

# GOLDACRES

*Australia's World Class Sprayers*



## Goldacres Total Machine Control Operators Manual

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# Chapter I

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## INTRODUCTION

### Welcome

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Congratulations on your purchase of a Goldacres sprayer. For more than a quarter of a century Goldacres has supplied Australian farmers with quality, innovative and technologically advanced spraying solutions - equipment designed in Australia for Australian conditions.

Goldacres not only produce Australia's finest range of spraying equipment - we also keenly value the unique relationship we enjoy with owners of our equipment. We are pleased to welcome you as a Goldacres owner and look forward to making your spray applications as efficient as possible.

Please use this comprehensive resource to gain a full understanding of your equipment, and don't hesitate to contact your Goldacres Dealer or Goldacres for further information.



Roger Richards  
General Manager

Congratulations with your new Goldacres Total Machine Control (GATMC) controller.

The GATMC includes a wide selection of useful features, which enable it to be a valuable partner together with your agricultural implement.

This manual provides essential information for safe and efficient use, together with information on the care and maintenance required to combine trouble free operation with minimum operating costs.

The instructions and information contained within this manual assumes operator ability, level of training and familiarity with the machine type used with this monitor/control system. It is the owner's responsibility to ensure operator training in the correct and safe usage of this control system.

If the monitor/control system is used in accordance with the guidelines in this manual, the GATMC will be a useful and reliable tool for many years to come.

## GOLDACRES - RESELLER TERMS AND CONDITIONS OF SALE

Goldacres Goods are only available for purchase upon the terms and conditions set out below.

### Interpretation

- In terms and conditions:
  - "Goldacres" means Goldacres Trading Pty. Ltd. A.C.N. 061 306 732 trading as Goldacres Agricultural Equipment (its successors and assigns) which is the seller of the Goods;
  - "Purchaser" means the purchaser of the Goods;
  - "Goods" means the products and, if any, the services sold or provided by Goldacres to the Purchaser;
  - "GST Act" and "GST" are given the meanings referred to in a New Tax System (Goods and Services Tax) Act 1999.
  - "PPSA" means the Personal Property Securities Act 2009 (Cth) (as amended);
  - Nothing in these terms and conditions shall be read or applied so as to exclude, restrict or modify or have the effect of excluding, restricting or modifying, any condition, warranty, guarantee, right or remedy implied by law (including the Competition and Consumer Act 2010) and which by law cannot be excluded, restricted or modified.

### General

- (1) The Goods and all other products or services provided by Goldacres are provided subject to these terms and conditions. These terms and conditions and any terms and conditions incorporated herein by virtue of clause 3 hereto shall prevail over all other terms and conditions of the Purchaser or otherwise to the extent of any inconsistency.
  - These terms and conditions may not be modified or amended without the expressed written consent of Goldacres endorsed by the Managing Director of Goldacres Trading PL.

### Additional Terms and Conditions

- From time to time Goldacres may provide additional or extended warranties in respect of certain goods and/or services. Where such additional or extended warranties are provided to a Purchaser in writing they will be incorporated into these terms and conditions provided that in the event of any inconsistency between these terms and conditions and the terms of any additional or extended warranty, the provisions of the additional or extended warranty shall prevail.

### Goldacres quotations.

- Unless previously withdrawn, Goldacres quotations are open for acceptance within the period stated therein or, when no period is stated, with 14 days only of the quotation date. Goldacres reserves the right to refuse any order based on any quotation within 7 days of receipt of the order.

### Packing

- The cost of any special packing and packing materials used in relation to the Goods shall be at the Purchaser's expense notwithstanding that such cost may have been omitted from any quotation.

### Shortage

- The Purchaser waives any claim for shortage of any Goods delivered if a claim in respect thereof has not been lodged with Goldacres within (7) seven days from the date of receipt of the Goods by the Purchaser.

### Specifications, etc: Catalogues, etc: Quantities

- All specifications, (including but not limited to: drawings, particulars of weights, volumes, capacities, dimensions, load factors) are approximate only and any deviation shall not be taken to vitiate any contract with Goldacres or form any claim against Goldacres. The descriptions, illustrations, and performances contained in catalogues, price lists and other advertising matter do not form part of the contract of sale of the Goods. Where specifications, drawings or other particulars are supplied by the Purchaser, Goldacres' price is made on estimates of quantities required. Should there be any adjustments in quantities above or below the quantities estimated by Goldacres and set out in a quotation, then any such increase or decrease shall be adjusted on a unit rate basis according to unit prices set out in the quotation.

### Performance, Capacities, Chemicals, Liquids, Application Methods, Environmental Effects

- Any performance, volumes, and/or capacity figures given by Goldacres are estimates only. Goldacres shall be under no liability for damages for failure to obtain such figures unless specifically guaranteed in writing and any such written guarantee shall be subject to the recognised tolerances applicable to such figures. The suitability of chemicals and other liquids for any application and the application methods and the environmental effects shall be the sole decision and responsibility of the Purchaser and the user of the Goods. Goldacres gives no warranty as to the suitability of any chemicals or other liquids for any application, nor the application methods nor the environmental effects, which may result from the use of the Goods. Goldacres shall be under no liability for damages arising out of the use of any chemicals, liquids, or mixtures in the Goods nor for any application, nor for the application methods nor for the environmental effects, which may result from the use of the Goods.

### Delivery/Service Times

- The delivery times and service times made known to the Purchaser are estimates only and Goldacres shall not be liable for late delivery, non-delivery or delay and under no circumstances shall Goldacres be liable for any loss, damage or delay occasioned by the Purchaser or its customers arising from the late or non-delivery or late installation of the Goods.

### Loss or damage in transit

- Goldacres is not responsible for any loss or damage to Goods in transit. Goldacres shall render the Purchaser such assistance as may be necessary to press claims on carriers provided that the Purchaser shall have notified Goldacres and the carriers immediately the loss or damage is discovered on receipt of Goods and shall lodge a claim on the carrier within three days of the date of receipt of the Goods. Insurance of Goods in transit is the responsibility of the Purchaser.

### Limit of Liability

- (1) Goldacres liability for Goods manufactured by it is limited to:
  - where the law implies consumer guarantees into these terms and conditions pursuant to Part 3.2 Division 1 of Schedule 2 to the Competition and Consumer Act 2010 ("Cth") ("consumer guarantees") which cannot be excluded and Goldacres breaches a consumer guarantee, the loss and damage the Purchaser is entitled to at law which cannot be excluded by these terms and conditions; and, in all other cases
  - making good any defects by repairing the same or at Goldacres option by replacement within a period not exceeding either 1000 hours or twelve calendar months, whichever comes first, after the Goods have been dispatched provided that:
    - the defects have arisen solely from faulty materials or workmanship;
    - the Goods have not received maltreatment inattention or interference;
    - accessories of any kind used by the Purchaser are manufactured or approved by Goldacres;
    - where applicable, the seals on the Goods remain unbroken;
    - there has been no improper adjustment, calibration or operation;
    - the use of accessories including consumables, hardware or software (not manufactured by Goldacres) has been approved in writing by Goldacres;
    - no contamination or leakage has been caused or induced;
    - any modification to the Goods have been authorised in writing by Goldacres;
    - there has been no inadequate or incorrect use, storage, handling or application of the Goods;
    - there has been no use or operation of the Goods outside of the physical, electrical or environmental specifications of the Goods;
    - there has been no inadequate or incorrect site preparations;
    - there has been no inadequate or improper maintenance of the Goods;
    - it has not been caused by fair wear and tear; and
    - the Goods have been thoroughly inspected and any damage (from whatever cause) to the Goods (and in particular – the structure, welding, seams, bolts, booms) has been repaired prior to the Goods being operated, used driven or moved and on each occasion the tanks are filled; and
  - there has been no failure to comply with the requirements of all present or future laws or regulations relating to the Goods and/or the use and/or the operation of the Goods; and
  - there has been no failure to maintain a record of hours of operation (which record shall contain full details of all inspections, repairs and maintenance) and produce same to Goldacres at the time of the claim;
  - the defective Goods or any damaged part of the Goods are promptly returned free of cost to Goldacres or a representative of Goldacres;
  - all warranty related repairs have been carried out with the prior authorisation of Goldacres;
- If Goods or any part thereof are not manufactured by Goldacres, in particular engines, engine accessories, transmissions, transfer cases, differentials, tyres, tubes, batteries, radios and UHFs, the guarantee of the manufacturer thereof shall be accepted by the Purchaser and is the only guarantee given to the Purchaser in respect of the Goods or that part provided always that this clause does not seek to exclude the consumer guarantees;
- In the case of hydraulic systems, Goldacres shall replace defective parts in accordance with clause 11(1) of these conditions, provided that the failure of the part was not related to contamination within the system, Goldacres shall not be liable for labour in the case of repairing hydraulic system defects;
- Goldacres will not accept liability for damage attributed to fair wear and tear including but not limited to fair wear and tear to nozzles, chains, belts, filters, brake pads, polyethylene bushes and liquid pump valves, valve O-rings, diaphragms and seals;
- Goldacres shall not be liable for and the Purchaser releases Goldacres from any claims in respect of faulty or defective design of any Goods supplied unless such a design has been wholly prepared by Goldacres and the responsibility for any claim has been specifically accepted by Goldacres in writing and in any event Goldacres liability hereunder shall be strictly limited to the replacement of defective parts in accordance with paragraph 11(1) of these conditions provided always that this clause does not seek to exclude the consumer guarantees;
- Except as provided herein, all express and implied warranties, guarantees and conditions under statute or general law as to the merchantability, description, quality, suitability or fitness of the Goods for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are hereby expressly excluded and Goldacres shall not be liable for physical or financial injury, loss or damage or for consequential loss or damage of any kind arising out of the supply, layout, assembly, installation or operation of the Goods or arising out of Goldacres negligence or in any other way whatsoever;
- The benefit of any warranty provided under these terms and conditions shall only be available to the Purchaser and shall not be transferable by the Purchaser;
- The warranties provided under these terms and conditions do not extend to second hand or used Goods that may be sold by Goldacres.
- Goldacres liability for breach of a consumer guarantee is hereby limited (in the case of goods and services not used for personal, domestic or household purposes) to:
  - in the case of Goods, any one or more of the following:
    - the replacement of the Goods or the supply of equivalent Goods;
    - the repair of the Goods;
    - the payment of the cost of replacing the Goods or acquiring the equivalent Goods;
    - the payment of having the Goods repaired; or
  - in the case of services;
    - the supplying of the services again; or
    - the payment of the cost of having the services supplied again.

### Prices

- (1) Unless otherwise stated in writing by Goldacres, all prices quoted by Goldacres are inclusive of GST for supplies within Australia and exclusive of GST for exports outside of Australia. Prices quoted are those ruling at the time of quotation or the date the price is given and are based on rates of freight, insurance, customs, duties, taxes, export, shipping expenses, sorting and stacking charges, cartage, cost of materials and other charges affecting the cost of production ruling on that date and any alterations thereto either before acceptance of or during currency of the contract shall be to the Purchaser's account.
  - For the purpose of 38-1B5 of the GST Act, the day upon which the seller gives the invoice for the supply shall be the date of the invoice.

### Payment

- (1) The purchase price in relation to the Goods and the cost of the service shall be payable without deduction and or set off and payment thereof shall be made on or before the thirteenth day of the month following the delivery of the Goods or performance of the

services unless other terms of payment are expressly stated in writing.

- A decreasing or increasing adjustment and or the issuing of an adjustment note, pursuant to Division 21 and Division 29-C of the GST Act, shall not, in any way, constitute a release, waiver, and or forgiveness of the debt incurred by the Purchaser.

### Interest on overdue payments

- If Goldacres is not paid for any Goods or services on the due date specified in this agreement without prejudice to any other right or remedy, all outstanding money shall bear interest at the rate set, pursuant to the Penalty Interest Rates Act, Victoria, 1986, as such money, together with interest shall be recoverable forthwith from the Purchaser.

### Rights in relation to Goods.

- (1) Title to the Goods supplied by Goldacres to the Purchaser shall remain with Goldacres until the total amount due in respect of the Goods and all monies owing to Goldacres have been paid in full (the "Debts"). Risk in the Goods shall pass to the Purchaser upon delivery.
  - The Purchaser shall have the right to resell Goods but only as fiduciary agent and trustee for Goldacres by way of bona fide sale at full market value and in the ordinary course of its business.
  - Until all the Debts have been paid in full:
    - the Purchaser shall take custody of the Goods as trustee, fiduciary agent and bailee for Goldacres;
    - the Purchaser shall keep the Goods separate from any other goods and properly marked, stored, protected and insured;
    - the Purchaser must hold all of the money it receives ("Proceeds");
    - from the sale of any property into which Goods supplied have been incorporated; and
    - from the sale of Goods or provision of services including the Goods supplied by the Goldacres as bailee, fiduciary agent and trustee for Goldacres, but the Purchaser need not hold on trust any money exceeding the amount of the Debts at the time the money is received.
  - The Purchaser expressly acknowledges that it is bound by the fiduciary obligation created in the preceding paragraph and acknowledges that:
    - it must hold the Proceeds on trust for Goldacres;
    - it must place the whole of the Proceeds in an account separate from its own moneys (the "Proceeds Account");
    - it must maintain the Proceeds Account separate from its own moneys at all times.
    - it must maintain proper records for the Proceeds Account.
    - it must not assign or encumber any book debts arising from sales made in circumstances set out in clauses 16(c)(i) and (ii) or do any other act in derogation of Goldacres' legal or beneficial interests; and
    - it must account to Goldacres on demand for all moneys standing to the credit of such account.
  - For the purposes of identification of different consignments of Goods purchased from Goldacres and receipt of Proceeds, the Purchaser agrees that the principle of "Last In, First Out" shall be applied to any items that cannot be distinguished.
  - Goldacres may trace the Proceeds in equity.
  - Goldacres may at any time, without notice to the Purchaser and without prejudice to any other rights which it may have against the Purchaser, terminate any contract connected with the Goods and the bailment referred to in clause 16(3) and enter upon any premises owned or occupied by the Purchaser where Goldacres reasonably believes the Goods may be stored, and repossess the Goods without liability for any damaged caused, and subsequently dispose of the Goods at Goldacres' discretion if:
    - the Debts are not paid in accordance with these terms and conditions or any other contract or arrangement between Goldacres and the Purchaser; or
    - Goldacres receives notice of or reasonably believes that:
      - a third person may attempt to levy execution against the Goods; or
      - the Purchaser is insolvent (within the meaning of the Corporations Act 2001) or bankrupt; or
      - the Purchaser has entered into any arrangement or composition with its creditors, gone into liquidation, or has appointed a receiver, a receiver and manager or administrator.
  - If after repossession under clause 16(4) Goldacres sells the Goods, Goldacres shall account to the Purchaser for any proceeds of sale (less expenses of repossession and sale) that exceeds the amount of the outstanding Debts.
  - If any Goods belonging to Goldacres are disposed of by the Purchaser or an insurance claim is made in respect of them, Goldacres shall be entitled to trace the sale or insurance proceeds, which proceeds shall be held by the Purchaser in a separate bank account on trust for Goldacres.
  - The Purchaser agrees and acknowledges that in the event it sells Goods to a third party on account, it will include in its terms and conditions of sale a provision under which the Purchaser retains title to the Goods until such time that the total amount due in respect of the Goods and all monies owing to the Purchaser have been paid in full by that third party debtor. The Purchaser also agrees and acknowledges that in these instances, it will register its PMSI in accordance with the PPSA in respect of its security interest in the Goods.

### PPSA provisions

- (1) The Purchaser acknowledges that these terms and conditions constitute a security agreement for the purposes of section 20 of the PPSA and that a security interest exists in all Goods (and any associated Proceeds from their sale) previously supplied by Goldacres to the Purchaser (if any) and in all in future Goods (and any associated Proceeds from their sale) that may be supplied to the Purchaser by Goldacres.

- The Purchaser acknowledges that Goldacres has a first ranking purchase money security interest ("PMSI") (as defined in section 14 of the PPSA) in the Goods and the Purchaser must not jeopardise such ranking (whether by act or omission).

- The Purchaser acknowledges that it has received value as at the date of first delivery of the Goods and has not agreed to postpone the time for attachment of the security interest (as defined in the PPSA) granted to Goldacres under these terms and conditions.

- The Purchaser will execute documents and do such further acts as may be required by Goldacres to register the security interest granted to Goldacres under these terms and conditions under the PPSA.

- Until ownership of the Goods passes, the Purchaser must not give to Goldacres a written demand or allow any other person to give Goldacres a written demand requiring Goldacres to register a financing change statement under the PPSA in respect of Goldacres' interest in the Goods.

- The Purchaser must indemnify Goldacres and on demand reimburse Goldacres for all costs and expenses incurred by Goldacres in respect of these terms and conditions including but not limited to Goldacres registering its security interest in the Goods, lodging, discharging or amending any financing statement or financing change statement, or otherwise complying with the PPSA.

- The Purchaser agrees (other than as provided in these terms and conditions) not to sell, lease, mortgage, deal with, dispose of or create or attempt to create any other security interest in or affecting the Goods unless and until the Purchaser's Debts have been satisfied.

- The Purchaser waives its rights under the following provisions of Chapter 4 of the PPSA:
  - to receive a notice on enforcement action against liquid assets (section 121(4));
  - to receive a notice to seize collateral (section 122);
  - to receive a notice of disposal of Goods by Goldacres purchasing the Goods (section 129);
  - to receive a notice to dispose of Goods (section 130);
  - to receive a statement of account following disposal of Goods (section 132(2));
  - to receive a statement of account if no disposal of Goods for each 6 month period (section 132(4));
  - to receive notice of any proposal of Goldacres to retain Goods (section 135(2));
  - to object to any proposal of Goldacres to either retain or dispose of Goods (section 137(2));
  - to redeem the Goods (section 142);
  - to reinstate the security agreement (section 143);
  - to receive a notice of any verification statement (section 157(1) and section 157(3));

- The rights Goldacres may have under the PPSA are supplementary and in addition to those set out in these terms and conditions and do not derogate from the rights and remedies of Goldacres under these terms and conditions or under any other statute or under general law.

- The Purchaser must give 10 business days prior written notice of any proposed change in the Purchaser's name or other identifying characteristics and details.

### Purchasers property

- Any property of the Purchaser under Goldacres' custody or control shall be entirely at the Purchaser's risk as regards loss or damage caused to the property or by it.

### Storage

- Goldacres reserves the right to make a reasonable charge for storage if delivery instructions are not provided by the Purchaser within (14) fourteen days of a request by Goldacres for such information.

### Returned Goods

- Goldacres shall not be under any obligation to accept Goods returned by the Purchaser and will do so only on terms to be agreed in writing in each individual case.

### Goods sold

- All Goods to be supplied by Goldacres shall be described on the purchase order agreed by Goldacres and the Purchaser and the description on such purchase order modified as so agreed shall prevail over other descriptions including any Purchaser's specification or enquiry.

### Cancellation

- No order may be cancelled except with the consent in writing and on terms, which will indemnify Goldacres against all losses.

### No waiver

- The failure of any party to enforce the provisions of these terms and conditions or to exercise any rights expressed in these terms and conditions shall not be a waiver of such provisions or rights and shall not affect the enforcement of this agreement. The exercise by any party of any of its rights expressed in this agreement shall not preclude or prejudice such party from exercising the same or any other rights it may have irrespective of any previous action taken by that party.

### Force Majeure

- If by reason of any fact, circumstance, matter or thing beyond the reasonable control of Goldacres is unable to perform in whole or in part any obligation under these terms and conditions then Goldacres shall be relieved of that obligation under these terms and conditions to the extent and for the period that it is so unable to perform and shall not be liable to the Purchaser in respect of such obligation.

### Passing of risk

- Risk in the Goods shall pass to the Purchaser upon delivery of the Goods to the Purchaser or collection of the Goods by the Purchaser's agent or carrier as the case may be.

### Exclusion of liability

- To the extent permitted by law Goldacres shall not be liable to the Purchaser in contract or in tort arising out of, or in connection with, or relating to, the performance of the Goods or any breach of these conditions or any fact, matter or thing relating to the Goods or error (whether or not it is negligent or a breach of contract) in information supplied to the Purchaser or a user before or after the date of the Purchaser's or user's use of the Goods and Goldacres shall be under no liability for damages arising out of the use of any chemicals, liquids, or mixtures in the Goods, nor for any application, not for the application methods nor for the environmental effects, which may result therefrom or from the use of the Goods.

### Exclusion of representations and arrangements

- To the extent permitted by law the terms and conditions supersede and exclude all prior and other discussions, representations (contractual or otherwise) and arrangements relating to the supply of the Goods or any part thereof including, but without limiting the generality of the foregoing, those relating to the performance of the Goods or any part thereof or the results that ought to be expected from using the Goods.

### Place of contract

- The contract for sale of the Goods and the provision of the services is made in the State of Victoria and the Purchaser agrees to submit all disputes arising with Goldacres to the courts of such State and any court competent to hear appeals therefrom.





# Chapter 2

## DATA RECORD SETTINGS

### Controller Settings Record

Record Serial number of machine and the GATMC console.

#### Initial Information:

Screen S/N \_\_\_\_\_

Technicians Name \_\_\_\_\_ Date \_\_\_\_\_

Serial Number of Crop Cruiser \_\_\_\_\_

Registration Number GATMC console \_\_\_\_\_

Options Installed e.g. Boom Recirculation \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

#### External Controller Setup

I.3.2.2 Communication Type \_\_\_\_\_

#### Calibration settings:

Found in (Spanner tab, 2 Machine Setup, 1 Sprayer Setup) Wheel:

2.1.1.1 Wheel Type \_\_\_\_\_

2.1.1.2 Wheel Factor \_\_\_\_\_ M/Pulse

#### Auto Regulation

2.1.2.1 Input set to FLOW

2.1.2.2 Spray Regulation Input \_\_\_\_\_ %

2.1.2.3 Minimum Regulating Speed \_\_\_\_\_



# Controller Settings Record

## Sprayer Line Control Setup

2.1.5.1 Nozzles type and sizes \_\_\_\_\_

2.1.5.2 Nozzles type and sizes \_\_\_\_\_

2.1.5.3 Nozzles type and sizes \_\_\_\_\_

2.1.5.4 Nozzles type and sizes \_\_\_\_\_

## Auto Nozzle Select

2.1.7.1 Tier settings Min \_\_\_\_\_

2.1.7.2 Max \_\_\_\_\_

2.1.7.3 Overlap \_\_\_\_\_

## Sprayer Setup

2.1.10.1 Number of Spray Sections \_\_\_\_\_

2.1.10.3 Upward for Sections 1 to max number of boom sections \_\_\_\_ \_

2.1.17.1 Should be ticked GREEN

2.1.17.2 Flow Factor \_\_\_\_\_ P/L

## Pressure Sensor Calibration

2.1.20.1 Pressure sensor should be set to 10 bar

## Tank Calibration

Found in (Spanner tab, 3 Tech Setup, 6 Tank Level Sensor)

3.6.1.7 Calibration Step \_\_\_\_\_

Enter Tank Calibration Points from 3.6.1.17

P1	P2	P3	P4	P5
P6	P7	P8	P9	P10
P11	P12	P13	P14	P15
P16	P17	P18	P19	P20

### **Boom height**

Height sensor settings \_\_\_\_\_Min\_\_\_\_\_Max\_\_\_\_\_

### **Boom recirculation values**

3.1.8.1 Amount \_\_\_\_\_Litre

3.1.8.2 activation time \_\_\_\_\_sec

3.1.8.3 Deactivation time \_\_\_\_\_sec

80 Litre, 8 seconds on, 4 seconds off

### **Regulation valve setup**

3.1.3.2 Threshold for fast regulation \_\_\_\_\_%

3.1.3.3 Threshold for slow regulation \_\_\_\_\_%

3.1.3.4 Reg. intervals - fast regulation \_\_\_\_\_1/6 sec

3.1.3.5 Reg. intervals - slow regulation \_\_\_\_\_1/6 sec

3.1.3.6 Threshold for no regulation \_\_\_\_\_%

3.1.3.7 Threshold for display update \_\_\_\_\_%

### **Regulation Factor**

3.1.4.1 Auto regulation factor \_\_\_\_\_ ---- \_\_\_\_\_

3.1.4.2 Regulation valve gear backlash facctor \_\_\_\_\_ms ---- \_\_\_\_\_

### **Product 1 Spray Pump RPM Sensor**

2.1.14.2 Input Frequency \_\_\_\_\_ Pulses Per Revolution

### **Product 2 Spray Pump RPM Sensor**

2.1.15.2 Input Frequency \_\_\_\_\_ Pulses Per Revolution

## **Notes**



# Chapter 3

## SAFETY

### General

The following pages outline important safety information. At Goldacres safety is a high priority. These safety and warning instructions **MUST** be followed to ensure the safe operation of your Goldacres equipment.

Explanation of key terms used in this operator's manual are:

#### Danger

You will be killed or seriously hurt if you don't follow instructions

#### Warning

You can be seriously hurt if you don't follow instructions

#### Caution

You can be hurt if you don't follow instructions

#### Note

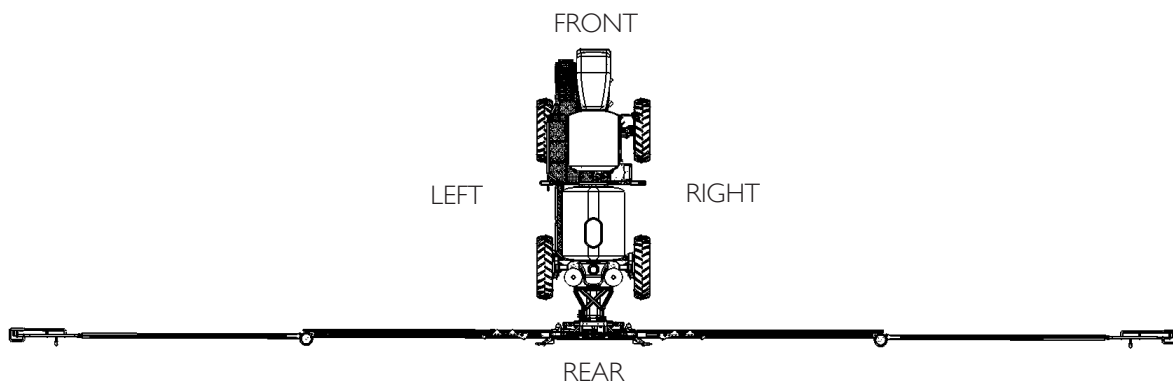
Is used to notify people of installation, operation or maintenance information that is important but not hazard related.

### The Operator

All operators of this equipment should be adequately trained in the safe operation of this equipment. It is important that all operator's have read and fully understand the operators manual prior to using this equipment.

All new operators should be trained in an area without bystanders or obstructions and become familiar with the sprayer prior to operation.

### Machine Orientation



# Safety Precautions

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## Notes

- Always read, and understand, the operator's manual prior to operation of this equipment.
- Goldacres equipment ordered, or operated, outside the guideline limitations may not be warranted by Goldacres for successful performance. Operators working outside these limitations do so at their own risk, unless specific advice has been sought from, and provided by, Goldacres in writing.
- Inspect the equipment thoroughly for damage and wear before operation.
- Do not operate the equipment while under the influence of any drugs, alcohol or if excessively tired.

## Cautions

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- Do not use this machine in ambient temperatures exceeding 40 degrees Celsius.
- Each individual boom section has a maximum delivery of 35 litres per minute with clean filters fitted.
- The maximum combined flow of all boom sections is limited to 140 litres per minute, or 50% of the pump flow whichever is the lesser amount, with clean filters.
- Do not exceed the maximum spraying pressure of 8 Bar.
- When leaving the sprayer always isolate the batteries by turning the isolator key off and removing it.

## Warnings

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- Any unauthorised modifications to this equipment may affect its function and create a serious safety risk.
- Keep clear of overhead obstructions – especially power lines as contact can be fatal.

### **NOTE: 1 LITRE WATER = 1 KG.**

- Water weighs 1kg per litre, however conversion factors must be used when spraying liquids that are heavier or lighter than water. Example: liquid nitrogen has a density of 1.3 kg/L approx and will therefore be significantly heavier than water if the tank is filled completely. The total weight of a tank full of chemical, should not exceed that of a full tank of water. Machine damage can result if the machine is over weight. (See filling instructions in the Operations chapter for more information.)
- Never stand within the radius of boom wings.
- Never work under any hydraulically raised boom.

## **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Always wear close fitting clothing and safety equipment designed for the job.

- Exposure to loud noise over an extended period can cause impairment or loss of hearing. Be active in the conservation of your hearing and wear appropriate hearing protection at all times.
- Chemicals can be harmful to humans, appropriate PPE should be used when handling chemicals. Always refer to the chemical manufacturers label for guidelines on the appropriate PPE to use with the chemical/s you are using.

Goldacres also suggest that you read and understand the following Australian standards:

- Australian Standard for Chemical protective clothing AS3765
- Australian Standard for Respiratory protection devices AS1715

## **AIR BORNE PARTICLES**

- Always stand well clear of equipment during operation.
- Any spray drift is dangerous and may be hazardous to humans.
- When heating and welding components, ensure that all paint and other such materials are removed. Often hazardous air borne particles and fumes are generated from welding and heating.

## **DO NOT CARRY PASSENGERS**

Do not stand or carry passengers on the steps or platform when the equipment is in motion or when the booms are being folded or unfolded.

- To minimize the risk of injury in the event of an accident, the operator must wear seat belt at all times.
- Before leaving the sprayer the engine must be shut off, the transmission placed in neutral and the park brake engaged. NEVER ENGAGE THE PARK BRAKE WHILE THE SPRAYER IS MOVING. DAMAGE TO THE TRANSMISSION MAY RESULT.

## Dangers

- Check area to be sprayed for overhead powerlines. Contact between the machine and powerlines can result in serious injury or death. If there are powerlines in the spray area, exercise extreme caution when tilting boom wings.
- Do NOT walk on machine platform when near power lines.
- NEVER start the engine when standing on the ground. Only start the engine from the operator's seat, with the transmission in neutral. Possible injury or death can occur by starting the machine through other methods.
- Diesel engine exhaust fumes are harmful and can cause severe sickness or death. If it is necessary to run the engine in an enclosed area use an exhaust pipe extension. If an exhaust pipe extension is unavailable ensure that all doors are

fully open and the room is well ventilated.

## ENTANGLEMENT IN ROTATING DRIVE LINES

- Rotating drives can cause serious injury or even death when entanglement occurs. Keep hands, feet, hair and clothing away from all moving parts to prevent injury. Never operate this machine with covers, shrouds, or guards removed.

## REMOTE BOOM\HYDRAULIC OPERATION

- If operating the GATMC controller from a wi-fi device, when exiting the cabin, ensure machine is in neutral and the park brake is on.
- Never stand within the radius of the boom wings.
- Never work under any hydraulically raised booms.

## Personal Protective Equipment (PPE)

---

Always wear close fitting clothing and safety equipment designed for the job.

Chemicals can be harmful to humans, appropriate PPE should be used when handling chemicals. Always refer to the chemical manufacturers label for guidelines on the appropriate PPE to use with the chemicals you are using.

Goldacres also suggest that you read and understand the following Australian standards:

- Australian Standard for Chemical protective clothing AS3765
- Australian Standard for Respiratory protection devices AS1715

### Air borne particles

Always stand well clear of equipment during operation. Any spray drift is dangerous and may be hazardous to humans and animals.

### Fluids under pressure

DO NOT disconnect any hoses, nozzles or filters while equipment is operating. Disconnecting these components while under pressure may result in uncontrolled fluid discharge which may be hazardous.

When the repair is complete ensure that all fittings and lines are secured before re-applying pressure.

## Safety Decals

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Understanding safety decals and their purpose assists in the safe operation of your sprayer. Safety decals are there for your protection and it is the responsibility of the owner operator to replace damaged and/or missing safety decals.

Regularly review safety decals with operators. It is very important to ensure that all new machine components and replacement parts include

current hazard identification decals.

Replacement safety decals can be ordered from your Goldacres dealer or directly from Goldacres. Part numbers and descriptions of the decals on this machine can be found in the parts manual supplied.



## Parts Ordering

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When ordering parts from your Goldacres dealer, please quote:

- Serial No.
- Part No. required
- Part Description
- Quantity Required

The parts manual supplied with this machine includes all the relevant information that you need when ordering parts from your dealer or Goldacres. When returning parts to Goldacres, or to a Goldacres dealer, for service or repair all parts **MUST** be cleaned thoroughly before sending them. Goldacres cannot expose technicians to the many potentially hazardous pesticides and substances that are in use.

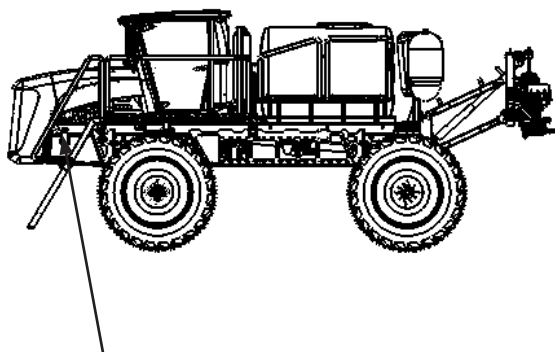
**NOTE:** Please ensure that all parts are clearly labelled with the owner's details, and a brief description of the fault. Goldacres are not liable for the return of any goods to Goldacres or a Goldacres Dealer. The goods must be returned to the point of sale. The customer will be responsible for any cost incurred by a Goldacres appointed person travelling to any site outside the point of sale.

Genuine Goldacres parts only should be used on Goldacres equipment.

## Identification

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When ordering parts or requesting service information for your sprayer it is important to quote the serial number of your machine, and the purchase date, in order to receive accurate information. The location of the serial number plate on your machine is shown in the picture.



ID plate located on the left hand chassis rail near steps.



# Chapter 4

## INITIAL STARTUP

### Starting up and shutting down the console

The GATMC console is powered separately to the job computers (which is powered by ignition live). The controller can be started if the ignition is OFF, but not all systems will be detected until the key is in the ACC position or the engine is started and the machine is operable. It is preferable to start the machine and be sitting at idle and then start the console.

