ATL MICRO CONTROL Mk 2

OPERATING & INSTALLATION INSTRUCTIONS

Serial No: MC 897

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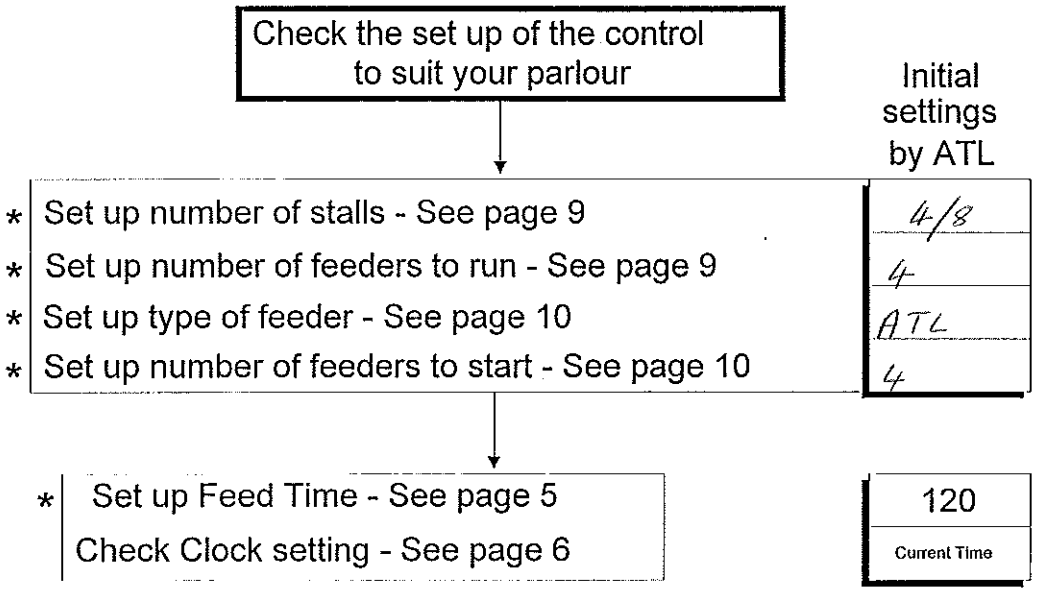
Agricultural ATL Technology

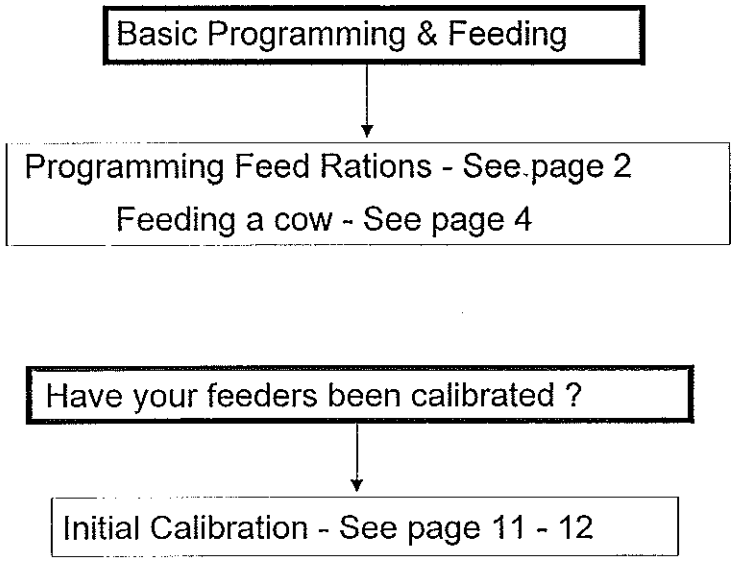
ATL Micro Control

General Introduction & Setting up Procedure

All instructions & notes should be read thoroughly and understood before commencing operation. However, the following is a summary of procedures that must be undertaken prior to any use of the Micro Control



* NOTE: When running these sub routines - press RESET to leave the value as it is or type in new value and press ENTER



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Operating Instructions

INTRODUCTION

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All instructions and notes should be read thoroughly and understood before commencing operation.

Ensure that the 'Setting Up' procedure as described in the Installation Instructions (and repeated in these instructions) has been carried out.

Care should be taken in the Parlour with the use of water hoses and pressure washers. The Controllers, Interface Box and Power Supply Unit, whilst giving a high degree of protection, are not designed to have water sprayed over them. NOTE the Control Console unit must be kept completely dry at all times. WARNING Plastic enclosures and switch covers can be severely damaged by Petrol and some petroleum products.

Important Note - if any rubber switch cover or if the keypad overlay becomes split, cut or damaged, it must be replaced immediately. Any ingress of water can seriously damage the switch and the components within the box. No warranty claim can be accepted under these conditions.

Care must be taken with any surplus lengths of the special multicore cable linking either the Console or the Parlour Control Unit (or Compact). This cable MUST NOT BE FOLDED but must be loosely coiled (never less than 6in. dia.) WITHOUT TWISTING - otherwise the inner cables will be damaged. The multicore cable must never run alongside other cables, mains or otherwise. Make crossings at as near to 90 degrees as possible. The ATL Micro Control System must be connected to a mains supply with only a light load and a good earth connection. i.e. not a line which already has a motor or heavy water heater load. If there is any doubt about the type of earth on the farm see the note at the end of these instructions on electrical interference.

IF IN ANY DOUBT - ASK

SELECTING MICRO CONTROL or STAND-BY FEEDING SYSTEM

The switch to select MICRO or MANUAL feeding is on the right hand side of the box.

The first position on the switch is 'OFF'. In this position, both Micro and Manual feeding are in-operable.

The next position is labelled 'CONTROL'. The switch should be in this position to use the Micro Control for standard operation. As the switch is moved to this position, you will see the display on the front of the box illuminate. In all other positions the display will be off.

The other positions on this switch control the operation of the stand-by system, and will be explained later.

On all low voltage systems there is a TWO WAY TOGGLE switch on the left hand side of the box, which controls the supply to the feeders.

THIS SWITCH SHOULD BE IN THE **'OFF'** POSITION BETWEEN MILKINGS. THIS WILL PREVENT ACCIDENTAL OPERATION OF THE FEEDERS.

On high voltage and mains powered feeders, switch off the supply to the feeders in between milkings, leaving the control system 'ON'.

If the console is to be detached from the multicore cable at any time, the mains supply to the console must be switched OFF, and the parlour control should be switched to the 'OFF' position, BEFORE disconnecting. Remember, this is a data link, the act of disconnection will result in spurious data being entered into the control with unpredictable results, if the system is not turned off before hand.

If the mains supply to the farm is disrupted, it is advisable to switch the unit OFF. When the supply is re-connected, there is frequently a great deal of electrical interference created due to the large number of separate items of equipment being switched on at the same time.

SELECTION OF MODE OF OPERATION (Control, Program & Shift)

The ATL MICRO Control has three 'Modes' each entered by the key switch on the front of the Console Unit or the side of the Compact unit:

1. CONTROL MODE - key to the Left position.
2. PROGRAM MODE - key to the Centre position.
3. SHIFT MODE - key to the Right position.

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The functions are generally as follows:

	CONSOLE	PARLOUR
CONTROL MODE		
Feeding	*	*
Changes to indicators	*	*
Recall facility	*	*
Review of cow entries	*	*
Batch feeding	*	*
Side change & stall step	*	*
	CONSOLE	PARLOUR
PROGRAM MODE		
Feeding	*	*
Changes to indicators	*	*
Review of cow entries	*	*
Programming feed rations	*	*
Milk recording	*	*
No. cows fed, daily milk & daily feed	*	
Feed Time Calibration	*	
SHIFT MODE		
Printer & Micro link	*	
Clears cow memories, feed & milk totals	*	
Cumulative feed total	*	
Individual feed & milk records	*	
Displays time & date	*	

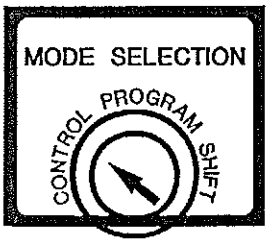
All the above functions are available in the single box 'Compact' unit except for the Printer and Micro links

NOTE - In the Shift Mode, all functions (except the top row of keys which are limited to Control functions only) are available on the Parlour Control Unit but without the full display. Caution is required since the 'clear' functions will operate if the key is left in the Shift Mode position.

Where more than one parlour control is installed, all controls have the same functions.

Within these instructions, the following diagram will be used throughout, although there are three different displays that are used according to the type of control that you have. This display is typical of the Compact version. If you have an office Console, then the fourth window of the display will show the cumulative feed or milk records for each cow as shown above in the fifth window. Only the Main Parlour Control displays the fifth window.

The Mode Selection Switch is the key operated switch situated on the front of the Console Unit or on the side of the Compact Control Unit. Note: the key can only be removed from the 'Control' position. This means that only feeding of the pre-programmed rations can be undertaken or the introduction or removal of Warning Indicators against any cow.



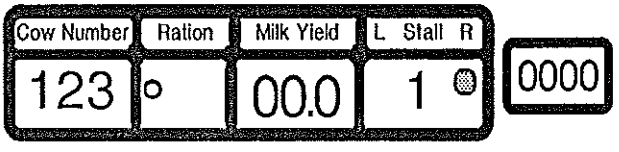
OPERATION OF KEYBOARD

PROGRAMMING FEED RATIONS - Program Mode key

Any Cow number can be entered between 1 and 999. The Cow numbers entered will be displayed (both on the unit and the print out) in numerical order.

Remember that the Feed Ration entered is a unit of feed. The number of units will be dispensed each time the cow is fed i.e. morning & afternoon.

1. ENTER COW NUMBER Up to 3 digits, feed ration & daily milk yield will be displayed if entered previously.
2. PRESS ENTER Feed ration indicator lamp lights giving access to feed ration memory.



3. ENTER RATION 1 TO 29.
4. PRESS ENTER Displays Cow No. & NEW ration with milk yield & indicators (if entered before)and indicator lamp goes out.

5. ENTER INDICATORS By pressing digits 1 to 4 which correspond to the indicator sequence & toggle ON-OFF as switch is depressed & 6 & 7 for 'tSt' & 'buL' Note 'DRY' cancels current milk yield.
6. PRESS ENTER Clears display and makes ready for next entry.

If no indicators are required on a new cow entry, press enter twice after entering feed ration.

Note. It may be found helpful, before introducing un-programmed cows into the Parlour, to reserve certain unused numbers for some feed rations i.e. number 901 for 1 unit of feed and 902 for 2 units of feed etc. The use of these 'cow' numbers allows easy and quick feeding to any new cow or as a 'top up' to any programmed cows. The feed fed will of course, be recorded against that special 'cow' number.

General Note - It is good practice to check the Feed Time' and (Real Time) 'Clock' settings every time the herds rations are altered. (Keep a note of the last Feed Time number). Under certain rare conditions, excessive mains interference can affect these. Adjust as necessary - see later pages.

TO CHANGE RATION OR INDICATORS (Program mode)

7. ENTER COW NUMBER Cow No., previous ration, milk yield and indicators will be displayed.
8. PRESS ENTER Gives access to feed program. (indicator light shows)
9. ENTER NEW RATION 1 to 29
10. PRESS ENTER Enters new ration and gives access to indicators. (indicator light goes out).
11. ENTER NEW INDICATORS By pressing keys 1 to 4, 6 or 7.
12. PRESS ENTER Enters indicators & clears display.

NOTE: This procedure can be undertaken during feeding. e.g. Enter cow number and press 'Feed' If you then press the 'Enter' key you will now be able to change rations or enter milk yields by pressing Milk Yield key etc.

TO CHANGE INDICATORS (Control Mode)

13. ENTER COW NUMBER Cow No. etc. displayed.
14. PRESS ENTER (once only)
15. ENTER NEW INDICATORS By pressing keys 1 to 4, 6 or 7 Note 'DRY' deletes current milk yield.
16. PRESS ENTER Display will clear (Indicators into memory)

TO ENTER MILK YIELD (Program Mode)

1. CLEAR PREVIOUS DAILY MILK RECORDS - SHIFT MODE - PRESS 9

NOTE - Only clear milk yields if starting new recording, i.e. pm milking - do not clear prior to next - am - (or subsequent milkings. The Daily Milk Yield being pm + am.

2. ENTER COW NUMBER Cow No. etc. displayed.
3. PRESS MILK YIELD Red indicator shows access to milk yield display. This should normally be off. (See note on Shift Functions).
4. ENTER NEW MILK YIELD New yield displayed.

