

KEE

PRECISION FARMING CONTROLS

Simplicity

AIRSEEDER COMPUTER

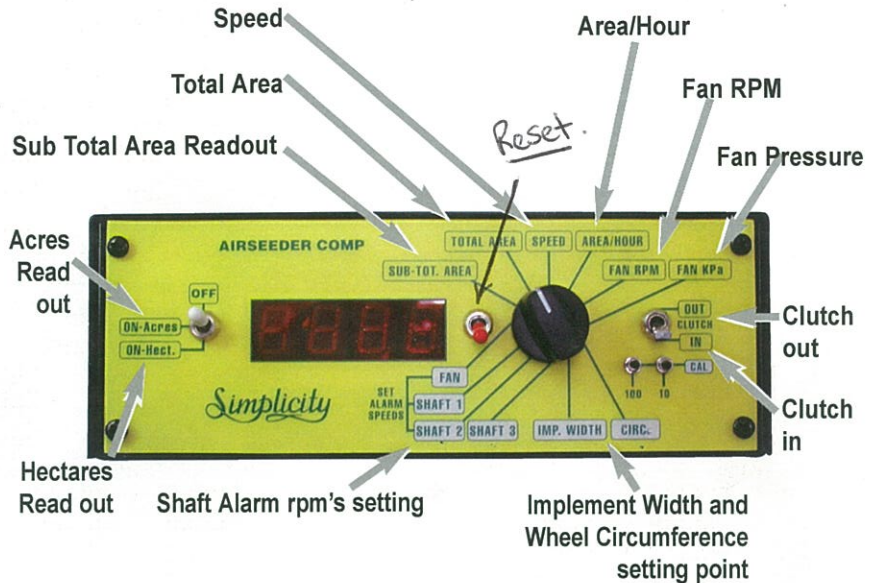


DON'T JUST MONITOR...



...TAKE CONTROL!

OVERVIEW



Please record the details below which will ensure that you have all necessary information at hand when you need it quickly.

SERIAL NUMBER OF

MODEL & SERIAL NUMBER TRACTOR

PURCHASED FROM (DEALER):

PURCHASE DATE:



Do NOT connect Computer to POWER unless you have read the Fitting Instructions!

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Can't External switch. (switch clutch Power Source).

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PRODUCT OVERVIEW

This monitor combines the functions of an Airseeder Tank monitor, Seeder Head Blockage monitor and Area Monitor. Clutch IN OUT is also facilitated.

A single selector switch allows a 4 digit LED readout to display a variety of functions.

The monitor can continuously read Ground Speed, Areas covered, Area per Hour being worked, Fan rpm and Fan Pressure in Kpa. At all times the 1 to 3 Bin Shafts, the Fan rpm and 1 to 3 Bin Levels are monitored.

If any speeds or levels of these fall below the limits, an alarm is sounded and a message is flashed on the display.

FEATURES

- 1) Area and Area per hour readings switchable from acres to hectares.
- 2) Separate clearing of Total Area and Sub total Area.
- 3) Shaft speed alarms are activated when any of the 4 monitored shaft speeds goes below the preset alarm speed.
- 4) Selective alarm cancel. During any alarm sequence, by holding up the RESET switch, CA is displayed which cancels this alarm.
- 5) Calibration facilities for fitting to any size and type of tractor.
- 6) All of the calibration information, and the current areas, are stored in memory when the power is turned off or the Control Console removed from the tractor.
- 7) Prewired and color coded loom with breakaway. No cutting or terminating of wires needed.
- 8) Sturdy metal box and brackets.
- 9) Modular construction.

FEATURES

SELECTOR SWITCH

The main selector switch can be used to select any of the available readouts at any time without affecting the monitor operation.

	1:	SubTotal Area
	2:	Total Area
	3:	Ground Speed
	4:	Area per Hour
	5:	Fan rpm
	6:	Fan KPa
Calibrate	7:	Tyre Circumference
Calibrate	8:	Implement Width
Alarm	9:	Bin 1
Alarm	10:	Bin 2
Alarm	11:	Bin 3
Alarm	12:	Fan Alarm Speed



HECTARES/ACRES

The area readout can be switched to read in acres or hectares at any time with the main left switch.

CLUTCH IN/OUT

This feature can operate a timed actuator or air conditioner type clutch which engages or dis engages the seed drive shaft.

The area accumulation is activated by this switch automatically therefore not accumulating area measurements when the unit is not seeding.

