

# Air Seeder Head Blockage Monitor

1020 (Single Product)



1020T (Dual Product)



## Installation & Operation Instructions



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# 1.0 Introduction

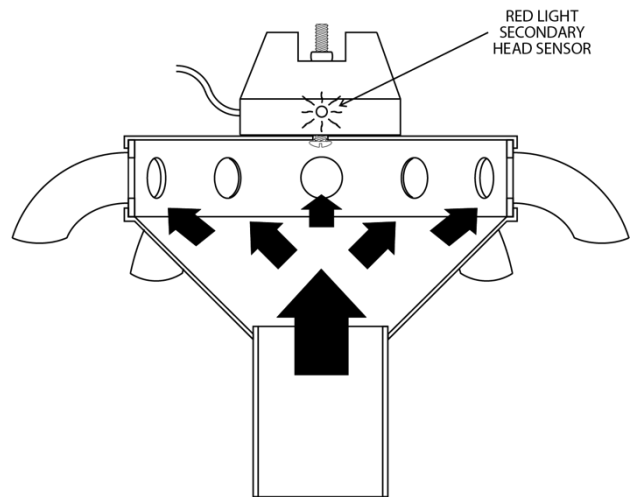
## 1.1 General Outline

Farmscan manufactures a 1020 Series Airseeder Monitor for both Single Shoot and Twin Shoot installations.

The Twin Shoot models (1020T) provides the ability to monitor two independent delivery systems simultaneously. For example, seed and fertiliser may be delivered to separate distributor heads and independently monitored for blockages.

The Farmscan 1020/1020T Airseeder Monitors detect secondary head blockages by means of sensors (listening devices) bolted onto each secondary distributor head.

Material flowing through each distributor head strikes the sensor mounting bolt which conducts the sound into the sensor.



The operator is able to adjust the control unit sensitivity so that a bright red light on each sensor is held in the “OFF” condition for a given rate of seed and fertiliser.

When a blockage occurs, a red light will illuminate on the relevant sensor and simultaneously activate the cab alarm buzzer for 5 Seconds and the associated Bin Product Indicator light will illuminate RED.

The operator will **flick the Master Run / Alarm Hold switch to Alarm Hold** switch, thereby freezing the Sensor RED light on the Sensor at the blockage point before stopping the machinery.

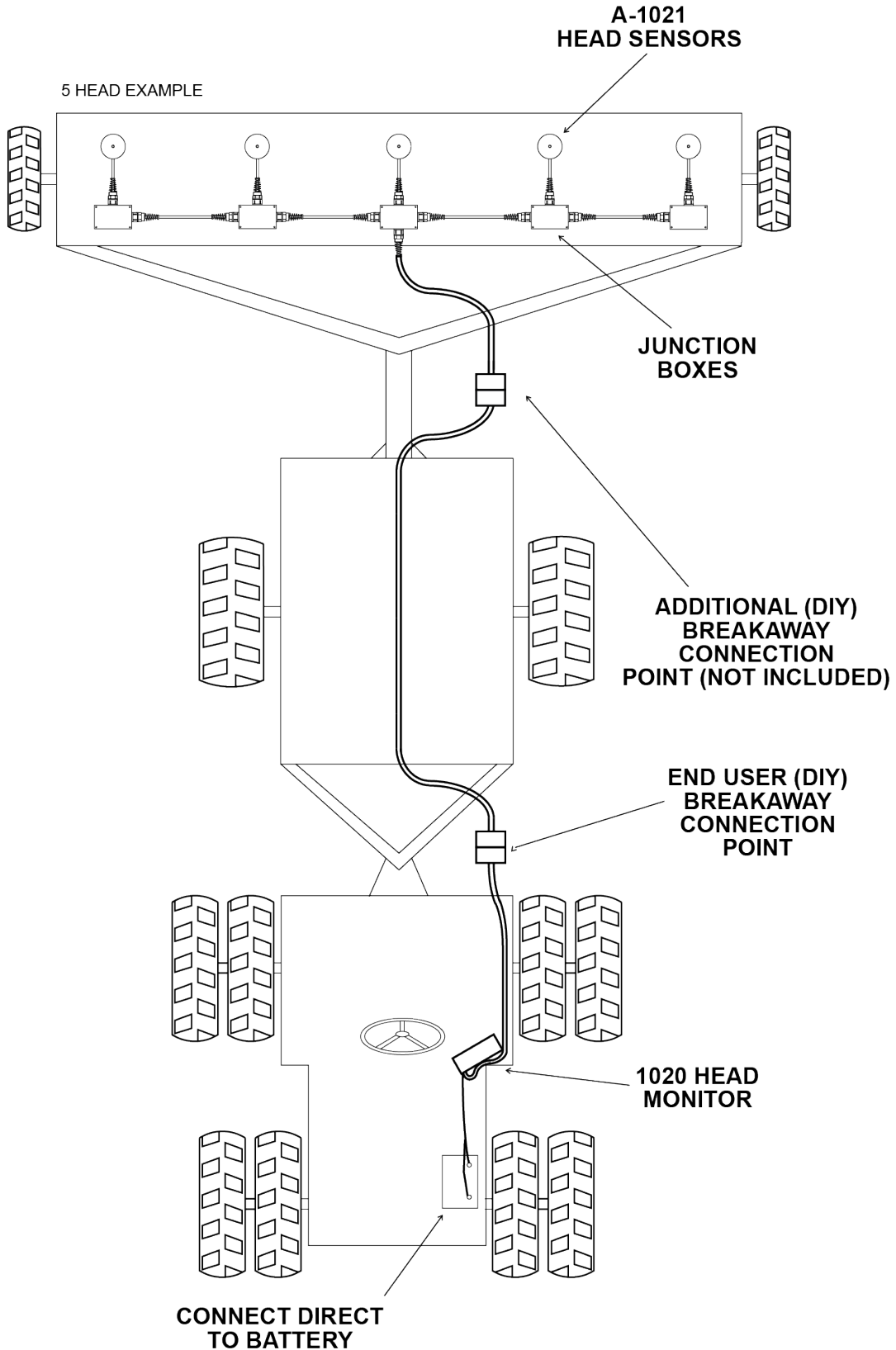
**While in Alarm Hold condition the Power Indicator light will be flashing RED.**

