Operators Manual

E15 Seeder Console
Electric Drive Seedrate Controller
V1.2

KEE TECHNOLOGIES
POWERING FARM PRODUCTION

How to use this operator's manual

As with any computer operated equipment, software and/or hardware is in many cases changed and upgraded over the life of the equipment.

KEE Technologies software engineers are constantly working on software enhancements which will provide you with many additional benefits and features in the future.

The EAGLE System will keep on evolving! ...to ultimately improve your 'bottom line"!

KEE Technologies personnel have records of all changes implemented to your system with the subsequent serial number.

When talking to KEE Technologies Support staff, always have this manual with you, as we may ask you what version manual you are currently looking at to ensure we all talk the same language. For this purpose all pages are coded as follows.

Page number Date when written Software version

Below is space provided to keep records of any software and hardware upgrades you may have received.

Type of upgrade (software or hardware)	Version	Date	Manual upgraded
KEE EAGLE SRC (Electric Motors)	1.2	01/05	01/05

Personal Notes

Personal Notes

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1. OVERVIEW

The Eagle seedrate controller is a control system designed to complement an air seeder by controlling the rate of application of any product that is being sown or spread by the seeder, (*within the mechanical ability and physical limitations of the machine*) using high torque Electric Motors to drive the metering shafts. A feature of this system is the ability to preload or prime the air seeder hoses before moving to reduce gaps in field. It also allows for easy calibration of products.

To achieve accurate rate control the Electric Drive controller requires the following facts:

Wheel Calibration factor to deliver accurate ground speed.
Seeding Width of machine.
Product Calibration factor. Represents the actual amount of material that is metered by 1 revolution of the metering shaft.
Gear Ratio, this is the number of Electric Motor Revolutions for every metering shaft revolution. e.g. 30:1

Note: If any of the Factors are not correct proper control cannot be achieved. Please take time to properly enter this information. This will help you gain a clear understanding of how the system functions and ensure that your seeding operation is accurate and trouble free.

As well as the control of the seeding application, the system also monitors the status of the air seeder functions such as ground speed, hectares covered, fan speed, metering shaft, fan pressure and bin levels.

Liquid Upgrade Kit

The Eagle Seed Rate Controller is designed to also control a Liquid Channel. The principles of control are identical to a conventional spraying system with one main difference; only one section is used as opposed to multiple sections on some sprayers.
A Liquid Upgrade kit can be purchased to compliment your existing Eagle Seedrate Control. The Liquid tank can be fitted on your existing Air Seeder bar. See your KEE dealer for more information.

Variable Rate Control

With the addition of other Hardware components the Eagle Controller can be used for Region Based Prescription Variable Rate Control.
See your KEE Technologies dealer for further information.

The Electric Drive system uses a 200 Watt, 12 Volt motor, coupled through a reduction gearbox and other changeable gears onto the metering shaft of a air seeder bin. There is a sensor on the electric motor shaft that delivers 2 pulses per revolution of the motor, which is used to control the speed of the motor through the Motor Drive Electronic Control Unit (MDECU). There is also a shaft sensor connected on the metering shaft that is used to determine shaft stoppages and in conjunction with the motor sensor, performs a check of the gear ratio entered into the console.

To enable the correct target rate of product delivery, it is necessary to know the overall gear ratio between the motor and metering shaft, the weight of product delivered per revolution of the metering shaft, the speed of the air seeder, and the width of the seeder. The PRODUCT CALIBRATION SCREEN sets up the calibration factor and other related information.

The calibration factor will vary with product, but for most general products and systems, a factor between 0.4 and 0.8kg/rev is typical for main bins.

Gear ratios are selected so as to give the maximum application rate at the highest speed, such as with fertilizers, (low ratios) or to give the lowest rate at low speed without the motor pulsing too slowly. (high ratios)

Sowing rates can be changed on the go with the value of the increment entered from the Product Calibration Screen. For canola, this would be in the vicinity of 0.1 kg/hectare, whereas other grains and fertilizer would be around 5 to 10 kg/hectare.

2. CONFIGURATION

2.1 Air Seeder Overview

The basic air seeder controller consists of an Eagle Console, Motor Drive Electronic Control Unit (MDECU), Tractor Loom, Implement Extension Loom, Chassis Loom, Electric Motors sensors (Ground Speed, Fan Speed, Fan Pressure Transducer, Metering shaft) and mounting hardware. The console is mounted in the cabin of the tractor, and connects to the MDECU via a communication cable. This cable also has a power loom going to the MDECU and electric motors. The MDECU is mounted on the air seeder, underneath the air seeder; the MDECU contains the control circuitry for the electric drive motors.

The system has been designed to operate up to 4 bins, all of which can be calibrated independently. With 4 bins operating, approximately 36 amps is required to drive all the motors under normal operations, however, if a metering shaft was to jam with product, such as with hard lumps of fertilizer, the motor current will increase under control to approximately 20 amps each. The looms and plugs are designed to carry this load with a minimum of voltage drop.

The console stores all of the data for the operation of the system, such as metering roller calibration, gear ratios, alarm points, bin volumes, application rates and other fixed data such as the seeder width and wheel factor. The console also records area covered, operating time, and monitors the motor load and current.

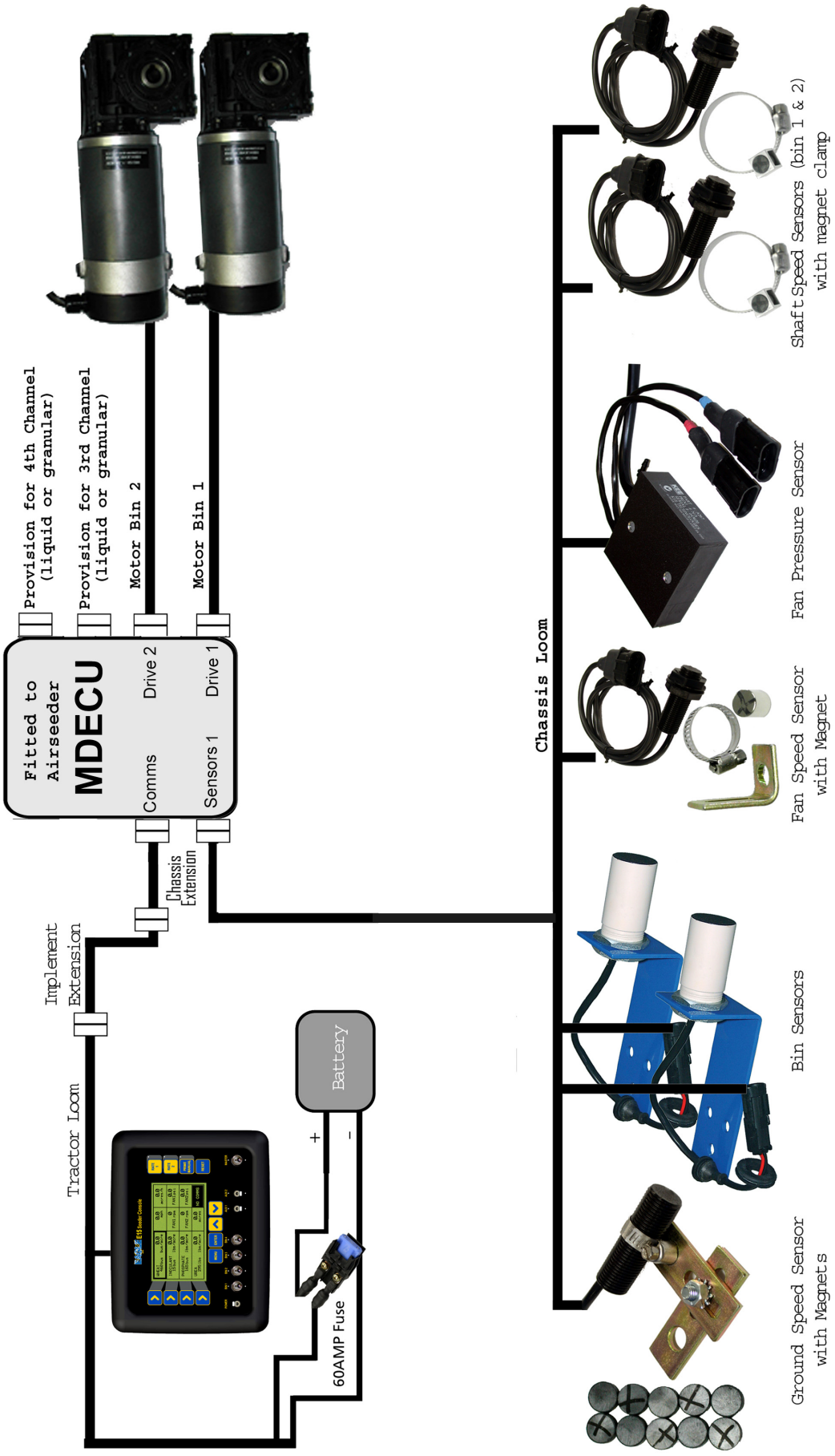
The MDECU communicates to the console via a communication cable. The data received by the MDECU processors, concerns the rate of control for the motors that are directly operated by the processors. The data returned to the console includes the status of the system, alarms, and timing from the various sensors on the seeder. The speed of the air seeder is determined from the wheel sensor on one of the main wheels on the seeder, and is sent to the console for display and calculation of the motor speed for the rate required. An alternative speed pickup connection is available on the loom near the console plug. A speed sensor mounted on the tractor can be connected at this point.

The seeder width in the console should be the sowing width of the bar. If the wheel factor is inaccurate, the area calculations will also be inaccurate along with the application of the product.

Temporary changes in application rate of any bin's product can be achieved with a few button presses while seeding. The step rate of change is part of the initial product calibration. A manual operating speed needs to be entered into the console for correct calibration, and for prime operations.

2.2 System Components

For a Typical 2 Bin Air Seeder



2.3 MENU MANIPULATION

2.3.1 TO MOVE THE FOCUS AROUND THE SCREEN

- The buttons (LINE 1,2 ,3 and 4) along the left hand side of the screen are aligned with a row on the screen.
- Pressing a LINE (1,2,3 OR 4) button will take you to the first focus square on that row.
- If there is no text on a row you will not be able to set the focus to that row.
- If a value is uneditable (ie a title or display value) you may not be able to set the focus to that window.
- To move between windows on a single row, press the corresponding left hand LINE (1,2,3 or 4) button repeatedly. The focus will scroll between available fields on the row.

2.3.2 TO ENTER THE MENU FROM THE WORKING SCREEN

- Ensure the MASTER switch is in the OFF (hold) position
- Press the MENU button
- You will be taken to the main menu screen

2.3.3 TO RETURN TO THE WORKING SCREEN

- Ensure that you are not editing a value (if you are editing a value an asterisk (*) will be shown in the box the focus is set to)
- Press the MENU button
- You will be returned to the previous menu screen
- To return to the WORKING screen the MENU button may have to be pressed several times

2.3.4 TO ENTER A MENU SCREEN

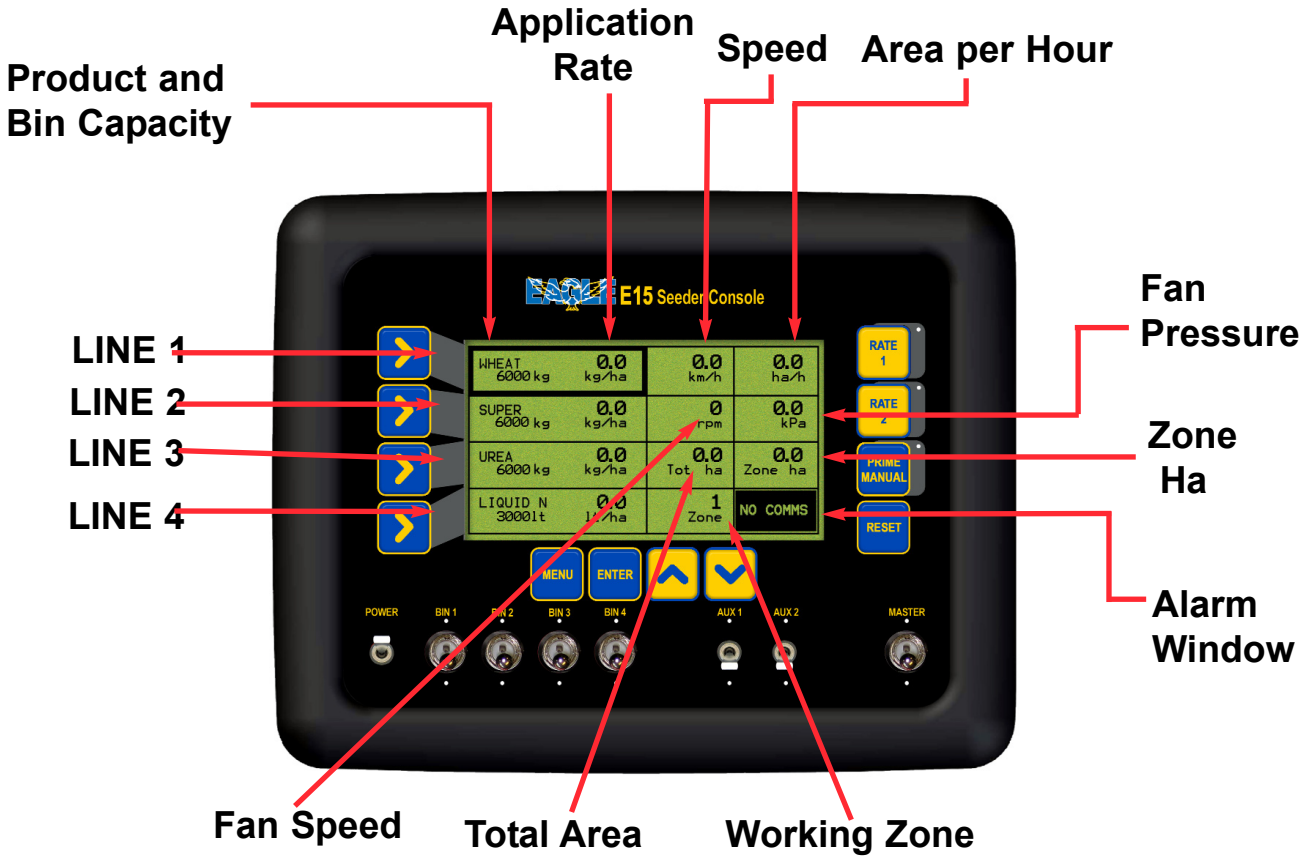
- Highlight the field displaying the menu you wish to enter
- Press the ENTER button
- You will advance to the next screen.

2.3.5 TO EDIT A VALUE

- Highlight the field displaying the value to be edited.
- Press the ENTER key. An asterisk (*) will appear in the field being edited
- Use the Inc or Dec buttons to adjust the value
- Press the ENTER button to accept and save the changed value. The asterisk (*) will disappear.

2.4 THE EAGLE CONSOLE OVERVIEW

2.4.1 THE WORKING SCREEN



Working Screen

PRODUCT AND BIN CAPACITY- Shows the four bins down the left hand side of the console, starting with Bin 1 at the top through to Bin 4 down the bottom. If only two bins are selected from the SEEDER SETUP MENU then LINE 3 AND LINE 4 rows will be blank.
The window displays:

- The Product Name
- Capacity of BIN after refill, then
- Contents of BIN left as product is metered out

LINE 1 displays the Product that is being metered from BIN 1
LINE 2 displays the Product that is being metered from BIN 2
LINE 3 displays the Product that is being metered from BIN 3
LINE 4 displays the Product that is being metered from BIN 4

APPLICATION RATE- The Application rate is displayed in the same window as the Bin Contents and Capacity but to the right. The Bin Output rate displays the actual sowing rate selected for each bin and the actual sowing rate being applied.

SPEED- Displays the speed of the air seeder in km/hr from a wheel sensor mounted on the air seeder.or other external sources such as a tractor radar. When a manual speed is displayed then 'MANUAL' appears under the speed; if MANUAL is not displayed then the speed is from the air seeder or tractor radar.

AREA PER HOUR- Displays the work rate of the air seeder in ha/h.

FAN PRESSURE- Displays the static air pressure as picked up from the Fan Pressure sensor mounted on the manifold near the fan. The Fan Pressure is displayed in kPa.

ZONE HA- Shows the hectares (ha) the air seeder has accumulated for the selected Working Zone as displayed in the Working Zone window.