ALARMS

If a shaft runs slower than the pre-set speeds when in operate mode, or a bin sensor is activated from low level, or the clutch is disabled whilst moving with fan rpm present, the beeper will sound and the display will flash an alarm message.

RESET

The areas can be individually cleared by holding the RESET switch up for at least 2 seconds, for example at the start of a new job or paddock.

Reset is also used to clear any numbers when programming any of the shaft, fan alarm, any audible alarm etc.

Do not try to cancel Alarms when in TOTAL or SUB-TOTAL AREA as this will zero totals.

OPERATION - CALIBRATION

INITIAL START

After the unit or vehicle battery has been disconnected or large spikes have been generated, the display may show 'CAL' to indicate that a calibration is needed when first turned on. This message will be cleared when the selector switch is set to 'CIRC'.

!!! IMPORTANT !!! (when programming numbers)

Note: Whilst calibrating any function - If you overrun any numbers **do not increase a number until it reaches zero again** as theoretically this number will be 1000 or greater therefore producing an error. Always use the RESET switch to "zero" the display.

PROGRAM THE WHEEL CIRCUMFERENCE

This is the distance the machine moves forward for every pulse of the magnet on the Ground Speed sensor. Turn the selector switch to 'CIRC.', when the display will show '.10'. Use the 10 and 100 CAL buttons to set the correct tyre circumference in metres. Pressing either button will "run up" the display in units or hundreds, similar to setting a digital clock. If you go past the correct setting, clear with the RESET switch.

The simplest way of calculating the tyre circumference is to temporarily use the Sensor Test Mode. ie. Push both CAL buttons and hold the reset switch up to get into test mode.

Switch the selector switch to SPEED. The display will show "SP".

Drive forward slowly in a straight line until the beeper just sounds, then stop and mark the ground adjacent to some fixed point on the machine. Continue to drive forward slowly, counting say 10 beeps. Mark the ground again and measure the distance from the first mark.

The tyre circumference is then distance divided by the no. of beeps.

For example if the distance measured 24.2 m then circumference = $24.2/10 = 2.42$ m .
(Providing only one magnet is attached to the shaft.)

To get out of test mode you have to switch the monitor off and back on again.

OPERATION - CALIBRATION

PROGRAM THE IMPLEMENT WIDTH

Switch to 'IMP WIDTH' and enter the correct implement width in metres to the nearest cm in the same way as for circumference. Allow for your specific overlap. ie deduct the amount of your intended overlap from the width of the machine.

SENSOR TEST MODE

A special mode has been built in which allows each shaft to be selected in turn by the selector switch and the internal beeper is sounded when the magnet on that shaft passes the sensor. Select the appropriate shaft in the Set Alarm Speeds position.

For Speed sensor, select SPEED. The display shows the same message as for the corresponding shaft and "SP" for ground speed. This mode is activated by pressing both push buttons while holding the reset switch up, and can only be disabled by turning the monitor off and back on. This is only intended for use while trouble shooting for failed sensors or wiring faults. The beeper sound will not be regular at normal operation speeds.

It is intended to be used when turning shafts slowly or by hand. If the ground speed sensor is selected the beeper can be used to count wheel revs from within the cabin as an aid to calibrating the tyre circumference.

SET ALARM SPEEDS

Use the CAL buttons to set each shaft alarm speed. The alarm speeds should be approx. 20% slower than normal operating speed.

The Bin Shafts are generally slow in most cases, even as little as 1-2 rpm depending on the seed variety. In these circumstances a second magnet may need to be attached to that seed shaft. The Fan Alarm should be set at approx. 2,000 rpm.

By using the Auto Test Mode , each pulse on each shaft can be heard and so a working rpm can be calculated for each of these slow shafts. 20% less than these calculations should be programmed in.

RESET

If a wrong value is entered for any of the above calibrations, it can be cleared by holding the RESET switch up for at least 2 seconds to clear the display and then the correct numbers may be re-entered.

OPERATION - CALIBRATION

ALARM MESSAGES

Fan

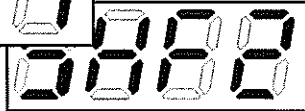


FLO indicates material is not flowing or when the FAN shaft runs slower than the pre-set speed, or the Clutch is disabled whilst moving with fan rpm present, the beeper will sound and the display will flash FLO.

Shaft 1



Shaft 2



Shaft 3

If a shaft stops, the beeper will sound and the display will flash one of these three displays.