A simple inspection of all the sensors will indicate which head is blocked. **Upon clearing the blockage and returning to operation, ensure to return to Master Run. The Power Indicator will be illuminated Green.**

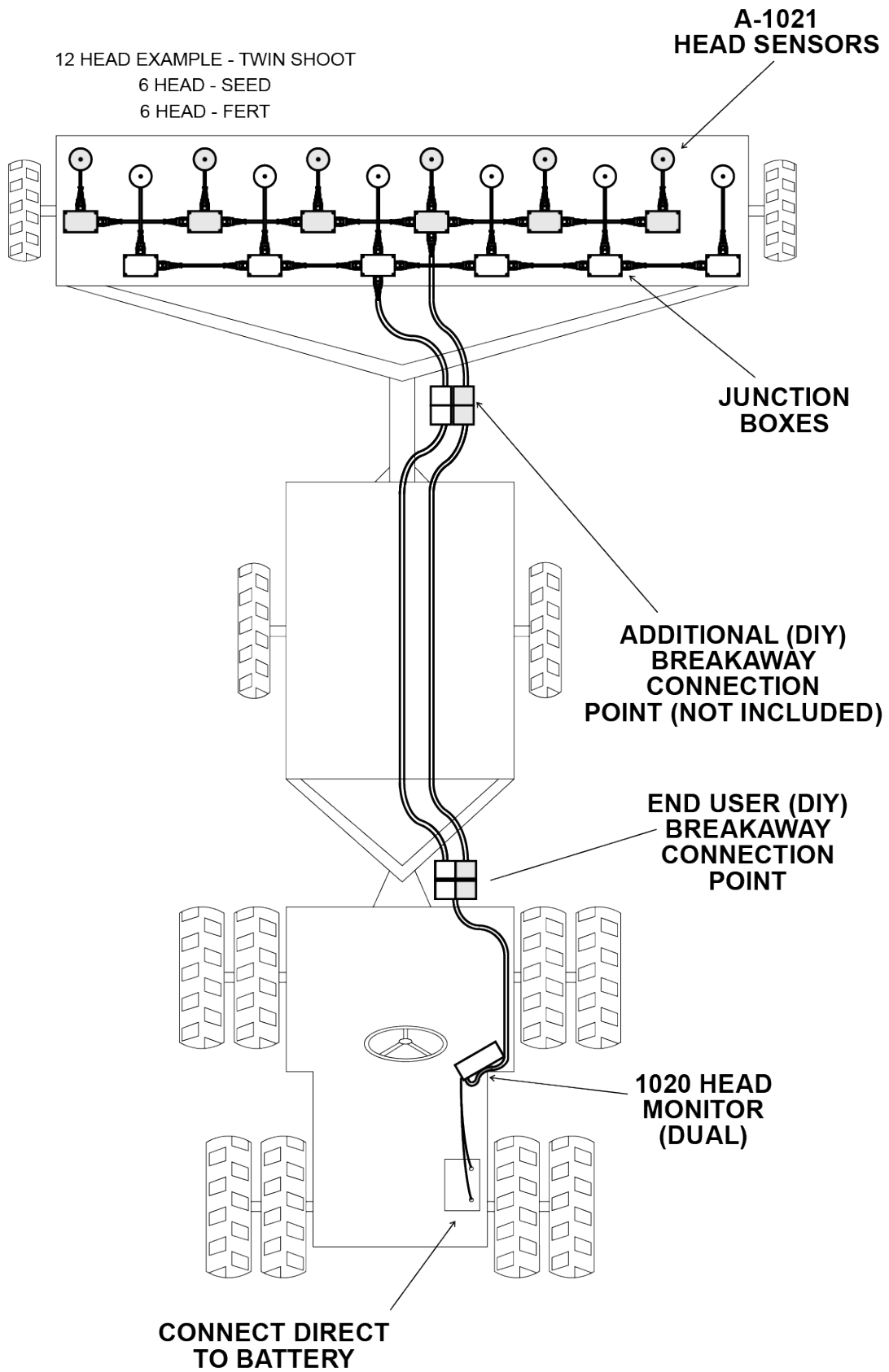
Up to **12** Secondary Head sensors may be installed on the same party line wiring.

Version 4 of the 1020 head unit also includes a remote Run/Hold function to allow for end of run & headland hold via an external switch as well as individual bin on/off control.

