ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION

Version - February 2005

Controlled By The **ATL**

MicroMarque3S

CHOSEN TO REPRESENT AGRICULTURAL PRODUCTS IN THE MILLENNIUM DOME 2000
MILLENNIUM PRODUCTS

ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **INDEX**

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MicroMarque3S Subroutine List:

GOOD PRACTICE: Mains Supply.

- A separate mains supply and earth running directly from the consumer meter is essential.
- Avoid routing the mains cable to the power supply close to other supplies especially those providing intermittent current- motors that are starting and stopping continually or high power heaters with thermostatic control.
- Terminate in a sealed, fused, double pole switched outlet fitted with a 13Amp (BS 1362 Standard) 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.
- 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:

Auto-ID Power *Supply: Nominal 15volts DC*

Rotary Parlour 4pt Power Supply: Nominal 12volts DC For Feeder

Nominal 15volts DC For Control

Control, Power and Data 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.
- Where ever 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.

ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **1**

SYSTEM ELEMENTS

The complete Rotary Parlour Auto-ID system comprises:

 # MicroMarque3S Control,

 # Digital Feeder Control with Return-To-Ration

 # Rotary Power Supply,

 # Auto-ID Interface Unit,

 # Auto-ID Power Supply providing 15v DC output,

 # Rotary Parlour Table Interface,

 # Rotary Parlour Antenna.

#OMRON Sensor

#Antenna Hanging Chains

Cow Data:

The cow records, each of which includes the cow's herd number, TIRIS ear tag number, and possibly ration details and milk yields, are stored and updated by the MicroMarque3S control.

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.

Ideally, data cable should be run through suitable conduit by itself, especially if it is exposed to the weather. Sharing conduit with power wires invariably corrupts data.

Fitting data cables or ROM chips to the Marque3S should be carried out only with the power OFF at the mains supply. Before handling electronic components, electrically discharge your body with either a wrist strap attached to earth or by regularly touching a proper earth. *Always back up cow and system data before removing an existing ROM chip.*

Rotary Parlour and Auto ID Interface Power Supplies

The Rotary Parlour Power Supply is specifically design to provide power for the Dump Box Feeder, the MicroMarque3S and the Digital Feeder Control. *Neither power supply nor the Auto-ID Interface should be exposed to the weather.*

The Auto-ID Interface requires a 15v DC supply; a purpose built PSU is supplied with every installation. *Neither power supply nor the Auto-ID Interface should be exposed to the weather.*

The power supply should be sited as close to the Pegasus Antenna Control as possible but sufficiently far away from the antenna not to interfere with tag reading. A double pole switched, fused (5Amp) mains outlet (230vAC) is required. A 13Amp'plug and socket' is not suitable. We strongly recommend the use of Residual Current Circuit Breakers (RCCB) in all mains outlets.

The power supply casing is splash proof but not guaranteed to withstand direct pressure washing, so position it well away from areas that are likely to be washed down regularly.

Use only the cable entries and glands fitted to the case and ensure that cables are a 'snug', sealed fit. Do not drill additional holes in the sides, top or back.

All mains wiring should be installed by a competent electrician and comply with all relevant regulations.

Dump Box Feeder and Bin

For the installation of the dump box please see the Rotary Feeder Installation manual.

Table Interface

The Rotary Parlour Table Interface contains the timing circuits which form an integral part of the system.

MicroMarque3S

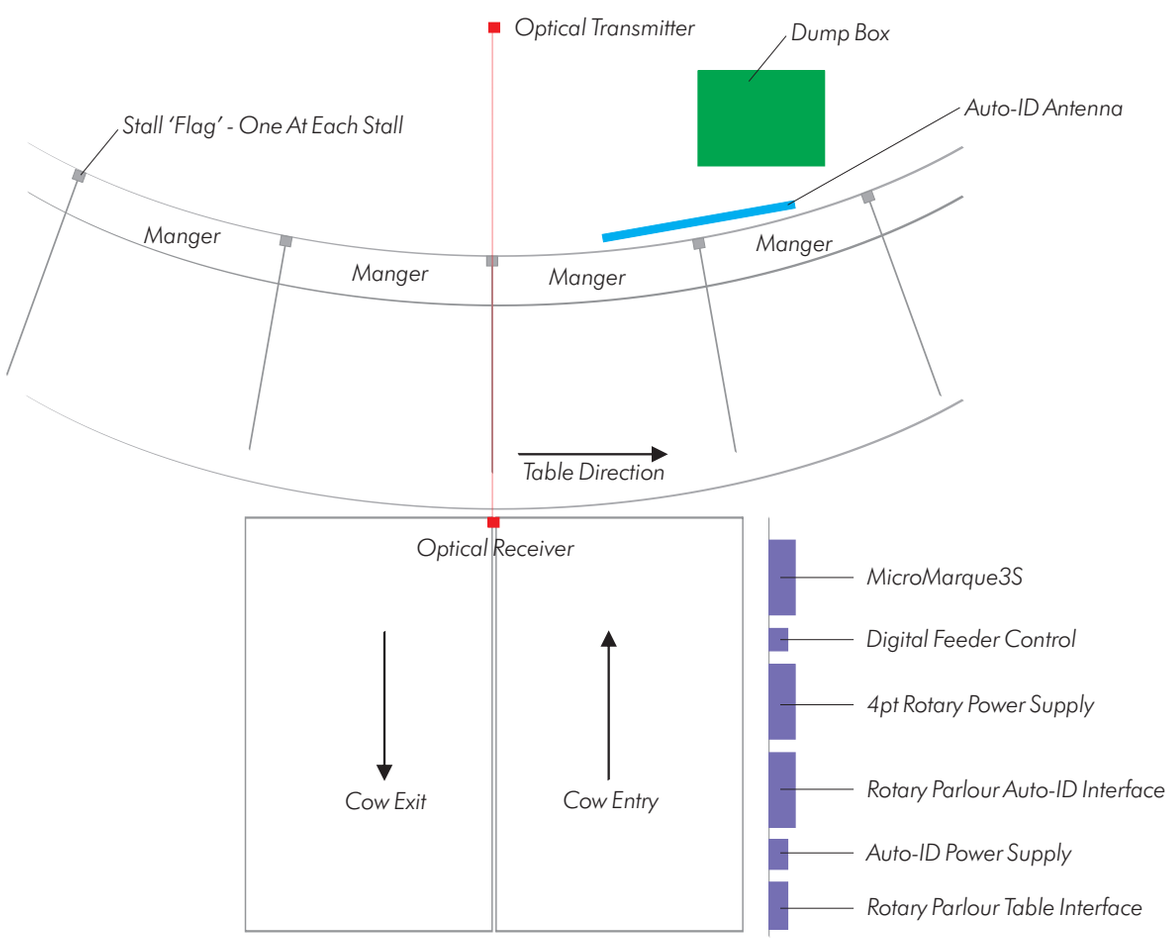
The MicroMarque3S is the user interface for the system - for more detailed information on its characteristics and capabilities please refer to the MicroMarque3S manual.

ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **2**

SYSTEM OVERVIEW

The ATL Rotary Auto-ID system enables individual cows to be fed their own/individual rations at precise positions so that feed is always dropped into the mangers. An optical sensor triggers the outlet flap of the Dump Box to open when it is in the optimum position above the manger. The next ration is then fed into the dump box after a small delay to allow the flap to close. If the table is reversed, a circuit has been incorporated to prevent feeding during the reverse movement. With Auto-ID, no feed will be dispensed during the return to the position where the reverse started since the system can prevent cows from being fed twice.