5. PRESS ENTER. If PM milking, milk yield is displayed as entered, if AM milking, the new amount will be added to PM yield giving a daily milk yield total.

Note - Daily Milk yield is added to the total yield per cow at noon automatically. Every time the cow number is entered, only the daily yield will show on the main display.

BATCH FEEDING (Control Mode)

General Note. Any cow fed by batch feeding will not, of course, have the amount fed, added to that cow's total of feed fed, although it will be added to the Total Feed Fed to date.

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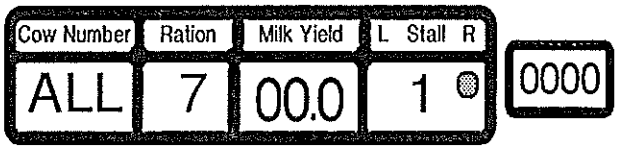
1. PRESS BATCH 'ALL' is displayed in Cow No. display.

2. ENTER RATION TO BE FED 1 to 29



3. PRESS 'FEED' All feeders on the side of the parlour selected will dispense rations accordingly. 'F' will show in Ration Window.

SELECTING SIDE OF PARLOUR TO BE FED (Control Mode)

During the normal feeding operation, the side of the parlour will be changed automatically. However, this can be overridden by pressing 'SIDE'. This causes the side to alternate left to right each time the key is pressed (reverting to stall 1. The indicator lamps at each side of the 'stall' number display, show which side has been selected. Note - 'SIDE' will not change if a feeder is still operating. NOTE - When ever 'Reset' is pressed Stall No. 1 on the Right hand side is automatically selected. This is useful when calibrating.

Three Sided Parlours (Special Program)

The SIDE button causes the stall number to jump to the start of the next side. For example in a system with 6,7, and 5 stalls on respective sides, the first press of SIDE will set the stall count to 7, the next to 14, and the next to 1. This sequence operates from all the controls, however many, in the system.

FEEDING (Control or Program Mode)

HERRINGBONE PARLOURS

1. ENTER COW NUMBER Cow No., Ration etc. will be displayed.
2. PRESS FEED 'F' will show in feed ration display. The next cow number can now be entered. The stall number will have automatically stepped to the next stall.

Only valid cow numbers will be accepted, i.e. cow numbers that have been entered. The display will clear and the stall count will be retained with non valid cow number. After feeding a valid cow number, the stall count will automatically be incremented. Note - this sequence is started with a blank display but after feeding, the cow number is retained until the next cow number is entered. To by-pass a stall in which no cow is to be fed - Press 'STEP'. Feed only one side of the parlour at a time. Do not attempt to feed the other side until the side indicator lamp has changed. This will not occur until all the feeders have finished operating.Does not apply to 3 sided parlours

NOTE: After pressing the 'FEED' key, by pressing the enter key, Rations can be changed or Milk Yields can be entered after pressing Milk Yield key etc. (Program Mode Only)

FEEDING

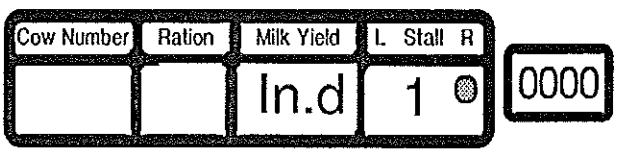
ABREAST PARLOURS

1. ENTER COW NUMBER Cow No., Ration etc. will be displayed.
2. PRESS FEED 'F' will show in Feed Ration Display.
3. ENTER STALL NUMBER
4. PRESS FEED again

RECALL FACILITY (Control Mode)

The Recall Function is used to view only cows that have just been fed but with Warning Indicators against them.

1. PRESS RECALL 'In.d' will show in Milk Yield window.



2. PRESS STEP

Each press of 'STEP' will display the next cow with indicators. If the Cow Window is blank against any stall - then the cow in that stall had no Warning

Indicators against it. Keep pressing STEP to complete the stalls on that side of the parlour. The Control will then reset and change sides ready to recall that side. The recall memory is also reset when the RESET key is pressed.

FEED TIME (Program mode)

The FEED TIME facility allows all Feed Meters (Electric timed run feeders only) to be re-calibrated, AT THE SAME TIME, to accommodate different densities of feed - See Calibration instructions. The FEED TIME is the time number to dispense one unit of feed. (60 to 255). One time unit is about 0.0166 seconds and 120 is about 2 seconds. e.g. 150 = 1/2 kg. with ATL Feed Meters.

1. PRESS FEED TIME 'Fdt' will be displayed in the Cow Number window.

2. PRESS ENTER Previous Feed Time displayed in Cow Number window.
3. ENTER NEW TIME From 60 to 255
4. PRESS ENTER Display clears to '000'.
5. PRESS RESET Enters into memory.

To check entry - Clear display, press "Feed Time", "Enter" and "Reset". Do Not press "Enter" a second time instead of "Reset" since as no new entry was made, zero will be entered.

If the Micro Control is controlling 'Pulse' type feeders this re-calibration method cannot be used. The Feed Time is set so that the pulse length is long enough to start the feeder but not so long that the feeder is re-triggered, nor too short so that a second pulse occurs before the feeder motor (pulsed electric feeders only) has stopped at the first self park position. A note must be made of the Feed Time Number - so that, if for any reason, this number is erased or altered - it can be re-entered by using the above procedure. With older feeding systems the recovery time may need to be increased in order to allow the vacuum piston time to be fully retracted before the next stroke. Increase the FEED TIME number if this is the case.

STEPPING THROUGH THE MEMORY (All Modes)

Press ENTER whilst there is no Cow No. present or after pressing RESET. Press ENTER repeatedly for as long as necessary. At the end of the list the Cow Number window will display 'End', at this point you can use the Micro normally for any other function or by pressing RESET. Cows are listed numerically. Indicators will show except TST & BUL

Functions available whilst stepping through the memory are as follows:

GO TO

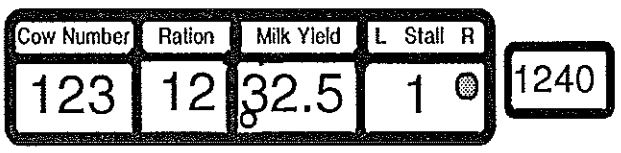
If you wish to list from a particular cow number - type in the number and press ENTER. The display will then update with the information for that cow and the listing be continued by pressing ENTER. If the cow number you entered did not exist, the Micro will display the next valid cow number.

DELETE

To delete a cow from memory, turn to the Shift Mode and press key 3. The Cow Number window will show 'dEL'. Turn back to the previous mode and continue listing with the enter key.

SWITCH DISPLAY

Whilst listing, the Micro can be set to display either cumulative milk yield or cumulative feed in the cumulative window. Turn to Shift Mode and press key 8. A light will illuminate in the milk yield window - this indicates that the cumulative display is milk yield. If this light is not illuminated the cumulative display will be the feed record. You can press key 8 as many times as you wish to toggle between the milk yield and feed cumulative records.



NOTE - DO NOT leave switch set to Shift Mode as accidental deletion can occur by way of the Parlour Control Unit.

CLEARING THE DISPLAY

All operating sequences (except feeding) require to start with a clear display (except small 4 digit display). If an input sequence is to be terminated before completion, press 'Enter' once or twice. The

Cow Number window will blank waiting for the next key entry.

PRINTER OPERATION

The cow listing can be printed out from the Office Console Unit to any standard Centronics type compatible 80 column printer. If you need advice on a suitable cable connector - consult ATL.

Ensure that the printer is set up and is 'On Line'.

SELECT SHIFT MODE

1. PRESS RESET
2. PRESS '0' The Cow Number window will display 'Prn' whilst it is printing and will reset when it is finished. Printer will start and will stop automatically. The keyboard except 'Reset' is disabled during printing.

NOTE - SEE INSTALLATION INSTRUCTIONS for details of the Centronics type printer interface connections. Do not connect any printer to the Micro Control unless all these connections have been checked.

SHIFT FUNCTIONS - The key in the third position.

WARNING - If the key is left in the SHIFT position, all shift functions are available from the Parlour Control Unit. This can cause accidental loss of records and information. To be safe, turn to Control Mode and remove the key.

'0' Activates Printer Disables all keys except 'Reset'.

'1' Sub-routine facility.

'2' Displays 'Cumulative Feed Total' (units of feed). Note - Maximum is 9999 units (except on a print out) so remember it will change to 0000 as soon as 9999 is exceeded. Make a regular note of these totals for the re-ordering of feed.

'3' Clears cow memory (against each cow number displayed)

'5' Sets 24 hour clock. See later page.

'6' Displays time and date.

'7' Clears 'Cumulative Feed Total' Then press '2' to

check.

'8' Switches 4 digit display (in both Program and Control Modes) to either 'Total Feed per cow' or 'Total Yield per cow' press for one or press again for the other. A LED indicator against milk yield entry indicates total milk yield. When milk recording, set this to total feed per cow and the milk yield LED indicator will then show that you have access into the memory for milk recording. Otherwise the indicator will be on all the time and access into the memory for recording will not show.

'9' Clears 'Daily Milk Yields' against all cow Nos. Then check that yields have been cleared.

* Top row 3rd key Displays 'No. of cows fed'. Auto reset at noon to zero.
* Top row 4th key Displays 'Daily Milk Total'. Auto reset at noon to new total.
* Top row 5th key Displays 'Daily Total Feed Fed'. Auto reset at noon to zero.
* - Displays also available in Program Mode.

SETTING PROCEDURE FOR 24 HOUR CLOCK.

1. PRESS RESET
2. SELECT 'SHIFT MODE'
3. PRESS '5' Display all zeros. Note - this stops the clock in preparation for re-setting.
4. SELECT 'CONTROL MODE'
5. ENTER MINUTES From 0 to 59
6. PRESS ENTER Digits transferred to Milk Yield window.
7. ENTER HOURS From 1 to 24 (Remember - 24 hour clock). 8. PRESS ENTER Digits transferred to Milk Yield window.
9. ENTER DAY OF MONTH From 1 to 31
10. PRESS ENTER Digits transferred to Milk Yield window.

11. ENTER MONTH From 1 to 12
12. PRESS ENTER Digits transferred to milk Yield window.
13. ENTER YEAR Two digits only e.g. 93
14. PRESS ENTER Digits transferred to Milk Yield window then display clears and clock starts.
15. SELECT 'SHIFT MODE'

Hours 15 Minutes 20th November

16. PRESS '6' To check that the entry is correct.

NOTE - If '5' is pressed accidentally while the key is in the 'Shift Mode' position, pressing 'Reset' will return the Control to normal Operation without affecting the clock setting.

AUTOMATIC OPERATIONS for both 2 & 3 TIMES A DAY MILKING

(Only operative while power is switched on)

Operations executed at 3.00 AM

Number of Cows Fed is set to zero

Individual Cow Fed Flags are cleared

Days (A.I. due) for each cow is decremented and A.I. flag is set if days are reduced to zero.

Operations executed at 11.00 AM

Daily Milk Total re-calculated

Daily milk yield is added to the cumulative milk yield for each cow.

Number of Cows Fed is set to zero

Daily Milk Yield Total is set to zero

Daily Feed Total is set to zero

Batch Feed Fed is set to Zero

Memory recalled from Milk Meters if set for Automatic Milk Recording

Individual Cow Fed Flags are cleared

Cumulative Milk Yield for each cow is incremented

Cumulative Milk Total is incremented

Operations executed at 8.00 PM

Number of Cows Fed is set to zero.

Individual Cow Fed Flags are cleared.

CONTROL DISABLE

To prevent two control keyboards being used at the same time, a signal is sent to the Micro Control circuit as soon as any key (except RESET or FEED) is pressed which disables all other key boards in the system.

This signal is cancelled at the completion of the following key sequences or by pressing RESET.

a) Entering Cow number & then pressing 'Feed'.

b) Entering Cow number & then pressing 'Milk Yield' & then 'Enter'.

c) Pressing 'Batch' & then pressing 'Enter'.

When a keyboard is disabled, the display is blank except for an LED lamp which is illuminated at the Left hand side of the Cow No. window. All the keys except 'Reset' become inoperable while the LED is illuminated. All key pads can be enabled again by pressing 'Reset' on any keyboard.

SUB ROUTINES

The subroutines can only be accessed in shift mode. They have special functions that are not commonly used in the set-up of the micro, and for communicating with a PC or milk meters etc. Some of these routines are included to allow for future developments.

