Prairie Pro Series 2

OPERATOR'S MANUAL MY22

GOLDACRES

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Download an electronic version (PDF) of this Manual & the Parts Manual from Goldacres website:

www.goldacres.com.au

Under: Parts & Service > Owner-Operator Manuals:

Model	Year	Revision	Part Number
Prairie Pro Series 2	2022	00	GA8701602

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Model	Year	Revision	Part Number
Prairie Pro Series 2	2022	00	GA8701754

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Welcome

Congratulations on your Selection of the Goldacres Prairie Pro Series 2 Trailed Sprayer

Goldacres has been designing, building, supplying and servicing Australian farmers with high quality, innovative & technologically advanced spraying solutions for over 40 years.

Our advanced equipment is specifically designed & developed in Australia for Australian conditions.

Goldacres produce Australia's finest range of spraying equipment and we keenly value the unique relationships we develop and enjoy with the owners of our equipment.

We welcome you as a Goldacres Owner and look forward to assisting you to make your spraying applications as easy and efficient as possible.

This Operators Manual outlines all you need to know about the operation of your sprayer, along with operating guidance and the overall maintenance & care of your machine.

Our Customer Care booklet, called the Delivery & Warranty Registration Manual (supplied separately) explains in simple, easy to understand terms the Pre-Delivery, Post-Delivery, Warranty, Servicing and Maintenance of your Sprayer.

Please read, understand and use these comprehensive manuals to gain complete understanding of your spayer for its reliable, safe, accurate & efficient operation.

Do not hesitate to contact your Goldacres Dealer or Goldacres for further information as explained in these manuals.

Roger Richards
General Manager

About this Manual

This manual provides instructions for some items requiring assembly on delivery, setting up instructions, calibration procedures, pre-operation requirements, operating instructions and maintenance requirements to achieve the best performance of this Prairie Pro Series 2 Trailed Sprayer.

Some options explained in this manual may not be installed on your sprayer. Other options fitted may require another operator manual for instructions.

Please ensure this manual and other relevant manual are passed onto the new owner if the sprayer is sold.

How to Use/Read this Manual

This manual includes a Contents page and 10 Chapters - with each Chapter beginning with a list of Headings & Subheadings.

Each page contains written instructions with pictures, illustrations, decal & symbol instructions, above & below providing visual support and information to each instruction.

Numerical values & settings shown in the manual are instuctional examples only and may not be representative for your machine or local situation.

Decal/Symbol Instructions

Danger, Warning, Caution & Note symbols & decals are used throughout this manual and on your Prairie Pro Series 2 Trailed Sprayer instructing you of risks, procedures & operator safely.

It is important to familiarise yourself with these & understand their meaning to be able to quickly identify risks, procedures, operator safety & safety of others, as outlined below:

⚠ DANGER
• Conveys highest risk of injury or death to convey that action must be taken to protect personal health.
• Serious injury or death may occur if you don't follow instructions!

- **Danger Symbol** - used for areas where the highest personal risk of injury or death is present.

  Always read the information on these decals and ensure you are taking the precautions necessary to prevent risk of injury or death.

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

⚠ WARNING
• Conveys risk of injury highlighting the need for action to be taken to protect personal health.
• Serious injury may occur if you don't follow instructions!

- **Warning Symbol -** used in areas where there is potential for risk or injury highlighting the need for action to be taken to protect personal health.

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

⚠ CAUTION
• Conveys the potential for personal injury and/or damage to the machine itself.
• Injury and/or damage your machine, if you don't follow instructions!

- **Caution Symbol -** used where there is potential for personal injury and/or damage to the machine itself.

  Injury and/or damage your machine may occur if you don't follow instructions

NOTE
• Conveys useful operating information and procedures.
• It is not hazard related.

- **Note Symbol -** is used to inform the operator of installation, operation or maintenance information & procedures that are important for the best ways of operating this sprayer.

  The Note symbol is not hazard related.

Operator Responsibilities

All operators of the Prairie Pro Series 2 Trailed Sprayer should be adequately trained in the safe operation of this equipment.

It is important that all operators have read and fully understand the operator's manual prior to using this equipment.

All operators of the Prairie Pro must **read all Operator Manuals** for this machine including but not limited to:

- **This** Prairie Pro Series 2 Operators Manual
- **Delivery & Warranty Registration** Manual
- Prairie Pro Series 2 Parts Manual (available online only).
- **Raven Rate Control Module Operation Manual**
- **Other** Manuals as required,

and fully understand:

- All risks & safety concerns
- Installation & assembly
- Pre-operation checks
- Calibration of the sprayer
- Operating the sprayer
- Sprayer lubrication & maintenance
- Use of protective clothing
- Risks of using chemicals & spraying.

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

1 Foreword - **Important Information**

The serial number plate is located on the left hand side of the front hitch.

Identification & Parts Ordering

When ordering parts or requesting service information for your sprayer it is important to quote the serial number of your machine in order to receive accurate information.

The serial number plate on your machine is located on the chassis at the front left hand side by the cabin access ladder.

When ordering parts from your Goldacres dealer, please quote:

- Machine serial number
- Part number required
- Part description
- Quantity required.

The Goldacres Parts Manual (available online) includes the relevant information you need when ordering parts from your dealer.

When returning parts to a Goldacres dealer for service or repair, all parts MUST be cleaned thoroughly before sending them.

Dealers will not expose their service technicians to the many potentially hazardous pesticides & substances that may have been used.

Use only Genuine Goldacres parts on Goldacres equipment.

Tyre Size	Load Index	Model (L)	Recommended Pressure @ (kPa/PSI)
18.4 x 38		5000	290 / 42
		6500	315 / 46
480/80R46	166A8/159D	5000	140 / 20
	166A8/159D	6500	240 / 35
480/80R50	177A8/166D	6500	220 / 32
	177A8/166D	8500	310 / 45
	177A8/166D	8500	410 / 65
520/85R42		5000	140 / 20
		6500	220 / 32
		8500	315 / 46
520/80R46	173A8/169D	8500	240 / 35
710/70R42		5000	140 / 20
		6500	210 / 30
		8500	240 / 35
		10000	315 / 46

Wheels & Tyres

Tyre pressures need to be checked **regularly - check every 8 to 12 hours of operation.**

There are many factors concerning the appropriate tyre pressure for a particular tyre and load. The many factors include:

- Tyre size,
- Rim type,
- Tyre status (driven or free rolling),
- Load,
- Speed,
- Haul length and
- Load Indicx.

All factors need to be considered when determining the tyre pressure.

For information on wheel maintenance please refer to Chapter 8 "Lubrication & Maintenance".

NOTE

To identify the exact options fitted to your particular sprayer, refer to the original quotation and/or build sheet.

If needed, a copy of the build sheet may be obtained by contacting your dealer and quoting your machine serial number as described above.

NOTE

Please ensure all parts are clearly labelled with the owner's details and a brief description of the fault.

Dealers are not liable for the return of any goods to a Goldacres Dealer. Goods must be returned to point of sale.