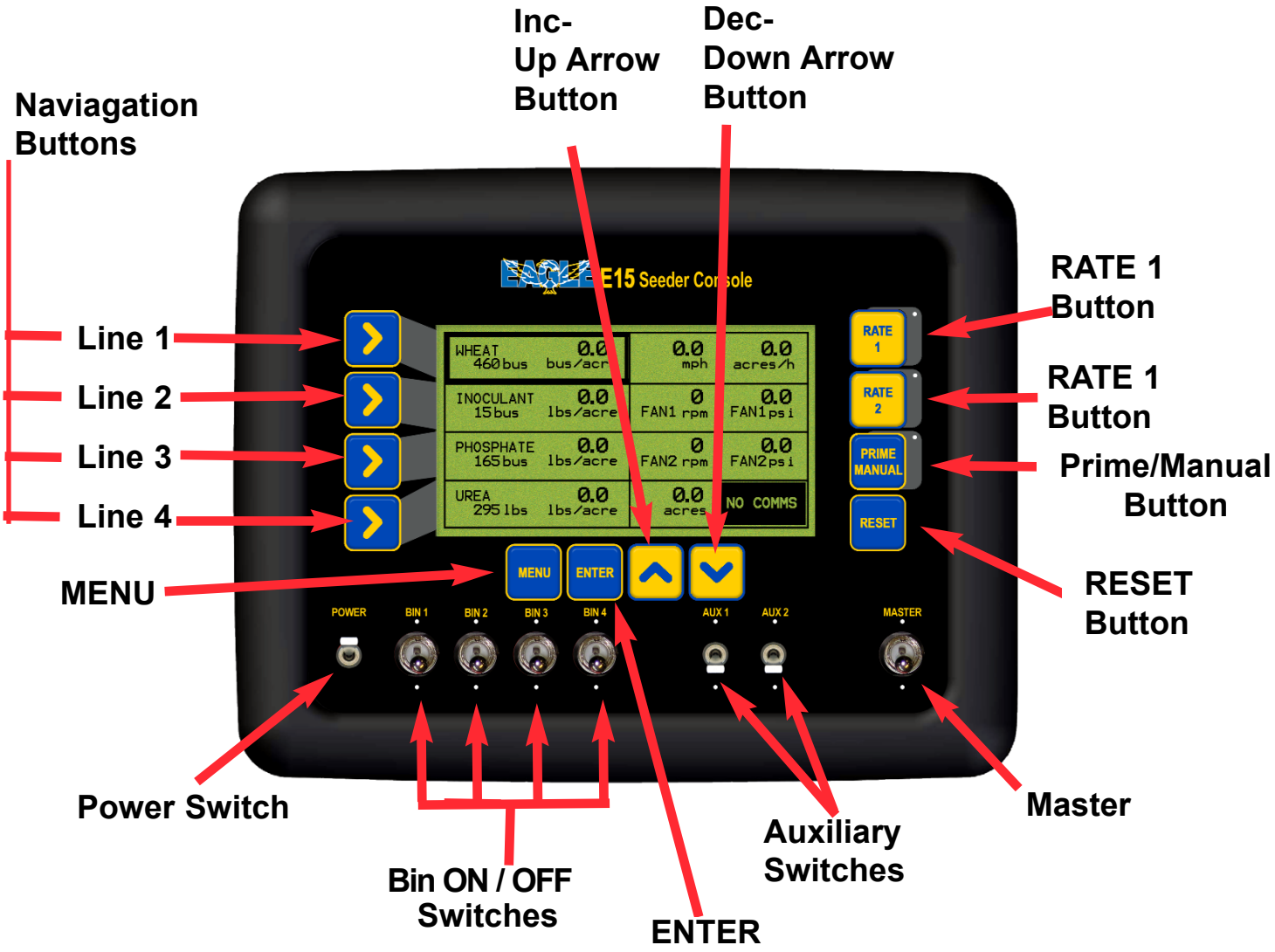
WORKING ZONE- Displays a number between 0 and 9, the number represents what zone is being applied at the moment. The Working Zone associates Bins, Products and areas.

TOTAL AREA- The Total Area windows display the total hectares(ha) the air seeder has seeder since being last reset. ie. The seeder might only be reset at the beginning of a season then the value would represent the total hectares covered since the beginning of the season.

FAN SPEED- The Fan Speed window displays the actual fan speed in rpm.

ALARMS- The alarms window displays all the current warning messages. If there is more than one warning then the warnings will cycle through each warning at about once a second.
See Section 10 for list of Alarms displayed in the Alarm Window and an explanation of the alarms.

2.5 WORKING SCREEN NAVIGATION FUNCTIONS



RESET - The RESET button allows the bins to be refilled in the console when the bins are empty. (See Section 7.1 for details).
The RESET button also returns the current application rate(kg/ha) to the original application rate, when the focus window is on the selected bin. (See Section 8.7 for details.)
The RESET button allows the TOTAL AREA and ZONE AREAS to be reset. (See Section 7.3 and 7.4 for details).

PRIME/MANUAL- When the PRIME/MANUAL button is pressed ONCE. The 'speed window' will display the word "PRIME". The time remaining will start counting down from the value set for the PRIME TIME in seconds, normally 7 seconds.
When the PRIME/MANUAL button is pressed twice, 'MANUAL' is displayed in the 'Speed Window', along with the Manual Speed set in Section

POWER- The Eagle console is turned ON and OFF by this switch on the front panel.

NAVIGATION BUTTONS

1) Setup menu-LINE 1, LINE 2, LINE 3 AND LINE 4 buttons allow the operator to navigate in the SETUP MENU.
LINE 1 selects line 1 of the display; LINE 2 selects line 2 of the display and so on for LINE 3 and LINE 4. If the operator selects LINE 3 then the window on LINE 3 will be highlighted. If the operator presses LINE 3 again then the column 2 will be highlighted; if permitted. When LINE 3 is pressed again, column 3 will be highlighted. If LINE 3 is pressed a third time the first column will be highlighted.

2) Navigating the Screen
LINE 1 button highlights the Product that is being metered from BIN 1
LINE 2 button highlights the Product that is being metered from BIN 2
LINE 3 buttonhighlights the Product that is being metered from BIN 3
LINE 4 button highlights the Product that is being metered from BIN 4

LINE 3 button Pressed twice highlights the TOTAL HA window.
LINE 3 button Pressed three times highlights the ZONE HA window.
LINE 4 button Pressed twice highlights the WORKING ZONE window

BIN SWITCHES ON/OFF-

These switches turn individual Bins ON or OFF; down is ON

The red LED aligned with each BIN switch, indicates the status of each Product (BIN). When the LED light is:

- **OFF** - The Bin Switch for that bin is switched OFF, temporarily.
- **Flashing**- Bin Switch is switched ON but not metering. MASTER is OFF
- **ON**- The Bin Switch is switched ON, MASTER is ON and Product is being metered at the calibrated sowing rate which is displayed "live" as the Application Rate.

MASTER- The MASTER switch turns all metering shafts selected for operation, ON or OFF

AUX 1 and AUX 2 SWITCHES- These 2 switches, switch any WORKLIGHTS or WING CUT-OFF clutches fitted on the air seeder ON or OFF.

LED- LIGHT EMITTING DIDOES (LED). The LED's on the under side of the Bin Switches indicate the status of the BINS.
The LED's under the LIGHTS, AUX and RUN/HOLD switches indicate the status of the switches.
The LED's near the RATE 1 and RATE 2 buttons indicate which sowing rate has been selected.
The LED near the PRIME/MANUAL button indicates whether the PRIME or the MANUAL functions are being used.

INC/DEC Buttons- The Increase and Decrease(INC/DEC) buttons when on the Working Screen allow the operator to increase or decrease the sowing rate of the Bin highlighted.
To increase the sowing rate of product in Bin 2 the operator would press LINE 2 to highlight the Bin 2, then press the INC button until the desired rate is achieved, the rate(kg/ha) will increase by the INCREMENT RATE, which is set in the Product Screen Setup.
To decrease the application rate of product in Bin 2 the operator would press LINE 2 and then press the DEC button until the desired rate is achieved, the rate(kg/ha) will decrease by the INCREMENT RATE, which is set in the Product Screen Setup.

The INC/DEC buttons when in the SETUP MENU allow the operator to increase and decrease factors (when a asterisk (*) appears next to the value), in the SETUP MENU. When using the INC/DEC buttons to change a value, the operator may press the INC/DEC button repeatedly to changed the value OR the operator may press and hold the INC or DEC button and the value will change while the button is depressed; the longer the button is depressed the faster the values will change.

ENTER- When the ENTER button is pressed, the value within the highlighted window, has an asterisk (*) appear next to the value. The value can be increased or decreased using the INC/DEC buttons. Press the ENTER button again to lock-in and save the value.

MENU- When the MASTER switch is in the OFF position, the MENU button, when pressed, is the gateway into the SETUP MENU's for the Console.
MENU also returns to the Working Screen from any menu, (the button may have to be pressed several times to return to the WORKING SCREEN). Press MENU once to return to the previous menu.
When the MASTER switch is ON and the MENU button is pressed, the product name and bin weight remaining, for each BIN, are replaced with motor current (amps) and motor load (%), for each BIN.

RATE 1- The RATE 1 button sets the sowing rate as selected for PRESET RATE 1 for the highlighted Bin.

RATE 2- The RATE 2 button sets the sowing rate as selected for PRESET RATE 2 for the highlighted Bin.

2.6 SETUP MENU

• Press MENU. *To enter SETUP MENU screen*
Ensure MASTER switch is in the OFF position.

Note: all procedures assume the operator is starting from the "Working Screen"

• To advance to the SEEDER SETUP MENU see Section 3.0
• To advance to the PRODUCTS SETUP MENU see Section 4.0
• To advance to the ZONES SETUP MENU see Section 5.0
• To advance to the ALARMS SETUP MENU see Section 6.0

Setup Screen

3. SEEDER SETUP MENU

- Press MENU
- Press ENTER to advance to the SEEDER SETUP screen

Seeder Setup Screen

3.1 BINS SETUP MENU

3.1.1 SET THE NUMBER OF BINS ON THE AIR SEEDER

- Press MENU
- Press ENTER to advance to the SEEDER SETUP screen
- Press ENTER to advance to the BINS SETUP screen
- Press ENTER to edit NO OF BINS. *An asterisk (*) appears.*
- Use Inc/Dec buttons, to set the number of Bins
- Press ENTER to accept the changes

3.1.2 SET THE BIN VOLUME

- Press MENU
- Press ENTER to advance to the SEEDER SETUP screen
- Press ENTER to advance to the BINS SETUP screen
- Press LINE 2 to highlight BIN VOLUMES
- Press LINE 2 repeatedly, to cycle through to the bin to be edited
- Press ENTER to edit the Volume of the BIN. *An asterisk (*) appears.*
- Use Inc/Dec buttons to set the bin capacity.
  Note:*Capacity changes in 10 litre increments; by holding the Inc or Dec buttons down the value will change more quickly.*
- Press ENTER to accept changes

3.1.3 CHANGE THE DRIVE TYPE

- Press MENU
- Press ENTER to advance to the SEEDER SETUP screen
- Press ENTER to advance to the BINS SETUP screen
- Press LINE 3 to highlight DRIVE TYPE.
- Press LINE 3 repeatedly, to cycle through to the bin to be edited
- Press ENTER to edit the DRIVE TYPE. *An asterisk (*) appears.*
- Use Inc/Dec buttons to change the DRIVE TYPE. *Select either ELECTRIC for Electric Drive Bins OR LIQUID for a Liquid Bin.*
- Press ENTER to accept changes

Bins Setup Screen

3.2 WHEEL CALIBRATION FACTOR

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 2 to highlight WHEEL FACTOR
- Press ENTER to advance to Wheel Factor Screen

When the MDECU is selected for the SPEED SOURCE:
MDECU is the default, which means the speed source is taken from the wheel sensor on the Air Seeder.
This wheel factor value is the distance travelled by the air seeder per pulse from the wheel (speed)sensor. The value will vary considerably between models, with typical values between .25 and 1 meter per pulse. Values less than 0.05 metres and more than 5 meters will not give good metering rate control and must be avoided.

When the EXTERNAL is selected for the SPEED SOURCE:
If the EXTERNAL is selected, then the speed source is taken from the 3 pin weather pak connector on the loom going into the back of the Eagle console;
The EXTERNAL SOURCE is used if the operator wants to use the tractor radar.
The wheel factor value will vary between different tractor radar models, a typical value will be between 0.1 and 0.0005.

Wheel Factor Screen

3.2.1 SET THE WHEEL FACTOR

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 2 to highlight WHEEL FACTOR
- Press ENTER to advance to Wheel Factor Screen

3.2.2 SELECT SPEED SOURCE

- Press LINE 4 to highlight SPEED SOURCE
- Press ENTER. *An asterisk (*) will appear*
- Use Inc/Dec buttons to select MDECU (air seeder wheel magnets and sensor) OR EXTERNAL SOURCE. (eg tractor radar)

3.2.3 WHEEL FACTOR CALIBRATION

- Press ENTER to begin wheel factor calibration
- Drive forward a measured distance, say 100m. *The PULSES count will accumulate as you travel forwards. The DISTANCE value and ESTIMATED value will accumulate in metres as you travel forwards. These values will accumulate reflecting the current WHEEL FACTOR value; if the value is close then then the ESTIMATED and DISTANCE value will also be close to the actual distance travelled.*
  The DISTANCE value is the value to be edited and the ESTIMATED value is a display value only.
- Once the known distance is reached, press ENTER. *Focus will automatically jump to* DISTANCE *line of the screen*
- Use Inc/Dec buttons to change the DISTANCE value to reflect the actual distance travelled
- Press ENTER to accept the value. *Wheel factor will be automatically calculated and displayed, on the WHEEL FACTOR line.*

3.2.4 MANUAL ENTRY

- Press LINE 3 to highlight the WHEEL FACTOR
- Press ENTER to edit the value
- Use Inc/Dec buttons to manually change the wheel factor. *Wheel factor changes in 1mm increments; when the SPEED SOURCE selected is MDECU.*
- Press ENTER to accept the value

3.3 WIDTH, SPEED AND PRIME DURATION SETUP

- Press MENU
- Press ENTER to advance to the SEEDER SETUP screen
- Press LINE 3 to highlight WIDTH, MANUAL SPEED AND PRIME DURATION screen
- Press ENTER to advance to WIDTH, MANUAL SPEED AND PRIME DURATION screen.

Width, Manual Speed and Prime Duration Screen

3.3.1 SET THE SEEDING WIDTH OF THE MACHINE

- Press MENU
- Press ENTER to select SEEDER SETUP
- Press LINE 3 to highlight, WIDTH SPEED AND PRIME DURATION
- Press ENTER to advance to the WIDTH, MANUAL SPEED AND PRIME DURATION screen
- Press ENTER to edit the WIDTH. *An asterisk (*) will appear.*
- Use Inc/Dec buttons to set the width of the Air Seeder bar. *Width changes in 1cm increments*
- Press ENTER to accept the value

Note:This is the effective seeding or operating width of the Air Seeder

3.3.2 SET THE MANUAL SPEED

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 3 to highlight, WIDTH SPEED AND PRIME DURATION
- Press ENTER to advance to the WIDTH, MANUAL SPEED AND PRIME DURATION screen
- Press LINE 2 to highlight MANUAL SPEED
- Press ENTER to edit Manual Speed. *An asterisk (*) will appear.*
- Use Inc/Dec buttons to set the manual speed
- Press ENTER to accept the value

During calibrations,the Manual Speed is set into the controller to simulate a ground speed when the seeder is stationary. The Manual Speed can be used to operate the system if the speed sensor fails. This value is normally set to the speed used for normal seeding operations, ie, 7 to 10 km/h. This is one of the factors that must be present to enable correct motor operation during calibration.

3.3.3 SET THE PRIME DURATION

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 3 to highlight, WIDTH SPEED AND PRIME DURATION
- Press ENTER to advance to the WIDTH, MANUAL SPEED AND PRIME DURATION screen
- Press LINE 3 to highlight PRIME TIME
- Press ENTER to edit PRIME TIME. *An asterisk (*) will appear.*
- Use Inc/Dec buttons to set the Prime Time.
  Prime time changes in 1 second increments
- Press ENTER to accept the value

The PRIME DURATION time is set to allow the air seeder's electric motors to operate prior to moving off and starting to sow, it takes several seconds to convey seed/fertiliser from the bins to the seeding boots. This feature eliminates the start-up sowing gaps that might otherwise appear.The default is 7 seconds and this will suit most air seeder models.

3.4 OPERATING HISTORY

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 4 to highlight OPERATING HISTORY
- Press ENTER to advance to the OPERATING HISTORY screen
- Press LINE 1, 2 or 3 to highlight the type of history values you wish to view.
- Press ENTER to advance to the history page highlighted

Note: None of these values are editable by the customer

Operating History Screen

3.4.1 TOTALS HISTORY

These values are a record of the air seeder operation over its life.

These values are not editable by the user

Totals History Screen

3.4.2 SHAFTS HISTORY

These values are a record of the air seeder operation over its life.

These values are not editable by the user

Shaft History Screen

3.4.3 FAN HISTORY

These values are a record of the air seeder operation over its life.