### Typical Installation Plan – Single Shoot Model



Typical Installation Plan – Twin Shoot Model



## 2.0 Installation

### 2.1 Monitor Installation

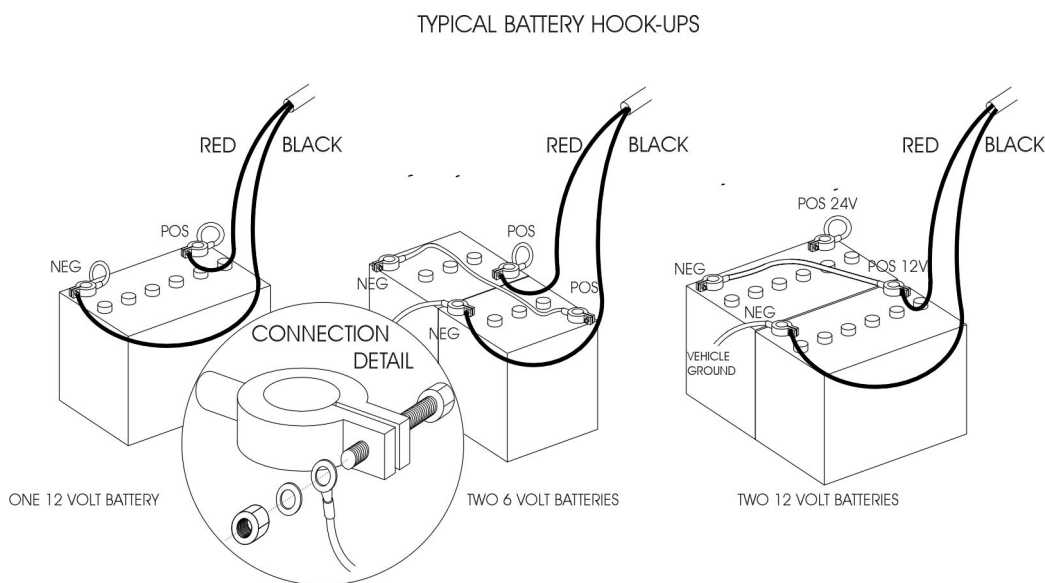
Install control unit in tractor cab using bracket and securing knobs supplied.

### 2.2 Power Connection

Control unit must be connected DIRECTLY to the 12 Volt DC battery terminals, using the 8m supplied power cable. The unit has an internal poly fuse for protection, which if tripped will reset after a short period with the unit turned off.

**There must be a minimum of 13.6v being produced from the alternator to battery while the tractor is running. Use a multimeter to confirm this.**

**A power boost module is available from Farmscan under certain conditions if power requirements are not met.**



#### IMPORTANT:

- **DO NOT run this system from a JD power bar or cigarette lighter socket**
- A minimum voltage of 13.6v must be observed at all times.
- Make sure battery connections are clean and tight.
- Secure the power cable away from hot or moving parts with the supplied cable ties.
- Disconnect battery terminals when arc welding on machinery (Warranty will be void)

## 2.3 Secondary Head Sensor Installation

Sensors can be fitted in any way that provides a mechanical link between the sound of flowing material and the inner copper tube of each sensor.

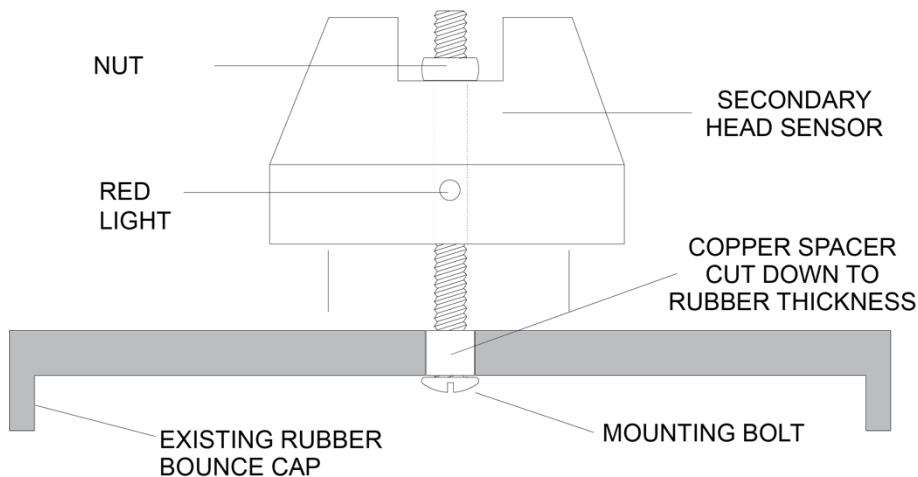
The sensor must be isolated from the machinery framework to avoid false activation of the sensor through vibration. Ideally, the bolt will be isolated via the rubber wear pad inside the secondary head inspection cap.