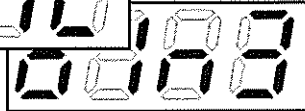
Bin 1



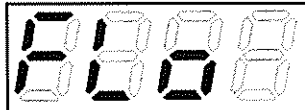
Bin 2



Bin 3



Clutch
OUT



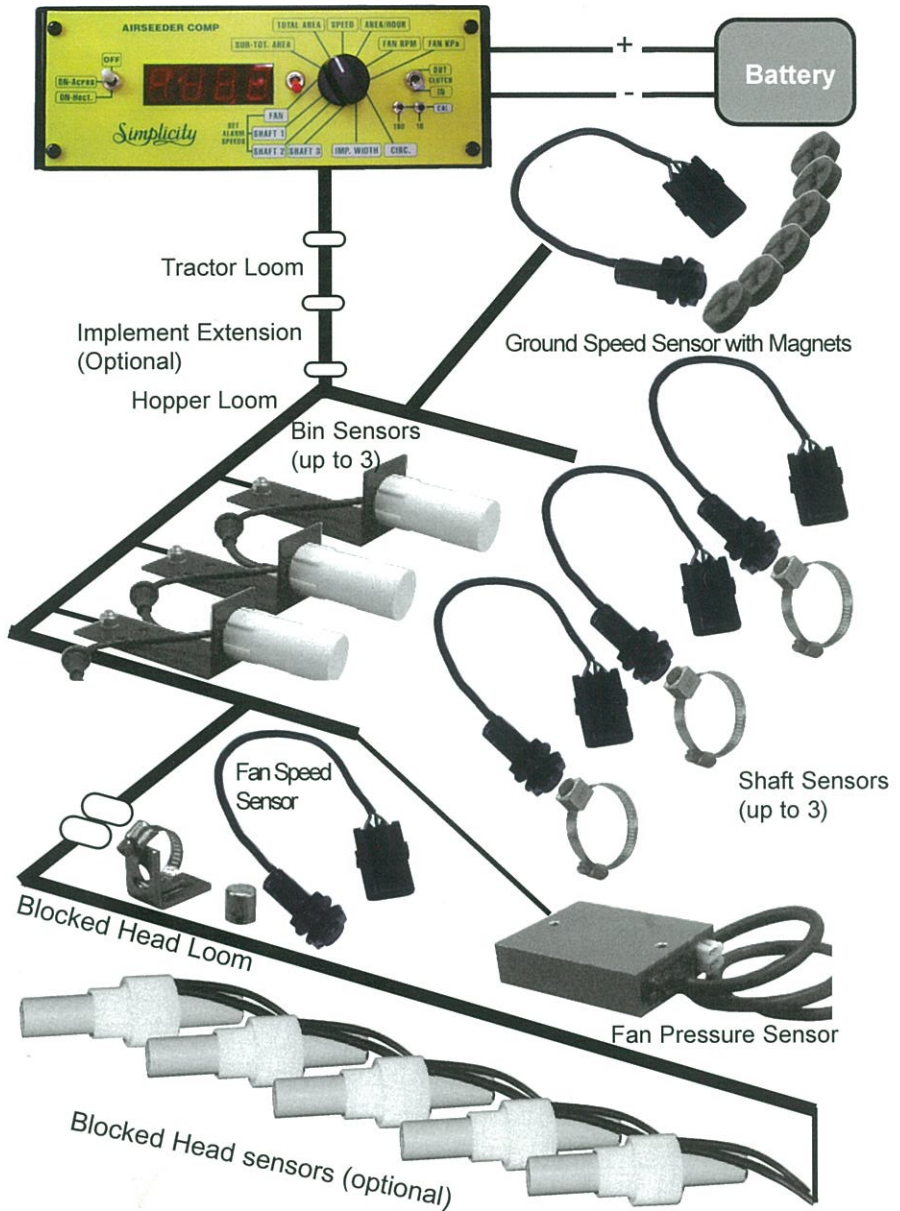
If a bin level lowers below sensor, the beeper will sound and the display will flash one of the above displays.

ALARM CANCEL

The operator may deliberately cancel an alarm, for instance when a shaft is not used, or a bin is low but further work will be done before refilling, by holding the RESET switch up while the alarm is active. The display will flash 'CA' and that alarm will be cancelled until the monitor is switched off and back on again or if the shaft starts turning again or the bin is filled.

NOTE: DO NOT CLEAR ALARMS WHEN IN SUB-TOTAL OR TOTAL AREA SETTING AS THIS WILL CLEAR YOUR AREA!