NOTE

If a tyre is replaced with a different brand or size, please contact the supplier for correct air pressures to suit the load carrying capacity of this machine.

NOTE

Converting Kilopascals (Kpa) to Pounds per Square Inch (PSI):

PSI = Kpa x 0.145
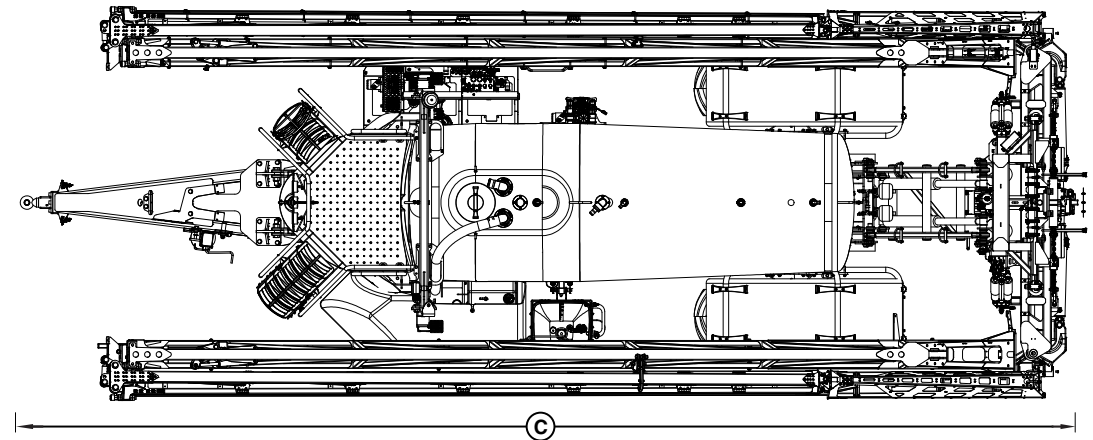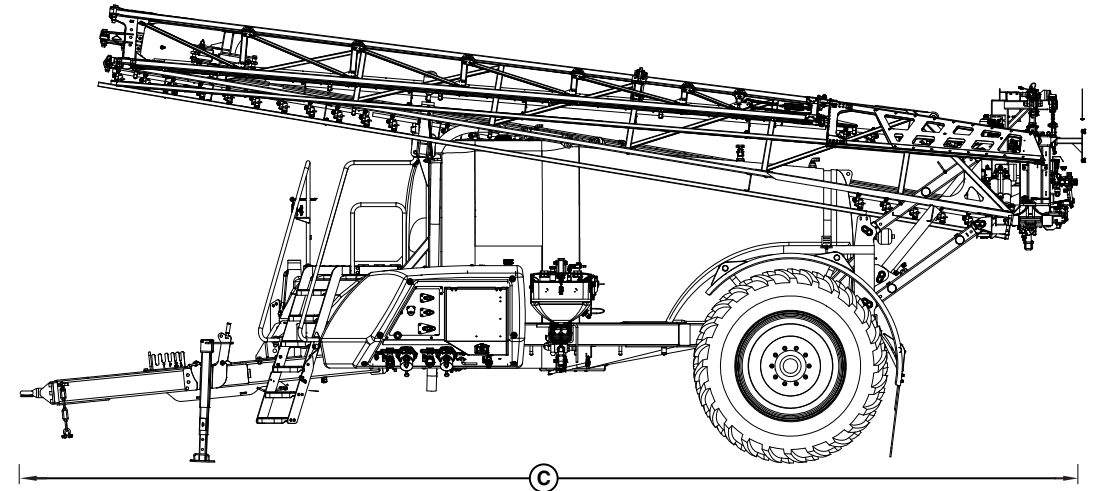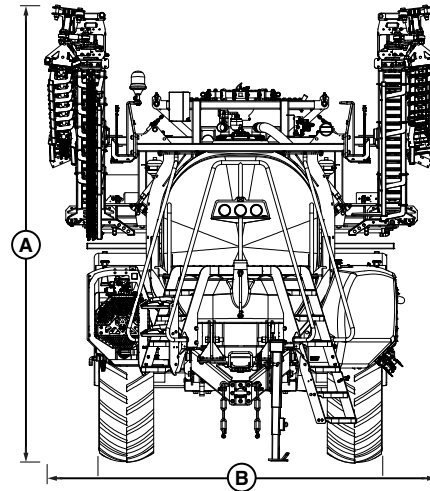
Eg. 282 Kpa x 0.145 = 40.9 PSI

Sprayer Dimensions

The following Prairie Pro Series 2 Trailed Sprayer dimensions are provided as a guide only.

Variations in mass & dimensions may occur without notification.

Dimensions show here do not include aerials and other attachments.

To ensure that the dimensions are accurate for your sprayer **it is recommended that you measure your sprayer individually**.

Prairie Pro Series 2		Empty - Folded			Dimensions - Folded		
					A	B	C
Model	Boom (m)	Drawbar Load (kg)	Axle-Load (kg)	Total (kg)	Height (mm)	Width (mm)	Length (mm)
10000	48	1694	7030	8724	4550	4030	9900
10000	36						
8500	48						
8500	36	1336	6120	7456			
6500	36	1250	5710	6960	3750	3430	9560
6500	30	**At time of publishing, Table information was incomplete -**					
6500	28	**Contact your Goldacres Dealer for up-to-date**					
6500	24	**Weights & Dimensions.**					
5000	30	842	5200	6042			
5000	28						
5000	24						

NOTE

Sprayer dimension are based on 480/85 R50 tyres fitted with airbags deflated.
Be aware that dimensions given have no aerials fitted.

NOTE

The Prairie Pro Series 2 sprayer is approximately 4.55m in height. Aerials on the tractor roof, may be much higher.
Check regulations in your state for maximum vehicle height restrictions. When driving on roads it may be necessary to remove aerials to meet the required height restrictions.

NOTE

Aerials on the roof may also need to be removed to meet clearance requirements for over head power lines, while on the road and also in some paddocks.