These values are not editable by the user

Fan History Screen

3.5 EXTERNAL MASTER (OPTIONAL)

An External Master Switch may be purchased as an option. If a Master Switch is fitted then the option has to be enabled in this section.

- Near the back of the Eagle console where the tractor loom connects into the console will be 2 three pin weather-pak plugs one marked 'RADAR' the other marked 'MASTER', connect the External Master Switch plug, to the plug marked 'MASTER'. See Section 13 for Wiring Diagrams
- Then mount the switch in an convenient position.
- The CABIN switch overrides the MASTER switch.
- A Cabin Switch can be floor mounted in the tractor cabin, to allow easy accessible remote switching, to turn the MASTER, ON or OFF.

3.5.1 TO CHANGE THE EXTERNAL MASTER SETTING

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 1 to highlight the MASTER SWITCH
- Press ENTER to advance to MASTER SWITCH screen
- Press ENTER to edit EXTERNAL MASTER. *An asterisk (*)will appear.*
- Press Inc/Dec buttons to select between ON and OFF.
  When EXTERNAL MASTER is selected ON "MASTER TYPE CABIN' appears to the right.

Note: There is an option to select TILLAGE as an option for MASTER TYPE but this option is not available with the current wiring looms.

- Press ENTER to accept changes

External Master Switch Screen

3.6 MOTOR SETUP

3.6.1 SETUP FOR MOTORS USING FOUR PULSES

By default most motors are 2 pulse motors. A 2 pulse motor means in the internal shaft of the electric motor there are 2 magnets; a 4 pulse motor has 4 magnets. Select the ON option ONLY, if 4 pulse motors where supplied with the KEE Seedrate Kit.
The electric motors have to be ALL 2 pulse motors OR ALL 4 pulse motors. Not a combination of the two.

- Press MENU
- Press ENTER to advance to SEEDER SETUP screen
- Press LINE 2 twice to highlight MOTOR SETUP
- Press ENTER to advance to MOTOR SETUP screen
- Press ENTER to edit USING FOUR PULSE MOTORS.
  An asterisk (*)will appear.
- Press Inc/Dec buttons to select ON or OFF.
  Select OFF for 2 pulse motors or ON for 4 pulse motors
- Press ENTER to accept changes

Motor Setup Screen

4. PRODUCT SETUP AND SELECTION

4.0.1 PRODUCT SELECTION SCREEN

- Press MENU
- Press LINE 2 to highlight PRODUCT SETUP
- Press ENTER to advance to PRODUCTS SELECTION screen. *The PRODUCTS SELECTION screen allows the operator to see what products are stored and what Bins the products are setup for.*
- Select which product is to be edited by using the LINE 1, 2,3 or 4 buttons. Repeated pressing moves the focus across the screen.
- Once the PRODUCT is highlighted,
- Press ENTER, to advance to the PRODUCT SETUP screen, where the details of each product can be viewed and edited. See Section 4.1

Up to 16 products can be entered and calibrated in the PRODUCT SETUP MENU, ready for seeding. Below is the PRODUCTS SELECTION screen showing the default screen with a list of products. These products can changed and edited to reflect the products used with your farming operation.

Product Selection Screen

4.1 PRODUCT SETUP

For each product that is going to be sown it is neccesary to enter the following:

1- Product Name
2- Bin Number
3- Gear Ratio
4- Density of Product
5- Preset Sowing RATE 1
6- Preset Sowing RATE 2
7-Sowing Rate Increment/Decrement
8- Calibration Factor

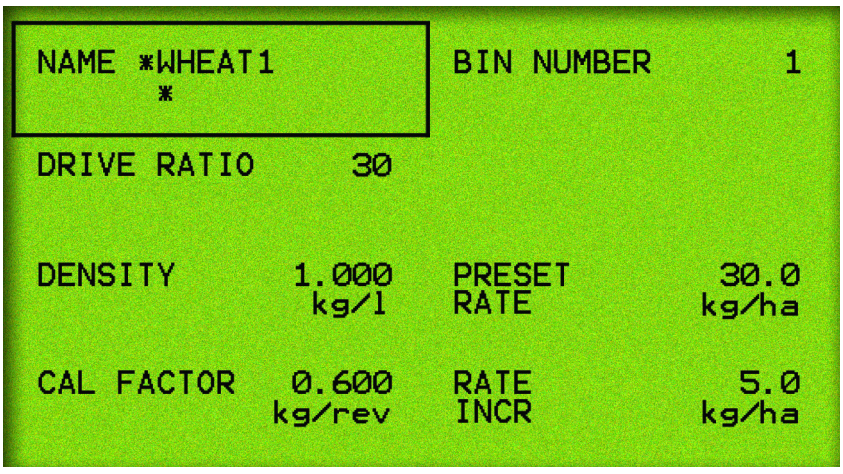
Product Setup Screen

4.1.1 ENTER A PRODUCT NAME

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the PRODUCT to be edited and advance to the Product Setup screen
- Press ENTER to edit the PRODUCT NAME. *A asterisk (*) will appear under the first character of the name.*

- Press MENU button. Another asterisk (*) will appear to the left of the PRODUCT NAME. This means the character with the asterisk (*) under it can now be edited. *See Screen below.*
- Press Inc/Dec buttons to change the character. *The Inc/Dec buttons can be pressed once and will move one letter at a time, or the Inc/Dec buttons can be held down to scroll through the values quicker.The Inc button scrolls forward through the alphabet and numerals, the Dec scrolls backwards through the alphabet and numerals. The values are available in this order: A to Z (letters in Upper case), a to z (letters in Lower case), space ( ), comma (,), minus(-) , full stop (.), forward slash(/), numerals 0 -9.*
- Press MENU button. The asterisk (*) disappears,the value is now locked in.
- Press the Inc button to move the asterisk (*) to the next character to the right. Repeat the above procedure until the product has been edited, to create the desired **8** character name

- Press ENTER to accept the changes to the Product Name.



Product Name in Edit Mode

The the above screen shows an asterisk (*) below the 'W' character and an asterisk (*) to the left of the Product Name. Using the Inc/Dec buttons the'W' character can be edited.

4.1.2 ENTER A PRODUCT BIN NUMBER

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the product
- Press LINE 1 to highlight the BIN NUMBER
- Press ENTER to edit the Bin Number for the product. *An asterisk (*) appears*
- Press Inc/Dec buttons to set the Bin Number for the product
- Press ENTER to accept the changes

4.1.3 ENTER THE GEAR RATIO

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the product
- Press LINE 2 twice to highlight GEAR RATIO
- Press ENTER to edit the GEAR RATIO. *An asterisk (*) will be appear.*
- Press Inc/Dec buttons to select a gear ratio. *A Gear Ratio value between 8 and 100 can be selected. Common Drive Ratio values are 15, 30, 60, 80, and 100. The Gear Ratio stamped on the Gearbox of the motor can be used as the Drive Ratio as long as the ratio between output of the motor and the metering shaft are* ***1:1.***
- Press ENTER to accept the changes

4.1.4 ENTER THE DENSITY OF THE PRODUCT

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the product
- Press LINE 3 to highlight DENSITY
- Press ENTER to edit the DENSITY. *An asterisk (*) will appear.*
- Press Inc/Dec buttons to set the DENSITY of the product. *Density changes in 1 gram increments*
- Press ENTER to accept the changes

Note: The relative DENSITY of the product will determine the "actual" tonnage capacity of each bin (which is quoted in litres)

4.1.5 ENTER THE PRESET SOWING RATE 1 FOR THE PRODUCT

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the product
- Press LINE 3 twice to highlight the PRESET RATE
- Press the RATE 1 button to edit the PRESET RATE 1. *When the RATE 1 button is pressed, (1) will appear next to PRESET RATE, indicating RATE 1 was selected and the current preset rate will be displayed in kg/ha.*
- Press ENTER to edit the Preset Sowing Rate for RATE 1.
  An asterisk (*) will appear.
- Press Inc/Dec buttons to set the Preset Sowing Rate for RATE 1, for the product.
  Preset Rate changes in 0.1 kg increments
- Press ENTER to accept the changes to RATE 1.

4.1.6 ENTER THE PRESET SOWING RATE 2 FOR THE PRODUCT

- With PRESET RATE highlighted
- Press the RATE 2 button to edit the PRESET RATE 2. *When the RATE 2 button is pressed, (2) will appear next to PRESET RATE, indicating RATE 2 was selected and the current preset rate for RATE 2 will be displayed in kg/ha.*
- Press ENTER to edit the Preset Sowing Rate for RATE 2.
  An asterisk (*) will appear.
- Press Inc/Dec buttons to set the Preset Sowing Rate for RATE 2, for the product.
  Preset Rate changes in 0.1 kg increments
- Press ENTER to accept the changes for RATE 2.

4.1.7 ENTER THE SOWING RATE INCREMENT/DECREMENT FOR THE PRODUCT

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the product
- Press LINE 4 twice to highlight RATE INCR
- Press ENTER to edit the Sowing Rate Increment.
  An asterisk (*) will appear
- Press Inc/Dec buttons to change the Sowing Rate Increment. for the product
  Rate Increment changes in 0.1 kg/ha increments
- Press ENTER to accept the changes

4.2 ENTER THE CAL FACTOR FOR THE PRODUCT

- Press MENU
- Press LINE 2 to highlight PRODUCTS SETUP
- Press ENTER to advance PRODUCTS SELECTION screen
- Use the LINE 1, 2, 3 or 4 buttons to select the product you wish to edit. Repeated pressing of LINE buttons moves the focus across the screen
- Press ENTER to select the PRODUCT to be edited and advance to the Product Setup screen
- Press LINE 4 to highlight the CAL FACTOR
- Press ENTER to advance to the CAL FACTOR screen.

During calibration, the motor driving a particular metering shaft is turned on. For the motor to turn on, the console must have a manual speed, application rate, gear ratio, and a realistic calibration factor. (0.6 kg per rev.) If any of these are zero, the motor will not turn on.
Product is METERED. After (approximately 5-15 kgs of fertiliser or cereal) the operator must weigh the product and enter this value. The console then calculates the CAL FACTOR. For this factor to be correct, you must have the correct gear ratio for that bin entered into the console.

CAL FACTOR SCREEN

4.2.1 PRODUCT CALIBRATION

- Press ENTER to begin CAL FACTOR CALIBRATION.
  An asterisk (*) will appear next to REVS
- *Metering shaft will automatically begin turning. The REVS count will begin accumulating as the metering shaft turns. The WEIGHT value and ESTIMATED WEIGHT value will accumulate in kgs as the product is being metered. These values will accumulate reflecting the current CAL FACTOR value for the product; if the value is close then the ESTIMATED WEIGHT and WEIGHT value will also be close to the actual weight being metered out. The WEIGHT value is the value to be edited and the ESTIMATED WEIGHT value is a display value only.*
- Once approximately 5-15kg of product has been metered. Press ENTER.
  Focus will automatically jump to the WEIGHT window, on the screen.
- Weigh the product metered.
- Change the value in the WEIGHT window, using the Inc/Dec buttons so the value is the same as the actual weight of the product metered.
- Press ENTER to accept value. *Cal factor will be automatically calculated and displayed.*

Each BIN should be calibrated for each product that is going to be used. 16 different products can be calibrated and stored within the console.
Eg. If Urea is going to be used in Bins 1 and 2 on the air seeder; then each BIN must be calibrated separately for UREA. The console will store a:cal factor, preset sowing rate 1, preset sowing rate 2, sowing rate increment and density for UREA BIN 1 and another set of values for UREA BIN 2. When seeding with UREA in bin 1 then the operator would select UREA BIN 1 and all the factors stored with UREA BIN 1 would be retrieved.
All the different products being used in each different bin can be calibrated and stored in the console before the operator starts seeding.

4.2.2 MANUAL ENTRY OF CAL FACTOR

- Press LINE 3 to choose line 3 of the display
- Press ENTER to edit the value
- Use Inc/Dec (Up and down arrows) to change the cal factor. C*al factor changes in 1gram/rev increments*
- Press ENTER to accept the value

5. ZONES SETUP MENU

- Press MENU
- Press LINE 3 to highlight ZONES SETUP
- Press ENTER to advance to the ZONES SETUP screen

Zone Setup Screen

5.1 CHANGE THE WORKING ZONE

- Press MENU
- Press LINE 3 to highlight ZONES SETUP
- Press ENTER to advance to the ZONES SETUP screen
- Press ENTER to change the zone number. *An asterisk (*) will be shown next to the zone number*
- Use Inc/Dec buttons to change the zone number. There are 10 Zones to select from (0-9). As the operator scrolls through the different Working Zones using the Inc/Dec buttons; the operator will see the different products selected for each bin.
- Press ENTER to accept the value. Once the Working Zone has been selected the operator will now go to Section 5.2 to select the products for each bin.

5.2 PRESETTING OF ZONES

- Press MENU
- Press LINE 3 to highlight ZONES SETUP
- Press ENTER to advance to the ZONES SETUP
- Press LINE 2 to select the Bin that needs to be edited
- Scroll through the bins by repeated pressing of the LINE 2 button until focus is set to the Bin to be edit.
- Press ENTER to edit the product for the Bin Number. *An asterisk (*) will be shown next to the bin number*
- Use Inc/Dec buttons to scroll through the products that have been calibrated for that bin
  The operator can only select products that have been calibrated for that bin.
- Press ENTER to accept the product for that bin
- Press LINE 2 to highlight the next Bin to be edited.
- Press ENTER to edit the product for the Bin Number. *An asterisk (*) will be shown next to the bin number*
- Use Inc/Dec buttons to scroll through the products that have been calibrated for that bin
- Press ENTER to accept the product for that Bin
- Repeat the above procedure until a product has been selected for each bin. That has setup the first Zone.

To setup another Working Zone go to Section 5.1 (Change the Working Zone) and select another Working Zone number. Then proceed to Section 5.2 (Presetting of Zones) to select a product for each bin; for that Working Zone. Repeat the above procedure until all Working Zones, that are required have been setup,
Then see Section 7.5 (Change Working Zone) to select a Working Zone from the ***Working Screen***

6. ALARM SETUP MENU

- Press MENU
- Press LINE 4 to highlight ALARMS SETUP
- Press ENTER to advance to the ALARMS SETUP screen .

Alarm Setup Screen

6.1 FAN ALARMS

6.1.1 FAN SPEED ALARM OVERVIEW

A sensor is mounted on the fan to determines the speed of the fan in rpm. When the FAN SPEED LOW ALARM is turned ON and the FAN SPEED LOW ALARM POINT rpm is set; when the fan speed rpm drops below that threshold point a LOW FAN SPEED alarm will appear in the alarm window. The FAN SPEED LOW ALARM POINT is usually set at 20% below the normal operating speed of the fan.

When the FAN SPEED HIGH ALARM is turned ON and the FAN SPEED HIGH ALARM POINT rpm is set; when the fan speed rpm goes over that threshold point, a HIGH FAN SPEED alarm will appear in the alarm window. The FAN SPEED HIGH ALARM POINT is usually set at 20% above the normal operating speed of the fan.

When the FAN SPEED LOW and FAN SPEED HIGH are turned OFF; the ALARM POINTS for each disappear.

Fan Alarm Screen

6.1.2 FAN PRESSURE OVERVIEW

A pressure transducer sensor is mounted on the air seeder chassis near the fan to determine the pressure of the system in kPa. The operating pressure of any system is affected by fan speed, tube blockages, product density, application rates, air density and even the prevailing wind. This alarm, if set too close to the operating pressure, will trigger if any of the above conditions change. When set correctly, the pressure alarm can indicate a fault or failure in the system.

When the FAN PRESS LOW alarm is turned ON and the FAN PRESS LOW ALARM POINT is set in kPa; when the pressure of the system drops below that threshold point a LOW FAN PRESS alarm will appear in the alarm window on the console. The FAN SPEED LOW ALARM POINT value is usually set 1.5 to 2 kPa below the operating pressure.

When the FAN PRESS HIGH alarm is turned ON and the FAN PRESS HIGH ALARM POINT is set in kPa; when the pressure of the system goes over that threshold point, a HIGH FAN PRESS alarm will appear in the alarm window. The FAN PRESS HIGH ALARM POINT is usually set 1.5 to 2 kPa above the operating pressure.

When the FAN PRESS LOW and FAN PRESS HIGH are turned OFF, the ALARM POINTS for each disappear.