To access the subroutines turn the key to shift mode and press key 1. The cow number window will display 'Sub'. Turn the key back to program mode, type in the subroutine number and press enter.

If a subroutine number is entered, that does not exist - 'Err' will flash in the Milk Yield window. Turn key back to 'Shift', press 1 and re-enter correct subroutine number in the Program Mode.

2. DISPLAY SOFTWARE VERSION NUMBER.
5. GET DATA FROM P.C. (SERIAL)
6. SEND DATA TO P.C. (SERIAL)
10. LIST COWS NOT FED DURING MILKING
11. LIST COWS WITH MILK YIELD VARIATIONS OF THE PRE SET TOLERANCE.

12 . LIST COWS DUE FOR 'A.I.'

20. DISPLAY NO. OF COWS FED

21. DISPLAY DAILY MILK YIELD TOTAL

22. DISPLAY CUMULATIVE MILK YIELD TOTAL

23. DISPLAY CUMULATIVE FEED TOTAL

24. DISPLAY DAILY FEED TOTAL

25. SHOW FEED FED USING BATCH

50. GET DATA FROM MILK METER

81. ERASE MILK METER MEMORY

100. ADD 'X' UNITS TO ALL DAILY FEED RATIONS

101. DECREASE 'X' UNITS FROM ALL DAILY FEED RATIONS.

102. ENTER CUMULATIVE MILK YIELD FOR A SPECIFIED COW.

103. ENTER CUMULATIVE FEED FOR A SPECIFIED COW.

104. ENTER DAYS BEFORE A.I. DUE

281. CLEAR MEMORY.

581. CLEAR DOUBLE FEED FLAGS FOR THE SAME MILKING

777. DISPLAY SERIAL NUMBER.

980. SET UP HERRINGBONE/ABREAST MODE

981. SET UP STORED FEEDING MODE

982. SET UP NUMBER OF STALLS.

983. SET UP NUMBER OF FEEDERS TO RUN

984. SET UP FEEDER TYPE.

985. SET UP MILK METER RECORDING

986. SET UP PERCENTAGE ERROR FOR MILK YIELDS.

987. SET UP NUMBER OF FEEDERS TO START

988. SET UP SINGLE OR DOUBLE LINE FEEDS FOR PRINTOUT

989. SET UP PAGE LENGTH FOR PRINTOUT

990. PRINTOUT CONFIGURATION OF MICRO.

991. PRINTOUT STATISTICS OF MEMORY

992. ENABLE/DISABLE PROTECTION OF DOUBLE FEED FACILITY

993 ENABLE/DISABLE FEED PROTECTION OF DRY COWS

994 ENABLE/DISABLE 'tSt' INDICATOR

995 ENABLE/DISABLE 'buL' INDICATOR

996. SET UP DEFAULT CUMULATIVE DISPLAY

997. ENABLE/DISABLE AI INDICATOR

998. ENABLE/DISABLE MAS INDICATOR

999. ENABLE/DISABLE VET INDICATOR

DETAILED DESCRIPTION OF SUBROUTINES

2. DISPLAY SOFTWARE VERSION NUMBER - The cow number window will display 'EPr' and the cumulative window will show the version number of the software inside the micro. Press reset to resume using the micro.

5. GET DATA FROM A P.C. - The cow number window will display 'S-I' The micro is now ready to receive data from a P.C. through the serial RS232 port. As each cow is received the milk yield window will display the cows number. At the end of the transfer the micro will display 'End' and then reset.

   Note : The memory of the micro is not cleared before receiving data. This is so new cows can be added to the current list in the micro. If you wish to load in a completely new batch of cows, you should clear the memory first using subroutine 281. A program is available from A.T.L. for the IBM PC for transferring and editing this information.

6. SEND DATA TO A P.C. - The cow number window will display 'S-O' Before running this routine ensure that the PC is ready to receive the information. As each cow is transmitted its number is displayed in the milk yield window. At the end of the transfer 'End' is displayed and the micro will reset. A program is available from A.T.L. for the IBM PC for transferring and editing this information.

10. List cows not fed during milking. 'CnF' is displayed in the Cow Number window. Press 'Enter' to step through the cows not fed until 'End' is displayed. Cows flagged with the 'DRY' indicator will NOT be included.

11. LIST COWS WITH MILK YIELDS OUTSIDE OF TOLERANCE - The cow number window wil display 'dIF' Press enter to browse through all of the cows that have a yield variation outside of the percentage value set in subroutine 986. At the end of the list the cow number window will display 'End'.

12. List cows due for 'A.I.' The Cow number window will display 'duE'. Press ENTER The Cow number, Ration & Daily Milk Yield will be displayed as well as the number of days due for 'A.I.' in the cumulative window. Press ENTER to step through all the cows due. 'End' is displayed at the end of the list.

20. Display number of cows fed during the last milking period. Press 'Enter' & this is displayed in the cumulative window.

21. Displays daily milk yield total. Press 'Enter' & this is displayed in the cumulative window.

22. Displays cumulative milk yield total. Press 'Enter' & this is displayed in the cumulative window.

23. Displays cumulative feed fed total since last reset to zero. This is displayed in the cumulative window.

24. Displays Daily Feed Fed total. This is displayed in the cumulative window.

25. Shows feed fed using the BATCH routine. The cow number window will display 'bFd' and the cumulative window will show the feed fed using Batch.

50. GET DATA FROM THE MILK METER INTERFACE - The cow number wnidow will display 'uPL'. The micro will send a code to the milk meter to tell it to send back the data in its memory. As each cow is received its number is displayed in the milk yield window. For all the cows received, the current milk yield that was originally stored against that cow is moved over to the last milk yield and the current milk yield becomes the new value from th milk meter.

81. Erases Milk Meter Memory. The cow number window will display 'deL' for a short period and then the Micro will RESET. If a Milk Meter Interface is connected then all of its memory will also be erased. (See Automatic Milk Recording Instructions)

100. ADD 'X' UNITS TO ALL DAILY FEED RATIONS. - The cow number window will display 'Add'. The lamp next to the ration window will light up, type in the amount that is to be added to each ration and press enter. The micro will not accept a value greater than 29. The led will go out. The ration window will display the new rations as they are updated and then reset.

Note : Rations will never exceed 29. If a ration for a cow is 20, and you try to add 11, it will become 29 and NOT 31 !

101. DEC 'X' UNITS FROM ALL DAILY FEED RATIONS. - The cow number window will display 'dEC' follow the instructions as for adding a ration, except the value you type in will be deducted from all the rations.

Note : Rations will never go below 1. If a cow has a ration of 3, and you deduct 7, it will become 1 and NOT -4 !

102. ENTER CUMULATIVE MILK YIELD FOR A SPECIFIED COW. - The cow number window will display 'YLd'. Enter the number of the cow that you wish to change and press enter. The cumulative window will clear ready for you to enter the cumulative milk yield, then press enter. The micro will reset.

103. ENTER CUMULATIVE FEED FOR A SPECIFIED COW. - The cow number window will display 'FEd', Follow the instruction as for cumulative milk yield, except enter the cumulative feed for the cow instead.

104. Enter days due for 'A.I.' The cow number window will display 'dAy'. Enter the Cow Number, it will be displayed in the Cow Number window. Press ENTER. The current days due for 'A.I.' will be displayed in the Milk Yield window. Enter the days before 'A.I.' due and press enter. It WILL NOT ACCEPT A NUMBER GREATER THAN 99.

281. CLEAR MEMORY. - The cow number window will display 'CLr' while the micro is clearing the memory, then it will reset. As well as clearing all the cows the following all information is cleared including:

The daily feed total is set to zero.
The daily milk yield is set to zero.
The cumulative feed total is set to zero.
The cows fed is set to zero.
The cumulative Milk yield is set to zero
The batch Feed is set to zero

581. Clears the double feed flags for the same milking. This is not normally used as this function is automatic between different milkings.

777.DISPLAY SERIAL NUMBER. 'Sno' is displayed in the cow number window. This number should be quoted when talking to A.T.L. This number will also be shown on the configuration sheet attached to the inside of the front cover of the Installation & Operating Instructions

ENTERING A VALUE :

The following routines require a value to be entered.

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Press reset to leave the value as it is or type in the new value and press enter.

980. HERRINGBONE/ABREAST MODE. This routine sets up the operating procedure for Herringbone or Abreast parlours. Normally this will be factory set. 'Abr' 'yES' = Abreast mode, 'Abr' 'nO' = Herringbone mode.

981. STORED FEEDING MODE. 'Std' 'nO' = normal feeding. The feeder will start after the FEED button has been pressed. 'Std' 'yES' allows all cows to be entered on one side of the parlour before the feeders start dispensing. Enter cow number and press feed button as normal for all cows ('Std' will show in milk yield window). Press the 'Batch' key twice to activate the feeders. 'F' is displayed in the Ration window and the milk yield window clears.

982. SET UP THE NUMBER OF STALLS. - The cow number window will display 'StL' and the milk yield window will show the current number of stalls. See Entering a value above. (The micro will not accept a value greater than 16). The micro will reset. Note : Whenever the number of stalls is set, the number of feeders to run is automatically set to 4 and so is the number of feeders to start.

983. SET UP THE NUMBER OF FEEDERS TO RUN - The cow number window will display 'Fdr' and the milk yield window will show the current number of feeders to run at the same time.. See : Entering a value. (The micro will not accept a value greater than the number of stalls currently set). **NOTE: For Timed Feeders the normal number to run is 4. If more than 4 are required, a larger Power Supply may be necessary- Consult ATL.**

984. SET UP THE TYPE OF FEEDER - The cow number window will display 'tFd' and the milk yield window will display the current setting. Press any key except Enter to step through the Feeder list. Press Enter to select the Feeder type required - see following chart

TABLE OF FEED TIMES AND CODES

		FEEDTIME			
		60	120	240	
CODE	Pulse/ Time	Duration(secs)			FEEDER
AtL	Time	0.8	1.8	3.7	ATL
rAt	1	0.4	0.8	1.8	R/Master
HOS	Time	0.4	0.8	1.8	Hosler
AL2	2	0.8	1.8	3.7	Alfa 2 Pulse
SIA	Time	0.8	1.8	3.7	Simplex Alum
SP1	Time	5.5	11.0	22.2	Westfalia EZ
SP2	4	0.8	1.8	3.7	Westfalia M
SP3	1	0.8	1.8	3.7	Westfalia EP
Aug	Time	5.5	11.0	22.0	Auger Master
Orb	1	0.4	0.8	1.8	Orby
Sur	Time	5.5	11.0	22.0	Surge
gAS	Time	2.5	5.0	10.0	Gascoigne
SI2	Time	2.5	5.0	10.0	Simplex Galv
Eb	Time	5.5	11.0	22.0	EB
SSt	4	0.8	1.8	3.7	Somerset
AL4	4	0.8	1.8	3.7	Alfa 4 pulse

985. Set up for automatic milk recording from milk meters. Cow number window displays 'I-F' & milk yield window displays 'nO' or 'yES'. Press any number key to toggle between yes or no and press ENTER to accept. If you have a milk meter it should be set to yes, if you do not, it should be set to no. This allows information to be updated at 12.oo noon automatically if set to yes.

986. SET UP THE PERCENTAGE ERROR FOR MILK YIELDS - The cow number window will display 'PCt' and the milk yield window will display the current setting. See : Entering a value.

EXAMPLE : If this value is set to 10, the micro will only display the cows with a milk yield variation of greater than 10%, when running subroutine 11.

987. Set up number of feeders to start. Cow number window displays 'FdS' - as for 983 except the value is used to set how many feeders can start up at once. It is automatically set to the same number of feeders to run when the number of feeders to run is set up.

988. Set up Single or Double line feeds for the printout. Cow number window displays 'dLF'. Press any number key to toggle between 'nO' & 'yES' in the milk yield window. If yes, an extra line feed is added between each cow record so that notes can be made on the printout. If no, each record is printed immediately below the other.

989. Set up page length for printer. Cow number window displays 'PgL'. The milk yield window displays the current setting. Enter new value and press ENTER. This is in lines per page. Default value is 64. After 64 lines are printed, 5 extra lines will be printed to skip over perforations

990. PRINTOUT CONFIGURATION OF MICRO. The cow number window will display 'PCn'. The

configuration of the micro,i.e. Number of stalls, Number of feeders, Number of pulses etc..will be printed out to the printer (if attached).