Front

Forward

Right
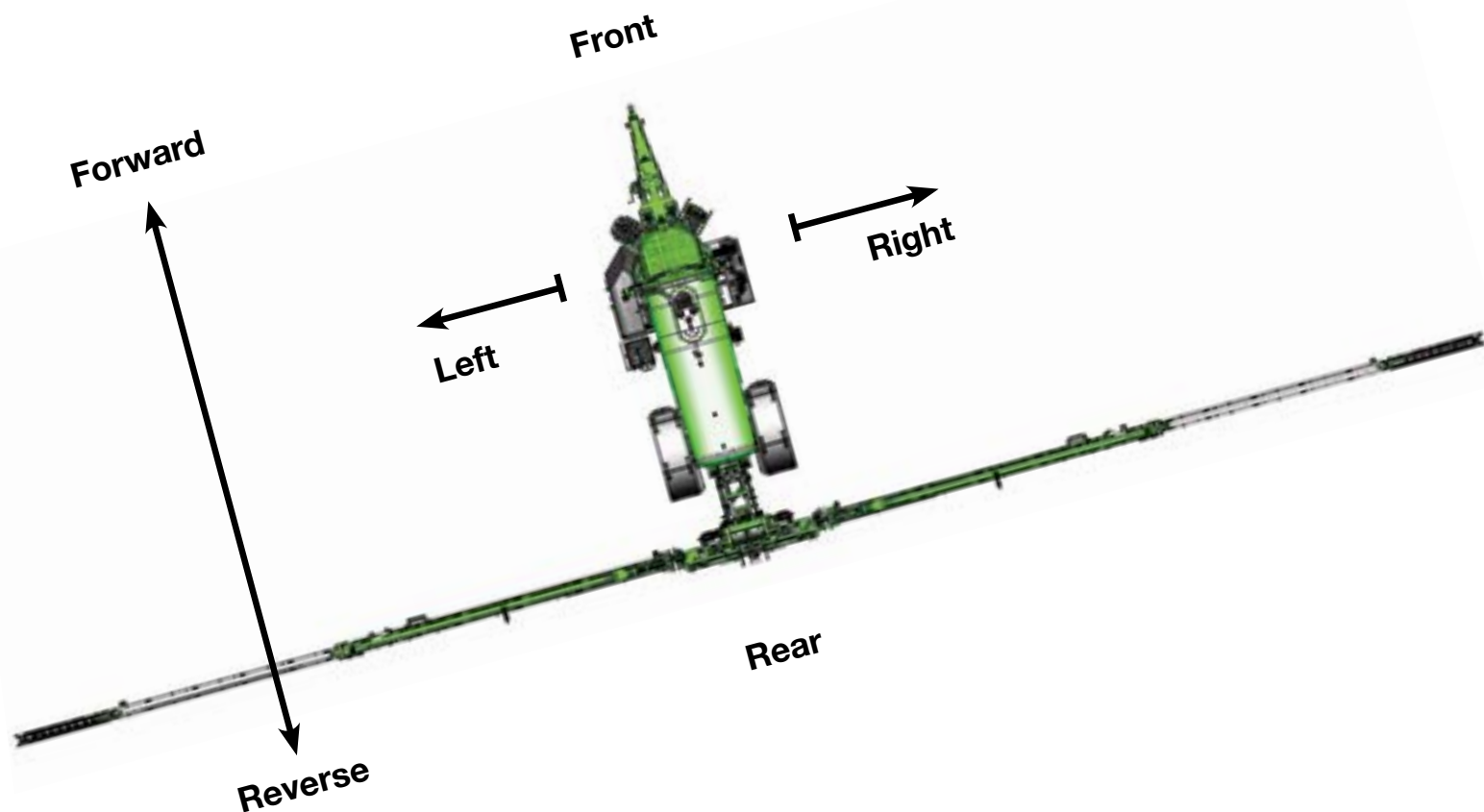
Left

Rear

Reverse

Sprayer Orientation

Throughout this manual instructions are given with reference to the front, rear, left and right of the sprayer including moving forward and reversing.

To avoid any confusion or misunderstandings these are given using the orientation of the sprayer as illustrated (above).

Paint Codes

For repairs or touching up damaged paintwork use Australian Standards AS2700 codes:

    Wheels: N23 Neutral Grey 2 pack

    Steel (Green): G13 Emerald Green 2 pack

    Steel (Black): N61 Black 2 pack.

2 - Safety – Essential Risk Management   **11**

Prairie Pro Series 2.

Front cover of Australian Standard for Chemical protective clothing AS3765 publication.

Critical safety information to keep you free from danger, injury or death is outlined in the following pages.

Safety is a very high priority of Goldacres and must be for all operators. All safety and warning instructions MUST be followed to ensure the safe operation of your sprayer.

1   Operator Safety

Always read and understand the operator manuals provided with your sprayer prior to its operation.

It is the responsibility of the operator to ensure there are no damaged or missing decals on the equipment and that any damaged or missing decals are replaced prior to operation.

Training & Certification

Operational training for your sprayer will be given by your dealer or at the point of sale.

If required, please ask for this training again.

Chemical certification through a local government body is recommended for all those working with chemicals.

Not Okay to Operate!

Do not operate this sprayer if you are:

- Intoxicated (Never operate a sprayer while under the influence of any drugs or alcohol)
- Fatigued (Never operate a sprayer if you are excessively tired)
- Untrained (Never operate a sprayer if you are not qualified)
- Stressed or mentally unfit for work!

First Aid

Before spraying make sure you are aware of first aid requirements relative to the chemicals being used.

Read the appropriate Chemical Safety Data Sheets(CSDS) and know the location of an appropriate First Aid Kit.

Make sure you have a first aid action plan in place whenever chemical handling/spraying.

It is recommended an appropriate First Aid Kit be kept with your sprayer.

Personal Protective Equipment (PPE)

Chemicals can be extremely harmful to humans so the use of appropriate PPE when handling chemicals is essential.

Ensure the correct Personal Protective Equipment (PPE) is available & worn before using agricultural chemicals & operating the sprayer.

PPE must be appropriate to both chemicals and sprayer.

Always refer to the chemical manufacturer's label for the guidelines on the appropriate PPE for the chemical(s) you are using.

Always wear close fitting clothing and appropriate safety equipment for the job at hand.

Goldacres strongly recommends that you read and understand the following Australian standards:

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

Poisons Information Centres - Call 131 126 (AU)

Minimum PPE

Minimum Personal Protective Equipment requires:

- Coveralls
- Elbow length rubber gloves
- Approved respirator &
- Face shield.

Passengers

Do allow other to stand on or travel on the steps or platform of the sprayer when in motion or when the booms are being folded or unfolded.

Avoid Excessive Noise Exposure

Exposure to loud noise over an extended period can cause permanent hearing impairment or loss.

Be pro-active in conservation of your hearing and wear appropriate hearing protection at all times.

Do not operate or make alterations to the sprayer outside the guidelines or limitations given in all the manuals.

Personal Protective Equipment (PPE) must be appropriate to both chemicals and sprayer.

Machine Alterations

Any unauthorised modifications to this sprayer may affect its function and create a serious safety risk.

Any part of a Goldacres sprayer that is altered or operated outside the guidelines or limitations given may not be warranted by Goldacres for successful operation or performance.

Operators working outside standard specificatons & limitations do so at their own risk, unless specific advice has been sought from, and approved by Goldacres in writing.

2 Chemical Safety

The safe use of Agricultural (Ag) chemicals with this equipment is the responsibility of the owner/operators. Owners & operators should be trained in the safe use of Ag-chemicals.

Safe Chemical Usage

Agricultural chemicals can cause serious illness and even death if they are handled incorrectly or enter the body.

Risks of chemical entering the body include:

Orally - Drinking, splashing into mouth, eating/drinking with dirty hands

Never attempt to clean parts or nozzles by blowing with your mouth

Never attempt to siphon chemicals or substances by sucking.