6.1.3 SETTING THE FAN PRESSURE LOW ALARM

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press ENTER to edit the FAN PRESS LOW alarm.
  An asterisk (*) will be displayed
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

6.1.4 ADJUST THE FAN PRESSURE LOW ALARM POINT

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen

Note: If the alarm is OFF, turn the alarm ON as explained in Section 6.1.3

- Press LINE 1 to highlight the ALARM POINT
- Press ENTER to edit the value. *An asterisk (*) will be displayed*
- Use Inc/Dec buttons to adjust the alarm point
- Press ENTER to accept the changes

6.1.5 SETTING THE FAN PRESSURE HIGH ALARM

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 2 to choose the FAN PRESS HIGH line
- Press ENTER to edit the value. *A star(*) will be displayed*
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

6.1.6 ADJUST THE FAN PRESSURE HIGH ALARM POINT

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 2 to highlight the FAN PRESS HIGH line

Note: If the alarm is off, turn the alarm on as explained in Section 6.1.5

- Press LINE 2 to highlight the alarm point
- Press ENTER to edit the value. *A star (*) will be displayed*
- Use Inc/Dec buttons to adjust the ALARM POINT
- Press ENTER to accept the changes

6.1.7 SETTING THE FAN SPEED LOW ALARM

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 3 to highlight FAN SPEED LOW
- Press ENTER to edit the FAN SPEED LOW alarm.
  An asterisk (*) will be displayed
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

6.1.8 ADJUST THE FAN SPEED LOW ALARM POINT

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 3 to highlight the FAN SPEED LOW line

Note: If the alarm is OFF, turn the alarm On as explained in Section 6.1.7

- Press LINE 3 to highlight the alarm point
- Press ENTER to edit the value. *An asterisk (*) will be displayed*
- Use Inc/Dec buttons to adjust the ALARM POINT
- Press ENTER to accept the changes

6.1.9 SETTING THE FAN SPEED HIGH ALARM

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 4 to highlight the FAN SPEED HIGH line
- Press ENTER to edit the FAN SPEED HIGH alarm.
  An asterisk (*) will be displayed
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

6.1.10 ADJUST THE FAN SPEED HIGH ALARM POINT

- Press MENU
- Press LINE 4 to highlight the ALARM SETUP
- Press ENTER to advance to ALARMS SETUP screen
- Press ENTER to advance to the FAN ALARMS screen
- Press LINE 4 to highlight the FAN SPEED HIGH line

Note: If the alarm is OFF, turn the alarm ON as explained in Section 6.1.7

- Press LINE 4 to highlight the alarm point
- Press ENTER to edit the value. *An asterisk (*) will be displayed*
- Use Inc/Dec buttons to adjust the ALARM POINT
- Press ENTER to accept the changes

6.2 SHAFT ALARMS

6.2.1 SHAFT ALARM OVERVIEW

A shaft sensor is mounted on each of the metering shafts. Therefore if there are 3 bins on the air seeder, there will be 3 shaft sensors.

A shaft alarm occurs because there is no signal as expected from the metering shaft sensor and is used to check the gear ratio entered into the console.

If a drive chain or gear was to break, the then a SHAFT # STOPPED (# represents bin number) will appear in the alarm window on the console. The alarm will persist until the problem is rectified.

Another common cause for a shaft alarm is that the sensor may have shifted. They should be mounted so that the magnet passes the sensor with a clearance of approximately 2 to 3 mm.

The SHAFT ALARM can be turned OFF or ON for each bin. The default setting is ON.

Shaft Alarm Screen

6.2.2 SETTING THE SHAFT STOPPED ALARM

- Press MENU
- Press LINE 4 to highlight ALARM SETUP
- Press ENTER to advance to the ALARMS SETUP screen
- Press LINE 2 to highlight SHAFT ALARMS
- Press ENTER to advance to the SHAFT ALARMS screen
- Press LINE 1 to highlight SHAFT 1

OR Press LINE 2 to highlight SHAFT 2
OR Press LINE 3 to highlight SHAFT 3
OR Press LINE 4 to highlight SHAFT 4

- Press ENTER to edit the SHAFT STOPPED alarm.
  An asterisk (*) will be displayed
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

Note: Repeat the above procedure to switch the SHAFT STOPPED alarms ON or OFF for the remaining bins.

6.3 BIN ALARMS

- Press MENU
- Press LINE 4 to highlight ALARM SETUP
- Press ENTER advance to the ALARM SETUP screen
- Press LINE 3 to highlight BIN ALARMS
- Press ENTER to advance to the BIN ALARMS screen

Bin Alarm Screen

6.3.1 BIN LOW OVERVIEW

In each bin there is a sensor that sets an alarm once the product level falls below the sensor.When product in the bin covers the bin sensor the light on the back of the sensor will be off and there will be no alarms.

When the product level falls below the sensor a BIN # LOW alarm will appear in the alarm window. The alarm will keep cycling in the alarm window, until the bin is refilled, with product.

The LOW BIN alarm can be turned ON or OFF, by default it is turned ON. The LOW BIN alarm maybe turned off if using canola or similar seed, it is possible that the amount put in the bin does not cover the bin level sensor.

The sensor is normally calibrated when new with Urea, (lightest density product in general use) on 12 volts and will suit most applications and products.
Adjustment of these sensors may be required due to different operating voltages of the system, or different product densities.

6.3.2 BIN EMPTY OVERVIEW

The BIN EMPTY ALARM is generated from the console. During seeding, the signal from the metering shaft sensor is used to decrease the bin weight based on the calibration factor.
If set correctly, this alarm will indicate the last grain of seed going through the metering rollers, and cause the BIN # EMPTY (# represents bin number) alarm to cycle in the alarm window on the console. The console can be electronically reset the counter after the bins are filled, see Section 7.1.
The BIN EMPTY can be switched ON, therefore the alarm will flash and beep when the last grain is calculated to pass over the metering rollers
The BIN EMPTY can be switched OFF, to turn the alarm OFF.

6.3.3 SETTING THE BIN LOW (SENSOR) ALARM

- Press CAL
- Press LINE 4 to highlight ALARM SETUP
- Press ENTER advance to the ALARM SETUP screen
- Press LINE 3 to highlight BIN ALARMS
- Press ENTER to advance to the BIN ALARMS screen
- Press ENTER to edit the BIN 1 SENSOR. *An asterisk (*) will be displayed*
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

THEN Press LINE 2 to highlight BIN 2 SENSOR
OR Press LINE 3 to highlight BIN 3 SENSOR
OR Press LINE 4 to highlight BIN 4 SENSOR

- Press ENTER to edit the BIN # : SENSOR. *An asterisk (*) will be displayed*
- Use Inc/Dec buttons to switch the alarm ON or OFF
- Press ENTER to accept the changes

6.3.4 SETTING THE BIN EMPTY (CONTENTS) ALARM

- Press CAL
- Press LINE 4 to highlight ALARM SETUP
- Press ENTER advance to the ALARM SETUP screen
- Press LINE 3 to highlight BIN ALARMS
- Press ENTER to advance to the BIN ALARMS screen
- Press LINE 1 to highlight BIN 1 CONTENTS

OR Press LINE 2 twice to highlight BIN 2 CONTENTS
OR Press LINE 3 twice to highlight BIN 3 CONTENTS
OR Press LINE 4 twice to highlight BIN 4 CONTENTS

- Press ENTER to edit the BIN EMPTY alarm.
  An asterisk (*) will be displayed
- Use Inc/Dec buttons to select ON or OFF
  If ON is selected then the BIN # EMPTY alarm will come on when the air seeder has calculated the last of the product has been metered.
  If OFF is selected the alarm is disabled
- Press ENTER to accept changes

7. AIR SEEDER OPERATIONS

Working Screen

7.1 FILL A BIN

- MASTER switch in the OFF position
- Press LINE 1 to highlight Bin 1

OR • Press LINE 2 to highlight Bin 2

OR • Press LINE 3 to highlight Bin 3

OR • Press LINE 4 to highlight Bin 4

- Press ENTER once a Bin has been highlighted.
  An asterisk (*) will be displayed next to the remaining bin weight, in the Product and Capacity Window
- Press RESET. The bin weight returns to full.
- Press ENTER to accept the change.

Note: When Bins are filled with product each Bin must be electronically FILLED.

7.2 ADD VOLUME TO A BIN

- MASTER switch in the OFF position
- Press LINE 1 to highlight Bin 1

OR • Press LINE 2 to highlight Bin 2

OR • Press LINE 3 to highlight Bin 3

OR • Press LINE 4 to highlight Bin 4

- Press ENTER once a Bin has been highlighted.
  An Asterisk (*) will be displayed next to the bin weight
- Press Inc/Dec buttons to adjust the volume.
  The Inc or Dec buttons can be held down to speed up the changes. Volume changes in 10kg increments
- Press ENTER to accept the change

Note: When Bins are filled with product each Bin must be electronically FILLED.

7.3 RESET THE ZONE AREA

- MASTER switch in the OFF position
- Press LINE 3 several times, to highlight the ZONE HA window
- Press ENTER to RESET the ZONE AREA.
  An asterisk (*) will be displayed next to Zone
- Press RESET. "Reset?" Will be displayed in the window
- Press ENTER to RESET the ZONE HA for Working Zone selected

OR • Press Dec button to cancel and NOT reset the Zone HA

- Press ENTER to accept the change.

The reseting of Zone Area, resets the area accumulated by the air seeder for the current Working Zone displayed in the Working Zone window.
To reset the Zone Area for another Working Zone, select another Working Zone as set out in Section 7.5. Then repeat the above procedure.

7.4 RESET THE TOTAL AREA

- MASTER switch in the OFF position
- Press LINE 3 twice to highlight the TOTAL AREA window
- Press ENTER to RESET the TOTAL AREA.
  *A star (*) will be displayed next to **ha**, in the TOTAL HA window*
- Press RESET button. "Reset?" Will be displayed in the window
- Press ENTER to RESET the TOTAL HA value to zero.

OR
- Press the Dec button to cancel
- Press ENTER to accept the change

This resets the Total Ha accumulated by the air seeder.

7.5 CHANGE THE WORKING ZONE

- Press LINE 4 twice to move to WORKING ZONE window
- Press ENTER to select the area. *An asterisk (*) will be displayed next to Zone*
- Press Inc/Dec buttons to set the Working Zone number.

1)The Working Zone number will be displayed in the Working Zone window.

2)The area accumulation for the Working Zone will be displayed in the Zone Ha window.

3)The products assigned to the Bins for the selected Working Zone will be displayed, in the Product and Bin Capacity windows

- Press ENTER to accept the change

7.6 SWITCH A BIN ON or OFF

The Bin switches turn individual Bins ON or OFF; down is ON

- To turn a Bin ON. *Adust the Bin switch (Bin 1, Bin 2, Bin 3 or Bin 4) for the selected bin to the down (ON) position.*
- To turn a Bin OFF. *Adust the Bin switch (Bin 1, Bin 2, Bin 3 or Bin 4) for the selected bin to the up (OFF) position.*

The red LED aligned under each BIN switch, indicates the status of each Product (BIN). When the LED light is:

- **OFF** - The Bin Switch for that bin is switched OFF, temporarily.
- **Flashing**- Bin Switch is switched ON but not metering. MASTER is OFF
- **ON**- The Bin Switch is switched ON, MASTER is ON and Product is being metered at the calibrated sowing rate which is displayed "live" as the Application Rate.

7.7 DISPLAY SOWING RATES (WITH MASTER OFF)

- Press either LINE 1,2,3 or 4 buttons momentarily
- The current sowing rates will be displayed for all BINS, for about 3 seconds. After 3 seconds it reverts back to the live rates.

7.8 INCREASE OR DECREASE THE SOWING RATE OF A BIN

- Press LINE 1, 2, 3 or 4 to select the bin you wish to adjust. *The BIN selected will be highlighted*
- Press the INC button to INCREASE the sowing rate, by the increment set for the product and bin

OR

- Press the DEC button to DECREASE the sowing rate, by the increment set for the product and bin
- If the BIN is switched OFF, the rate will be displayed for approximately 3 seconds

7.9 SETING RATE 1 OR RATE 2 FOR EACH BIN

The RATE 1 button sets the PRESET SOWING RATE 1 for the highlighted Bin.
The RATE 2 button sets the PRESET SOWING RATE 2 for the highlighted Bin.

In the PRODUCT SETUP screen (Section 4.1) , part of the setup process for each PRODUCT is to set a PRESET RATE 1 and PRESET RATE 2 with a corresponding Bin number.

To select a PRESET RATE for each Bin:

- Press LINE 1 button to highlight Bin 1.
- Press the RATE 1 or RATE 2 button. The LED next to either the RATE 1 or RATE 2 button will illuminate and the preset rate will be displayed in the LINE 1 window. If stationary, the rate will be displayed for 3 seconds. If seeding, the rate displayed will be the 'live' rate being metered out.

- Press LINE 2 button to highlight Bin 2.
- Press the RATE 1 or RATE 2 button. The LED next to either the RATE 1 or RATE 2 button will illuminate and the preset rate will be displayed in the LINE 2 window. If stationary, the rate will be displayed for 3 seconds. If seeding, the rate displayed will be the 'live' rate being metered out.

Repeat the above procedure to set a RATE 1 or RATE 2 for all remaining bins

7.10 BEGIN SEEDING

- Select a Working Zone
- Electronically REFILL any BINS
- Ensure any required BINS are switched ON. *The corresponding LED,s for the BINS that are switched ON will be flashing*
- Engage the FAN
- Switch the MASTER switch to the ON position
- Press the PRIME button (if required)
- Drive OFF

7.11 USE THE PRIME FUNCTION

- With required Bins ON, switch theMASTER to the ON position
- Press the PRIME button once. The LED near the PRIME/MANUAL button will illuminate.
- Prime will be displayed and a timer will count down from the value,the operator has set. The electric motors will turn on and begin metering product.
- Drive off while the timer is counting down
- Once the Prime time has finished counting, the current groundspeed will be displayed. The LED will turn OFF.

If the air seeder has not begun moving in this time, the electric motors will stop metering product and NO GROUND SPEED warning will appear in the ALARM WINDOW

7.12 RETURN TO A PRESET RATE 1 OR RATE 2

During seeding the operator may have used the Inc or Dec buttons to change the sowing rate for a particular Bin. The following shows how to bring a particular Bin back to either a PRESET RATE 1 or RATE 2.

- Press LINE 1, LINE 2, LINE 3 OR LINE 4 to highlight the Bin to be adjusted
- Press the RATE 1 or RATE 2 button. The PRESET RATE will be displayed in the highlighted Bin window. The LED will illuminate next to the RATE (1 or 2)button which was selected.

7.13 SHOW MOTOR LOAD and MOTOR AMPS

• Press MENU while seeding with the MASTER switched ON. *The MOTOR LOAD displayed as a % and MOTOR AMPS displayed as Amps will be displayed for each bin where the Product and Bin Capacity are normally displayed.*

• Press MENU to return to the Working Screen display.

7.14 USE THE MANUAL SPEED

- Press the PRIME/MANUAL twice button
- MANUAL will be displayed in the 'Speed Window' and the manual speed set, will be displayed. The LED near the PRIME/MANUAL button will illuminate while the air seeder is using the MANUAL SPEED.
- To switch MANUAL SPEED OFF, press the PRIME/MANUAL button once and the LED will turn off.
- The current groundspeed will be displayed

7.15 ADJUST BRIGHTNESS OF THE CONSOLE SCREEN

At the back left-hand side of the Console is a metal adjusting knob, turn the knob clockwise or anti-clockwise to adjust brightness of the screen to suit. See Page 61 for position of Contrast Knob.

8. CONFIGURATION OPTIONS

To access the extra console related configuration options, hold down the RESET button while the unit is first starting up.

Configuration Menu

8.1 KEY CONFIGURATION

- Press LINE 2 to highlight KEY CONFIG
- Press ENTER to advance KEY CONFIGURATION screen

Key Configuration Screen

8.1.1 SWITCH THE KEY BEEPER ON/OFF

- Press LINE 2 to highlight KEY CONFIG
- Press ENTER to advance KEY CONFIGURATION screen
- Press ENTER to edit the KEY BEEPER. *An asterisk (*) will be displayed*
- Press INC/DEC buttons to switch the beeper state ON or OFF
- Press ENTER to accept changes

The KEY BEEPER when switched ON will mean every time the key buttons on the console are pressed a beep will sound. When switched OFF, there is no beep when the key is pressed.

8.1.2 CHANGE THE KEY BEEPER TIME

- Press LINE 2 to highlight KEY CONFIG
- Press ENTER to advance KEY CONFIGURATION screen
- Press LINE 2 to highlight KEY BEEPER TIME
- Press ENTER to edit KEY BEEPER TIME. *An asterisk (*) will be displayed*
- Press INC/DEC buttons to edit the beeper time
- Press ENTER to accept changes

When the KEY BEEPER is toggled ON, then the KEY BEEPER TIMER determines how long the beep sound lasts for. The default is 300mS which is a third of a second.

8.1.3 SWITCH THE KEY REPEAT ENABLED

- Press LINE 2 to highlight KEY CONFIG
- Press ENTER to advance KEY CONFIGURATION screen
- Press LINE 3 to highlight KEY REPEAT ENABLE
- Press ENTER to edit KEY REPEAT ENABLE. *An asterisk (*) will be displayed*
- Press INC/DEC buttons to switch the key beeper, ON or OFF.
- Press ENTER to accept changes

The KEY REPEAT ENABLED when toggled ON allows the operator when using the Inc/Dec buttons to change values on the console during setup; to hold the Inc or Dec button down and the value will change without having to continually pressing the button to change the value. When switched OFF the operator will have to repeatedly press the Inc or Dec buttons to change the value.

