automatic Over Current Protection
- Maximum Number Of Milk Meters With ATL ACR Control Valve: 24

  NB - Maximum number of milk meters will depend upon ACR control valve solenoid specifications - if unsure please contact ATL.

- Ensure the loading on each power supply is as even as possible.
- Recommended ACR Solenoid Spec: 12volt DC Continuous Operation Normally Closed with power rating up to 5 watts.
- Recommend system is powered on all of the time to prevent condensation build up on electronic components.



MILK METER

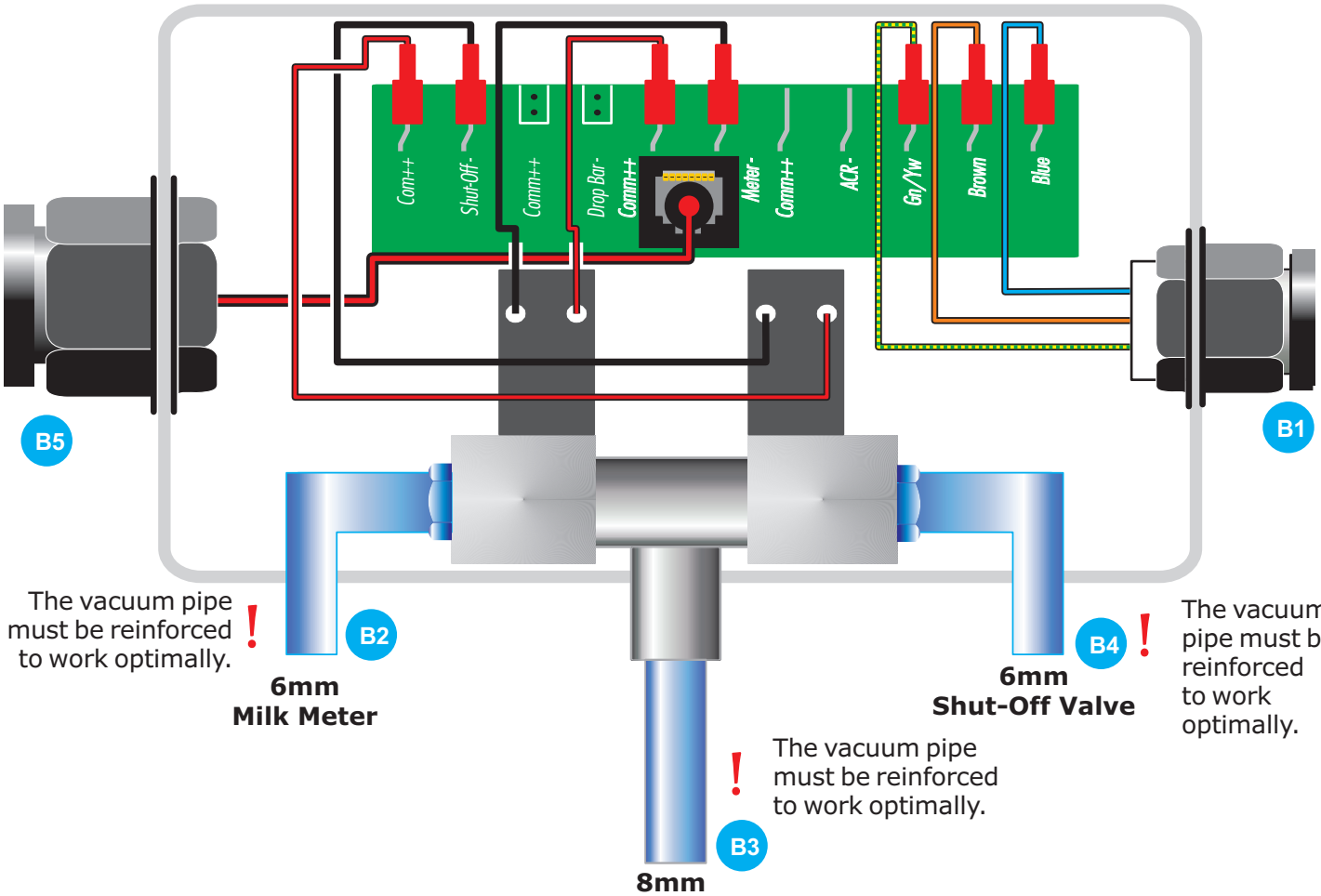
Connect to milk meters.

Output Specification: Nominal 12vDC @ 33 Amps

IMPORTANT - Use different cable for each connection box to provide for current requirements of system.

Solenoid Box Installation

The solenoid box contains two solenoids, one is used to operate the milk meter plunger, the other the shut-off valve. The box is fitted with two spring clips to enable easy installation to a 1.25 inch (nominal bore) tube. The solenoid box is delivered pre-wired.



B1 Connect into the milk meter sensors (A3, A4, A5); see diagram on right.

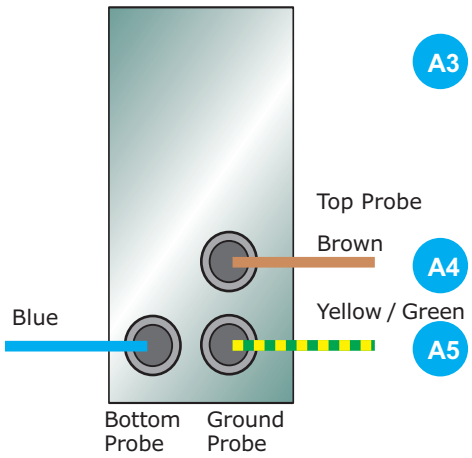
B2 Connect a piece of 6mm vacuum pipe to the milk meter (A1).

B3 Connect a piece of 8mm vacuum pipe to the vacuum source.

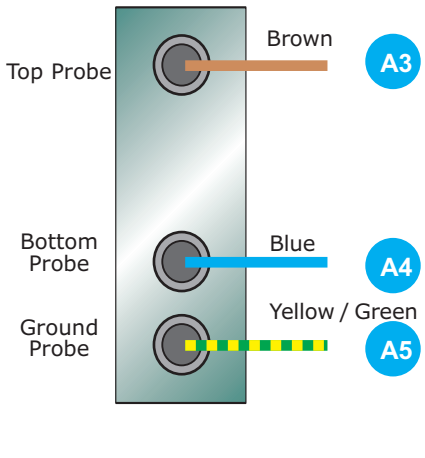
B4 Connect a piece of 6mm vacuum pipe to the shut-off valve.

B5 Connect into the milk meter display; see diagrams on page 5B.

Sheep and Goats Milk Meter Sensor Connection Diagram

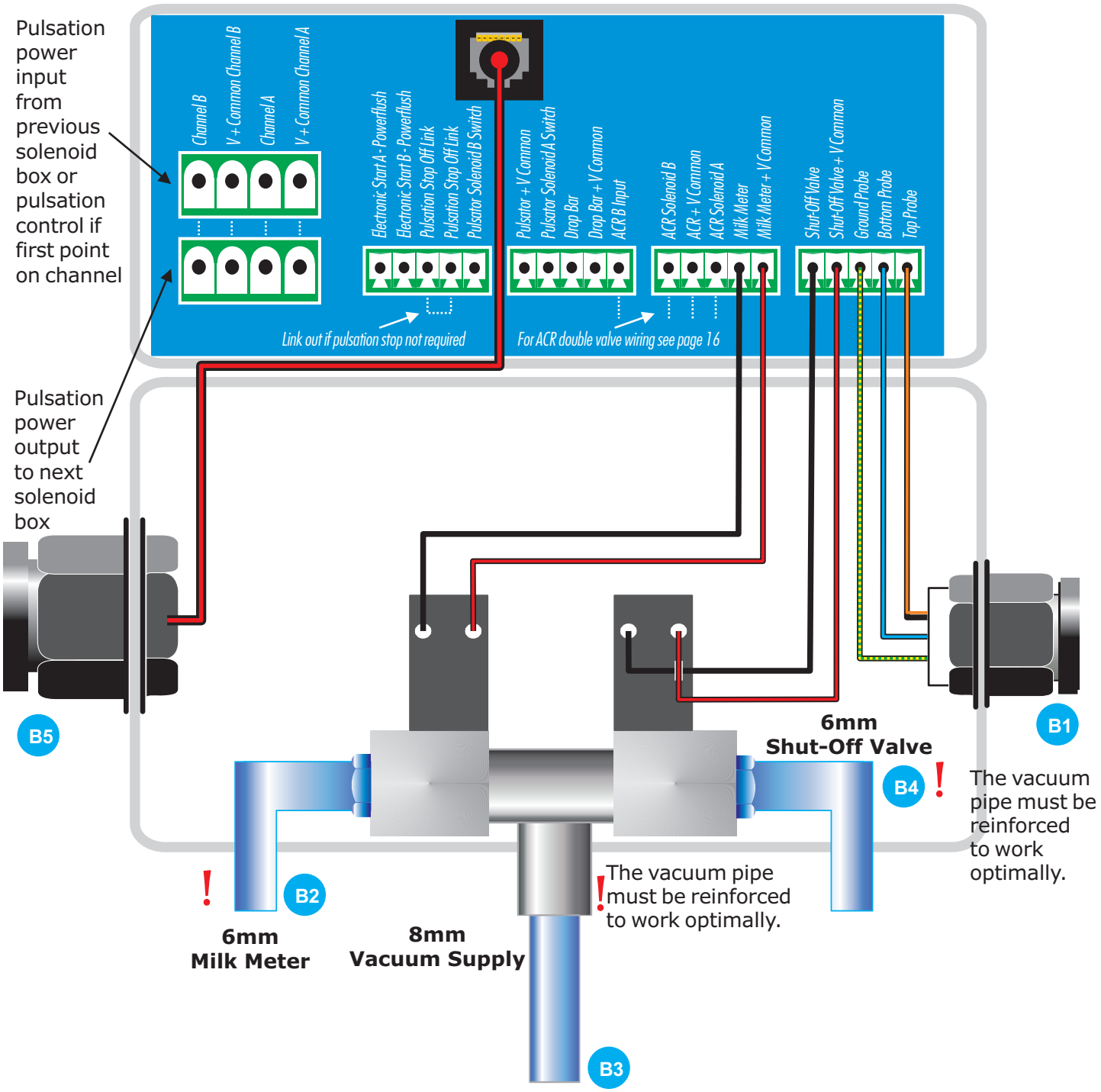


Cows Milk Meter Sensor Connection Diagram



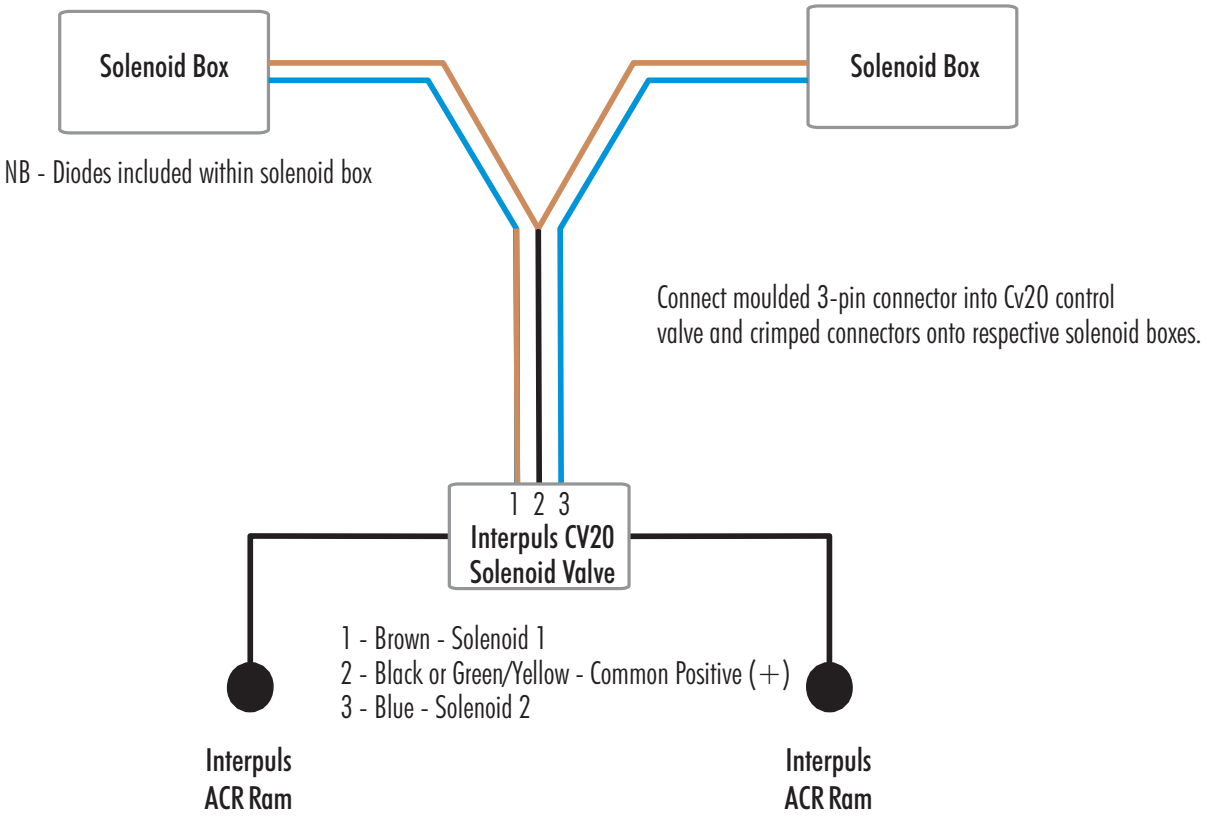
Solenoid Box Installation (with Pulsation Stop - PCB CON218)