Inhalation - Inhaling chemical vapours &/or spray droplets as Airborne Particles

Always stand well clear of equipment during operation

Any spray drift is dangerous and may be hazardous to humans & other animals.

Dermal Absorption – Absorbtion of chemical through the skin. Risks are increased if your skin is broken.

Make sure your PPE is appropriate for the chemicals to be used.

Goldacres recommends a relevant spraying course is completed by owners and operators prior to operating the sprayer.

Always read & follow chemical manufacturer's guidelines for safe application as per the chemical labels & Material Safety Data Sheets.

Particular attention should be given to the recommended target application rate of the chemical being applied as per chemical guidelines.

Keep Operator Areas Clean

Use disposable gloves or triple rinse multiple-use gloves.

Carefully remove all potentially contaminated PPE & clothing before entering the Cabin (if applicable) to ensure no chemical enters your working environment.

If chemical contacts your body, rinse with fresh water immediately & seek medical attention.

Chemical Handling

You should have all relevant Chemical Labels, Material Safety Data Sheets (MSDS) and technical guides available to you.

These can be found on the manufacturer's website if you do not have hard copies.

Ensure you have familiarised yourself with all documentation - including chemical labels & Material Safety Data Sheets, before opening & mixing chemicals.

Always understand the complexities of the chemical you are using, the safety measures & have an appropriate safety plan in place.

Safe Spraying Application

Safe application starts with being familiar with the safety requirements of the chemical being used.

Be sure to familiarise yourself with all the documentation supplied with your chemical drum or shuttle before you start mixing and spraying.

Prairie Pro Series 2.

In addition to operator safety, it's important that the chemical being sprayed hits the target and drift is minimised.

The following conditions are generally unsuitable for spraying:

- Rain
- High winds above 15km/h
- Excessive humidity
- Cold air and low pressure systems that increase the risk of inversion

Delta T has become a widely used measure for acceptable spraying conditions with regards to temperature and humidity.

Observe all weather conditions, temperature, humidity, wind direction & speed before you start spraying & for the duration of the job.

Take all steps necessary to minimise spray drift and the risk of inversion.

If you have any doubt consult with a qualified advisor or agronomist.

Spray Application Risk Assessment

Answer the following risk questions to assess risks & safety before spraying:

Weather Conditions? **Yes / No**

Are winds or gusts likely to present risk of drift? .... ☐ ☐

Are humidity and Delta T in the appropriate operating range? .... ☐ ☐

Are weather conditions likely to change before the task is complete? .... ☐ ☐

Have all pre-start checks been undertaken? .... ☐ ☐

Is the sprayer in good working order? .... ☐ ☐

Is the operator fit for work? .... ☐ ☐

Has the operator been trained in the use of this machine & the chemicals? .... ☐ ☐

Have all appropriate PPE items been made readily available? .... ☐ ☐

Is the operator aware of the risks posed by the chemical(s) being used? .... ☐ ☐

Physical risks and the work environment

Is there any danger posed by power lines? .... ☐ ☐

Is there any uneven terrain to be considered? .... ☐ ☐

Is there any likelihood of untrained bystanders or children in the area? .... ☐ ☐

Is there a first aid station nearby? .... ☐ ☐

Disposal of Chemicals & Containers

Flush all chemicals from the sprayer immediately after use.

When draining fluids from the sprayer, use appropriate, leak proof containers.

Do not use food or beverage containers because someone may consume the contents by mistake.

Dispose of unused chemicals & empty chemical containers in the correct manner..

For information on correct disposal of unwanted farm chemicals, visit ChemClear.org.au or call 1800 008 182.

Label the product for disposal and store it securely away until it is able to be collected for disposal.

Disposal must be carried out by a licensed waste disposal company or chemical collection program.

Personal Safety

Change out of protective clothing and shower as soon as possible after working with chemicals.

Wash hands and face thoroughly before eating, drinking or smoking.

Provide clean water at all filling sites and on the sprayer in case of emergency.

Wash & clean respirators regularly & replace respirator cartridges at recommended intervals.

Goldacres Equipment

Our equipment uses several materials that may be harmful to the environment.

Potentially harmful waste used includes such items as oils and lubricants.

If disposed of incorrectly these can threaten the surrounding environment and ecology. Waste products can leech into surrounding water sources and contaminate the area.

Certain chemicals may be unsuitable for use with Goldacres standard plumbing designs. Consult your Goldacres dealer if required.

3 Maintenance Safety

Correct sprayer maintenance is an important part of eliminating the risk of incorrect spraying applications and ensuring overall safety.

Always maintain the sprayer to ensure it is in good working order for its next use.

Keep the sprayer clean - inside & out to minimise wear and allow easier recognition & identification of problems that might arise.

Hydraulic Inspection, Adjustment & Repair

Periodic inspection & assessment of hydraulic systems and especially hoses is recommended and should include:

1 The age of hoses

2 Condition of hose fittings

3 Rub marks and potential wear points from hose contact

4 Unexplained hydraulic oil leaks

5 Excessive corrosion of fittings

If any faults are found, do not operate the machinery until the issues have been rectified.

Where practicable, all inspections and maintenance/servicing work should be conducted by a person competent in hydraulics systems and maintenance, including testing & commissioning.

Maintenance and routine checks should be conducted to ensure adequate hydraulic fluid levels and filter cleanliness are fully maintained.

Manufacturer's recommendations should be adhered to as excessive or inadequate fluid levels can cause system failure and present serious risks.

Injury Risks

Encumbent with all sprayer maintenance is the risk of injury from:

Cuts, Stabs & Punctures:

- When servicing a machine, be mindful of sharp edges on parts such as trimmed cable ties, hose clamps, cut reinforced hose, edges of plates and brackets as they may cause cut, stab or puncture injuries.

Crush Hazards:

- Never attempt maintenace on axles, wheels or components within the vicinity of the wheels with the engine running.
- Never attempt to do maintenance under any hydraulically raised boom or structure.

Pinch Hazards:

- When operating moving components such as a boom, access ladder or other components. Keep fingers and hands away from potential pinch points.

Burn Hazards:

- Hydraulic oil increases in temperature with pressure and use
- Components may be very hot to touch and could result in contact burns
- Oil leaks may spray hot oil and cause eye injury & burns

- Avoid contacting the hydraulic tank and all hydraulic lines when at operating temperature.
- Full coverage clothing minimises the risk of oil burns and is recommended with this type of equipment.

Injection Injury

- Injection injuries occur when a jet of hydraulic fluid pierces the skin and enters the blood stream.
- This may occur if a hydraulic line is pierced or damaged. Be aware that injection injuries are extremely dangerous and have the potential to cause death.

Hose Whip/Striking

- Hose whip or striking injuries may occur when an unrestrained hose releases oil pressure quickly causing whipping back & forth until the oil and energy is fully released.
- The most common point for failure in a hydraulic hose is at the fittings, where corrosion and stress related damage is most likely to occur.