991. Printout statistics of memory. Cow number window displays 'StA'. If printer is attached and on line, it will print out only the statistics for all cows in the memory. The statistics are also printed out at the end of the main printout.

992. Enable / Disable protection of Double Feed facility. 'PdF' is displayed in the Cow Number window. yES or nO is displayed in the Milk Yield window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed a cow twice.

If 'PdF' is enabled, the Milk Yield window will flash 'FEd' if that cow has already been fed during that milking. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

993 Enable / Disable protection of Dry Cow Feed facility. 'CdY' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed Dry Cow.

If 'CdY' is enabled, the Milk Yield window will flash 'FEd' if that cow is flagged as DRY. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

994 Enable / Disable protection of Test Indicator 'tSt' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed Dry Cow.

If 'tSt' is enabled, the Milk Yield window will flash 'tSt' if that cow is flagged as Test. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

995 Enable / Disable protection of Bull Indicator. 'buL' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed Dry Cow.

If 'buL' is enabled, the Milk Yield window will flash 'buL' if that cow is flagged as Bull. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

996. DEFAULT CUMULATIVE DISPLAY OF FEED OR MILK. To display cumulative feed for each cow when it is entered on the display, 'dFd' should show - 'yES', for cumulative milk: 'dFd' = 'nO'.

997. Enable / Disable protection of AI Indicator 'PAI' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed that cow.

If 'PAI' is enabled, the Milk Yield window will flash 'AI' if that cow is flagged as AI. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

998. Enable / Disable protection of MAS Indicator 'PAS' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed that cow.

If 'PAS' is enabled, the Milk Yield window will flash 'nAS' if that cow is flagged as MAS. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

999. Enable / Disable protection of VET Indicator 'PEt' is displayed in the Cow Number Window. yES or nO is displayed in the Milk Yield Window. Press any number key to toggle - Yes or No. Press Enter to accept. If YES, the control will warn you if you try to feed that cow.

If 'PEt' is enabled, the Milk Yield window will flash 'uET' if that cow is flagged as VET. Press 'Feed' again to feed that cow regardless, or press any other key (except 'Reset') to enter a new cow number.

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CALIBRATION OF FEEDERS for ATL & Electric Feeders only.

INITIAL CALIBRATION (Electric Timed Feeders only)

The object of the initial calibration is to equalise the Feed Meters so that they all feed the same as each other, as well as dispensing the required amount of feed. Once this has been carried out, for subsequent re-calibrations, it should only be necessary to simply alter the 'Feed Time' number from the Micro Control, to accommodate different densities of feed, the Stand-by time only needs to be adjusted if the Micro Control Feed Time has been altered significantly.

Two separate calibration operations are required, the first (a), is for the Stand-by controls and the second (b), to adjust the Feed Time in the Micro Control system.

(a) STAND-BY CONTROL (Electric Timed Feeders only)

Set the calibration slide on the number 1 feeder on the right hand side, to the halfway position. Set the rotary stand-by switch on the right hand side of the control box to 'Ind. Stall' in the 'Ration' section. Set the 'Stall' selection dial to number '1' Feeder on the right hand side of the parlour. Switch the Left/Right switch to Right, and press the Feed button 4 times to feed 4 units of 0.5kg (or 1lb). Weigh the amount dispensed. If it is more or less the 2kg (or 4lb), adjust the course or fine 'Density' control, (depending on how far the amount weighed is out). The two Density adjustments can be found on the right hand side of the relay board in the back of the box of the Compact or Parlour Control. Repeat this operation as necessary to obtain an accurate result.

All of the remaining Feeders should now be calibrated by using each feeders calibration slide, so that they all feed the same amount.

DO NOT ALTER THE TIME SETTING DURING CALIBRATION OF THE REMAINING FEEDERS UNLESS YOU INTEND TO START AGAIN WITH FEEDER NUMBER 1.

Carry out several weighings to ensure repeatability since the variation in nut length can cause slight variations. By repeating weighings, an average can be arrived at. The amounts dispensed should always be at least within plus or minus 5% of the desired amount. With care it should be possible to obtain results within plus or minus 2%

(b) MICRO CONTROL CALIBRATION (Electric Timed Feeders only)

Since all Feed Meters should now dispense the same amount of feed as each other for the same feed settings, the Feed Time on the Micro Control unit can now be set up. Set the Feed Time to 120 or a number which gives the desired unit of feed, see page 9 for instructions. Dispense from one of the Feed Meters 4 units of feed (Use Cow number 004, if pre-programmed) at stall No. 1 on the right hand side (this stall is automatically selected with RESET). Feed 4 units of feed, using a polythene bag or suitable container to catch the cake. Weigh the feed dispensed. Each unit of feed can be varied to suit individual requirements but will generally be either 1/2 kg. or 1 lb. For the purpose of this example we will assume it to be 1/2 kg.

Weigh the amount of feed dispensed from the Feed Meter. If less than the 2 kg. (4 units x 1/2 kg.) then increase the Feed Time amount on the Micro Control. If more than the required amount - decrease the Feed Time (Note - if the error is say 10% then the Feed Time number should be adjusted by about 10%). Carry out several weighings to find the average to ensure repeatability.

SUBSEQUENT CALIBRATIONS (Electric Timed Feeders only)

After initial setting up of the Feed Meters - slide adjustment should no longer be necessary since all the feed Meters should deliver the same amount of feed for any given time.

The density of feed may well vary from delivery to delivery - even with the same nut size. To make maximum economic use of expensive concentrates, calibration should be checked after each delivery of feed.

All that is necessary is to go to any one Feed Meter - dispense 4 units of feed and weigh the feed dispensed. If the feed is denser and more than 2 kg. is dispensed - then the Feed Time on the Micro Control should be reduced accordingly (if the error is about 10% then adjust the Feed Time number by about 10%). Re-check the new setting by weighing a further sample from the same Feed Meter to see if any further adjustment is necessary. As mentioned above, the more care and checking for repeatability - the greater the accuracy - the more cost savings.

Remember - you only have to check one Feed Meter since the Feed Time adjustment affects the auger

running time of all the Feed Meters.

Note - If the Feed Time on the Micro is altered during subsequent re-calibrations, the Stand-by timing will have an error. If a note is kept of the original Micro Feed Time number then the amount of error (+ or -) will give a guide to the adjustment necessary. If it exceeds 10% for example, then it is advisable to re-calibrate the Stand-by using the 'Feed Time' control in the Parlour Control (or Compact) unit. NOTE: THE ABOVE CALIBRATION PROCEDURES ONLY APPLY TO ATL FEEDERS AND CERTAIN OTHER ELECTRIC TIMED FEEDERS.

Pulsed Type Feeders

The only effect of the Feed Time facility for Pulsed type Feeders is to set the on / off period between pulses.

STAND-BY FEEDING

The operation of the stand-by is dependant on the position of the rotary switch on the right hand side of the Compact or Parlour Control. In the first two positions, 'OFF' and 'CONTROL', the stand-by will not operate. The next three positions allow the feeding of rations, and the last three positions allow manual feeding only.

With the switch set to 'Ind. Stall' in the ration section, select the number of the stall you wish to feed on the 'Stall Selection' underneath. Now select which side of the parlour is to be fed with the 'Side' switch, and press the 'Feed' switch once. This will feed one ration to the selected stall. If you wish to feed more, press the 'Feed' switch twice for 2 rations, 3 times for 3 rations etc.

Note : You do not have to wait for the first ration to finish feeding before you press the 'Feed' switch again. The control will remember how many times you have pressed it and feed the corresponding number of rations.

With the Stand-by switch set to '1-6' or '7-12' in the ration section, you can feed a ration to all feeders 1-6 or 7-12 at the same time. In this case, it does not matter where the 'Stall Selection' switch is. As with 'Ind. Stall' just select the side you wish to feed and press the 'Feed' switch for the number of rations to be fed.

Manual feeding operates in the same way as Ration feeding except that the 'Feed' switch is not used. In this mode the selected feeders will continue to feed as long the 'Side' switch is in the left or right position. to stop the feeders running switch the 'Side' switch to it's central position.

General Note : Where cows are normally fed different rations, it will be found quicker to feed, if a basic ration is fed to all cows first, and the individual cows can be 'topped up' as required.

MAINS SUPPLY FAILURE

NOTE: A Generator, even a large unit, cannot respond quickly to increases in load. There is therefore, the possibility that the control will react to switching on fairly light loads. This is quite normal. If this presents a problem, the load on the generator is probably too high.

Terminals are provided (if requested) for 12 volt feeder systems, on the base of the Power Supply Unit for connecting to a stand-by 12 volt battery. Protection is included to prevent the current flowing into the battery in the event of a resumption of the mains supply while the battery is still connected, the power supply simply taking over from the battery.

Note - Only stand-by feeding is possible when a 12 volt battery is connected to the Power Supply Unit.

The Feed Meters may not operate as accurately as normal operation since the voltage to the Feeders from the battery is likely to be different to that of the Power Supply.

USE OF A GENERATOR

The Micro Control system should operate normally provided that:

1. The voltage is stable i.e. the governor is operating correctly.
2. The unit is not one of the small portable type - these generally have a very 'noisy' output and frequently have poor voltage stability.

Note - If a PTO generator is used at any time - ensure that the PTO shaft is running at the correct speed so that only 240 volts is used for the supply. Ensure that the correct voltage is reached BEFORE connecting the Micro.

The Cow records in the memory will not be destroyed in the event of a mains failure as there is a battery back-up within the unit which is automatically re-charging itself when the power is normally connected. This battery should be replaced every 5 to 6 years - consult your Dealer.

NOTE - Cumulative Milk Yields and Number of Cows Fed:

The memory will not be destroyed in the event of a mains supply failure or disconnection. Power must be supplied to the Console or Compact control for a short period from just before midnight until a few minutes after, and again from just before 12 noon until a few minutes afterwards, for the cumulative milk yield to be updated on that day. The Number of cows fed is also reset to zero at these times.

SETTING UP PROCEDURE BEFORE COMMENCING PROGRAMMING OR OPERATION

This section is a repeat of the setting up procedure detailed in the Installation Instructions.

Before commencing programming of the herd rations the following procedure must be followed:

1. Clear all memories by following the procedure
2. Set the number of stalls & the number of Feeders
3. Set the time and date
4. Set the Feed Time & check its entry

This procedure will ensure that the memories are cleared and that the Micro is ready for programming and operation. The Micro Control system will not operate correctly if any of these items are not carried out.

FEEDERS WHICH CAN BE CONTROLLED BY THE ATL MICRO CONTROL

The ATL MICRO CONTROL is now being used to control many types of feeder including the following:

VACUUM OPERATED FEEDERS

Fullwood Rationmaster- 1 or 2 pulses per lb or 1/2 Kg

Alfa Laval - 2 or 4 pulses per lb or 1/2 Kg

Orby - 1 pulse per lb or 1/2 Kg

Somerset - 4 pulses per lb or 1/2 Kg

Westfalia Separator EP - 1 pulse per 700gm (W.S. solenoids are 24v dc)

With a pulsed output system the duration of the 'ON' period is the same as the 'OFF' period. On some types of feeder the period may need to be extended to allow for a slower return of the piston in the air cylinder. The pulse length is set by means of the FEED TIME as with motor driven feeders. The length of the 'ON' period is normally about 1.25 to 1.5 seconds.

Note: all the above require solenoid valves to control the vacuum supply by means of an electrical signal. These may already be present in the system but it is prudent to check before carrying out the installation. Solenoid valves can be recommended by ATL if they are required.

DC MOTOR DRIVEN ELECTRIC FEEDERS

APPROX. TIME per lb or 1/2 Kg

ATL 14v dc 2.2 secs

Gascoigne 14v dc 5.0 secs

Hosier 14v dc 1.5 secs

Simplex 14v dc 2.0 secs

Westfalia Separator 'EZ' 24v dc 12.0 secs

Westfalia Separator 'M'* 24v dc 12.0 secs

*(4 pulses, approx. 1.0 secs ON and OFF)

Note: Westfalia "M" type must be started with a NEGATIVE DC pulse, it must be connected with both a common POSITIVE & a common NEGATIVE to the feeder motors.

NOTE. The outputs of the ATL MICRO CONTROL system can be connected with either a common positive or a common negative.