The diagram below illustrates the typical layout of the Rotary Parlour Auto-ID System:

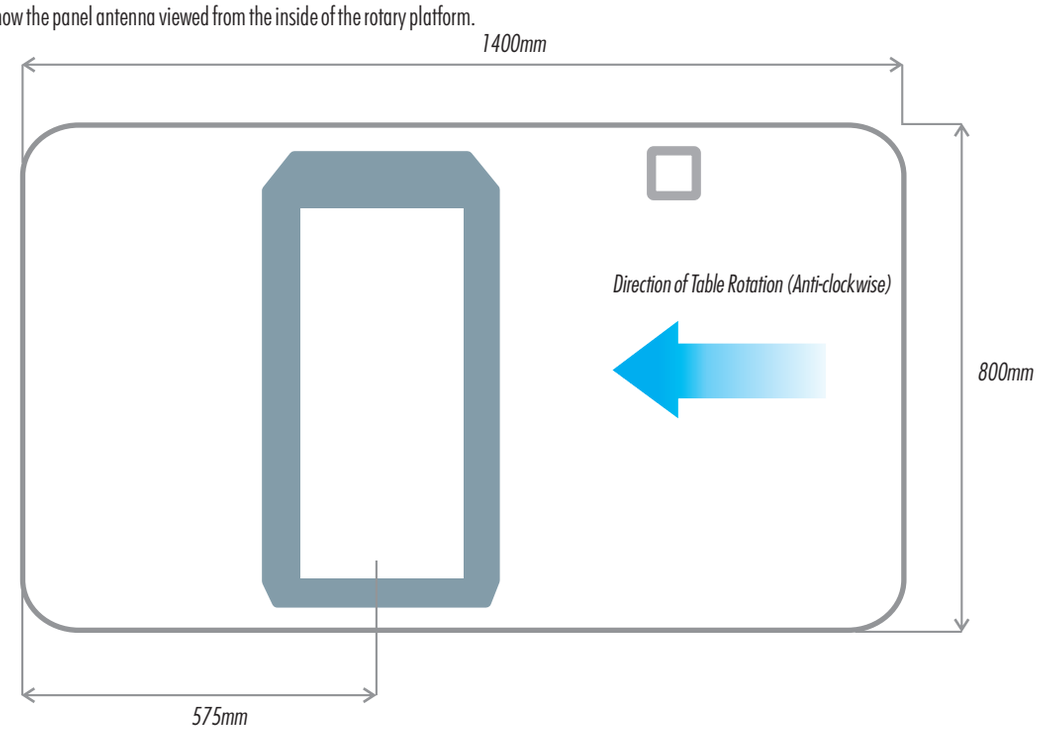


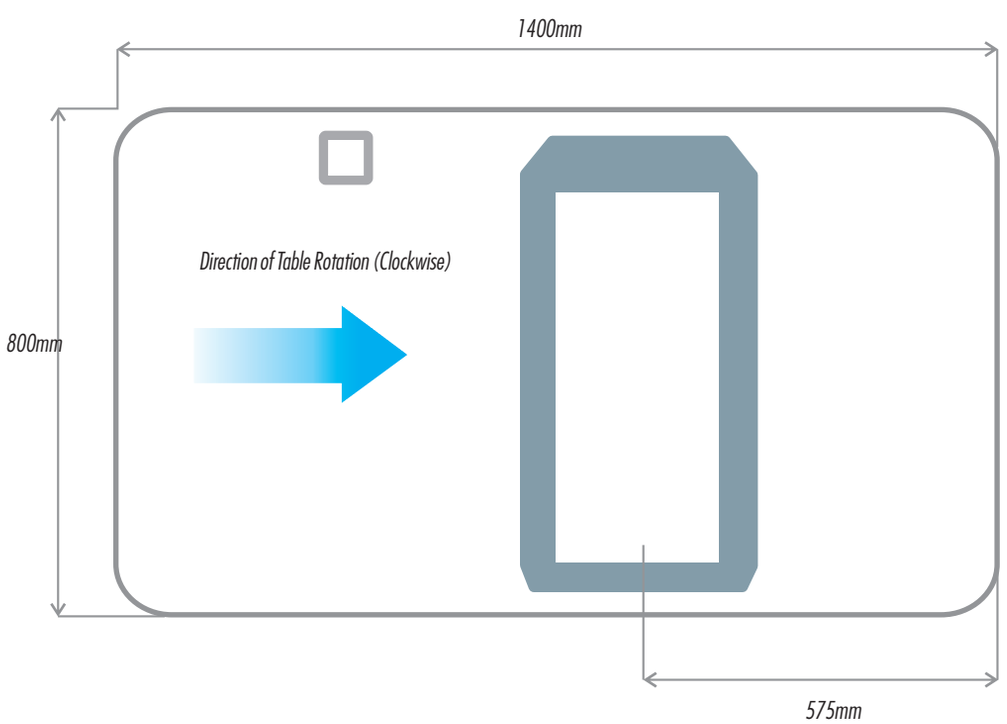
ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **3**

PANEL ANTENNA INSTALLATION

The rotary parlour panel antenna can be configured for both clockwise or anti-clockwise rotary parlour. The antenna should be positioned between the first and second stalls after cow entry onto the rotary platform - thus the cow is identified as the cow passes the start of the rump rail and cannot exit from the stall.

The diagrams below show the panel antenna viewed from the inside of the rotary platform.





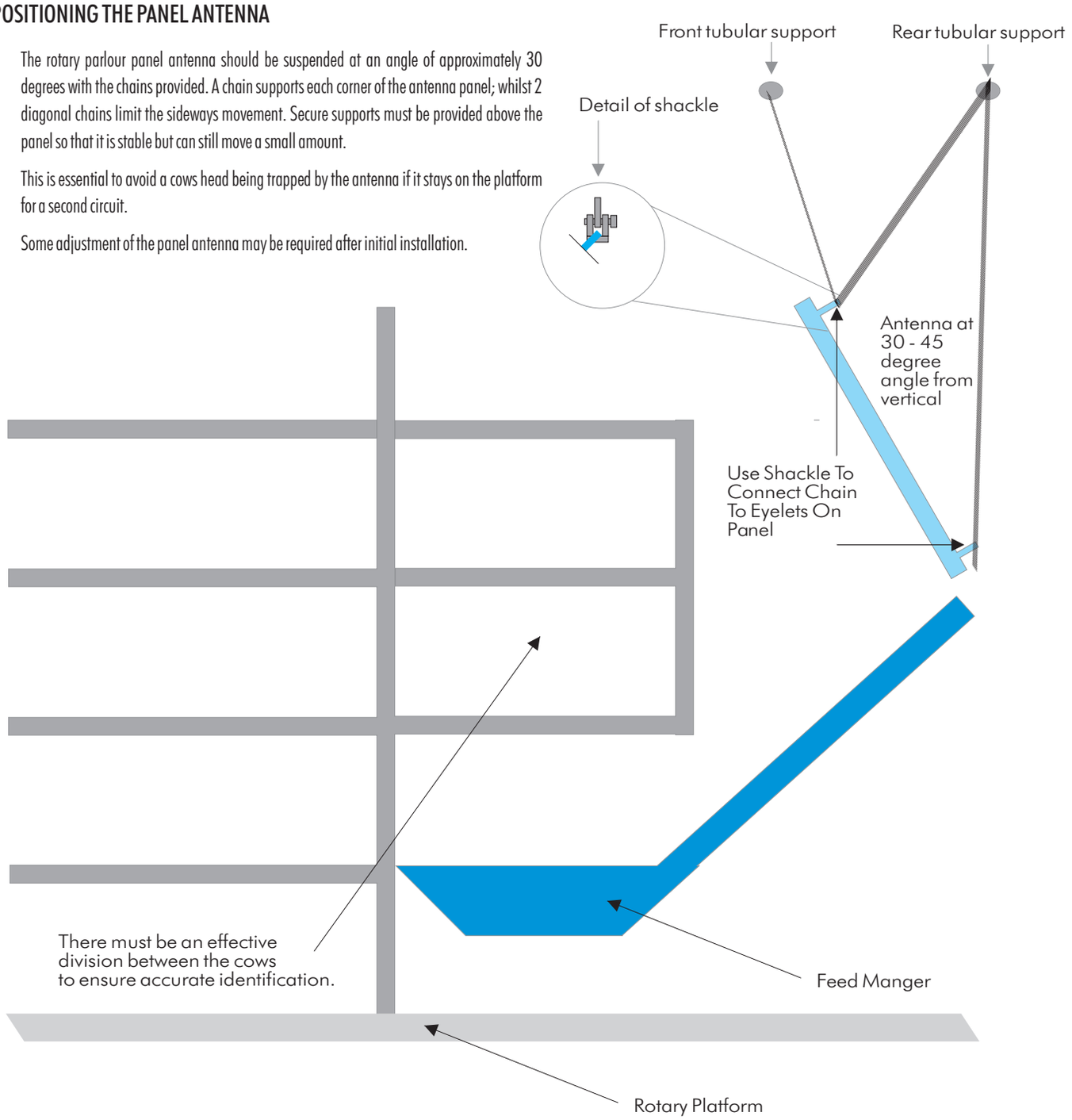
ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **4**

POSITIONING THE PANEL ANTENNA

The rotary parlour panel antenna should be suspended at an angle of approximately 30 degrees with the chains provided. A chain supports each corner of the antenna panel; whilst 2 diagonal chains limit the sideways movement. Secure supports must be provided above the panel so that it is stable but can still move a small amount.

This is essential to avoid a cows head being trapped by the antenna if it stays on the platform for a second circuit.

Some adjustment of the panel antenna may be required after initial installation.



MOUNTING THE SYSTEM CONTROLS AND POWER SUPPLIES

The system control equipment can be mounted in many configurations and ATL recommends only that the MicroMarque3S and Digital Feeder Control are mounted by the operator on the outside of the pit. For simplicity, this manual shows all the system control equipment in the same place; by the operator (see diagram on page 2).