8.1.4 ADJUST THE KEY REPEAT DURATION

- Press LINE 2 to highlight KEY CONFIG
- Press ENTER to advance KEY CONFIGURATION screen
- Press LINE 4 to highlight the KEY REPEAT DURATION
- Press ENTER to edit the KEY REPEAT DURATION *An asterisk(*) will be displayed*
- Press INC/DEC buttons to set the KEY REPEAT DURATION
- Press ENTER to accept changes

When the KEY BEEPER ENABLED is toggled ON, the KEY REPEAT DURATION determines how long when the Inc or Dec button is held down how quickly the value changes. The default is 300mS.

8.2 ALARM CONFIGURATION

- Press LINE 3 to highlight ALARM CONFIG
- Press ENTER to advance to the ALARM CONFIGURATION screen

Alarm Configuration Screen

8.2.1 Alarm Beeper Overview-

- This screen allows to change the settings on how the alarm will beep when an alarm appears in the ALARM WINDOW on the Working Screen.
- The ALARM CYCLE TIME sets how long in milliseconds(mS) the alarm stays in the ALARM WINDOW.
- The ALARM CYCLES is how many times the alarm will cycle (beep and flash, in the 'Alarm Window'
- The ALARM DUTY CYCLE is the percentage of time the beeper will beep, when the alarm is flahing in the 'Alarm Window'. Ie. When the ALARM DUTY CYCLE is set at 50% the beep will sound for half the time (50%), the alarm flashes in the 'Alarm Window.' The ALARM BEEPER needs to be switched ON.
- The ALARM BEEPER can be switched ON or OFF. When the beeper is turned ON, the console will beep as well as display what the alarm is. When the beeper is turned OFF, the alarm will be displayed on the screen but without the beep
- Ie. The default settings are displayed on the screen on Page 53.
- The alarm will appear in the ALARM WINDOW.
- The alarm will flash for 1 second.
- The alarm will beep for 1/2 a second (50% of the alarm cycle time), and the alarm will cycle (flash and beep) 5 times.
- After the 5 cycles the beep will stop and if the alarm is still present, then the alarm will cycle through in the ALARM WINDOW with no beep.

8.2.2 SET THE ALARM CYCLE TIME

- Press LINE 3 to highlight ALARM CONFIG
- Press ENTER to advance to the ALARM CONFIGURATION screen
- Press ENTER to edit the ALARM CYCLE TIME.
  An asterisk (*) will be displayed
- Press INC/DEC button to set the ALARM CYCLE TIME
- Press ENTER to accept changes

8.2.3 SET THE ALARM DUTY CYCLE

- Press LINE 3 to highlight ALARM CONFIG
- Press ENTER to advance to the ALARM CONFIGURATION screen
- Press LINE 2 to highlight ALARM DUTY CYCLE
- Press ENTER to edit the ALARM DUTY CYCLE.
  An asterisk (*) will be displayed
- Press INC/DEC buttons to set the ALARM DUTY CYCLE
- Press ENTER to accept changes

8.2.4 SET THE NUMBER OF ALARM CYCLES

- Press LINE 3 to highlight ALARM CONFIG
- Press ENTER to advance to the ALARM CONFIGURATION screen
- Press LINE 3 to highlight ALARM CYCLES
- Press ENTER to edit the ALARM CYCLES.
  An asterisk (*) will be displayed
- Press INC/DEC buttons to set the number of ALARM CYCLES
- Press ENTER to accept changes

8.2.5 SWITCH THE ALARM BEEPER ON/OFF

- Press LINE 3 to highlight ALARM CONFIG
- Press ENTER to advance to the ALARM CONFIGURATION screen
- Press LINE 4 to highlight ALARM BEEPER
- Press ENTER to edit the ALARM CYCLES. *An asterisk (*) will be displayed*
- Press INC/DEC to toggle alarm beeper ON or OFF
- Press ENTER to accept changes

8.3 GENERAL CONFIGURATION

- Press LINE 1 to select GENERAL CONFIG
- Press ENTER to select GENERAL CONFIG
- *See the following page for details on the General Configuration screen*

General Configuration Screen

8..3.1 CHANGING BETWEEN AIR SEEDER MONITOR AND SEED RATE CONTROLLER

- Press ENTER to select GENERAL CONFIG
- Press ENTER to change UNIT TYPE. *An asterisk (*) will be displayed*
- Press INC/DEC buttons to switch between SRC (Seedrate control) and ASM (Area, shaft monitor).
  SRC MUST BE SELECTED FOR ELECTRIC DRIVE MODELS
- Press ENTER to accept the changes

8.3.2 INTERFACE TO AN MDECU: (ELECTRIC DRIVE ONLY)

- Press ENTER to select GENERAL CONFIG
- Press LINE 2 to highlight INTERFACE TO MDECU
- Press ENTER to edit INTERFACE TO MDECU.
  An asterisk (*) will be displayed
- Press INC/DEC buttons to switch between ON or OFF
  ON MUST BE SELECTED FOR ELECTRIC DRIVE MODELS
- Press ENTER to accept changes

8.3.3 CHANGE THE TYPE OF MDECU: (ELECTRIC DRIVE ONLY)

- Press ENTER to advance to the GENERAL CONFIG screen
- Press LINE 2 twice to highlight MDECU MODE
- Press ENTER to change MDECU MODE. *An asterisk (*) will be displayed*
- Press INC or DEC buttons to select
- Select ELECTRIC MDECU if the black box located on the air seeder between the 2 rear bins; has UNIVERSAL MULTI DRIVE ECU stamped on the box

OR

- Select ELECTRIC SATCOM if the black box located on the air seeder between the 2 rear bins; has SATELLITE COMMANDER stamped on the box
- Press ENTER to accept changes

8.3.4 CHECK MDECU VERSION NUMBER

- If the Eagle Console, tractor loom, implement with any extension looms, chassis loom and the Multi Drive Electronic Drive Unit (MDECU) are correctly installed, then a version number will be displayed in this window.
- This the number represents the version of software installed on the MDECU.
- This number maybe needed by a KEE Service Representative.
- *Note: For earlier air seeders that have SATELLITE COMMANDER stamped on the box, the Version number displayed in the window will be 0.0.*

8.3.5 TOGGLE DISPLAY POLLING

- Press ENTER to advance to the GENERAL CONFIG screen
- Press LINE 3 twice to highlight DISPLAY POLLING
- Press ENTER to edit DISPLAY POLLING. *An asterisk (*) will be displayed*
- Press INC or DEC buttons to switch between ON and OFF

  OFF MUST BE SELECTED FOR ALL OPERATIONS.

  MUST ONLY BE SWITCHED ON WHEN DIRECTED BY A KEE SERVICE REPRESENTATIVE
- Press ENTER to accept changes

8.3.6 DIAGNOSTICS MODE

- Press ENTER to advance to the GENERAL CONFIG screen
- Press LINE 3 to highlight DIAGNOSTICS MODE
- Press ENTER to advance to the DIAGNOSTICS MODE screen

  Go to Section 9.0 for further details.

8.3.7 RESTORE TO FACTORY SETTINGS

- Press ENTER to advance to the GENERAL CONFIG screen
- Press LINE 4 to highlight COLD RESET (RESTORE DEFAULTS)
- Press ENTER to advance to COLD RESET screen
- Press MENU to go back to the GENERAL CONFIGURATION SCREEN

OR

- Press the RESET button on the console. *This will restore ALL settings and values in the Eagle Console back to the original settings set in the factory.*
- *Once the RESET button has been pressed, the console will revert back to the original factory settings and the Console will automatically AUTO POWER DOWN.*
- *The Console will then automatically POWER ON and start up at the Working Screen.*

9. DIAGNOSTICS MODE

- Hold the RESET button down(for about 5 seconds) while turning the POWER button ON.
- Press ENTER to advance to the GENERAL CONFIG screen
- Press LINE 3 to highlight DIAGNOSTICS MODE
- Press ENTER to advance to the DIAGNOSTICS MODE screen
- Press LINE 1, 2, 3 or 4 to move around the screen, till the TEST that required.is highlighted
- Press ENTER to advance the selected test.screen
- Press MENU to exit from any of the test screens

Diagnostics Screen

9.1 LED TEST

- Select this to check the operation of the Light Emitting Device (LED)'s on the front panel. Diagram below shows the positions of the LED,s
- If operating correctly the LED's will cycle consecutively around the front panel, starting from the:

  1)- Right hand side of console from top to bottom, then

  2)- Bottom side of console from left to right

,
- then once one cycle has been completed, all the LED's will flash together.
- Press MENU to exit

LED Test Screen

9.2 SWITCH TEST

- Select this to check the operation of the switches
- If operating correctly:
- The MASTER switch when in the OFF position;
  "MASTER SWITCH = OFF will be displayed on the console screen
- The MASTER switch when in the ON position;
  "MASTER SWITCH = ON will be displayed on the console screen
- Status of the Bin switches (1 to 4) will be indicated by SW1 to SW 4 on the test screen.
  When the position of the Bin switch is in the DOWN position the corresponding SW indicator will point DOWN. When the Bin switch is in the UP position the corresponding SW indicator arrow will point UP
- Status of the LIGHTS switch will be indicated by SW 6
- Status of the AUX switch will be indicated by SW 7
- Press MENU to exit

Switch Test Screen

9.3 KEYS TEST

- Select this to check the operation of the buttons on the front panel
- If operating correctly by pressing any button, the button that is pressed will be displayed on the screen
- Press MENU button to exit

Keys Test Screen

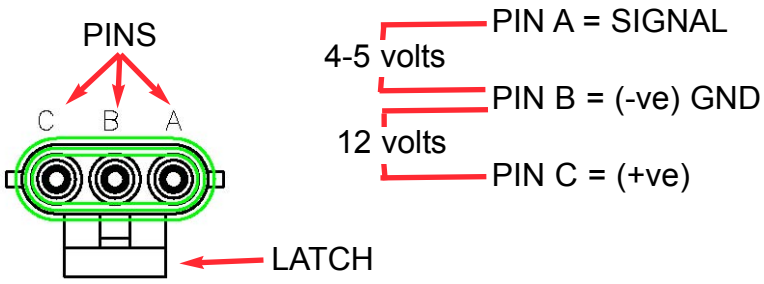
9.4 SENSORS TEST

- Select this test to check the operation of the sensor circuitry
- The current period (time between pulse, measured in mS) for each sensor will be displayed on the screen.
- During operation the period between the pulses should be constant, if this figure isn't constant then this suggests there is a magnet missing or a sensor distance isn't set properly.
- The pulse count keeps accumulating as each magnet goes past the sensor.
- The Gear ratio of each motor is displayed here, these values should be checked against the Gear Ratio values used in the SEEDER SETUP. (See Section 4.1.3)
- Press MENU to exit

Electric Sensor Test Screen

9.4.1 CHECKING LOOM VOLTAGES, FOR 3 PIN SENSORS

- This test should be carried out if the sensor (ground speed sensor, metering shaft sensors, fan shaft sensor) that appears to be faulty has been checked using the Diagnostic Test in Section 9.4., and no 'pulse count', or no 'period' can be observed or the period is erratic.
- This test will check the sensor is receiving the correct voltages, from the chassis loom.
- To carry out this test a multimeter is required which can measure DC voltage between 1 and 24 volts. A ruler to measure distance between sensor and magnet.
- This test procedure can be carried out on ground speed sensors, metering shaft sensors and the fan speed sensor all which have a 3 pin weather-pak connector, which connects the sensor to the chassis loom. Each connector has A, B and C marked on the connector. If the A,B and C are covered by shrink-wrap, then use diagram below to determine A,B and C pins position
- Check the the distance between the magnet and sensor. The distance should be 2 to3 millimeters. Rectify if distance is incorrect.
- If checking ground speed sensor check to make sure no magnets are missing and they evenly spaced apart.
- Check for obvious signs of damage(breakage, corrosion etc) to the sensor, plug and wiring. Rectify any damage.



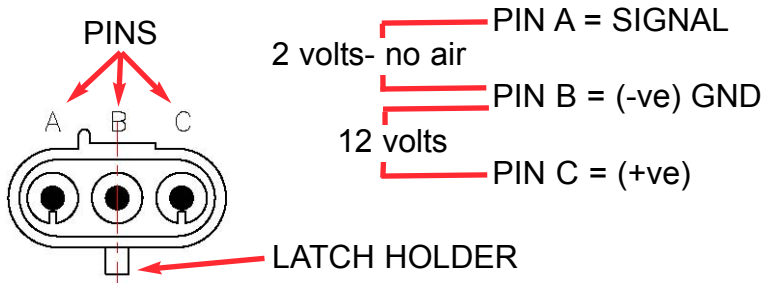
'LOOM' 3PIN Weather-Pak Plug

- From the sensor trace back the wiring to the 3 pin weather-pak plug, unplug the sensor plug from the chassis loom plug.
- Switch Console POWER switch ON.
- The 'Latch' on the plug is what holds the 2 plugs together. With the 'Latch' facing down (as shown in diagram), the Pins starting from the left are: C, B and A.
- Using multi-meter, the voltage between PIN C and PIN B should be 12 volts.
- Using multi-meter, the voltage between PIN A and PIN B should be 4-5 volts.
- If the voltages are correct as above then this would suggest a faulty sensor.
- If one or both voltages are incorrect then write down the actual voltages and contact your local KEE Dealer.

9.4.2 PRESSURE SENSOR TEST

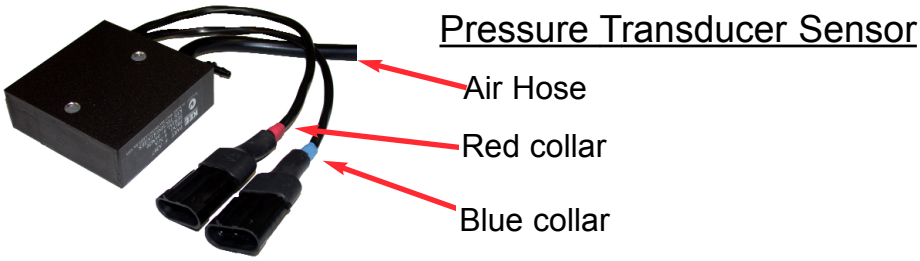
This is a simple test procedure that determines whether the pressure transducer sensor is functioning properly. A multi-meter is required which can measure DC voltage between 1 and 24 volts.

- The pressure transducer sensor is mounted on the air seeder chassis near the fan.
- The sensor has 2 weather-pak plugs(one with a red collar and one with a blue collar) and a spigot with a rubber hose which goes to the fan.
  See diagram of Pressure Transducer Sensor at bottom of page, showing red collar plug, blue collar plug and air hose
- For correct operations the weather-pak plug with the **red collar** should be connected to the chassis loom; if the red collar plug isn't connected then do so now and check console for a pressure reading; the blue collar plug is used for testing.
- To test the sensor unplug red collar plug from chassis loom.
- Connect the blue collar plug to the chassis loom.



Red collar 3PIN Weather-Pak Plug

- Switch Console POWER switch ON.
- The 'Latch Holder' on the plug is what holds the 2 plugs together. With the 'Latch Holder' facing down (as shown in diagram), the Pins starting from the left are: A, B and C.
- Using a multi-meter, the voltage between PIN C and PIN B should be 12 volts.
- Using multi-meter, the voltage between PIN A and PIN B should be 2 volts.
- Unplug the rubber hose from where it is attached to the fan.
- With the multi meter still across PIN A and PIN B, blow hard into the hose, the voltage should read approximately 3 volts.
- Once testing is finished ensure the weather-pak plug with the red collar is connected to the chassis loom and connected the rubber hose back to the spigot on the fan.
- If one or both voltages are incorrect then write down the actual voltages and contact your KEE Dealer.