### Starting the machine

To start the machine, it is advised to turn the ignition to the ON/ ACC position until an audible double beep sound is heard inside the cab, this signifies the Can bus system has successfully checked the system, initialised and is ready for operation. The ignition switch can then be turned to the start position in order to crank the engine. If this sequence is not adhered to it may be possible to start the engine by rotating the ignition switch quickly, from the off position, directly to start position before the GATMC system has initialised fully, and therefore no operations will be possible as a suspected power supply problem will prevent operation as a safety precaution. If this situation occurs simply turn the ignition off and perform the correct start sequence as detailed above.

NOTE! As described above the GATMC Canbus system is ignition powered whereas the GATMC operator console is powered directly, therefore settings and factors in menus cannot be successfully altered, reset or changed via the console unless the ignition is switched on, the existing figures/factors will be retained in this case.

### Starting the GATMC Operator Terminal

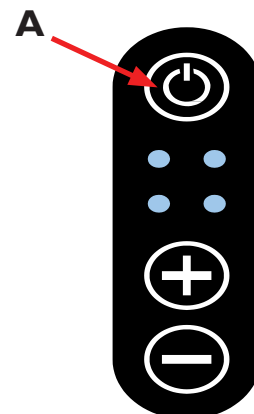
To start the GATMC Operator console, press the power switch (A) on the side of the console, the screen will initially scroll text and then display a start-up screen with progress bar; the GATMC computer will take approx 60 seconds to fully start-up. During the start-up the screen may be temporarily black for 10-15 sec., this is perfectly normal and no additional key presses are necessary. During this start up procedure the machine is fully operable but will show no display on the GATMC console.

### Starting External controls

Once the machine and the GATMC has started, then the other equipment fitted to the sprayer can be started, eg: Trimble, Raven controller; etc.

### Refresh screen

If the data on screen is not correct after starting up the other equipment, the screen will need to be refreshed. To do this select the ROAD screen and then back to the SPRAY screen. All the CAN data from the nodes can take a few more minutes to update to the GATMC screen.



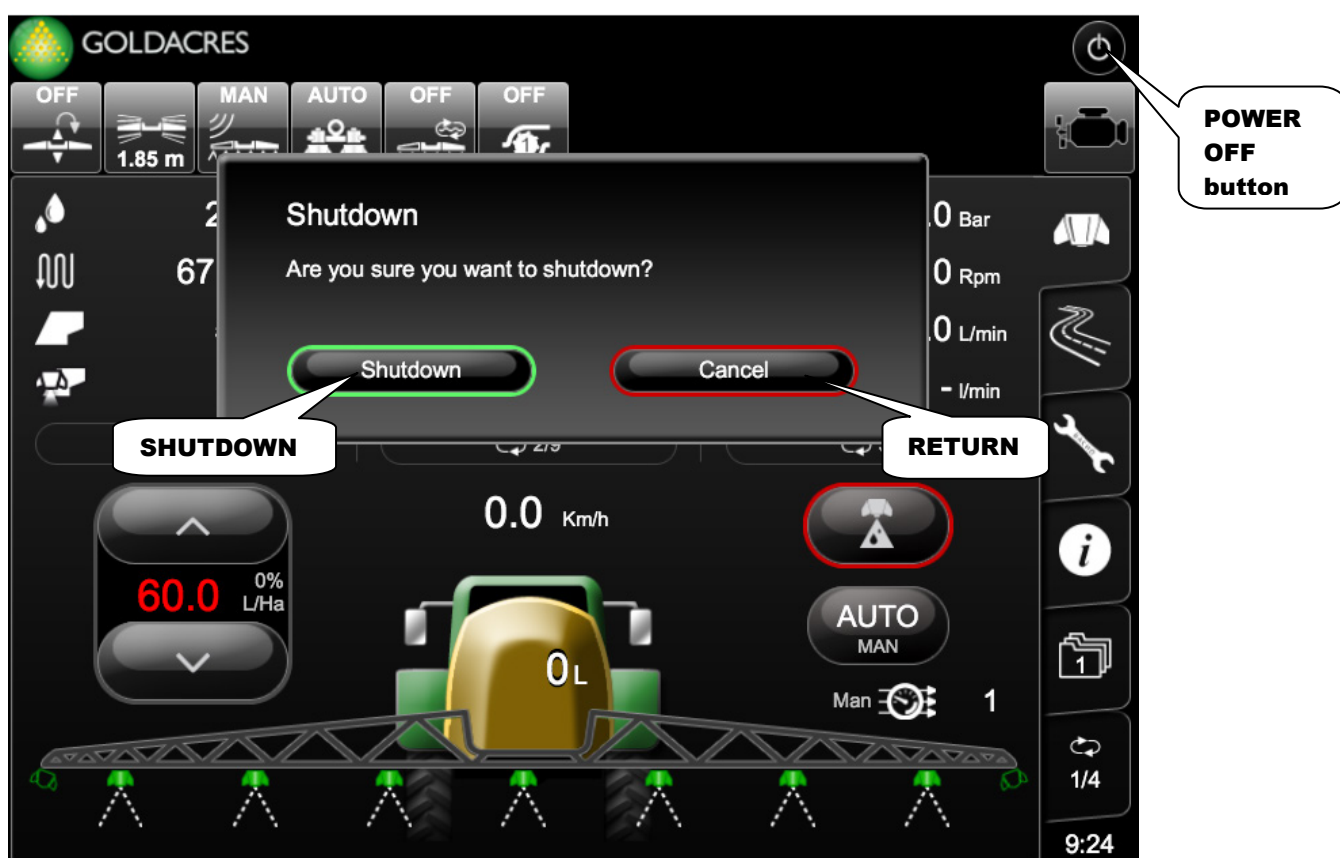
## Shutting down the GATMC Console

To switch off the GATMC console, press the "Power" logo in the top right hand corner of the screen (PRESS). The display will read "Are you sure you want to shutdown?", press [Shutdown] to continue to power down, press [Cancel] to return to main screen if accidentally pressed. The console will now prepare to close down and will be powered down in approximately 5 seconds.

NOTE! The GATMC console must be shut down by the operator to avoid battery drain when the vehicle is left unused.

NOTE! The GATMC console must be shut down correctly to avoid data corruption/loss as detailed above, it is not advised to switch off the Terminal without first prompting shut down.

NOTE: If the screen remains frozen, no change in figures or display, PRESS and hold the power button on the side of the console until the screen resets.



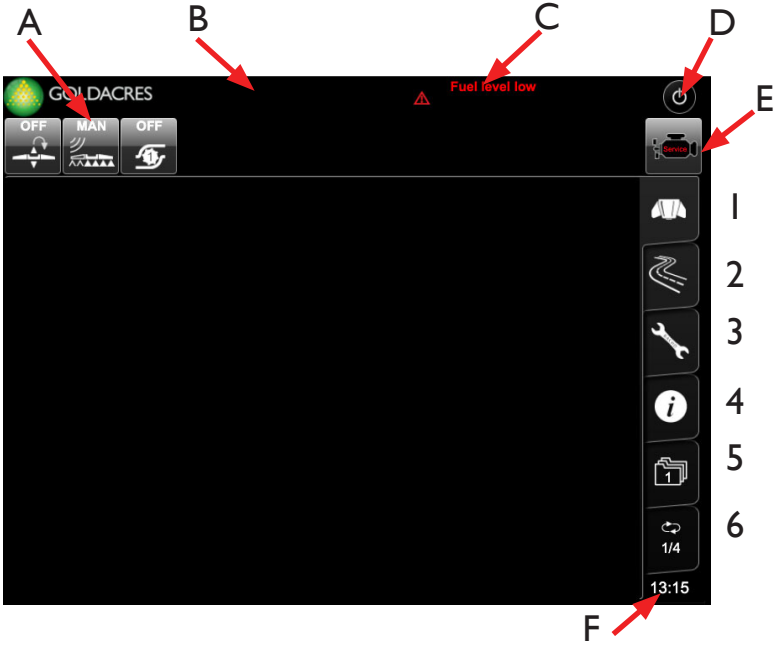
# Chapter 5

## BASIC OVERVIEW

### Key features

#### General Display and Structure

An overview of the general structure of the graphical user interface, including explanation of selected features is included below.  
All of the outlined areas of content are explained in further detail in later paragraphs



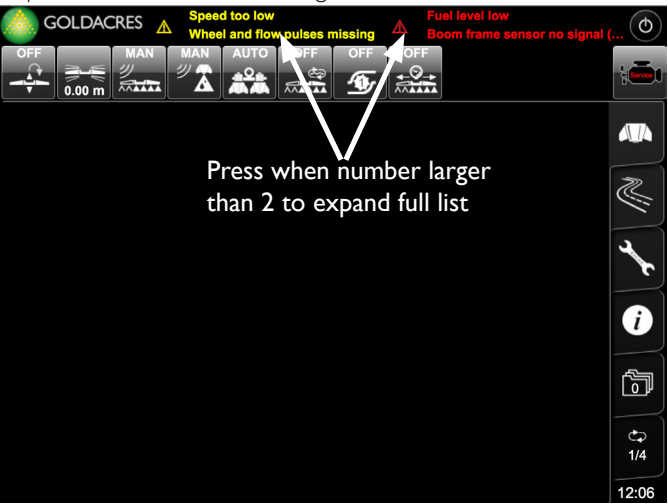
Key	Functions and Indications
A	Status Bar - Area for selected status icons and operations
B	Warning message area
C	Alarm message area
D	Power Down button
E	Service reminder; Engine warnings
F	Time Clock

Key	Functions and Indications
1	Spray Operation Screen
2	Road Screen
3	Setup Menus - Both operator and technical setup
4	Help Menu
5	Field / Job Menu
6	View Selector - Only visible in spray computer screen to alter sub-views

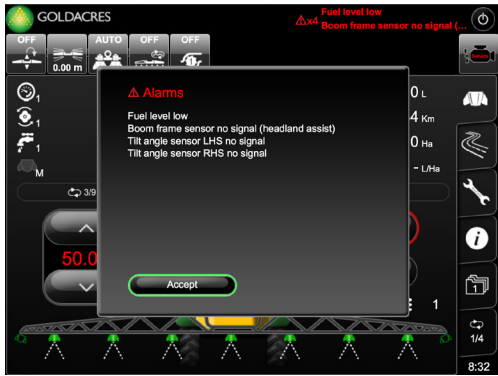
NOTE: All figures shown are examples only and are not to be used for spraying operations.

Computer warnings / alarms

Warning messages and alarm messages may appear, to alert the operator of any potential issues relating to the GATMC system, or components connected to it. Warning messages will be indicated in yellow writing (and alarm messages in red writing) at the top of the screen, regardless of the current screen displayed. In front of the warning/alarm text a number indicates the total amount of active warnings/alarms. NOTE! In case the number of warnings/alarms exceeds two, it is crucially important to press the symbol to expand the total list of warnings/alarms!



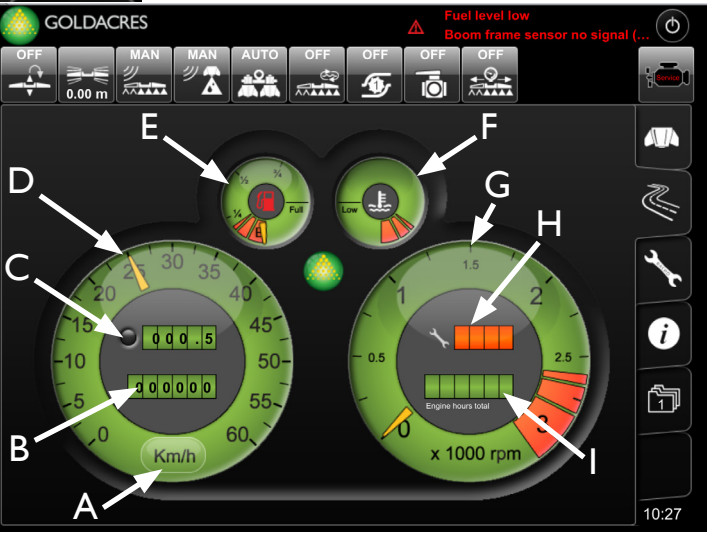
NOTE! Any red text or warning signs on screen, must be investigated immediately.



Road Screen



To select 'Road Screen', press the Road symbol on the right hand side of the screen. This screen shows the road speed, fuel, engine temp and RPM. By pressing the fuel or engine temp gauges, it will change to the ENGINE DIAGNOSTIC screen, showing more info from the engine. See Engine Diagnostic.



Key	Functions and Indications
A	Select unit of measure by touching (km/h or MPH)
B	Total distance travelled
C	Trip computer (reset enabled by touching button)
D	Forward speed
E	Fuel level
F	Engine temperature
G	Engine Speed
H	Engine hours to service
I	Engine hours (total)

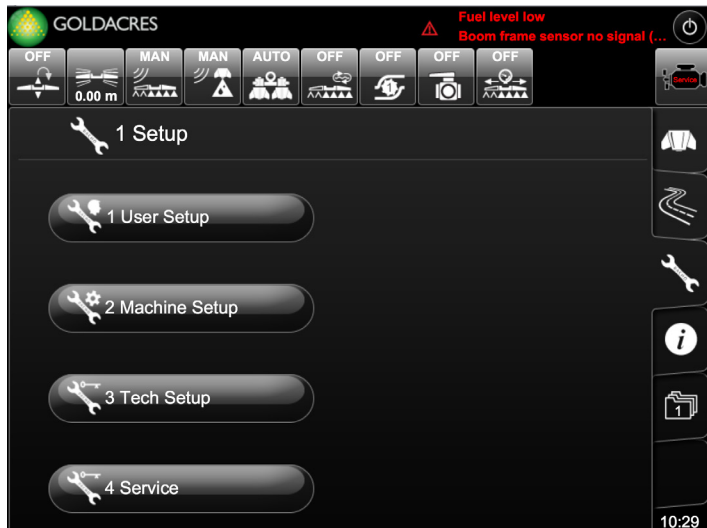
NOTE! Trip distance will be counted when a Simulated speed is active i.e. when jug testing the sprayer at a preset forward speed (8kph @ 3BAR 03 nozzle 180L/ha).  
NOTE! Trip distance reset will be performed when pressing the button next to trip counter value. A confirmation dialogue box will appear: Once confirmed the trip counter will be reset.  
NOTE! The Fuel gauge needle will enter the Red part of the gauge and a warning "Fuel level low" will appear, when there is approx 60 litres (20%) left in the tank. This is purposely designed as an early warning to avoid running out of fuel when working far away from the fuel supply or driving on steep inclines where fuel may run away from the suction pipe if on an incline for long periods.

## Spanner - Setup Menus



In the Setup Screen, the User Setup and Machine Setup sections are for the operator to access for the everyday running of the sprayer. The Tech Setup and Service sections are locked for Goldacres or Dealer service support. These can be viewed but not changed by the customer.

NOTE: See Console Setup chapter for more info.



## Help Screen

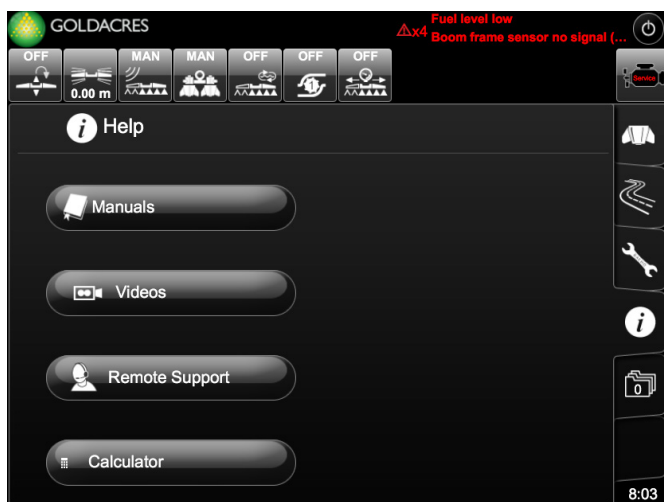


The help screen has 4 options, Manuals, Videos, Remote Support and a Calculator. Manuals has the Crop Cruiser Operators Manual in high quality and low quality versions and also the manual for the GATMC.

Video has a demo video of the GATMC.

Remote Support is for connection to a Goldacres Tech support person, not in operation at this time.

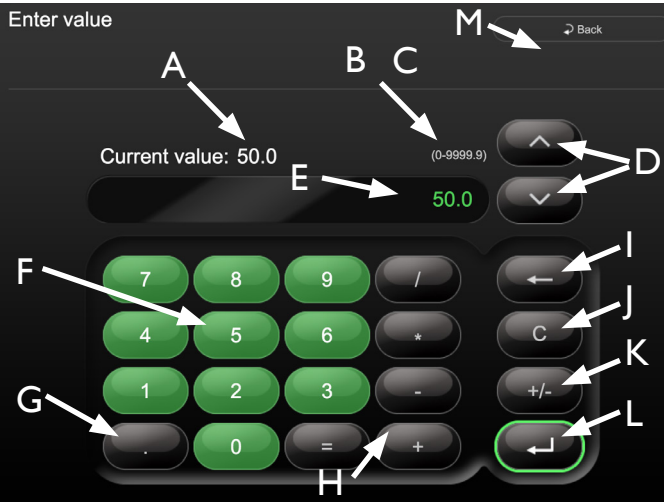
Calculator is a pop-up keypad.





### Pop-up Keypad

The GATMC Operator terminal utilizes a 10" touch screen as the operator interface, to enter figures into setup menus on screen a "Pop-up" keypad will appear when an adjustable setting menu box is pressed. For example, to enter a new Application rate, press the current displayed application rate in the spray screen, and the screen below will appear; the "pop-up" keypad screen will always show Min, Max and Current value to help with setting selection. Pressing the icon on the screen you wish to adjust generally hyper-links directly to a menu you wish to alter i.e. nozzle colour/spray line etc.



Key	Functions and Indications
A	Current value
B	Min value that can be entered
C	Max value that can be entered
D	Incremental adjustment steps (for easy application of small changes)
E	Value keyed in on keypad
F	Keypad numbers
G	Decimal point
H	Arithmetical symbols(when used as calculator)
I	Delete key
J	Clear key (clears value entered)
K	Change sign key
L	Enter key (to enter value keyed in)
M	Escape/back key (exits "pop-up")

## Joystick Control Fold\Spray Mode

The joystick functionality is mainly dependent on the position of the main mode switch. When the machine is started, it will be in the mode that it was in when last shut down, if the light is solid, it will be in Spray mode, the button on the arm rest console needs to be pressed and the light will change to a solid light and to go back to Fold mode, pressed again.

In Spray Mode the master spray control can be switched on/off either by pressing the top left button on the joystick knob or Master On/Off button on the screen. The Spray Mode must be on before starting to spray from an external controller.

Sequential sections:









This Joystick control allows the operator to sequentially switch off the sections from left to right (turning joystick knob clock-wise) or right to left (turning joystick knob anti clock-wise). This option of joystick section control is ideal if using more than 6 sections and most work allows sequential switching.

An overall schematic of the joystick functions is enclosed below.

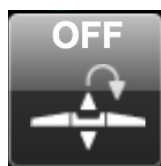


## Status bar symbols and icons

An overview of status bar symbols and icons is included below.  
Functions marked with Optional may not be available.

	Functions and Indications
	Headland Assist
	Centre Boom height (optional)
	Auto Section Control operations (optional)
	Auto Nozzle Select operations (3TS) (optional)
	Boom Recirculate operation (optional)
	Pump I operation – On/off function as outlined in text above the symbol
	Electric valve operation (optional) On/Off function as outlined in text above the symbol
	Bi-fold boom pressure (optional)

### Headland Assist



Headland assist is designed to aid the operator at headland turns in difficult conditions and to reduce operator fatigue (for example, on uneven terrain or exceptionally tall crops), by performing preset automated sequences on headland approach and headland exit. The automated sequences can be customized in the User setup menu making it possible to tailor to any individual need and preference. The sequence can as an example on headland exit include re-engagement of cruise control and auto-steer in addition to boom lowering, master spray switch activation and resetting boom inclines to level.

NOTE! Headland assist is intended as a headland turn aid and must not be relied upon to ensure booms do not come into contact with the ground, this is the operators responsibility and no measure is in place to avoid boom and ground contact or overhead power lines ect.

NOTE: See Spray Operation chapter for more info.

## Centre Boom Height



This will show the height of the boom centre and nozzles from the ground. There is a sensor on the boom centre that is setup at the factory and will show the height when all the job computers are online and sending info to the console.

## Auto Nozzle Select Operations



The Auto Nozzle Select functionality can be selected when dual lines or MultiSpray nozzles bodies (dual or quad bodies) are fitted.

In MAN mode the line switching or nozzle position switching is done from the cab using the relevant info-screen. To manually switch between lines.

In AUTO mode the two or four lines are handled individually and simultaneously switching over automatically between lines (or combinations hereof) depending on forward driving speed or requested flow rate. The intelligent switching between lines/nozzles and combinations enables constant application (not just rate but also in terms of spray pressure and droplet size) with a wide range of possible forward driving speeds and target application rates.

The automatic nozzle select feature will hence help improve spray effectiveness (more hectares covered as no manual nozzle changes are needed and operator fatigue is reduced) and spray quality due to correct pressure and droplet size.

The currently selected nozzles and nozzle characteristics are set up in the User setup menu. A sub-menu in the User setup is dedicated to outlining the spray characteristics that should be implemented. This includes an aid for the operator to select the correct nozzle configurations for a given spray job ensuring maximum spray flexibility and increased yield potential.

NOTE: See Spray Operation chapter for more info.

## Auto Section Control



The activation box should be ticked if the machine is set up with an Automatic Section control unit e.g. Raven Smart Boom (serial port) or Trimble Offset ect.

The communication type should be selected from the drop down menu list containing currently supported communication methods and types, as shown in "Connecting to an External Controller".

The Auto Section Control (ASC) function operates by integrating to an external control device that keeps track of GPS positions and calculates desired status of Master spray valve and the respective section valves.



In order to activate auto section control functionality, at startup the icon should be on "MAN", if not press until the "MAN" is displayed.

At the start of the days spraying, this sequence needs to be followed. Once this has been followed the ASC can be left in AUTO for the remainder of the day.

When starting to spray the selected field, keep the ASC in "MAN" mode until the machine is spraying, then press to change to "AUTO", signifying automatic section control from the external device is active.

Please note that it is generally made possible to "over rule" the external input i.e. manually deciding that certain sections should be dis-engaged at all times, this will be displayed with colours on the boom section icons at the bottom of the spray screen as outlined in a later chapter regarding Section control.

In order to disengage the ASC functionality, the ASC icon must be pressed on screen until MAN appears.

Several options of external ASC controllers are made available and setup instructions for these options are detailed in the separate "Connecting to an External Controller" found at the end of "Spray Operation" chapter.

## Boom Recirculation (RapidFlow) Operations



The Boom Recirculation (RapidFlow) function is for charging the spray lines ready to spray. Boom Recirculation allows an agitated chemical mix to be run through the boom lines prior to spraying - pre-charging them and eliminating waste. This can be used to assist decontamination of the boom. This option is not available unless RapidFire is also fitted.



To operate the Boom Recirculation correctly before spraying.

1. At the suction valve, turn the valve to SUCK FROM MAIN TANK.
2. BYPASS must be open on the EZ control station.
3. Turn the spray pump on.
4. A single press on the icon will change it to PRIME, which will recirculate the lines with 80L as per the presets in 3.1 Sprayer menu. When finished it will turn off, and then it will trigger an alarm in the cabin for 6 seconds, also when at zero speed at the EZ control pod for 6 seconds. This 6 second alarm is useful so that when the boom is flushed the rest of the machine hoses can be rinsed from the EZ control.



For manual mode, the valves must be in the same position as above, pressed and hold until the icon changes to "ON" and will run until it is pressed again back to OFF, or when pump is turned OFF.

This can also be used to decontaminate the boom,

1. At the suction valve, turn the valve to SUCK FROM RINSE TANK.
2. Set the EZ control pod to BYPASS.
3. Turn on the spray pump from the cabin.
4. Then from the cabin press the Boom Recirculation until the "ON" is displayed and it will rinse the booms back to the main tank.

When finished press the icon so the "OFF" icon is shown and then turn the pump off and shut the valves to the off position at the suction valve and the EZ control pod. Also if the pump is turned OFF, the function will also stop.

## Pump I Operations



The Spray Pump function is for turning the spray pump ON and OFF from the console.

The Spray Pump can also be turned on from the EZ Control POD on the machine, and then turned OFF at the console. The reverse is also possible as the switch at the POD is a momentary switch.

## Bi-fold Pressurise



When the Bi-fold Boom Pressure icon is pressed and held, it will apply hydraulic pressure to the Bi-fold hydraulic fold cylinders to keep them in the closed position while spraying. This is so the operator does not have to change from spray mode to fold mode to maintain the boom position. This function will only operate when the Master Spray is on.

NOTE: See Spray Operation chapter for more info.

This function can also be used for blasting corners of a paddock. reverse in the corner, Master OFF, turn prime on, once boom is pressurised, turn master on and drive off and continue spraying.

## Engine Status



The operational status of the Engine is always displayed at the top of the screen. Under normal operating conditions and within acceptable pre-determined parameters, Icons are grey/black (as illustrated).

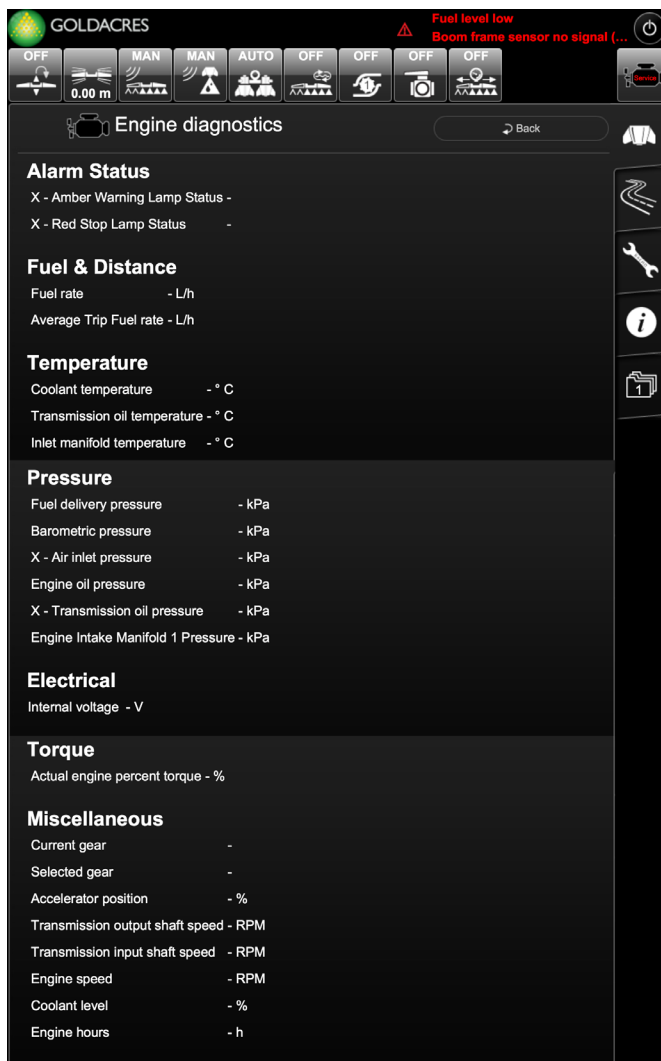


If a fault occurs, a red warning colour will be displayed behind the relevant icon (as illustrated). Pressing the icon will open the Diagnostics window, so assisting with fault diagnosis (see below).

By pressing the 'Engine' Icon, the Engine Diagnostics screen will be shown. This could for instance display current Alarm status and selected engine parameters related to Fuel/Distance, Temperature, Torque, Pressure, Electrics etc. If any figures fall outside preset parameters or alarm status is supported by the engine calibration the red warning sign will be displayed.

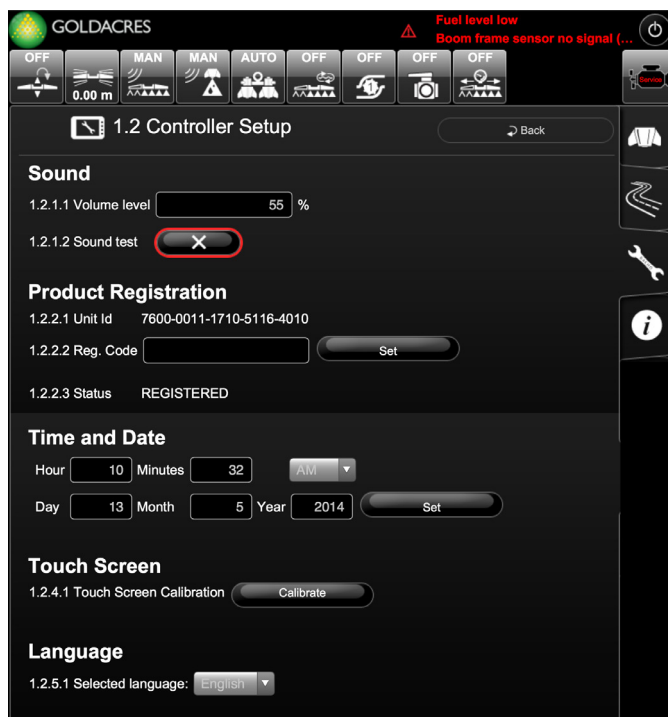
NOTE: The Cummins engine has a self protection mode where it will drop power or completely shut down depending on the fault that is detected.

## Engine diagnostics



By pressing the 'Engine' Icon, the following status screen will be shown. This will for instance display current engine parameters related to Fuel/Distance, Temperature, Torque, Pressure, Transmission etc. If any figures fall outside preset parameters an alarm status is supported by the engine calibration the red warning sign will be displayed.

# Controller Setup



To set the sound, product registration, time & date, touch screen and language, press the Spanner icon, 1 User Setup, 2 Controller Setup

## Sound

The sound level of all audio output (i.e. warnings and when touch screen operations are performed) can be adjusted in the Volume level entry box by entering a new volume figure. Press the entry box and key in a new figure using the "pop-up" keypad. The default setting is 55%.

## Set Time & Date

The date and time can be set by pressing the entry boxes and using the "pop-up" keypad to change.

NOTE: This is used by the system for recording data and warning message displayed.

NOTE: System may take upto 30 seconds to update if changed.

## Touch Screen

Calibration:

Although the touch screen will be calibrated before leaving the factory, it may be necessary to recalibrate the screen over time. To calibrate screen press [Calibrate] key and follow on screen instructions, when the last cross has been pressed the calibration is set and will exit back to menu screen.

NOTE! If the calibration is not set correctly, and the icons on the screen can not be accessed by pressing, a computer USB mouse will need to be plugged into the USB port and the screen calibration to be run again.

## Product Registration

From the factory the registration code will be entered to test and set the basic functions of the console.

If for some reason the code is deleted or the console is asking for the code on startup, the console will not function as no CAN will be connected.

To re-enter the code, it is on the side or rear of the console, press the Spanner icon, press the 1 User Setup, then press 2 Controller Setup.

Press the data field and when the pop-up keypad comes up, enter the registration code and press enter.

Please write this code down for future reference.



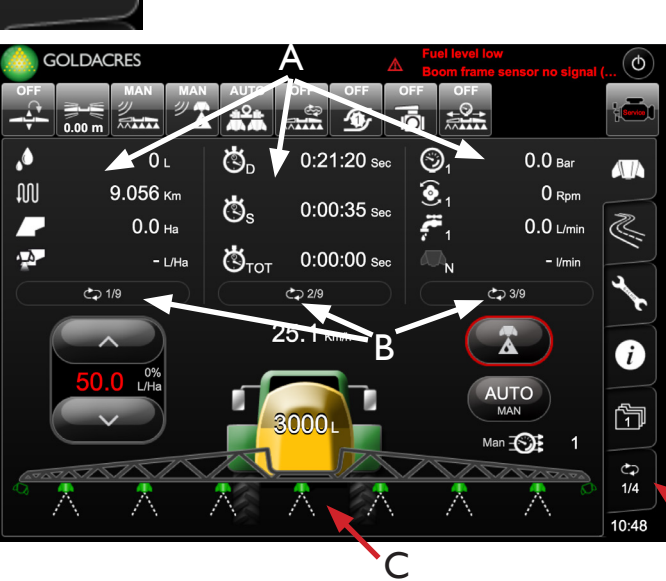
# Chapter 6

## SPRAY OPERATION

### Spray Screen



To select 'Spray Screen', press the Nozzle symbol on the right hand side of the screen.



Key	Functions and Indications
A	Information screen - 3 separate info screens are provided and the content can be selected by the operator based on information needed. There is 9 different options for displaying info
B	Info screen selector button.
C	Spray operations screen with all handling and control of spray control functions.
D	Sub-tab selector - This will scroll through all the spray operations screens.

### Info Screen I



Total volume dispensed on current field/job number (Litres)

Unsprayed distance travelled on current field/job number (Km)  
(Does not include sprayed or when Master is ON)

Total Area sprayed on current field/job number (Hectares)

Average spray rate on current field/job number  
(Litres per Hectares)  
only worked out over the last 10 minutes

NOTE: Unsprayed distance, example: distance from end of spraying to fill point and back to the paddock to continue spraying.

NOTE: All figures shown are examples only and are not to be used for spraying operations.

## Info Screen 2

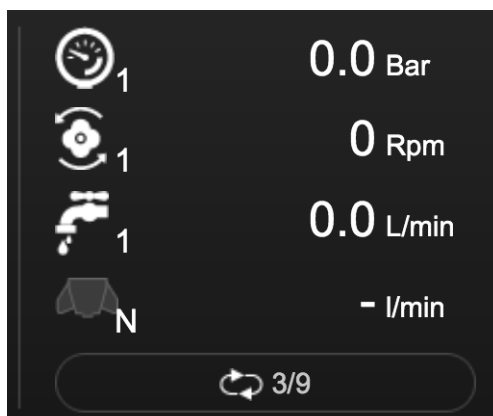


Total driving time on current field/job number.

Total spraying time on current field/job number.