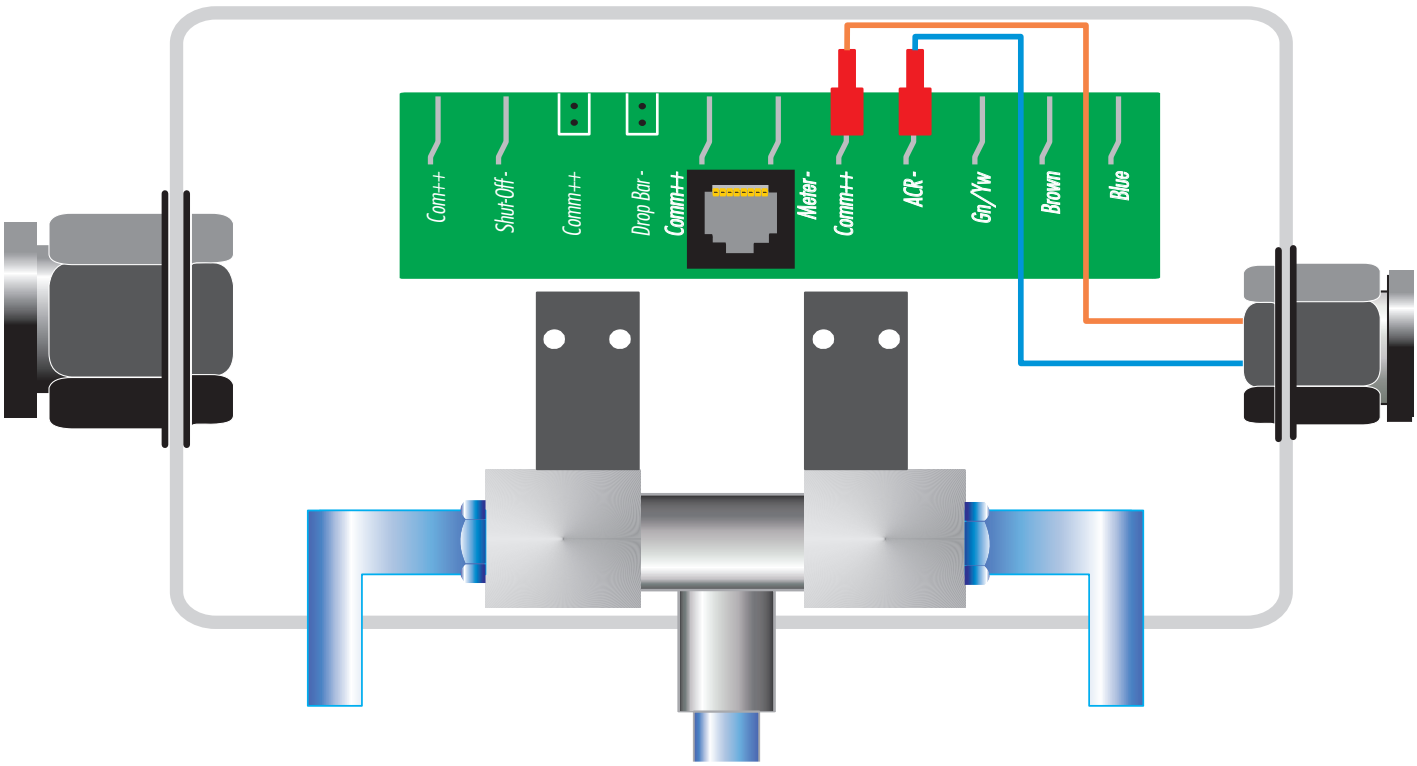
The solenoid box contains two solenoids, one is used to operate the milk meter plunger, the other the shut-off valve. The box is fitted with two spring clips to enable easy installation to a 1.25 inch (nominal bore) tube. The solenoid box is delivered pre-wired.



IMPORTANT - For connection information and probe wiring please see bottom of previous page.

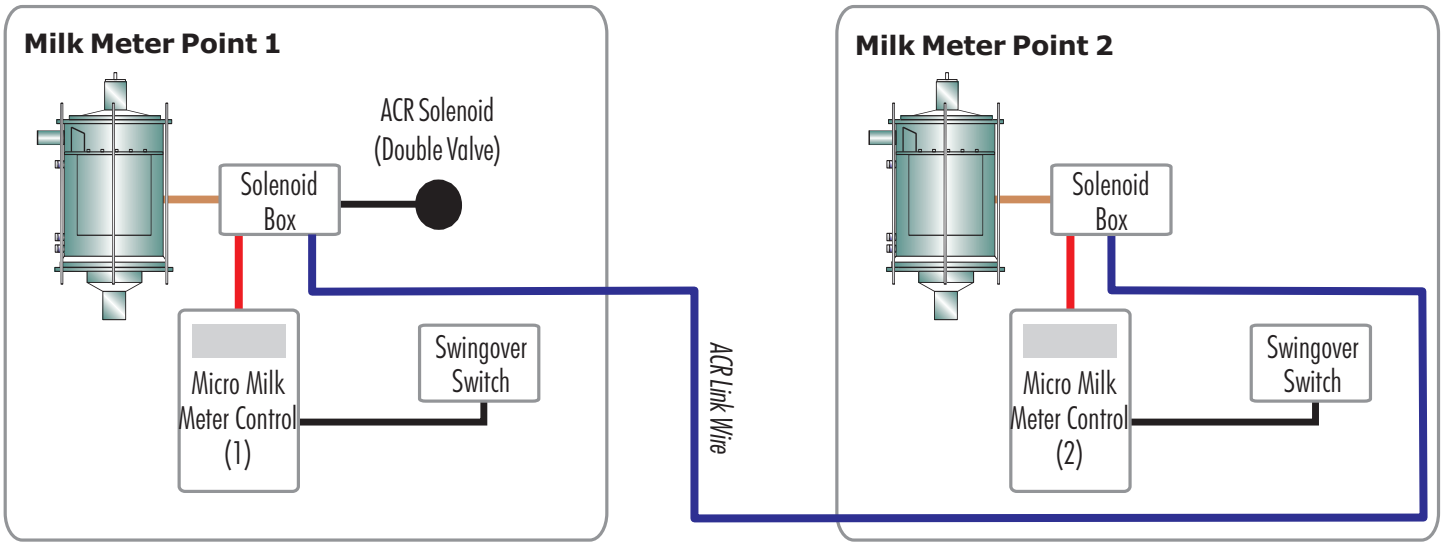
Interpuls ACR Ram and Cv20 Control Valve Connections to Solenoid Box

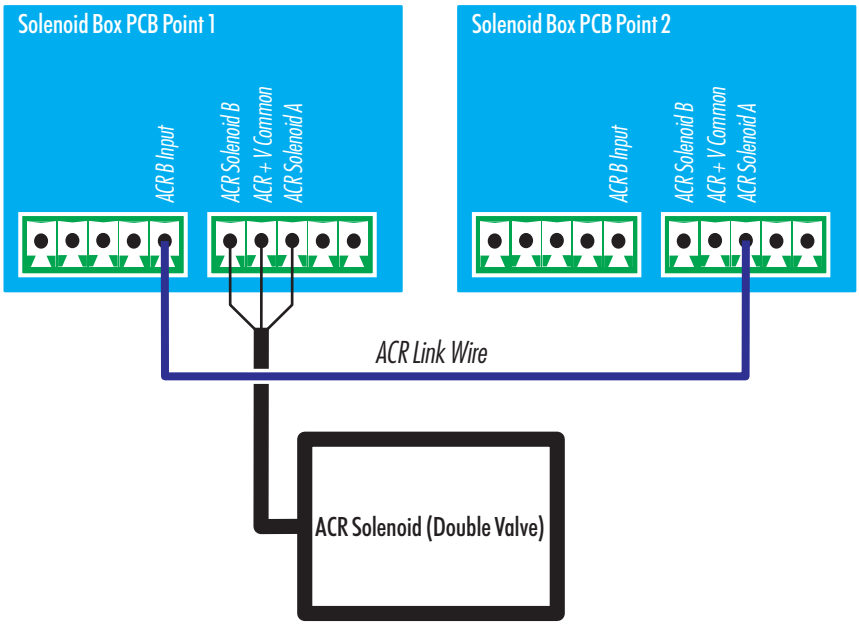




Solenoid Box ACR Wiring on Pulsation Stop Systems (using PCB CON218)

A link wire is required between each pair of solenoid boxes which use one control valve for the ACR ram. The diagram below shows the wiring.

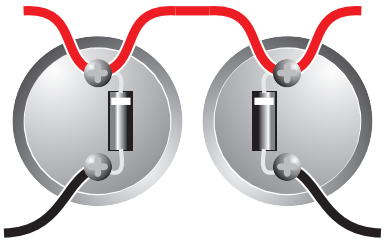




Interpuls ACR Ram and CV20 Control Valve Connections to Milk Meter Control

(**IMPORTANT** - Only connect to milk meter display on low level milking parlours)

IMPORTANT - Diodes not included within milk meter control so should be installed on CV20 solenoid valve - see diagram below