9.5 RELAY TEST

- Select this to check the operation of the all relay circuitry
- This test, cycles through each relay within the console; and each of the three states of each relay
- If operating correctly and a “Light” and or a “Wing Cut-off” kit is installed using the AUX 1 and AUX 2 plugs on the loom. (see page ??)
- During the RELAY TEST regardless of the position of the Console switches
  1) Any LIGHT KIT connected to the AUX 1 plug will switch ON then OFF
  2) Any AUX kit (Wing Cut-off or another LIGHT kit) connected to the AUX 2 plug of the loom will switch ON then OFF.
- This test isolates whether it is a relay problem in the console or an actual switch problem in the console
- Press MENU to exit

Relay Test Screen

9.6 BIN LEVELS TEST

- Select this to check the operation of the bin level sensors
- If operating correctly when the product, fully covers the bin sensor the particular bin should say FULL.
- If the product doesn't fully cover the bin level sensor the particular bin will say EMPTY.
- Press MENU to exit

Bin Levels Test Screen

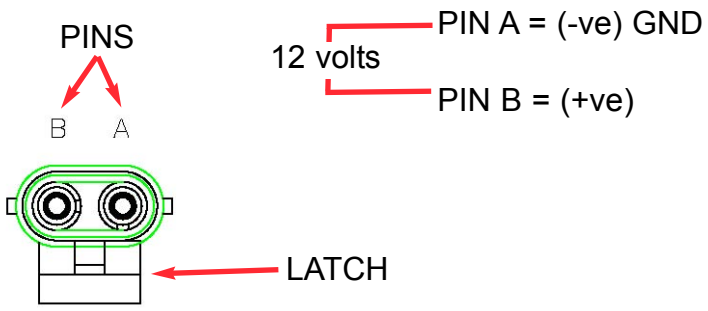
9.6.1 BIN LEVEL SENSOR ADJUSTMENT

The Bin Level Sensors should be adjusted when fitted to a system and at the start of each season, They are sensitive to voltage changes and may operate differently on a different tractor. They are also sensitive to different products, and while they will work with grain such as wheat, re-adjustment may be required to detect Urea. Once set to work with Urea, they will work on all other products provided voltage supplies remain the same.

- The unit should be mounted so that there is nothing within 2 inches of the front of the sensor, bin struts, side walls, product etc.
- Turn the Eagle console ON, with sensor in free space or in an empty bin
- Check the sensor light. If OFF, turn the adjusting screw counterclockwise until the light comes on.
- If the light is on, turn the screw clockwise until it goes off then turn back again until it just comes on.
- Place a hand near the sensor cap, or place the sensor in the product that will be in the bin. The light should go off.
- Remove the product or hand, the light should come on when the cap has a clearance of 1.5 to 2 cms from the product or hand. If using a hand to set the sensor, check the operation with the product as this is only a rough guide to simplify testing.
- Adjust the screw if necessary to achieve this result.
- Repeat the procedure for each Bin
- If set with Urea, the sensor light should go off when the end is in the product approximately 1 cm, with wheat etc, the light should go off just as the sensor face touches the product, and come back on again at approxImately 2 cm clearance.

9.6.2 CHECKING LOOM VOLTAGES, FOR BIN SENSOR

- This test should be carried out if the bin level sensor appears to be faulty has been checked using the Diagnostic Test in Section 10.6. This test will check the sensor is receiving the correct voltages.
- To carry out this test a multimeter is required which can measure DC voltage between 1 and 24 volts.
- Each bin level sensor has a 2 pin weather-pak connector and has A and B marked on the connector.
- Check for obvious signs of damage(breakage, corrosion etc) to the sensor, plug and wiring. Rectify any damage.
- From the sensor trace back the wiring to the 2 pin weather-pak plug, unplug the sensor plug from the chassis loom plug.
- Switch Console POWER switch ON.



'LOOM' 2 PIN Weather-Pak Plug

- The 'Latch' on the plug is what holds the 2 plugs together. With the 'Latch' facing down (as shown in diagram), the Pins starting from the left are: B and A.
- Using a multi-meter, the voltage between PIN A and PIN B on the chassis loom should be 12 volts.
- If the voltage is incorrect then write down the actual voltage and contact your KEE Dealer.

9.7 MEMORY TEST

- Select this to check the operation of the read/write to memory chip.
- When on the memory test page, the lines should keep scrolling. If it stops on a particular line, there is a problem, and the information is not being saved properly to the chip.
- Press MENU to exit

Memory Test Screen

9.8 DISPLAY TEST

- Select this to check the operation of the pixels on the display screen
- When on the Display Test page the screen will start blackening from the left to right. This test will show whether all pixels are working on the screen.
- Press the MENU to exit.

10. ALARM MESSAGES

10.1 Alarm Messages Overview

All alarms to alert the operator will flash in the 'Alarm Window'.
The frequency and whether an alarm sounds when an alarm is displayed in the 'Alarm Window' is set in the ALARM CONFIGURATION see Section 9.2.
The alarm will keep flashing in the 'Alarm Window' till the problem is rectified.
If there is more than one alarm present then the alarms will scroll through in the 'Alarm Window' one alarm at a time, the first alarm will flash a number of times, then the next alarm will flash and so forth, until all alarms have been displayed.
The 'Alarm Window' will then start again with the first alarm.
A list of all the alarms and an explanation for each alarm are listed on the following pages.

Working Screen

10.2 Fan Alarms

- **Fan Pressure Low-** if the fan pressure goes below the programmed Alarm Point, the message “FAN PRESS LOW” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Fan Pressure High-** if the fan pressure goes above the programmed Alarm Point, the message “FAN PRESS HIGH” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Fan Speed Low-** if the fan speed goes below the programmed Alarm Point, the message “FAN SPEED LOW” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Fan Speed High-** if the fan speed goes above the programmed Alarm Point, the message “FAN PRESS HIGH” flashes in the ‘Alarm Window’ and the alarm sounds.

10.3 Metering Shaft Alarms

- **Shaft 1 Stopped-** if bin metering Shaft 1 stops rotating, the message “SHAFT 1 STOPPED” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Shaft 2 Stopped-** if bin metering Shaft 2 stops rotating, the message “SHAFT 2 STOPPED” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Shaft 3 Stopped-** if bin metering Shaft 3 stops rotating, the message “SHAFT 3 STOPPED” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Shaft 4 Stopped-** if bin metering Shaft 4 stops rotating, the message “SHAFT 4 STOPPED” flashes in the ‘Alarm Window’ and the alarm sounds.

10.4 Rate Alarms

- **Rate 1 Alarm-** if the selected application rate for BIN 1, can not be controlled to within 5% (above or below the rate), the message “RATE 1 ALARM” flashes in the ‘Alarm Window’, the alarm sounds. and the “actual” rate being metered will be displayed on LINE 1.
- **Rate 2 Alarm-** if the selected application rate for BIN 2, can not be controlled to within 5% (above or below the rate), the message “RATE 2 ALARM” flashes in the ‘Alarm Window’, the alarm sounds. and the “actual” rate being metered will be displayed on LINE 2.
- **Rate 3 Alarm-** if the selected application rate for BIN 3, can not be controlled to within 5% (above or below the rate), the message “RATE 3 ALARM” flashes in the ‘Alarm Window’, the alarm sounds. and the “actual” rate being metered will be displayed on LINE 3.
- **Rate 4 Alarm-** if the selected application rate for BIN 4, can not be controlled to within 5% (above or below the rate), the message “RATE 4 ALARM” flashes in the ‘Alarm Window’, the alarm sounds. and the “actual” rate being metered will be displayed on LINE 4.

10.5 Bin Low (Sensor) Alarms

- **Bin 1 Low Alarm-** when the product level in BIN 1 falls below the sensor, the message “BIN 1 LOW” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 2 Low Alarm-** when the product level in BIN 2 falls below the sensor, the message “BIN 2 LOW” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 3 Low Alarm-** when the product level in BIN 3 falls below the sensor, the message “BIN 3 LOW” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 4 Low Alarm-** when the product level in BIN 4 falls below the sensor, the message “BIN 4 LOW” flashes in the ‘Alarm Window’ and the alarm sounds.

10.6 Bin Empty (Contents) Alarms

- **Bin 1 Empty Alarm-** will alarm when the air seeder has calculated the last of the product has been metered, through BIN 1, “ BIN 1 EMPTY” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 2 Empty Alarm-** will alarm when the air seeder has calculated the last of the product has been metered, through BIN 2, “ BIN 2 EMPTY” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 3 Empty Alarm-** will alarm when the air seeder has calculated the last of the product has been metered, through BIN 3, “ BIN 3 EMPTY” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Bin 4 Empty Alarm-** will alarm when the air seeder has calculated the last of the product has been metered, through BIN 4, “ BIN 4 EMPTY” flashes in the ‘Alarm Window’ and the alarm sounds.

10.7 Gear Ratio Alarms

- **Gear 1 Ratio Alarm-** when the ratio between the metering shaft (Bin 1) and the electric motor (Bin 1) is different to the programmed Gear Ratio set for Bin 1, the message “GEAR1 ALARM” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Gear 2 Ratio Alarm-** when the ratio between the metering shaft (Bin 2) and the electric motor (Bin 2) is different to the programmed Gear Ratio set for Bin 2, the message “GEAR2 ALARM” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Gear 3 Ratio Alarm-** when the ratio between the metering shaft (Bin 3) and the electric motor (Bin 3) is different to the programmed Gear Ratio set for Bin 3, the message “GEAR3 ALARM” flashes in the ‘Alarm Window’ and the alarm sounds.
- **Gear 4 Ratio Alarm-** when the ratio between the metering shaft (Bin 4) and the electric motor (Bin 4) is different to the programmed Gear Ratio set for Bin 1, the message “GEAR4 ALARM” flashes in the ‘Alarm Window’ and the alarm sounds.

10.8 Motor Sensor Alarms

Note: The Motor Sensor Alarm indicates the shaft in the electric motor has stopped turning. For the alarm to be activated the Bin has to be switched ON, MASTER is in the ON position and a current Ground Speed is detected.

- **Motor 1 Sensor Alarm-** when the sensor in the back of the electric motor for (Bin 1), doesn't detect a pulse for a period of time, the message "MOTOR1 SENSOR" flashes in the 'Alarm Window' and the alarm sounds.
- **Motor 2 Sensor Alarm-** when the sensor in the back of the electric motor for (Bin 2), doesn't detect a pulse for a period of time, the message "MOTOR2 SENSOR" flashes in the 'Alarm Window' and the alarm sounds.
- **Motor 3 Sensor Alarm-** when the sensor in the back of the electric motor for (Bin 3), doesn't detect a pulse for a period of time, the message "MOTOR3 SENSOR" flashes in the 'Alarm Window' and the alarm sounds.
- **Motor 4 Sensor Alarm-** when the sensor in the back of the electric motor for (Bin 4), doesn't detect a pulse for a period of time, the message "MOTOR4 SENSOR" flashes in the 'Alarm Window' and the alarm sounds.

10.9 Other Alarms

- **No Ground Speed-** when no signal is detected from the wheel sensor on the air seeder or tractor radar (if fitted), when a Bin is switched ON and MASTER is in the ON position. This will occur any time the air seeder stops and is intended as a warning only.
  If the "NO GROUND SPEED" message flashes in the 'Alarm Window' and the alarm sounds and the air seeder is moving, the wheel sensor (on air seeder) or Tractor radar (if fitted), should be checked immediately.
- **NO COMMs-** if the Multi Drive Electronic Control Unit (MDECU) is disconnected, from the Console, the message flashes in the 'Alarm Window' and the alarm sounds. No seeding is possible if this alarm is present.
- **MASTER OFF-** when a Bin is switched ON and the MASTER switch is in the OFF position, after a set period, the message "MASTER OFF" flashes in the 'Alarm Window' and the alarm sounds.
  This alarm is intended as a warning only.
- **HIGH TEMP-** when the MDECU box, reaches or exceeds the maximum temperature, the message "HIGH TEMP" flashes in the 'Alarm Window' and the alarm sounds.
- **TANKS OFF -** when the MASTER is switched to the ON position; but the Bin switches are switched OFF, the TANKS OFF will flash in the 'Alarm Window' This alarm is intended as a warning only.
- **TURN MASTER OFF-** when the MASTER switch is in the ON position and the operator tries to PRESS a button that requires the MASTER switch to be in the OFF position (ie go to the sub menu's) then the TURN MASTER OFF alarm flashes in the 'Alarm Window.'

11. SPECIFICATIONS

11.1 Console

- **Supply Voltage** 13 - 16 volts Negative earth system.

The Console's power leads must be connected directly to the tractors battery terminals.
No attempt should be made to connect the system to positive earth vehicle. Damage will result and Warranty will become void.

- **Supply Current Console** 0.9 amps approxImately.

Maximum Motor supply current 20 amps each motor (80 amps total, if 4 motors fitted)

11.2 Ground Speed, Fan Speed, Metering Shaft Sensors

Ground Speed Sensor,: Fan Speed Sensor and Shaft Sensors: Hall effect type sensors
3 pin weather-pak plug (Pin A, B and C)

Sensor to Magnet Distance 2-3 millimeters (mm)

Supply Voltage Supply 12 volts from MDECU

Signal Voltage: 4 -5- volts sensor inactive
< 1 volt sensor activated by magnet

11.3 Fan Pressure Sensors

Fan Pressure Sensor: Solid state aircraft altimeter type. Max. error 1%

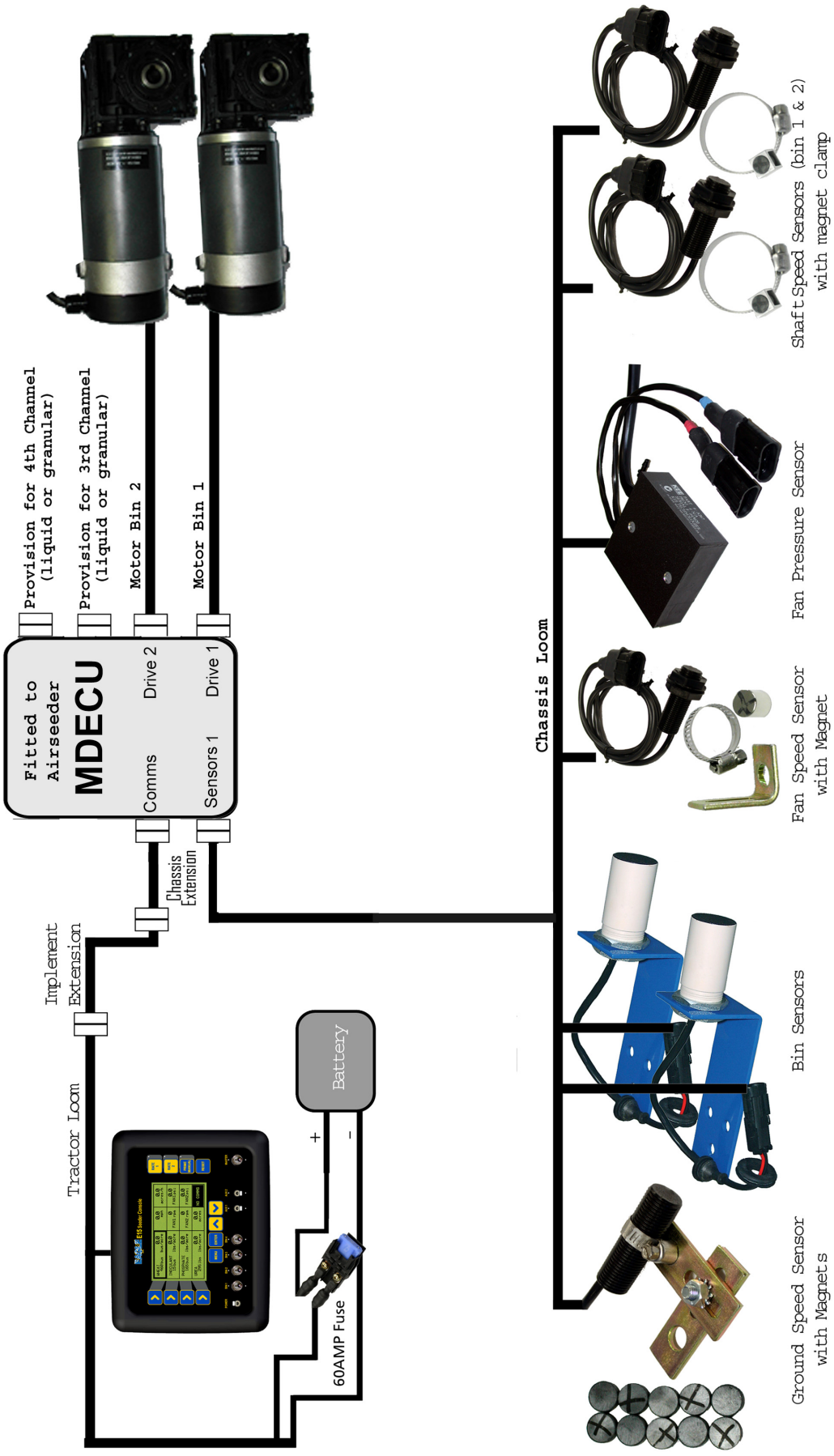
11.4 Bin Level Sensors

Bin Level Sensor: Solid state capacitive type.
2 Pin weather-pak plug (Pin A and B)
Triggered on flat end
Sensitivity adjustable for light material eg. Urea

Supply Voltage Supply 12 volts from MDECU

12. SYSTEM COMPONENTS

For a Typical 2 Bin Air Seeder



12.1. SYSTEM COMPONENTS- PARTS LIST

For a Typical 2 Bin Eagle Seedrate Control (Electric Motors)