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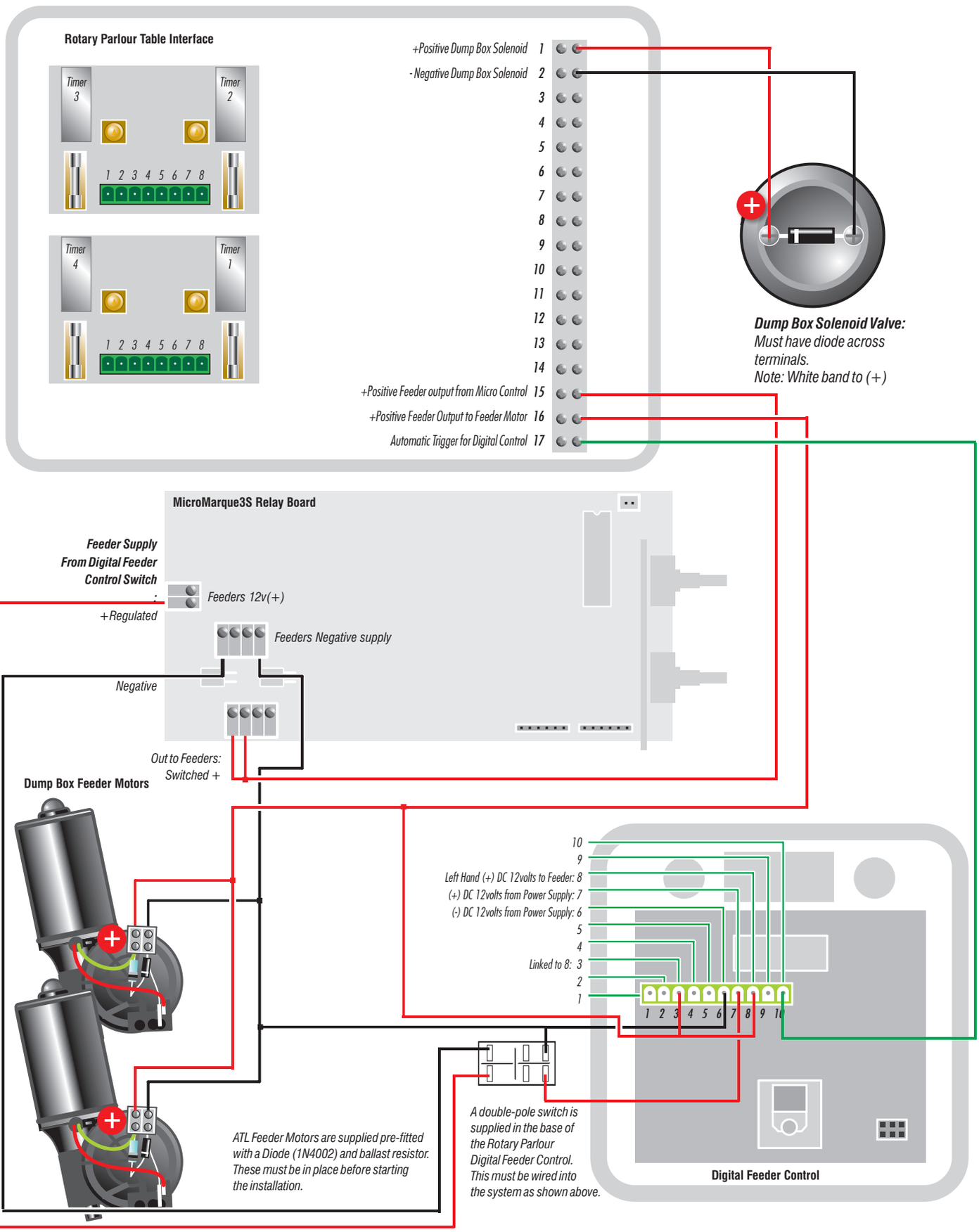
DUMP BOX FEEDER CONNECTIONS



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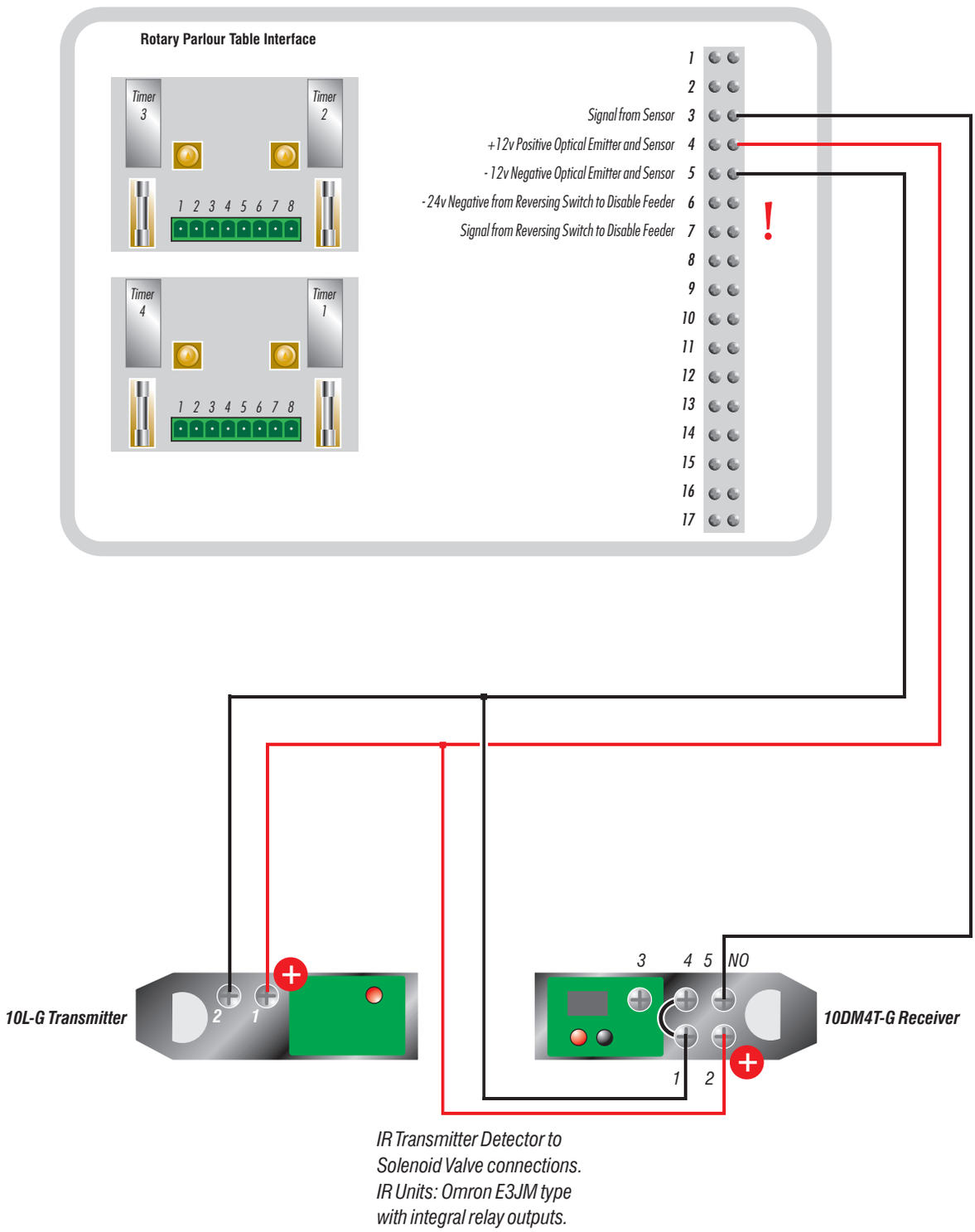
INFRA-RED OMRON SWITCH AND TABLE REVERSE SWITCH CONNECTIONS



IR Transmitter Detector to Solenoid Valve connections. IR Units: Omron E3JM type with integral relay outputs.