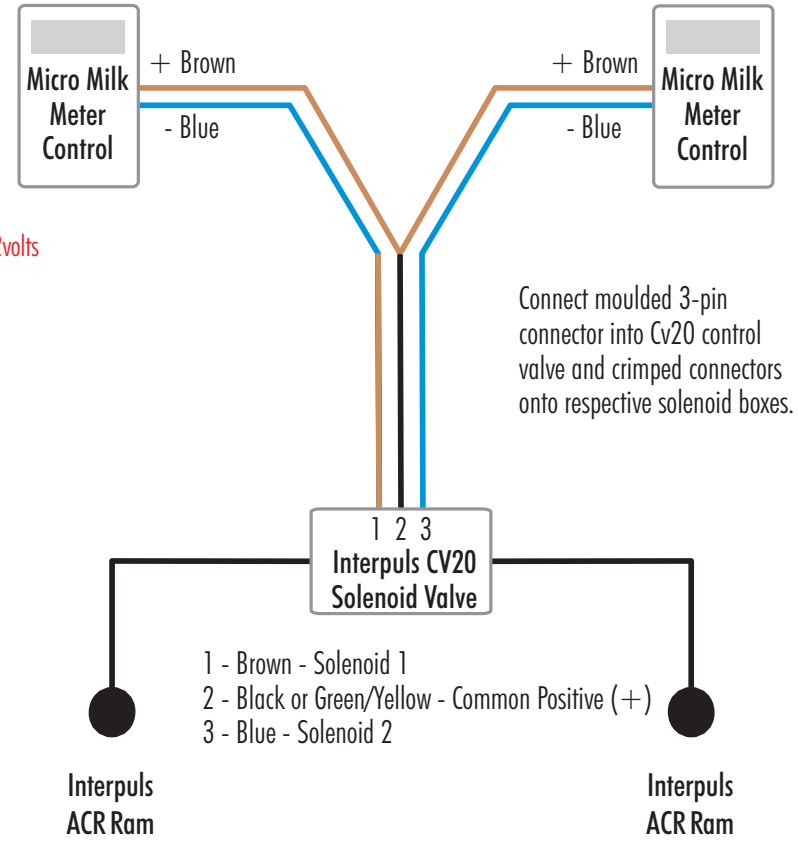


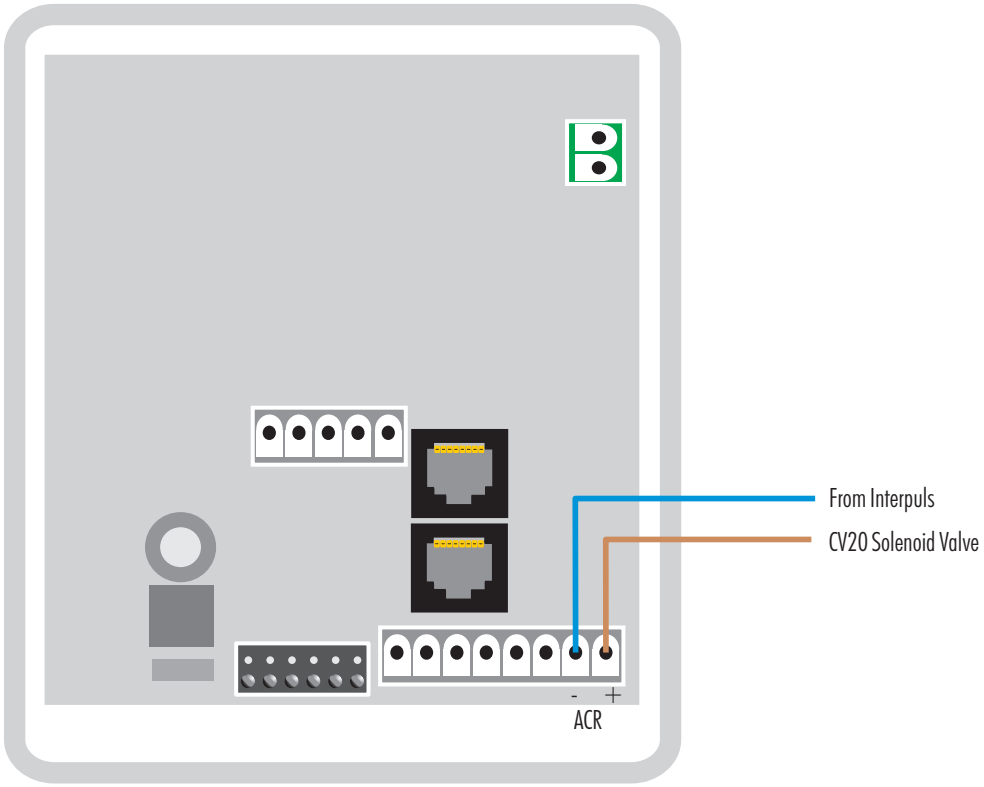
Negative (-) Switched:

Common Positive (+) 12volts

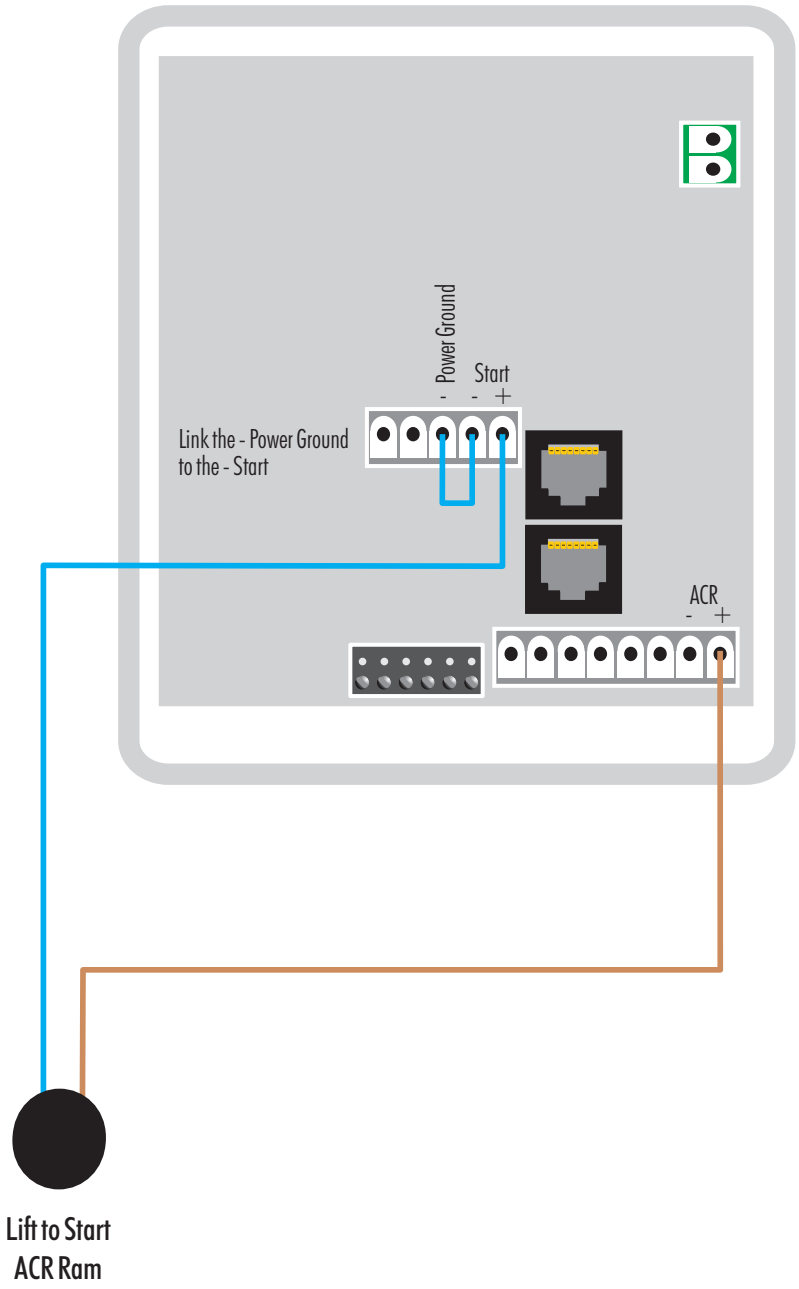
Diode 1N4002 across terminals. Observe banding to (+) terminal.

Negative (-) Switched:



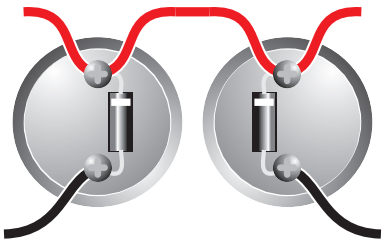


Lift to Start ACR Connections to Milk Meter Control



24vAC or 24vDC ACR Ram and Solenoid Connections

IMPORTANT - Diodes not included within milk meter control so should be installed on CV20 solenoid valve - see diagram below

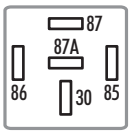


Common Positive (+) 12volts

Diode 1N4002 across terminals. Observe banding to (+) terminal.

Negative (-) Switched:

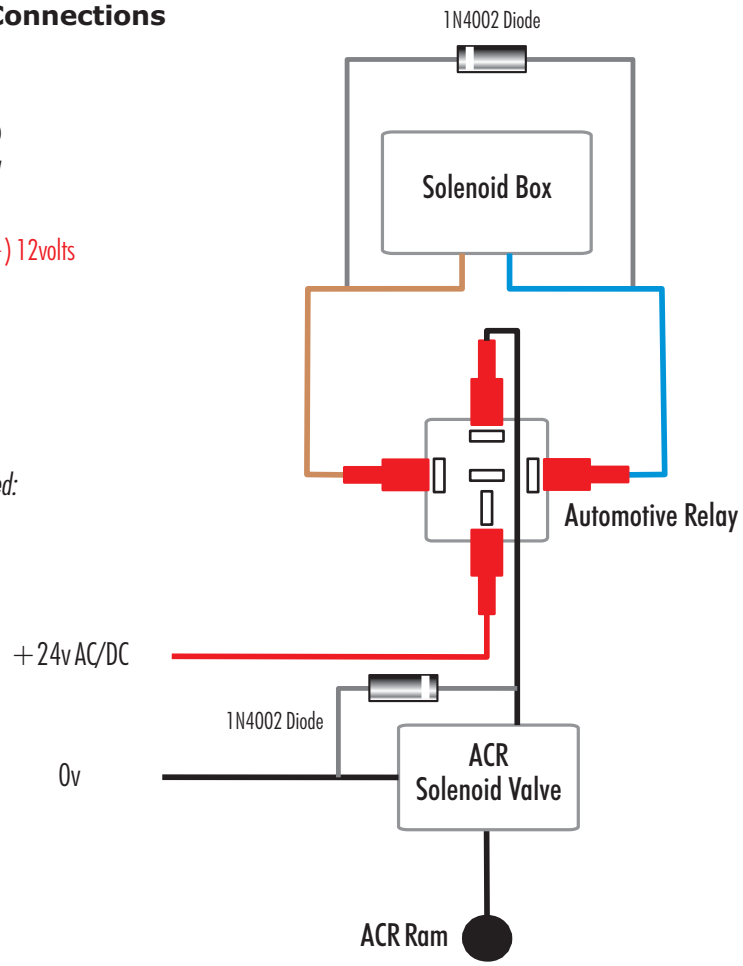
Negative (-) Switched:

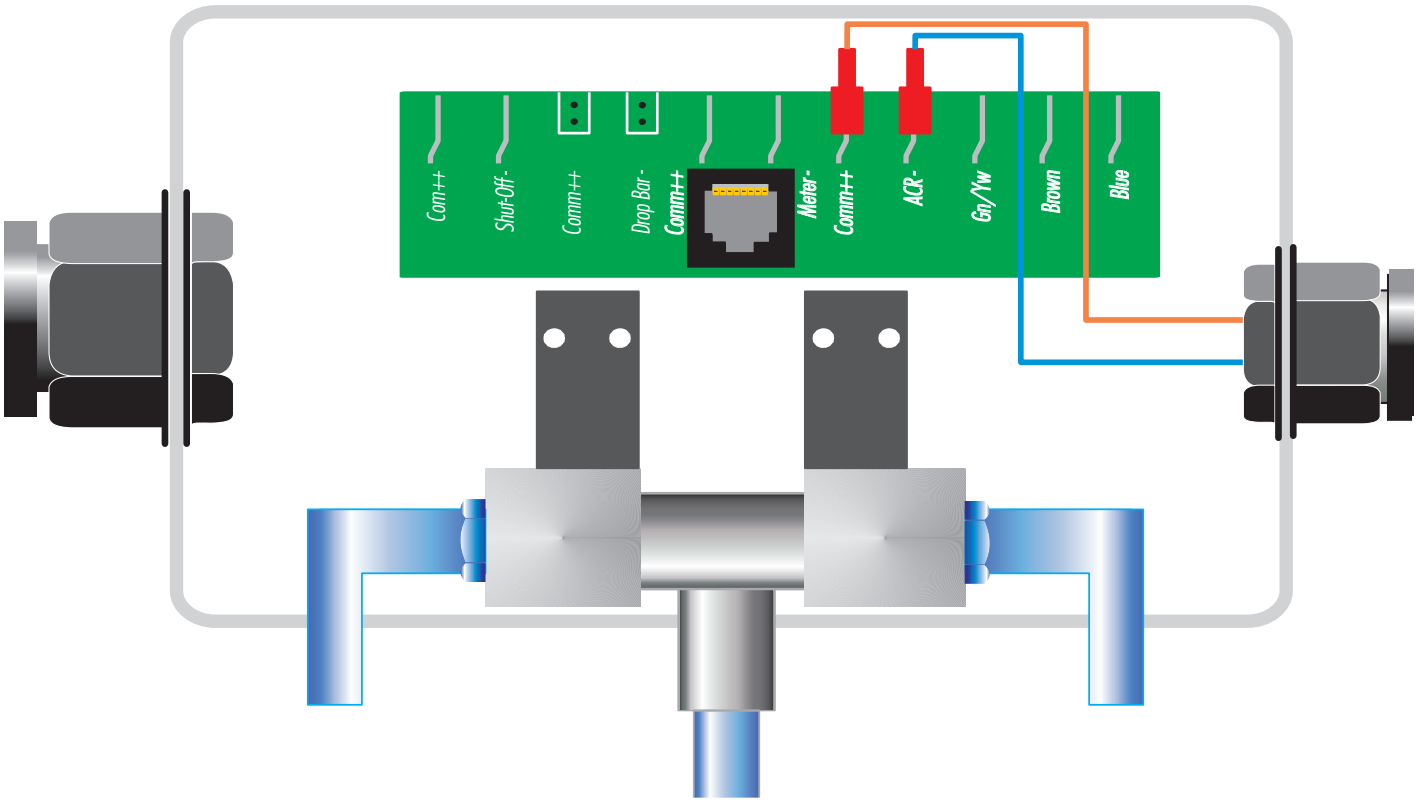


87 - Normally Open

87A - Normally Closed

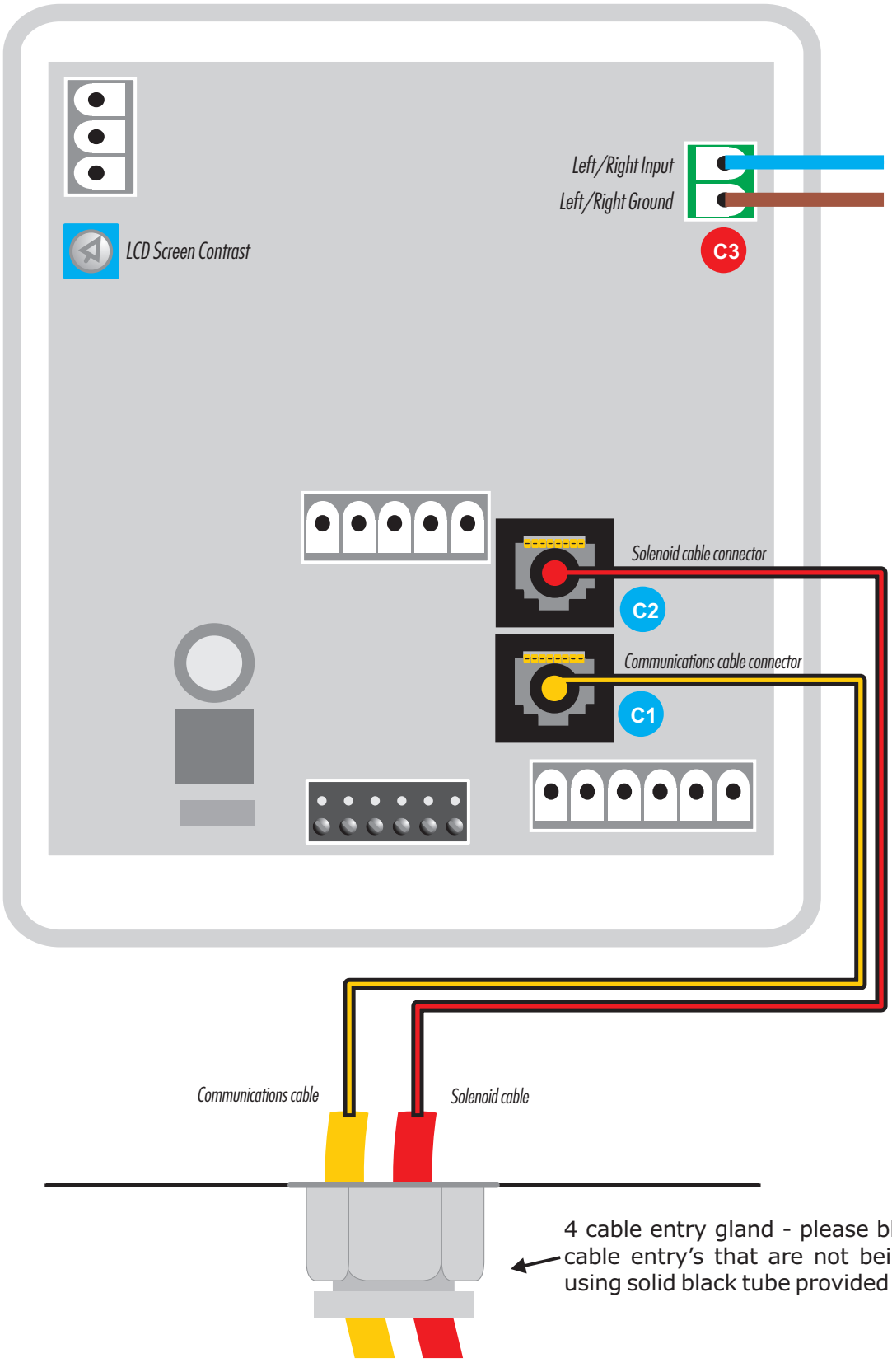
30 - Common



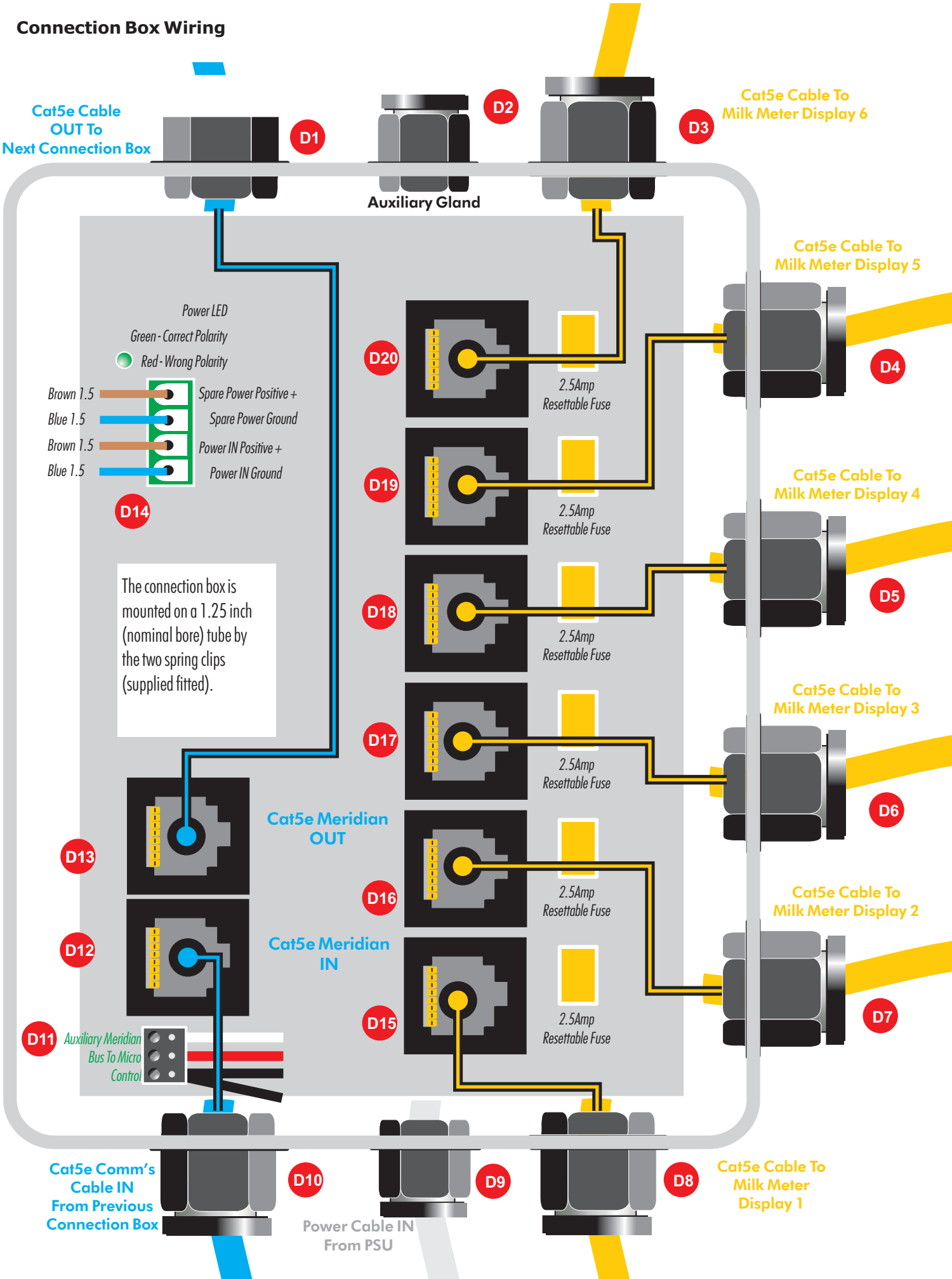


Milk Meter Control Wiring

The Milk Meter Control Box has a large character backlit LCD display and 6 button keypad to access real-time and historical (must be connected to MicroM3S control) milk yield and animal information.



Connection Box Wiring



Setting Up The Milk Meter System

Before it can be used, the Milk Meter System must be setup. This is outlined in the following pages.

The Parlour Type Setting

This setting selects the type of parlour the milk meter control is being installed on. The setting allows for doubled-up (via LHS and RHS settings), swingover and rotary parlours.

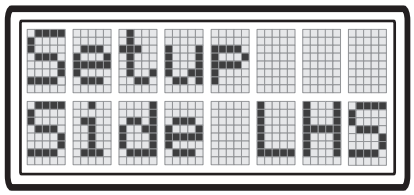
NB - Control address should be setup even if stand-alone to enable cumulative milk yield function.

To Select the Parlour Type:

Press and hold the LEFT, WASH, HAND and RIGHT arrow keys to enter setup

Release the keys

How select the parlour type by using the LEFT and RIGHT keys



NB - For doubled-up parlours, use LHS for milk meter controls on the left-hand side and RHS for the right-hand side respectively.

With the correct parlour type selected press the WASH key to store the data

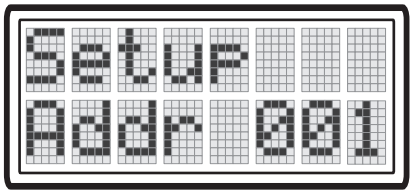
The Control Address Setting is now displayed

The Control Address Setting

This setting is the unique control address. Each milk meter control must have a unique address number.

To Select the Address:

Now select the unique control address by using the LEFT and RIGHT arrow keys



NB If the WASH key is held down with the LEFT or RIGHT arrow keys the numbers increment or decrement by 10

With the correct address selected press the WASH key to store the data

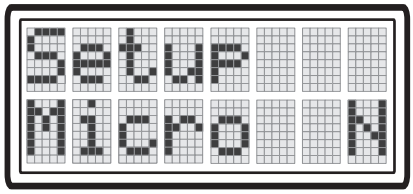
The Micro Setting is now displayed

The Micro Setting

The Micro setting is a simple ON/OFF function. When enabled the meter will expect communications from an ATL Micro control, Enable this setting if the Milk Meter is connected to a Micro control.

To Alter the Micro value:

Select either Y or N by using the LEFT and RIGHT arrow keys



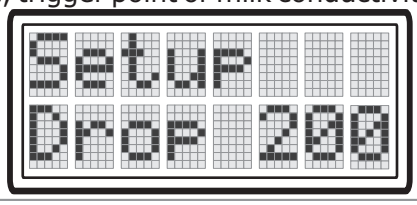
Press the WASH key to store the data

The Drop Value Setting is now displayed

Factory Default: N = Off

The Drop Value Setting

The drop value is the calibration setting for the milk meter 'dump' value. It is the meter chamber volume in millilires. It can be changed to take up any minor variations in chamber size, trigger point or milk conductivity value. For more information on this setup function please see page 12.



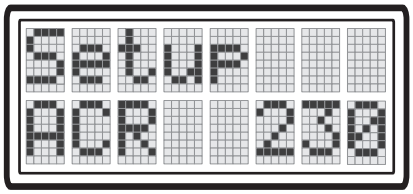
Press the WASH key to store the data.

The ACR setting is now displayed.

Factory Defaults: Cow = 200ml, goat = 55ml and sheep = 55ml

The Automatic Cluster Removal (ACR) Setting

The ACR setting does not come into operation until after the first two minutes of the milking have elapsed. Then, if the flow rate reaches or drops below this value, the end-of-milking procedure is initiated. The setting is in millilitres per minute. If the cow is being over milked this value should be raised, if under-milked, it should be lowered.



To Alter the ACR Setting:

Select by using the LEFT and RIGHT arrow keys

NB If the WASH key is held down with the LEFT or RIGHT arrow keys the numbers increment or decrement by 10

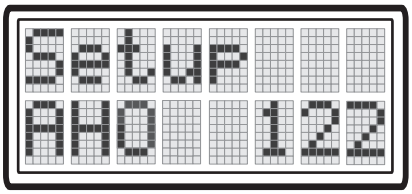
With the correct setting selected press the WASH key to store the data

The ACR hold off setting is now displayed

Factory Defaults: Cow = 230ml/min, goat = 180ml/min and sheep = 180ml/min

The ACR Hold Off Setting

The ACR hold off setting lets the user specify the length of time before the ACR becomes active after the start of milking. The range is from 30 to 250 seconds.



To Alter the ACR Hold Off Setting:

Select by using the LEFT and RIGHT arrow keys

NB If the WASH key is held down with the LEFT or RIGHT arrow keys the numbers increment or decrement by 10

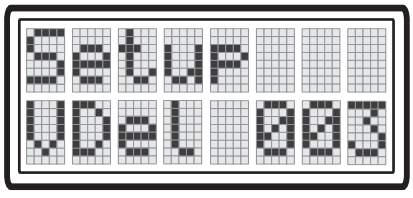
With the correct setting selected press the WASH key to store the data

The vacuum delay setting is now displayed

Factory Defaults: Cow = 122 seconds, goats = 30 seconds and sheep = 61 seconds

The Vacuum Delay Setting

This setting allows a delay to be set between the operation of the shut-off valve closing to shut off the vacuum and the ACR operating. It can be set to 0, 1, 2, 3, or 4 seconds of delay. It should be set to a value that ensures that as the shut-off valve operates at the end of milking, the vacuum decays to a point when the cluster is just about to fall before the ACR operates. If the cluster is pulled up too early, the value needs to be increased and if the cluster drops from the udder, the value needs to be decreased.