SCHEMATIC DIAGRAM



FITTING

MONITOR BOX

Fit the box in a convenient position in the tractor cab where the readout is easily seen and protected from direct sunlight to improve visibility. The brackets provided allow for either roof or dash mounting at several different angles.

MAGNETS

Mount the magnet hose clamps on the selected shafts so that the magnet is clear of other protrusions and will not be damaged as the shafts rotate. Extra blank hose clamps may be necessary on some large diameter shafts to extend the magnet hose clamps.

SHAFT SENSORS

Mount the sensors using the brackets provided on the shaft bearing housings. Some bending of the brackets may be necessary to ensure the the magnets pass squarely across the face of the sensors, at a maximum gap of 3mm. See diagram.

Ensure that the sensors are rigidly mounted and cannot vibrate loose. Plug the cables into the sensors and strap so that no movement or chafing of the cables can occur in operation. If there is any doubt about the alignment of the sensors, see the section SENSOR TEST MODE in TROUBLESHOOTING .

Fan sensor fitting to Simplicity direct motor coupled fans.

Locate position alongside or above hydra-motor as close as permissible to the centre of the shaft. A hole to allow the sensor to slide through must be drilled through both the plate mounting bracket and the cast fan housing on the motor side. Allow enough room for the sensor clearance hole (15.6mm Diam). This hole will be approximately 3 to 4 inches out from the centre of the shaft, but keep it in as close as permissible to reduce centrifugal force generated by the magnets when pressed into fan impeller.

Initially drill a smaller hole, say 1/4 inch. Drill through the mounting plate and the fan casting squarely. Continue to take drill through to fan impeller to mark this radius on the impeller. Use a long scribe if you wish.

Remove outer fan casting cover. Take impeller off of shaft by removing grub screws. Locate drill or scribe mark on impeller and measure this radius from the centre of the impeller hub. Mark this radius on opposite sides of impeller hub between pop rivets.

Select 2 positions directly opposite for balance and mark to drill. Drill 2 holes carefully and squarely to enable the magnet to tightly press into. These holes go through the steel hub and the aluminium fan. Magnet diameter is 9.5 mm. Press magnets into holes squarely, the tighter the fit, the better. Make sure a different pole of each magnet faces out (Black faces) This ensures only one magnet triggers the sensor each revolution. Centralize magnets so that the same amount protrudes from each side of the hole. Secure permanently with Loctite.

FITTING

SHAFT SENSORS (Continued)

Now enlarge hole in fan mounting bracket and casting of fan to allow Shaft Sensor to slide through. Re fit impeller onto shaft and re balance using grub screws. Align impeller magnet with hole in casting. Slide sensor in until it touches magnet. Mark side of sensor in this position and slide out 1/4 inch. Secure sensor in this position using silicone. Re fit outer fan casting and seal.

BIN SENSORS

Either one, two or three bin sensors may be fitted, for low bin level indication.

These may be mounted in the grain bin on the brackets provided or through the bin walls in a suitable hole. The sensors detect when grain surrounds the front area, so they can be mounted in any position, as long as the front surface is at least 30mm clear of any other object.

POWER

Negative earth system only. No attempt should be made to connect monitor to a positive earth system until the manufacturer has been consulted.

Locate a permanent source of power directly connected to the tractor battery and connect the red wire from the line fuse in the loom to the positive power source. Connect the black wire to vehicle earth, either on the chassis or directly to the battery.

TRACTOR LOOM

Run the front half of the loom from the monitor box through the cab to the back, strapping where necessary to prevent movement and chafing.

TANK LOOM

Starting at the breakaway, strap the loom down, leading each sensor wire out at convenient points to plug onto the sensors mounted on the shaft bearings.

No cable cutting should be necessary. Strap any unused length of cable out of the way. If a cable is too short, extension cable sections of 2 and 3 metres can be supplied.

The labels on the 3 pin cable plugs correspond to the sensor :

Ground Speed, Fan rpm, Fan KPa, Shaft 1, Shaft 2, Shaft 3, Bin 1, Bin 2, Bin 3 and Clutch.

Plug the 2 pin plugs from the loom into the wires on the bin sensors as labelled.

FITTING

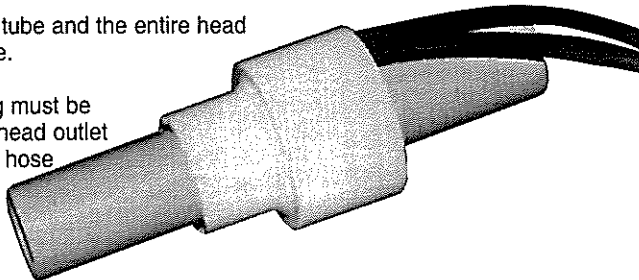
BLOCKED HEAD SENSORS (Optional)

Blocked Head Kit (Optional Extra)

This kit contains a sensor to be fitted on each secondary head in one of the final drop tubes.