Stop watch on current field/job number - The stop watch time can be started/stopped by pressing the symbol. When the stop watch time is running the icon will be flashing.

## Info Screen 3



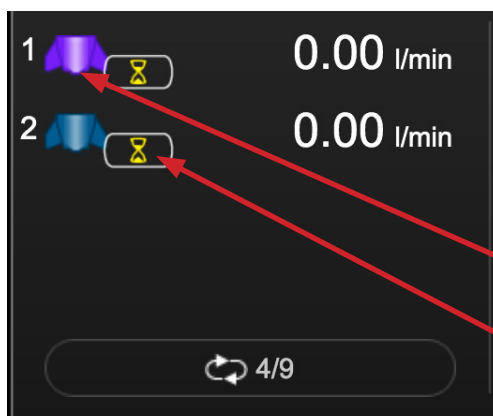
Current spray line pressure. Product I

Spray Pump RPM. Product I

Total flow/output to the boom. Product I

Spray line selected (no number if single line sprayer) ISO nozzle is active and current output per nozzle. By pressing the nozzle icon it will link to the Sprayer Setup screen for nozzle selection.

## Info Screen 4

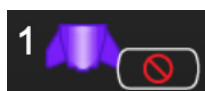


Line 1 nozzle - operation indicator - output per nozzle as to ISO standards

Line 2 nozzle - operation indicator - output per nozzle as to ISO standards

Pressing the nozzle icon will take the operator to the Spray Line Control Setup in "I User Setup"

Press the icon to change state.



Red stop-sign/"No spray" signify spray lines that are de-activated by the operator (spray line cannot spray regardless of Master switch and Auto Nozzle Select/MultiSpray control input).

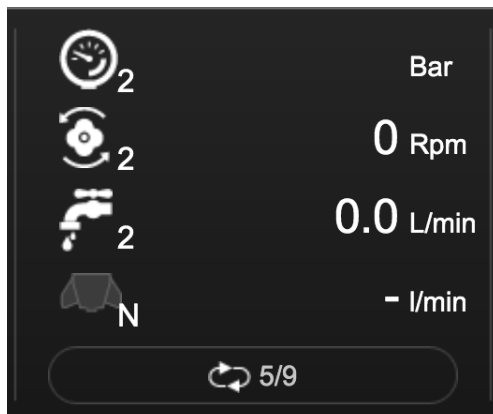


Yellow "hour glass"/"Wait" signify lines that are turned on by the operator but temporarily turned off by the Auto Nozzle Select/MultiSpray control input or Master switch is turned off (lines are not spraying).



Green arrow/"Spray" signify lines that are engaged and currently spraying.

## Info Screen 5



Current spray pressure. Product 2

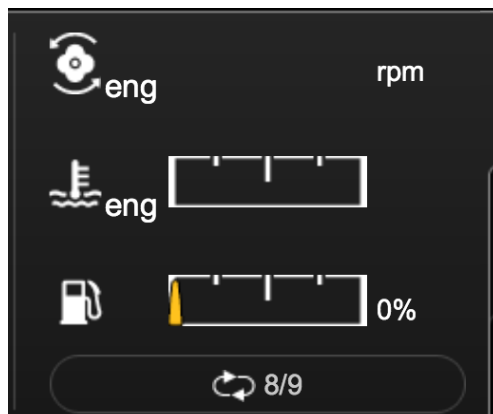
Spray Pump RPM. Product 2

Total flow/output to the boom. Product 2

Spray line selected (no number if single line sprayer) ISO nozzle is active and current output per nozzle. By pressing the nozzle icon it will link to the Sprayer Setup screen for nozzle selection.

Screens 6 and 7 are under development.

## Info Screen 8

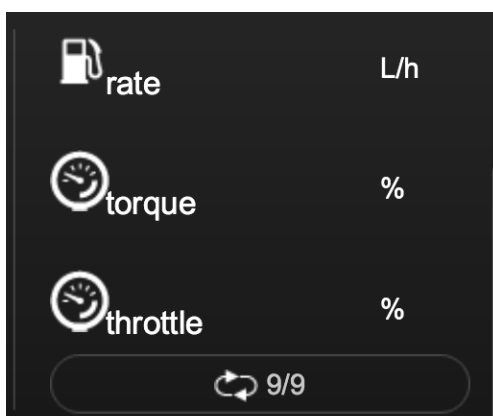


Current engine revolutions displayed as numerical value

Engine temperature displayed on the same relative scale as on the road screen

Fuel level indicator displayed on the same relative scale as on the road screen

## Info Screen 9



Instantaneous Fuel Rate - Litres per hour

Engine Torque - actual engine percentage

Accelerator position - percentage (there will be no reading when cruise control is on)

# Spray Screen I

Spray mode functions and indications, single product.



Key	Functions and Indications
A	Spray Regulation Input - Flow meter I, Pressure Transducer or Auto
B	MANual or AUTOMatic sprayer regulation icon (Manual or Auto Rate product regulation)
C	Master Spray On/Off Icon – Rim of Icon is Green when ON. Rim of Icon is Red when OFF. Rim of icon is Orange when waiting for signal.
D	Spray Rate - when Master is OFF it will show the Target Rate and when the Master is ON it will show the Actual Rate. Rim is Green when on rate. Rim is Red when off rate. Rim is Grey when in manual mode. Press to set the application rate.
E	Up and Down arrows manually raise or lower application rate by +10% / -10% to application rate in AUTOMatic regulation. (% of original value - percentage can be changed)
F	Forward speed (actual or self test speed)
G	Current tank contents. Either based on tank level sensor (if applied) or subtraction of spray volume from initial tank content
H	Spray sections status (Please see later paragraph for additional information) By pressing the nozzle it can change the state of that section.
I	Fence line nozzle status – these are not part of the section allocation but an optional extra. These are turned off together with adjacent outer section
J	Spray nozzle state of operation. (see later paragraph for additional information)
K	Indication of simultaneous manual switching of multiple sections (see later paragraph for setup of this) – In example “K” two sections are turned on/off together

## Spray Regulation input

Spray Regulation input icon has 3 settings: Flow, Pressure and Auto. These can be set depending on the metering on the machine. These icons will be shown on the main spray screen.



Flow - take the reading from the flow meter located at the rear of the machine on the boom centre.



Pressure - take the reading from the pressure transducer located at the flow distributor body on the boom centre of the machine.

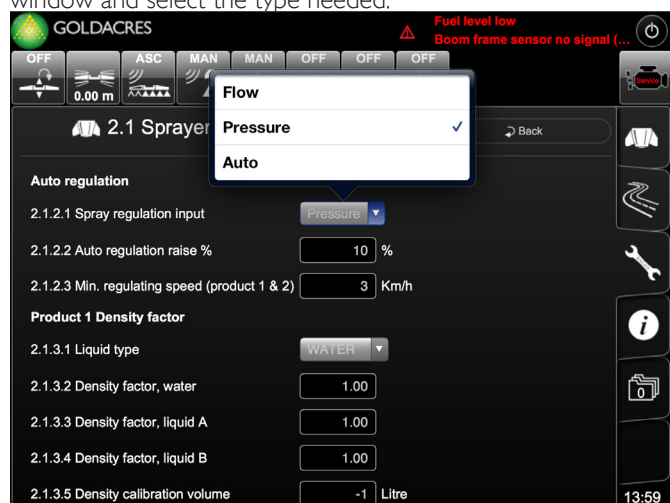


Auto - can take the reading from either the flow meter or the pressure transducer.

### Regulate according to Flow/Pressure:

The controller is capable of regulating according to pulses received from a flow meter (Flow based) or signal received from a pressure transducer (Pressure based). It is possible to install both sensors and choose to regulate according to which method is the most suitable for the current application. To choose to regulate according to flow meter input or pressure transducer signal select the drop down box next to the window showing flow or press and highlight the method to which you choose to regulate.

To change the regulation input, go to the side panel and press the "SPANNER" then go to "1 User Setup", then scroll down to Auto regulation and then 1.1.2.1 to change the input. Press the arrow at the end of the selection window and select the type needed.



Note: If the flow meter stops working - switch the regulation to "Pressure" based regulation.

If Pressure is selected, must ensure that the correct nozzles are selected.

## Auto & Manual Regulation



### Auto Rate Control

Automatic regulation to a pre-set application rate will be controlled by selecting AUTO on the GATMC console. (Pressing this icon will toggle between Auto and MANUAL regulation.)



### Manual Rate Control

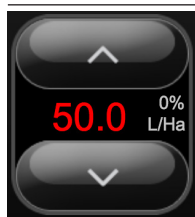
Manual regulation allows the operator to manually over-ride the automatic regulation.

This can be used to calibrate or setup nozzles or in specific applications where Automatic regulation is not required. When this is on, the Spray Rate icon will be boarded Grey.

NOTE! When regulating in AUTO, a coloured icon rim will appear around the Spray Rate icon "D", this will be RED to signify current application is off target until current application regulates inside a dead-band where it will turn green to signify on target application rate at a glance.

To change the dead-band percentage, go to the side panel and press the "SPANNER" then go to "3 Tech Setup", "1 Sprayer" then scroll down to Regulation valve setup and then 3.1.3.7 to change the figure. Press the window to change the percentage figure.

## Current\Target Application Rate



Current/Target Application Rate - To enter the desired application rate you wish to apply in L/Ha, press the application rate display (ie: 50) and type in desired application rate using the “pop-up” keypad.

When AUTO regulation is selected, pressing the UP or Down arrows on screen raises or lowers the application rate by standard incremental steps respectively (typically +/- 10%).

When MANual regulation is selected, pressing the UP or DOWN arrows will change the regulating valve open or close amount. Press and hold the arrow will change the amount more quickly than a single press.

NOTE: The Target desired application rate will be displayed each time the master spray switch is off and when AUTO regulation is active, as soon as the Master switch is turned back on the current application rate will be displayed.

NOTE: When MAN regulation is selected the current\target rate will read 0 L/Ha in white when master is off as no application rate will be automatically regulated to.

### Rate Bump Value (Auto regulation raise %):

When spraying in auto at a set application rate, this rate can be adjusted using the up and down arrows on the spray screen by a percentage of the application rate (e.g Application rate is set at 120 L/H and 10% is input into the % adjustment step value and on the spray screen the arrow is pushed up, the application rate will rise to 132 L/H, if the arrow is then pressed up again the application rate will then increase to 20% setting the application rate at 144 L/h and so on). This figure can be set between 1% and 20%. The figure that has been input should then show when the arrows are pressed on the spray screen above where the application rate is shown along with the change in application rate figure.

NOTE: To change the Rate Bump percentage, press the “SPANNER” then go to “1 User Setup”, then “1 Sprayer Setup” then scroll down to Auto Regulation and then 1.1.2.2 to change the figure. Press the window to change the percentage figure with the pop-up keypad.

NOTE: When the spray pump is turned off the percentage rate bump will be canceled.

NOTE: Some applications use fixed incremental values (in L/Ha) as adjustment step rather than a relative percentage value.

NOTE: The rate bump will not be adjustable if the ASC has all of the sections turned OFF. Which will also display an ORANGE rim around the Master icon.

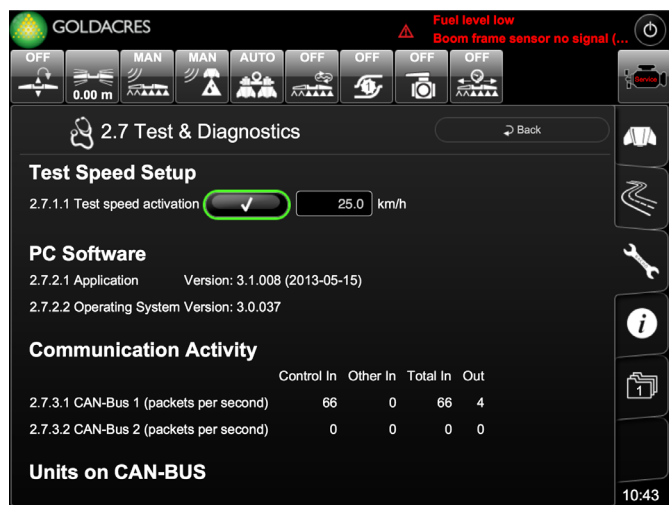
### Min. regulating speed: (2.1.2.3. Sprayer Setup)

When spraying in lower speed areas (e.g. around obstacles) a decrease in pressure below the desired working pressure, hence imperfect spray pattern, can occur. The “Min. regulating speed” will ensure that auto regulation is done based on this speed as a minimum even though actual forward driving speed might be lower.

To find the minimum regulating speed, have the booms in the working position. Have the correct application rate set and turn on the Self Test Speed and set to 15km/h. Turn on the Spray Pump and then the Spray Master and ensure all nozzles are spraying correctly. Adjust the self test speed to see when the spray pattern drops off and set this as the minimum speed.

NOTE! Due to spraying pressure being held at higher level than actual forward speed suggests, when this minimum value “kicks in” this will result in over-application and a warning of minimum speed will be displayed on the screen.

## Self Test Speed



To set a simulated forward speed, i.e. 6 km/h to allow automatic regulation to 6 km/h when static nozzle calibrating.

From the main spray screen, press the 0.0 km/h speed and it will go to the 2.7 Test & Diagnostics screen.

Press the red cross to change to green tick and enter the speed value required by pressing the entry box and using the “pop-up” keypad to enter a set speed and press enter.

Go back to the main Spray Operation screen to perform spray functions or settings like headland assist can be tested.

NOTE: The default speed is 25 km/h

NOTE: As soon as the machine detects a speed input the self test speed will be canceled.

NOTE: The hydraulic fill pump will not work with this feature ON.

## Master Spray On/Off



Press this icon when ready to start spraying. It will change to a GREEN rim.  
Spray master ON



This icon is RED when the spray operation is OFF. The spray nozzles will be closed.  
Spray Master OFF



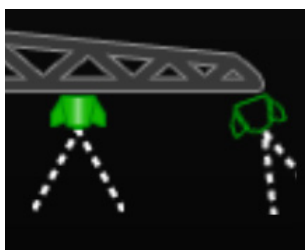
If the Master spray has been turn on, and this icon turns ORANGE, the nozzles or sections have been turned off and are shown as being RED, or it is waiting for a signal from an external controller to start spraying.

Example: Master Spray ON, but ASC has all sections turned OFF

NOTE: This only controls the nozzle open or close and all other functions like the spray pump need to be turned on manually.

## Fence line Nozzle

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Fence line nozzle status – these are not part of the section allocation.

Fence line nozzles can be switched on/off manually via the screen controls or through the push buttons on the arm rest console.

The icons with no dashed lines will not spray when the master spray is on. If the icon has dashed lines it will spray when the master spray is on.

If the Fence line nozzle is on, they will be turned off together with adjacent outer section.

When the fence line nozzle is activated, the bump rate may need to be increased to compensate with the extra flow.

The FENCE LINE JETS “L” - “R” on the arm rest console can be operated by pressing the on /off/ on switch to the left, the fence line nozzles on the left hand side will be activated. Press the switch to the right, the right hand fence line is activated. This switch will return to centre position after each press, and press the switch again to the left or right will turn them OFF.

## Nozzle Check

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To check that all nozzles are operating,

1. Turn on the RPM Raise and then the spray pump,
2. Turn on the Master and then press to MANual regulation and let the system get up to pressure.
3. Turn the spray pump off and the RPM Raise. Nozzles may drip as the Master is still on.

Ensure the machine is in neutral and go to the EZ control POD

4. Turn on the RPM Raise and then the Spray Pump.

Then the operator can walk around the boom to ensure all nozzles are functioning correctly. When finished return to the EZ control POD

5. Turn off the spray pump and RPM Raise and return to the cabin to turn the Master OFF.

## Boom Spray Nozzle Icons

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Red nozzles/No spray signify sections that are turned off by the operator (sections cannot spray regardless of Master switch and GPS Auto Section Controller input).



Orange nozzles/No spray signify sections that are turned on by the operator but temporarily turned off by the external Auto Section controller (sections are not spraying). eg. In an area already sprayed or in a no go zone.



Green nozzles/dotted spray signifies sections that are active (turned on) but the Master Switch is turned off (not currently spraying).



Green nozzles/full spray signify sections that are active and the master is turned on (sections are spraying).

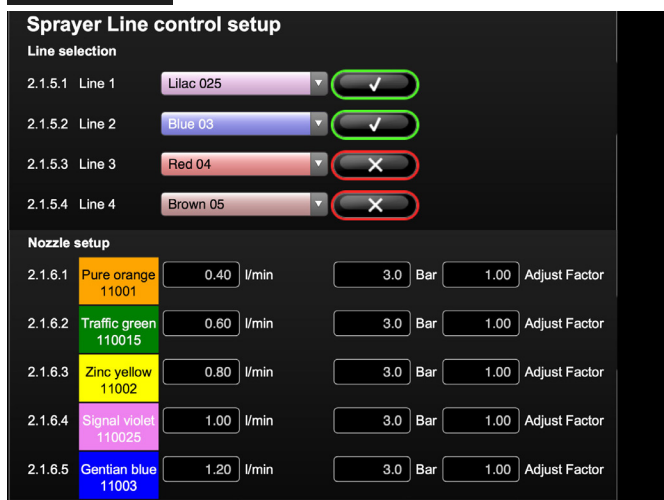


## Nozzle & Sprayer Line Control Setup



Press on one of these this icons

Press one of the nozzle icons will go direct to the Sprayer Line Control Setup in SETUP, I User Setup.  
Press the nozzle indicator will change the state of the nozzle.



To select the ISO nozzle type currently being used the drop down arrow should be pressed in the entry window next to the relevant Line indicator and the appropriate nozzle colour should be highlighted. The output of the nozzle, in L/min at a given pressure, is listed below in Nozzle Setup and can be adjusted for alternative nozzle types, wear or unlisted specialist nozzles.

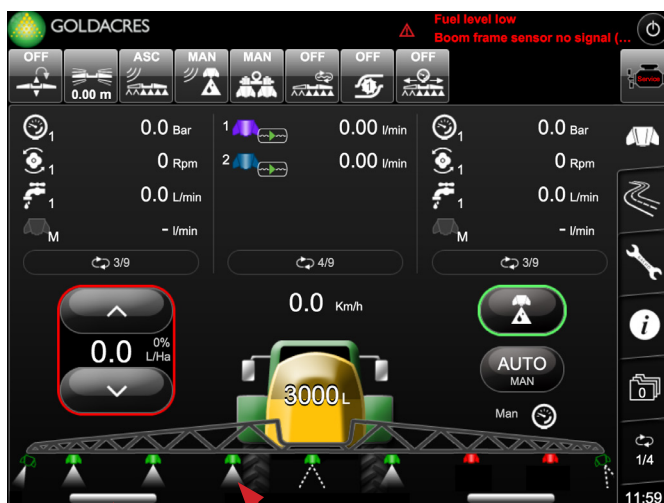
Line 1 or Line 2 or Line 3 or Line 4 activation:

If twin (or quadruple) line or Twin/Quadruple nozzle body is fitted to the machine, it is possible to select which line you wish to be active (or possibly can be activated in

Automatic Nozzle Select/MultiSpray mode) from this menu, Line 1, Line 2, Line 3, Line 4 or a selection of these can be selected by pressing the Red cross to change it to a Green tick to be active. (line 3 and 4 require an unlock code)

NOTE! If no pressure transducer is installed the pressure reading on the sprayer screen is calculated via the ISO nozzle details, therefore it is important to ensure the ISO nozzle selected for the line in use is correct. (ONLY APPLIES for single product sprayers)

## Spray Section setup



Spray Sections 2.1.10.1

Manually Operated Spray Section Distribution (Manual switch 2.1.11.3)

The number of spray sections on the machine will be setup from the factory, these setting can alter how many nozzle icons are shown on the touch screen display.

The width of the sections can be entered in this menu, 2.1.10.1 the total width of the machine will be calculated from these settings and therefore area covered and rate applied.

The number of Manually Operated Spray Section Distribution can also be setup and controlled from the main spray screen. See 2.1.11.1

See next page for setup screens.

## Spray Section Setup

**Sprayer Setup**

**Section setup**

2.1.10.1	Number of spray sections	<input type="text" value="7"/>
2.1.10.2	Total active width	36.00 m
2.1.10.3	Section 1	<input type="text" value="6.00"/> m
2.1.10.4	Section 2	<input type="text" value="6.00"/> m
2.1.10.5	Section 3	<input type="text" value="4.00"/> m
2.1.10.6	Section 4	<input type="text" value="4.00"/> m
2.1.10.7	Section 5	<input type="text" value="4.00"/> m
2.1.10.8	Section 6	<input type="text" value="6.00"/> m
2.1.10.9	Section 7	<input type="text" value="6.00"/> m
2.1.10.10	Section 8	<input type="text" value="0.00"/> m
2.1.10.11	Section 9	<input type="text" value="0.00"/> m
2.1.10.12	Section 10	<input type="text" value="0.00"/> m

To enter the data for the spray section, press the Spanner icon, press 2 Machine Setup, press 1 Sprayer Setup and then scroll down to the Section Setup, as shown to the left. In 2.1.10.1 enter the number of section the sprayer will have (this will be set at the factory). Next enter the width of each section in meters, starting from the left hand side.(this data will also be set at the factory). The total width will be displayed and should match the spray width. This will display the 7 nozzles on the main Spray Screen 1.

## Manually Operated Section Distribution

**GOLDACRES**

OFF 0.00 m MAN OFF OFF

**2.1 Sprayer Setup** Back

**Manually operated section distribution**

2.1.11.1	Number of Manual Switches	<input type="text" value="4"/>
2.1.11.2	Configuration Status:	OK
2.1.11.3	Manual switch 1 operates	<input type="text" value="2"/> sections
2.1.11.4	Manual switch 2 operates	<input type="text" value="2"/> sections
2.1.11.5	Manual switch 3 operates	<input type="text" value="1"/> sections
2.1.11.6	Manual switch 4 operates	<input type="text" value="2"/> sections
2.1.11.7	Manual switch 5 operates	<input type="text" value="0"/> sections
2.1.11.8	Manual switch 6 operates	<input type="text" value="0"/> sections

14:57

Auto Section Control can shut off nozzles automatically based on GPS signals. In case the sprayer is equipped with a number of sections (e.g. 12 sections) that exceeds the number of sections possible to control manually by the operator it is made possible to bundle electrical sections in Manual mode for ease of operations. If the entry box "Number of Manual Switches" is set to zero the number of manually controlled sections will equal the total number of electrical sections on the sprayer. Alternatively the desired number of manual sections can be entered in the entry box.

If a value not equal to zero is entered the

following entry boxes must be filled out indicating how the electrical sections should be bundled.

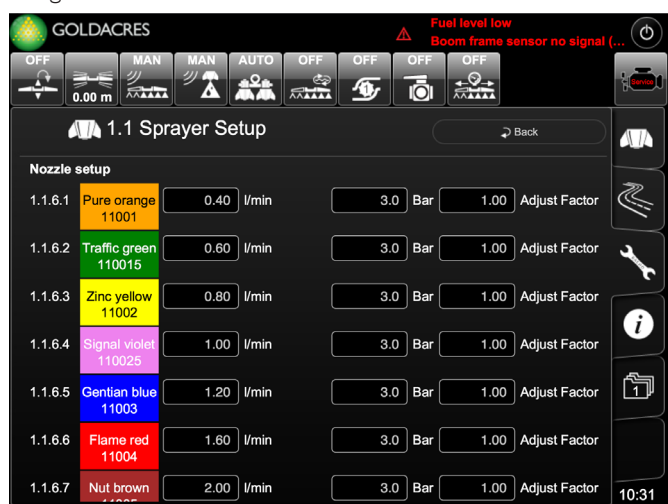
The bundling of section on manual switch is oriented from left to right i.e. in the example above 7 electrical section has been bundled on 4 manual switches, where switch 1 (seen from the left) operates two electrical sections, switch 2 operates the next two electrical sections etc.

**NOTE!** As an operators aid during setup a configuration status has been added. This checks that the number of entry boxes with a number different from zero adds up to the number of manual switches applied and that the total number of electrical sections distributed equals the total number of sections on the sprayer. Please check that the configuration status is "OK" before leaving the Machine setup menu.

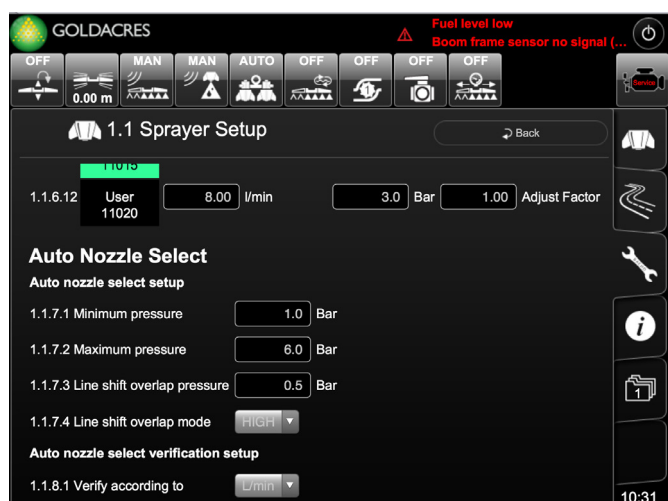
# ISO Nozzle Setup

The standard ISO nozzle details are given in the nozzle setup menu, these figures can be changed to suit any nozzle variants being used instead. To change the ISO nozzle data press the entry box and key in new data using the “pop-up” keypad. Nozzle number 12 is a User defined nozzle, to be used for fertiliser/specialist and unlisted nozzles. A decimal adjust factor is also available to adjust each nozzle colour manually for wear; the standard setting is 1, i.e. 1=100% accurate to the output at rated pressure, whereas 0.95 will assume the nozzle is 95% efficient or applies 95% of the L/min displayed in the ISO nozzle output.

NOTE! New or extra nozzles may be added to the ISO selection over time as technology advances and new designs are released.



# ANS - Auto Nozzle Select, Line select (3TS)



In AUTO mode the two or four lines are handled individually and simultaneously switching over automatically between lines (or combinations) depending on forward driving speed or requested flow rate. The intelligent switching needs operator input in order to optimize spray characteristics e.g. spray pattern and droplet sizes.

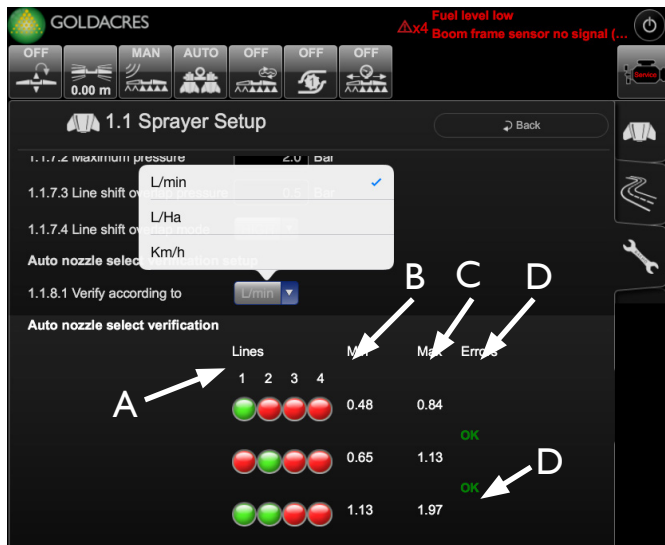
In order to ensure correct spray pattern and droplet sizes with the applied nozzles (type and colour) the operator should define the minimum and maximum spray pressure allowed in AUTO mode using the pop-up keypad when the corresponding entry box is activated.

The “Line shift overlap pressure” entry box indicates the gap in pressure between the shifting point going from a lower flow rate nozzle combination to higher flow rate nozzle combination and vice versa.

NOTE: This is used to prevent frequent and rapid nozzle combination shifts when spraying is constantly performed close to the ideal shifting point between the appropriate nozzle combinations.

“Line shift overlap mode” indicates whether an ideal shift between nozzles (or nozzle combinations) should be made according to the lowest or highest flow rate point of the overlapping flow range.

# ANS - Auto Nozzle Select verification and setup (3TS)



In order to aid the operator to define the correct nozzle combinations and configurations for a given spray job allowing for ultimate flexibility the verification has been added. Using this the operator can verify the setup chosen and easily identify (and correct) potential gaps (in application rate or forward driving speed) were the requested pressure ranges and line shift overlap pressures cannot be adhered to in AUTO mode.

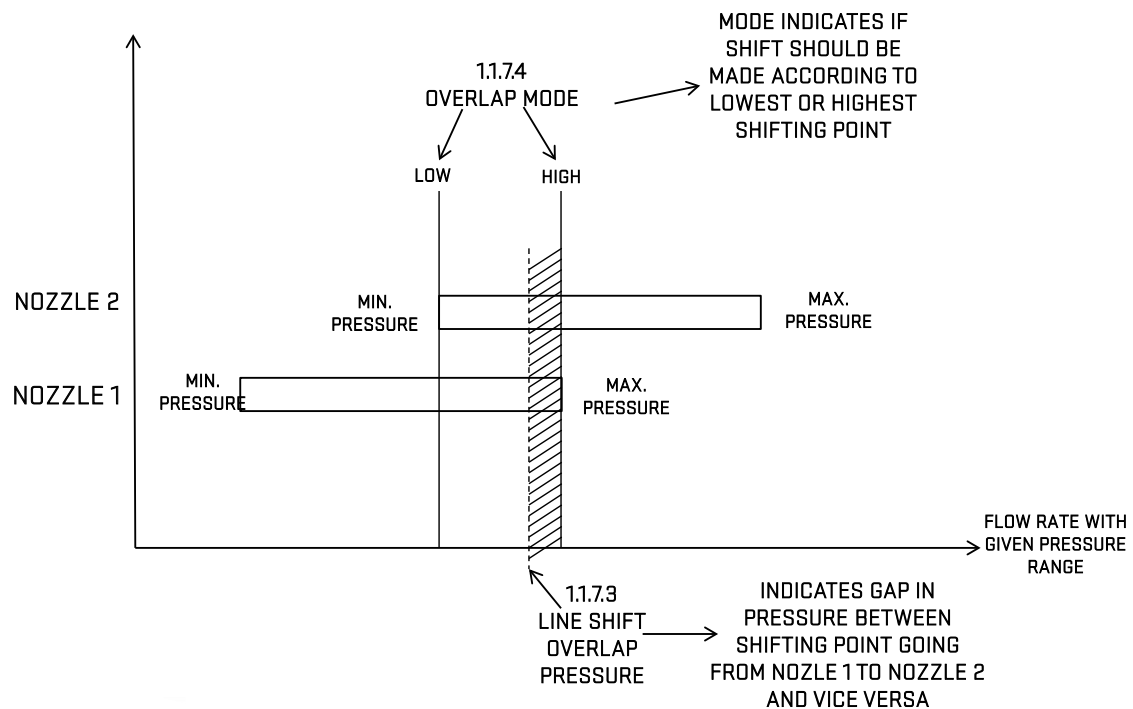
Initially select whether the verification (1.1.8.1) should be done according to, L/min or L/Ha flow rate, km/h - at a preset driving speed. Based on this entry and the lines/nozzles engaged in AUTO mode the different nozzle/line combinations are outlined (A) with their corresponding minimum (B) and maximum

(C) values. The "Error"/"Status" column (D) outlines whether a shift can be made between the line/nozzle combinations while at the same constantly adhering to the requested spray characteristics in "Auto nozzle select setup".

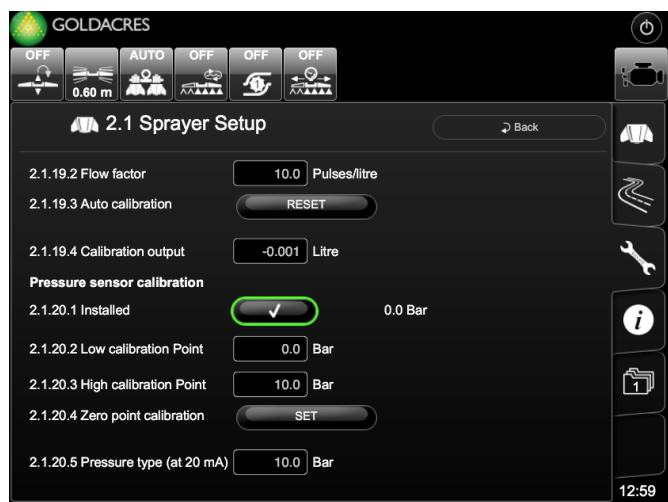
NOTE: In case "Error" is stated in the (D)-column it is advised to change nozzle type, allowed pressure range or line shift overlap pressure until "OK" is stated. In this way it is ensured that characteristics of the performed spray job in AUTO mode is known and accepted prior to spray start.

NOTE: If there is an error in the verification it will still spray, but the pressure may be outside of the optimum range.

NOTE: At this stage it is only possible to set the min and max pressure for both lines but not individually.



# Spray Pressure Transducer Setup



If installed, the Pressure Transducer calibration figure settings can be adjusted in this menu:

The Pressure Transducer can be activated by pressing the Red cross which will turn to a Green tick.

When the Pressure transducer is installed and the sprayer is running, the actual current in mA is received as an input to the controller; along with the measured pressure (based on the current in mA) will be shown in the top right of the menu for diagnostic purposes.

NOTE! If a pressure transducer is installed and activated, the spray screen pressure reading will be actual pressure, whereas if the

Transducer is not installed or activated the pressure will be calculated according to current flow and ISO nozzle fitted.

## Calibration:

The Pressure Transducer can be calibrated by using two methods; ideally the first method is to use the calibrated line gauge located in front of the cabin.

The sprayer should be clean and filled with enough water (i.e. at least 300 litres) to ensure there is sufficient quantity for the calibration procedure dependant on nozzle size fitted.

NOTE: Ensure that the nozzles are new or have very little wear as it will give a false reading.

## Calibration method 1:

Start the sprayer spraying with all sections and manually regulate to a low pressure i.e. 1 BAR according to the calibrated line gauge in front of the cabin. Enter the Low calibration point (Actual recorded pressure) by pressing the entry box and using the “pop-up” keypad. (this calibrates the Transducer to display 1 BAR when 1 BAR is actually present at the Transducer).