Fluids Under Pressure

Fluids escaping from high pressure lines can cause serious injury to skin. High pressure hydraulic oil can easily penetrate human skin.

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.

Pressure in the fluid lines must be released before any maintenance is undertaken.

Be mindful of the location of pressurised lines in the vicinity of the work area when using equipment such as grinders, oxy torches and welders.

Such equipment poses two major risks:

- Equipment may easily cut through lines
- Heat generated may cause line to rupture and/or burn.

Ensure all fittings and lines are fully/tightly secured before re-pressurizing after repairs.

Pumps, Pressure Lines & Valves

It is important that the liquid flow systems of this sprayer are understood and well maintained because liquids under pressure create serious risks of injury.

Pressurised spaying and hydraulic systems operate at pressures up to 20 bar (284 psi) for spraying and (3000 psi) for hydraulics.

To avoid risks of injury, it is important to:

- Read and understand the operator's manual
- Never undo fittings, cut hoses or carry out maintenance when a pump is running or when a system is under pressure
- Do not exceed maximum pressures as stated in operators manual.

Stored Energy Hazard

Even when a machine is not running, energy can be stored in components such as hydraulic accumulators, air tanks, tyres, air hoses and springs.

Hydraulically supported components such as the boom center are also a source of stored energy.

Before working on the machine, ensure that these parts are relieved of their energy in a safe manner.

Never get underneath a suspended machine or suspended part of a machine.

Lifting a Sprayer

Before raising a sprayer off the ground:

- Ensure that the boom is in its closed position.
- Park on a flat level, firm area.
- Empty the spray tank where possible.
- Chock all wheels that remain on the ground.
- Securely lift the sprayer using a rated jack and support the machine on work stands.
- Do not work under the machine when supported solely by a jack.
- Do not support the machine using materials that may crumble.

⚠ **CAUTION**

Only rated and approved equipment should be used to lift and support the Prairie Pro 2 sprayers.

Failure to follow these instructions may result in injury.

Changing Wheels & Tyres

An experienced person with the correct equipment should mount the wheels on the sprayer.

When changing a wheel on the sprayer ensure the machine is on firm level ground and the opposite wheel is chocked.

Tyre Maintenance

Maintain correct tyre pressure at all times. Inflation of tyres above or below the recommended pressure exerts additional pressure on the tyre, which may result in tyre damage.

Extreme caution is required during the inflation of tyres. Rapid inflation of a tyre may cause separation and/or explosion of the rim. Such an event can inflict serious or fatal injuries to the operator of close bystanders.

Always use a tyre inflation gauge.

Be pro-active and continually check the condition of your tyres during operations.

Do not weld, heat or modify a tyre rim.

Working Heights above Ground

Please contact your local government on the restrictions and safety requirements needed to operate at various heights above the ground.

Do not climb on machine to get access. There is a risk a falling if a person has climbed onto the machine.

Use ladder or work platform to get access to parts or areas of the machine above local government restrictions.

Working On or Underneath the Sprayer

When working on or underneath a sprayer, always take measures to make sure that the sprayer cannot move.

Never get underneath a suspended machine or suspended part of a machine.

If you must work under the machine ensure the machine or machine part is solidly supported.

Slippery Surfaces

The surface of the sprayer platform has raised portions or grip tape to minimise the risk of slipping.

Keep platform surface clean of mud and other material to avoid risks of slipping.

Main Spray Tank

Danger – The main spray tank is a confined space and you must not enter because the lack of oxygen and chemicals can cause asphyxiation and death..

Do not enter the tank for any purpose.

Entanglement Hazard

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 a machine with covers, shrouds, or guards removed.

Decals

Decals are an important part of making operators aware of risks and correct operations.

Understand the safety decals and their purpose to assists the safe operation of your machine.

It is the responsibility of the owner operator to replace damaged and/or missing decals.

All decals on the sprayer must be maintained in good order and replaced if damaged or missing.

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

Decals have a part number to assist in their identification & replacement.

Replacement decals can be ordered from your Goldacres' dealer.

Part numbers and descriptions of the decals on this machine can be found In the Part Manual on the Goldacres website.

Safety Guards

All safety guards should be replaced if damaged to ensure that risks of injury are controlled as intended.

Some examples of safety guards includes fan blade guards, PTO guards and hydraulic hose covers.

Exhaust Fumes

Diesel engine exhaust fumes are harmful and can cause severe sickness or death.

If it is necessary to run a tractor 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 very well ventilated.

Before Operating

Inspect all equipment thoroughly for damage and wear before operating.

Lubricate the sprayer as recommended before operating.

Reversing

Only when optioned with a cabin G-Hub 12" Display is the Prairie Pro 2 sprayer equipped with rear view camera.

Be vigilant and aware of bystanders and other obstacles when attempting to reverse.

Sprayer Lighting

Keep lighting and signs in good order and replace any damaged or faulty fixtures.

Deflate the air-bag suspension system for more load stability when loading & transporting the sprayer.

4 Transport Safety

Check the wheel nut tension on a regular basis, especially before and when travelling on roads.

The torque and inspection frequency is outlined in the maintenance section.

Brake performance should be checked regularly. The inspection frequency is outlined in the maintenance section.

Always ensure that the boom is securely supported when travelling on roads.

Collision Risk & Warning Lights

Before driving the sprayer check with the relevant road management authorities for information regarding safe and legal transport on public roads in the state where the machine is being operated.

To assist in the prevention of collisions with other road users the sprayer is fitted with warning lights and signs in accordance with national road regulations.

Public Roads

In your locality there may be special vehicle licencing conditions that govern the use and movement of your sprayer.

Check with relevant government authorities for the relevant road laws in your area (these can vary from area to area). It is the responsibility of the operator to know these laws.

Depending on the width of the machine, a pilot or escort vehicle may be required. Any wide vehicle must display an "Oversize" sign.

Most sprayers driven on public roads have requirements for flashing lights.

Make sure the sprayer complies with all relevant road regulations before travelling or transporting on public roads.

Always follow the laws requiring pilot vehicles, escorts and signage when traveling with oversized loads.

Even if a pilot vehicle is not legally required, if vision or manoeuvrability is limited, it is strongly recommended that an escort accompanies the equipment for road transport

Always ensure a vehicle load does not exceed loads allowed for the towing vehicle (consult operators manual).

Where possible travel with your sprayer and tow when tanks are empty or near empty.

This sprayer can only be driven on public roads during daylight hours. However, there are some exceptions for night driving. Always check for your locality.

Always use safety chains when towing a triailed vehicle.

Transporting the Sprayer

A disabled sprayer is best transported on a drop deck trailer.

Use chains to secure the machine via the tie down attachment points located under the sprayer.

Loading & Unloading

Off loading a sprayer from a truck is an especially dangerous task. Similarly, loading a sprayer onto a truck.

This is not a one-person job and must be performed by people qualified for the task at hand and with equipment of sufficient capacity.

When loading onto a truck, always use the tie downs point provided.

Deflate the sprayer air-bag suspension system to provide more load stability.