### HELPFUL TIPS

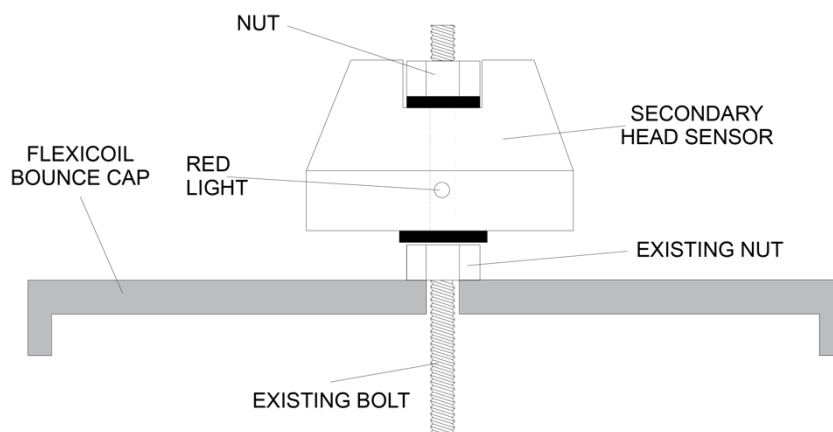
1. Face all sensor lights towards a single point to make checking easier.
2. Grease inside sensor tube will stop fertiliser build up and make removal of the bolt easier.
3. When not in use, drop a bag or old container over sensor head to stop parrots chewing the cable close to the sensor.

*Find the installation option in the following pages that best suits your airseeder model.*

Mount sensors upside down with copper spacer fitted as shown below to avoid distortion of rubber bounce cap for airseeder models shown below.



**FLEXICOIL** - Existing nut must remain in place. Insert washers as shown below.



**JOHNDEERE** – The image below is a modification required for some newer John Deere heads.



It

A longer stainless-steel bolt & copper pipe is required for this modification



NB: The copper pipe and stainless steel bolt must go all the way through.  
*These are not provided by Farmscan*

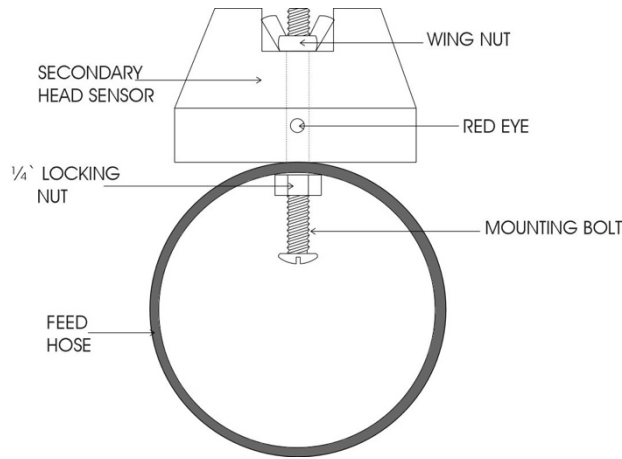


**OTHER** – The image below is a modification required for some rubber caps.

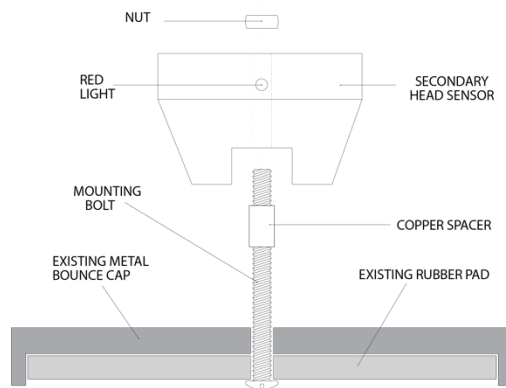


NB: The copper pipe and stainless steel bolt must go all the way through.  
*These are not provided by Farmscan*

The sensor can be attached to the rubber feed hose as shown below - close to the distributor head.



If mounting sensors with legs downwards, then copper spacer must be installed as shown below to prevent damage to sensor caused by over tightening wingnut.

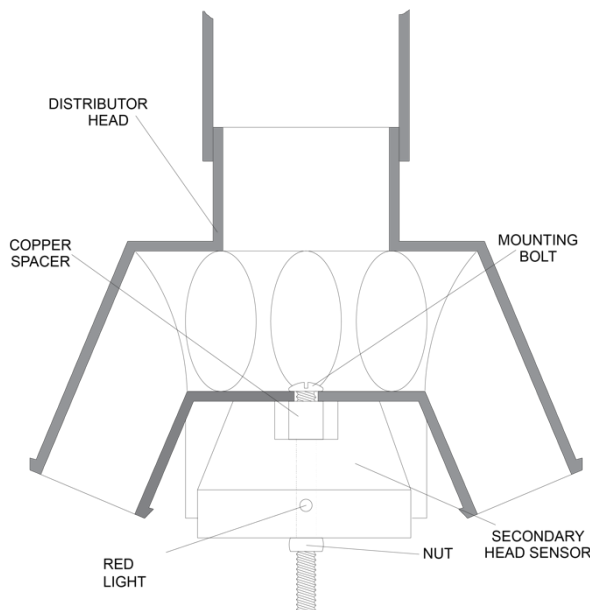


Mount the sensor centrally between drop tubes as shown below.