The sprayer should now be manually regulated to read a high pressure i.e. 5 BAR according to the calibrated line gauge. Enter the High calibration point (Actual recorded pressure) by pressing the entry box and using the “pop-up” keypad. (this calibrates the Transducer to display 5 BAR when 5 BAR is actually present at the Transducer).

The transducer is now calibrated using a Low and High pressure.

NOTE! The two calibration points can be other than 1 and 5 BAR, ideally they should be higher and lower than general spraying regulation pressures if other than 1 and 5.

## Calibration method 2:

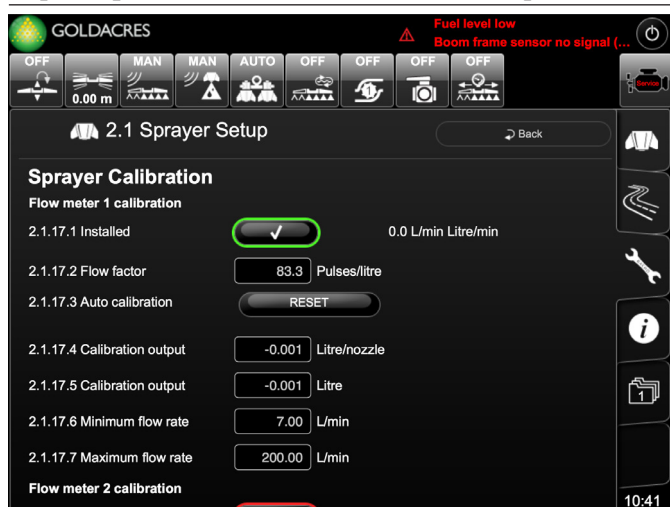
With the spray pump not running switch the master spray switch On/Off to ensure the spray lines are depressurised.

Press the [SET] button next to Zero point calibration, to set transducer 0 point.

Enter the pressure stated by the manufacturer of the transducer at which it will give a 20 mA output in the Pressure @ 20 mA entry box using the “pop-up” keypad.

The pressure transducer has a label on it with the reading of 10 bar pressure at 20mA. Please read the label and ensure that this is correct.

# Spray Flow Meter Setup



The flow meter can be activated by pressing the Red cross/Green tick and scrolling between On/Off.

When the sprayer is operating, the actual current recorded flow/min will be shown in the top right of the menu (position of "undefined Litre/min" in attached screen shot).

## Manual factor entry:

The flow factor/pulses per litre can be manually entered by pressing the entry box and typing in the known factor using the "pop-up" keypad.

The calculation below should be used to

calculate and correct the factor manually entered:

$(\text{Volume dispensed on spray controller screen} / \text{Actual volume dispensed}) \times \text{flow factor}$   
 $(3300 \text{ litres on spray controller} / 3000 \text{ litres (known volume)}) \times 83.3 \text{ ppl} = 91.63 \text{ ppl}$

NOTE! The ppl (pulse per litre) factor needs to be raised to counter under dosing and lowered to counter overdosing. This method of entering a factor is not accurate and simply allows the operator a close initial starting point before a more accurate Auto calibration is performed

## Auto calibration factor:

The flow factor/pulses per litre can be automatically calculated, to perform an automatic flow meter calibration, follow the steps of one of the options below:

## Nozzle collection method 1:

Ensure the nozzles currently fitted to the machine are in good condition and have very little wear and do not vary from one nozzle to another (of equal age and condition), If the machine has two lines, only run the single line for this test.

Ensure the tank has a suitable quantity of liquid to complete at least a 5 minute spraying cycle, a known volume in the tank however is not required.

NOTE! Ideally the sprayer should be set up to a mid range pressure when static in the yard/field, i.e. using the simulated speed setting and MAN regulation. This is so the output of the nozzle can be verified easily and checked at the same time as calibrating the flow meter.

The sprayer should be switched on with all sections spraying (NO feneline jets) and allow the controller to regulate to the desired application rate, switch off the master switch only and place a calibrated measuring jug beneath a nozzle with the boom lowered in order to collect all the nozzles output (or if a second person is present they can hold the jug beneath the nozzle).

Press the "SPANNER" then go to "2 Machine Setup", then "1 Sprayer Setup" then scroll down to Sprayer Calibration, Flow Meter 1 Calibration. Initiate calibration by pressing [RESET]. This will reset the Pulses/Litre to 0.

The master switch of the sprayer can now be switched on and the volume dispersed will be collected in the jug, ideally the sprayer output should be timed to one minute (or two minutes) if the nozzle output is also to be checked against ISO standards.

Turn off the master switch (after one minute if required).

The volume actually dispersed into the measuring jug should be read and written down. (and checked against the output of the ISO nozzle chart corresponding to the nozzle being used).

The recorded volume dispersed by one nozzle should be input into 2.1.17.4 Calibration output Litre/Nozzle, enter into the entry box using the "pop-up" keypad.

The flow meter factor will be automatically calculated and stored in the FLOW FACTOR entry box.

The flow meter installed is now calibrated for the liquid being applied.

## **Nozzle collection method 2:**

This method is for collecting the nozzle spray in a jug. Follow the instructions from the Nozzle Collection Method 1 upto turning the Master OFF after collecting the volume in a jug.

The volume actually dispersed into the measuring jug should be read (and checked against the output of the ISO nozzle chart corresponding to the nozzle being used).

The recorded volume dispersed by one nozzle should be multiplied by the total number of nozzles spraying when calibration was undertaken (i.e. 48 if a full 24 metre boom was spraying with nozzle distance of 0.5 meter). This figure will be the actual output of the sprayer and needs to be input into 2.1.17.5 Calibration output Litre, enter into the entry box using the "pop-up" keypad.

The flow meter factor will be automatically calculated and stored in the FLOW FACTOR entry box.

The flow meter installed is now calibrated for the liquid being applied.

NOTE! Depending on the type of Flow meter installed, the flow factor may vary with the Specific Gravity (SG)/ Density of material being sprayed, please contact Spray Manufacturer for advice if liquids other than those with a SG of 1.0 are being applied.

NOTE: A Digital Flow Meter or a TeeJet Tip Tester can also be used for spray nozzle collection.

## **Full/part tank output method:**

Ensure the tank is empty, then fill the tank with a known volume (at least 200 litres - the greater the volume the greater the accuracy) measured into the tank by weight or accurate calibrated infill meter i.e. 3000 litres). Press the "SPANNER" then go to "2 Machine Setup", then "1 Sprayer Setup" then scroll down to Sprayer Calibration, Flow Meter 1 Calibration. Initiate calibration by pressing [RESET]. This will reset the Pulses\Litre to 0.

The contents of the tank (i.e. 3000 litres) can now be sprayed out statically in the yard using a simulated speed in Auto regulation and a suitable application rate, or in Manual regulation at a fixed application pressure or also the Auto calibration can be turned on as described and left running (by pressing sprayer screen icon and exiting the menu) whilst the sprayer is used in the field and adjusted by re-entering the flow factor menu when application has been completed.

The volume counted by the flow meter (using the current flow factor) will be displayed in the window next to the Auto calibration menu as liquid is applied, therefore when all the liquid has been applied (3000 litres) the window theoretically should display very close to 3000. Depending on the accuracy of the flow factor entered and many other factors this may differ from the actual volume known to be distributed.

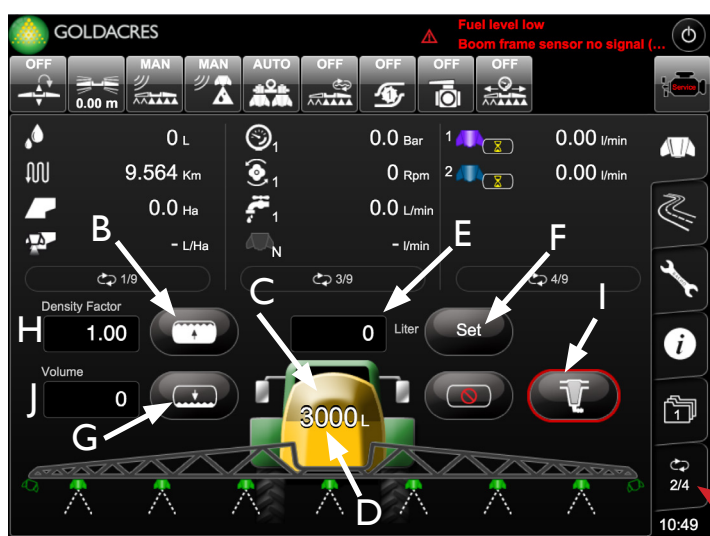
Assuming the volume applied according to the controller does not correspond to the actual volume known to be distributed, type in the known applied volume (i.e. 3000) in the entry window 2.1.17.5 Calibration output Litre, enter into the entry box using the "pop-up" keypad.

The flow factor will be automatically adjusted to a new factor to take into account the discrepancy.

NOTE! It is advised to perform a full or part tank calibration whilst static with a full boom spraying as in field conditions with part boom spraying at headlands etc small inaccuracies of dose/flow rate may affect calculated output.



## Spray Tank - Screen 2



Key	Functions and Indications
A	Spray operation tab selection
B	Fill button key
C	Tank level icon
D	Numerical tank volume readout
E	Tank volume entry key
F	Set volume key
G	Empty tank key
H	Density factor entry key
I	Self cleaning filter
J	Volume

B,F,G are for operation with  
no tank transducer

### Manual tank fill with tank transducer

To manually fill the spray tank.

Exit the cabin and go to the EZ control pod. Connect suction hose and open all taps/valves as required.

Press the switch on for the RPM Raise and then press and hold the Fill Pump switch for 2 seconds, the pump will start and the red light will come on (constant).

Watch the dry sight tube for the volume required.

The pump will run until the switch is pressed again. This will turn the pump off and the light will go out as well.

Turn off the RPM Raise and close all valves. Remove suction hose.

This method will let the tank overflow if the user is not watching the dry sight tube for the required volume level.



### Auto-fill (optional)

The Auto fill feature allows a quantity of liquid to be pre-selected, and then automatically added to the sprayer tank without operator intervention. This option requires a hydraulic fill pump and tank level sensor.

Type the required total amount needed in the tank e.g. '2000' in the entry box (E) by pressing entry box and using the "pop-up" keypad.

Connect suction pipe to sprayer and open all taps/valves as required.

On the EZ Control console, switch on the RPM Raise, then switch on the Fill Pump, the light will flash.

When the pre-set volume is achieved, the GATMC will turn off the fill pump.

Then there will be 3 seconds where the system will let the water settle in the tank and then take another reading to see if the required fill level has been reached.

If volume was not reached, then the fill pump will start again and run until the required amount has been reached. It will pause again to do a reading and if the level has been reached there will be a 8 second beep to indicate the level has been reached.

The fill pump will be turned OFF and the red LED will turn OFF. From the GATMC console there will be beeps and on the screen a yellow warning message will say "TANK FULL",



## Main Tank Filling - Continued

Once the volume has been reached the fill pump switch can be pressed once again to add another 100 litres and the cycle will start again with the pause and running the pump again if needed. Once the level has been reached the beeper will sound for 8 seconds indicating that the volume has been reached. (4 presses of the switch will put in 400 litres)

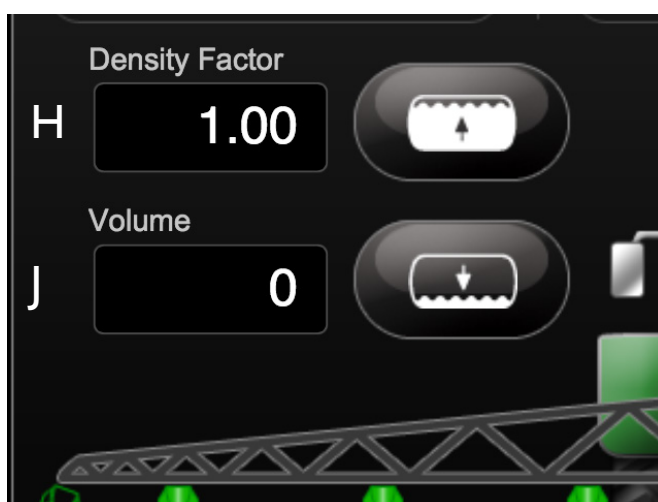
When the required amount has been reached, the RPM Raise can be switched off.

Turn off all taps and disconnect suction pipe from machine.

The machine is filled to the desired volume and ready for work.

NOTE! To add a volume to an existing part tank the desired tank volume must be entered, not the desired additional amount, i.e. to fill to 2300L with an existing 2000L tank volume key in 2300L not 300L

## Density Factor - Tank fill screen



The Density Factor on the Tank Fill screen is for setting the tank volume when the chemicals that are added have a density above or below the 1.00 factor:

The (H) entry box is for when the density factor is known and the tank is empty. The density factor needs to be entered before the main tank is filled to level required.

or

The (J) entry box is for when the density factor of the chemical is not known.

If the tank was filled to the 6000L mark on the dry sight tube with the chemical added, the GATMC screen will say 9000L, which the tank cannot hold. Enter 6000L into the Volume

entry box(J) with the pop-up keypad and press enter. The numerical tank volume readout will change to 6000L and in the density factor entry box will display 1.5, which will be the density of the chemical added.

## Manual fill with no transducer

If for some reason the tank transducer has failed and not sending a reading to the GATMC, then the tank level sensor needs to be turned off and the tank filling done manually.

If there is still water in the tank, it will need to be entered manually by pressing the (E) tank volume entry and in the pop-up keypad enter the volume that is shown by the dry sight tube.

If the tank is full, press the [FILL] icon (B) the Tank Fill Level icon (C) will be filled to the maximum capacity preset and the tank contents (D) will also read maximum capacity (i.e. 6000L).

Set volume:

The Set feature allows the volume of liquid in the tank to be set to a specific quantity (i.e. when filling a part tank).

To enter a part volume, press the entry box (E) and enter part volume using the pop-up keypad that appears, press the Enter key to enter part volume and then [SET] (F) to set the tank icon and volume in the GATMC console.

If the tank is empty, press the [EMPTY] icon (G) the tank icon empties and the numerical volume will go to zero, this will clear remaining contents.

To fill the tank with water, follow the instructions from the manual tank filling above.

## Self Cleaning Filter (pressure)



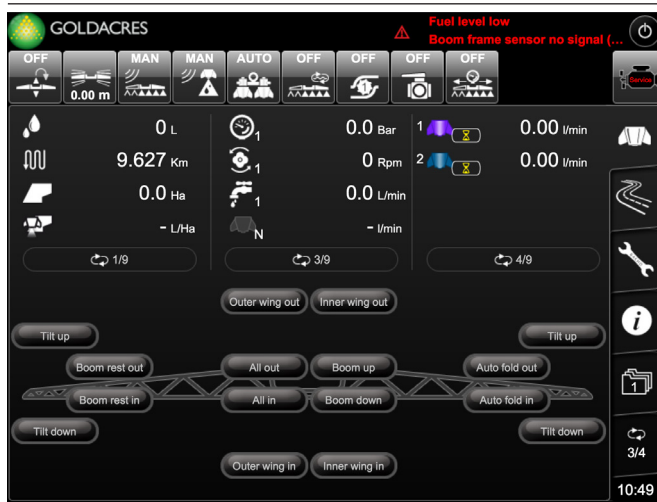
The pressure filter traps the minute particles that are not collected by the main suction filters. It only requires operation once or twice a day, depending on the water supply being used (dam, bore, rain, mains). The self cleaning filter operation must only be used while the spray pump is in operation. The particles are flushed back to the main tank.

It requires running for about 2 minutes at a time. Select the icon to start, it will change to a GREEN ring, and reselect to stop operation, it will change to RED ring.

**NOTE:** The Self Cleaning filter operation **must not** be used during spraying operations or when using boom recirculation. You must ensure that the self cleaning filter is OFF before commencing spraying. To this end, we recommend that the spray screen be left on page 2 while filter cleaning is ON.

**This option is turned on from the factory only when a correct self cleaning filter is installed.**

## Boom Operation- Screen 3

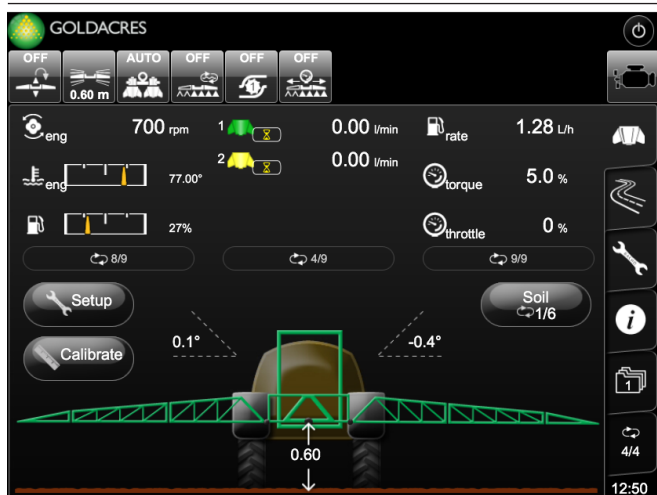


Hydraulic Boom Operation can be controlled from the 3rd screen. The screen buttons cover all the functions needed to operate the boom, from fold out to Bi-fold outer wings. These can be operated in the Fold Mode or Spray Mode.

This screen is also useful if the joystick is not functioning correctly.

NOTE: Auto Fold Out and Auto Fold In are not functional.

## Boom Level - Screen 4



Boom Level setting and Tilt indication angle can be found on 4th screen. The dimension under the boom shows the ground clearance.

The Angle indicators over the boom are for the tilt angles when optional.

Setup, soil and calibrate are not applicable and should not be entered or modified.

# Headland Assist

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Headland assist is designed to aid the operator at headland turns in difficult conditions and to reduce operator fatigue (for example, on uneven terrain or exceptionally tall crops), by performing preset automated sequences on headland approach and headland exit.



The automated sequences can be customized in the User setup menu making it possible to tailor to any individual need and preference. The sequence can as an example on headland exit include re-engagement of cruise control and auto-steer in addition to boom lowering, master spray switch activation and resetting boom tilts to level.



To engage Headland Assist, press the top Icon shown, last state will be displayed above the Icon. To initiate the Headland Assist sequences press the RIGHT button on the joystick for activation, icon will change to HEAD, this will start the Headland assist preset functions.

In OFF mode all headland functions have to be performed manually.

To set the relevant boom height for Headland turning and spraying, the following steps should be followed:

1. Spray Master to be OFF.
2. Headland mode "HEAD".
3. Lift the booms to the desired height for turning and tilt the boom for clearance if needed.
4. Press the Headland icon and change to SPRAY.
5. Lower the booms to the desired spray height and level the tilts for spraying.

The Headland assist boom heights are now set. Each time the Headland icon is pressed to SPRAY, the booms will lower to the pre-determined height and each time the Headland icon is pressed to HEAD, the booms will lift to the pre-determined height.

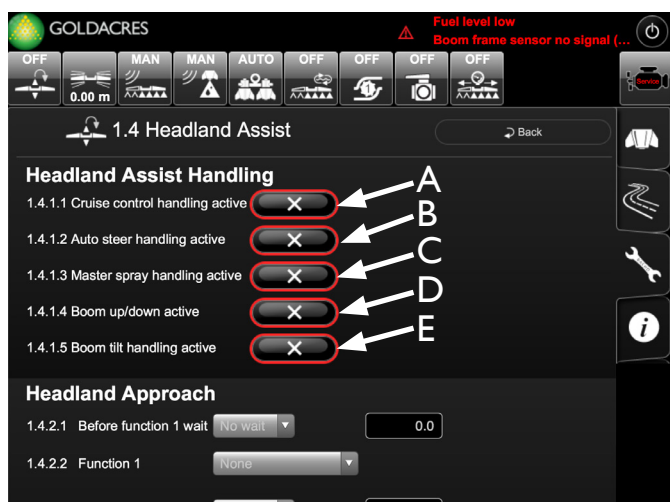
To adjust Headland assist lift height whilst in operation, when in HEAD mode, simply adjust desired height manually using Joystick (or side console operator controls if applicable). The next time the Headland icon is pressed to HEAD the booms will lift to the new height.

To adjust spray operation height, when Headland icon is pressed to SPRAY, simply adjust the spray height manually using operator controls. The next time the Headland icon is pressed to SPRAY, the booms will lower to the new height.

NOTE! Headland assist is intended as a headland turn aid and must not be relied upon to ensure booms do not come into contact with the ground or overhead lines, this is the operators responsibility and no measure is in place to avoid boom and ground contact.

## Headland Assist Setup

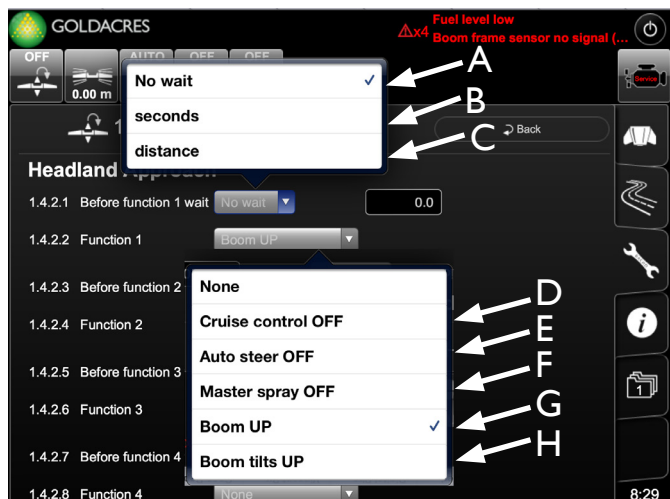
To setup the Headland Assist, press the SPANNER to go into the setup menu, press “I User Setup”, then press “4 Headland Assist”



Key	Functions and Indications
A	Activation of outputs connected to the implemented cruise control system
B	Activation of outputs connected to an Auto Steer system
C	Turns the Master switch off, and resumes spraying as part of the sequence
D	Lifts the booms to a pre-determined height when the spray Master switch is turned off, and lowering them back down to the original spraying height when spraying is resumed
E	Handles boom tilts as part of the headland sequences, typically setting tilts back to previous setting at headland exist

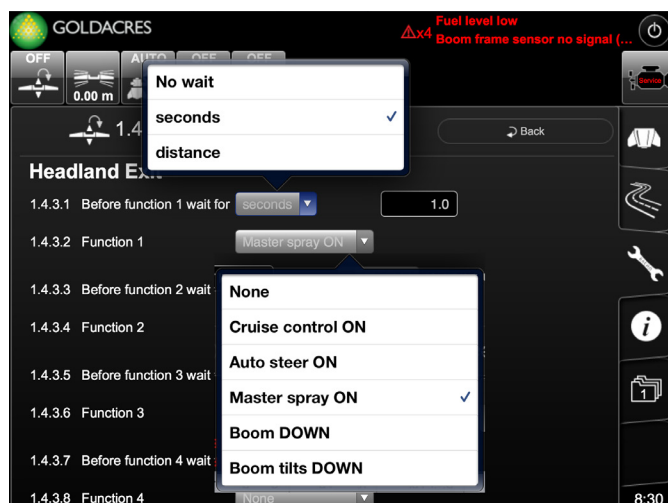
The following sequence is user programmable, to what the operator wants. The setup menu is sub-divided in a Headland approach and Headland Exit to allow for full customisation. The principles for setting up the sequences are similar between the two paragraphs, hence only Headland approach is visualized in the following.

Each step of the sequence consists of waiting/delay parameter (A to C) and an indication of the actions to be executed (D-I). The detailed value for the waiting/delay parameter is entered via the pop-up key that will appear when the entry box is activated.



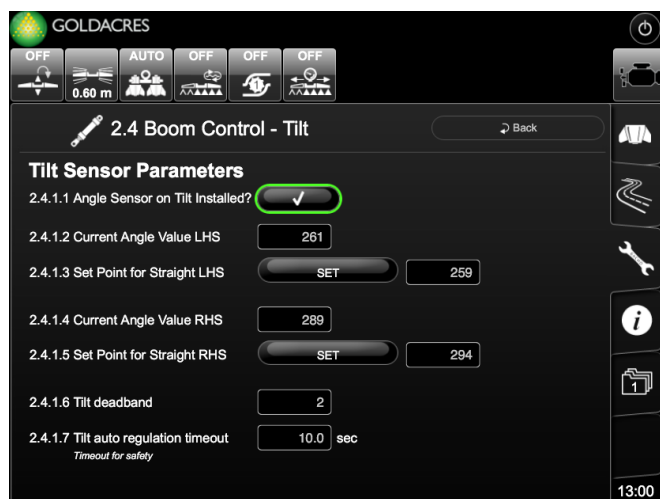
Key	Functions and Indications
A	No waiting/delay before the actual action.
B	A delay before the action is activated should be time-based. Please enter delay in seconds in entry-box.
C	A delay before the action is activated should be distance-based. Please enter delay in metres in entry-box.
D	Signal given to de-activate cruise control system
E	Signal given to de-activate auto-steer system.
F	Master spray valve will be turned off.
G	Lifts the booms to a pre-determined height.
H	Handles boom tilts as part of the headland sequences (the corresponding setting in Headland Exit will set tilts to level).

## Headland Assist - Continued



In the Headland Exit sequence, the reverse can be setup from the Headland Approach, or a more custom setup can be entered to restart spraying.

## Boom Level - Setup



### 2.4 Boom Control - Tilt

Tilt sensor parameters (option)

If installed (please activate tick-box) the tilt-to-level sensors can be calibrated and settings can be adjusted in this menu.

The angle sensor outputs can be seen on screen to ensure potentiometer feedback is working correctly.

To set the LHS/RHS level calibration, ensure the boom wings are level and the tilt arms are square to the centre section (i.e. the same height from the ground at each tip when the machine is parked on level ground), the [SET] button should be pressed to save this position as level.

This setting is to position the booms level automatically when the Tilt-to-level function is engaged.

### Tilt deadband:

When the boom tilt cylinders are moving to the level calibration points, the cylinders must be inside this figure before movement will stop. Therefore this deadband increases (low figure) or decreases (high figure) the accuracy of Tilt-to-Level alignment.

NOTE! If this factor is too high the boom tilt-to-level alignment might be too poor, whereas if it is set too low the tilt-to-level movement might become to "jumpy" or aggressive as it can pass the alignment point and need to activate the tilt cylinder in the opposite direction (depending on hydraulics applied and hydraulic oil availability).

### Tilt auto-regulation time-out:

This will limit the time spent on auto-regulating the tilt towards level. This is meant as a safety precaution in the event that the function is activated and the job computer has started regulating prior to the machine and hydraulic system starting to cycle. After 10 sec (default) (in the above example) the job computer will stop regulating and the function would have to be re-engaged to start again.

The normal regulation time for the booms to reach level position will depend on external factors like hydraulic oil available at the given time. This time parameter should be set higher than the maximum regulation time in order to allow sufficient time for the optimal functioning.

# Wheel Factor Setup



The controller can store multiple preset wheel factors at any time allowing the operator to select the correct wheel factor for the wheels fitted without having to recalibrate the factor each time.

To select a different wheel type/factor press the drop down arrow next to the wheel selection box and highlight the desired wheels type.

To enter a wheel factor (distance travelled per pulse received) two methods can be used:

## Manual Entry:

A new figure can be manually entered into the wheel factor by pressing the entry box in

menu 1.1.1.2 or over typing in a new figure using the “pop-up” keypad, this figure will be the distance travelled per pulse from the transmission sensor.

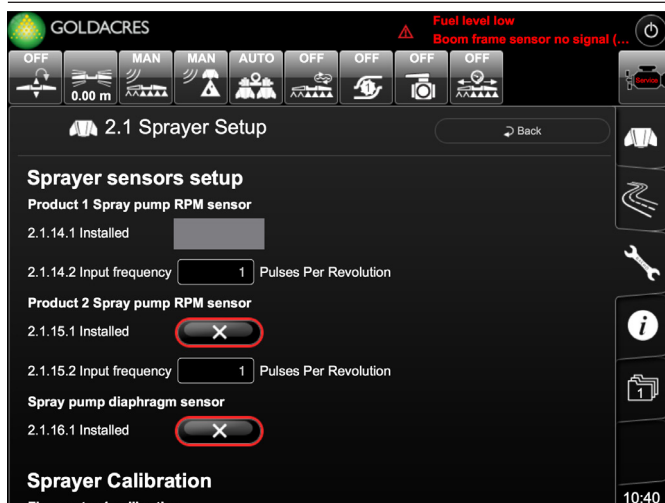
This figure may need to be adjusted to match the speed showing on a GPS input. The adjustment needs to be small, from i.e: 0.0165 to 0.0163 to help match speed.

## Automatic Entry:

A new figure for the Wheel Factor can be automatically generated for the “Other” wheel type. Select the Wheel type “Other” then select the Wheel Factor and zero out the metre/pulse.

Then press the AUTO CALIBRATION button. Then the machine should be driven forward a distance greater than 100 m and less than 1000 m, the number of pulses will be counted on the screen as you drive. Enter the distance travelled in metres in the WHEEL CALIBRATION DISTANCE entry box once you have stopped, press enter and the wheel constant will be automatically calculated.

# Spray Pump RPM Sensor

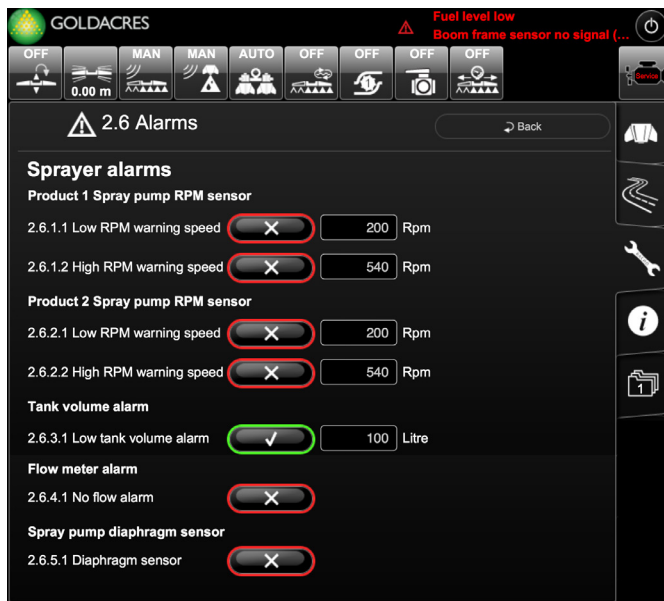


## Pulses/rev setting:

The RPM sensor typically measures the rpm for the spray pump, this option will be turned on by pressing the Green tick/Red cross. The pulses per revolution can be entered in the entry box by using the “pop-up” keypad.

NOTE: The default for this setting is “1”.

# Alarms



## Alarm limits for Spray Pump RPM sensor

An alarm can be set to warn the operator of spray pump rpm exceeding acceptable limits and falling below minimum effective pumping speed. To activate Min and Max speed alarms press the Red cross/Green tick. To adjust rpm alarm speed thresholds enter a new figure by pressing the entry box and using the “pop-up” keypad.

## Alarm limits for tank sensor

A minimum volume can be set to alert the operator the spray tank is becoming low and may run out. To activate this setting press the Red cross/Green tick, to adjust the volume at which the alarm will alert the operator the tank is low, enter a new figure by pressing the entry box and using the “pop-up” keypad.

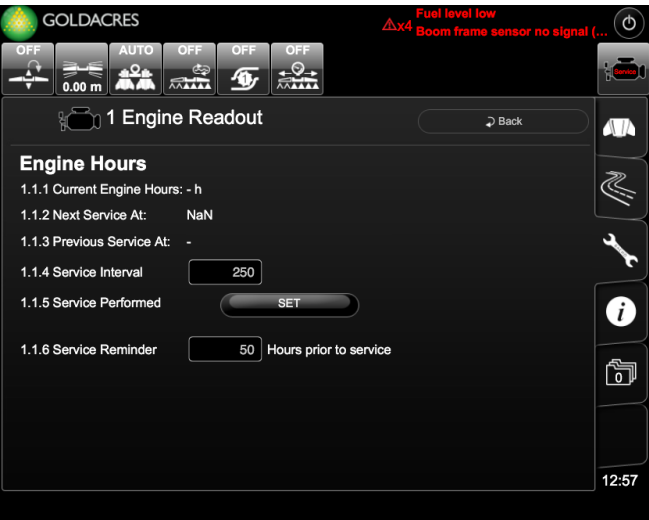
Note: This alarm is deactivated when the spray pump is turned OFF. This so the alarm is not sounding constantly when driving back to fill point.

## Flow meter alarm

An alarm can be set to alert the operator that no output from the sprayer is present although the master spray switch is on, i.e. the flow meter has failed or the tank has prematurely ran out. To activate this setting press the Red cross/Green tick.



# Engine Hours



Engine hours are counted on the ECU.

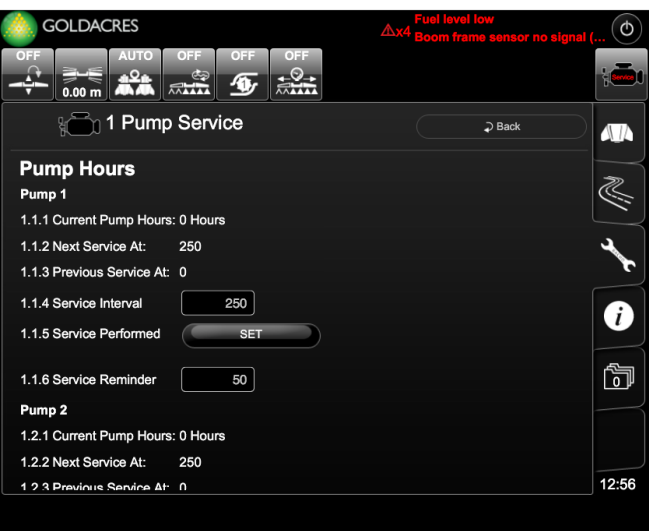
Service intervals are typically preset at every 250 hours from last service and service reminder will appear 50 hours before the service is due (as illustrated to the right). (See Ops Manual for more info)

An equivalent service reminder will appear when the service is overdue highlighting this in the header.

If the customer chooses to maintain the machine themselves, the service schedule reminder can be turned off by a Goldacres appointed dealer/reseller or access granted to the Engine Service reminder menu.