Secure all components of the sprayer that might come loose or move during transport.

WARNING
Do not pressure wash
electrical connections
GA8701275

5 Operating Safety

Ladders & Steps

Ladders present a number of risks to an operator. Therefore use them appropriately.

Not all ladders are configured the same. Familiarise yourself with the steps, handles, rails of your ladder.

Be mindful of wearing appropriate, enclosed foot wear with good grip when operating a sprayer and working with chemical.

Always keep 3 points of contact when using steps and ladders.

Diaphragm spray pump

Care should be taken to never overfill a diaphragm pump with oil or operate at speeds exceeding 540 rpm.

Centrifugal spray pump

Running the pump dry will cause failure.

Care should be not to operate at speeds exceeding 4200 rpm.

Do not exceed the maximum spraying pressure of 8 Bar.

Electrical Safety

Only qualified persons should disassemble or service electric components of the sprayer.

If an electrical device or accessory is supplied with a three-pronged, earthed plug, ensure it is used correctly with a compatible earthed 240V power source.

Electrical looms should be checked on a regular basis for fraying and any signs of wear, damage or defects.

Do not use an electrical device in or near an area where it may fall or be pulled into water, other liquids or in the rain.

Do not touch an electrical device that has fallen into water.

In case of an electrical fire, shut off the power and use a suitable fire extinguisher.

Never use water to put out an electrical fire. Water used on an electrical fire may result in fatal shock.

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Hydraulic Safety

Hydraulic systems used on the Prairie Pro include hydraulic cylinders, motors, manifolds, and accumulators.

Various hydraulic hoses, fittings and couplings used are all specific for purpose and rated to take the pressures used in the system.

Hydraulic system components are sometimes operated at very high pressures and temperatures.

For these reasons it's very important that the operator be familiar with the functions and limitations of the system.

Read and understand the operator's manual carefully before operating any of the sprayer's hydraulic systems.

Connecting Hoses

Hydraulic systems are colour coded to aid in correct identification of hydraulic hoses.

Always double check hose connections, after maintenance work, especially the return line.

Failure to properly connect the return line will result in "dead heading" the system and can lead to a pressure failure.
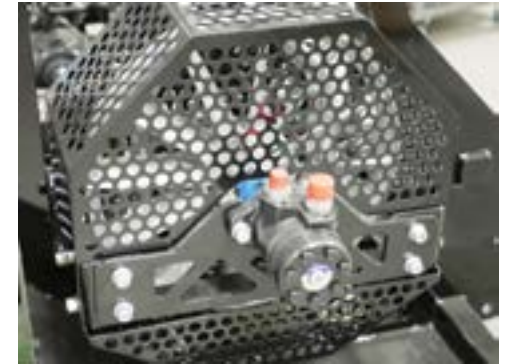
Refer to the sprayer operator manuals for full details.

Hydraulic functions

Hydraulically controlled moving parts should never be touched whilst in operation.

Hydraulically controlled components should be isolated and released of any hydraulic pressure before they are worked on or serviced.

This applies to all hydraulic cylinders.

Working with Fans

It is vital all supplied guards remain in place and are replaced if damaged or fatigued.

Be mindful the air inlet side is often the most dangerous side because the suction created by fans can quickly and unexpectedly pull in hands, hair or objects such as loose clothing or tools.

On the downwind side of a fan, the most common danger is loose objects being propelled at high speed.

⚠ **WARNING**

The sprayer compressor fan may start spinning without notice.

Never service or work on the compressor with the tractor engine running.

Failure to follow instructions may result in serious injury.

Always ensure the fresh water tank is filled.

Serious injury or death may occur if the warnings below are not followed:

- Keep body parts and loose objects away from rotating fans
- Never try to adjust or clean the fan while it is engaged and operating
- Never allow untrained personnel or children near the fans while in operation
- Always ensure fans are stopped completely before repairing, cleaning or inspecting fans.

Boom Height Control System

If a boom height control system is fitted, keep clear of the boom as it could potentially move without notice.

Bogged Sprayer

Goldacres stropngly recommends that bogged sprayer's situations are addressed prudently by **using the assistance of a tow vehicle**.

Failure to heed this advice and doing otherwise can cause significant damage and **VOID WARRANTY**.

Operating Tips

1   A supply of fresh water should be maintained on the sprayer at all times.

2   Do not use this machine in ambient temperatures exceeding 40 degrees Celsius.

3   Ensure that all bolts are tightened and secured before operation.

Take notice of warning signs for overhead power lines.

Be aware of unsafe & safe distances from power lines.

6 In-Field Safety

Each paddock or field presents its own risks which must be assessed correctly to ensure safe spraying application.

Sloping or Uneven Ground

Operating machinery on sloping or uneven ground creates risk of machine roll overs.

There is also a risk of towed vehicles sliding and/or pulling the towing vehicle sidways.

Always be aware of the ground conditions and grip levels of both personal footing and the sprayer.

When operating the sprayer:

- Slow down for slopes exceeding 10 degrees
- Do not operate on slopes exceeding 15 degrees
- Slow down when operating the sprayer on irregular or uneven country.

Pay special attention to ground surface conditions while operating as these will vary throughout the area and the duration of the work.

Be especially mindful when turning corners on sloping ground. Due to forces involved when turning corners it's very easy to exceed safe operating limits.

Hazard identification

Power Lines

Operating the sprayer too close to power lines can have serious consequences. The operator is responsible to maintain a safe distance from powerlines and its supporting structures.

Keep in mind a sprayer with a high potential to conduct electricity such as a wet spray boom does not need to touch a power line for it to arc down through the sprayer to reach the ground.

Minimum safe distance from power lines, for equipment or operators will vary from 1 to 6 metres depending on the transmission voltage (240 to 220,000 volts).

High humidity and dusty air will increase the danger of high voltage power lines.

Turn off automatic height control systems when under a power line to avoid the boom unexpectedly lifting up.

Changing weather conditions such as high temperatures will cause lines to sag & high winds will cause lines to move - changing the position of the power cables.

See your local authority for further information.

https://www.safeworkaustralia.gov.au has useful, comprehensive information as do most state safety offices.

Most Shires or Councils can assist with risk assessment and how to best manage the risk of power lines.

Large booms

The end of large booms can be difficult to judge whilst spraying.

Be mindful hitting power poles, trees or other objects with boom tips because this can cause damage to the boom, the power pole as well as risking electrocution.

Potential Risks

1 Proximity of the work to the overhead power lines and the height of the overhead power lines.

2 Environmental conditions, such as rain, wind, high humidity and uneven terrain may bring an increased risk.

3 Visibility of the overhead power lines and their supporting structures.

4 Location of overhead power lines and supporting structures such as poles & towers.

5 Frequency of work to be done near overhead power lines.

6 Proximity of operating plant and equipment to the overhead power lines.

7 Boom lift &/or tilt & radio antenna may be in danger of striking power lines.

8 Walking on the sprayer platform may put you in danger of electrocution when near power lines.

Control measures

Once the risks and hazards of spraying near overhead power lines have been assessed, control measures should be taken to eliminate the risks.