**NOTE:** With Connershea, airseeder springs may need to be modified to secure cap.

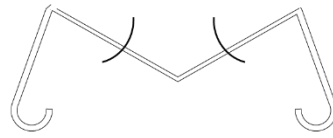
**Example:**

- Connershea
- Fusion

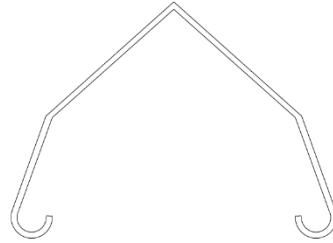


**SUITS:**

Napier  
Simplicity (Metal Bounce Cap)



① EXISTING CAP SPRING

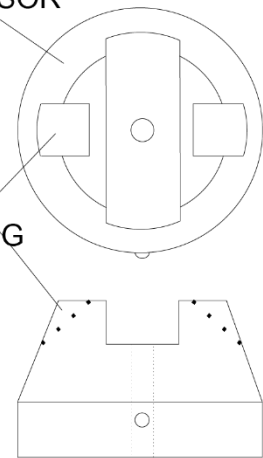


② INVERT TOP OF SPRING LIKE THIS

③

SECONDARY  
HEAD SENSOR

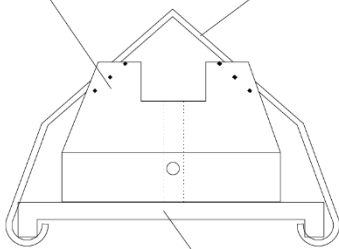
GRIND  
GROOVES  
FOR SPRING  
LOCATION



⑤

HEAD SENSOR  
WITH GROOVES

SPRING



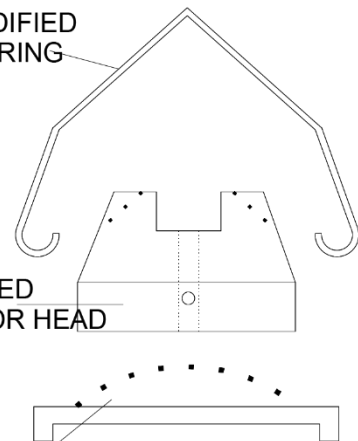
BOUNCE CAP

④

MODIFIED  
SPRING

ALTERED  
SENSOR HEAD

GRIND TOP FLAT SO  
SENSOR SITS FLAT  
ON CAP



## 2.4 Sensor Cable Connection

Use the 5m tractor cable to connect from the monitor to the rear of the tractor.

Ensure breakaway socket is secured away from risk of contamination by hydraulic oil.

Use the separate 30m roll of 3 core sensor cable and 3 pin breakaway connectors to make up suitable extension cables to reach 4 way junction box mounted at centre of cultivator bar.

NB: Farmscan prewires the roll of cable with matching Deutsch end for easier installation. Farmscan uses DEUTSCH connectors for weatherproof connectors:

### 1020 Kit

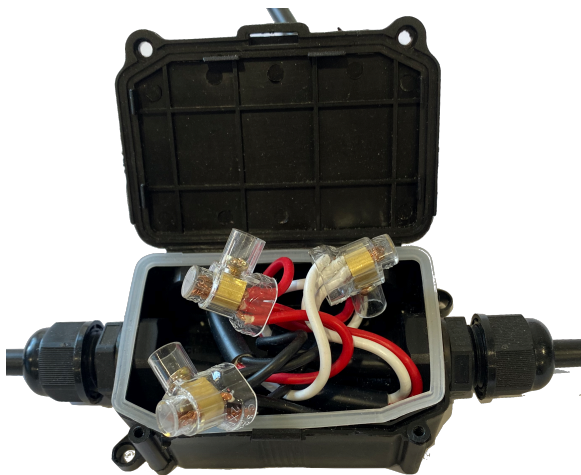
Interconnect all sensors using weatherproof junction boxes. Secure junction boxes and cables away from risk of damage using cable ties supplied.

Simply cut and join as required making sure to always match the same cable colours together in the Junction Box. A joiner block or insulated connectors are included in each kit.



Cable should be trimmed to a minimum of 70mm for easier install in junction box

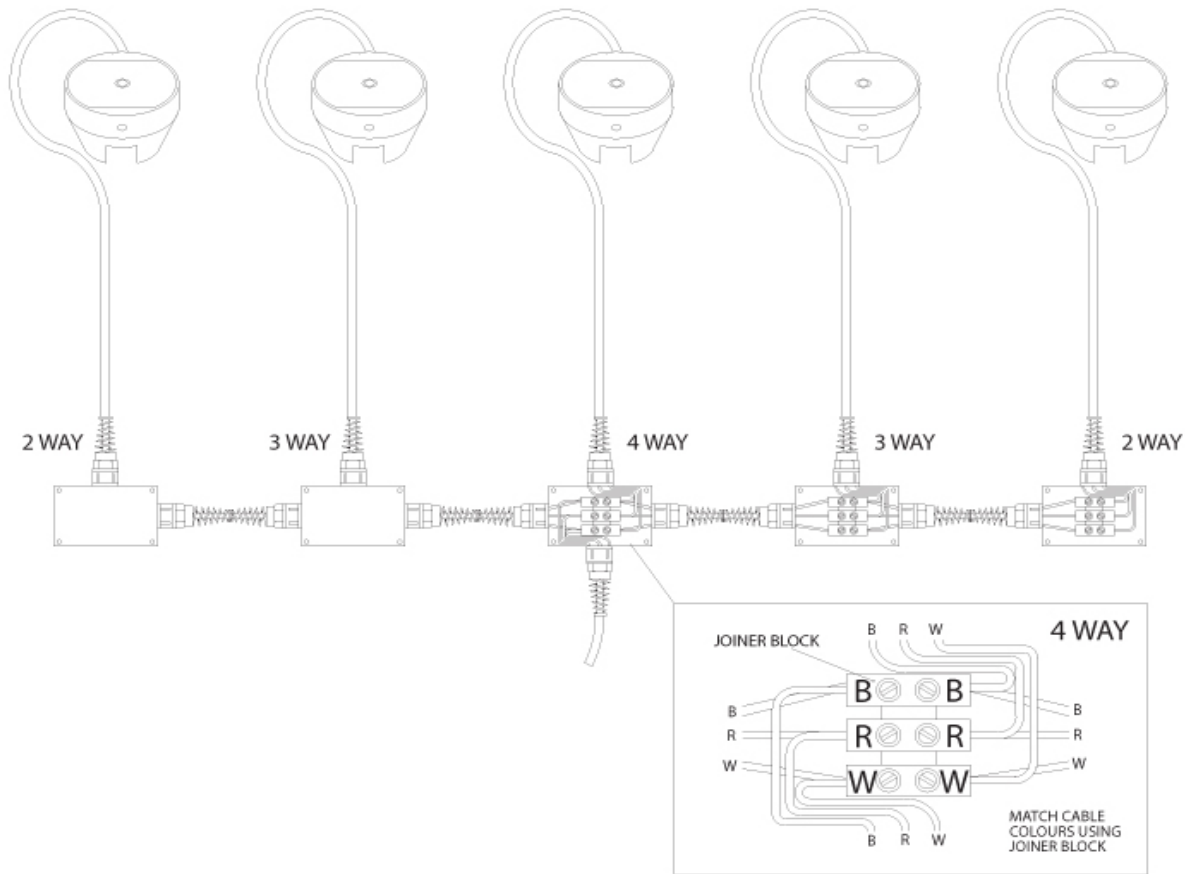
Tighten weatherproof glands and seal junction boxes with silastic or grease around the lid before replacing screws.