To access press Spanner; 3 Tech Setup, Engine Service Password.

# Pump Hours



Pump hours are counted on the Spray pump. Service intervals are typically preset at every 250 hours from last service and service reminder will appear 50 hours before the service is due (as illustrated to the right). (See Ops Manual for more info)

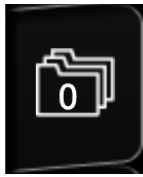
An equivalent service reminder will appear when the service is overdue highlighting this in the header.

If the customer chooses to maintain the machine themselves, the service schedule reminder can be turned off by a Goldacres appointed dealer/reseller or access granted to the Pump Service reminder menu.

To access press Spanner; 3 Tech Setup, Pump Service Password.



## Job Menu



To enter the 'JOB MENU' screen, press the File Record icon (A) at the screen tabs on the right side of the screen. The current status or field/job number is written in the File Record icon.

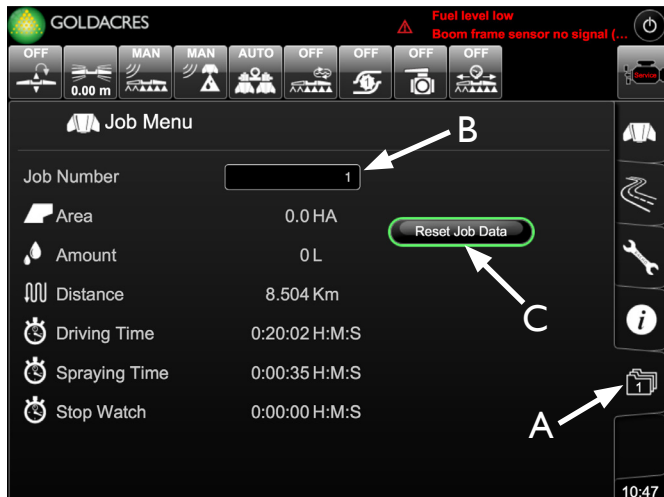
The controller is capable of storing up to 19 separate jobs (fields), and recording Total Area, Total Volume Dispensed, Distance Travelled, Driving and Spraying Time.

NOTE! Job number 0 is selectable as 'read-only' and displays the totals for the machine, these

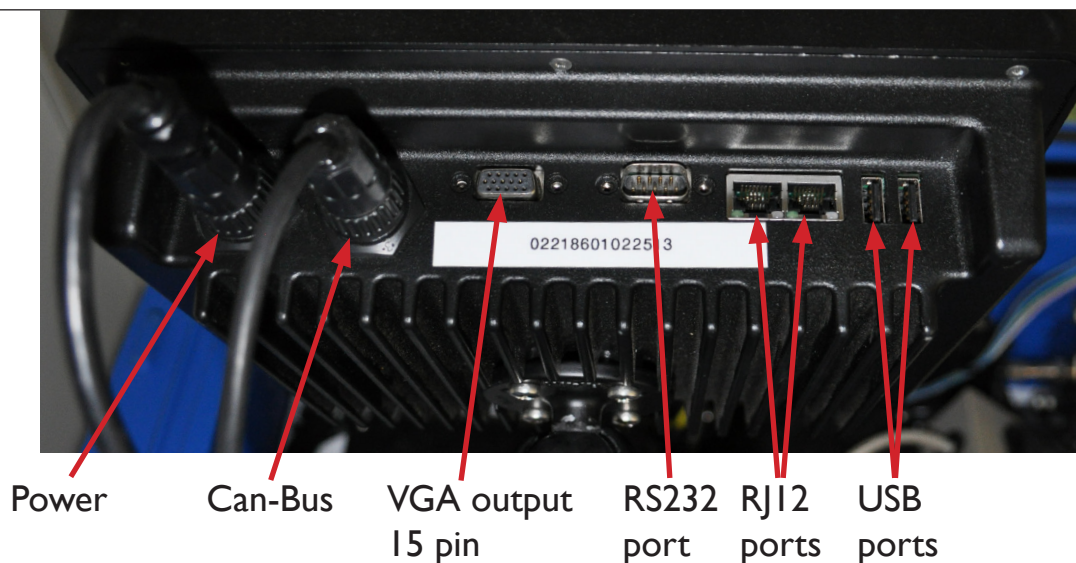
figures cannot be reset like job numbers (1-19) and hence will show the total sprayed volume or area covered by the machine in its lifetime.

To select a new job number, press the entry box (B) and type in new job number using the pop-up keypad.

To reset existing data in the job number, press the green Reset Job Data button (C) to delete all data stored, a prompt will ask you to confirm reset and then data will be reset to zero. Data stored for each field/job includes total area actually sprayed, total litres sprayed out, the distance travelled in total for the job, time the sprayer was driving without spraying (transport) and the time taken to complete the spraying task.



## GATMC Console Ports



## Connecting to an external controller

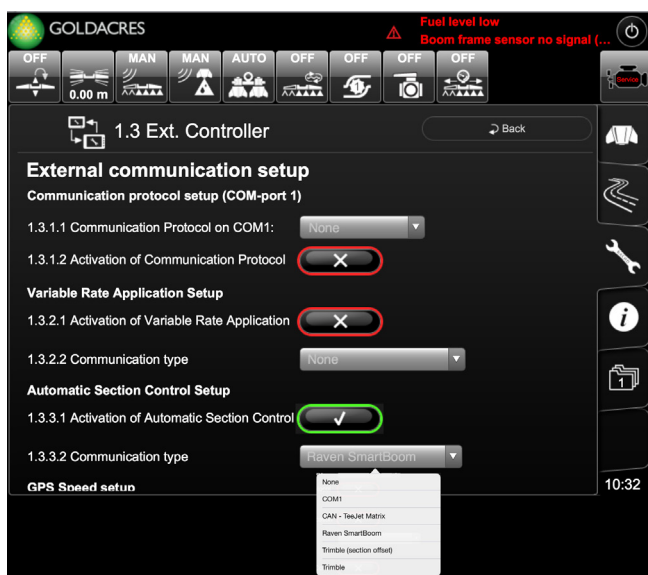
### Connecting to Trimble Controller

Direct connection between the GATMC console and a Trimble controller is possible via a RS232 cable. This allows seamless integration of the auto section controller; meaning no extra switch boxes or controllers are required.

Press the "SPANNER" then go to "I User Setup", then "3 Ext Controller" then down to "Automatic Section Control Setup" and press the Cross to change to a tick with green rim and then from the drop down menu select the Trimble controller that is being fitted.

There is two options for the Trimble, the first is "Trimble" which may only run 6 sections when testing, if so then the second option needs to be selected.

"Trimble (section offset)" when testing this setting, if all 7 sections (example) are being switch on, leave this setting. If this is the first option selected and only 6 sections are switching on, then select the "Trimble" option to get all 7 sections spraying. Please test before spraying any product.



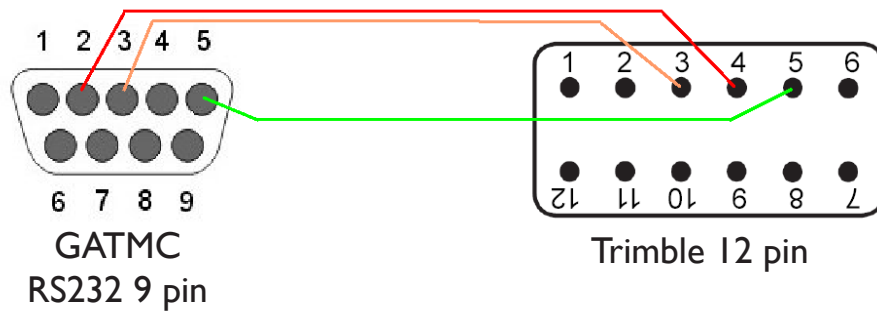
These two options are needed and dependant on the Trimble units firmware as to which option will work.

This is only required on older Trimble firmware units, pre 2013.

This will place the ASC icon on the status bar. See next page for wiring information.

The options for 1.3.1.1 and 1.3.2.2 need to be to "NONE".

## RS232 Cable Pinout - GA5069565



## Connecting to Raven Smart Boom Controller or similar,

GATMC section control cable, which is a multi core grey insulated cable, runs to the power distribution box in the cabin from the rear job computer.

NOTE: This may have been done at the factory and could be in place.

This wire contains Black wires which are labelled 1-10 numbers relate to the boom sections

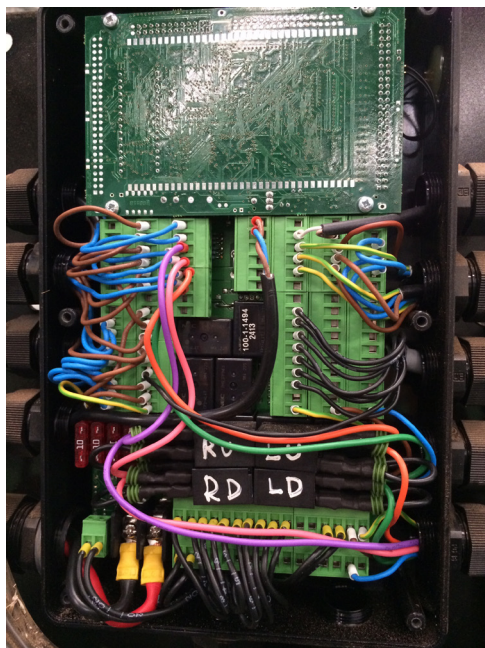
Coloured green wire or wire 12 is the master on/off.

470 Ohm resistor between signal and earth pins mounted on PCB to stop false triggering

+12v signal used to activate sections

+12v output when spray master on the screen is turned "on"

Remove the cover from the slave computer on the rear centre of the sprayer. Feed the cable in through the R3 port and then terminate the wire in the correct ports, B3 - B9 & B17 & B18 & A13 Raven Smart Boom Output for Spray Master. This signal is for the GATMC console to tell the Smart Boom controller to start working.



All other controllers that have a 12 volt positive boom output signal will be connected the same as the Raven Smart Boom Controller.

To view connection ports into the Slave computer go to GATMC Schematics for more details.

If this unit was optioned from the factory, all wiring will already be in place.

# WiFi Connection & Control

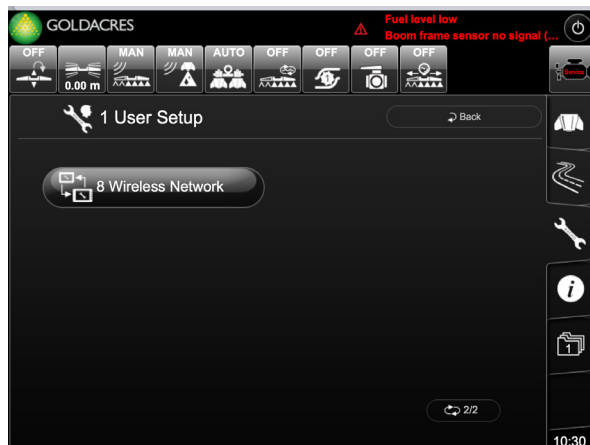
The GATMC Console can be connected by Wi-Fi to a mobile device, such as a iPhone or iPad. The screen and controls are replicated on the mobile device and the machine can then be controlled from the device.

NOTE: This function is still under development and have not been tested on all brands of portable devices.

NOTE: Operating the functions remotely can be dangerous if misused, especially the hydraulics.



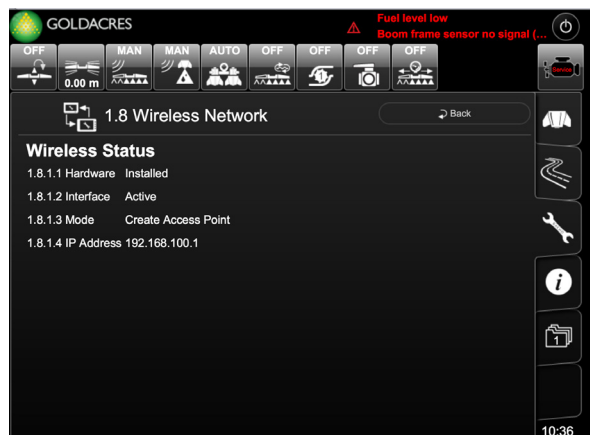
The Wi-Fi adaptor can be inserted into one of the USB ports located at the bottom right of the console. If a long range is needed then use a USB extension cable and mount the USB adaptor in a high location. Power up the console and after about 2 minutes, press the Spanner icon and go to the "1 User Setup", then go to page "2" and press the "8 Wireless Network" icon. If the network IP address is not displayed, then go back to the spray screen and then back to the wireless network screen to see if it has been configured.



Once the GATMC has created a IP address, it will be displayed on the screen.

Then the mobile device needs to be connected to the GATMC. Go to the settings page on the mobile device and select the Wi-Fi page, turn on the Wi-Fi if it is not already on. Then select the "Goldacres ####-#####" network or similar.

On the mobile device start the internet browser installed. Enter the IP Address (1.8.1.4) from the Wireless Network screen into the address bar of the browser and press enter. It will connect to the GATMC and the spray screen will be displayed. It may take a few minutes for all the screen to display, so be patient.



The screen on the mobile device will now look like the GATMC Console. But the two screens can show different pages as they are not linked and can run independently.

The GATMC screen can be on the Spray screen and the mobile device can be on the Tank Fill screen and the functions can be operated on each.

To disconnect the mobile device, close the browser and then go to the network settings and disconnect from the WiFi network.

Note: If the adaptor needs to be remove, the console needs to be shut down.

# Chapter 7

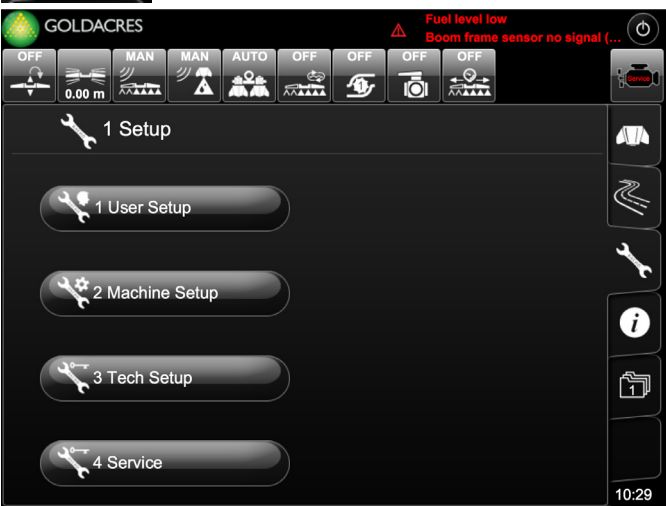
## CONSOLE SETUP

### Setup Screens

#### Main Setup Menu

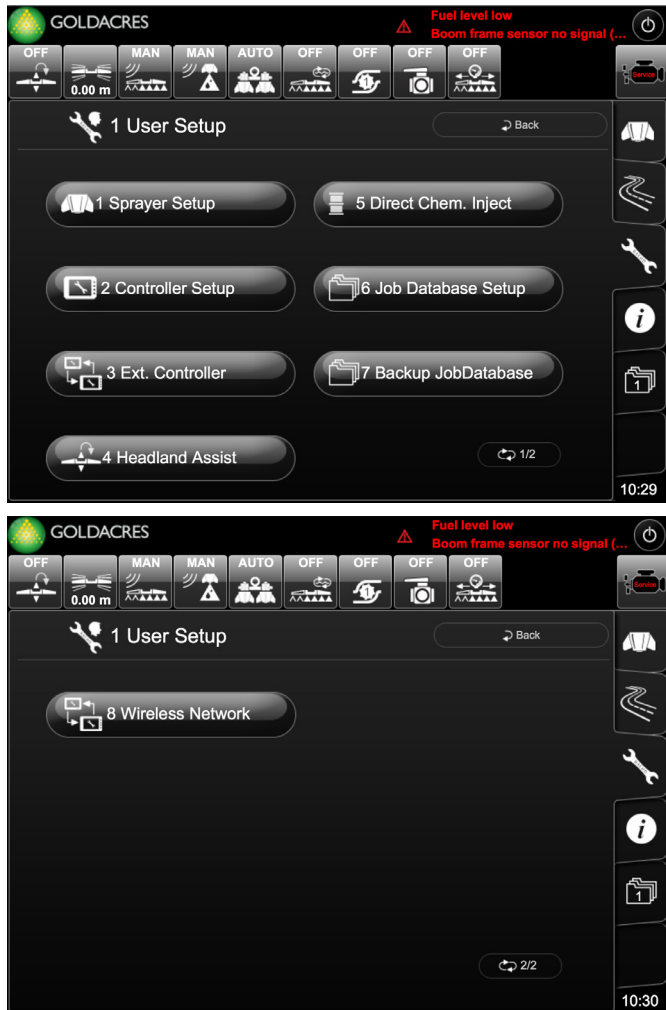
In the Setup menu, the User Setup and Machine Setup sections are for the operator to access for the everyday running of the sprayer. The other 2 sections are locked for Goldacres or Dealer service support.

NOTE: All figures shown are examples only and are not to be used for spraying operations.



Key	Functions and Indications
1	The User Setup (or Operator Setup) menu is designed to contain the most frequently adjusted settings by the operator.
2	The Machine Setup menu contains setup and calibration settings that should rarely need adjusting once the machine is setup correctly.
3	The Tech Setup menu contains more detailed setup procedures and programming screens. This area is password protected and exclusively intended for use by Goldacres engineers/ Service trained persons. These screens can still be view by pressing the enter button.
4	The service setup menu contains specialized diagnostic functions exclusively intended for Goldacres engineering personnel only. These screens can still be view by pressing the enter button.

# I User Setup



Key	Functions and Indications
1	Spray Regulation Setup Spray Line Control Setup Auto Nozzle Select Tank - Density
2	Sound Product Registration Time & Date Touch Screen (calibration) Language
3	External Communication Setup
4	Headland Assist Handling Headland Approach Headland Exit Lift Control Setup (min boom height)
5	Chemical Pump 1 - 6 (DCI)
6	Fields Chemical Customers Operators Machines
7	Storage Space Backup Extended Job Database Restore Extended Job Database
8	Wireless Status



## I User Setup

### I.1 Controller Setup

Fuel level low

Boom frame sensor no signal (...)

OFF

0.00 m

MAN

MAN

AUTO

OFF

OFF

OFF

OFF

1.1 Sprayer Setup

Back

### Sprayer Regulation Setup

Wheel factor setup

1.1.1.1 Wheel type:

1.1.1.2 Wheel factor

1.1.1.3 Auto calibration

1.1.1.4 Wheel calibration distance

Auto regulation

1.1.2.1 Spray regulation input

1.1.2.2 Auto regulation raise %

1.1.2.3 Min. regulating speed (product 1 & 2)

Product 1 Density factor

1.1.3.1 Liquid type

1.1.3.2 Density factor, water

1.1.3.3 Density factor, liquid A

1.1.3.4 Density factor, liquid B

1.1.3.5 Density calibration volume

Product 2 Density factor

1.1.4.1 Liquid type

1.1.4.2 Density factor, water

1.1.4.3 Density factor, liquid A

1.1.4.4 Density factor, liquid B

1.1.4.5 Density calibration volume

### Sprayer Line control setup

Line selection

1.1.5.1 Line 1

1.1.5.2 Line 2

1.1.5.3 Line 3

1.1.5.4 Line 4

Nozzle setup

1.1.6.1 Pure orange 11001

1.1.6.2 Traffic green 110015

1.1.6.3 Zinc yellow 11002

1.1.6.4 Signal violet 110025

1.1.6.5 Gentian blue 11003

1.1.6.6 Flame red 11004

1.1.6.7 Nut brown 11005

1.1.6.8 Signal grey 11006

1.1.6.9 Traffic white 11008

1.1.6.10 Light blue 11010

1.1.6.11 Yellow green 11015

1.1.6.12 User 11020

This section is not to be modified

## Auto Nozzle Select

### Auto nozzle select setup

1.1.7.1 Minimum pressure  Bar

1.1.7.2 Maximum pressure  Bar









1.1.7.3 Line shift overlap pressure  Bar

1.1.7.4 Line shift overlap mode  ▼

### Auto nozzle select verification setup

1.1.8.1 Verify according to  ▼

### Auto nozzle select verification

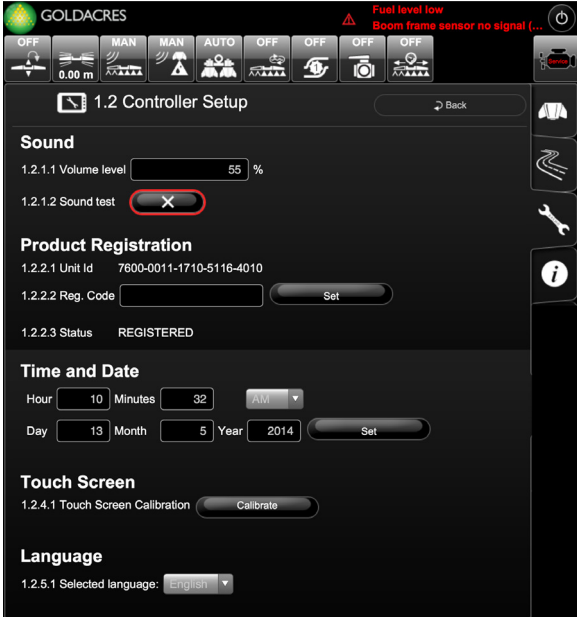
Lines	Min	Max	Errors
1 2 3 4	0.57	1.41	OK
   	0.69	1.69	
   	1.26	3.10	

## Tank

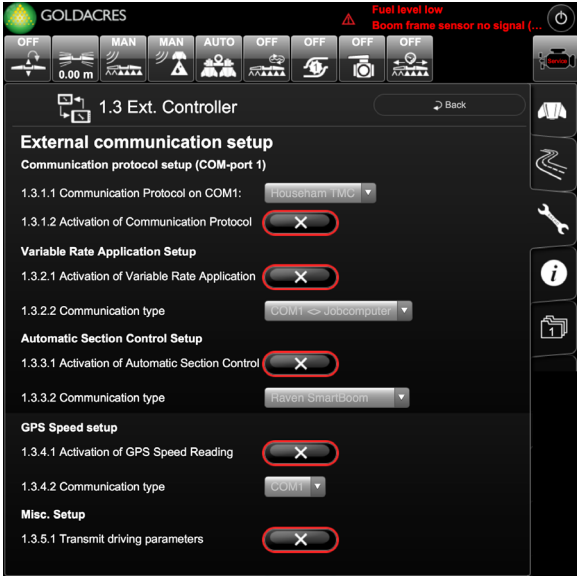
1.1.10.1 Tank Density Factor

## User Setup - Continued

### 1.2 Controller Setup



### 1.3 Ext Controller





## I.4 Headland Assist

OFF

MAN

MAN

AUTO

OFF

OFF

OFF

OFF

Fuel level low

Boom frame sensor no signal (...)

1.4 Headland Assist

Back

Headland Assist Handling

1.4.1.1 Cruise control handling active

X

1.4.1.2 Auto steer handling active

X

1.4.1.3 Master spray handling active

X

1.4.1.4 Boom up/down active

X

1.4.1.5 Boom tilt handling active

X

Headland Approach

1.4.2.1 Before function 1 wait

No wait

0.0

1.4.2.2 Function 1

None

1.4.2.3 Before function 2 wait

No wait

0.0

1.4.2.4 Function 2

None

1.4.2.5 Before function 3 wait

No wait

0.0

1.4.2.6 Function 3

None

1.4.2.7 Before function 4 wait

No wait

0.0

1.4.2.8 Function 4

None

1.4.2.9 Before function 5 wait

No wait

0.0

1.4.2.10 Function 5

None

1.4.2.11 Before function 6 wait

No wait

0.0

1.4.2.12 Function 6

None

1.4.2.13 Before function 7 wait

No wait

0.0

1.4.2.14 Function 7

None

Headland Exit

1.4.3.1 Before function 1 wait for

No wait

0.0

1.4.3.2 Function 1

None

1.4.3.3 Before function 2 wait for

No wait

0.0

1.4.3.4 Function 2

None

1.4.3.5 Before function 3 wait for

No wait

0.0

1.4.3.6 Function 3

None

1.4.3.7 Before function 4 wait for

No wait

0.0

1.4.3.8 Function 4

None

1.4.3.9 Before function 5 wait for

No wait

0.0

1.4.3.10 Function 5

None

1.4.3.11 Before function 6 wait for

No wait

0.0

1.4.3.12 Function 6

None

1.4.3.13 Before function 7 wait for

No wait

0.0

1.4.3.14 Function 7

None

Lift Control Setup

1.4.4.1 Minimum boom height

0.00

m

## User Setup - Continued

### 1.5 Direct Chem Inject

**GOLDACRES**

Fuel level low  
Boom frame sensor no signal (...)

OFF OFF MAN MAN AUTO OFF OFF OFF OFF

0.00 m

### 1.5 Direct Chem. Inject

Back

#### Chemical pump 1

1.5.1.1 Dosage correction percentage  0 %

1.5.1.2 Flow Factor  0.0 Pulses/litre

1.5.1.3 Clear Auto Calibration CLEAR

1.5.1.4 Auto Calibration  0.000 Litre

1.5.1.5 Enable ext. switch for flow calibration ☒

#### Chemical pump 2

1.5.2.1 Dosage correction percentage  %

1.5.2.2 Flow Factor  Pulses/litre

1.5.2.3 Clear Auto Calibration CLEAR

1.5.2.4 Auto Calibration  NaN Litre

1.5.2.5 Enable ext. switch for flow calibration ☒

#### Chemical pump 3

1.5.3.1 Dosage correction percentage  %

1.5.3.2 Flow Factor  Pulses/litre

1.5.3.3 Clear Auto Calibration CLEAR

1.5.3.4 Auto Calibration  NaN Litre

1.5.3.5 Enable ext. switch for flow calibration ☒

#### Chemical pump 4

1.5.4.1 Dosage correction percentage  %

1.5.4.2 Flow Factor  Pulses/litre

1.5.4.3 Clear Auto Calibration CLEAR

1.5.4.4 Auto Calibration  NaN Litre

1.5.4.5 Enable ext. switch for flow calibration ☒

#### Chemical pump 5

1.5.5.1 Dosage correction percentage  %

1.5.5.2 Flow Factor  Pulses/litre

1.5.5.3 Clear Auto Calibration CLEAR

1.5.5.4 Auto Calibration  NaN Litre

1.5.5.5 Enable ext. switch for flow calibration ☒

#### Chemical pump 6

1.5.6.1 Dosage correction percentage  %

1.5.6.2 Flow Factor  Pulses/litre

1.5.6.3 Clear Auto Calibration CLEAR

1.5.6.4 Auto Calibration  NaN Litre

1.5.6.5 Enable ext. switch for flow calibration ☒

## I.6 Job Database Setup

**GOLDACRES** Fuel level low Boom frame sensor no signal (...)

1.6 Job Database Setup

**Fields**

1.6.1.1 Saved fields: TEST

1.6.1.2 Add field: [ ] Save

**Chemicals**

1.6.2.1 Saved chemicals: ROUND UP

1.6.2.2 Add chemical: [ ] Save

**Customers**

1.6.3.1 Saved customers: GOLDACRES

1.6.3.2 Add customer: [ ] Save

**Operators**

1.6.4.1 Saved operators: RW

1.6.4.2 Add operator: [ ] Save

**Machines**

1.6.5.1 Saved machines: 660230

1.6.5.2 Add machine: [ ] Save

## I.7 Backup Job Database

**GOLDACRES** Fuel level low Boom frame sensor no signal (...)

1.7 Backup JobDatabase

**Storage space**

1.7.1.1 Remaining storage space: 753 MB

**Backup extended job database**

1.7.2.1 Backup job database to USB stick: Backup

**Restore extended job database**

1.7.3.1 Restore job database from USB stick: Restore

10:35

## I.8 Wireless Network

**GOLDACRES** Fuel level low Boom frame sensor no signal (...)

1.8 Wireless Network

**Wireless Status**

1.8.1.1 Hardware: Installed

1.8.1.2 Interface: Active

1.8.1.3 Mode: Create Access Point

1.8.1.4 IP Address: 192.168.100.1

10:36

# 2 Machine Setup



Key	Functions and Indications
1	Spray Regulation Setup Spray Line Control Setup Auto Nozzle Select Sprayer Setup Foam Marker Setup - NA Sprayer Sensors Setup Sprayer Calibration
2	Not Used
3	Sensor Installation Lift Control Setup
4	Tilt Sensor Parameters
5	Boom Levelling Type Boom Height Sensor Calibration Manual Override Parameters Boom Regulation Presets
6	Sprayer Alarms
7	Test Speed Setup PC Software Communication Activity Units on CAN-BUS
8	General CAN-BUS USB Power Module State Power Input Power Output Battery

## 2 Machine Setup

### 2.1 Sprayer Setup

**GOLDACRES** ▲ Fuel level low  
Boom frame sensor no signal (...)

OFF MAN MAN AUTO OFF OFF OFF OFF

0.00 m

#### 2.1 Sprayer Setup

Back

##### Spray Regulation Setup

###### Wheel factor setup

2.1.1.1 Wheel type:

2.1.1.2 Wheel factor:  0.0165 Metre/pulse

2.1.1.3 Auto calibration:  OFF 0 Pulses 25.1 km/h

2.1.1.4 Wheel calibration distance:  100 m

###### Auto regulation

2.1.2.1 Spray regulation input:  FLOW

2.1.2.2 Auto regulation raise %:  10 %

2.1.2.3 Min. regulating speed (product 1 & 2):  3 Km/h

###### Product 1 Density factor

2.1.3.1 Liquid type:  WATER

2.1.3.2 Density factor, water:  1.00

2.1.3.3 Density factor, liquid A:  1.00

2.1.3.4 Density factor, liquid B:  1.00

2.1.3.5 Density calibration volume:  -1 Litre

###### Product 2 Density factor

2.1.4.1 Liquid type:  WATER

2.1.4.2 Density factor, water:  1.00

2.1.4.3 Density factor, liquid A:  1.00

2.1.4.4 Density factor, liquid B:  1.00

2.1.4.5 Density calibration volume:  -1 Litre

##### Sprayer Line control setup

###### Line selection

2.1.5.1 Line 1:  Lilac 025 ☒

2.1.5.2 Line 2:  Blue 03 ☒

2.1.5.3 Line 3:  Red 04 ☐

2.1.5.4 Line 4:  Brown 05 ☐

###### Nozzle setup

2.1.6.1	Pure orange 11001	<input type="text"/> 0.40 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.2	Traffic green 110015	<input type="text"/> 0.60 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.3	Zinc yellow 11002	<input type="text"/> 0.80 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.4	Signal violet 110025	<input type="text"/> 1.00 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.5	Gentian blue 11003	<input type="text"/> 1.20 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.6	Flame red 11004	<input type="text"/> 1.60 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.7	Nut brown 11005	<input type="text"/> 2.00 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.8	Signal grey 11006	<input type="text"/> 2.40 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.9	Traffic white 11008	<input type="text"/> 3.20 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.10	Light blue 11010	<input type="text"/> 4.00 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.11	Yellow green 11015	<input type="text"/> 6.00 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor
2.1.6.12	User 11020	<input type="text"/> 8.00 l/min	<input type="text"/> 3.0 Bar	<input type="text"/> 1.00	Adjust Factor

#### Auto Nozzle Select

##### Auto nozzle select setup

2.1.7.1 Minimum pressure:  1.0 Bar

2.1.7.2 Maximum pressure:  6.0 Bar

2.1.7.3 Line shift overlap pressure:  0.5 Bar

2.1.7.4 Line shift overlap mode:  HIGH

##### Auto nozzle select verification setup

2.1.8.1 Verify according to:  Limit

##### Auto nozzle select verification

Lines	1	2	3	4	Min	Max	Errors
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.57	1.41	
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0.69	1.69	OK
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.26	3.10	OK

#### Sprayer Setup

##### Section setup

2.1.10.1	Number of spray sections	<input type="text"/> 7
2.1.10.2	Total active width	<input type="text"/> 36.00 m
2.1.10.3	Section 1	<input type="text"/> 6.00 m
2.1.10.4	Section 2	<input type="text"/> 6.00 m
2.1.10.5	Section 3	<input type="text"/> 4.00 m
2.1.10.6	Section 4	<input type="text"/> 4.00 m
2.1.10.7	Section 5	<input type="text"/> 4.00 m
2.1.10.8	Section 6	<input type="text"/> 6.00 m
2.1.10.9	Section 7	<input type="text"/> 6.00 m
2.1.10.10	Section 8	<input type="text"/> 0.00 m
2.1.10.11	Section 9	<input type="text"/> 0.00 m
2.1.10.12	Section 10	<input type="text"/> 0.00 m
2.1.10.13	Section 11	<input type="text"/> 0.00 m
2.1.10.14	Section 12	<input type="text"/> 0.00 m
2.1.10.15	Section 13	<input type="text"/> 0.00 m
2.1.10.16	Section 14	<input type="text"/> 0.00 m
2.1.10.17	Section 15	<input type="text"/> 0.00 m
2.1.10.18	Section 16	<input type="text"/> 0.00 m
2.1.10.19	Section 17	<input type="text"/> m
2.1.10.20	Section 18	<input type="text"/> m
2.1.10.21	Section 19	<input type="text"/> m
2.1.10.22	Section 20	<input type="text"/> m
2.1.10.23	Section 21	<input type="text"/> m
2.1.10.24	Section 22	<input type="text"/> m
2.1.10.25	Section 23	<input type="text"/> m
2.1.10.26	Section 24	<input type="text"/> m
2.1.10.27	Section 25	<input type="text"/> m
2.1.10.28	Section 26	<input type="text"/> m
2.1.10.29	Section 27	<input type="text"/> m
2.1.10.30	Section 28	<input type="text"/> m
2.1.10.31	Section 29	<input type="text"/> m
2.1.10.32	Section 30	<input type="text"/> m
2.1.10.33	Section 31	<input type="text"/> m
2.1.10.34	Section 32	<input type="text"/> m

Continued on next page

# Machine Setup - Continued

## 2.1 Sprayer Setup - Continued

Manually operated section distribution

2.1.11.1

Number of Manual Switches

0

2.1.11.2

Configuration Status:

Incorrect number of manual switches setup

2.1.11.3

Manual switch 1 operates

2

 sections

2.1.11.4

Manual switch 2 operates

3

 sections

2.1.11.5

Manual switch 3 operates

4

 sections

2.1.11.6

Manual switch 4 operates

3

 sections

2.1.11.7

Manual switch 5 operates

2

 sections

2.1.11.8

Manual switch 6 operates

0

 sections

2.1.11.9

Manual switch 7 operates

0

 sections

2.1.11.10

Manual switch 8 operates

0

 sections

2.1.11.11

Manual switch 9 operates

0

 sections

2.1.11.12

Manual switch 10 operates

0

 sections

2.1.11.13

Manual switch 11 operates

0

 sections

2.1.11.14

Manual switch 12 operates

0

 sections

2.1.11.15

Manual switch 13 operates

0

 sections

2.1.11.16

Manual switch 14 operates

0

 sections

2.1.11.17

Manual switch 15 operates

0

 sections

2.1.11.18

Manual switch 16 operates

0

 sections

Foam marker setup

2.1.12.1

Installed

X

2.1.12.2

Side Shift Control:

Manual

Spray state taken from

2.1.13.1

Taken from

Sprayer sensors setup

Product 1 Spray pump RPM sensor

2.1.14.1

Installed

✓

2.1.14.2

Input frequency

1

 Pulses Per Revolution

Product 2 Spray pump RPM sensor

2.1.15.1

Installed

X

2.1.15.2

Input frequency

1

 Pulses Per Revolution

Spray pump diaphragm sensor

2.1.16.1

Installed

X

Sprayer Calibration

Flow meter 1 calibration

2.1.17.1

Installed

✓

0.0 L/min Litre/min

2.1.17.2

Flow factor

83.3

 Pulses/litre

2.1.17.3

Auto calibration

RESET

2.1.17.4

Calibration output

-0.001

 Litre/nozzle

2.1.17.5

Calibration output

-0.001

 Litre

2.1.17.6

Minimum flow rate

7.00

 L/min

2.1.17.7

Maximum flow rate

200.00

 L/min

Flow meter 2 calibration

2.1.18.1

Installed

X

0.0 L/min Litre/min

2.1.18.2

Flow factor

83.3

 Pulses/litre

2.1.18.3

Auto calibration

RESET

2.1.18.4

Calibration output

-0.001

 Litre/nozzle

2.1.18.5

Calibration output

-0.001

 Litre

2.1.18.6

Minimum flow rate

7.00

 L/min

2.1.18.7

Maximum flow rate

200.00

 L/min

Infill meter calibration

2.1.19.1

Installed

X

L/min Litre/min

2.1.19.2

Flow factor

10.0

 Pulses/litre

2.1.19.3

Auto calibration

RESET

2.1.19.4

Calibration output

-0.001

 Litre

Pressure sensor calibration

2.1.20.1

Installed

X

0.0 Bar

2.1.20.2

Low calibration Point

Bar

2.1.20.3

High calibration Point

Bar

2.1.20.4

Zero point calibration

SET

2.1.20.5

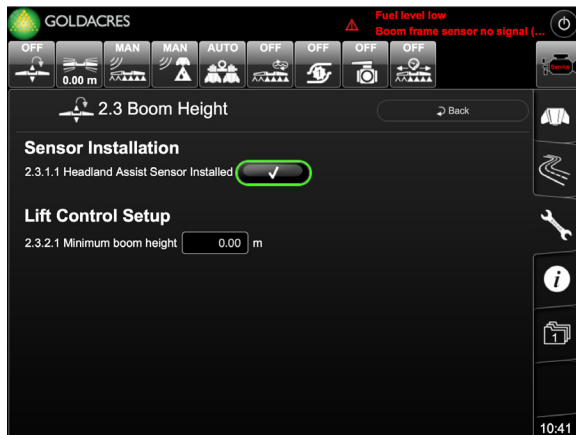
Pressure type (at 20 mA)

10.0

 Bar

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## 2.3 Boom Height

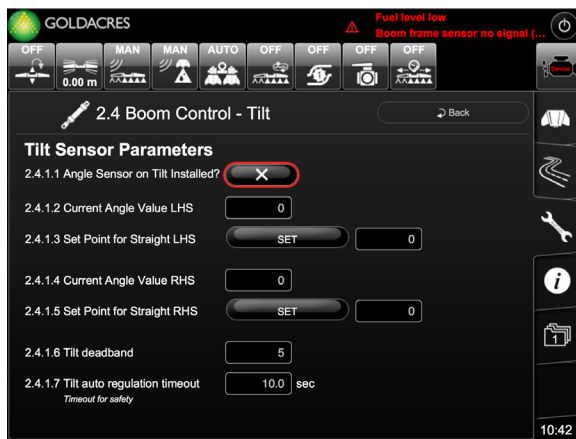


2.3.2.1 will set the minimum boom height for spraying applications.