1 Using a spotter to decrease the risk of striking the power lines accidentally.

2 Planning a different travel/spray route so the spayer does not travel close to the power lines.

3 Use barriers or fences, if possible, so that no one can drive in the high risk areas identified.

4 Where practical have low lying power lines replaced with lines underground.

5 Do NOT walk on the machine platform when near power lines.

6 Do NOT use boom lift &/or tilt and radio antenna near dangerous power lines.

A combination of these control measures is recommended as best practice.

Keep clear of overhead obstructions, especially power lines, as contact can be fatal.

Chemical & Water Densities

Care should be taken when transferring liquid into the sprayer tank to ensure the gross weight of the vehicle does not exceed the specified safe braking and carrying capacity of the vehicle.

1 Litre water = 1 Kg.

Water weighs 1kg per litre. However conversion factors must be used when spray liquids are heavier or lighter than water.

For example: Liquid nitrogen has a density of 1.28 kg/L. It will therefore significantly increase vehicle load if the tank were to be filled completely, ie, 6000 litres of water weighs 6000kg. 6000 litres of liquid nitrogen weighs 7680kg. 6000kg of liquid nitrogen is only 4687.5 litres.

The total weight of a tank full of chemical, should not exceed that of a tank full tank of water only.

Sprayer damage can result if the vehicle is over-weight.

For more information, refer to Chapter 6 'Operation', 'Filling the Sprayer' instructions.

Operating & Travelling Speed

Check with Goldacres' specifications and follow the instructions for operating, transporting and/or towing.

Ensure that the maximum speed of the vehicle, when loaded is within recommended limits.

The sprayer is designed for a maximum speed of 50 km/h when empty. Maximum speed when fully loaded is 25km/hr. These speed must only be used with suitable terrain & conditions.

All components i.e. tyres, brakes, suspension, steering and chassis are designed and built this for maximum speed.

However, high speed turning places severe stress on the wheels and axles and should be avoided.

It is also essential to be aware of the stresses of turning impose on an open spray boom.

Excessive turning speeds transmit great stresses to the spray boom and **will cause boom damage**.

Maximum speed when cornering or turning **at an angle greater than 45° or driving on a slope or uneven terrain is 5km/h**.

Modification of the sprayer to increase maximum speed is **Strictly Prohibited.**

When fitted with narrow wheel track with high centre of gravity, the machine may become unstable when turning at excessive speed or when operating on excessively steep terrain.

Do not ride on the sprayer when moving.

Stand well clear of sprayer when operating.

Ensure equipment is securely fastened or attached to vehicle at all times

Never stand within the radius of the boom wings.

Opening & Closing Booms

Be attentive to opening, closing & parking of hydraulically controlled booms at all times:

- Always check for clear and available space before operating booms
- Be especially vigilant of bystanders or power lines
- Regularly check for loose or damaged structures or components. These can be snagged or fail during operation
- Be sure a folded boom is properly positioned and locked into position before driving. A loose boom arm can be very dangerous.
- Be aware that in opening or closing a boom, it also changes the weight distribution of a sprayer
- Never allow the boom to be operated by untrained personnel.

Transporting the Prairie Pro

1   Loading onto a Truck

Before loading:

- Rinse & drain product tanks
- Fold the boom & close the boom lift cylinder taps
- Strap the booms ends in
- Remove beacons & antennae.

Load the Prairie Pro Series 2 onto the truck, then:

- Release air pressure from the airbags by opening the dump valves & air drain valve
- Fasten the Prairie Pro with chain to all tie-down points.

2   Unloading

Before unloading:

- Remove tie-down chains
- Check airbag dump valves & the air drain valve are closed
- Inflate the airbags.

Load the Prairie Pro Series 2 off the truck, then:

- Remove the boom tie-straps
- Refit beacons & antennae
- Open the boom lift cylinder taps
- Check the product tank drain valves are closed.`

Hydraulic Hitch Jack option.

Optional cabin controller mountings for setting-up the tractor cabin.

Optional cabin controller mountings for setting-up the tractor cabin.

Introduction

The Prairie Pro Series 2 Trailed Sprayer is available in 5000, 6500, 8500 & 10000 litre models with Goldacre's boom sizes ranging from 24 to 48 metres in width and other boom & nozzle options.

Depending on the options chosen, the Prairie Pro Series 2 may be fitted with the Goldacres G-Hub Controller system, Raven automatic rate controller and Raven Rate Control Module (RCM) ready system.

Spray pump options include the 400L/min at 8 Bar centrifugal pump or 260L/min positive displacement oil backed diaphragm pump.

The 'Connect' chapter provides instructions to connect the tractor & sprayer, as well as the in-cabin controls, displays, auxiliary controls & harnesses.

Each tractor & sprayer will vary according to its size and the options fitted. Illustrations & pictures used in this manual are representive but may not be exactly the same as your machine.

Tractor Requirements

This manual should be read in conjunction with the towing vehicle operators manual and specifications.

Safety of owners, operators and gneral public is of the highest importance to Goldacres.

The safe operation of a trailed sprayer is defined by the ability of the towing vehicle to safely control the sprayer.

It is the responsibility of the owner and/or operator to ensure the towing vehicle can safely control the sprayer.

The drawbar capacity of the towing vehicle must be known and safely matched with the gross drawbar mass of the sprayer. Refer to the towing vehicle specification for the towing capacity.

The gross mass of the liquid in the sprayer tank varies in relation to its specific gravity. The mass must be calculated by the operator to ensure gross vehicle mass is not exceeded.

If the sprayer tank is completely filled with specific chemicals, the gross mass may exceed the allowable capacity of the sprayer and towing vehicle.

Sprayer gross mass may also vary according to options fitted and any modifications or additions made to the sprayer. This must also be considered when calculating towing capacity.

Hydraulic Capacity

The hydraulic system must be closed centre with load sensing.

Required hydraulic capacities for the Prairie Pro Series 2 sprayer are:

- Main spray pump:
  - Diaphragm 40 l/min or
  - Dual Diaphragm 80 l/min or
  - Centrifugal 50 l/min or
  - Dual Centrifugal 100 l/min
- Optional 3" fill pump 45 l/min
- Air compressor 30 l/min.

Standard 9 pin ISO BUS connector.

Manual Hitch Jack option.

With all hydraulic items running at the same time, eg, whilst filling, maximum total hydraulic requirement might be 115 to 175 l/min, depending on model & options fitted.

While spraying, the fill pump is not operating and the air compressor operation is intermittent.

If a boom height controller is fitted, extra oil capacity will be required depending on the performance settings.

If brakes are fitted a dedicated hydraulic brake port must be installed on the tractor.

Consult your tractor supplier to obtain an accurate hydraulic capacity.

Electrical Requirements

The Prairie Pro Series 2 sprayer requires 3 electrical tractor connection points:

1. The tractor must be configured for ISO BUS.

    If the tractor is not ISO BUS compliant, Goldacres can supply a cabin wiring kit to enable this functionality.