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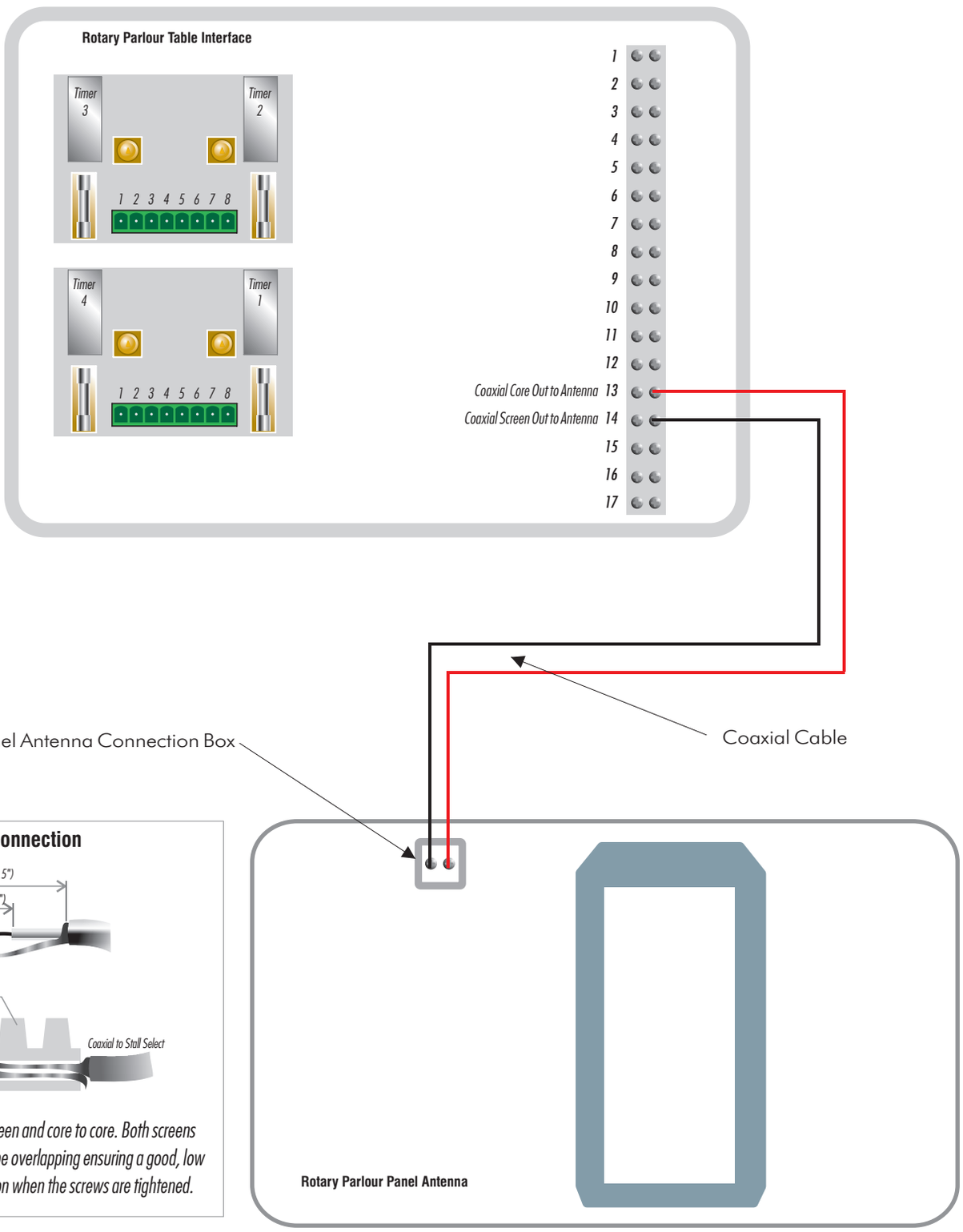
PANEL ANTENNA CONNECTIONS



Panel Antenna Connection Box Detail

! *Ensure screen to screen and core to core. Both screens and cores will now be overlapping ensuring a good, low resistance connection when the screws are tightened.*

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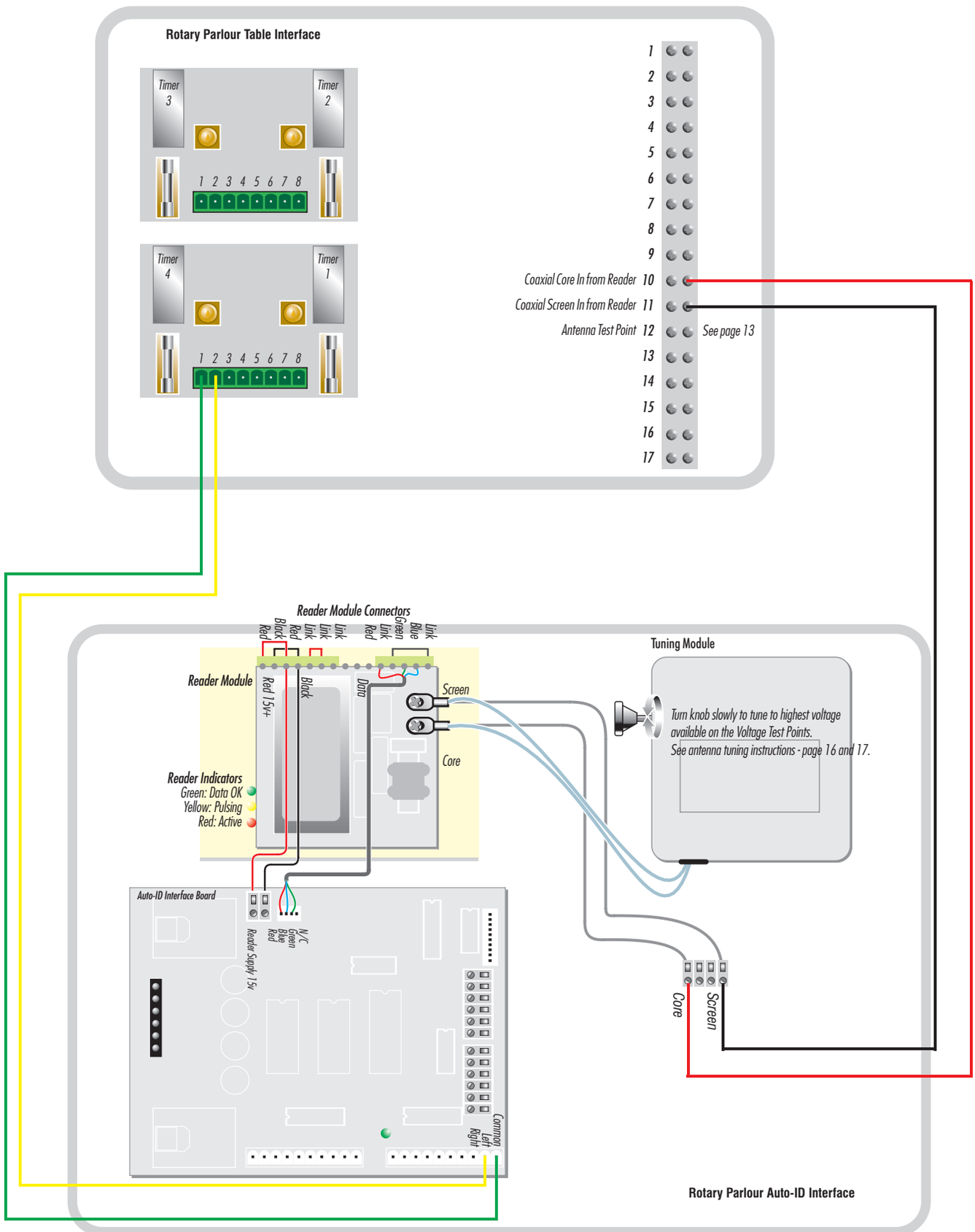
ROTARY PARLOUR AUTO-ID INTERFACE CONNECTIONS



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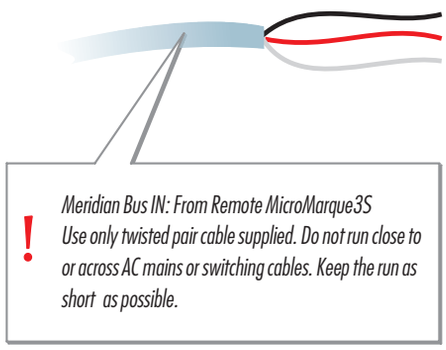
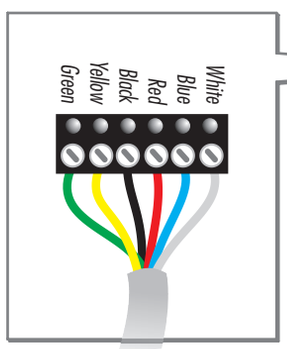
MERIDIAN DATA CABLE CONNECTIONS

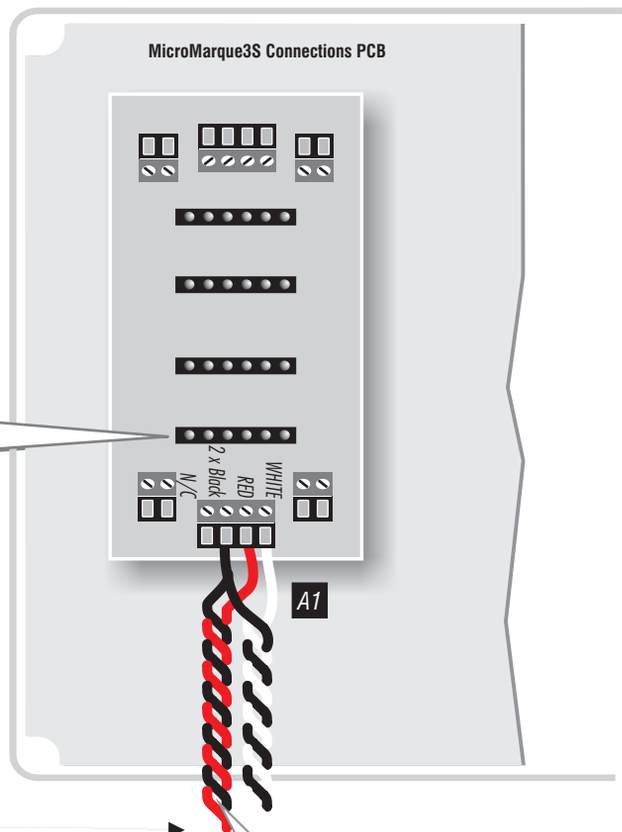
A 2 x twisted pair cable- the Meridian Bus- connects the MicroMarque3S to the Auto-ID Interface, shown on the next page. This cable cannot be substituted. The two Black cores are twisted together into a common connector and the Red and White connected as shown. The Screen is not connected at either end.