This then detects that tube and the entire head for no flow or blockage.

The actual drop tubing must be cut 3 inches from the head outlet and fitted in line using hose clamps on the tubing.



Fitting:

Cut appropriate tube(s) near the head as possible.

Insert sensor as far as possible, face wires down and inward. Sensor should now be reasonably rigid with the head.

Screw and push down tube on the bottom of the sensor.

Wire the sensors to each other with interconnecting hookups supplied.

Start from one end of the bar and connect all up in series. Take the wire into one of the sensor wires, and the next wire out of the other sensor wire. After plugging all sensors together tape up all plugs with electrical tape to assist in preventing corrosion.

Be sure to connect main bar loom to one end sensor first before interconnecting all other sensors. Strap cable neatly and avoid areas of possible wear.

SPECIFIC CALIBRATION VALUES

For future reference, write in here the calibration values for your machine.

Circumference: metres

Implement Width (actual): metres

Intended Overlap: metres

Implement Width entered: metres

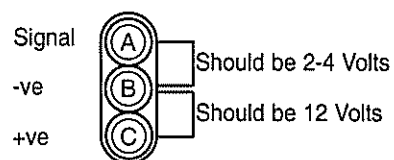
Fan normal operating speed:.....RPM Alarm speed:.....RPM

Shaft 1 speed: RPM Alarm speed:.....RPM

Shaft 2 speed: RPM Alarm speed:.....RPM

Shaft 3 speed: RPM Alarm speed:.....RPM

TROUBLE SHOOTING

PROBLEM	CAUSE / REMEDY
No display when unit turned on.	<p>a: Flat battery (Low Voltage, must be greater than 12.5 volts)</p> <p>b: Blown fuse</p> <p>c: Power connection faulty - inspect and clean connections</p> <p>d: Monitor failure - ring KEE for advice and authorisation for return of the monitor for service.</p>
No ground speed readout.	<p>a: Tyre circumference set to zero - switch to CIRC. and enter correct circumference with push buttons.</p> <p>b: Ground speed sensor not aligned or damaged - check alignment of wheel sensor and magnet assembly and check that front face of sensor has not been scraped or damaged. Replace sensor if any damage is evident.</p> <p>c: Wiring or plug to sensor damaged, inspect and clean connections, repair damage if necessary. Check continuity of loom wires from control box to the sensor connection as diag. below using multi</p> <div style="text-align: center; margin-top: 20px;">  <p style="margin-left: 20px;">Signal (A) Should be 2-4 Volts</p> <p style="margin-left: 20px;">-ve (B)</p> <p style="margin-left: 20px;">+ve (C) Should be 12 Volts</p> </div>
Ground speed fluctuates.	<p>Check the wheel speed sensor.</p> <p>If mounted on the front wheel of a 2 wheel drive tractor, there should be 2 or 3 magnet hose clamps at equal spacing. This spacing must be within 3mm to stop ground speed fluctuations.</p> <p>If wheel stud magnets are fitted, check that one has not fallen off.</p>

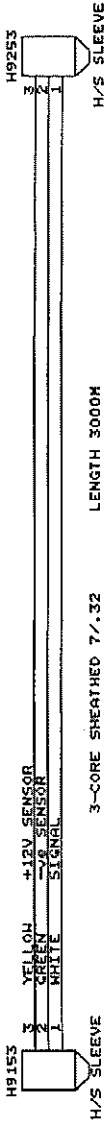
TROUBLE SHOOTING (continued)

PROBLEM	CAUSE / REMEDY
<p>Area errors.</p>	<p>1) If areas are clocking up higher or lower than known field sizes, but the Speed is correct, the machine width (AREA) programmed in is too wide or narrow.</p> <p>RULE OF THUMB: If Area clocked up is say 10% too High, reduce Width. by 10%. If Area clocked up is say 5% too Low, increase Width. by 5%.</p> <p>2) If areas are clocking up higher or lower than known field sizes, in the same proportion to a Speed error, the circumference (Circ) programmed in is too high or low.</p> <p>RULE OF THUMB: If Area clocked up or speed is say 10% too High, reduce Circ. by 10%. If Area clocked up or speed is say 5% too Low, increase Circ. by 5%.</p>
<p>No Area or Area/hour readout.</p>	<p>(a) No ground speed, see above</p> <p>(b) Bins not turned on, Area is based on implement width, so Bins must be on to get an area readout.</p> <p>(c) Implement width set to zero, re-set implement width to correct value in metres. (Be sure decimal point is in correct position)</p>
<p>Funny characters on display.</p>	<p>Indicates power has been lost and restored without turning unit off at front panel.</p> <p>Turn front panel switch off and back on again. The unit should start normally. A new set of calibration figures may have to be entered.</p>
<p>Display shows alarm but beeper doesn't sound.</p>	<p>No ground speed input.</p>