The boom will not go below this setting when in spray mode.

Minimum boom height will not go below the machine minimum boom height.

## 2.4 Boom Control - Tilt

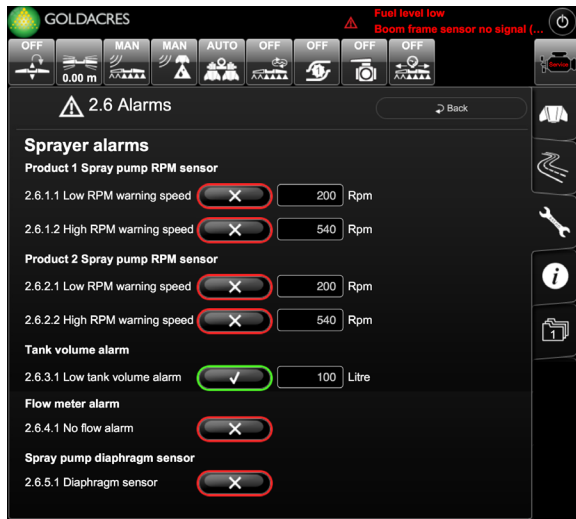


## 2.5 Boom Level - VG

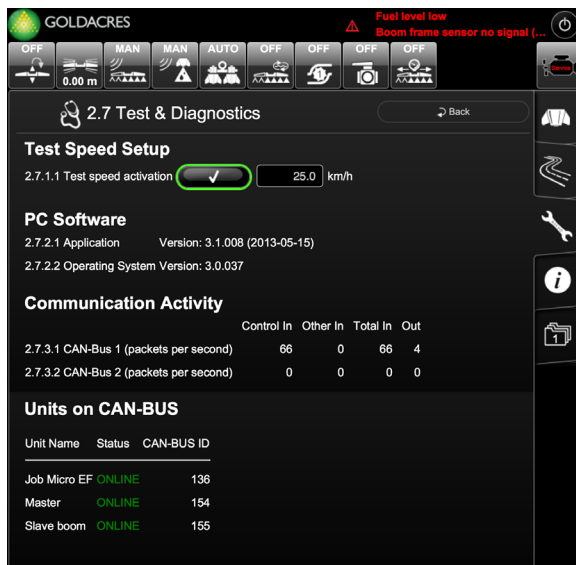
NOT APPLICABLE



## 2.6 Alarms



## 2.7 Test & Diagnostics



This page has three diagnostic lists that are used for troubleshooting problems through the GATMC console. Under the Units on CAN-BUS there is:

**Job Micro EF** - This displays the connectivity for the Joystick functions

**Master** - This displays the connectivity from the Master Computer

**Slave Boom** - This displays the connectivity from the Slave Boom Computer

By pressing on the green ONLINE, it will display the diagnostic inputs and outputs from the selected computer

## 2.7 Test & Diagnostics

### CAN-BUS - Job Micro EF

**Units on CAN-BUS**

Unit Name	Status	CAN-BUS ID
Job Micro EF	ONLINE	136
Master	ONLINE	154
Slave boom	ONLINE	155

**Information for selected unit:**

2.7.6.1	Manufacturer	227
2.7.6.2	Industry group	2
2.7.6.3	Device class	0
2.7.6.4	Lykketronic Device ID	10
2.7.6.5	Device class inst.	0
2.7.6.6	Function inst.	1
2.7.6.7	Hardware type	0
2.7.6.8	Software version	3.003
2.7.6.9	Boot ROM checksum	0x0 Hex
2.7.6.10	Program ROM checksum	0x0 Hex

**Power Supply Currents**

1	11.7 V
---	--------

**Switch Input Status**

A2	A3	A4	A5
A6	A7	A8	A9
A10	A11	A12	A13
A14	A15	A16	A17
C2	C3	C4	C5
C6	C7	C8	C9
C10	C11	C12	C13
C14	C15	C16	C17

**Joystick Input Status**

B7	0
B8	0
B10	0

**LED Outputs**

D2	D3	D4	D5
D6	D7	D8	D9
D10	D11	D12	D13
D14	D15	D16	D17

Terminal #	Function Description
A13	Steering - Auto
A14	Fence line jet - LHS
A15	Fence line jet - RHS
A18	+12 vdc
A19	Earth
A20	+12 vdc
B1	Job Micro -
B2	Job Micro +
B3	Job Micro CAN Low
B4	Job Micro CAN High
B7	Joystick - X-Axis
B8	Joystick - Y-Axis
B9	Joystick Potentiometer Vcc - 5V
B10	Joystick - Z-Axis
B11	Earth
B12	+12 vdc
B15	Top Button Left (Master On/Off - Rest In)
B18	Top Button Right (Headland Assist/Rest out)
B19	Earth
B20	+12 vdc
C1	Earth
C2	(Section 1 Input -Ext. ASC controller)
C3	(Section 2 Input -Ext. ASC controller)
C4	(Section 3 Input -Ext. ASC controller)
C5	(Section 4 Input -Ext. ASC controller)
C6	(Section 5 Input -Ext. ASC controller)
C7	(Section 6 Input -Ext. ASC controller)
C8	(Section 7 Input -Ext. ASC controller)
C9	(Section 8 Input -Ext. ASC controller)
C10	(Section 9 Input -Ext. ASC controller)
C11	(Section 10 Input -Ext. ASC controller)
C15	Gear sensor - Forward
C16	Gear sensor - Backward
C17	Park brake sensor
C18	+12 vdc
C19	Earth
C20	+12 vdc
D1	Earth
D2	Light - Field/Spray mode
D3	Output signal - Auto steer (with fixed 2 sec signal)
D4	Output signal - Cruise control
D18	+12 vdc
D19	Earth
D20	+12 vdc

## 2.7 Test & Diagnostics

### CAN-BUS - Master

**Units on CAN-BUS**

Unit Name	Status	CAN-BUS ID
Job Micro EF	ONLINE	136
Master	ONLINE	154
Slave boom	ONLINE	155

**Information for selected unit:**

2.7.6.1	Manufacturer	227
2.7.6.2	Industry group	2
2.7.6.3	Device class	6
2.7.6.4	Lykketronic Device ID	11
2.7.6.5	Device class inst.	0

**Digital Input Status**

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B17	B18

**Analogue Input Status**

B11	1023
B12	0.29 mA
B13	0.29 mA
B14	0.29 mA
B15	0.34 mA
B16	0.29 mA

**Output Status**

A1	Float	A2	Float	A3	Float	A4	Float
A5	Float	A6	Float	A7	Float	A8	Float
A9	Gnd	A10	Power	A11	Power	A12	Gnd
A13	Gnd	A14	Gnd	A15	Gnd	A16	Gnd
C1	Gnd	C2	Gnd	C3	Gnd	C4	Gnd
C5	Gnd	C6	Gnd	C7	Gnd	C8	Gnd
C9	Gnd	C10	Gnd	C11	Power	C12	Gnd
C13	Gnd	C14	Gnd	C15	Gnd	C16	Gnd

Terminal #	Function Description
A1	Reg.Valve 1 - Up=+12V
A2	Reg.Valve 1 - Down=+12V
A3	Reg.Valve 2 - Up=+12V
A4	Reg.Valve 2 - Down=+12V
A5	Steering - Left
A6	Steering - Right
A7	Cruise control Off signal !?
A9	Boom recirc.Valve - Product 1/2
A10	Main dump valve 1 / Master 1
A11	Main dump valve 2 / Master 2
A12	Pump suction control valve
A13	Auto Wash Valve
A14	Foam Marker - Left
A15	Foam Marker - Right
A16	Foam Marker - Compressor
B1	Ground Speed - 1
B2	4WD sensor input
B3	Pump Rpm - 1
B4	Pump Rpm - 2
B5	Filling flow meter
B6	Pump protection sensor 1
B7	Pump protection sensor 2
B8	Low Air sensor
B9	Hand brake sensor
B10	Hydraulic Low Oil sensor
B11	Fuel sender unit
B12	Track steering - Reference
B13	Track steering - Wheel
B14	Tank measurement - Pressure
B15	Hydraulic pressure transducer - Spray circuit
B16	Hydraulic pressure transducer - Hydraulic circuit
B17	External pump 1 switch
B18	External Fill Pump Switch
C1	Spray pump unloader - Dump valve
C2	Spray pump 1
	Spray pump 1 Lights (Extra cable in existing connector)
C3	Spray pump 2
C4	Fill Pump/shut-off valve (3-wire)
	Fill Pump/shut-off valve Lights (Extra cable in existing connector)
C5	Warning beacon
C6	Working light
C7	Hydraulic boom rest - Out
C8	Hydraulic boom rest - In
C9	External warning buzzer
C10	Fill Pump Status Lamp (Man/Auto)
C11	Self cleaning Filter activation

## 2.7 Test & Diagnostics

### CAN-BUS - Slave Boom

#### Units on CAN-BUS

Unit Name	Status	CAN-BUS ID
Job Micro EF	ONLINE	136
Master	ONLINE	154
Slave boom	ONLINE	155

#### Information for selected unit:

2.7.6.1 Manufacturer 227

2.7.6.2 Industry group 2

2.7.6.3 Device class 6

2.7.6.4 Lykketronic Device ID 12

2.7.6.5 Device class inst. 0

2.7.6.6 Function inst. 0

2.7.6.7 Hardware type 0

2.7.6.8 Software version 3.020

2.7.6.9 Boot ROM checksum 0x7013 Hex

2.7.6.10 Program ROM checksum 0xAE67 Hex

#### Power Supply Currents

1	11.8 V
---	--------

#### Digital Input Status

B1	B2	B3	B4
B5	B6	B7	B8
B9	B10	B17	B18

#### Analogue Input Status

B11	0 mA
B12	0 mA
B13	0 mA
B14	0 mA
B15	0 mA
B16	0 mA

#### Output Status

A1	Float	A2	Float	A3	Float	A4	Float
A5	Float	A6	Float	A7	Float	A8	Float
A9	Gnd	A10	Gnd	A11	Gnd	A12	Gnd
A13	Gnd	A14	Gnd	A15	Gnd	A16	Gnd
C1	Gnd	C2	Gnd	C3	Gnd	C4	Gnd
C5	Gnd	C6	Gnd	C7	Gnd	C8	Gnd
C9	Gnd	C10	Gnd	C11	Gnd	C12	Gnd
C13	Gnd	C14	Gnd	C15	Gnd	C16	Gnd

Terminal #	Function Description
A1	Boom Raise
A2	Boom Lower
A3	Boom wing tilt - RHS - Up
A4	Boom wing tilt - RHS - Down
A5	Boom wing tilt - LHS - Up
A6	Boom wing tilt - LHS - Down
A9	Boom fold - Out
A10	Boom fold - In
A11	Bi-fold - Out
A12	Bi-fold - In
A13	Raven Smart boom output for Spray Master
A14	Center lock cylinder (Fold+Bi-Fold)
A15	Main hydraulics unload - Master/dump
A16	Boom recirculation valve - Product 1
B1	Flow meter pulses - 1
B2	Flow meter pulses - 2
B3	Section 1 input (Raven SmartBoom)
B4	Section 2 input (Raven SmartBoom)
B5	Section 3 input (Raven SmartBoom)
B6	Section 4 input (Raven SmartBoom)
B7	Section 5 input (Raven SmartBoom)
B8	Section 6 input (Raven SmartBoom)
B9	Section 7 input (Raven SmartBoom)
B10	Section 8 input (Raven SmartBoom)
B12	Incline return to level sensor - LHS
B13	Incline return to level sensor - RHS
B14	Boom height/Headland assist potentiometer
B15	Pressure transducer - 1
B16	Pressure transducer - 2
B17	Section 9 input (Raven SmartBoom)
B18	Section 10 input (Raven SmartBoom)
C1	Section output 1 (split on section+Tier system)
C2	Section output 2 (split on section+Tier system)
C3	Section output 3 (split on section+Tier system)
C4	Section output 4 (split on section+Tier system)
C5	Section output 5 (split on section+Tier system)
C6	Section output 6 (split on section+Tier system)
C7	Section output 7 (split on section+Tier system)
C8	Section output 8 (split on section+Tier system)
C9	Section output 9 (split on section+Tier system)
C10	Section output 10 (split on section+Tier system)
C11	Section output 11 or "Smart box" line output 3
C12	Section output 12 or "Smart box" line output 4
C13	Section output 13 or "Smart box" line output 1
C14	Section output 14 or "Smart box" line output 2
C15	Fence line jet 1 - LHS
C16	Fence line jet 2 - RHS

## 2.8 Can/Power Status

Fuel level low  
Boom frame sensor no signal [...]

OFF

MAN

MAN

AUTO

OFF

OFF

OFF

OFF

0.00 m

2.8 CAN/Power Status

Back

General

2.8.1.1 Type

Power Supply 5V 12V

2.8.1.2 Software version

1.004

2.8.1.3 Module Temperature

59 degr.

CAN-BUS

Rx

Tx

2.8.2.1 CAN buffer overflow

0

0

2.8.2.2 CAN buffer max size

1

0

2.8.2.3 CAN 1 error counter

0

0

2.8.2.4 CAN 2 error counter

0

0

USB

2.8.3.1 Output buffer overflow

0

2.8.3.2 Output buffer max size

1

Power Module State

2.8.4.1 Power Supply State

0

2.8.4.2 +12V State

1

2.8.4.3 Work Command For PC 1

Power Input

2.8.5.1 Volt Input

11.1 V

2.8.5.2 Volt Key

11.7 V

2.8.5.3 Volt Board Intern

10.8 V

Power Output

2.8.6.1 +5V

5 V

2.8.6.2 +12V

19.5 V

2.8.6.3 Current

0.9 A

Battery

2.8.7.1 State

0

2.8.7.2 Temperature

0 degr.

2.8.7.3 Voltage

0 V

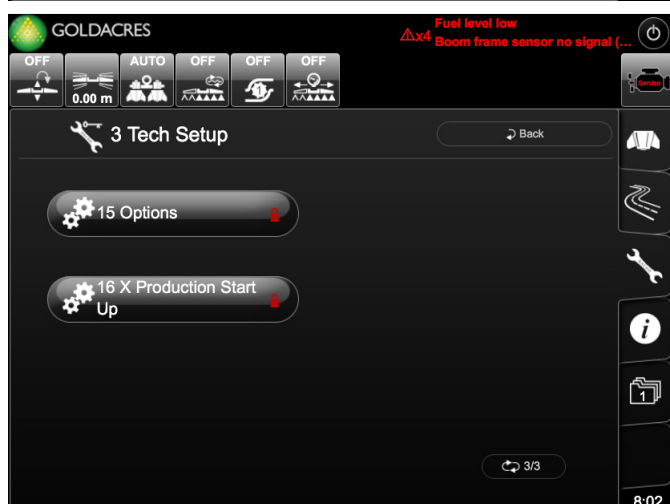
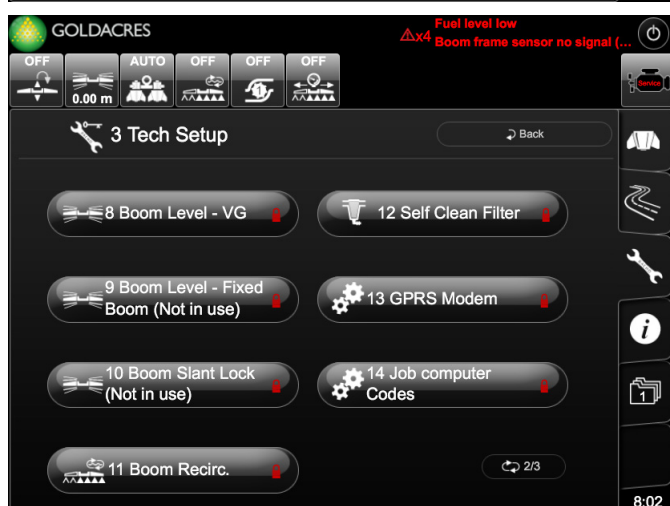
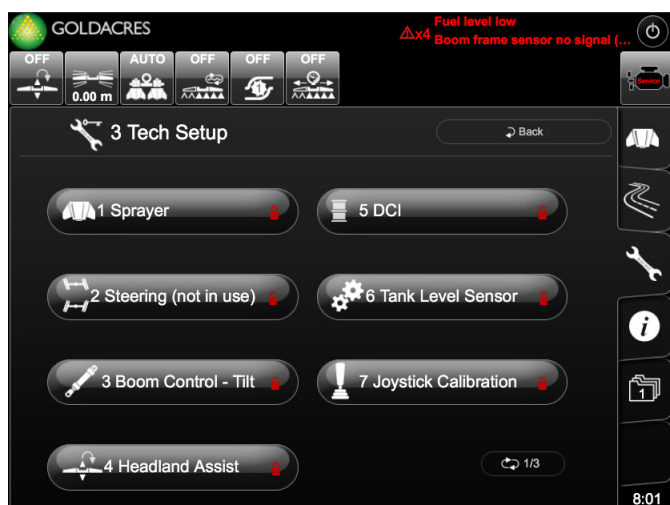
2.8.7.4 Charge Current

0 A

2.8.7.5 Current Capacity

0 %

## 3 Tech Setup



Key	Functions and Indications
1	Sprayer Setup Product 1 Sprayer regulation Setup Product 2 Sprayer regulation Setup Boom Recirc. Auto Prime (option) Regulation Valve - Pump Start/Stop
2	Not Used
3	Boom Tilt Valves - Speed Parameters Boom Tilt Valves - Auto Speed Parameters Boom Tilt - Sensor Parameters
4	Sensor Installation Sensor Calibration Lift Control Setup
5	Chemical Pump 1 Chemical Pump 2 Chemical Pump 3 Chemical Pump 4 Chemical Pump 5 Chemical Pump 6 Unit Numbering
6	Tank Level sensor (Pressure)
7	Joystick Calibration
8	Boom Levelling Type Boom Level - Emergency Control Figures Boom Level - Lift Control Setup Boom Level - Tilt Control setup Boom Regulation Presets
9	Not Used
10	Not Used
11	Auto Prime Setup
12	Self Clean Filter Setup
13	GPRS Modem Provider Settings Sim-Card Modem Status
14	Send Job Computer Codes
15	Options
16	Sprayer Options Time and Date Wheel Line Selection Section Setup

The image displays the Goldacres 3.1 Sprayer control interface, which is divided into two main sections: 'Sprayer setup' and 'Product 1 Sprayer Regulation setup'.

**Sprayer setup**

- 3.1.1.1** Sprayer boom type:
- 3.1.1.2** Sprayer chassis type:
- 3.1.1.3** Number of products:
- 3.1.1.4** Nozzle spacing:  m
- 3.1.1.5** Calibrated returns:
- 3.1.1.6** Section valve control:
- 3.1.1.7** Tank capacity:  Litre
- 3.1.1.8** External spray control enabled:
- 3.1.1.9** Foam marker enabled:

**Product 1 Sprayer Regulation setup**

**Rate of speed update**

- 3.1.2.1** Min. regulating speed (product 1 & 2):  Km/h
- 3.1.2.2** No forward speed alarm delay:  sec
- 3.1.2.3** Spray to auto regulation delay:  sec
- 3.1.2.4** Low speed sprayer stop delay:  sec

**Regulation valve setup**

- 3.1.3.1** Regulating valve enabled: ☒
- 3.1.3.2** Threshold for fast regulation:  %
- 3.1.3.3** Threshold for slow regulation:  %
- 3.1.3.4** Reg. intervals - fast regulation:  1/6 sec
- 3.1.3.5** Reg. intervals - slow regulation:  1/6 sec
- 3.1.3.6** Threshold for no regulation:  %
- 3.1.3.7** Threshold for display update:  %

**Regulation factor**

- 3.1.4.1** Auto regulating factor:
- 3.1.4.2** Regulation valve gear backlash factor:  ms

**Product 2 Sprayer Regulation setup**

**Rate of speed update**

- 3.1.5.1** Min. regulating speed (product 1 & 2):  Km/h
- 3.1.5.2** No forward speed alarm delay:  sec
- 3.1.5.3** Spray to auto regulation delay:  sec
- 3.1.5.4** Low speed sprayer stop delay:  sec

**Regulation valve setup**

- 3.1.6.1** Regulating valve enabled: ☐
- 3.1.6.2** Threshold for fast regulation:  %
- 3.1.6.3** Threshold for slow regulation:  %
- 3.1.6.4** Reg. intervals - fast regulation:  1/6 sec
- 3.1.6.5** Reg. intervals - slow regulation:  1/6 sec
- 3.1.6.6** Threshold for no regulation:  %
- 3.1.6.7** Threshold for display update:  %

**Regulation factor**

- 3.1.7.1** Auto regulating factor:
- 3.1.7.2** Regulation valve gear backlash factor:  ms

**Boom Recirc. Auto Prime (Option)**

- 3.1.8.1** Amount:  Litre
- 3.1.8.2** Activation time:  sec
- 3.1.8.3** Deactivation time:  sec


**Regulation Valve - Pump Start/Stop**

- 3.1.9.1** Activation time:  sec
- 3.1.9.2** Deactivation time:  sec


FAST REGULATION


The diagram illustrates the three levels of PID control: Step Regulation, Step Regulation, and Fast Regulation. The top timeline shows the control signal (ON/OFF) and calculation periods. The middle timeline shows the error signal (Percent error) and the corresponding control action (50% ON, 50% OFF) for each level. The bottom timeline shows the error signal (Percent error) and the corresponding control action (50% ON, 50% OFF) for each level.


### 3.3 Boom Control -Tilt





△x4 Fuel level low  
Boom frame sensor no signal (...


OFF 


AUTO 

OFF 


OFF 

OFF 

 0.00 m



### 3.3 Boom Control - Tilt

 Back

#### Boom tilt valves - Speed parameters

3.3.1.1 Manual tilt Speed
 %

Relative to min/max PWM

##### Left Boom Up

3.3.2.1 PWM Min. value LHS up
 22 %

3.3.2.2 PWM Max. value LHS up
 100 %

3.3.2.3 PWM Acceleration time LHS up
 1.0 sec

3.3.2.4 PWM De-acceleration time LHS up
 0.3 sec

##### Left Boom Down

3.3.3.1 PWM Min. value LHS down
 22 %

3.3.3.2 PWM Max. value LHS down
 100 %

3.3.3.3 PWM Acceleration time LHS down
 1.0 sec

3.3.3.4 PWM De-acceleration time LHS down
 0.3 sec

##### Right Boom Up

3.3.4.1 PWM Min. value RHS up
 22 %

3.3.4.2 PWM Max. value RHS up
 100 %

3.3.4.3 PWM Acceleration time RHS up
 1.0 sec

3.3.4.4 PWM De-acceleration time RHS up
 0.3 sec

##### Right Boom Down

3.3.5.1 PWM Min. value RHS down
 22 %

3.3.5.2 PWM Max. value RHS down
 100 %

3.3.5.3 PWM Acceleration time RHS down
 1.0 sec

3.3.5.4 PWM De-acceleration time RHS down
 0.3 sec

#### Boom tilt valves - Auto Speed Parameters

3.3.6.1 Tilt speed factor LHS

3.3.6.2 Tilt speed factor RHS

#### Boom tilt - Sensor Parameters

3.3.7.1 Angle Sensor on Tilt Installed?

YES

3.3.7.2 Current Angle Value LHS
 0

3.3.7.3 Set Point for Straight LHS

SET

 0

3.3.7.4 Current Angle Value RHS
 0

3.3.7.5 Set Point for Straight RHS

SET

 0

3.3.7.6 Tilt deadband
 2

3.3.7.7 Tilt auto regulation timeout
 10.0 sec

3.3.7.8 Tilt angle sensor type

4-20 mA 30



## 3.4 Headland Assist

OFF

0.00 m

AUTO

OFF

OFF

OFF

Fuel level low

Boom frame sensor no signal (...)

3.4 Headland Assist

Back

Sensor Installation

3.4.1.1 Headland Assist Sensor Installed ☒

Sensor Calibration

Boom LOW calibration

Current mA

Set Point

Boom height

3.4.2.1 Center Frame (CF)

0.00 mA

4.00 mA

m

Boom HIGH calibration

Current mA

Set Point

Boom height

3.4.2.2 Center Frame (CF)

0.00 mA

20.00 mA

m

Lift Control Setup

3.4.3.1 Minimum boom height

m

3.4.3.2 Absolute minimum boom height

m

3.4.3.3 Dead Band Factor

m

1

## Tech Setup - Continued

### 3.5 DCI

OFF

0.00 m

AUTO

OFF

OFF

OFF

Fuel level low

Boom frame sensor no signal (...)