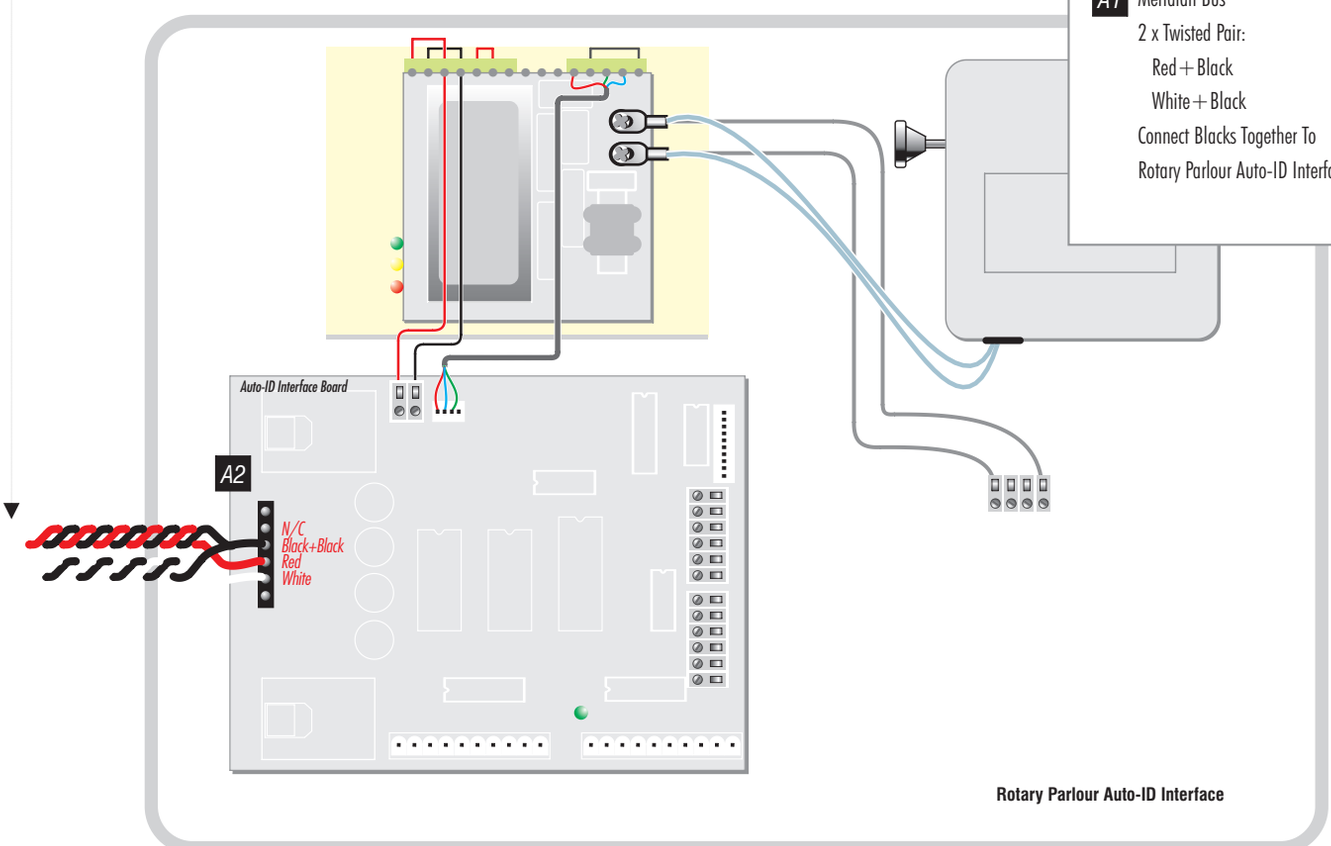
! *Meridian Bus IN: From Remote MicroMarque3S*
Use only twisted pair cable supplied. Do not run close to or across AC mains or switching cables. Keep the run as short as possible.



Meridian Bus from the MicroMarque3S Main or Relay board.



A1 Meridian Bus
2 x Twisted Pair:
Red + Black
White + Black
Connect Blacks Together To
Rotary Parlour Auto-ID Interface **A2**



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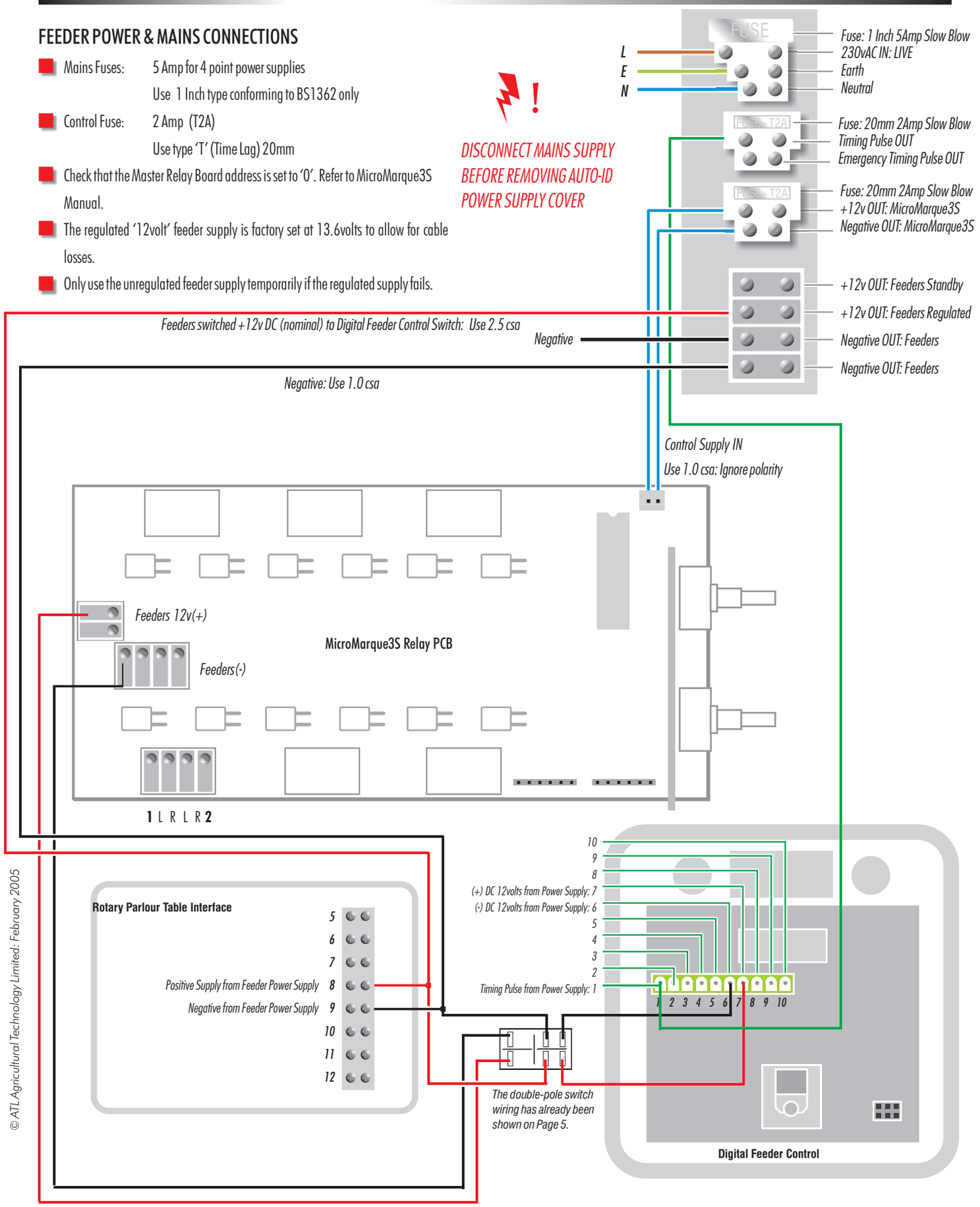
FEEDER POWER & MAINS CONNECTIONS

- Mains Fuses: 5 Amp for 4 point power supplies
  Use 1 Inch type conforming to BS1362 only
- Control Fuse: 2 Amp (T2A)
  Use type 'T' (Time Lag) 20mm
- Check that the Master Relay Board address is set to '0'. Refer to MicroMarque3S Manual.
- The regulated '12volt' feeder supply is factory set at 13.6volts to allow for cable losses.
- Only use the unregulated feeder supply temporarily if the regulated supply fails.