To Set the VDEL:

Select by using the LEFT and RIGHT arrow keys

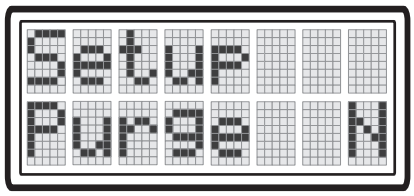
When the correct value has been selected press the WASH key to store the data

The purge setting is now displayed.

Factory Default: 3 seconds

The Purge Setting

The purge setting is a simple ON/OFF function. When the ACR operates and the ram pulls the cluster, setting purge ON makes the shut-off valve momentarily open to allow a blast of air to enter the line and purge any milk residues through the milk line. **Factory Default:** No = Off



To Alter the PURGE value:

Select either Y or N by using the LEFT and RIGHT arrow keys

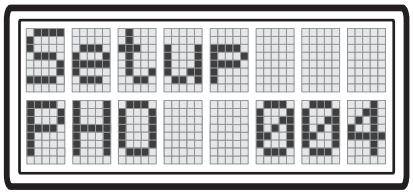
Press the WASH key to store the data

If the setting is set to Y, the purge hold off setting will be displayed

If the setting is set to N, the swingover control setting or the swing to start setting will be displayed

The Purge Hold Off Setting

This setting is only displayed if the purge setting is ON. It allows a delay to be set between the ACR operating and the purge activating. It is for installations with flushing systems. It can be set to between 4 and 30 seconds.



To Alter the Purge Hold Off value:

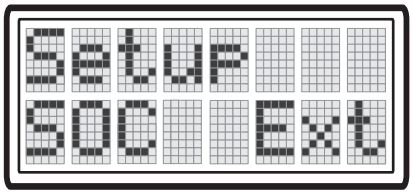
Select by using the LEFT and RIGHT arrow keys

Press the WASH key to store the data

The swingover control setting or the swing to start setting will be displayed

The Swingover Control Setting

This setting is only displayed if the Micro setting is ON. It is only used on swingover parlours where there is a Micro connected to the system and the milk yields are being stored. It controls how the system identifies which side of the parlour the milk meter is measuring milk from and therefore records it against the correct animal.



To Alter the Swingover Control value:

Select by using the LEFT and RIGHT arrow keys

For systems where swingover switches are being used to automatically select the sides, select Ext

For systems where the left and right keys on the milk meter control are being used to select the sides, select Key

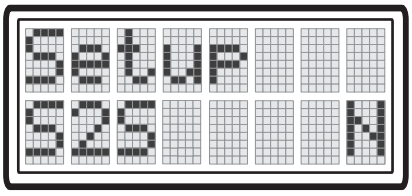
Press the WASH key to store the data

The swing to start setting will be displayed

Factory Default: SOC Ext

The Swing to Start Setting

This setting enables the meter to start automatically when the swingarm is swung to change sides. It requires a swingover switch to function and can be used on both stand-alone and systems connected to a Micro.



To Alter the Swing to Start Setting:

Select either Y or N by using the LEFT and RIGHT arrow keys

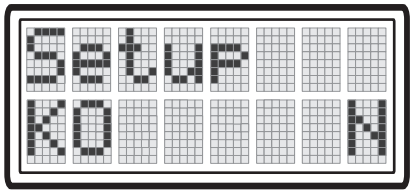
Press the WASH key to store the setting

The key delay setting will be displayed

NB - If the swingover control setting is set to Key and the swing to start setting is set to Y, changing side using the left and right arrow keys will cause the cluster to drop and the vacuum to be turned on.

The Kick Off Enable Setting

The kick off enable setting lets the user specify a length of time the length of time after the ACR hold off delay has passed, that if an ACR take off occurs, the control will give a kick off alert.



To Alter the Kick Off Enable value:

Select either Y or N by using the LEFT ⇇ and RIGHT ⇉ arrow keys

Press the WASH key to store the data

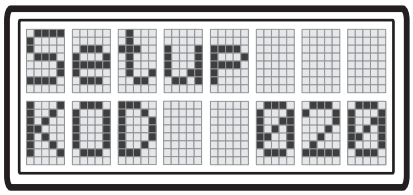
If the setting is set to Y, the kick off delay value setting will be displayed

If the setting is set to N, the key delay enable setting will be displayed

Factory Default: N = Off

The Kick Off Delay Value Setting

If the Kick Off Delay Enable is set to Y then the next setting displayed is the kick off delay value. This is the length of time the length of time after the ACR hold off delay has passed, that if an ACR take off occurs, the control will give a kick off alert. The range is from 0 seconds to 250 seconds.



To Alter the Kick Off Delay Enable value:

Select by using the LEFT ⇇ and RIGHT ⇉ arrow keys

NB If the WASH key is held down with the LEFT ⇇ or RIGHT ⇉ arrow keys the numbers increment or decrement by 10

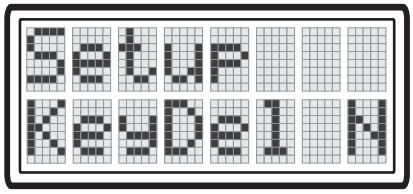
With the correct setting selected press the WASH key to store the data

The setting is now saved and the key delay enable setting will be displayed

---

The Key Delay Enable Setting

The key delay enable setting lets the user specify a length of time for a key to be pressed before it will activate. This setting is recommended for parlours where the cows can flick their tails to hit the control key pad.



To Alter the Key Delay Enable value:

Select either Y or N by using the LEFT ⇇ and RIGHT ⇉ arrow keys

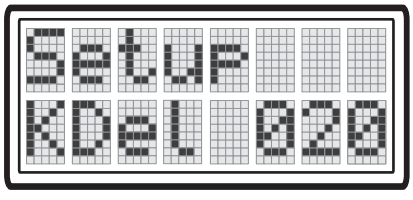
Press the WASH key to store the data

If the setting is set to Y, the key delay value setting will be displayed

If the setting is set to N, the setup routine will exit

The Key Delay Value Setting

If the Key Delay Enable is set to Y then the next setting displayed is the key delay value. This is the length of delay until a key press is considered valid.



To Alter the Key Delay Enable value:

Select by using the LEFT ⇇ and RIGHT ⇉ arrow keys

NB If the WASH key is held down with the LEFT ⇇ or RIGHT ⇉ arrow keys the numbers increment or decrement by 10

With the correct setting selected press the WASH key to store the data

The setting is now saved and the setup routine will exit

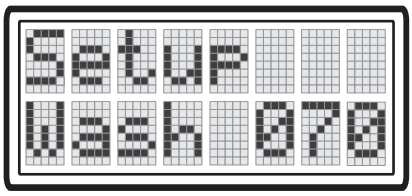
Checking the Software Version of the Milk Meter Display

To check the software version:

Press and hold the LEFT, WASH, MILK and RIGHT arrow keys to display the software version

Release the keys

The software version of the wash box is now displayed.



To exit press the WASH key

MicroM3S Setup

If the Milk Meter system is linked to a MicroM3S, the following setup needs to take place.

IMPORTANT - For these subroutines to be available the software in the MicroM3S control needs to be:

MAIN PCB - V4.23 or greater

Have Subroutine 331 enabled (see next page)

SET Milk Meter SYSTEM: Subroutine 311

This subroutine turns the link to the Milk Meter system on or off.

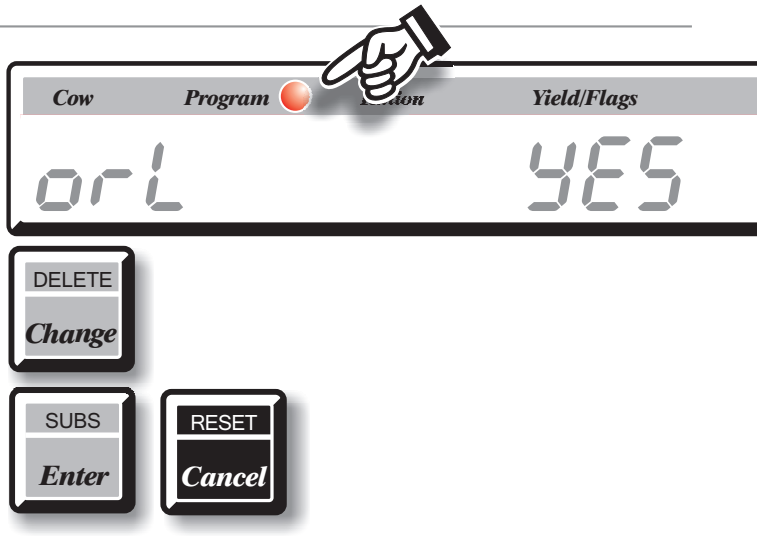
Check that Program Mode is selected.

Run the subroutine. The message 'orL' is displayed with 'yES' or 'no' in the Yield/Flags window.

Press Change to toggle between 'yES' and 'no'.

Press Enter to store the new setting.

Press Cancel to exit the subroutine.



SET SWING OVER PARLOUR TYPE: Subroutine 312

This subroutine sets the parlour type; 'no' equals doubled-up; 'yES' equals swingover.

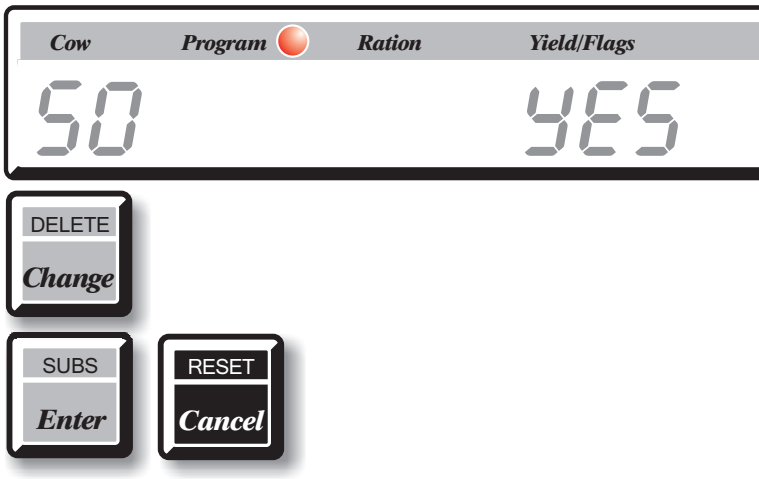
Check that Program Mode is selected.

Run the subroutine. The message 'SO' is displayed with 'yES' or 'no' in the Yield/Flags window.

Press Change to toggle between 'yES' and 'no'.

Press Enter to store the new setting.

Press Cancel to exit the subroutine.



ENABLE/DISABLE MILK METER INTERFACE: Subroutine 301: Default = NO(OFF)

If milk meters are attached to the system, the interface- the electronic device that converts the output from the milk meters to information that the MicroM3S can 'understand'- has to be enabled.

Check that Program mode is selected.

Run subroutine 301. The message 'MMIF' will be displayed with the current setting - 'YES' or 'no'.

Use the Change key to toggle between 'YES' (Interface ON) or 'no' (Interface OFF).

Press Enter to store the setting.

MicroM3S Setup Continued

SET VERSION 2 MILK METER SYSTEM: Subroutine 331

This subroutine tells the micro control to communicate using version 2 protocols.

Check that Program Mode is selected.

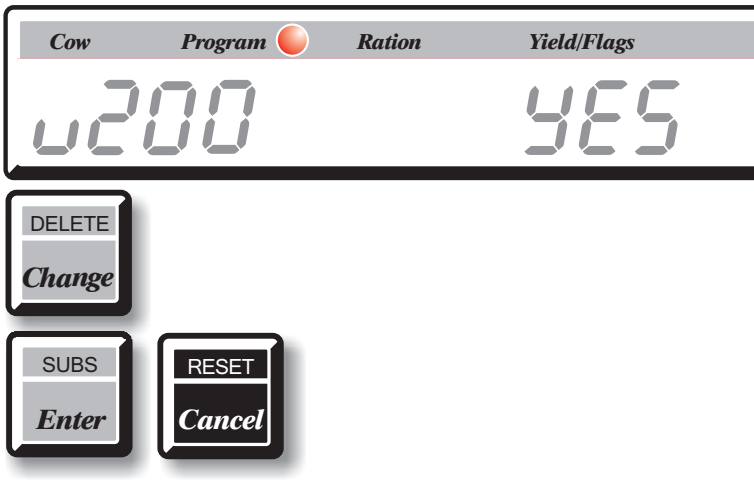
Run the subroutine. The message 'v200' is displayed with 'yES' or 'no' in the Yield/Flags window.