Item	Part Number	QTY
• **KEE Eagle Seedrate Control Console-**	A1669	1
• **Looms**		
Tractor Loom	A1985	1
Implement Extension Loom(15m)	A832L	1
Chassis Extension Loom	A883L	1
Chassis Loom	A1110L	1
• **Motor Drive Electronic Control Unit (MDECU)**		
2 Channel MDECU	A1525	1
or 4 Channel MDECU	A1526	1
• **Electric Motor with 30:1 Gearbox**	**A1350**	**2**
15:1 Gearbox only	A621	
30:1 Gearbox only	Y178	
60:1 Gearbox only	Y179	
Electric Motor only	A287	
• **Ground Speed Sensor**	**A1200**	**1**
"L" Angle Speed Sensor Bracket	A006	1
or Slotted Speed Sensor Bracket	A007	1
10 Magnet Wheel Kit	A369	1
• **Fan Speed Sensor**	**A1200**	**1**
Fan Magnet	A368	1
• **Bin Level Sensor**		
Bin Level Sensor only	A667	2
or Bin Level Sensor with Bracket	A1201	2
• **Fan Pressure Sensor Kit**	**A267**	**1**
• **Shaft Speed Sensor**	**A1200**	**2**
"L" Angle Speed Sensor Bracket	A006	2
or Slotted Speed Sensor Bracket	A007	2
Block Magnet and Clamp	A402	2
• **Remote Master Switch (Optional)**	**A601**	**1**
• **Spares**		
16 Pin Locking Ring Kit (pack of 3)	**A1478**	
Fuse 10 Amp 3AG (Console fuse)	**Y846**	
Fuse 20 Amp (Aux1 and Aux 2 fuse)	**Y848**	
Fuse 60 Amp (Electric Motors)	**Y197**	

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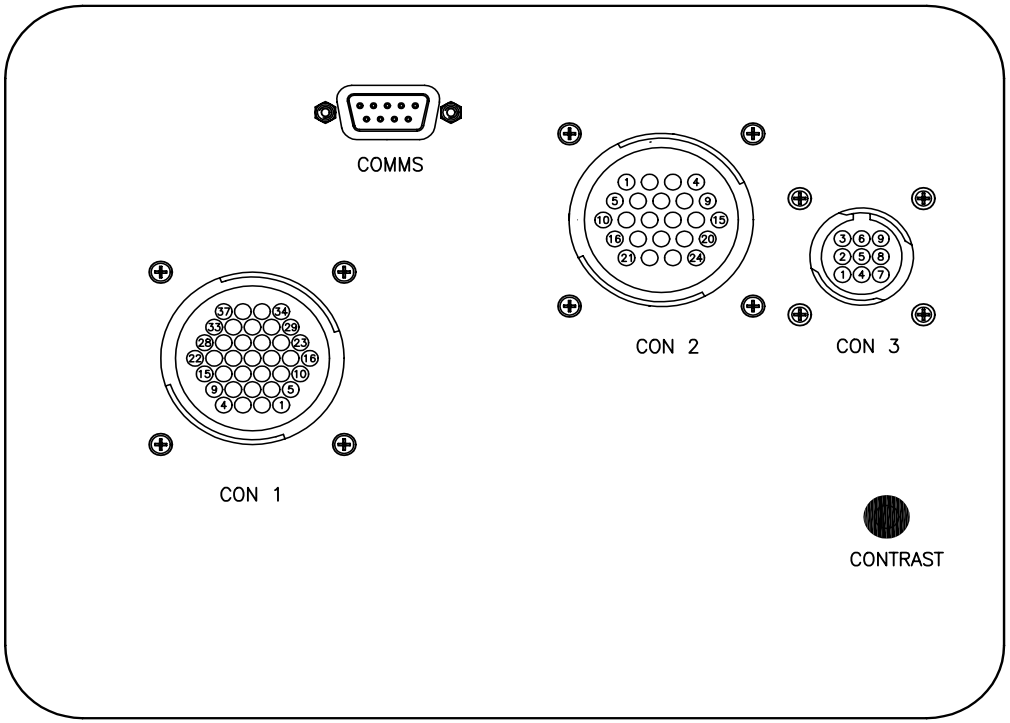
ITEM	QTY	MATERIAL/DESCRIPTION	DWG. NO.	CODE



CONNECTOR 2	
PIN NUMBER	FUNCTION
1	LIGHTS 1
2	LIGHTS 2
5	BATTERY +13.8V
7	GROUND
8	SPEED
11	BATTERY +13.8V
17	BATTERY +13.8V
18	GROUND
20	SENSOR POWER

CONNECTOR 3	
PIN NUMBER	FUNCTION
1	SWITCHED POWER
2	GROUND
3	COMMS A
4	COMMS B
7	EXTERNAL SWITCH

REV	DATE	DCR NO.	DESCRIPTION OF CHANGE	APPR'D

MATERIAL/FINISH:

DO NOT SCALE UNLESS OTHERWISE STATED ALL DIMENSIONS ARE IN MILLIMETRES

TOLERANCES
X. +/−1
X.X +/−0.2
X.XX AS STATED
ANGULAR ±0.25°

DRAWN	APPROVED	PART OF ASSY:
OM		
18/11/04		

KEE TECHNOLOGIES
14 PARKWAY
MAWSON LAKES
SOUTH AUSTRALIA 5095
PHONE:(+618)82033300
FAX:(+618)1300307205
EMAIL:info@kee.com.au

PART NO:

PROJECT:

TITLE: ED PINOUTS

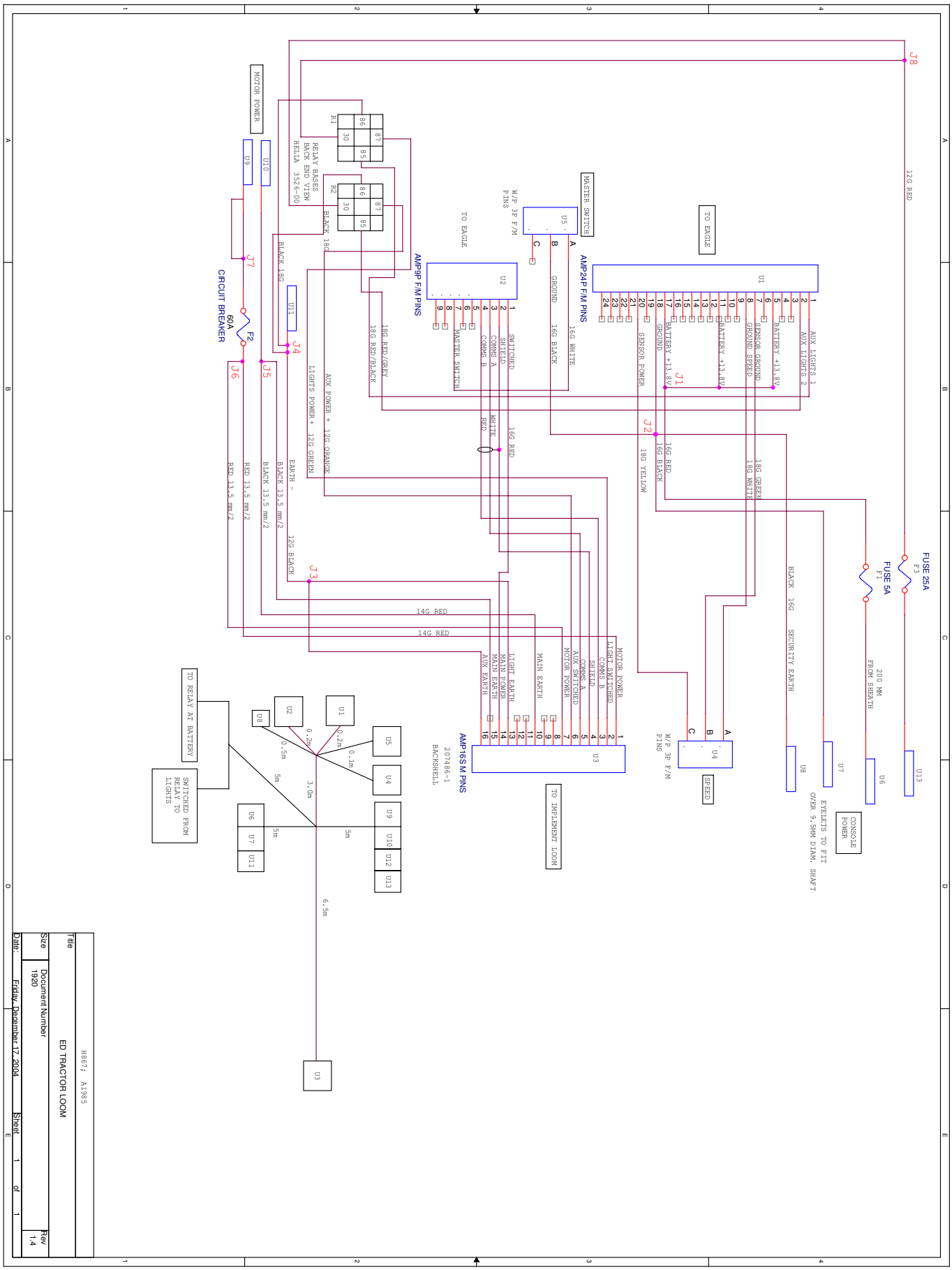
SCALE N/A

SHEET 1 OF 1

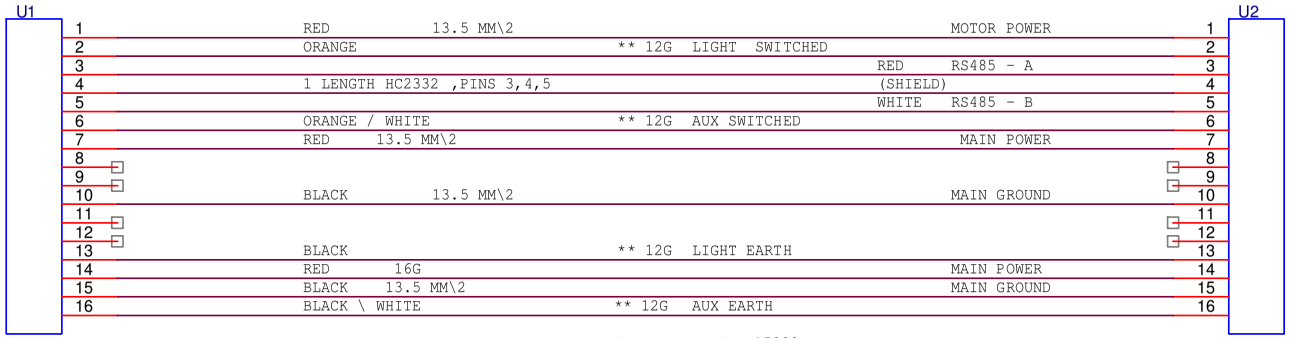
DRAWING NO: 1977

FILE NAME: 1977_10.DWG

REV 1.0


J8
12G RED
FUSE 25A
F3
FUSE 5A
F1
200 MM
FROM SHEATH
U13
U6
CONSOLE
POWER
EYELETS TO FIT
OVER 9.5MM DIAM. SHAFT
U7
U8
BLACK 16G
SECURITY EARTH
TO EAGLE
U1
AUX LIGHTS 1
AUX LIGHTS 2
BATTERY +13.8V
SENSOR GROUND
GROUND SPEED
BATTERY +13.8V
GROUND
BATTERY +13.8V
SENSOR POWER
J1
J2
16G RED
16G BLACK
18G YELLOW
18G GREEN
18G WHITE
SPEED
W/P 3P F/M
PINS
A
B
C
U4
MOTOR POWER
LIGHT SWITCHED
COMMS B
SHIELD
COMMS A
AUX SWITCHED
MOTOR POWER
MAIN EARTH
LIGHT EARTH
MAIN POWER
MAIN EARTH
AUX EARTH
U3
AMP16S M PINS
207486-1
BACKSHELL
TO IMPLEMENT LOOM
MASTER SWITCH
AMP24P F/M PINS
U5
GROUND
16G BLACK
16G WHITE
W/P 3P F/M
PINS
TO EAGLE
U2
AMP9P F/M PINS
SWITCHED
SHIELD
COMMS A
COMMS B
MASTER SWITCH
18G RED/GREY
18G RED/BLACK
16G RED
WHITE
RED
AUX POWER + 12G ORANGE
LIGHTS POWER + 12G GREEN
EARTH -
BLACK 13.5 mm/2
12G BLACK
J3
14G RED
14G RED
RED 13.5 mm/2
BLACK 13.5 mm/2
RED 13.5 mm/2
J4
J5
J6
J7
F2
60A
CIRCUIT BREAKER
BLACK 18G
BLACK 18G
U11
MOTOR POWER
U9
U10
RELAY BASES
BACK END VIEW
HELLA 352-00
R1
R2
86
30
87
85
TO RELAY AT BATTERY
SWITCHED FROM
RELAY TO
LIGHTS
U8
U2
U1
0.2m
0.1m
0.5m
5m
3.0m
5m
5m
6.5m
U5
U4
U6
U7
U11
U9
U10
U12
U13
U3
H867; A1985
Title
ED TRACTOR LOOM
Size
Document Number
1920
Rev
1.4
Date:
Friday, December 17, 2004
Sheet
1
of
1

** These 12G wires are connected to their respective pins via short lengths of 14g wire (50mm)
LIGHT SWITCHED, AUX SWITCHED, LIGHT EARTH, AUX EARTH



207485-1 PLUG
66741-6 FEMALE CONTACTS
66101-3 MULTIMATE SOCKETS
206512-1 BACKSHELL
Y242 DUST CAPS SUPPLIED BY KEE

SLEEVED LENGTH 15000 mm

CONNECT PINS 1 & 7 IN BOTH BACKSHELLS
CONNECT PINS 10 & 15 IN BOTH BACKSHELLS

207486-1 RECEPTACLE
66259 MALE PINS
66101-3 MULTIMATE SOCKETS
206512-1 BACKSHELL
207446-1 CAP

KEE TECHNOLOGIES , 39 PLYMOUTH ROAD WINGFIELD SA

A832L , H602

Title: ED IMPL EXTN CABLE 15M

Size: Custom | Document Number: 1339 EL070072 | Rev: A

Date: Monday, January 12, 2004 | Sheet 3 of 17

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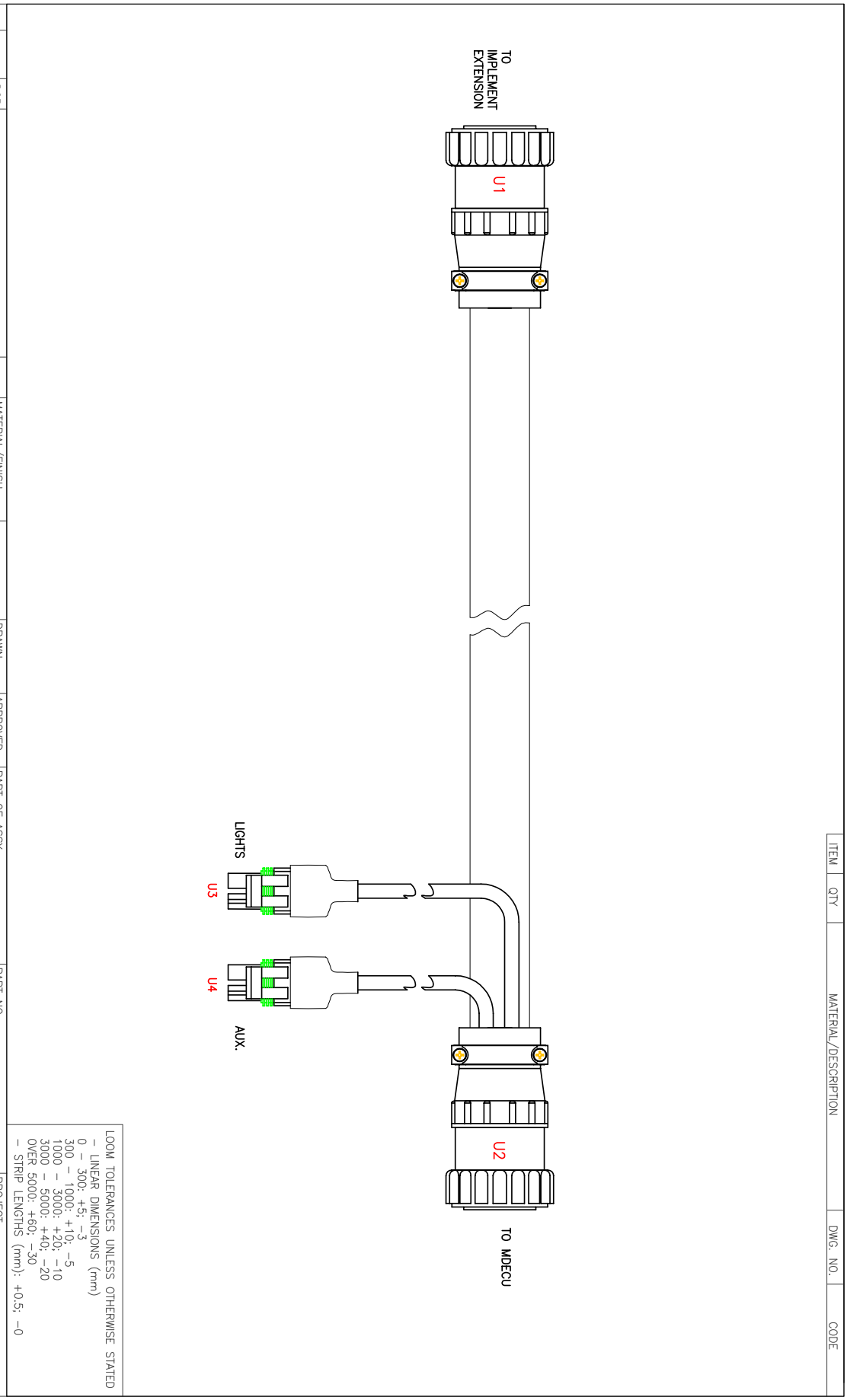