DISCONNECT MAINS SUPPLY BEFORE REMOVING AUTO-ID POWER SUPPLY COVER



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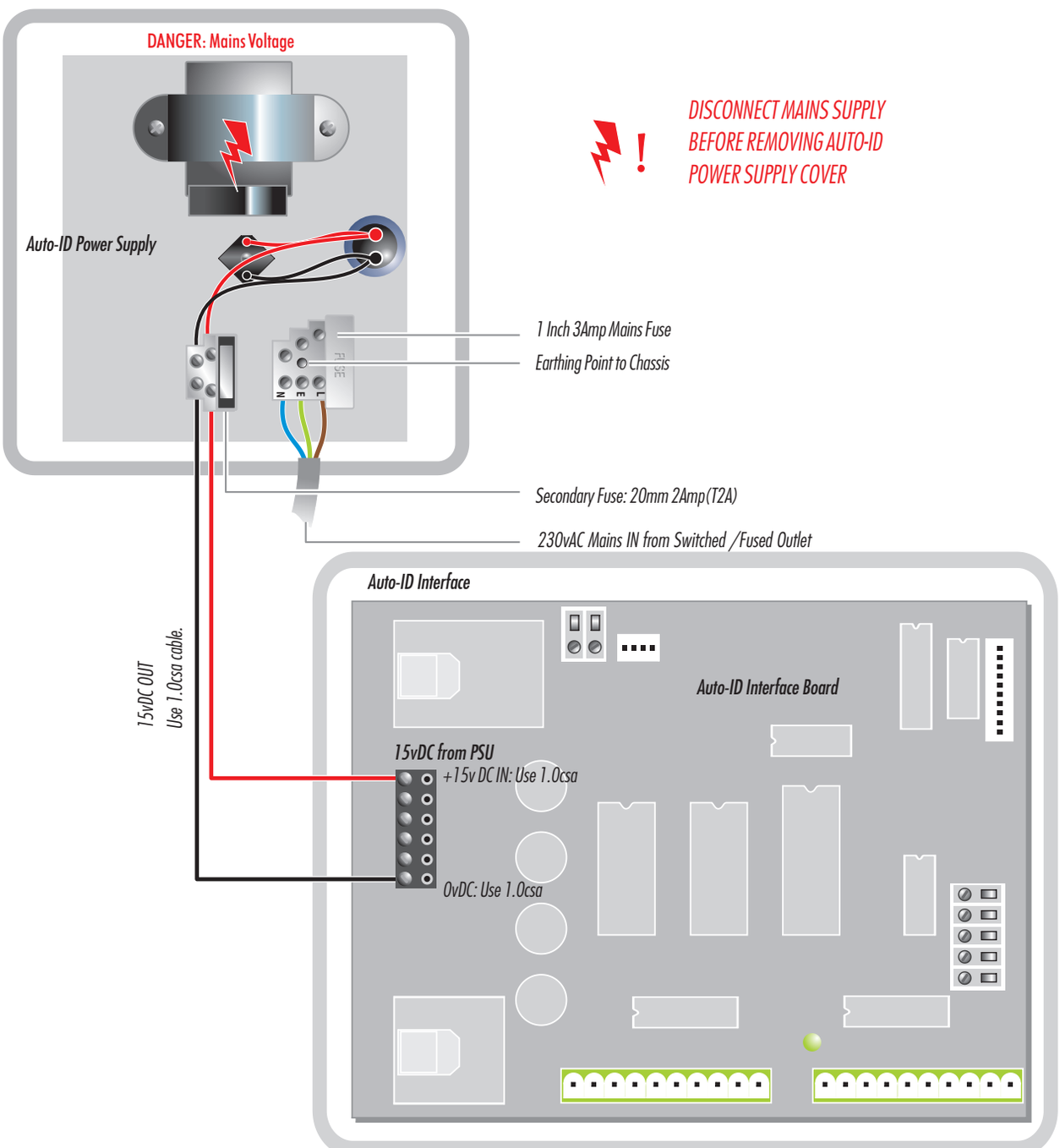
ROTARY PARLOUR AUTO-ID INTERFACE POWER & MAINS CONNECTIONS



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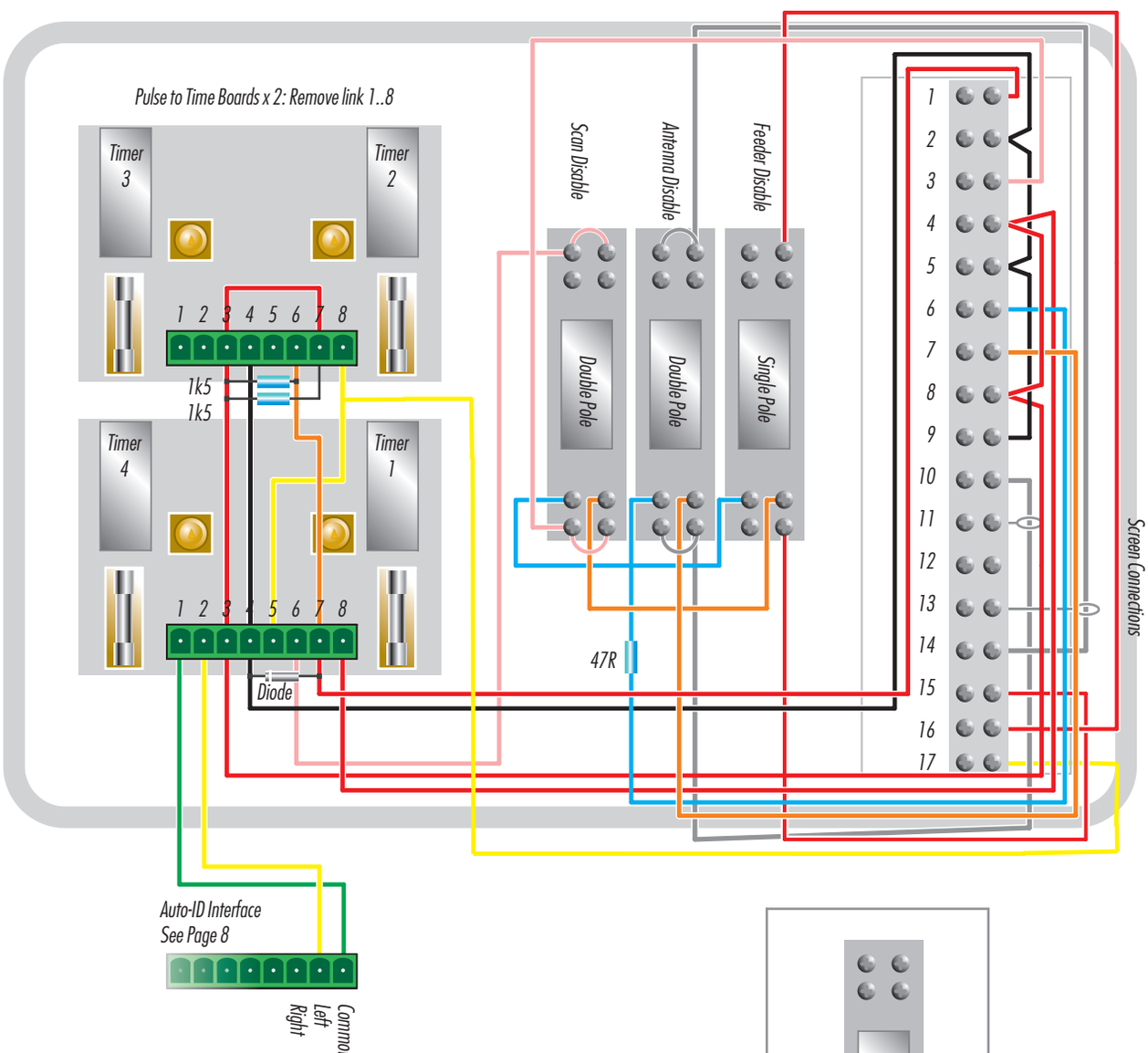
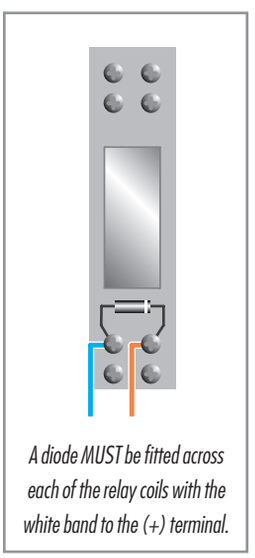
ROTARY PARLOUR TABLE INTERFACE FACTORY-MADE CONNECTIONS





A diode MUST be fitted across each of the relay coils with the white band to the (+) terminal.