Press Change to toggle between 'yES' and 'no'.

Press Enter to store the new setting.

Press Cancel to exit the subroutine.

NB - ATL Milk Meter software display versions V2.01.00 and above require this - please refer to the Milk Meter manual.



ENABLE/DISABLE METER LOCKOUT : Subroutine 317 : DEFAULT = NO(OFF)

This routine enables or disables the meter lockout function, this function will lockout a milk meter if a cow has the selected warnings from subroutine 318.

Check that Program Mode is selected.

Run the subroutine. The message 'ENLK' is displayed with 'yES' or 'no' in the Yield/Flags window.

Press Change to toggle between 'yES' and 'no'.

Press Enter to store the new setting.

Press Cancel to exit the subroutine.

ENABLE/DISABLE METER LOCKOUT FLAGS: Subroutine 318: Default = ALL

The lockout flags setting enables which flags will lockup the meter if they are selected against a cow.

Check that Program mode is selected.

Run subroutine 318. The message 'OLCK' will be displayed with the current flags show in the flags area of the display.

Use the corresponding number keys to toggle the flags as you would for a cow.

Press Enter to store the setting.

Use with caution; milk meter lockout is not a fool proof method of preventing cross infection or milking of cows treated with antibiotics!

ENABLE/DISABLE METER SWING-TO-START : Subroutine 319 : DEFAULT = NO(OFF)

This routine enables or disables the meter swing-to-start function, where by the meter will automatically start milking when the side is changed in a swing over parlour.

Check that Program Mode is selected.

Run the subroutine. The message 'OS2S' is displayed with 'yES' or 'no' in the Yield/Flags window.

Press Change to toggle between 'yES' and 'no'.

Press Enter to store the new setting.

Press Cancel to exit the subroutine.

WASH MODE IDLE/WASH : Subroutine 313

This routine provides a backup to the wash control, enabling the user to select either idle or wash mode from the MicroM3S.

Check that Program Mode is selected.

Run the subroutine. The messages 'IdLE' or 'wASh' are displayed depending on the current mode of the Milk Meter System, with 'NEt' in the Yield/Flags window.

Press Change to toggle between 'IdLE' and 'wASh'.

Press Enter to store the new setting.

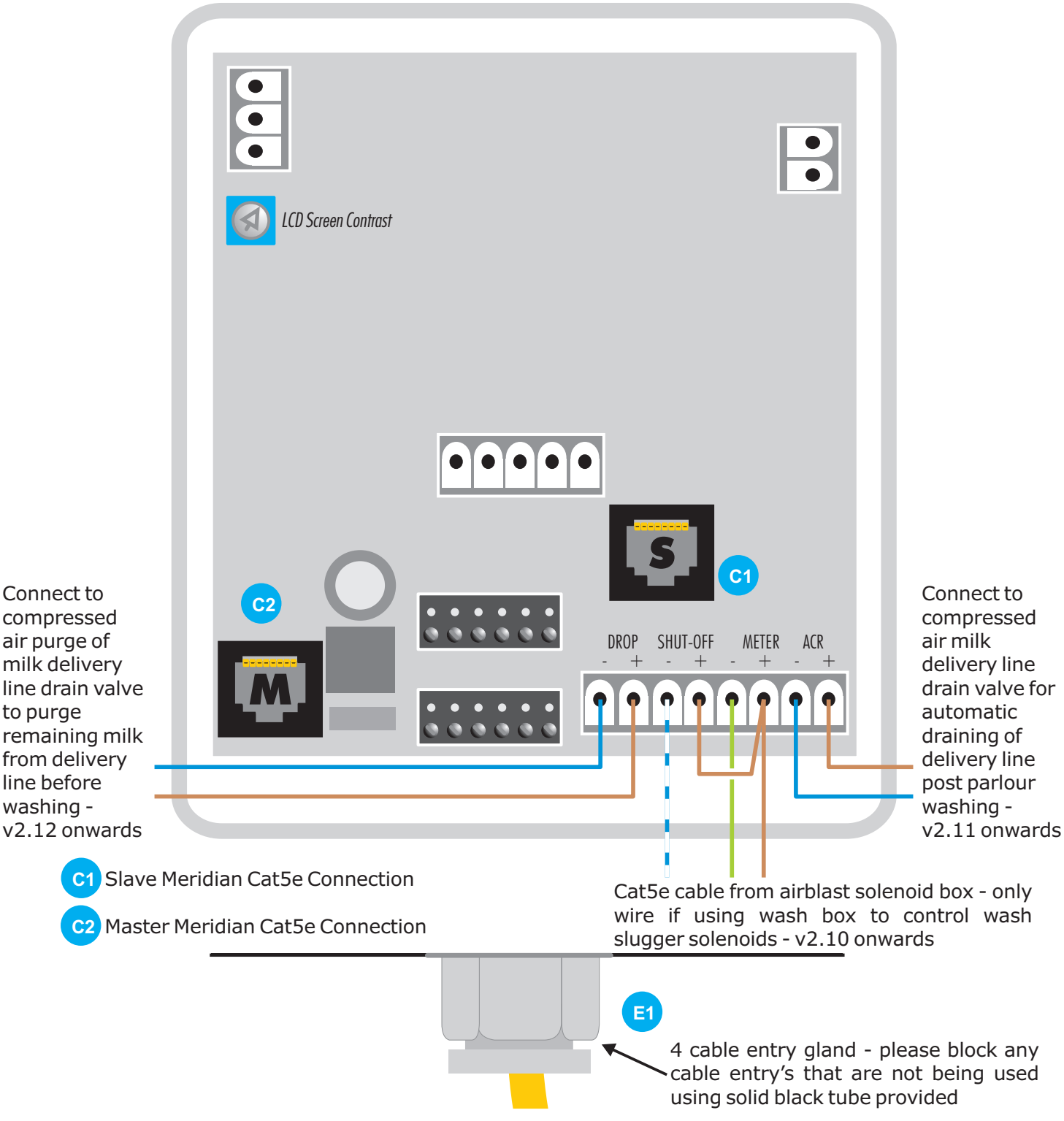
Press Cancel to exit the subroutine.

Wash Box Wiring

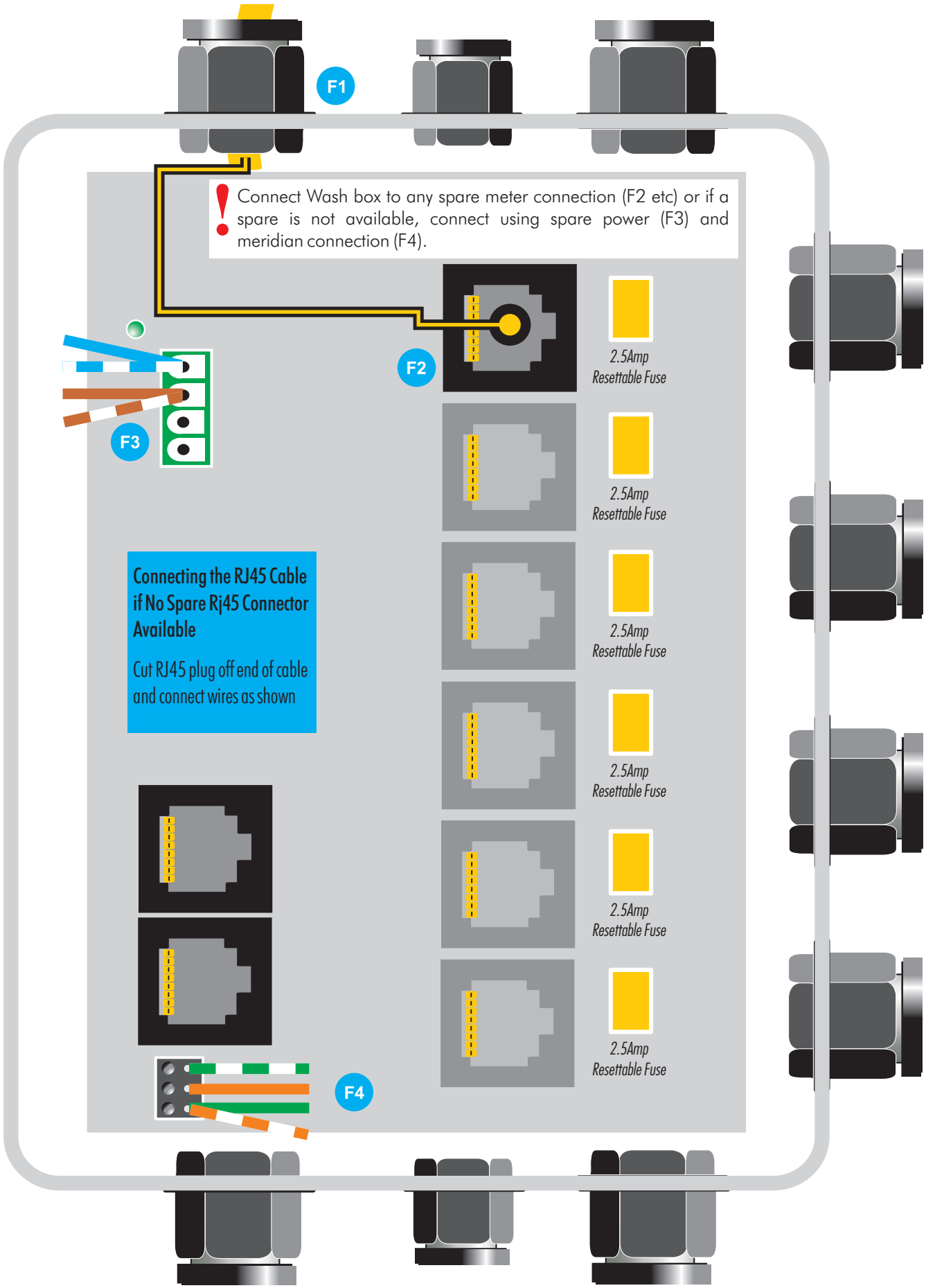
The Wash Box has a large character backlit LCD display and 6 button keypad to set the parlour into wash, idle or milking modes.

For Stand - Alone mode wire into Meridian Master connections (Connections marked M), for all other modes wire into slave connections (Connections marked S).

Also shows wiring for controlling wash slugger solenoids from Wash Box.



Connection Box Wash Box Wiring



Setting Up The Wash Box

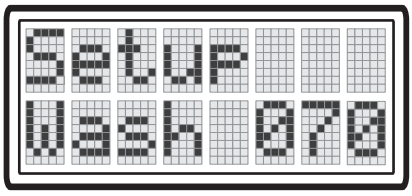
Before it can be used, the Milk Meter System must be setup. This is outlined in the following pages.

The Wash Time

This sets the wash time for the Milk Meter system.

To Set the Wash Time:

- Press and hold the IDLE, TICK, MILK and UP arrow keys to enter setup
- Release the keys
- Select by using the UP and DOWN arrow keys
- NB If the TICK key is held down with the UP or DOWN arrow keys the numbers increment or decrement by 10
- With the correct setting selected press the TICK key to store the data
- The system type setting is now displayed

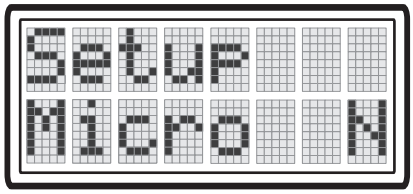


The Type Of Milk Meter System

This setting determines whether the Milk Meter system is connected to a MicroM3S control.

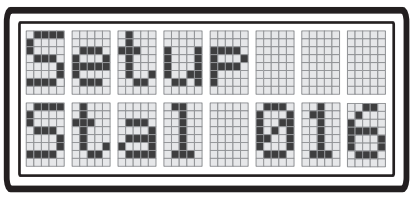
To Select the Type of System:

- Select by using the UP and DOWN arrow keys
- Select N (NO - for stand-alone systems) or Y (YES - for systems linked to a MicroM3S)
- With the correct setting selected press the TICK key to store the data
- If the setting is set to Y the wash slug air blast setting will be displayed
- If the setting is set to N, the number of stalls setting will be displayed



Setting the Number Of Milking Points on a Stand-Alone System

This sets the number of milking points on a stand-alone Milk Meter system.