Insulated Connectors



Joiner Block Connectors



AC-1020T-01 – 5M 1020/4 TRACTOR CABLE WITH DEUTSCH



30M IMPLEMENT CABLE – PRE-TERMINATED WITH DEUTSCH

## 2.5 Sensor Cable Connection – 1020T Twin Shoot Model

Using the 5m Twin Shoot tractor cable to connect from the airseeder monitors to the rear of the tractor.

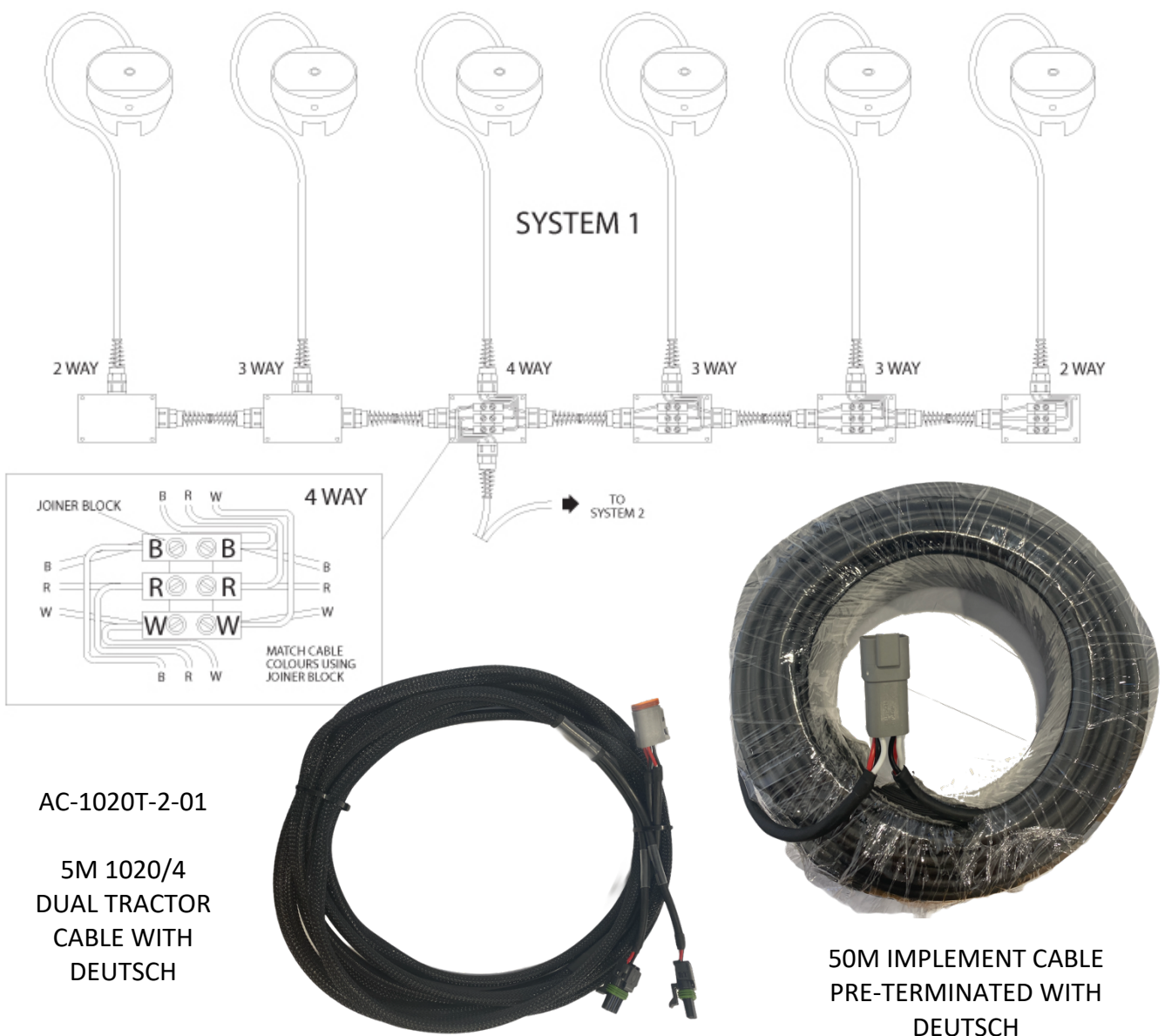
Use the separate 50 metre roll of 3 core sensor cable and Deutsch connector to make up suitable extension cables to reach 4 way junction boxes mounted at centre of cultivator bar. Refer to installation plan page 3.