SPECIFICATIONS

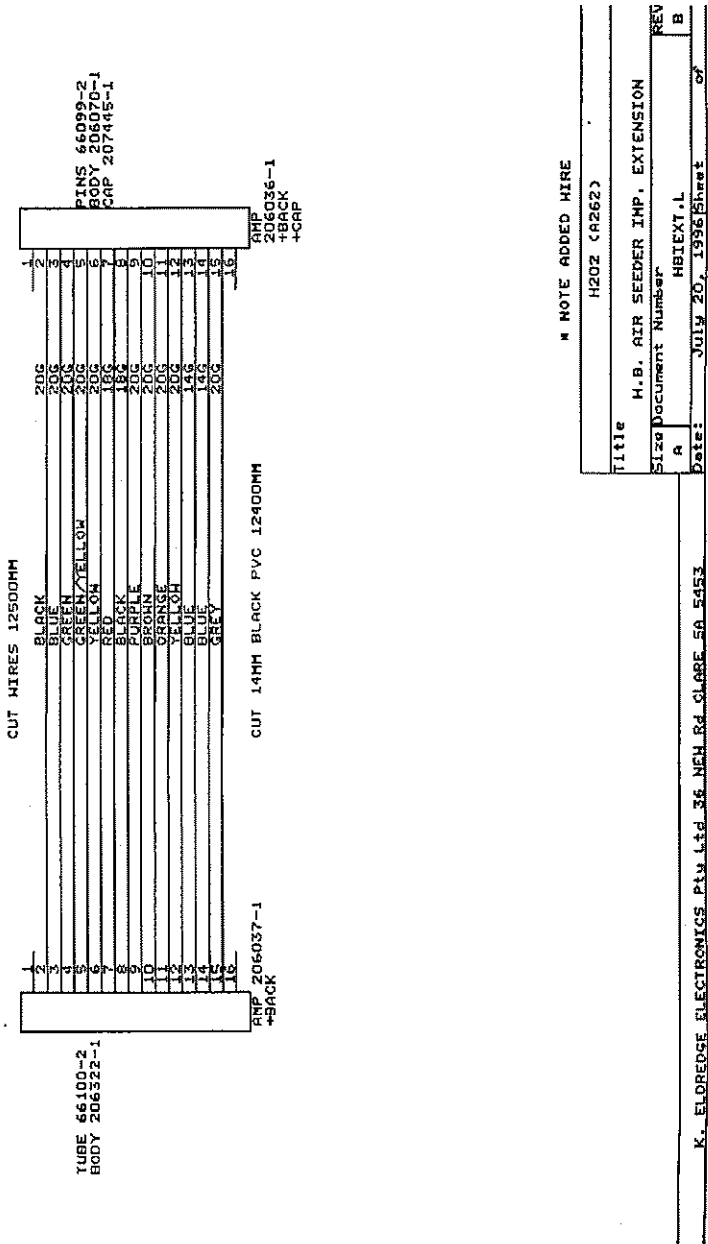
Supply voltage:	11.5 - 16.0 volts negative earth.
Supply current:	
Display on:	approx 0.8 amps
With blocked head sensors:	up to 1.4amps
Memory only:	less than 5 ma
No of input shafts:	3 plus ground speed input
Min shaft input speed:	2 rpm
Shaft alarms:	Within 1 rpm of alarm limit speed
Max alarm delay:	2 seconds
Timing error:	
Display shafts (3):	less than 60 us, this corresponds to an error of less than 1rpm at 1000 rpm.
Other shafts (3):	less than 250 us, (5rpm at 1000 rpm)
Ground Speed:	less than 250 us, (0.1 kph at 100 kph, 2 m wheel)
Bin alarms:	up to 3 capacitive proximity sensors.
Sensor voltage:	Supply voltage less 1 volt
Signal voltage:	> 3 volts sensor inactive < 1 volt sensor active
Min sensor distance:	> 5 mm with magnets supplied