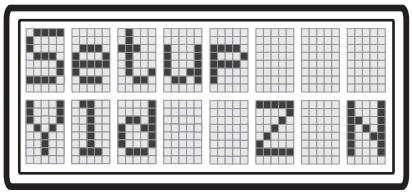


To Set the Number of Milking Points:

- Select by using the UP and DOWN arrow keys
- NB If the TICK key is held down with the UP or DOWN arrow keys the numbers increment or decrement by 10
- With the correct setting selected press the TICK key to store the data
- The cumulative milk yield setting is now displayed

IMPORTANT - This setting is only shown when the type of milk meter system is set to Micro N.

Setting the Cumulative Milk Yield to Automatically Zero on a Stand-Alone System



This automatically sets the milk yield totaliser to zero.

To Set the Cumulative Milk Yield Automatic Zero On or Off:

Select by using the UP ↑ and DOWN ↓ arrow keys

N = Do not clear cumulative milk yield on entering Milking Mode

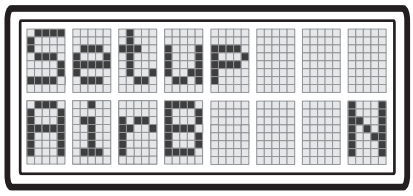
Y = Clear cumulative milk yield on entering Milking Mode

With the correct setting selected press the TICK ✓ key to store the data

The wash slug air blast setting is now displayed

The Wash Slug Air Blast Setting - Software v2.10 onwards

This setting enables the shut-off and meter outputs on the wash box to be used as an air blast control. The two channels can be used for controlling valves to allow water into the wash slugger or milk line and air.



To Alter the Wash Slug Air Blast Setting:

Select by using the UP ↑ and DOWN ↓ arrow keys

N = NO - wash slug air blast control OFF

Y = YES - wash slug air blast system ON

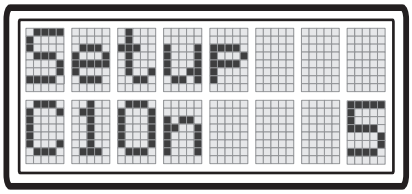
With the correct setting selected press the TICK ✓ key to store the data

If the setting is set to Y the channel 1 on time setting will be displayed

If the setting is set to N, the dump line enable setting will be displayed

---

Setting the Air Blast Channel 1 On Time - Software v2.10 onwards



This sets the channel 1 on time for the wash slug air blast system.

To Set the Channel 1 On Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

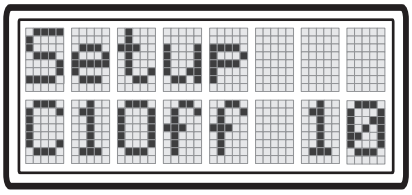
NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

With the correct setting selected press the TICK ✓ key to store the data

The channel 1 off time setting is now displayed

Factory Default: 5 seconds

Setting the Air Blast Channel 1 Off Time - Software v2.10 onwards



This sets the channel 1 off time for the wash slug air blast system.

To Set the Channel 1 Off Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

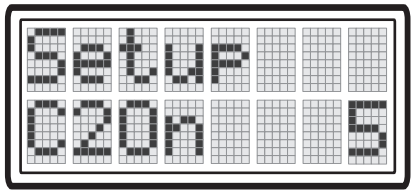
With the correct setting selected press the TICK ✓ key to store the data

The channel 2 on time setting is now displayed

Factory Default: 10 seconds

Setting the Air Blast Channel 2 On Time - Software v2.10 onwards

This sets the channel 2 on time for the wash slug air blast system.



To Set the Channel 2 On Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

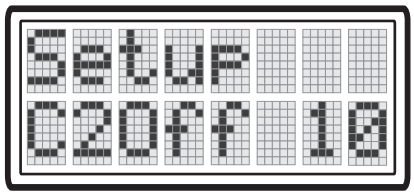
With the correct setting selected press the TICK ✓ key to store the data

The channel 2 off time setting is now displayed

Factory Default: 5 seconds

Setting the Air Blast Channel 2 Off Time - Software v2.10 onwards

This sets the channel 2 off time for the wash slug air blast system.



To Set the Channel 2 Off Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

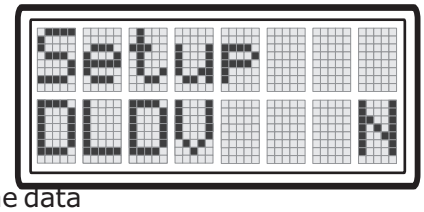
With the correct setting selected press the TICK ✓ key to store the data

The milk delivery line drain valve setting is now displayed

Factory Default: 10 seconds

The Milk Delivery Line Drain Valve Setting - Software v2.11 onwards

This setting enables a compressed air drain valve on the milk delivery line / milk pump to be automatically controlled by the wash box and/or automatic plant washer. The setting turns the drain valve on (i.e. drain clamped off and no flow through allowed) when the wash box is in wash and milking modes.



To Alter the Delivery Line Drain Valve Setting:

Select by using the UP ↑ and DOWN ↓ arrow keys

N = NO - delivery line drain valve OFF

Y = YES - delivery line drain valve ON

With the correct setting selected press the TICK ✓ key to store the data

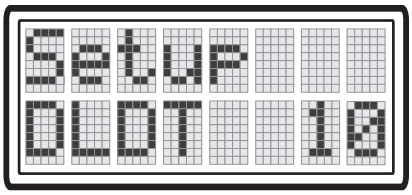
If the setting is set to Y, the delivery line drain timeout setting will be displayed

If the setting is set to N, the dump line enable setting is now displayed

---

Setting the Delivery Line Drain Valve Timeout - Software v2.11 onwards

This sets the time the compressed air drain valve on the milk delivery line / milk pump is on after the wash box has exited milk or wash mode. The range is from 1 to 60 seconds.



To Set the Delivery Line Drain Valve Timeout:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

With the correct setting selected press the TICK ✓ key to store the data

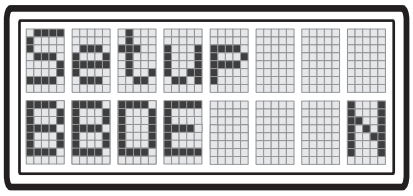
The dump line enable setting is now displayed

Factory Default: 10 seconds

The Dump Line Enable Setting

This setting enables the milk line and dump line to be washed automatically through the milk meter. It allows the time the milk meter is connected to the dump line and the milk line to be set and altered, allowing each line to be washed during a normal wash cycle of the parlour.

NB - It is only able to be used on milk meter systems where the drop bar output is populated on the milk meter control PCB - this is not available as standard and should be asked for on order.



To Alter the Dump Line Enable Setting:

Select by using the UP ↑↑ and DOWN ↓↓ arrow keys

N = NO - dump line enable OFF

Y = YES - dump line enable ON

With the correct setting selected press the TICK ✓ key to store the data

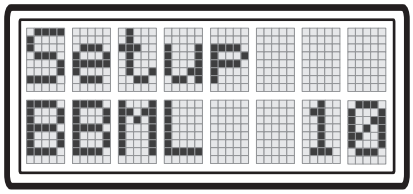
If the setting is set to Y, the milk line on time setting will be displayed

If the setting is set to N, the compressed air purge enable setting will be displayed

---

Setting the Milk Line Wash Time

This sets the time the milk meter is connected to the milk line in seconds during the wash cycle.



To Set the Milk Line Wash Time:

Select by using the UP ↑↑ and DOWN ↓↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑↑ or DOWN ↓↓ arrow keys the numbers increment or decrement by 10

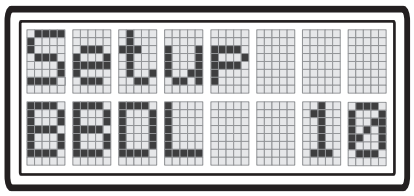
With the correct setting selected press the TICK ✓ key to store the data

The dump line wash time setting is now displayed

Factory Default: 10 seconds

Setting the Dump Line Wash Time

This sets the time the milk meter is connected to the dump line in seconds during the wash cycle.



To Set the Dump Line Wash Time:

Select by using the UP ↑↑ and DOWN ↓↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑↑ or DOWN ↓↓ arrow keys the numbers increment or decrement by 10

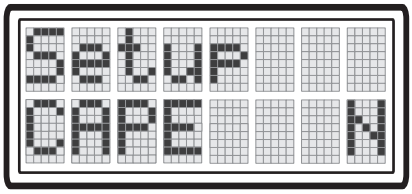
With the correct setting selected press the TICK ✓ key to store the data

The compressed air purge enable setting will be displayed

Factory Default: 10 seconds

The Compressed Air Purge of the Milk Delivery Line Setting - Software v2.12 onwards

This setting enables the drop output on the wash box to be used to control the input of compressed air into the milk delivery line to purge the majority of the remaining milk at the end of milking through to the bulk milk tank.



To Alter the Compressed Air Purge Setting:

Select by using the UP ↑ and DOWN ↓ arrow keys

N = NO - compressed air purge OFF

Y = YES - compressed air purge ON

With the correct setting selected press the TICK ✓ key to store the data

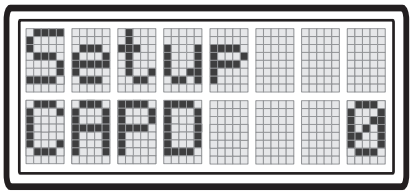
If the setting is set to Y the compressed air purge delay time setting will be displayed

If the setting is set to N, the milk pump control setting will be displayed

---

The Compressed Air Purge Delay Setting - Software v2.12 onwards

This setting is a delay in seconds after the wash box exits milk or wash modes before it performs the compressed air purge of the milk delivery line.



To Set the Compressed Air Purge Delay Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

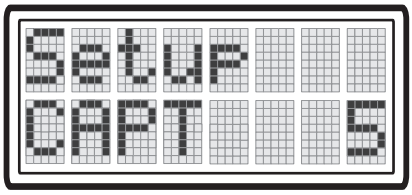
With the correct setting selected press the TICK ✓ key to store the data

The compressed air purge time setting is now displayed

Factory Default: 0 seconds

The Compressed Air Purge Time Setting - Software v2.12 onwards

This setting is the time compressed air purge of the milk delivery line operates for in seconds.



To Set the Compressed Air Purge Time:

Select by using the UP ↑ and DOWN ↓ arrow keys

NB If the TICK ✓ key is held down with the UP ↑ or DOWN ↓ arrow keys the numbers increment or decrement by 10

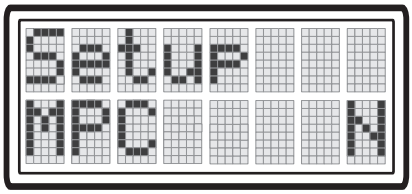
With the correct setting selected press the TICK ✓ key to store the data

The milk pump control setting is now displayed

Factory Default: 5 seconds

The Milk Pump Control Setting - Software v2.12 onwards

This setting is for when the type of milk meter system is set to Micro 'N' mode (i.e. stand-alone mode). It allows the Compressed Air Purge to be triggered from the Milk Pump Control, and also the system can be put into wash, milk and idle modes from the Milk Pump Control.



To Alter the Milk Pump Control Setting:

Select by using the UP ↑ and DOWN ↓ arrow keys

N = NO - compressed air purge from Milk Pump Control OFF

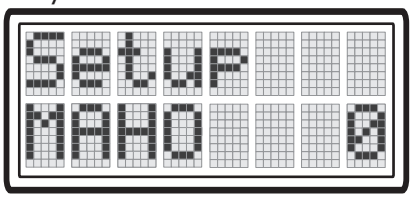
Y = YES - compressed air purge from Milk Pump Control ON

With the correct setting selected press the TICK ✓ key to store the data

The MAHO setting is now displayed

The Milk Pump Air Blast Hold Off Setting

This setting is a hold off time that delays the air blast on the milk line operating for X 1-60 seconds if the milk pump has just started running. It is to help systems whereby there is the possibility during washing the milk pump cannot keep up with the amount of water in the system and is designed to try and provide a buffer to prevent the ball going up on the sanitary trap and the wash finishing prematurely.



To Set the Milk Pump Air Blast Hold Off Time:

Select by using the UP and DOWN arrow keys

NB If the TICK key is held down with the UP or DOWN arrow keys the numbers increment or decrement by 10

With the correct setting selected press the TICK key to store the data

If the milk meter system is stand-alone, the Milk Meter Communications (IDS) setting is now displayed

If the milk meter system is integrated, the routine will be exited

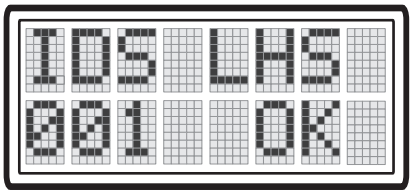
Factory Default: 0 second

Testing the Milk Meter Communications and Milk Pump Control (IDS) on a Stand-Alone System

The communications between each milk meter can be tested using this routine. NB - This routine is only available on stand-alone systems.