3.5 DCI

Back

Chemical pump 1

3.5.1.1 Enabled ☒

3.5.1.2 Pump number

3.5.1.3 Capacity  Litre

3.5.1.4 Low tank alarm at  Litre

3.5.1.5 Input volt  Volt

Chemical pump 1 Calibration Flow Factor

3.5.2.1 Enable ext. switch for flow calibration ☒

3.5.2.2 Flow Factor  Pulses/litre

3.5.2.3 Clear Auto Calibration

3.5.2.4 Auto Calibration  NaN Litre

Chemical pump 1 Calibration Prime Pulse

3.5.3.1 Enable ext. switch for prime calibration ☒

3.5.3.2 Prime pulse

3.5.3.3 New calibration

3.5.3.4 Calibration OK

Chemical pump 1 Pump

3.5.4.1 Pump/motor relation  :1

3.5.4.2 Pump pulses per rotation

3.5.4.3 Min. pump speed  Rpm

3.5.4.4 Calibration pump speed  Rpm

3.5.4.5 Clean pump speed  Rpm

Chemical pump 1 Cleaning (Not activated)

3.5.5.1 Clean 1st cycle prime count  Times

3.5.5.2 Clean soap cycle prime count  Times

3.5.5.3 Clean 2nd cycle prime count  Times

Chemical pump 1 Motor

3.5.6.1 Motor mV at 1000 RPM  mVolt

3.5.6.2 Motor pump correction factor  %

3.5.6.3 Motor min. PWM  %

3.5.6.4 Motor max. PWM  %

3.5.6.5 Motor PWN Reg. up/down  %

3.5.6.6 Motor Reg. Sensitivity   
0 = very slow, 9 = very fast

Chemical pump 1 Counters

3.5.7.1 Amount  Litre

3.5.7.2 Area  Ha

Chemical pump 2

3.5.9.1 Enabled ☒

3.5.9.2 Pump number

3.5.9.3 Capacity  Litre

3.5.9.4 Low tank alarm at  Litre

3.5.9.5 Input volt  Volt

Chemical pump 2 Calibration Flow Factor

3.5.10.1 Enable ext. switch for flow calibration ☒

3.5.10.2 Flow Factor  Pulses/litre

3.5.10.3 Clear Auto Calibration

3.5.10.4 Auto Calibration  NaN Litre

Chemical pump 2 Calibration Prime Pulse

3.5.11.1 Enable ext. switch for prime calibration ☒

3.5.11.2 Prime pulse

3.5.11.3 New calibration

3.5.11.4 Calibration OK

Chemical pump 2 Pump

3.5.12.1 Pump/motor relation  :1

3.5.12.2 Pump pulses per rotation

3.5.12.3 Min. pump speed  Rpm

3.5.12.4 Calibration pump speed  Rpm

3.5.12.5 Clean pump speed  Rpm

Chemical pump 2 Cleaning (Not activated)

3.5.13.1 Clean 1st cycle prime count  Times

3.5.13.2 Clean soap cycle prime count  Times

3.5.13.3 Clean 2nd cycle prime count  Times

Chemical pump 2 Motor

3.5.14.1 Motor mV at 1000 RPM  mVolt

3.5.14.2 Motor pump correction factor  %

3.5.14.3 Motor min. PWM  %

3.5.14.4 Motor max. PWM  %

3.5.14.5 Motor PWN Reg. up/down  %

3.5.14.6 Motor Reg. Sensitivity   
0 = very slow, 9 = very fast

Chemical pump 2 Counters

3.5.15.1 Amount  Litre

3.5.15.2 Area  Ha

Chemical pump 3

3.5.17.1 Enabled ☒

3.5.17.2 Pump number

3.5.17.3 Capacity  Litre

3.5.17.4 Low tank alarm at  Litre

3.5.17.5 Input volt  Volt

Chemical pump 3 Calibration Flow Factor

3.5.18.1 Enable ext. switch for flow calibration ☒

3.5.18.2 Flow Factor  Pulses/litre

3.5.18.3 Clear Auto Calibration

3.5.18.4 Auto Calibration  NaN Litre

Chemical pump 3 Calibration Prime Pulse

3.5.19.1 Enable ext. switch for prime calibration ☒

3.5.19.2 Prime pulse

3.5.19.3 New calibration

3.5.19.4 Calibration OK

Chemical pump 3 Pump

3.5.20.1 Pump/motor relation  :1

3.5.20.2 Pump pulses per rotation

3.5.20.3 Min. pump speed  Rpm

3.5.20.4 Calibration pump speed  Rpm

3.5.20.5 Clean pump speed  Rpm

Chemical pump 3 Cleaning (Not activated)

3.5.21.1 Clean 1st cycle prime count  Times

3.5.21.2 Clean soap cycle prime count  Times

3.5.21.3 Clean 2nd cycle prime count  Times

Continued on next page

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## 3.5 DCI

Chemical pump 3 Motor

3.5.22.1 Motor mV at 1000 RPM

mVolt

3.5.22.2 Motor pump correction factor

%

3.5.22.3 Motor min. PWM

%

3.5.22.4 Motor max. PWM

%

3.5.22.5 Motor PWN Reg. up/down

%

3.5.22.6 Motor Reg. Sensitivity

0 = very slow, 9 = very fast

Chemical pump 3 Counters

3.5.23.1 Amount

Litre

3.5.23.2 Area

Ha

Chemical pump 4

3.5.25.1 Enabled

X

3.5.25.2 Pump number

3.5.25.3 Capacity

Litre

3.5.25.4 Low tank alarm at

Litre

3.5.25.5 Input volt

Volt

Chemical pump 4 Calibration Flow Factor

3.5.26.1 Enable ext. switch for flow calibration

X

3.5.26.2 Flow Factor

Pulses/litre

3.5.26.3 Clear Auto Calibration

CLEAR

3.5.26.4 Auto Calibration

NaN

Litre

Chemical pump 4 Calibration Prime Pulse

3.5.27.1 Enable ext. switch for prime calibration

X

3.5.27.2 Prime pulse

3.5.27.3 New calibration

3.5.27.4 Calibration OK

OK

Chemical pump 4 Pump

3.5.28.1 Pump/motor relation

:1

3.5.28.2 Pump pulses per rotation

3.5.28.3 Min. pump speed

Rpm

3.5.28.4 Calibration pump speed

Rpm

3.5.28.5 Clean pump speed

Rpm

Chemical pump 4 Cleaning (Not activated)

3.5.29.1 Clean 1st cycle prime count

Times

3.5.29.2 Clean soap cycle prime count

Times

3.5.29.3 Clean 2nd cycle prime count

Times

Chemical pump 4 Motor

3.5.30.1 Motor mV at 1000 RPM

mVolt

3.5.30.2 Motor pump correction factor

%

3.5.30.3 Motor min. PWM

%

3.5.30.4 Motor max. PWM

%

3.5.30.5 Motor PWN Reg. up/down

%

3.5.30.6 Motor Reg. Sensitivity

0 = very slow, 9 = very fast

Chemical pump 4 Counters

3.5.31.1 Amount

Litre

3.5.31.2 Area

Ha

Chemical pump 5

3.5.33.1 Enabled

X

3.5.33.2 Pump number

3.5.33.3 Capacity

Litre

3.5.34.4 Auto Calibration

NaN

Litre

Chemical pump 5 Calibration Prime Pulse

3.5.35.1 Enable ext. switch for prime calibration

X

3.5.35.2 Prime pulse

3.5.35.3 New calibration

3.5.35.4 Calibration OK

OK

Chemical pump 5 Pump

3.5.36.1 Pump/motor relation

:1

3.5.36.2 Pump pulses per rotation

3.5.36.3 Min. pump speed

Rpm

3.5.36.4 Calibration pump speed

Rpm

3.5.36.5 Clean pump speed

Rpm

Chemical pump 5 Cleaning (Not activated)

3.5.37.1 Clean 1st cycle prime count

Times

3.5.37.2 Clean soap cycle prime count

Times

3.5.37.3 Clean 2nd cycle prime count

Times

Chemical pump 5 Motor

3.5.38.1 Motor mV at 1000 RPM

mVolt

3.5.38.2 Motor pump correction factor

%

3.5.38.3 Motor min. PWM

%

3.5.38.4 Motor max. PWM

%

3.5.38.5 Motor PWN Reg. up/down

%

3.5.38.6 Motor Reg. Sensitivity

0 = very slow, 9 = very fast

Chemical pump 5 Counters

3.5.39.1 Amount

Litre

3.5.39.2 Area

Ha

Chemical pump 6

3.5.41.1 Enabled

X

3.5.41.2 Pump number

3.5.41.3 Capacity

Litre

3.5.41.4 Low tank alarm at

Litre

3.5.41.5 Input volt

Volt

Chemical pump 6 Calibration Flow Factor

3.5.42.1 Enable ext. switch for flow calibration

X

3.5.42.2 Flow Factor

Pulses/litre

3.5.42.3 Clear Auto Calibration

CLEAR

3.5.42.4 Auto Calibration

NaN

Litre

Chemical pump 6 Calibration Prime Pulse

3.5.43.1 Enable ext. switch for prime calibration

X

3.5.43.2 Prime pulse

3.5.43.3 New calibration

3.5.43.4 Calibration OK

OK

Chemical pump 6 Pump

3.5.44.1 Pump/motor relation

:1

3.5.44.2 Pump pulses per rotation

3.5.44.3 Min. pump speed

Rpm

3.5.44.4 Calibration pump speed

Rpm

3.5.44.5 Clean pump speed

Rpm

Chemical pump 6 Cleaning (Not activated)

3.5.45.1 Clean 1st cycle prime count

Times

3.5.45.2 Clean soap cycle prime count

Times

3.5.45.3 Clean 2nd cycle prime count

Times

Chemical pump 6 Motor

3.5.46.1 Motor mV at 1000 RPM

mVolt

3.5.46.2 Motor pump correction factor

%

Continued on next page

# Tech Setup - Continued

## 3.5 DCI

3.5.46.3 Motor min. PWM

%

3.5.46.4 Motor max. PWM

%

3.5.46.5 Motor PWN Reg. up/down

%

3.5.46.6 Motor Reg. Sensitivity

0 = very slow, 9 = very fast

Chemical pump 6 Counters

3.5.47.1 Amount

Litre

3.5.47.2 Area

Ha

Unit Numbering

3.5.49.1 Set unit no.

X

## 3.6 Tank Level Sensor

Fuel level low  
Boom frame sensor no signal (...)

OFF
0.00 m
AUTO
OFF
OFF
OFF

3.6 Tank Level Sensor
Back

### Tank Level Sensor (Pressure)

3.6.1.1 Installed?
☒

3.6.1.2 Type
0.250 Bar

3.6.1.3 Actual value:
0.29 mA

3.6.1.4 Actual value:
0.00 mBar

3.6.1.5 Zero Point
4.00 mA

3.6.1.6 Set Zero Point
Set

3.6.1.7 Calibration Step
250 Litre

3.6.1.8 Tank capacity
6000 Litre

3.6.1.9 Infill meter Installed
☒
L/min Litre/min

3.6.1.10 Infill Flow factor
10.0 Pulses/litre Pulses/litre

3.6.1.11 Infill meter Auto calibration
RESET

3.6.1.12 Infill meter Calibration output
-0.001 Litre

3.6.1.13 Clear/Start Calibration
Start

3.6.1.14 End Calibration
End

3.6.1.15 Next Point
Next Point

3.6.1.16 Next Point
65535 Litre

3.6.1.17 Calibration Point 1
0.00 mBar

3.6.1.18 Calibration Point 2
10.00 mBar

3.6.1.19 Calibration Point 3
20.00 mBar

3.6.1.20 Calibration Point 4
30.00 mBar

3.6.1.21 Calibration Point 5
40.00 mBar

3.6.1.22 Calibration Point 6
50.00 mBar

3.6.1.23 Calibration Point 7
60.00 mBar

3.6.1.24 Calibration Point 8
70.00 mBar

3.6.1.25 Calibration Point 9
80.00 mBar

3.6.1.26 Calibration Point 10
90.00 mBar

3.6.1.27 Calibration Point 11
100.00 mBar

3.6.1.28 Calibration Point 12
110.00 mBar

3.6.1.29 Calibration Point 13
120.00 mBar

3.6.1.30 Calibration Point 14
130.00 mBar

3.6.1.31 Calibration Point 15
140.00 mBar

3.6.1.32 Calibration Point 16
150.00 mBar

3.6.1.33 Calibration Point 17
160.00 mBar

3.6.1.34 Calibration Point 18
170.00 mBar

3.6.1.35 Calibration Point 19
180.00 mBar

3.6.1.36 Calibration Point 20
190.00 mBar

3.6.1.37 Calibration Point 21
200.00 mBar

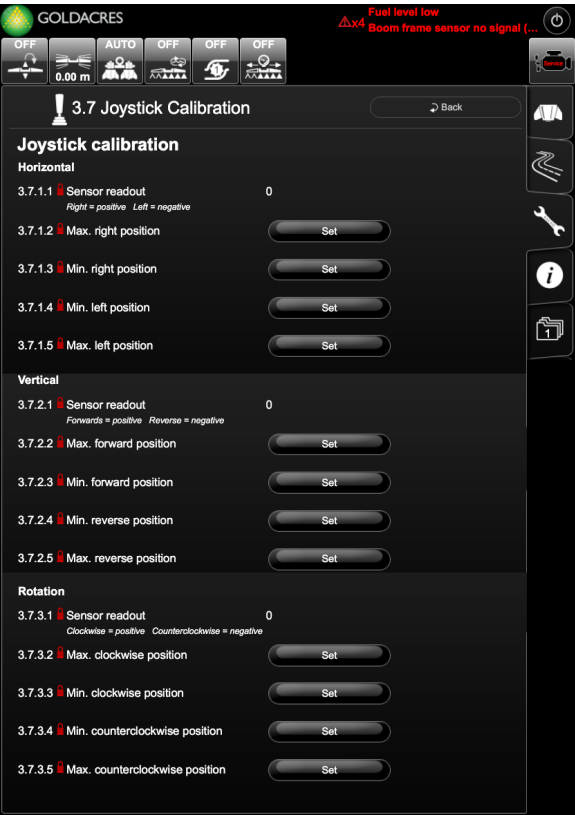
3.6.1.38 Calibration Point 22
210.00 mBar

3.6.1.39 Calibration Point 23
220.00 mBar

3.6.1.40 Calibration Point 24
230.00 mBar

# Tech Setup - Continued

## 3.7 Joystick Calibration



## 3.8 Boom Level - VG

Fuel level low  
Boom frame sensor no signal [...]

OFF 0.00 m AUTO OFF OFF OFF

### 3.8 Boom Level - VG

Back

#### Boom Levelling Type

3.8.1.1 Sensor Layout None

3.8.1.2 Headland Assist Sensor Installed ✓

3.8.1.3 Boom Tilt on Job Computer Job Computer Slave

#### Boom Height Sensor calibration

Boom low calibration

	Current mA	Set Point	Boom height
3.8.2.1 Center Frame (CF)	0.00 mA	4.00 mA	<input type="text" value="0.35"/> m
3.8.2.2 Outer LHS (U1)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.3 Inner LHS (U2)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.4 Center 1 (U3)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.5 Center 2 (UB)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.6 Inner RHS (U5)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.7 Outer RHS (U6)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m

Boom high calibration

	Current mA	Set Point	Boom height
3.8.2.8 Center Frame (CF)	0.00 mA	20.00 mA	<input type="text" value="3.40"/> m
3.8.2.9 Outer LHS (U1)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.10 Inner LHS (U2)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.11 Center 1 (U3)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.12 Center 2 (UB)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.13 Inner RHS (U5)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m
3.8.2.14 Outer RHS (U6)	<input type="text" value=""/> mA	<input type="text" value=""/> mA	<input type="text" value=""/> m

#### Boom Level - Emergency Control Figures

3.8.3.1 Threshold Height for Fast Boom Lift  m

3.8.3.2 Max. time up at time  sec

3.8.3.3 Off time after max. up at time  sec

3.8.3.4 Threshold Height for Fast Boom Lower  m

3.8.3.5 Delay Time before Fast Boom Lower  sec.

3.8.3.6 Boom Height Scan Time before Fast Boom Lower  sec.

#### Boom Level - Lift Control Setup

3.8.4.1 Dead Band Factor  m

3.8.4.2 Fast Regulating Factor  m

3.8.4.3 Step Regulating ON Time  sec.

3.8.4.4 Step Regulating OFF Time  sec.

3.8.4.5 Auto Regulating timeout  sec

#### Boom Level - Tilt Control Setup

3.8.5.1 Dead Band Factor  m

3.8.5.2 Fast Regulating Factor  m

3.8.5.3 Step Regulating ON Time  sec.

3.8.5.4 Step Regulating OFF Time  sec.

3.8.5.5 Point with maximum PWM  m

3.8.5.6 Wait time, after one side stop down when other side up (step)  sec

3.8.5.7 Wait time, after one side stop down when other side up (PWM)  sec

3.8.5.8 Regulation Delay Boom Left - Boom Right  sec.

### Boom Regulation Presets

3.8.6.1 Soil preset Store

3.8.6.2 Grass preset Store

3.8.6.3 Short crop preset Store

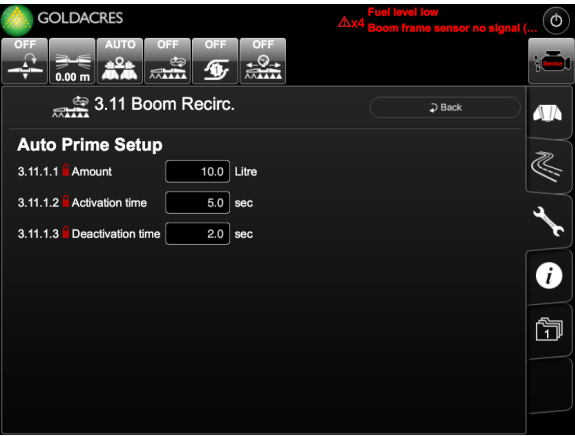
3.8.6.4 Medium crop preset Store

3.8.6.5 Tall crop preset Store

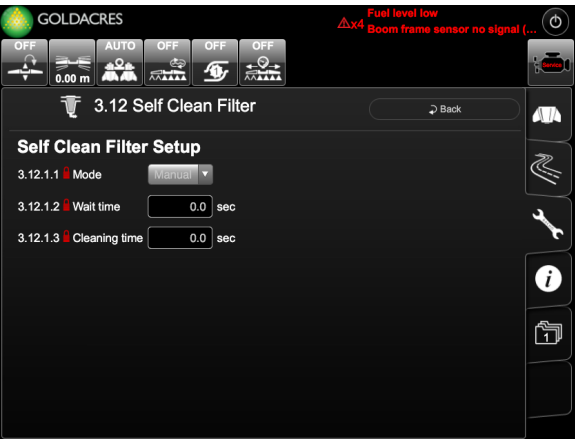
3.8.6.6 Other preset Store

## Tech Setup - Continued

### 3.11 Boom Recirc



### 3.12 Self Clean Filter





### 3.13 GPRS Modem

**GOLDACRES**

OFF AUTO OFF OFF OFF

0.00 m

⚠x4 Fuel level low  
Boom frame sensor no signal (...)

3.13 GPRS Modem

Back

**GPRS Modem**

3.13.1.1 Manufacturer

3.13.1.2 Model

3.13.1.3 Serial #

**Provider Settings**

3.13.2.1 APN

3.13.2.2 Username

3.13.2.3 Password

**SIM-card**

3.13.3.1 IMSI

**Modem Status**

3.13.4.1 Signal Quality

3.13.4.2 Network Registration Status: Not registered

3.13.4.3 GPRS Registration Status:

### 3.14 Job Computer Codes

**GOLDACRES**

OFF AUTO OFF OFF OFF

0.00 m

⚠x4 Fuel level low  
Boom frame sensor no signal (...)

3.14 Job computer Codes

Back

**Send Job computer Codes**

3.14.1.1 Chassis (Master)

3.14.1.2 Spray Boom (Slave)

3.14.1.3 DCI 1

3.14.1.4 DCI 2

3.14.1.5 DCI 3

3.14.1.6 DCI 4

3.14.1.7 DCI 5

3.14.1.8 DCI 6

3.14.1.9 Boom Levelling

8:22

### 3.15 Options

**GOLDACRES**

OFF AUTO OFF OFF OFF

0.00 m

⚠x4 Fuel level low  
Boom frame sensor no signal (...)

3.15 Options

Back

**Options**

3.15.1.1 Pump suction control valve ☒

3.15.1.2 Boom recirculation ☒

3.15.1.3 Bifold boom ☒

3.15.1.4 Self cleaning filter ☒

3.15.1.5 Extended job database ☒

3.15.1.6 Enable GPRS Modem ☒

## Tech Setup - Continued

### 3.16 X Production Start Up

Fuel level low  
Boom frame sensor no signal (...)

OFF OFF AUTO OFF OFF OFF  
0.00 m

#### 3.16 X Production Start Up

Back

#### Sprayer

3.16.1.1 Sprayer chassis type Mounded  
3.16.1.2 Tank capacity 6000 Litre

#### Options

3.16.2.1 Boom recirculation X  
3.16.2.2 Bifold boom X  
3.16.2.3 Self cleaning filter X  
3.16.2.4 Extended job database ✓  
3.16.2.5 Enable GPRS Modem ✓

#### Time and Date

Hour 8 Minutes 23 AM  
Day 23 Month 5 Year 2014 Set

#### Wheel

3.16.4.1 Wheel type:

#### Line Selection

3.16.5.1 Line 1 Yellow 02 ✓  
3.16.5.2 Line 2 Green 015 ✓  
3.16.5.3 Line 3 Lilac 025 X  
3.16.5.4 Line 4 Light Green 15 X

#### Section Setup

3.16.6.1 Number of spray sections 7  
3.16.6.2 Total active width 36.00 m

3.16.6.3 Section 1	<span>6.00</span> m
3.16.6.4 Section 2	<span>6.00</span> m
3.16.6.5 Section 3	<span>4.00</span> m
3.16.6.6 Section 4	<span>4.00</span> m
3.16.6.7 Section 5	<span>4.00</span> m
3.16.6.8 Section 6	<span>6.00</span> m
3.16.6.9 Section 7	<span>6.00</span> m
3.16.6.10 Section 8	<span>0.00</span> m
3.16.6.11 Section 9	<span>0.00</span> m
3.16.6.12 Section 10	<span>0.00</span> m

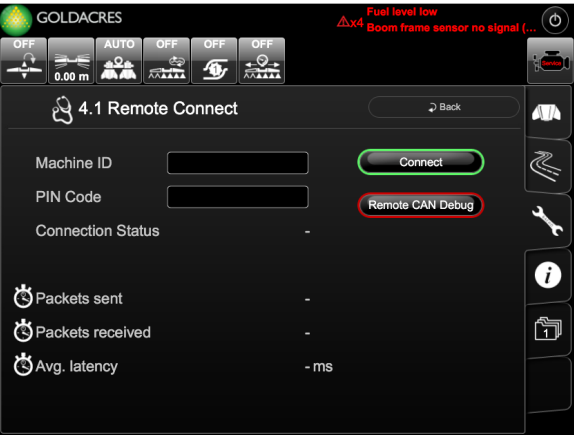
## 4 Service



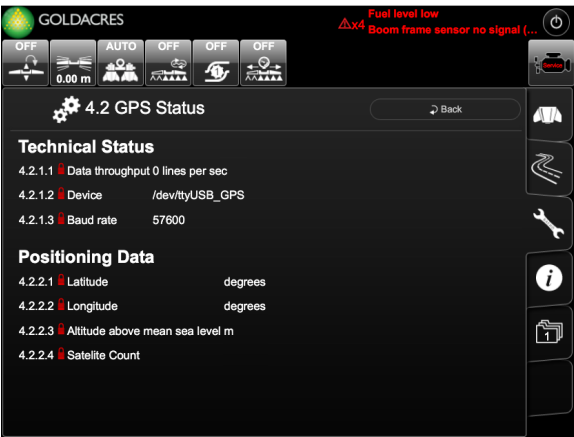
Key	Functions and Indications
1	Remote Connect
2	Technical Status Positioning Data
3	Alarm Log Ignored Alarms Ignored Warnings
4	Reboot in Recovery Mode Default Boot Operating System Upgrade of PC-Software Cabled Network Setup PC-Board Monitoring Initialize Job Database
5	Firmware File Upgrade Status
6	Backup Restore
7	Backup PC Setting Restore PC Settings
8	X CAN Debugger
9	Sends to 2.7 Test & Diagnostics
10	Send VarID on CAN Set VarID in Shared Memory Monitor VarID Monitor Outgoing Packets

Service - Continued

4.1 Remote Connect



4.2 GPS Status



## 4.3 Alarms Deactivation

**GOLDACRES** △x4 Fuel level low  
Boom frame sensor no signal (...) OFF 0.00 m AUTO OFF OFF OFF

**4.3 Alarms Deactivation** Back

**Alarm Log**  
4.3.1.1 Recent alarms

**Ignored Alarms**

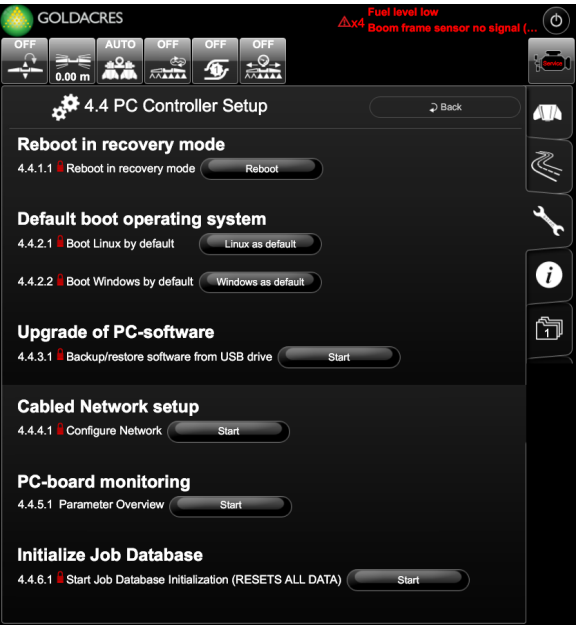
4.3.2.1	Hydraulic oil level low	X
4.3.2.2	Low air	X
4.3.2.3	High speed in 4WD mode	X
4.3.2.4	Rear angle sensor no signal	X
4.3.2.5	Front angle sensor no signal	X
4.3.2.6	Auto Prime - No Flow	X
4.3.2.7	Fuel level low	X
4.3.2.8	Pump 1 RPM out of range	X
4.3.2.9	Pump 2 RPM out of range	X
4.3.2.10	Boom frame sensor no signal (headland assist)	X
4.3.2.11	Boom height centre sensor no signal	X
4.3.2.12	Boom height centre sensor 2 no signal	X
4.3.2.13	Boom height left inner sensor no signal	X
4.3.2.14	Boom height left outer sensor no signal	X
4.3.2.15	Boom height right outer sensor no signal	X
4.3.2.16	Boom height right inner sensor no signal	X
4.3.2.17	Boom tilt control sensor no signal	X
4.3.2.18	Front angle sensor out of bounds	X
4.3.2.19	Rear angle sensor out of bounds	X
4.3.2.20	Front angle sensor centreline error	X
4.3.2.21	Rear angle sensor centreline error	X
4.3.2.22	Tilt angle sensor LHS no signal	X
4.3.2.23	Tilt angle sensor RHS no signal	X
4.3.2.24	System not registered	X
4.3.2.25	DCI 1: No pump pulse	X
4.3.2.26	DCI 2: No pump pulse	X
4.3.2.27	DCI 3: No pump pulse	X
4.3.2.28	DCI 4: No pump pulse	X
4.3.2.29	DCI 5: No pump pulse	X
4.3.2.30	DCI 6: No pump pulse	X
4.3.2.31	DCI 1: No pump speed signal (generator)	X
4.3.2.32	DCI 2: No pump speed signal (generator)	X
4.3.2.33	DCI 3: No pump speed signal (generator)	X
4.3.2.34	DCI 4: No pump speed signal (generator)	X
4.3.2.35	DCI 5: No pump speed signal (generator)	X
4.3.2.36	DCI 6: No pump speed signal (generator)	X
4.3.2.37	DCI 1: Pump speed too low	X
4.3.2.38	DCI 2: Pump speed too low	X
4.3.2.39	DCI 3: Pump speed too low	X
4.3.2.40	DCI 4: Pump speed too low	X
4.3.2.41	DCI 5: Pump speed too low	X
4.3.2.42	DCI 6: Pump speed too low	X
4.3.2.43	Water in the oil - Pump 1	X
4.3.2.44	Water in the oil - Pump 2	X
4.3.2.45	VAR_ID_ALARM_WHEEL	X

**Ignored Warnings**

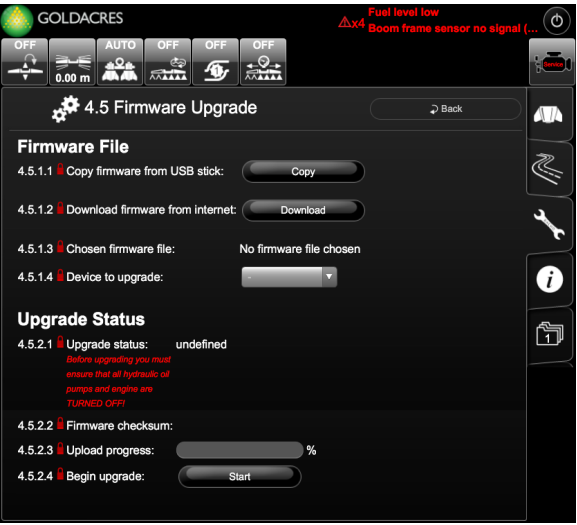
4.3.3.1	Speed too high	X
4.3.3.2	Speed too low	X
4.3.3.3	Tank full	X
4.3.3.4	Auto Prime Completed	X
4.3.3.5	Hand brake activated	X
4.3.3.6	Wheel and flow pulses missing	X
4.3.3.7	Wheel and flow pulses missing (flowmeter 2)	X
4.3.3.8	No wheel pulses	X
4.3.3.9	No flow pulses	X
4.3.3.10	No flow pulses - Flowmeter 2	X
4.3.3.11	Tank level low	X
4.3.3.12	DCI 1: Tank level low	X
4.3.3.13	DCI 2: Tank level low	X
4.3.3.14	DCI 3: Tank level low	X
4.3.3.15	DCI 4: Tank level low	X
4.3.3.16	DCI 5: Tank level low	X
4.3.3.17	DCI 6: Tank level low	X
4.3.3.18	DCI 1: Pump speed capped at max	X
4.3.3.19	DCI 2: Pump speed capped at max	X
4.3.3.20	DCI 3: Pump speed capped at max	X
4.3.3.21	DCI 4: Pump speed capped at max	X
4.3.3.22	DCI 5: Pump speed capped at max	X
4.3.3.23	DCI 6: Pump speed capped at max	X

## Service - Continued

### 4.4 PC Controller Setup



### 4.5 Firmware Upgrade



## 4.6 X Settings Backup

**GOLDACRES** ⚠x4 Fuel level low  
Boom frame sensor no signal (...) 0.00 m OFF AUTO OFF OFF OFF

**4.6 X Settings backup** Back

**Backup**

4.6.1.1 Settings to backup: All

4.6.1.2 Save to PC: Save

4.6.1.3 Copy to USB: Copy

4.6.1.4 Upload to internet: Upload

4.6.1.5 Copy all PC files to USB: Copy all

**Restore**

**Retrieve settings**

4.6.2.1 Load from PC: Load

4.6.2.2 Retrieve from USB: Copy

4.6.2.3 Download from internet: Download

**Apply Settings**

4.6.3.1 Machine: 7600-0011-1710-4708-5068

4.6.3.2 Time: 2016-03-21 12:34:46

4.6.3.3 Group: Boom height

4.6.3.4 Group to restore: All

4.6.3.5 Status: N/A Restore

## 4.7 PC Settings Backup

**GOLDACRES** ⚠x4 Fuel level low  
Boom frame sensor no signal (...) 0.00 m OFF AUTO OFF OFF OFF

**4.7 PC Settings backup** Back

**Backup PC settings**

4.7.1.1 Backup PC settings to USB stick: Backup

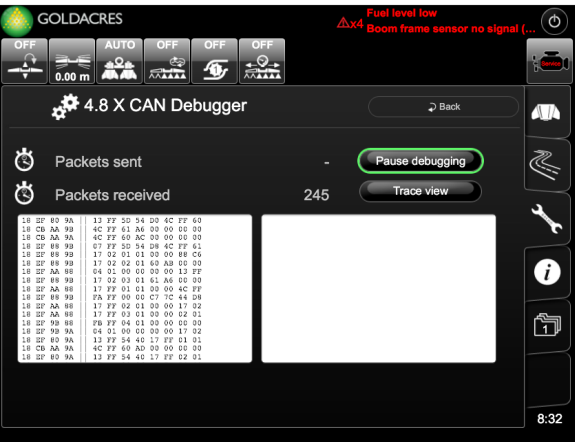
**Restore PC settings**

4.7.2.1 Restore PC settings from USB stick: Restore

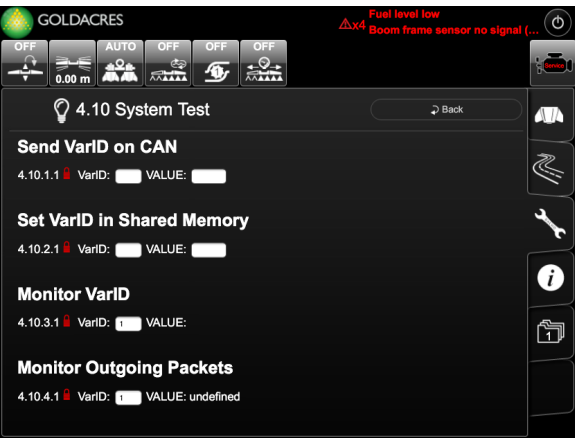
Job database, Configurations, Boom height regulation presets,  
Job computer backups and network settings.