WIRING DIAGRAMS



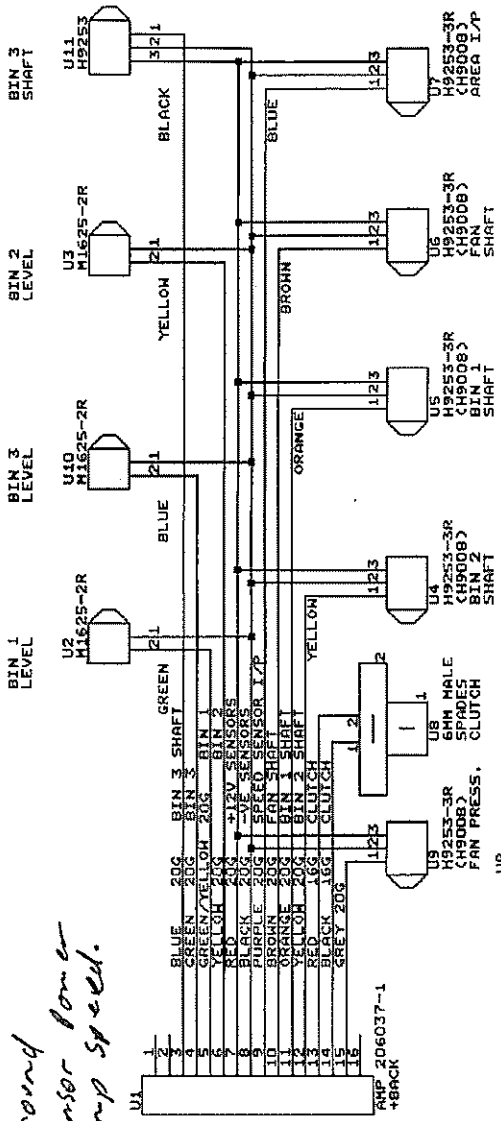
Title		GROUND SPEED EXTENSION 3 METRE	
Size	A	Document Number	GSE-3-L
REV	A	DATE	APR 18, 1954
K. ELDREDGE ELECTRONICS Pty. Ltd. 36 NEW RD CLARE SA 5453		OF	

WIRING DIAGRAMS



WIRING DIAGRAMS

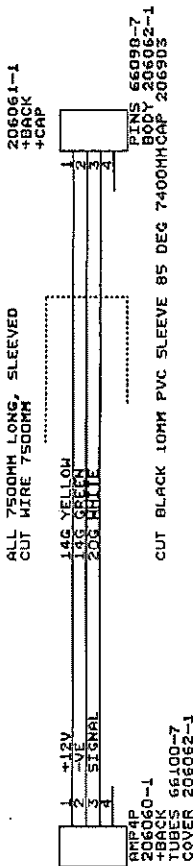
LiquiA - Sensor 2. Pin out
 Pin 1 - Ground
 Pin 7 - Sensor Power
 Pin 10 - Pump Speed.



UB H.P. 2984883 "T" CONNECTOR
 D2965429L 6 MM MALE SPADE TERMINALS

Title		H201 (A263)
Size Document Number		AIRSEDER TANK LOON, 3 BIN
REV	Size Document Number	HBUMS-1.L
B	Date:	October 15, 1996 Sheet 1 of 2