Press and hold the IDLE, TICK, WASH and UP arrow keys to enter setup

Release the keys



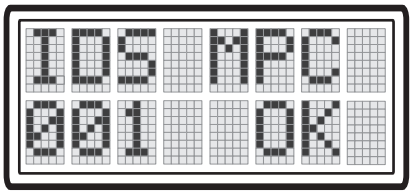
Step through all the milk meter points using the UP and DOWN arrow keys:

Press the IDLE key to swap sides on doubled-up parlours:

NB - The display will report OK if the communications are functioning correctly. ERR will be displayed if the communications are not functioning correctly. Please note that ERR will also be reported if no milk meter displays are connected at the address.

Press the WASH key to run the IDS on the Milk Pump Control.

The IDLE key will not function in MPC mode.



Press the TICK key to return to the Milk Meter IDS.

Press the TICK key to exit the routine.

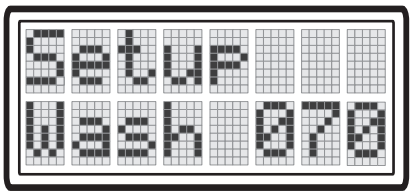
Checking the Software Version of the Wash Box

To check the software version:

Press and hold the IDLE, ✕ TICK, ✓ UP ↑ and DOWN ↑ arrow keys to display the software version.

Release the keys

The software version of the wash box is now displayed.



To exit press the IDLE ✕ key

Calibrating the Milk Meter System - Method 1

To ensure accurate performance each Milk Meter requires calibrating before use. This procedure may be carried out between milkings using milk or a hypochlorite solution. The calibration equipment required is as follows:

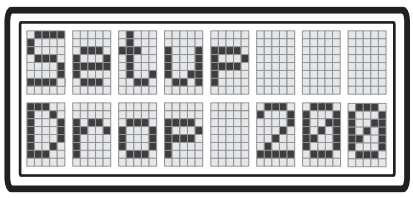
- 15 litres of milk or 3% Hypochlorite solution
- 1 metre length of 16mm stainless steel pipe with 1mm hole in the end
- Milking/dump bucket
- Bucket for milk or Hypochlorite solution
- Weighing scales accurate to within 50 grams

Before undertaking the calibration procedure, the drop value for each milk meter must be checked. For all new installations this value will have been factory set to 200, but for systems that have already been calibrated, the settings may be determined using the following procedure.

To access the drop value press and hold the following sequence of keys:

Then press the WASH key to go to the drop value:

The LCD display will then show the drop value:



Calibrating the Milk Meter System Continued

Press the WASH  key to confirm drop value and press it further times to step to the end of the setup routine.

Note the drop value from the milk meter control onto the calibration chart (NB factory default figure is 200) (photocopy chart on next page).

- Set the receiving dump bucket with all the hoses connected on the scales and weigh. This weight is the tare weight.
- Connect a 1 metre length of 16mm stainless steel pipe with a 1mm hole in the end furthest from the liquid and connect this to the long milk tube.
- Put approximately 15 litres of milk or 3% hypo solution into a bucket (NB milk is more accurate).
- Place the long milk tube into the calibration liquid, start the milk meter in manual mode and suck the calibration liquid through the milk meter into the dump bucket.
- When approximately 10 litres of liquid is recorded on the milk meter control, stop the milk meter.
- Note the weight of the dump bucket and then deduct the tare weight; this is the WEIGHT of liquid that has gone through the milk meter.
- To convert to litres divide the weight by 1.04 (NB 12.5 kilograms divided by 1.04 = 12 litres).
- Enter these figures onto the calibration chart along with the milk meter control displayed milk yield figures and repeat procedure twice more.
- Add the 3 weighed literages together.
- Add the 3 milk meter control figures together.

  For example, weighed totals added together equals 35.8 litres; milk meter control totals added together equals 33.4 litres.
- Divide the 35.8 by 33.4 equals 1.07; this equates to a 7% error.
- To find the new calibration value multiply the milk meter control drop value by 1.07.

  For example, 200 multiplied by 1.07 equals 214. This is the new drop value to be entered into the control.

Entering The New Drop Value

To enter the new drop value follow the procedure outlined on page 10.

The new drop value can be entered by pressing the LEFT  or RIGHT  arrow keys.

Holding down the WASH  key and pressing the LEFT  or RIGHT  arrow keys allows the values to be changed in tens.

Press the WASH  key to confirm drop value and press it further times to step through the setup routines.

Milk Meter Calibration Form - SAMPLE

Milk Meter No.			Original Drop Value	
Reading No.	Scales - Kilogram	Scales - Litres*	Control - Litres	——
1	12.5	12.0	11.2	——
2	12.3	11.8	11.0	——
3	12.5	12.0	11.2	——
Total	37.3	35.8	33.4	——

A = Total Weighing Scale Readings (litres)	A	B	C
B = Total Control Readings (litres)	35.8 divided by	33.4	equals 1.07
C = Ratio of A to B	C	D	E
D = Milk Meter Drop Value During Test	1.07 multiplied by	200	equals 214
E = New Calculated Drop Value			

* To convert the kilogram reading on the scales into litres please use the following formula:
Litres = Kilogram / 1.04

Milk Meter Calibration Form - PLEASE COPY AND USE

Milk Meter No.			Original Drop Value	
Reading No.	Scales - Kilogram	Scales - Litres*	Control - Litres	——
1				——
2				——
3				——
Total				——

A = Total Weighing Scale Readings (litres)	A	B	C
B = Total Control Readings (litres)		divided by	equals
C = Ratio of A to B	C	D	E
D = Milk Meter Drop Value During Test		times by	equals
E = New Calculated Drop Value			

* To convert the kilogram reading on the scales into litres please use the following formula:
Litres = Kilogram / 1.04

Checking the Calibration of the Milk Meter System

It is recommended that a Calibration Check is carried out on each Milk Meter annually.

To check the calibration follow the instructions on calibrating the milk meter on page 33.

The resulting relative error should be not more than +/-5%; if the error is more than this it will be necessary to re-calibrate the Milk Meter.

Milk Meter Calibration Check Form - SAMPLE

Milk Meter No.			Original Drop Value	
Reading No.	Scales - Kilogram	Scales - Litres*	Control - Litres	——
1	12.5	12.0	11.2	——
2	12.3	11.8	11.0	——
3	12.5	12.0	11.2	——
Total	37.3	35.8	33.4	——

A = Total Weighing Scale Readings (litres)

B = Total Control Readings (litres)

C = Ratio of A to B

D = Milk Meter Drop Value During Test

E = New Calculated Drop Value

A	B	C
35.8 divided by	33.4	equals 1.07
C	D	E
1.07 multiplied by	200	equals 214

* To convert the kilogram reading on the scales into litres please use the following formula:
Litres = Kilogram / 1.04

Milk Meter Calibration Form - PLEASE COPY AND USE

Milk Meter No.			Original Drop Value	
Reading No.	Scales - Kilogram	Scales - Litres*	Control - Litres	——
1				——
2				——
3				——
Total				——

A = Total Weighing Scale Readings (litres)

B = Total Control Readings (litres)

C = Ratio of A to B

D = Milk Meter Drop Value During Test

E = New Calculated Drop Value

A	B	C
divided by		equals
C	D	E
times by		equals

* To convert the kilogram reading on the scales into litres please use the following formula:
Litres = Kilogram / 1.04

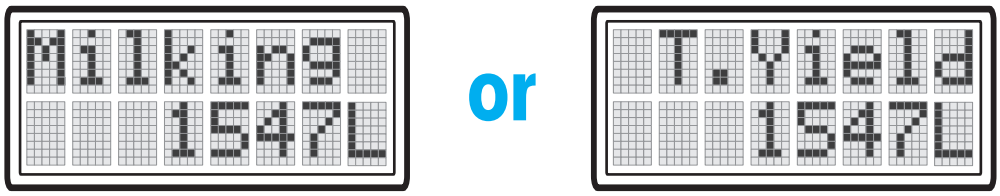
Calibrating the Milk Meter System - Method 2

Another method for calibrating the Milk Meter system is by comparing the daily milk yield total in either the Micro Wash Control on stand-alone systems or the MicroM3S on integrated systems to the bulk tank total.

Set the drop value to 200 (this is the factory default). It is best to milk the cows for a few days through the milk meters before calibrating as this allows the meters to settle down and the diaphragm to stretch etc. Please note that the drop value does not accurately reflect the true value of the milk measured each time the milk meter operates. This value is computed from the volume measured each time the meter operates plus an amount calculated from the flow rate to allow for the milk flowing through the meter when it is emptying.

Stand-Alone Milk Meter Systems

After a few days make a note of the Total Yield on the Micro Wash Control.



When the Milk Meter System is in milking mode, the total number of litres that the cows have yielded in displayed (i.e. 1500L equals 1500 litres). If the Micro Wash Control is not in milking mode, press the UP key to display the Total Yield.

The Total Yield will have to manually zeroed each time the bulk tank is emptied in order for the Total Yield to match and cover the same period.

Compare the Total Yield to the bulk tank printout.

Bulk Tank Printout	10-05-2009
Total Amount Collected	1624 litres

Therefore, to calibrate the milk meters, do the following calculation:

1547 ÷ 1624 x 100 = 95.26%

Milk meters out by 4.74%

Therefore, if drop value is set at 200, the drop value should be changed to:

200 ÷ 100 x 104.74 = 209.48

Therefore, the milk meter drop values should be changed to 209.

NB - Ensure that the drop value is changed on all milk meter controls.

Re-check this again after a few more days and change if required.

Calibrating Milk Meter Systems integrated with the MicroM3S

After a few days make a note of the Daily Milk Yield Total on the MicroM3S.

The Daily Milk Yield Total is stored under the Herd Totals. The Daily Milk Yield Total is calculated during the 11:00am automatic housekeeping routine. The automatic housekeeping times need to correspond to the milk collection times. Please refer to the MicroM3S Operation manual for information on how to change the automatic housekeeping times. NB - This is only available on MicroM3S software v4.27 or above. Please run subroutine 2 to check. To access these press the Totals key on the MicroM3S.

There are 7 totals available. Each press of the Totals key displays a new category. The categories available are:

cFEd* Cows Fed during this milking

dAYF* Daily Consumed Feed Total

dAYY* Daily Milk Yield Total

nLKY* Total Milk Yield during this milking (software v4.29 or above)

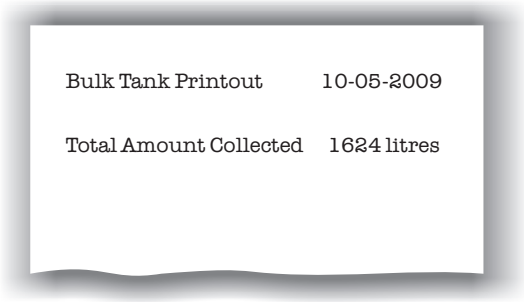
totF Total Feed Consumed to Date

totY Total Milk Yield to Date

bAtF Total Feed dispensed using Batch Mode

Press the Totals key until the MicroM3S display shows dAYY. The cumulative totals window will show the total milk yield for the current day.

Compare the Total Yield to the bulk tank printout.



Therefore, to calibrate the milk meters, do the following calculation:

1547÷ 1624 x 100 = 95.26%

Milk meters out by 4.74%

Therefore, if drop value is set at 200, the drop value should be changed to:

200 ÷ 100 x 104.74 = 209.48

Therefore, all milk meter drop values should be changed to 209.

NB - Ensure that the drop value is changed on all milk meter controls.

Re-check this again after a few more days and change if required.

Additional Items Required to Install Milk Meter System

- A 1¼" spline to mount the milk meter and solenoid connection box (one per milking pint, 1¼" U bolts supplied.
- 6mm PVC signal pipe to connect the shut off valve and the milk meter to the solenoid box (approx 2m per point).
- 8mm PVC signal pipe to connect vacuum feed to solenoid box (approx 2m per pint).
- 8mm hose tail or similar to connect 8mm signal pipe to main vacuum feed.
- 16mm and 19mm milk tube, 16mm to connect the milk meter to the cluster and 19mm to connect the meter to the main milk line. The milk meter has a milk inlet to suit 16mm tube and an outlet to suit 19mm transfer tube.
- If the milk line does not have 19mm inlets a suitable reducer will be required.
- Conduit, mounting and connectors for the cabling.
- Cable from the power supplies to the nearest connection box (1.5mm2).
- Cable from each ACR ram to the correct solenoid box.
- If using an existing ACR ram and solenoid, the solenoid must be 12vDC, otherwise an automotive relay will be required (P/N 16-1048).