HIGH VOLTAGE MOTOR DRIVEN ELECTRIC FEEDERS

APPROX. TIME PER 1/2Kg

Surge 110v ac 12 secs

Vaccar 50v ac or 110v ac 22 secs

EB 240v ac 10 secs

Note: High voltage feeders require a special relay PCB, please consult ATL if this type of feeder is to be used.

HIGH VOLTAGE SYSTEMS

A special shielded Relay Interface unit is provided for High Voltage Systems.

Generally the connections are similar to those for a low volt D.C. supply, the switched supply to each feeder equating with the positive switched supply, and the common side of the A.C. supply equating with the common negative.

CAUTION

1. DO NOT FIT DIODES TO HIGH VOLTAGE A.C. MOTORS!
2. THE HIGH VOLTAGE SIDE MUST NEVER BE LINKED TO THE LOW VOLT DC supply.

There is no positive or negative connections in an A.C. supply. One side of the A.C. supply must be switched (equating to positive in the low volt D.C. system), while the other must be connected to all the motors in a common link (equating with the negative in the D.C. system). Extreme caution must be exercised in the connections to the feeders since the wires are all carrying high voltages. The wires must always be installed in such a manner that the stock cannot interfere with them.....***REMEMBER HIGH VOLTAGES CAN KILL.***

Where high voltage feeders are positioned near to stock it is a wise precaution to provide an isolated supply such as those used with contractors plant and electric shavers: NOT AN AUTO TRANSFORMER.

AUTO TRANSFORMERS (50v and 100v systems)

Auto transformers should NOT be used since these have a single primary winding connected across the mains supply. This winding then has a centre tapping. The feeder motors are connected between the mains neutral and the centre tapping. In the event of a fault occurring which disconnects the neutral mains supply the whole of the wiring circuit becomes 'live' at 240v relative to earth. Please consult ATL

If there is any doubt regarding the type of transformer for a high voltage system. ATL can provide a 110v AC isolating transformer if required.

FAULT FINDING

Since the introduction of the ATL MICRO CONTROL, the unit has proved to be extremely reliable, no pattern of faults has emerged. Most of the faults reported have been due to faulty connections due to corrosion, which is caused by humidity and the vapour given off by some of the common chemicals used in the parlour. Many of these faults have been of an intermittent nature which can be extremely difficult to identify being an annoyance rather than a major problem. The remedy is often simply to re-make all the connections; do not just re-tighten screws.

In stating this it must not always be taken as criticism of the workmanship of the installation. When wires are clamped in screw connectors there is a possibility that the wires pack in a pattern which can subsequently be rearranged by vibrations and the physical movement encountered during the normal use of the parlour. This may not loosen the connection markedly but it will allow the formation of an oxide layer in the relatively harsh atmosphere of the milking parlour, invisible to the eye, but which is a good insulator. The result is a faulty connection which may or may not be permanent.

Intermittent faults can also be due to some form of electrical interference. If reconnection does not solve the problem the cause may be outside the control system.

IDENTIFICATION OF FAULTS IN THE PRINTED CIRCUIT BOARDS

Identification of the position of a circuit board fault is frequently a fairly easy matter, provided that the basic operation of the system is understood. Tests and inspection during manufacture eliminate virtually all this type of fault but unfortunately some do only reveal themselves after some period of use. If a system is working correctly after a period of about 3 weeks it is generally safe to assume that all is well and it should continue indefinitely.

The ATL Micro System consists of several PCB's linked by means of plug in connectors.

Main Micro PCB

The main PCB contains the microprocessor, its control program on an EPROM (Electrically Programmable Read Only Memory which holds the operating program) and the battery backed memory which holds the information entered from the keyboard on the cows, together with a number of other IC's (Integrated Circuits) which are necessary for the unit to work.

Keyboard and Display PCB's (Compact and Console Units)

Information is entered either by way of the keyboard and display PCB which is connected directly to the Micro PCB via a ribbon cable (Compact and Console Units), and also, in the case of the Console unit, by way of the Multicore cable link from the Parlour Control. All keyboard information is carried by 6 wires plus a positive and negative 5 volt supply.

Parlour Control Units

A similar keyboard and display PCB is used in these units, (which can be connected to the Micro PCB for testing). This is linked to the Main Micro PCB by way

of a Multicore cable to the left hand edge of the PCB. Opto-isolators situated down the left hand side of the Micro PCB enable the electrical supply for the Micro PCB in to be isolated from the electrical supply to the other PCB's in the system.

Output Signals

Output signals from the Micro PCB are transmitted by way of the opto-isolator IC's and decoded either in the display PCB for the LED displays, or in the relay PCB to control the relays for the feeders. All the output signals are carried by 5 wires plus the positive and negative 5 volt supply from the Micro PCB. (in both Compact and Console units).

Multicore Cable Connection Faults

Connections between PCB's are generally reliable but vibration over long periods of time can sometimes result in faults occurring.

Consistently wrong digits generally means a fault on a data input connections.

'Rubbish' in one section of the display indicates a fault with an 'enable' connection (one of three).

Feeder relays not operating could indicate a fault in the feeder 'enable' circuit, (only if the remainder of the displays are working correctly).

If no outputs are working in the parlour, but the Console Unit is working correctly, the fault is probably in the 20 way Multicore cable and may be in either the 'Clock' or 'Data' circuits, or the positive or negative supply circuits.

'Flashing ' of the display, or the Left and Right hand side selecting relays 'clicking', can be caused by one of two faults.

a. A fault in one of the circuits linking the display or relay PCB to the Micro PCB.

b. Mains supply voltage fluctuations. Fluctuations in the order of 50 or 60 volts have been recorded. Voltages below about 190 will cause the control system to switch off. When the voltage rises again the control will be reset. If the left hand side was being fed at the time, the result of the reset is to set the stall No. to 1 on the right hand side i.e. it appears to have changed over.

Random intermittent faults with no real pattern can be caused either by the presence of condensation (moisture) on the circuit boards, (or the result of moisture), or by electrical interference. See notes on both these subjects towards the end of these instructions.

TESTING FOR FAULTS ON POWER SUPPLY

1. If the control aoppears to operate normally but no Feed Meters will operate on the Micro or Stand-by feed systems, check the DC input voltage to the regulator at the large capacitor.

   If no voltage is present across the large capacitor, check the AC output voltage to the transformer (at AC connections to the bridge rectifier). If 18 volts AC is present, the bridge rectifier is faulty and should be replaced. With this fault, feeding is not possible using the mains supply, but a battery can still be used with the stand-by control system. If battery terminals are not fitted please consult ATL (we have ways to make it work!)

   If 18 to 25 volts is present, either the power transistor panel or the voltage regulator circuit is faulty and the PCB assembly should be replaced.

   To continue feeding on Stand-by prior to any remedial work being carried out - move the + DC regulated (reg) output wire to the connection above marked + DC non regulated (non reg). This is on the large terminal block on the right hand side of the Power Supply Unit. The Feed Meters will run faster than the previous setting - thus delivering more feed - select a smaller feed ration accordingly. REMEMBER - to switch off the mains supply before removing box lid. Replace the faulty PCB assembly.

   If no feeders or stand-by feeding controls will operate check to see if the green overload warning light on the base of the Power Supply Unit has gone out. The system includes a thermal cut-out which resets automatically when cooled. Check for the cause - likely overload from jammed feeder motor.

2. If the Micro Control does not operate due to any electronic failure, switch to Stand-by feeding - see Stand-by feeding.

3. If 'Ration' selection on the Stand-by feed system fails to operate, select 'Manual' 1 - 6 or 7 - 12 and all Feeders will run for as long as the Left/Right switch is held 'ON'.

PROBLEMS WITH THE FEEDER CIRCUITS

1. **Control working normally but one or more feeders not feeding:** Check fuses. If not blown check the following

   1. Operation of relay and condition of contacts.

   2. Connections in feeder motor

3. Connections to feeder in control.

4. Condition of cables linking control and feeder.

2. **Control working normally, wiring connections above are in order but one or more feeders still not operating:** Using the stand-by control select each feeder in turn and check the relays. As each relay contact closes there should be an audible 'click'. (it may be necessary to open the interface unit to hear it clearly). If there is no sound, check the Left and Right hand selection relays. There should be a click after the side button is pressed. (there will be a delay relative to the feed time) The relay may not be operating. Check cable links between the PCB's and between the Control and Interface boxes.

3. **Control appears to be working normally but one or more feeders run continuously:** Check relays, points may be stuck together. If this proves the case, they may be burnt, in which case the diode on the motor or solenoid may be damaged. Contacts of relays can be cleaned carefully. Replace the diode on the feeder motor. If the relay closes immediately the Micro control is selected, switch to Stand-by, if the relay is now operating normally, there is a fault in the output circuitry of the Micro Control.

CONDENSATION

Condensation only occurs when warm moist air meets a cold surface. See note on air flow through conduits in "GOOD INSTALLATION PRACTICE", the effect of condensation on the operation of an electronic circuit can vary from an intermittent to a permanent fault. In the early stages there is little possibility of any serious damage to the either the PCB or to the integrated circuits. But condensation can cause corrosion, not the red rust kind usually associated with iron and steel, but an invisible layer of oxide on switch contacts or the cable connectors which link the PCB's. The result may be a minor fault or total failure of the control.

If a fault is suspected to be due to corrosion, then there is a simple and effective remedy. This should however be only carried out if you feel competent to carry out a rather fiddly job. Switch off the control, and move (without disconnecting) all the IC's in their sockets and the cable connections which link the PCB's. If this works it is as well to spray the IC's and connectors with a water repellent oil to prevent a recurrence of the problem, as well as sealing the cable entries as described below in 'GOOD INSTALLATION PRACTICE'.

ELECTRICAL ENVIRONMENT

All Electricity supplies suffer from some degree of electrical or radio frequency interference. Any equipment, whether it be a simple tungsten lamp or a 3kW motor, will produce an effect on the supply when it is switched on or off. Interference is most easily noticed when watching television or listening to the radio. Switching on a light for example will often cause the picture to jump, or a blip on the sound. Electronic control circuits can be equated in this instance with radios and televisions, since they are quite capable of 'picking up' the same interference.

Interference signals can be transmitted in a number of ways. The most obvious being by way of the direct cable link through the power supply. There are however a number of other less obvious but equally effective methods of transmission which must be considered. The most common of these are inductive and capacitive effects between closely positioned cables. Radio signals from for example C.B. sets are another source of interference which can occur from time to time.

Unfortunately many electronic circuits operate using fairly fast 'on'/'off' pulses, i.e. 'digital' signals, as opposed to varying voltages as in radios and televisions. Consequently switching spikes (which only appear as blips on radio or t.v.) are seen as an instruction, i.e. an 'on' or an 'off' signal, and the control responds accordingly, which may result in an entirely different operation from what was required.

In spite of noisy electrical supplies the ATL MICRO CONTROL will work in this somewhat hostile environment. A number of protection devices are included in the circuitry which are designed to prevent normal levels of external interference from affecting the operation of the circuit. There are however a number of other simple precautions that should be taken.

These are listed below and although parlour installations vary it should be possible to incorporate most, which should ensure that the installation will work successfully.

MAINS EARTH AND ELECTRICAL INTERFERENCE

Interference protection devices have been incorporated, both in the Power Supply Unit and in the Micro (Console or Compact unit) but severe interference can cause some malfunction of the Micro routines. Generally no more than pressing Reset will be required to correct the unit. However, it is possible for false data to be entered into the cow memory or

to effect the clock time or Feed Time. It is good practice to regularly check the clock and the Feed Time and adjust as necessary.

All electricity supplies are subject to electrical interference. That is the presence of high voltage spikes on the 240v mains supply which are generally caused by a load being switched on or off. The source of the interference may be on other property which is supplied from the same transformer. Phase to neutral voltage levels also have a significant effect on the nature of the interference that is likely to be encountered.

As mentioned above, The ATL Micro Control is protected from most forms of electrical interference by special devices and circuits. But it must be noted that many protective devices suppress the interference by shorting it to earth.

MAINS EARTH CIRCUITS DO NOT ALWAYS PROVIDE A SUITABLE PATH TO GROUND FOR INTERFERENCE SUPPRESSION.

Typical interference related problems are outlined as follows:

1. Reset occurring without use of the Reset key.
2. Temporary lockout, corrected by resetting (in severe cases switch off and leave for about 15 minutes before trying again).
3. Corruption or loss of data stored in the memory.
4. Difficulty with entry of data and operation of Feeders.

   If problem 1 occurs check the mains voltage, the control system is designed to switch off if the voltage falls below a preset level. Reset is automatic on switch on.