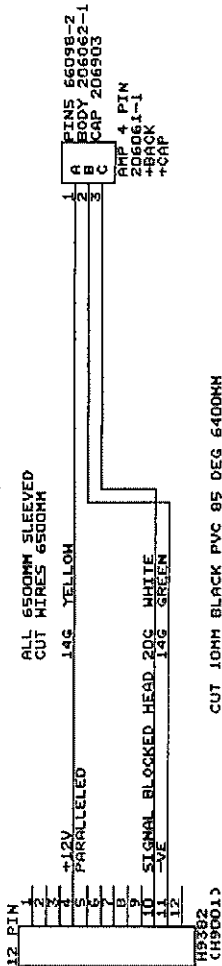
WIRING DIAGRAMS



HOTEL (6016)
 TITLE HEAD MESSAGE LOG, HOPPER BI-PASS
 PART DOCUMENT NUMBER
 REV A
 Date: January 21, 1955 Sheet 07 of

WIRING DIAGRAMS

14G 26/0.3
 20G 7/0.32
 16/0.2
 10/0.25

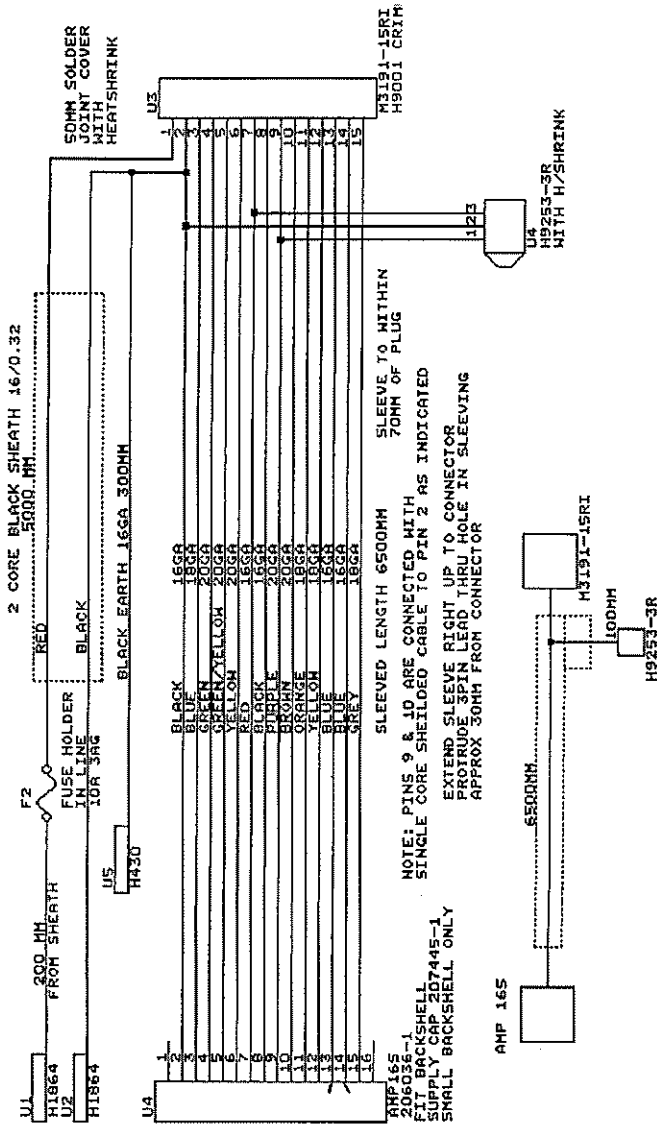


H072 (A016)	
Title	HEAD BLOCKAGE LOOM, TRACTOR EXTENSION
Size	Document Number
REV	
A	UAS-5.1
Date:	January 21, 1996
Sheet	of

K. ELDRIDGE ELECTRONICS Pty Ltd 36 NEH RD CLARE SA 5453

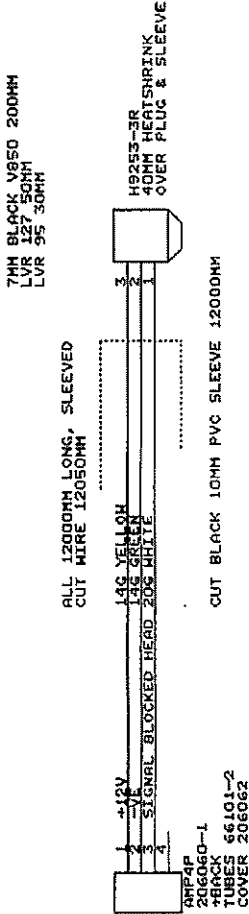
WIRING DIAGRAMS

U1 & U2 EYELETS TO FIT
OVER 9.5MM DIAM. SHAFT



Title	
6.5M VERSION OF UAS-2.1	
Size Document Number	11AC-96.1
REV	1

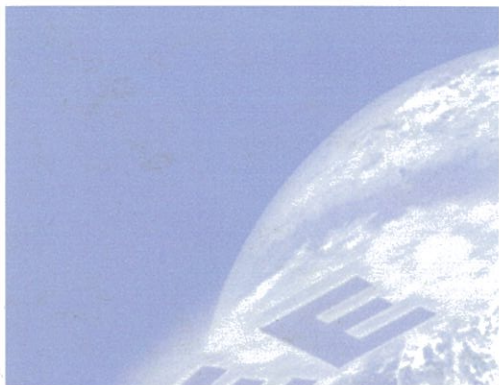
WIRING DIAGRAMS



Title	H069 (A016)
Size	A
Document Number	UAS-3.L
REV	B
Date:	January 21, 1998
Sheet	of

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Don't just monitor...



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November 01