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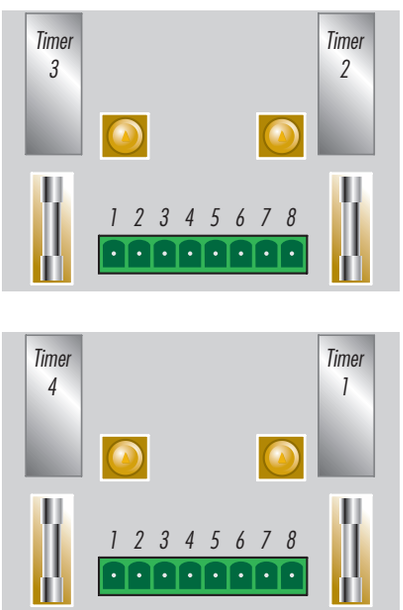
ROTARY PARLOUR TABLE INTERFACE PIN-OUTS



+Positivve Dump Box Solenoid	**1**
- Negative Dump Box Solenoid	**2**
Signal from Sensor	**3**
+ 12v Positive Optical Emitter and Sensor	**4**
- 12v Negative Optical Emitter and Sensor	**5**
- 24v Negative from reversing switch to disable feeder	**6**
Signal from reversing switch to disable feeder	**7**
+Positive Supply from Feeder Power Supply	**8**
- Negative from Feeder Power Supply	**9**
Coaxial Core In from Reader/Tuning Unit	**10**
Coaxial Screen In from Reader/Tuning Unit	**11**
Antenna Test Point	**12**
Coaxial Core Out to Antenna	**13**
Coaxial Screen Out to Antenna	**14**
+Positive Feeder output from Micro Control	**15**
+Positive Feeder Output to Feeder Motor	**16**
Automatic Trigger for Digital Control	**17**

ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **14**

About Subroutines.

There are a host of functions available on the MicroMarque3S which, because they are not used frequently do not have specific keys dedicated to them. Instead, they are accessed through the SHIFT + ENTER (SUBROUTINES) key combination and perform as a small part of the computer program. Having achieved their specific task they then return control to the main program.

Some subroutines simply deliver data- usually to the display and their job is done; others require additional key inputs to modify data that will affect the running of the entire system.

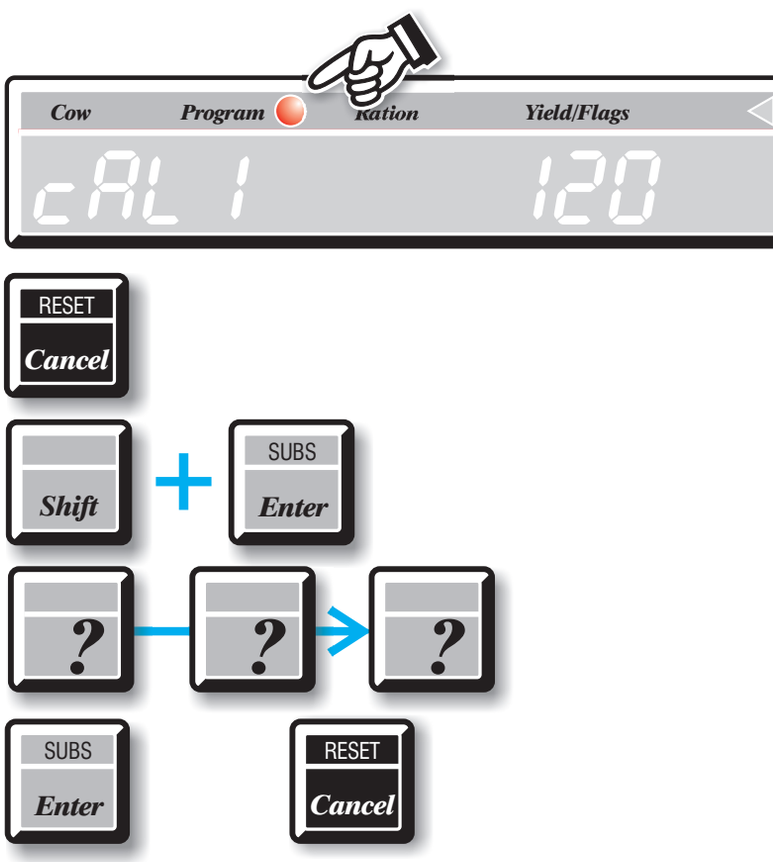
Running a Subroutine.

All subroutines are started in the same way:

- Check that the MicroMarque3S is in Program mode- the red indicator on the indicator bar should be illuminated. If it is not, run Subroutine 638 (operates in any mode) which toggles between Program and Feeding modes.
- Press RESET.
- Press and hold down the SHIFT key. Press the ENTER (SUBROUTINES) key. Release the ENTER key; release the SHIFT key. This key combination is shown as SHIFT + ENTER(SUBROUTINES) on the following pages.
  The Yield/Flags window will clear to three underscore marks.
- Key the number of the subroutine required. Ignore leading zeros.
- Press ENTER.

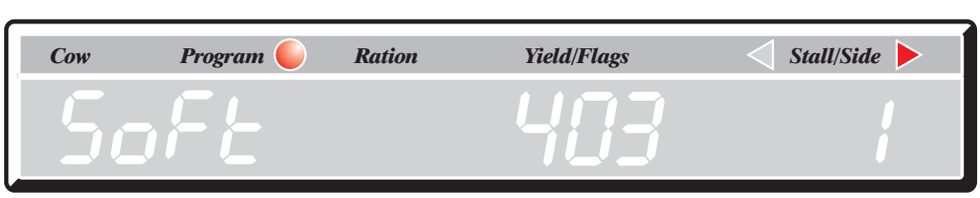
If the subroutine requires additional key entries, follow the instructions on the following pages.

- Press RESET to exit a subroutine.



Subroutine 2: Display the Software Version.

The program which 'drives' the MicroMarque3S is stored on a silicon chip inside the machine and is occasionally subject to minor changes. When a change is made the Version Number of the software is updated; your current version may be accessed through subroutine 2. This information is important if repairs are being carried out to the system.

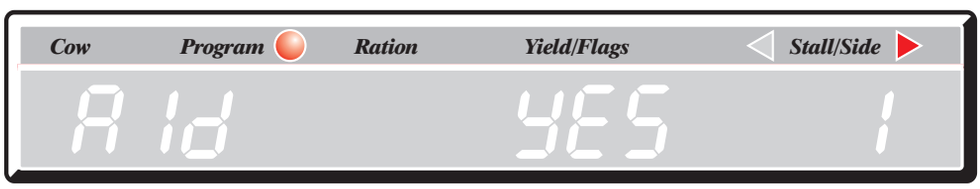


The Software Version Number is displayed in the Yield/Flags window as three digits- 403 in the example. There is a implicit decimal point after the first digit so the version is 4.03

Subroutine 300: Enabling Auto-ID

The scanning and ear tag reading system may be switched on and off through this subroutine.

- Run Subroutine 300. The display will show 'AId' (AUTO-ID) and the current status- 'YES' or 'no' (enabled/disabled) will appear in the Yield/Flags window.



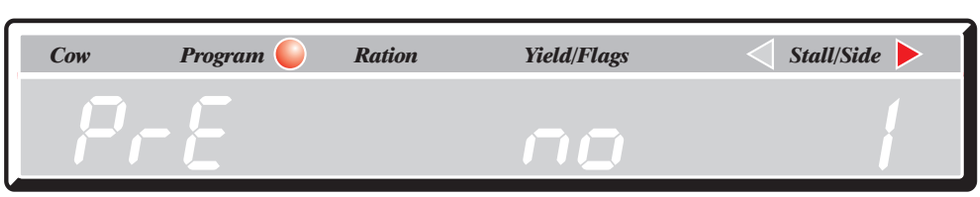
- Toggle between the two states by using the Change key

- Press Enter to store the selection.

Subroutine 304: Turn Ration Pre-feed On and Off.