Service - Continued

4.8 X CAN Debugger



4.10 System Test

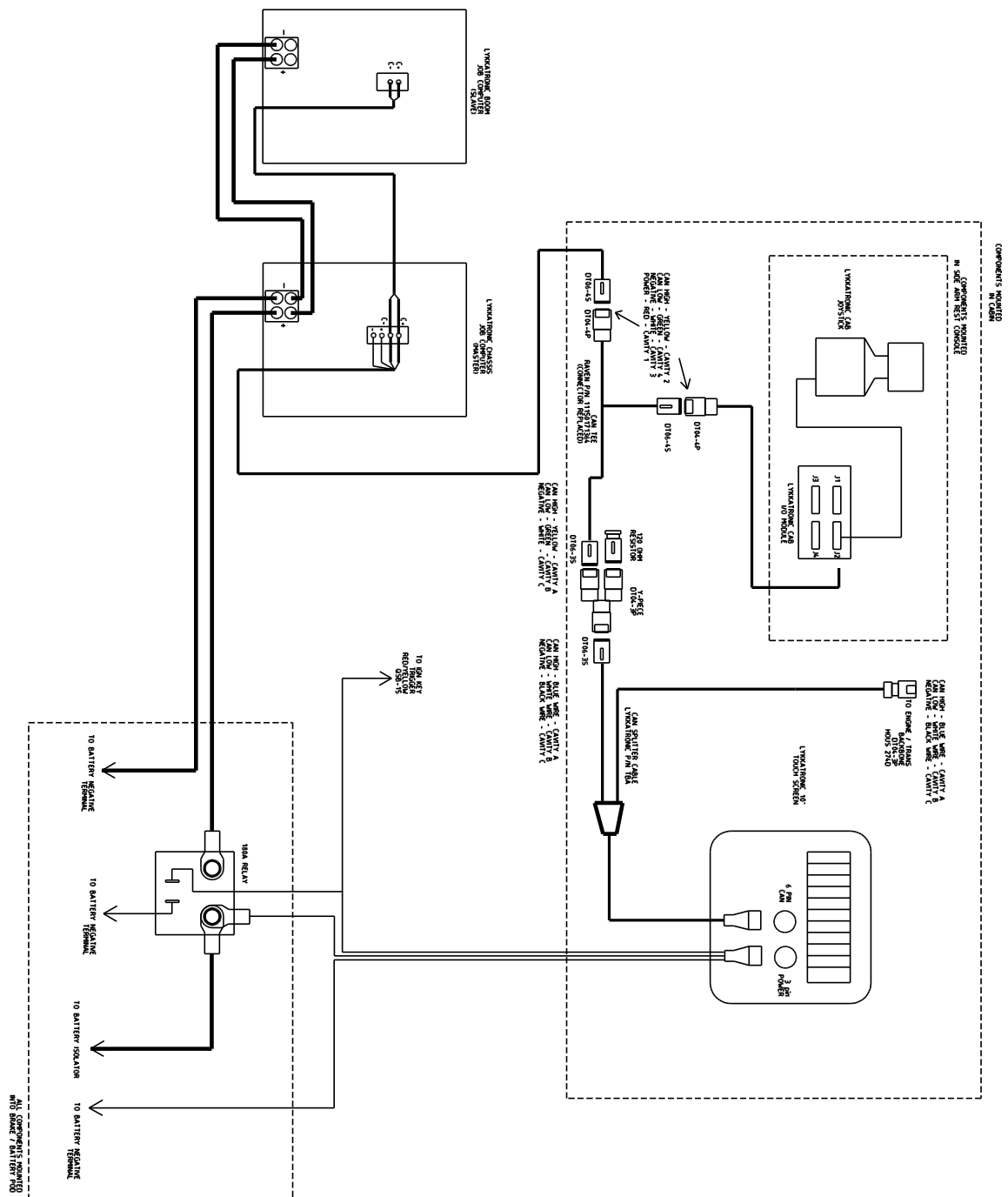




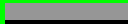






## SCHEMATICS

## Wiring

## Power & Can Layout



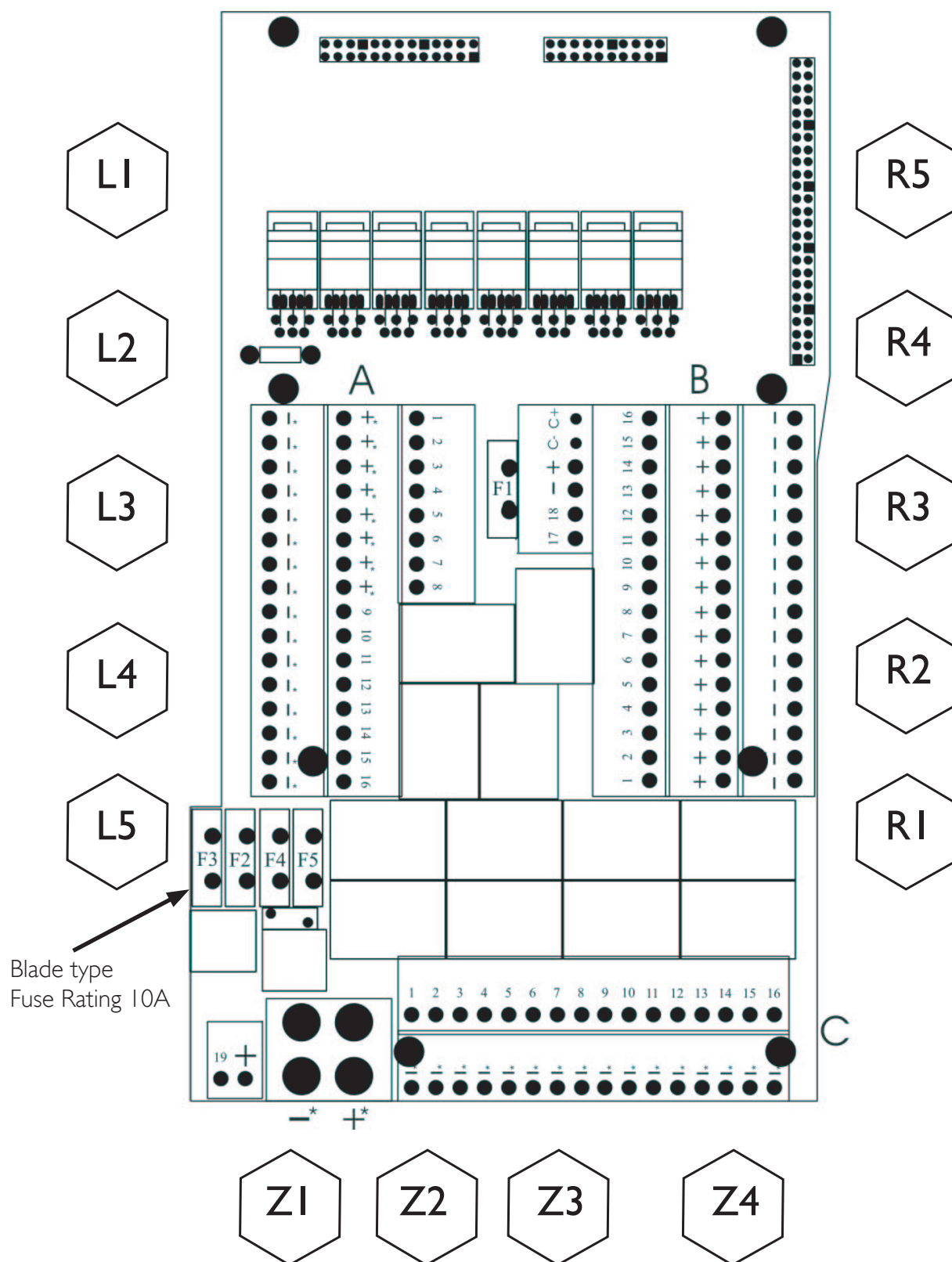
# GATMC Master computer pinouts

Project: Goldacres Self-Propelled Sprayer	Revision: 1.6 (LT Wiring)	 = Not used on this type of output / "Fri"
Date:		 = Not mounted or alternative use
Sited: Chassis - Mid side panel (Master)		 = LED loom for Spray pump + Fill pump
		 = Loom 2
		 = Loom 3
Jobcomp. type: Large Standard V2		 = Currently unused functions
Optional functionality		 = Moved/adjusted/added function








Functional description	Signal type	Terminal number	Signal terminal wire colour	Wire connections		
	Type comment			Positive Terminal wire colour	Negative Terminal wire colour	Cable gland #
Reg. Valve 1 - Up=+12V	PWM-Lowside /MH	A1	BLUE	"Free"	"Free"	L2
Reg. Valve 1 - Down=+12V	PWM-Lowside /MH	A2	BROWN			
Reg. Valve 2 - Up=+12V	PWM-Lowside /MH	A3		"Free"	"Free"	L2
Reg. Valve 2 - Down=+12V	PWM-Lowside /MH	A4				
Steering - Left	PWM-Lowside	A5				
Steering - Right	PWM-Lowside	A6				
Cruise control Off signal !!!	PWM-Lowside	A7	White (0,75mm2)			R3
	PWM-Lowside	A8				
Boom recirc. Valve - Product 1/2	Relay	A9		BROWN - A2 BROWN - A3		
Main dump valve 1 / Master 1	Relay	A10	YELLOW/GREEN		BLUE	L2
Main dump valve 2 / Master 2	Relay	A11	YELLOW/GREEN		BLUE	L2
Pump suction control valve	Relay	A12				
Auto Wash Valve	Relay	A13				
Foam Marker - Left	Relay	A14				
Foam Marker - Right	Relay	A15				
Foam Marker - Compressor	Relay	A16				
Ground Speed - I	NPN	B1	Brown			R2
4WD sensor input	NPN	B2				
Pump Rpm - 1	NPN	B3	BLACK	BROWN	BLUE	R2
Pump Rpm - 2	NPN	B4				
Filling flow meter	NPN	B5				
Pump protection sensor 1	NPN	B6				
Pump protection sensor 2	NPN	B7				
Low Air sensor	NPN	B8	BLUE (0,75mm2)			R3
Hand brake sensor	NPN	B9	RED (0,75mm2)			R3
Hydraulic Low Oil sensor	NPN	B10				
Fuel sender unit	Ohm resistance	B11	Black (0,75mm2)			R3
Track steering - Reference	4-20 mA	B12				
Track steering - Wheel	4-20 mA	B13				
Tank measurement - Pressure	4-20 mA	B14	YELLOW/GREEN	BROWN	BLUE	R4
Hydraulic pressure transducer - Spray circuit	4-20 mA	B15				
Hydraulic pressure transducer - Hydraulic circuit	4-20 mA	B16				
External pump 1 switch	NPN	B17	BROWN		BLUE - B11	R4
External Fill Pump Switch	NPN	B18	BROWN		BLUE - B12	R4
Spray pump unloader - Dump valve	Relay	C1				Z1
Spray pump 1	Relay	C2	BROWN		BLUE	Z1
Spray pump 1 Lights (Extra cable in existing connector)			BROWN		BLUE	Z1
Spray pump 2	Relay	C3				
Fill Pump/shut-off valve (3-wire)	Relay	C4	BROWN	BROWN - A4	BLUE	Z1
Fill Pump/shut-off valve Lights (Extra cable in existing connector)			YELLOW/GREEN		Together with C2	Z1
Warning beacon	Relay	C5				
Working light	Relay	C6				
Hydraulic boom rest - Out	Relay	C7	BROWN		BLUE	R1
Hydraulic boom rest - In	Relay	C8	BROWN		BLUE	R1
External warning buzzer	Relay	C9	BROWN		BLUE	Z4
Fill Pump Status Lamp (Man/Auto)	Relay	C10				
Self cleaning Filter activation	Relay	C11	YELLOW/GREEN		BLUE	Z4
	Relay	C12				
	Relay	C13				
	Relay	C14				
	Relay	C15				
	Relay	C16				
Emergency stop		EM.S				
Supply power		Power -				
Supply power		Power +				
0 volt power supply for monitor						
+12 volt power supply for monitor						
CAN Low		CAN Low				
CAN High		CAN High				

R5+R5

## GATMC Master computer pinouts



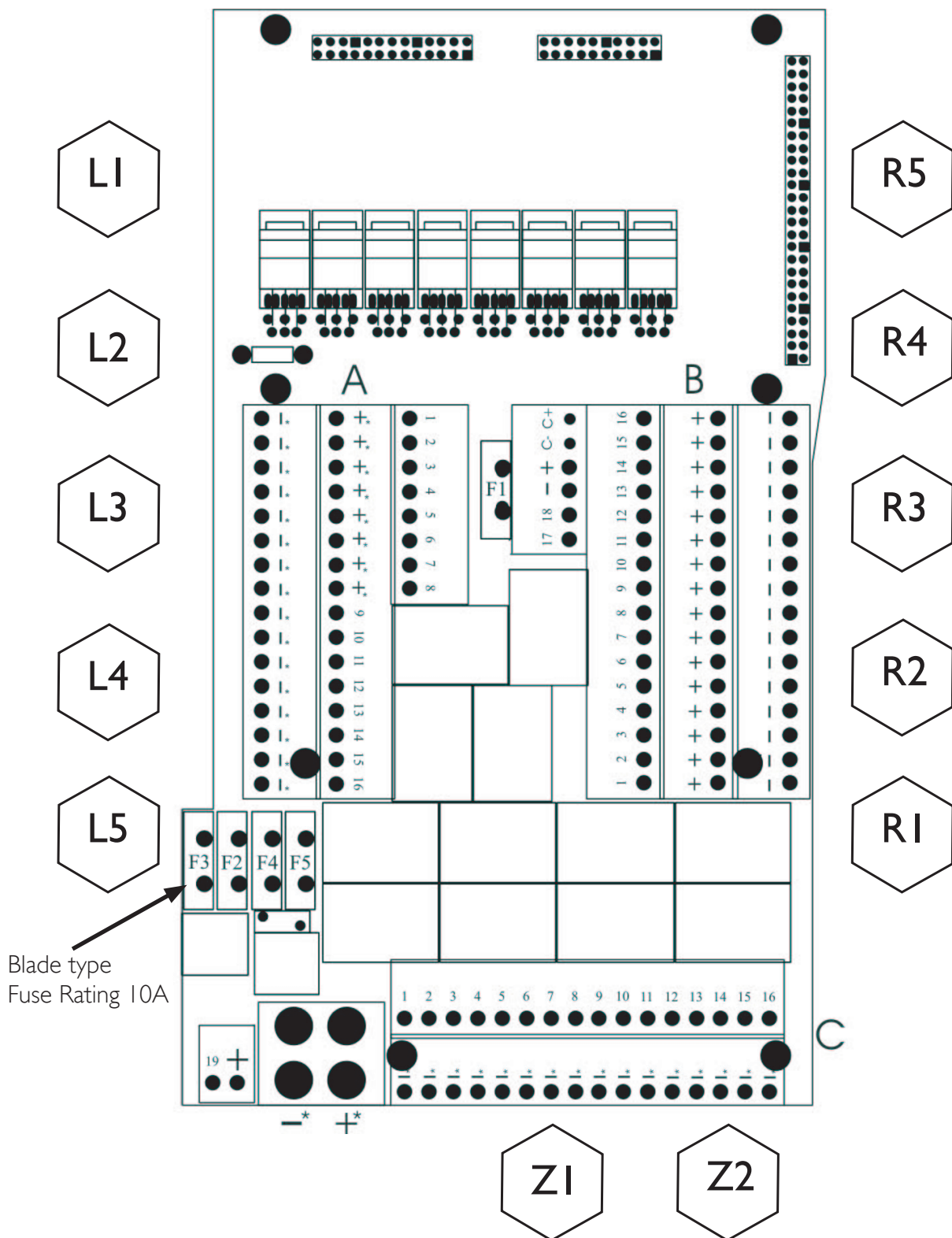
# GATMC Slave computer pinouts

Project: Goldacres Self-Propelled Sprayer	
Date:	Revision: 1.6 (LT Wiring)
Sited: Spray boom (Slave)	 = Loom 1  = Not used on this type of output / "Fri"
Jobcomp. type: Large Standard V2	 = Loom 2  = Not mounted or alternative use
Optional functionality	 = Loom 3  = Currently unused functions
	 = Moved/adjusted/added function

	Signal type	Terminal number	Signal terminal wire colour	Wire connections		
Functional description	Type comment			Positive Terminal wire colour	Negative Terminal wire colour	Cable gland #
Boom Raise	PWM-Lowside /MH	A1	BLUE	BROWN		L1
Boom Lower	PWM-Lowside /MH	A2	BLUE	BROWN		L1
Boom wing tilt - RHS - Up	PWM-Lowside /MH	A3	BLUE	BROWN		L1
Boom wing tilt - RHS - Down	PWM-Lowside /MH	A4	BLUE	BROWN		L1
Boom wing tilt - LHS - Up	PWM-Lowside /MH	A5	BLUE	BROWN		L2
Boom wing tilt - LHS - Down	PWM-Lowside /MH	A6	BLUE	BROWN		L2
	PWM-Lowside /MH	A7				
	PWM-Lowside /MH	A8				
Boom fold - Out	Relay	A9	BROWN		BLUE	L2
Boom fold - In	Relay	A10	BROWN		BLUE	L2
Bi-fold - Out	Relay	A11	BROWN		BLUE	L3
Bi-fold - In	Relay	A12	BROWN		BLUE	L3
Raven Smart boom output for Spray Master	Relay	A13	Orange/White			R3
Center lock cylinder (Fold+bi-fold)	Relay	A14	BROWN		Blue	L3
Main hydraulics unload - Master/dump	Relay	A15	BROWN		BLUE	L3
Boom recirculation valve - Product 1	Relay	A16	YELLOW/GREEN	BROWN	Blue	L4
Flow meter pulses - 1	NPN	B1	YELLOW/GREEN	BROWN	BLUE	R2
Flow meter pulses - 2	NPN	B2				
Section 1 input (Raven SmartBoom)	PNP	B3	RED			
Section 2 input (Raven SmartBoom)	PNP	B4	GREEN			
Section 3 input (Raven SmartBoom)	PNP	B5	YELLOW			
Section 4 input (Raven SmartBoom)	PNP	B6	WHITE			
Section 5 input (Raven SmartBoom)	PNP	B7	BLACK			
Section 6 input (Raven SmartBoom)	PNP	B8	BROWN			
Section 7 input (Raven SmartBoom)	PNP	B9	BLUE			
Section 8 input (Raven SmartBoom)	PNP	B10				
	4-20 mA	B11				
Incline return to level sensor - LHS	4-20 mA	B12	YELLOW/GREEN	BROWN	BLUE	R4
Incline return to level sensor - RHS	4-20 mA	B13	YELLOW/GREEN	BROWN	BLUE	R4
Boom height/Headland assist potentiometer	4-20 mA	B14	YELLOW/GREEN	BROWN	BLUE	R4
Pressure transducer - 1	4-20 mA	B15	WHITE	BROWN		R5
Pressure transducer - 2	4-20 mA	B16				
Section 9 input (Raven SmartBoom)	PNP	B17				
Section 10 input (Raven SmartBoom)	PNP	B18				
Section output 1 (split on section+Tier system)	Relay	C1	Nr.1 (1,0 mm2)		Nr. 17 (1,0 mm2)	
Section output 2 (split on section+Tier system)	Relay	C2	Nr.2 (1,0 mm2)		Nr. 18 (1,0 mm2)	
Section output 3 (split on section+Tier system)	Relay	C3	Nr.3 (1,0 mm2)			
Section output 4 (split on section+Tier system)	Relay	C4	Nr.4 (1,0 mm2)			
Section output 5 (split on section+Tier system)	Relay	C5	Nr.5 (1,0 mm2)			
Section output 6 (split on section+Tier system)	Relay	C6	Nr.6 (1,0 mm2)			
Section output 7 (split on section+Tier system)	Relay	C7	Nr.7 (1,0 mm2)			
Section output 8 (split on section+Tier system)	Relay	C8	Nr.8 (1,0 mm2)			
Section output 9 (split on section+Tier system)	Relay	C9	Nr.9 (1,0 mm2)			
Section output 10 (split on section+Tier system)	Relay	C10	Nr.10 (1,0 mm2)			
Section output 11 or "Smart box" line output 3	Relay	C11				
Section output 12 or "Smart box" line output 4	Relay	C12				
Section output 13 or "Smart box" line output 1	Relay	C13	Nr.11 (1,0 mm2)			
Section output 14 or "Smart box" line output 2	Relay	C14	Nr.12 (1,0 mm2)			
Fence line jet 1 - LHS	Relay	C15	BROWN		BLUE	
Fence line jet 2 - RHS	Relay	C16	YELLOW/GREEN		(together with C15)	R1
Emergency stop		EMS / B19		Nr. 19 / Nr. 20		
Supply power		Power -			BLACK	L5
Supply power		Power +			RED	L5
0 volt power supply for monitor						
+12 volt power supply for monitor						
CAN Low		CAN Low				R5
CAN High		CAN High				R5

NOTE: Approx cable lengths in paranthesis are from plug to job computer glands  
 C13/C14 can be alternated between use of "Smart Box" (i.e. 10/12 sections with dual lines) or standard Lykketronic setup with additional section prints enabling quadruple lines on sections down to the nozzle (Two codes setup)  
 C-Row relays not connected to Earth (to comply with Raven Smart Boom)  
 \* Not currently connected (to be discussed on visit)

## GATMC Slave computer pinouts



# GATMC Joystick pinouts

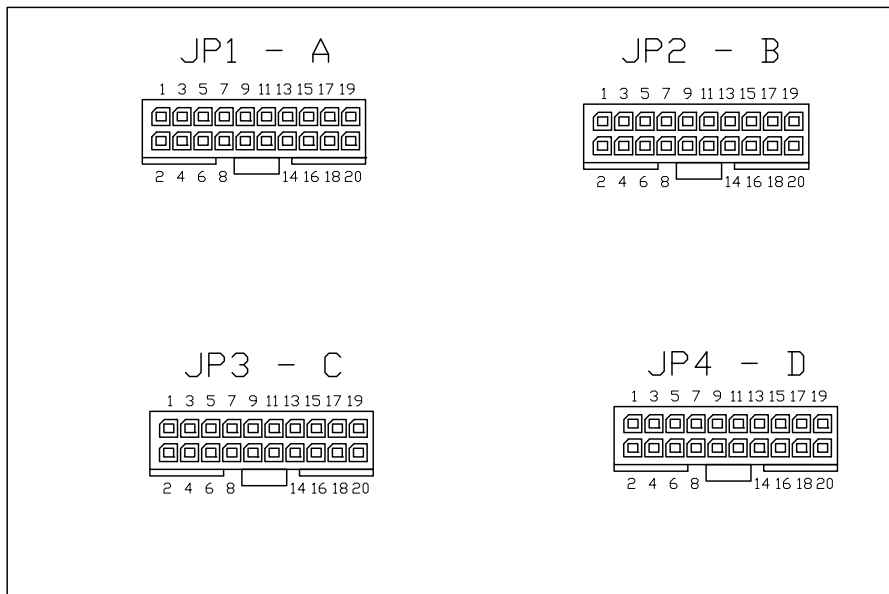
Project: Goldacres Self-Propelled Sprayer		
Date:	Revision: 1.3	
Sited: Joystick Pod		
Jobcomp. typeJob Micro V 1.1		
Optional functionality		
	Comment	Refer
	Common 0V earth	
	Moved/adjusted/added function	

Functional description	Comment	Terminal number
Earth		EF/A/1
Field/Spray mode selection		EF/A/2
		EF/A/3
Joint incline - Down		EF/A/4
Allocated on joystick pin-row		EF/A/5
Allocated on joystick pin-row		EF/A/6
		EF/A/7
		EF/A/8
Joint incline - Up		EF/A/9
		EF/A/10
		EF/A/11
Steering - Locked		EF/A/12
Steering - Auto		EF/A/13
Fence line jet - LHS		EF/A/14
Fence line jet - RHS		EF/A/15
		EF/A/16
		EF/A/17
+12 vdc		EF/A/18
Earth		EF/A/19
+12 vdc		EF/A/20
Job Micro -		EF/B/1
Job Micro +		EF/B/2
Job Micro CAN Low		EF/B/3
Job Micro CAN High		EF/B/4
		EF/B/5
		EF/B/6
Joystick - X-Axis		EF/B/7
Joystick - Y-Axis		EF/B/8
Joystick Potensiometer Vcc - SV		EF/B/9
Joystick - Z-Axis		EF/B/10
Earth		EF/B/11
+12 vdc		EF/B/12
		EF/B/13
		EF/B/14
		EF/B/15
Top Button Left (Master On/Off - Rest In)		EF/B/16
		EF/B/17
Top Button Right (Headland Assist/Rest out)		EF/B/18
Earth		EF/B/19
+12 vdc		EF/B/20
Earth		EF/C/1
(Section 1 Input -Ext. ASC controller)	NPN (PNP)	EF/C/2
(Section 2 Input -Ext. ASC controller)	NPN (PNP)	EF/C/3
(Section 3 Input -Ext. ASC controller)	NPN (PNP)	EF/C/4
(Section 4 Input -Ext. ASC controller)	NPN (PNP)	EF/C/5
(Section 5 Input -Ext. ASC controller)	NPN (PNP)	EF/C/6
(Section 6 Input -Ext. ASC controller)	NPN (PNP)	EF/C/7
(Section 7 Input -Ext. ASC controller)	NPN (PNP)	EF/C/8
(Section 8 Input -Ext. ASC controller)	NPN (PNP)	EF/C/9
(Section 9 Input -Ext. ASC controller)	NPN (PNP)	EF/C/10
(Section 10 Input -Ext. ASC controller)	NPN (PNP)	EF/C/11
	NPN (PNP)	EF/C/12
	NPN (PNP)	EF/C/13
	NPN (PNP)	EF/C/14
Gear sensor - Forward	NPN (PNP)	EF/C/15
Gear sensor - Backward	NPN (PNP)	EF/C/16
Park brake sensor	NPN (PNP)	EF/C/17
+12 vdc		EF/C/18
Earth		EF/C/19
+12 vdc		EF/C/20
Earth		EF/D/1
Light - Field/Spray mode		EF/D/2
Output signal - Auto steer (with fixed 2 sec signal)		EF/D/3
Output signal - Cruise control		EF/D/4
		EF/D/5
		EF/D/6
		EF/D/7
		EF/D/8
		EF/D/9
		EF/D/10
		EF/D/11
		EF/D/12
		EF/D/13
		EF/D/14
		EF/D/15
		EF/D/16
		EF/D/17
+12 vdc		EF/D/18
Earth		EF/D/19
+12 vdc		EF/D/20

## GATMC Job Micro Controller Pinout

function	color	pin	CIRC
SWITCH COM	BLACK	19	355
DUAL TILT UP	PINK	4	351
DUAL TILT DOWN	WHITE	9	352
FENCE LINE L	Purple	14	29
FENCE LINE R	Red/BLUE	15	40
MODE SWITCH COM	BLACK	1	357
MODE SWITCH	BROWN	2	356

function	color	pin	CIRC
top button R	ORANGE	15	J1
Top button L	VIOLET	18	J2
Y-axis	YELLOW	7	J3
X-axis	BLUE	8	J4
Vcc 5V	RED	9	J5
Z-axis	GREEN	10	J6
switch common	WHITE	19	J7
Ground	BLACK	19	4
CAN HI	YELLOW	4	344
CAN LOW	GREEN	3	345
12 V	RED	2	161
0 V	WHITE	1	4

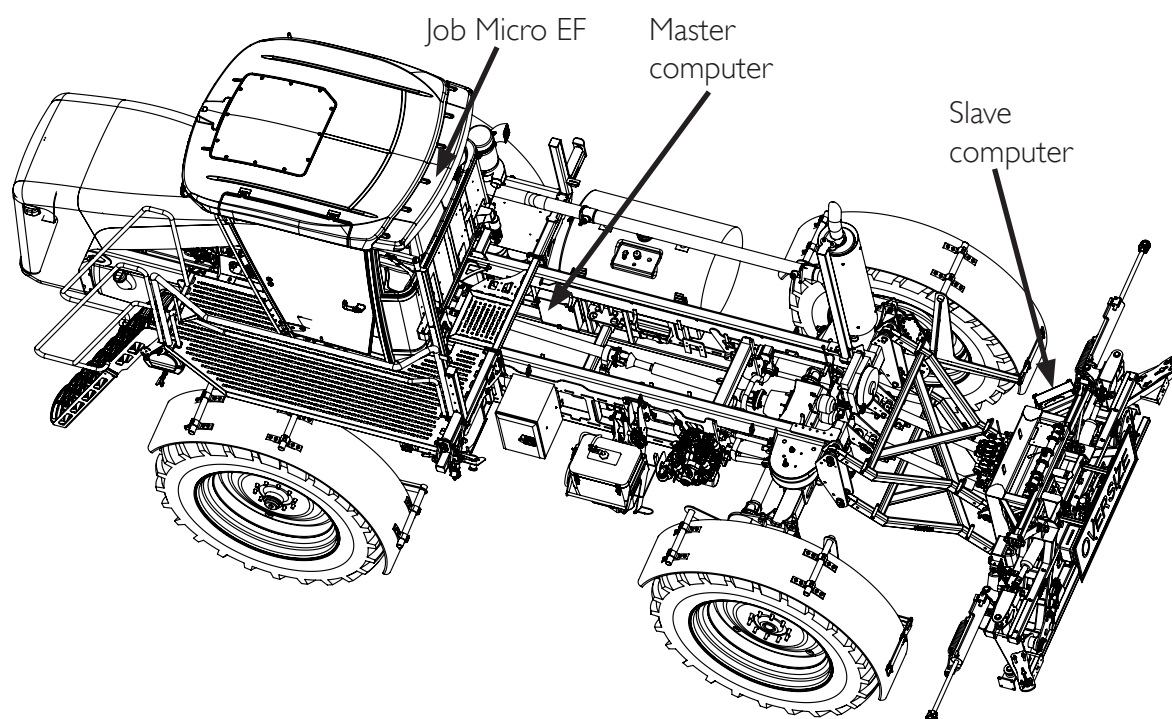


function	color	pin	CIRC
ASC-1	BROWN	2	ASC-1
ASC-2	ORANGE	3	ASC-2
ASC-3	PINK	4	ASC-3
ASC-4	GREEN	5	ASC-4
ASC-5	BLUE	6	ASC-5
ASC-6	Purple	7	ASC-6
ASC-7	GREY	8	ASC-7
ASC-8	WHITE	9	ASC-8
ASC-9	BROWN	10	ASC-9
ASC-10	ORANGE	11	ASC-10

ASC = Auto section control

function	color	pin	CIRC
RELAY AUTO STEER TRIGGER	orange	3	346
JOYSTICK MODE LIGHT	brown	2	347
CRUISE RESUME TRIGGER	pink	4	349
+12V FOR JOYSTICK MODE	red	18	348
+12V FOR RELAYS	red	20	350

## Job Computer Locations





## Chapter 9

# TROUBLESHOOTING

## GATMC Console

Problem	Common Causes	Common Solution
Console screen glare	Glare from the sun or lights	Window tint
		Move screen position
		Anti-glare screen protector
		Change screen contrast
Main spray screen won't refresh		Switch menu to road screen then back again
Job computers will not connect	Incorrect starting sequence	Wait another minute or cycle ignition key
		Check Master, Slave & Job Micro EF computers are online - 2.7
System locks up (Freezes)	Power spike	Power cycle system
Joystick not working	Cab IO module faulty	Replace IO module
		Calibrate the joystick (Contact Dealer)
Boom will not lower to required height	Height sensor stuck	Check & clean height sensor
		Check minimum boom height setting 1.4.4.1 & 2.3.2.1
		Make sure the soil type in the Boom Level screen is "Soil 1/6"
Touch screen selects a different part of the screen		Recalibrate to suit the operator 1.2.4.1
Console screen will not detect touch		Use a USB computer mouse
Screen blacks out during use	Voltage is low from battery	Check power supply is greater than 10 Volts
		Check screen power connector

## Spray Operation

Problem	Common Causes	Common Solution
Pressure and flow rate are too low	Pump	Check suction line for air leaks.
		Suction or pressure filter may be blocked.
		Check pump speed. 400 - 540 RPM
		Check valves in pump.
		Turn the pressure station ball valve to off, if the pressure increases on the pump gauge there is a problem with the control valve.
		Measure the flow per minute coming out of one nozzle and check the nozzle chart for the corresponding flow.
		Check the regulator valve is rotating the full 90 degrees when the boom valves are switched off.
		Check tank sump and suction line blockages.
Pressure and flow rate are too high	Excessive bypass on pressure manifold	Verify console calibration settings.
	Supply to pump is restricted	Check the pressure relief valve setting on pressure manifold.
	Bypass line is restricted or blocked.	Verify console calibration settings.
		Check for restriction in bypass line.
The pressure on my gauge is higher than the nozzle flow indicates		Check pump speed is not too fast.
	Blown fuse in the Slave computer	Find and replace 10A fuse
	Blocked filters of nozzles	Check and clean all pressure and nozzle filters
The flow rate is correct but my pressure is too low or high.	Flow loss due to resistance in lines, valves and filters.	Re-calibrate console to allow for pressure loss
	Nozzles	Check nozzle chart for correct nozzle size.
Pressure fluctuation	Air leak on suction side of pump	Check suction pump for air leaks.
	Incorrect pump speed	Adjust pump speed so it is between 400 -540rpm
	Faulty pump valves	Replace pump valves

Problem	Common Causes	Common Solution
Application rate is inaccurate, unstable or zero	Slow to get on rate	Check regulation vale settings
	Spray pump RPM to low	Check pump speed is 400-540 RPM
	Inconsistent spraying volume	Replace flow meter
	Faulty control valve. Check by using manual inc/dec flow control	Replace control valve
	Self cleaning filter is turned on	Turn OFF
	Boom Recirc is on	Turn OFF
	3TS switching erratically	Check flow meter; if not working switch to pressure controlled regulation
Volume display is inaccurate, unstable, zero or not changing	Meter calibration is incorrect	Reset meter calibration
	Flow meter cable pins are corroded	Replace flow meter plugs & pins
	Flow meter is pointing the wrong way	Disconnect flow meter and reinstall in the correct orientation
	Faulty cable	Manually test the cable
Flow meter appears not to be working	Flow meter is seized or blocked	Remove and clean any foreign materials so the turbine spins freely
	Indicator LED not flashing with water flow	Replace flow meter
Application rate or pressure will not alter	Faulty control valve	Test valve manually and replace if required
Control valve has failed	Replace control valve	Temporary solutions:  Remove the motor from the 3 way ball valve and manually adjust the flow by turning the shaft with a spanner.

If the flow meter fails to give accurate readings, the following procedures should occur:

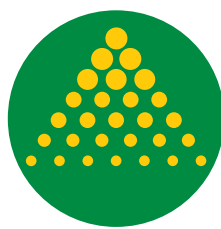
- Switch the regulation to "Pressure" based regulation. If Pressure is selected, must ensure that the correct nozzles are selected.
- Adjust the spraying pressure by putting the flow control switch into manual and using the increase decrease switch to adjust to the desired pressure as shown on the pressure gauge on the sprayer
- Drive the sprayer at a constant speed in order to apply the required application volume as determined by the nozzle selection chart
- The sprayer should then be operated to empty the tank. Once the sprayer is empty of chemical, partially fill the tank with fresh water so that test can be performed in order to correct the problem. Repair or replace the flow meter as soon as possible.

## Spray Nozzles

Problem	Common Causes	Common Solution
Streaky pattern coming from nozzle	Nozzle tip blockages.	Check for blockages by removing the nozzle, rinsing thoroughly with water and cleaning with compressed air.  DO NOT clean by blowing into nozzle with mouth.
	Nozzle worn or damaged.	Visually inspect nozzle for damage or wear; conduct a jug test if necessary.
No spray coming from nozzle	Nozzle tip blockages.	Check for blockages by removing the nozzle, rinsing thoroughly with water and cleaning with compressed air.
	Check valve blockages.	Remove the check valve and clean as required.
Boom valves fail to open.	Insufficient power.	Check all wiring and connections to ensure there is 12 volts at the valves.
	System pressure greater than 150 PSI.	Reduce the system pressure
	Blown fuse in the Slave computer	Find and replace 10A fuse
Boom valves fail to close.	Insufficient power.	Check all wiring and connections to ensure there is 12 volts at the valves.
	Foreign objects blocking plunger from seating.	Clean the inside of the boom valves.
No water at boom.	No Tier valve entered or is at 0	

## Spare Parts - GATMC

Goldacres part number	Lykketronic part number	Part description
GA5069420	013-9-0195	Cab I/O Module EF Isobus v2
GA5069570	015-2-0155	CAN split cable kit (your CAN breakout loom)
GA5069510	030-9-0700	Mounting bracket 70mm (for job computers)
GA5069515	040-6-9994	Job computer box top lid (suitable for 015-2-0010/...-0020)
GA5069576	050-1-0054	Connector plug in terminal block 4 pin 5mm pitch green suit Lykketronic
GA5069577	050-1-0056	Connector plug in terminal block 6 pin 5mm pitch green suit Lykketronic
GA5069578	050-1-0060	Connector plug in terminal block 10 pin 5mm pitch green suit Lykketronic
GA5069415	051-1-1023	Analogue joystick incl. loom to suit Lykketronic
GA5069535	065-2-7105	Eeprom Blank A29040B
GA5069540	100-1-1480	Lykketronic chip board GA - UPU-22 CAN D3
GA5069550	100-1-0734	GA - DCI Main pcb - Sparepart
GA5069470	100-3-0082	GA - Motherboard I/O - Chassis
GA5069475	100-3-0083	GA - Motherboard I/O - Spray
GA5069465	110-1-5019	Pump RPM sensor
GA5069455	110-2-0202	Elobau potentiometer (60 degree) - For tilt sensor
GA5069457	110-2-0200	Elobau potentiometer (120 degree) - For para lift height sensor
GA5069445	110-6-0222	Pressure sensor - 0-2mWC - 4-20mA - 5m FEP cable (Tank)
GA5069435	110-6-0223	Pressure sensor - 0-10Bar - 4-20mA - M12 plug (Spray)
GA5069560	110-7-0005	GA - DCI pcb - Raven power supply +5V
GA5069440	116-7-0133	PVC cable - M12 plug - 2m (for pressure transducer)
GA5069430	116-7-0682	Cab-Can - 2*Can - 4pConX (3m)/flywires (5,5m)
GA5069425	116-7-0690	PC Power cable - std- 4m
GA5069565	116-7-0009	Trimble Interface cable - 4m
GA5023920		Connector, 20 pin micro, suit cab I/O module, Lykketronic
GA5023925		Pin, Female, suit 20 pin micro cab I/O connector, Lykketronic
GA4524740		Pin removal tool, suit AMP 20 pin micro GA5023920
GA5060038		Side console loom to suit Lykketronic SP MY11
GA5069570		Loom Controller CAN breakout t/s Lykketronic



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