ITEM	QTY	MATERIAL/DESCRIPTION	DWG. NO.	CODE

LOOM TOLERANCES UNLESS OTHERWISE STATED
– LINEAR DIMENSIONS (mm)
0 – 300: +5; –3
300 – 1000: +10; –5
1000 – 3000: +20; –10
3000 – 5000: +40; –20
OVER 5000: +60; –30
– STRIP LENGTHS (mm): +0.5; –0

REV	DATE	DCR NO.	DESCRIPTION OF CHANGE	APPR'D

MATERIAL/FINISH:

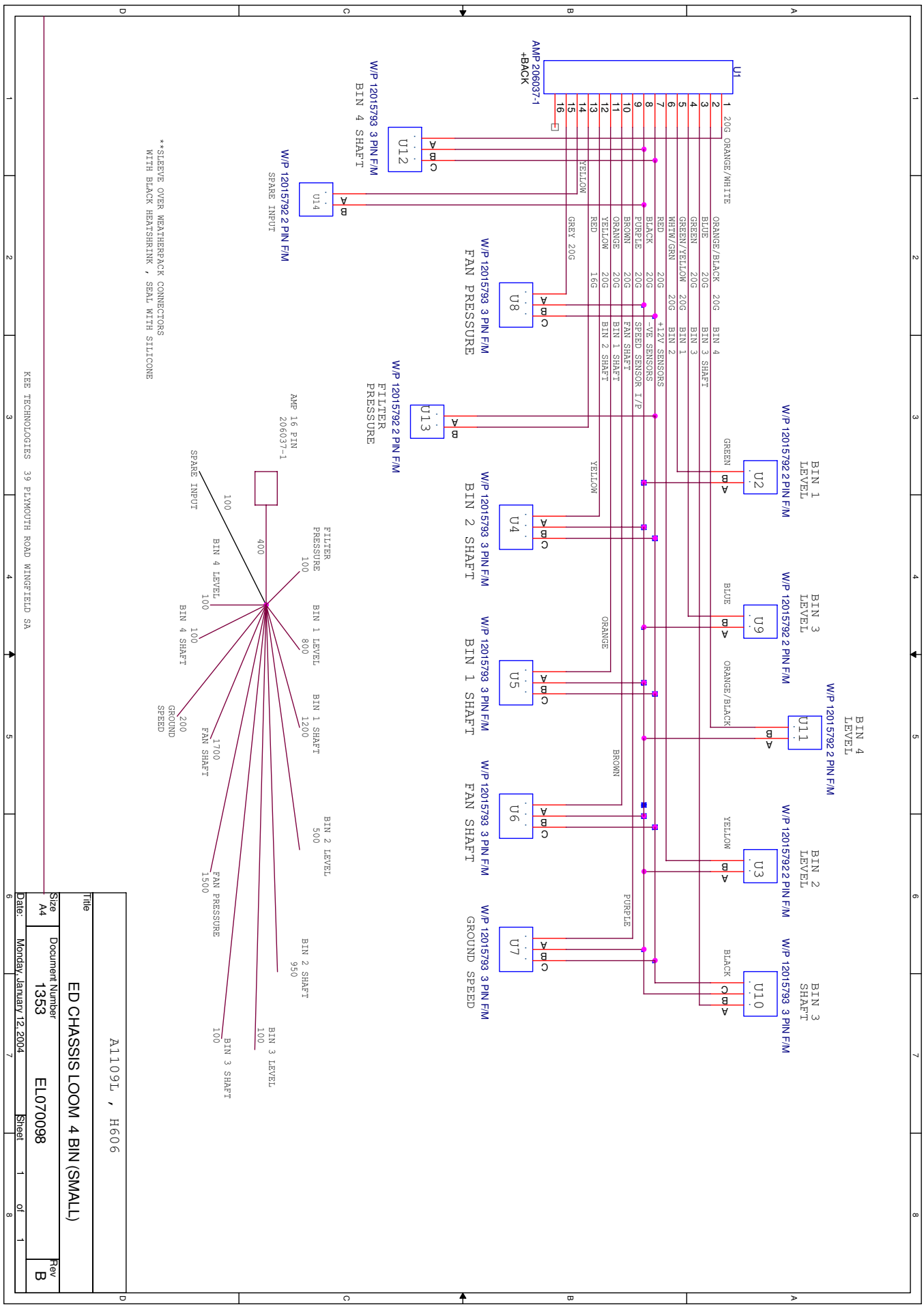
DO NOT SCALE
UNLESS OTHERWISE STATED ALL DIMENSIONS ARE IN MILLIMETRES

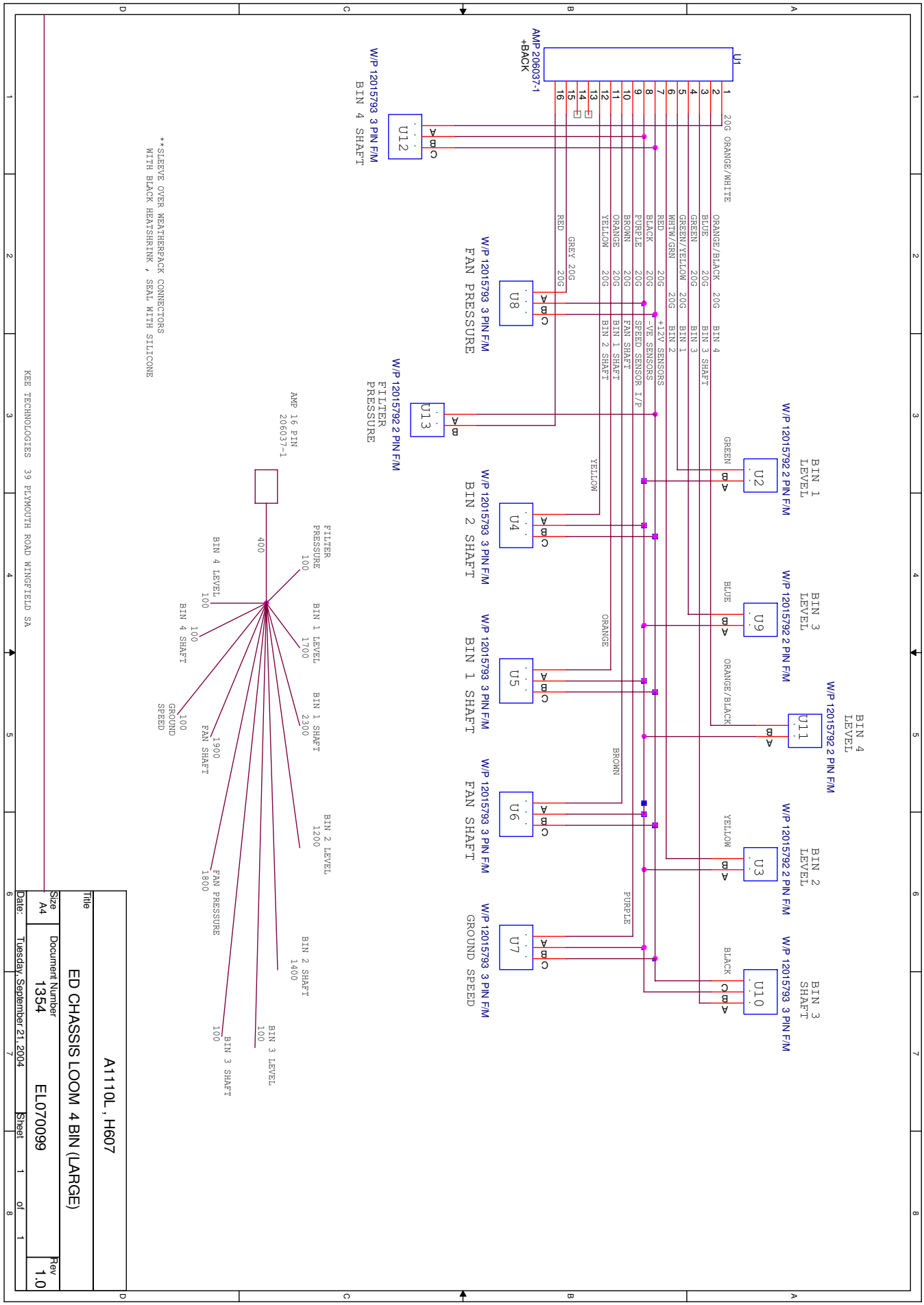
TOLERANCES
X +/–1
X.XX +/–0.2
X.XXX AS STATED
ANGULAR ±0.25'

DRAWN: BK 9/8/02
APPROVED:

KEE TECHNOLOGIES
14 PARKWAY
MAWSON LAKES
SOUTH AUSTRALIA 5095
PHONE:(+618)8203 3300
FAX:(+618)1300307205
EMAIL:info@kee.com.au

PART OF ASSY: A883L
PART NO: H603
TITLE: SEED RATE CONTROL ED CHASSIS EXTENSION
PROJECT:
DRAWING NO: 1340
FILE NAME: 1340_A.DWG
SCALE N/A
SHEET 1 OF 2
REV A


AMP 206037-1 +BACK
U1
1 20G ORANGE/WHITE
2 ORANGE/BLACK 20G BIN 4
3 BLUE 20G BIN 3 SHAFT
4 GREEN 20G BIN 3
5 GREEN/YELLOW 20G BIN 1
6 WHTW/GRN 20G BIN 2
7 RED 20G +12V SENSORS
8 BLACK 20G -VE SENSORS
9 PURPLE 20G SPEED SENSOR I/P
10 BROWN 20G FAN SHAFT
11 ORANGE 20G BIN 1 SHAFT
12 YELLOW 20G BIN 2 SHAFT
13 RED 16G
14 YELLOW
15 GREY 20G
16
W/P 12015793 3 PIN F/M
BIN 4 SHAFT
U12
W/P 12015792 2 PIN F/M
SPARE INPUT
U14
W/P 12015793 3 PIN F/M
FAN PRESSURE
U8
W/P 12015792 2 PIN F/M
FILTER PRESSURE
U13
W/P 12015793 3 PIN F/M
BIN 2 SHAFT
U4
W/P 12015793 3 PIN F/M
BIN 1 SHAFT
U5
W/P 12015793 3 PIN F/M
FAN SHAFT
U6
W/P 12015793 3 PIN F/M
GROUND SPEED
U7
W/P 12015792 2 PIN F/M
BIN 1 LEVEL
U2
W/P 12015792 2 PIN F/M
BIN 3 LEVEL
U9
W/P 12015792 2 PIN F/M
BIN 4 LEVEL
U11
W/P 12015792 2 PIN F/M
BIN 2 LEVEL
U3
W/P 12015793 3 PIN F/M
BIN 3 SHAFT
U10
GREEN
BLUE
ORANGE/BLACK
YELLOW
BLACK
YELLOW
ORANGE
BROWN
PURPLE
AMP 16 PIN 206037-1
400
FILTER PRESSURE 100
100
SPARE INPUT
BIN 4 LEVEL 100
BIN 1 LEVEL 800
BIN 4 SHAFT 100
BIN 1 SHAFT 1200
GROUND SPEED 200
FAN SHAFT 1700
BIN 2 LEVEL 500
FAN PRESSURE 1500
BIN 2 SHAFT 950
BIN 3 LEVEL 100
BIN 3 SHAFT 100
**SLEEVE OVER WEATHERPACK CONNECTORS WITH BLACK HEATSHRINK , SEAL WITH SILICONE
KEE TECHNOLOGIES 39 PLYMOUTH ROAD WINGFIELD SA
A1109L , H606
Title
ED CHASSIS LOOM 4 BIN (SMALL)
Size A4
Document Number 1353
EL070098
Rev B
Date: Monday, January 12, 2004
Sheet 1 of 1


U1
AMP 206037-1
+BACK
20G ORANGE/WHITE
ORANGE/BLACK 20G BIN 4
BLUE 20G BIN 3 SHAFT
GREEN 20G BIN 3
GREEN/YELLOW 20G BIN 1
WHTW/GRN 20G BIN 2
RED 20G +12V SENSORS
BLACK 20G -VE SENSORS
PURPLE 20G SPEED SENSOR I/P
BROWN 20G FAN SHAFT
ORANGE 20G BIN 1 SHAFT
YELLOW 20G BIN 2 SHAFT
RED GREY 20G
BIN 1 LEVEL
W/P 12015792 2 PIN F/M
U2
GREEN
BIN 3 LEVEL
U9
BLUE
BIN 4 LEVEL
U11
ORANGE/BLACK
BIN 2 LEVEL
U3
YELLOW
BIN 3 SHAFT
U10
BLACK
W/P 12015793 3 PIN F/M
BIN 2 SHAFT
U4
YELLOW
BIN 1 SHAFT
U5
ORANGE
FAN SHAFT
U6
BROWN
GROUND SPEED
U7
PURPLE
FAN PRESSURE
U8
FILTER PRESSURE
U13
W/P 12015792 2 PIN F/M
BIN 4 SHAFT
U12
W/P 12015793 3 PIN F/M
AMP 16 PIN
206037-1
400
FILTER PRESSURE 100
BIN 1 LEVEL 1700
BIN 1 SHAFT 2300
BIN 2 LEVEL 1200
BIN 2 SHAFT 1400
BIN 3 LEVEL 100
BIN 3 SHAFT 100
FAN PRESSURE 1800
FAN SHAFT 1900
GROUND SPEED 100
BIN 4 SHAFT 100
BIN 4 LEVEL 100
**SLEEVE OVER WEATHERPACK CONNECTORS WITH BLACK HEATSHRINK , SEAL WITH SILICONE
KEE TECHNOLOGIES 39 PLYMOUTH ROAD WINGFIELD SA
Title
A1110L , H607
ED CHASSIS LOOM 4 BIN (LARGE)
Size A4
Document Number 1354
EL070099
Rev 1.0
Date: Tuesday, September 21, 2004
Sheet 1 of 1

Personal Notes

WARRANTY

The warranty provided by KEE Technologies Pty Ltd covers faulty manufacture, defective components and installation of components, but not installation to the machine.

For the warranty to be recognised by KEE Technologies Pty Ltd the end user of the equipment must in the first instance of a problem developing, contact the local Dealer from where the unit was purchased.

The Control Unit Micro Processor is covered for 12 months under this warranty.

Accessories such as cables, sensors and hydraulic kits are covered for 1 year under this warranty.

This warranty will become void if any attempt is made to repair or modify the Control Unit Micro Processor.

This warranty will become void for all components if they are misused, accidentally damaged, if any attempt is made to repair or modify them or operate them on other the recommended or specified voltage.

This warranty is in addition to and not in substitution for any warranty or condition implied by the provisions of the Trade Practices Act.

OPERATION OF WARRANTY

In the event of warranty claim being made KEE Technologies Pty Ltd, will endeavour via its authorised dealer/installer to rectify the problem at the earliest opportunity. KEE Technologies Pty Ltd will arrange for the problem to be fixed and if necessary supply an exchange unit and or components. The method of repair shall be determined by KEE Technologies Pty Ltd at its sole discretion.

Any warranty claim shall at the first instance be reported to KEE Technologies Pty Ltd.

KEE Technologies Pty Ltd shall not in any event be liable for any direct or consequential injury, loss or damage arising out of any matter giving rise to a warranty claim.

Warranty registration must be filled in and Posted to KEE within 7 days of fitment to avoid warranty confusion at a later date if the unit fails during the warranty period.

KEE TECHNOLOGIES

POWERING FARM PRODUCTION

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Office: 605-368-2330
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Alberta T4P 1N1

Office: 403 340 1118
Fax: 403 340 1119

Email: StephenKEECanada@aol.com
website: www.keetechnologies.ca

A tradition of developing hi-tech electronic products for harsh environments.