The Auto-ID system will allow a small portion of feed to be delivered to each cow as soon as they arrive at a stall. This can help to calm nervous cows during the first few days of using the system and encourage them to put their heads down - aiding Auto-ID. All of the cows are fed including those that do not have a ration. The portion of cake that is delivered is subtracted from the cow's actual ration.

- Run Subroutine 304. The current status (YES = on/no = off) will be shown in the Yield/Flags window with the code 'Pre' (Pre-feed) in the Cow Number window.



- Turn Pre-feed on or off using the Change key to toggle.

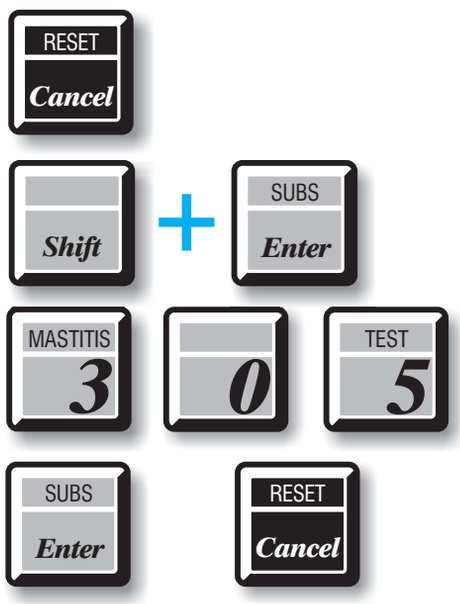
- Press Enter to store the selection.

! During testing, turn Pre-feed OFF.

ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **16**

Subroutine 305: Select Antenna and check voltage levels.

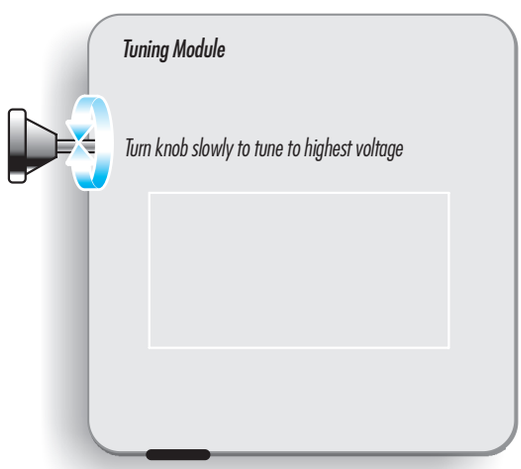
This subroutine allows a specific stall and antenna to be selected; the system will activate the antenna continuously and, if an ear tag is within reading distance, the MicroMarque3S buzzer will sound.

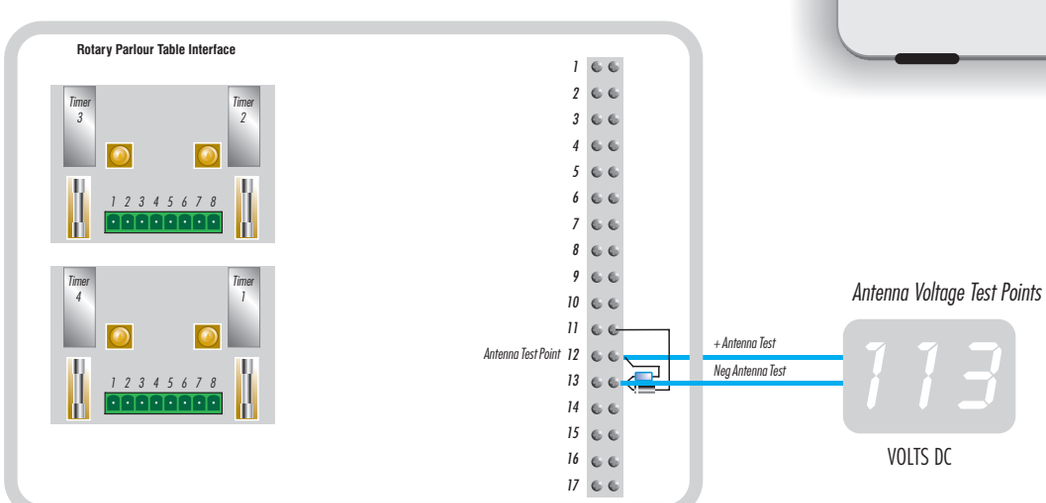


Checking the Voltage Levels.

- Connect a high quality voltmeter set to the 200v DC range across the Voltage Test Points on the Rotary Parlour Table Interface (see below). Ensure the polarity is correct.
- Reset the MicroMarque3S.
- Run Subroutine 305. The code 'tESt Ant' (Test Antenna) will appear in the Cow Number window, the side will default to the 'reset' side and the stall to number 1. That antenna is now active
- The voltmeter should read in the range 90 to 180 volts DC.

- Slowly turn the tuning knob on the tuning module- it turns in bothdirections- until the highest voltage is achieved. If it is not possible to achieve a voltage level higher than 90 volts, please contact your supplier.
- It is only necessary to carry out the tuning process once.
- Press Reset to exit the subroutine.





Testing Antenna Reading.

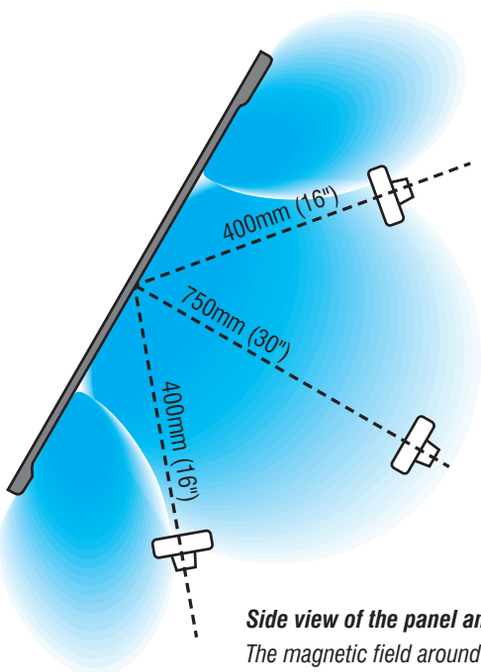
The magnetic field surrounding an antenna is not uniform and will be distorted by metal objects close by. The reading range is further complicated by the ear tag orientation; the best range will be achieved with the tag flat face toward the antenna with a noticeable deterioration if the tag is held edge on. However, this is not a cause for concern since cows seldom, if ever keep their ears stationary for more than a few seconds at a time!

But for the sake of consistent testing, hold the ear tag flat face toward the antenna as shown in the diagram. To test the reading range:

Run Subroutine 305 shown on Page 16.

When measuring the range, use a wooden or plastic lathe marked in cms or inches; do not use a metal rule.

Hold an ear tag with the hole pointing toward the *centre* of the antenna. Move the tag toward the antenna until the beeper sounds then move it away until the beeper ceases. Make a note of the distance.



Side view of the panel antenna.
The magnetic field around the antenna is complex and the reading range will vary depending upon the tag's position within the field. Keep the tag's face toward the antenna.

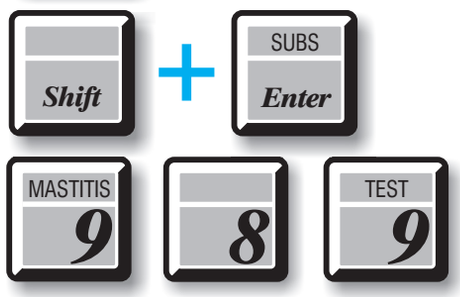
ROTARY PARLOUR AUTO-ID INSTALLATION & OPERATION: **18**

Subroutine 989: Rotary Parlour Mode

This subroutine allows the system to work on a rotary parlour using an ATL Dump Box Feeding System.

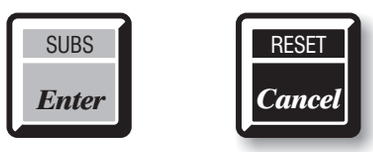
- *Reset the MicroMarque3S.*

- *Run Subroutine 989. The code 'rotA' (Rotary Parlour) will appear in the cow number window and the current status - 'YES' or 'no' (enabled/disabled) will appear in the Yield/Flags window.*



- *Toggle between the two states by using the Change key.*

- *Press enter to store the selection.*



Stand-By Feeding

In the event of a problem with the MicroMarque3S, the Digital Feeder Control provides a stand-by feeding option.

- To disable the automatic feeding using the MicroMarque3S and Auto-ID the switch provided on the base of the Digital Control should be flicked right
- IMPORTANT: This will only be the case if the system is wired according to how is stated in this manual.
- A ration can be set using the rotary knob on the Digital Feeder Control and after each use the control resets to the ration set so that the same ration is fed to every stall.
- The control is automatically triggered to dispense feed by the optical switch and the Rotary Parlour Table Interface.