   If problems 2,3, and 4 outlined above occur then. The fitting of a separate RCCB in the supply circuit to the control will often solve the above problems by enabling a separate earth to be used for the Micro System.

IF IN DOUBT CONSULT ATL

DO NOT PANIC....REMEMBER

If ATL Feeders jam or stop - You can clear by using the cut-off slide.

If the electronics fail - You can use the stand-by feed systems.

If all the Feeders stop - You can change the DC outputs in the Power Supply & still feed.

If the electronic stand-by fails - You can select 'Manual 1-6 or 7 -12 and batch feed by using the Left/Right switch.

If the mains supply fails - You can still feed by connecting to a 12 volt battery.

IF IN DOUBT - ASK !

Additional Notes

Additional Ration Feeding when using the ATL Automatic Milk Recording System. When feeding a particular cow whilst automatic milk recording is in progress and you wish to feed an additional ration to any cow so that the milk recording is not interrupted:

At the stall you wish to feed, enter Cow Number '0' and press 'Feed'. The Cow Number window will display 'rAt' and the LED indicator will light in the Feed Ration window. Enter the ration you wish to feed (1 to 29) and press 'Feed'. The Feed Ration window will display 'F' and the current stall will be fed. It will then step to the next stall automatically. The ration fed will not be recorded against any cow number but will be included in the cumulative feed fed total.

Entering a Cow Number not entered in Memory

If you try to feed a cow that does not exist in the memory, 'Err' will flash in the Milk Yield window. Type in the correct cow number or press 'Feed' again.

Double Feeding of a cow.

If a cow number is entered for a second time during a milking, 'FEd' will flash in the Cow Number window. You can now either press the Feed key again to feed against that cow number or enter a new cow number and continue feeding as before.

Dry Cow Feed Protection

If the Dry Cow Feed Protection is enabled (subroutine 993) and you try to feed a cow with the Dry flag against it, 'dry' will flash in the Milk Yield window and the 'Dry' indicator will flash alternately. If you do want to feed that cow, press 'Feed' again and 'F' will appear in the Ration window. If you do not want to feed that cow, re-enter the next cow number.

A T L MICRO CONTROL
Operating Instructions

AUTOMATIC OPERATIONS
for 3 TIMES A DAY MILKING

(Only operative while power is switched on)

Operations Executed at 11.00 AM

Daily Milk Total re-calculated

Daily milk yield is added to the cumulative milk yield for each cow.

Number of Cows Fed is cleared to zero

Daily Milk Yield Total is set to zero

Daily Feed Total is set to zero

Batch Feed Fed is set to zero

Individual Cow Fed Flags are cleared

Cumulative Milk Yield for each cow is incremented

Cumulative Milk Total is incremented

Operations executed at 3.00 AM

Number of Cows Fed is cleared to zero

Individual Cow Fed Flag are cleared

Days (A.I. due) for each cow is decremented and A.I. flag is set if days due are reduced to zero.

Operations executed at 7.00 PM

Number of Cows Fed is set to zero

Individual Cow Fed Flags are cleared

ATL Micro Sub Routine / Function Summary V5.09

SUB ROUTINES

The subroutines can only be accessed in shift mode. They have special functions that are not commonly used in the set-up of the micro, and for communicating with a PC or milk meters etc. Some of these routines are included to allow for future developments.

To access the subroutines turn the key to shift mode and press key 1. The cow number window will display 'Sub'. Turn the key back to program mode, type in the subroutine number and press enter.

If a subroutine number is entered, that does not exist - 'Err' will flash in the Milk Yield window. Turn key back to 'Shift', press 1 and re-enter correct subroutine number in the Program Mode.

2. DISPLAY SOFTWARE VERSION NUMBER.
5. GET DATA FROM P.C. (SERIAL)
6. SEND DATA TO P.C. (SERIAL)
10. LIST COWS NOT FED DURING MILKING
11. LIST COWS WITH MILK YIELD VARIATIONS OF THE PRE SET TOLERANCE.
12. LIST COWS DUE FOR 'A.I.'
20. DISPLAY NO. OF COWS FED
21. DISPLAY DAILY MILK YIELD TOTAL
22. DISPLAY CUMULATIVE MILK YIELD TOTAL
23. DISPLAY CUMULATIVE FEED TOTAL
24. DISPLAY DAILY FEED TOTAL
25. SHOW FEED FED USING BATCH
50. GET DATA FROM MILK METER
81. ERASE MILK METER MEMORY
100. ADD 'X' UNITS TO ALL DAILY FEED RATIONS
101. DECREASE 'X' UNITS FROM ALL DAILY FEED RATIONS.
102. ENTER CUMULATIVE MILK YIELD FOR A SPECIFIED COW.
103. ENTER CUMULATIVE FEED FOR A SPECIFIED COW.
104. ENTER DAYS BEFORE A.I. DUE
281. CLEAR MEMORY.
581. CLEAR DOUBLE FEED FLAGS FOR THE SAME MILKING
777 DISPLAY SERIAL NUMBER
888 FILL MEMORY WITH 999 DUMMY COWS.
980 SET UP HERRINGBONE/ABREAST MODE 'Abr' 'nO' = HERRINGBONE
981 SET UP STORED FEEDING MODE 'Std' 'nO' - NORMAL FEEDING MODE
982 SET UP NUMBER OF STALLS
983. SET UP NUMBER OF FEEDERS TO RUN
984. SET UP FEEDER TYPE.
985. SET UP MILK METER RECORDING
986. SET UP PERCENTAGE ERROR FOR MILK YIELDS.
987. SET UP NUMBER OF FEEDERS TO START
988. SET UP SINGLE OR DOUBLE LINE FEEDS FOR PRINTOUT
989. SET UP PAGE LENGTH FOR PRINTOUT
990. PRINTOUT CONFIGURATION OF MICRO.
991. PRINTOUT STATISTICS OF MEMORY
992. ENABLE/DISABLE PROTECTION OF DOUBLE FEED FACILITY
993 ENABLE/DISABLE FEED PROTECTION OF DRY COWS
994 ENABLE/DISABLE 'tSt' INDICATOR
995 ENABLE/DISABLE 'buL' INDICATOR
996 DEFAULT CUMULATIVE DISPLAY: 'dFd' FEED = 'yES' MILK = 'nO'
997 ENABLE/DISABLE AI 'AI' INDICATOR
998 ENABLE/DISABLE MAS 'nAS' INDICATOR
999 ENABLE/DISABLE VET 'uEt' INDICATOR

Special Functions

These Special Functions are available from the **Control Mode** on the Compact Unit and the Parlour Control Unit (supplied with the Office Console) as indicated below. Press 0 & 1 together and enter the number shown below for the function required, then press 'Enter'.

2. * Display Software version number.
10. List Cows NOT Fed.
11. List Cows with Milk yield variations outside the preset tolerance.
12. List Cows due for A.I.
20. * Display number of Cows Fed
21. * Display Daily Milk Yield Total..
22. * Display cumulative Milk Yield
23. * Display cumulative Feed Total.
24. * Display Daily Feed Total.
25. * Display Batch Fed Feed Total.

* Not available from Extension Parlour Controls.

Indicator Guide

1.	**A.I.**	**2.**	**Vet**
3.	**Mas.**	**4.**	**Dry**
6.	**Test**	**7.**	**Bull**

A T L MICRO CONTROL
Installation Instructions

Issue: MIN 7:01

GENERAL NOTES.

Please refer to notes in the Operating Instructions headed Good Installation Practice.

All instructions and notes in both the Installation & Operating instructions should be read thoroughly and understood before commencing installation or any remedial work.

IF IN DOUBT - ASK.

All electrical wiring should be conduited where necessary and be in accordance with current codes of practice.

Any notes or recommendations in these instructions and notes that are not observed may invalidate any warranty claim.

All conduited wiring connections to any of the control boxes or Power Supply Unit should be waterproofed by using a suitable solvent welding solution and sealants where necessary. All entry points into the Controls should be into the base of the boxes, if entry points on the sides are unavoidable such as cable entries in the sides of the Interface Box, remove rubber bungs and insert a suitable cable gland or conduit connector. The cable & conduit should be looped downwards to shed water before reaching entry point. Entry through top of the box must be avoided at all costs.

POWER SUPPLY UNITS

These units transform the mains supply down to a low voltage for use in the Parlour and provides a DC supply for the Feed Meters and a 14 volt DC supply to power the Micro Control system.

The Power Supply Unit should be positioned in an accessible position on a wall in the Dairy, clear of 'wet' areas, and be positioned so that the length of cable to the Feed Meters is as short as possible. If a long distance is unavoidable, install the Interface box at one end of the Parlour and use heavier cables for the low volt DC supply (see 'Electrical Connections' for cable sizes etc.).

A 13 Amp socket or a 13 Amp fused switch and cable for the mains supply will be required (NOTE - use only a 5 Amp fuse) and should be positioned so that only a short length of cable is required to link the Power Supply Unit. See section on 'Electrical Connections'. The RED lamp on the base of the unit indicates 'Power On' and it is good practice to leave the power on to this unit. The GREEN lamp should also be lit when the power is 'on' but will go out when the thermal overload safety cut-out is in operation.

On the base of the box (if fitted) are two battery terminals for stand-by operation from a 12 volt battery. RED for Positive (+) and Black for negative (-).

With increasing loads being used on many farm supplies, it is becoming increasingly important to provide as much protection from mains borne interference as possible. In order to utilise the protection systems built into the unit and ensure that there is a good earth connection close to the parlour (i.e. in addition to the earth at the transformer which may be some distance from the parlour). An RCCB (Residual Current Circuit Breaker) installed at the supply point to the control will enable a separate earth to be installed if no local earth is present. This should not be linked to the farms' earth circuit.

Note: this acts in a similar manner to a lightening conductor it shorts to ground the high voltage transients which are always present on the mains supply. Your electrician should be consulted regarding the fitting of an RCCB for reasons of safety.

INTERFACE BOX - High Voltage Systems only.

The Interface Box provides the motor drive outputs to the Feed Meters from the control system and includes individual relays and fuses for each Feed Meter and acts as the interface between the Console, Power Supply Unit, Parlour Controls and the Feed Meters. The Interface Box contains top relay PCB:

The Relay PCB contains the (+) & (-) Control Power Supply connections on the top Right Hand Side and the (+) Feeder Power Supply on the central Left Hand Side. The (+) connections direct from the Feeders are connected as marked on the PCB. i.e. Left & Right connections for the first six Feeders on the bottom of the PCB and the remainder on the top of the PCB. (see sketch)

CONSOLE UNIT (if supplied)

The Console Unit is a desk top unit and must be sited away from 'wet' areas in the farm office or house and is designed for the programming, entering and retrieval of all information held in its memory.

The Console has a mains supply (live, neutral and earth) connector via a 3 way plug & socket on the rear of the unit and sockets for a multicore cable which links it to the main control in the parlour via a 25 way 'D' type connector. In addition there is a

printer output port (25 way 'D' connector for - centronics) and an auxiliary port for connection to a personal computer (RS232)

IMPORTANT NOTE - USE ONLY THE SOCKETS ON THE REAR OF THE CONSOLE FOR THEIR MARKED PURPOSES

The Console Unit has a self contained battery back up system which will retain the memory, for well over a week, in the event of a mains supply failure or if the mains is disconnected. The battery automatically re-charges itself when the Console is connected to the mains in the normal way. The battery has a long life but it is recommended that it be replaced at least every 5 to 6 years.

The unit has, as standard, a lockable security key switch which is also used to change the mode of operation - Control, Program or Shift (see Operating Instructions for details). With the key removed, the set mode cannot be changed.

CARE must be taken with any spare lengths of the special Multicore cable - it must not be folded and should be only loosely coiled (never less than 6in. dia.) without twisting - otherwise the inner cables will be damaged. The Multicore cable must never run alongside other cables, mains or otherwise. Make crossings at as near to 90 degrees as possible. DO NOT enclose the multicore cable in 20mm or miniature square conduit. Bends and corners in these types of conduit are too sharp and the cable will be damaged. The Micro must be connected to a mains supply with only a light load & a good earth connection i.e. not a line which has a motor or heavy water heater load.

PARLOUR CONTROL UNIT

The Parlour Control Unit is normally sited at the entry end of the Parlour and secured to a firm flat surface using the fixing lugs provided and is used for operating the Feed Meters, changing the warning indicators and, providing the Console Unit is switched to the Program Mode, entering milk yields.