NB: Farmscan pre pins the roll of cable with matching Deutsch end for easier installation. You will need to unroll the 50m and cut desired length. Farmscan uses DEUTSCH connectors for weatherproof connectors:

Interconnect all sensors using weatherproof junction boxes. Secure junction boxes and cables away from risk of damage using cable ties supplied.

Simply cut and join as required making sure to always match the same cable colours together in the junction box.

Tighten weatherproof glands and seal junction boxes with silastic or grease around the lid before replacing screws.



## 2.6 Initial System Checks

### Ensure engine is running & voltage is sufficient.

1. **Switch power "ON"** and Switch to MASTER RUN
2. Start airseeder and fan and run at normal rpm without material flowing.
3. With no material flowing into the secondary distributor heads adjust SENSITIVITY to test the **Product Indicator** light on monitor.

Note: All "Red Light" sensors should be ON. "Red Light" sensors flickering with sensitivity set above 4 is acceptable.

4. If PRODUCT INDICATOR light (Red) stays ON then system sensitivity is OK.
5. If PRODUCT INDICATOR LIGHT (Red) goes OFF then check that sensor mountings are not vibrating especially the rubber bounce caps.

## 3.0 Operation

### 3.1 Power

Switch power "ON", Mode Switch at "MASTER RUN" and **Bin Enable Switch to "ON"**, the Power indicator light, Product Indicator light (Red) and all Secondary head sensor lights should be "ON".

**Note: If the Bin Enable Switch is set to "OFF" the Product Indicator light will be Blue.**

The alarm may sound for approx. 3-5 seconds, then the unit is ready for operation.

### 3.2 BIN Enable

The 1020 & 1020T models have the ability to ON/OFF each bin separately. This allows the user to disable the SENSE line to the sensors. When ON – sensors are active and are ready to alarm. **In Alarm condition the Product Indicator light will be illuminated "RED", When sensors are not in Alarm condition the Product Indicator light will not be illuminated.** When OFF – sensors are deactivated and will not alarm. In the OFF position the Product Indicator light will be illuminated "BLUE" This feature is useful when used with 1020T to individually control SEED & FERT.

### 3.3 Sensitivity Control.

With the Mode Switch at "MASTER RUN", start seeding at normal speed then turn SENSITIVITY control up until the sensor hold light is JUST OFF. At this point all the secondary head sensor lights will be off.

If the maximum sensitivity setting is not sufficient to de-activate the sensor Product Indicator (RED) light, then refer to troubleshooting section 4.

### 3.4 Alarm

Whenever a blockage occurs, the sensor HOLD light will come "ON"(1020 – PRODUCT) or (1020T – SEED or FERT) and the alarm will sound for 5 seconds. The operator must immediately flick to "ALARM HOLD" position before stopping the tractor to lock the relevant secondary head sensor light "ON" thereby pin pointing the blocked head.

After clearing the blockage, just switch back to "RESET".

**NOTE:**

When seeding resumes, if the operator forgets to start the fan, engage the clutch, or pressurise the bins then the sensor hold light will not go out as it should.



### 3.5 Remote Run/Hold

A remote Run/Hold connection point is now supplied at the rear of the 1020 head unit. This allows the end user to install a limit switch on the bar for automatic run/hold. The 1020's alarm will be disabled when the implement is lifted out of the ground for example.

Each 1020 kit includes the Deutsch plug for self-termination.

RED = +12v (Only required if using a powered proximity style switch is used)  
WHITE = Signal  
BLACK = Ground

The limit switch below is available from Farmscan pre-wired.

Should you supply your own – White & black (pull to ground is all that is required to put the unit on/off hold).

When the Remote Run/Hold function is activated the Product Indicator light(s) will be illuminated BLUE.