Up to 5 Parlour Control Units can be linked together and spaced down the length of the Parlour to provide quicker access when, for example, milk recording. Any of the above functions can be carried out on any of the Controls but a 'lock out' system is incorporated so that when one of the units is being used, it temporarily disables the others until a particular entry or operation has finished.

On the right hand side of the main Parlour Control is the manual feed stand-by system incorporating a rotary stall selection switch and a feed selection dial. The switch on the right hand side of the box selects the side - left or right and the Feeder selected is started by pressing the push button switch. The operation is detailed in the 'Operating Instructions'.

It should be noted that although the Control box is well sealed, it is not designed to have pressure washers or water hoses played over it. Care should be taken with the rubber toggle switch seals - If any switch seal or the keypad overlay becomes split, cut or damaged, it must be replaced immediately. Any ingress of water or moisture can cause condensation and can seriously damage the switch and the components within the box. No warranty claims can be accepted under these conditions.

Care must be taken with any spare lengths of the multicore cable - it must not be folded and should only be loosely coiled (never less than 6in. dia.) without twisting, otherwise the inner cables will be damaged.

Never run the cables alongside other electrical cables, mains or otherwise

COMPACT UNIT

Where the desk top Console Unit is not required and no printing or micro link facilities are needed, all programming and retrieval functions can be carried out in one handy unit positioned at the entry end of the Parlour.

Generally all notes above apply to the Compact unit. Please read carefully - particularly to the note regarding water. If a security lock is fitted to the Compact unit - Great Care must be taken to ensure that there is no ingress of moisture or water to the lock.

ELECTRICAL CONNECTIONS

MAINS SUPPLY

To the Power Supply unit, a 13 Amp plug and socket or fused cable outlet with switch must be used. A 5 Amp fuse in the plug or switch must be used. Live, Neutral and Earth connections are labelled in the unit.

To the Console Unit, a 13 amp plug and socket must be used - the plug to have a 2 Amp fuse.

Please refer to notes on Mains Earth Circuits in the Operating Instructions.

GENERAL NOTE

All cables have resistance, even though it is very small - this is related to the cross section area (c.s.a.)

and length. If a cable with a small cross section area carries a relatively large current, there will be a voltage drop along its length (volts = Amps x resistance) and the cable will become warm i.e. it will dissipate energy (watts). Watts = Amps x volts.

If a small cross section area cable is used to supply the Feed Meter motors, they may appear to work normally but during periods of high current demand i.e. when starting or periodically during running, the voltage at the motor will fall with the result that the motor delivers less power and therefore less feed, it is also more likely to stall since full power will only be developed with the correct voltage.

POWER SUPPLY OUTPUTS

Apart from the Mains Supply connections: Live, Neutral and Earth, the Power Supply Outputs are as follows:

Control Supply: Cable size:

a) 14 volt DC (+) To Interface Relay PCB 1.0 sq mm c.s.a.

b) 14 volt DC (-) To Interface Relay PCB 1.0 sq mm c.s.a.

Feeder Supply: Cable size:

c) DC (+) Non. reg. Stand-by for DC failure (to feeders)

d) DC (+) Regulated to the Relay PCB 2.5 sq mm c.s.a. (if over 30 ft - 3.5 sq mm c.s.a.

e) DC (-) To the Relay PCB 2.5 sq mm c.s.a. (if over 30ft - 3.5 sq mm c.s.a

Normally, only four connections are made from the Power Supply Unit i.e. a), b), d),& e) .

The low volt DC supply for the Feeder motors is a regulated DC supply and used to drive the Feed Meter motors, it is not fused at this point but has an overload shut down feature built into the voltage regulator. In the event of a short, the current will be limited and the voltage will drop to a low level. Removal of the short will restore the original voltage. It should be noted that the current, even at a low voltage, can do a great deal of damage to shorted components. CARELESS SCREWDRIVERS - BE WARNED !

In the event of a prolonged overload (see above) the temperature of the power transistor heat sink will rise until a thermal switch will switch off the output. The 'Green' indicator lamp on the base of the Power Supply Unit will go out when this switch is in operation. The output will be restored automatically as the heat sink cools.

The 14 volt DC supply for Parlour Controls is a separate 14 volt 2 Amp DC supply which is used for the parlour controls and relay coils.

RELAY OUTPUTS TO FEEDERS

The DC (+) to each Feeder - 1.5 sq mm c.s.a.

The DC (-) common returns from the Feeders should be a minimum of 2.5 sq mm c.s.a.

5 Amp 20mm quick blow fuses protect the system from short circuits on the outputs.

A diode with a resistor is fitted across the terminals on each Feed Meter motor to protect the supply and switches from the effects of reverse e.m.f. It is essential that the polarity of the connections to the motors are correct (+ to the red wired terminal) - the diode may be damaged if the polarity is reversed (the 5 Amp fuse may blow). It should be noted that if the diode is damaged, the system may still work after re-connecting correctly, apparently without any ill effects, but the reverse e.m.f. from the motor may affect the Micro control system and will reduce the life of the switches and may have an adverse effect on the voltage regulator circuit. The diodes used, are normally stocked at most radio service and electronic shops. The type used is 1N4002 (1 Amp 100v) or similar.

NOTE - If the Micro is being connected to feeder motors or solenoids other than ATL Feeders (which have diodes fitted as standard across the motor terminals) - check to see if diodes are fitted. If not they must be fitted as close to the motor or solenoid as possible with the 'striped' end to the positive (+) connection.

TESTING THE LOW VOLTAGE DC SUPPLY

The following test procedure assumes a standard 240 volts mains supply. A reasonable quality multimeter will be required for these tests with ranges of: DC current up to 8 Amps, DC voltage up to 25 volts and AC voltage up to 25 volts.

POWER SUPPLY UNIT DC OUTPUT - With a 240 volt mains supply, the output voltage should be variable between 12 & 15 volts with at least 2 Feeders running. With a battery supply, the output must be above 11 v.

INTERFACE BOX DC OUTPUT - Generally the

voltage should be the same as that measured at the DC output of the Power Supply Unit.

MULTICORE CABLE

IMPORTANT NOTE

It is important that the Multicore cables between the Console & the Interface Box - high voltage systems only) & the Parlour Control are positioned such that they are not subject to attack by vermin. When it is necessary to run a cable through a loft, for example, the cable should be 'piped' or 'conduited' (ideally 40mm x 40mm trunking but remember this size also offers comfortable nest sites for mice etc. - use end caps and seal well). Remember that the pipe should be large enough to allow the cable connector to pass through. The connector should be taped to avoid damage. NOTE which way the cable connectors are fitted on to the circuit boards before removing so that they can be refitted correctly - Damage will occur otherwise! Cable routes should be such that if accidental damage does occur, the whole cable can be replaced easily.

The Multicore cable must never be folded and only loosely coiled (never less than 6in. dia.) and without twisting otherwise damage will occur to the inner wires with disastrous results. Never run Multicore cables along side other electrical cables, mains or otherwise & make crossings at as near to 90 degrees as possible.

MAINS VOLTAGE FLUCTUATIONS

The ATL Micro Control has been designed to cope with normal mains voltage fluctuations. If a large volt drop is encountered, the micro power supply will cut off the 5v supply to the micro circuit board. When the correct voltage is restored, this 5v supply will be restored and the reset signal displayed. It is possible for voltage transients (i.e. a very short duration reverse voltage pulse) to cause the reset cycle to be initiated with the resultant 'On' signal being displayed. If the reset display occurs during a feeding cycle, the feeders will be stopped before they have completed dispensing the correct ration. Frequent 'reset' cycles for no apparent reason signify excessive external interference and ATL should be consulted. If a continual low voltage is a serious problem, consult your electricity board and advise ATL through your Dealer.

SETTING THE STALL COUNT

For automatic change of Parlour sides and setting the number of Feeders - refer to Sub Routine section in the Operating Instructions.

CLEARING ALL COW MEMORIES

Refer to Sub Routine Section in the Operating Instructions

CALIBRATION

For details of both initial and subsequent calibrations - refer to the 'Operating Instructions'.

IMPORTANT NOTE

SETTING UP BEFORE OPERATION OR COMMENCING PROGRAMMING

Before commencing programming of the herd rations the following procedure must be followed:

1. Clear all memories by following the procedure in the Sub Routine Section of the Operating Instructions. Subroutine 281.
2. Set the type of Feeder - Subroutine 984
3. Set the number of stalls and the number of feeders - as above. Subroutine 982 & 983
4. Set the time and date - See Operating Instructions.
5. Set the Feed Time and check its entry - see Operating Instructions.

This procedure will ensure that the memories are cleared and that the Micro is ready for programming and operation. The Micro Control will not operate correctly if any of these items are not carried out.

IF IN ANY DOUBT - ASK !

A T L MICRO CONTROL
Installation Instructions

GOOD INSTALLATION PRACTICE

1. Always use a good mains supply, preferably one with its own separate fuse, and not one which already has a load such as a heater or motor on it. NEVER double up supplies from a 13A plug. A heavy current switched on another circuit connected to the same socket is likely to cause a substantial volt drop to occur across the spring contacts of the plug socket which are potentially a weak link. Fused cable outlets provide a more satisfactory method for mains connection.
2. Keep the low voltage cables between the power supply and the control as short as possible. The transformer acts as a reasonably good supply 'cleaner', but the low volt cables act as a very good 'aerial', and can undo all the good work of the transformer. Remember cables do not have to be in actual contact for signals to be received.
3. Do not run cables which are connected to the control alongside other cables which are carrying high currents, mains or otherwise
4. Connect the 'common' return from the motors or solenoids directly to the power supply where possible. Remember: this cable will be carrying a heavy current to use as few connections in it as possible. Connect no more than 4 feeders to each 2.5 sq. mm. COMMON return.
5. Diodes MUST be fitted across all DC motor supply connections (band on the diode connected to positive).
6. Always use the correct size of cable. As a general rule the further the distance, the thicker the cable. The positive cable to each motor should be 1.5 sq. mm c.s.a. for lengths of 8 metres or more.
7. Always use the cable entry holes that are provided in the bottom side of the box. Any additional holes must always be positioned in the bottom side of the box. Holes elsewhere will provide a 'chimney action' and cause unnecessary air flows which in turn will lead to condensation and its related problems.

   NEVER MAKE CONDUIT ENTRIES INTO THE TOP OF ANY CONTROL BOX. RESULTANT AIR FLOWS WILL CAUSE CONDENSATION PROBLEMS LATER.
8. Try to avoid fitting the PARLOUR CONTROL or COMPACT UNIT between the ends of conduit which lead to each side of the parlour. Air flow along the conduit from one side of the parlour to the other can occur and result in CONDENSATION appearing on the PCB's. Use a 'T' junction (or two) on to a direct link across the parlour. The cable entry into the control can also be partially sealed using a suitable mastic or sealing compound. It should be noted that a perfect seal is unnecessary since the object is to slow the rate of air flow down, rather than stop it all together, which can have even worse results.
9. Where the ATL MICRO CONTROL is being used to replace an old control, check all existing cables that are going to be retained for 'blackened' ends. The blackening is the result of corrosion and means that the conducting cable is a good deal thinner than may appear. Cut the cable back until 'bright copper' or 'tinning' is visible or replace with new cable.
10. Arrange cables neatly in the control box, avoid excessive lengths and do not coil any wires, such loops make good transmitting aerials for electrical interference.

The above measures have proved to be more than adequate for the control to work with most of the common makes of feeders that are to be found on farm installations.

Please consult ATL if You have any doubts on your installation.

A T L MICRO CONTROL
Printer Connections

PRINTER CONNECTIONS

The printer output connector is of the centronics type, details of the pin connections required for the Micro Control are as follows:

ATL Micro 'D' Connector CENTRONICS pin connections:

13 12 11 10 9 8 7 6 5 4 3 2 1

25 24 23 22 21 20 19 18 17 16 15 14

Micro - Printer link. 25 way cable.

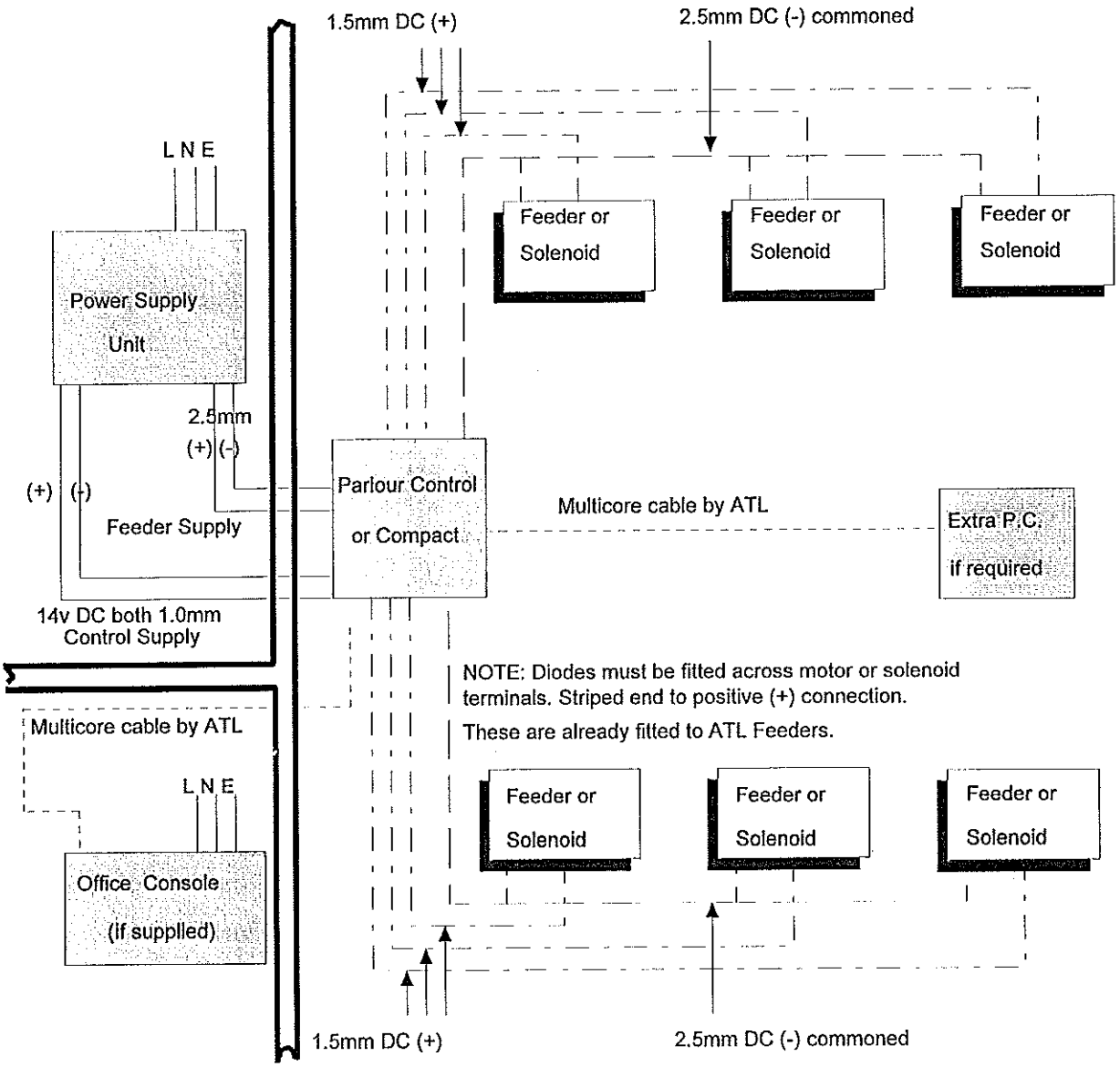
25 way 'D' Connector		36 way Printer Connector	Description
1	---------->	1	STROBE
14	---------->	14	Not used by ATL
2	---------->	2	DATA 1
15	---------->	32	Not used by ATL
3	---------->	3	DATA 2
16	---------->	31	Not used by ATL
4	---------->	4	DATA 3
17	---------->	36	Not used by ATL
5	---------->	5	DATA 4
18	Not used		
6	---------->	6	DATA 5
19	Not used		
7	---------->	7	DATA 6
20	Not used		
8	---------->	8	DATA 7
21	Not used		
9	---------->	9	DATA 8
22	Not used		
10	---------->	10	Not used by ATL
23	Not used		
11	---------->	11	BUSY
24	Not used		
12	---------->	12	PE
25	---------->	16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30.	0 volts.
13	---------->	13	Not used by ATL

IMPORTANT NOTE - The connections above for the 36 way connector follow a generally accepted standard. However always check the printer manual to confirm the description of the relevant pins on the 25 way 'D' connector.

To obtain a full memory print out use an 80 column EPSON Centronics compatible printer.

Schematic Wiring Diagram - ATL Micro Control (Herringbone)

For Abreast installations - wire as for one side of Parlour



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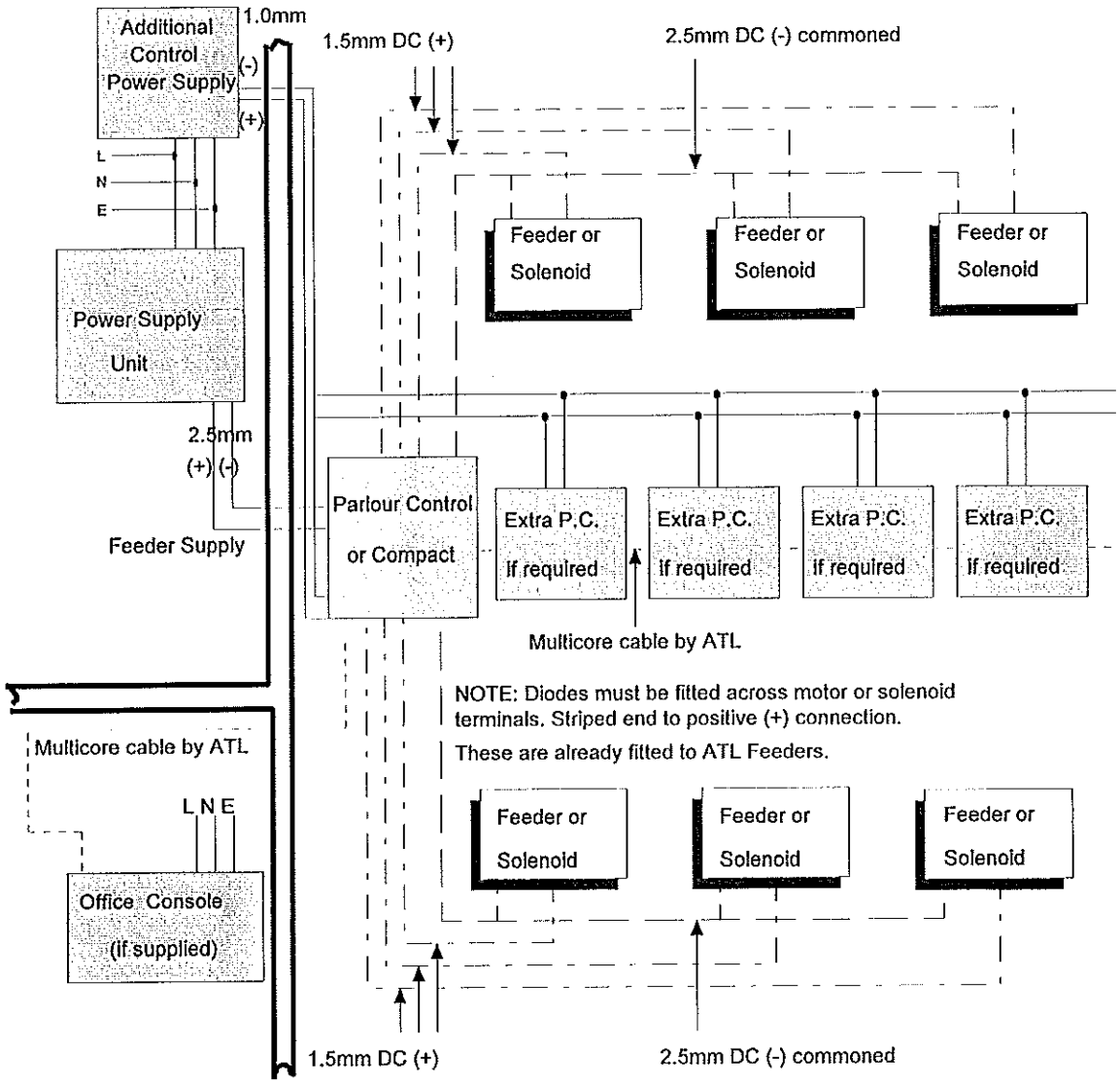
Schematic Wiring Diagram - ATL Micro Control (Herringbone)

For Abreast installations - wire as for one side of Parlour

FOR USE WITH MULTIPLE PARLOUR CONTROL UNITS



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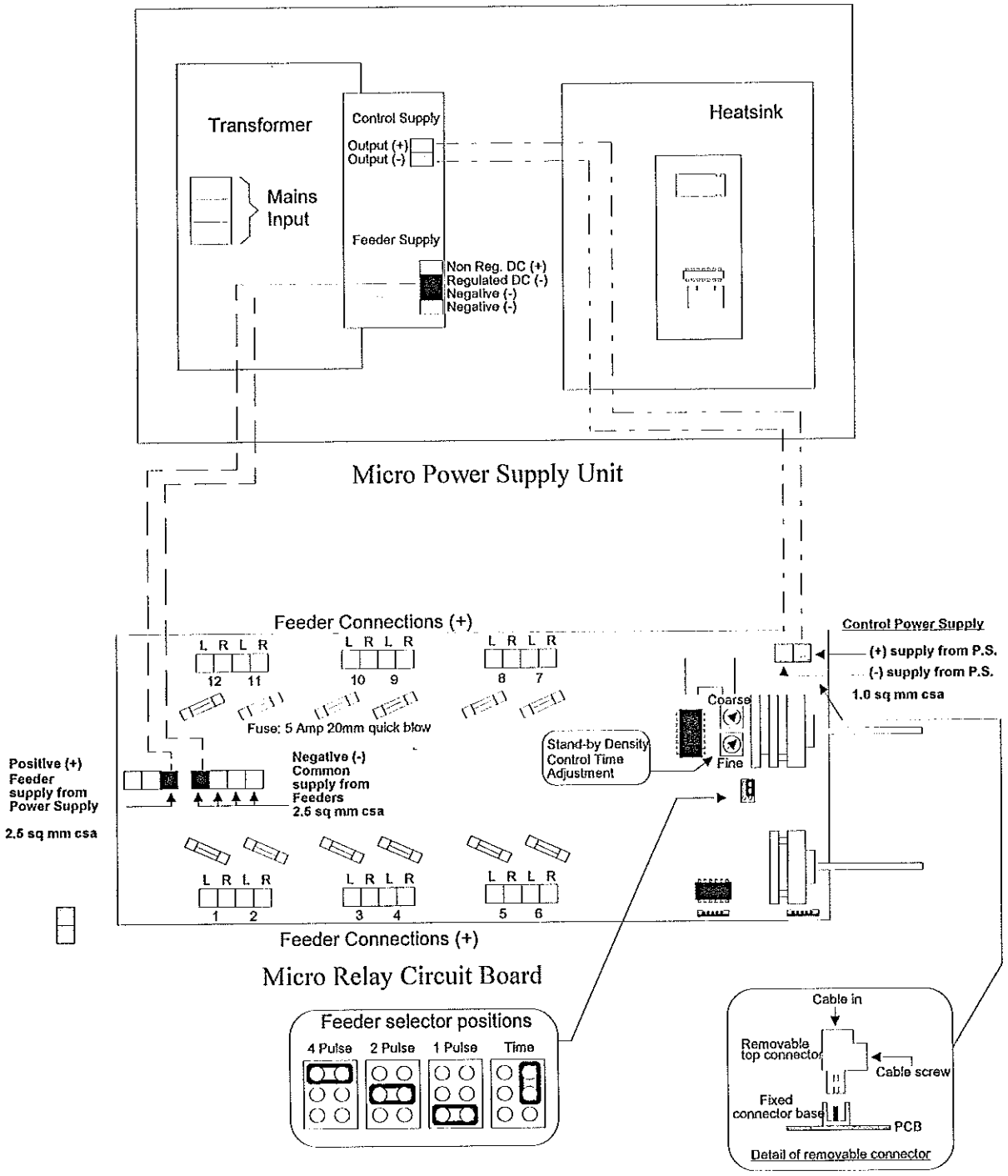
Micro Power Supply /Interface Connections



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Micro Control Power Supply / Relay Connections

For use with existing Feeder Power Supplies