## 5.0 Troubleshooting

PROBLEM		POSSIBLE CAUSE / REMEDY
1. NO POWER LIGHT	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> <li>c)</li> <li>d)</li> <li>e)</li> </ul>	<p>Check battery connections are secure.</p> <p>Use a multimeter to check voltage at Power Cable cab end, should be 12.5 - 13.8 volts DC.</p> <p>Check polarity of connections at both battery and rear of control unit. Red to +ve Black to -ve</p> <p>If poly fuse blows immediately with wiring loom to sensors disconnected then monitor at fault. Otherwise check loom for short circuit or cable damage.</p> <p>Unable to locate fault, Return unit to your nearest Farmscan dealer or authorised service agent</p>
2. NO SENSOR LIGHTS "ON"	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> <li>c)</li> <li>d)</li> <li>e)</li> </ul>	<p>Switch to MASTER RUN</p> <p>Check power indicator light is "ON" at control unit.</p> <p>Check for broken, dirty or disconnected wires and connections.</p> <p>Check voltage is 12 volts at control unit between red and black wires going into sensor. If voltage OK, check voltage at intervals along the main sensor cable until the fault is located.</p> <p>Check colour coding is matching throughout all plugs and wiring.</p>
3. NO SENSOR LIGHTS ON ONE WING OR PART THEREOF	<ul style="list-style-type: none"> <li>a)</li> </ul>	<p>If remaining sensors function correctly check disconnected red and black wires at junction of the first failed sensor.</p>
4. SENSOR LIGHTS FAIL TO EXTINGUISH WHEN SEEDING NORMALLY	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> <li>c)</li> <li>d)</li> </ul>	<p>Switch to MASTER RUN</p> <p>Set sensitivity to max (no. 6).</p> <p>Tap each sensor head lightly with handle of screwdriver and sensor light should extinguish for approx. 3 sec. If this happens sensor Okay, there is insufficient material to de-activate sensor when operating. Proceed to 4(i).</p> <p>Check wires for breaks, giving special attention to white wire.</p>

PROBLEM		POSSIBLE CAUSE / REMEDY
4. SENSOR LIGHTS FAIL TO EXTINGUISH WHEN SEEDING NORMALLY CONT.	<ul style="list-style-type: none"> <li>e)</li> <li>f)</li> <li>g)</li> <li>h)</li> <li>i)</li> </ul>	<p>Double check voltage at control unit on red and black wires from battery is 12.5 - 13.8 volts.</p> <p>Check voltage on main sensor cable between white and black wires. On RESET should be 5 - 10V depending on sensitivity setting. Should be 0V on HOLD.</p> <p>If previous working OK. Check for build up on sensor bolt head.</p> <p>Check tube is not severely restricted but still passing material.</p> <p><b>WITH NEW MONITOR INSTALLATION</b></p> <p>1) If the sound level is marginal when sensitivity is already at six then sensor lights will activate at random as the sound level varies with the result that different sensor lights may be "ON" each time the system is placed on "<b>Alarm Hold</b>".</p> <p>2) Increase sound collection surface area with a washer under the sensor bolt.</p> <p>3) If not already the case locate sensor bolt in center of bounce pad for better sound level.</p> <p>4) Increase protrusion of bolt for tube mountings.</p>
5. ONE SENSOR LIGHT WONT EXTINGUISH	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> <li>c)</li> </ul>	<p>Switch to RESET and turn sensitivity to max (no. 6).</p> <p>Tap suspect sensor loudly and if light should fail to extinguish, check wiring in immediate vicinity is 5-10Volts between white and black wires.</p> <p>If still inoperative replace sensor.</p>
6. CONTROL BOX SENSOR HOLD LIGHT REMAINS "ON".	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> <li>c)</li> <li>d)</li> <li>e)</li> <li>f)</li> <li>g)</li> <li>h)</li> </ul>	<p>Switch to "Master Run".</p> <p>Set max sensitivity.</p> <p>Seed normally and then switch to "<b>Alarm Hold</b>".</p> <p>Stop machine and check if one or more sensor lights are on.</p> <p>If so, follow check procedures 4 and 5 above.</p> <p>If all sensor lights "OFF", disconnect main sensor lead at rear of control box. <b>If the Product Indicator (RED) light on the monitor goes "OFF"</b> with step (f) begin checking for faulty sensor by disconnecting one sensor at a time.</p> <p><b>If the Product Indicator (RED) light on the monitor</b> remains "ON" with step (f) control unit faulty.</p> <p>If faulty sensor located, renew junction wiring and test again.</p>
7. CONTROL BOX SENSOR Product Indicator LIGHT INOPERATIVE	<ul style="list-style-type: none"> <li>a)</li> <li>b)</li> </ul>	<p>Switch to "Master Run" and check power indicator and sensor lights are "ON". If not, see section (2) above.</p> <p>If secondary head sensor lights go "OFF" when set to "<b>Alarm Hold</b>" red and white wires crossed.</p>

PROBLEM		POSSIBLE CAUSE / REMEDY	
8.	SENSORS WON'T HOLD "ON" OR "OFF" WHEN SET TO "HOLD".	a)	Sensors should remain in their previous state when set to "Alarm Hold".
		b)	If not, check wiring for breaks or incorrect colour coding.
		c)	If sensors go "OFF" or "ON" when set to "Alarm Hold". Then red and white wires crossed.
		d)	Check voltage between white and black wires is at least 5 volts or more on "Master Run" and zero volts on "Alarm Hold".
9.	SENSOR CHECK PROCEDURE		WARNING: Do not start engine during this test procedure.
		a)	Connect black wire of sensor to negative of battery terminal. Connect white and red wires together to battery positive terminal 12.5 Volts.
		b)	Sensor light should now be "ON" and tapping loudly on sensor should extinguish the sensor light for 2 - 3 seconds.
		c)	If any sensor proves faulty then replace.
10	CONTROL BOX CHECK PROCEDURE.	a)	Check control box by connecting a sensor direct to the control box rear terminals (match colours).
		b)	Connect power to the control box observing correct polarity.
		c)	Switch control box on and check power indicator light is on.
		d)	Both sensor light and sensor hold light should now be on and tapping the sensor loudly should cause both sensor lights and sensor hold light to extinguish simultaneously for approx. 3 sec.
		e)	Lowering the sensitivity control will require a higher rate of tapping for the sensor light to remain off.