    The standard ISO BUS connector is 9 pin as shown above.

2. G-Hub power, Ethernet & Can bus supply using a round 19 pin Deutch connector.

    Goldacres can supply the relevant cabin harness which must be wired to the tractor's battery source.

3. Tail light adapter using the standard 7 pin round connector:
    *   Tail lights
    *   Brake lights
    *   Indicators.

The Prairie Pro Series 2 does not come with a sprayer console. To operate the tractor requires a compatible ISO BUS terminal.

The ISO BUS rate controller used has the ability to have up to 2 terminals connected (such as a Raven CR7).

This means the tractor can use one terminal for steering and mapping and the other for rate control and height control (if required).

The total 12V maximum current draw is 23 amps.

Connecting Tractor & Sprayer

Follow this procedure to connect the tractor and sprayer:

1. Fit In-Cab Controllers & Cables
2. Connect the Drawbar & Hitch
3. Fit the safety chains
4. Connect Hydraulic Hoses
5. Connect Controllers.

Ensure the tractor being used matches the size and weight specifications of the Prairie Pro Series 2 sprayer being used.

> **⚠ DANGER**
>
> Ensure the tractor being used matches the size and weight specifications of the Prairie Pro Series 2 Sprayer being used.
>
> Failure to follow these instructions may result in severe injury or death.

Optional 12" G-Hub Display with standard fitted Auxiliary 12 Buttonpad & Raven Control Module (RCM).

1 Fit In-Cab Controllers & Harnesses

The Prairie Pro Series 2 Trailed Sprayer is fitted with Goldacres integrated G-Hub control system comprising an external display, PLC (programmable logic controller), I/O modules, sensors & switches which control & monitor all critical machine functions. The G-Hub 12" cabin display is optional.

The system operates with all leading steering and mapping providers using the ISO BUS protocol.

Fit the In-Cab Controllers (optional mountings available) and Harnesses as required.

For details refer to the information which follows in this chapter:

- Cabin Harnesses Electrical Layout
- Cabin Electrical Harness & Connector Layout
- Raven ISO BUS in Tractor Setup (Optional)

8 Buttonpad Joystick.

In-Cab Controls

In-Cab Controls of the G-Hub system include:

- An 8 Buttonpad Joystick with a Spraymaster On/Off button (at rear)
- An Auxiliary 12 Buttonpad (or 16 Buttonpad for the tri-folding 48m boom only).

8 Buttonpad Joystick

The 8 Buttonpad Joystick has a RAM mount® for mounting flexibility in the tractor cabin.

The 8 Buttonpad Joystick is supplied with a separate universal mounting for remote mounting within the tractor console.

The spray master switch at the rear can be bypassed using a foot switch or similar.

Auxiliary 12 Buttonpad.

Auxiliary 12 Buttonpad

The Auxiliary Buttonpad is used to operate many of the sprayer control functions and boom folding activities.

Both Buttonpads provide back lighting and operating status.

For sprayers not fitted with the optional 12" G-Hub cabin display, the operating status lights also provide some level of warnings via flashing or different colour lights.
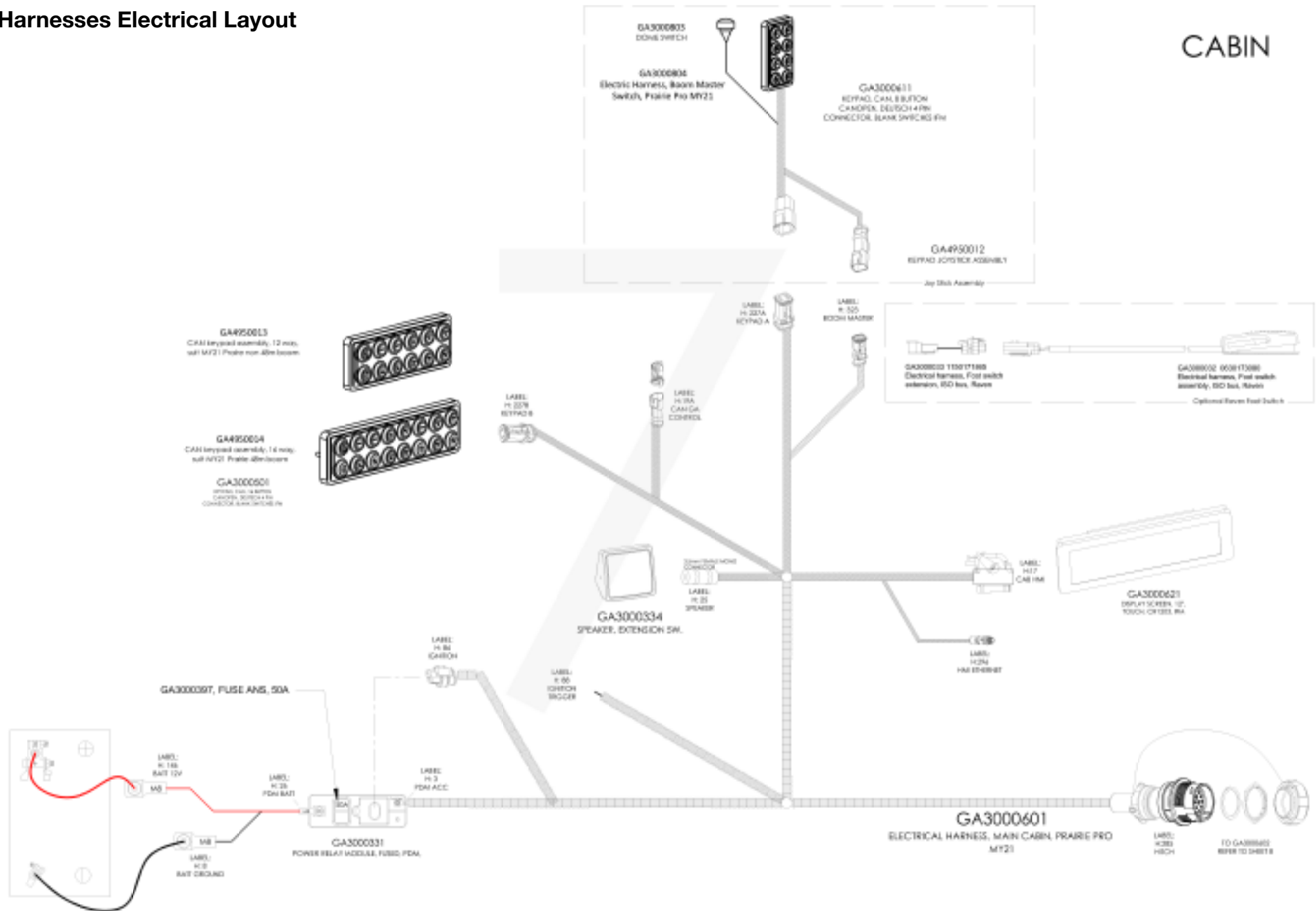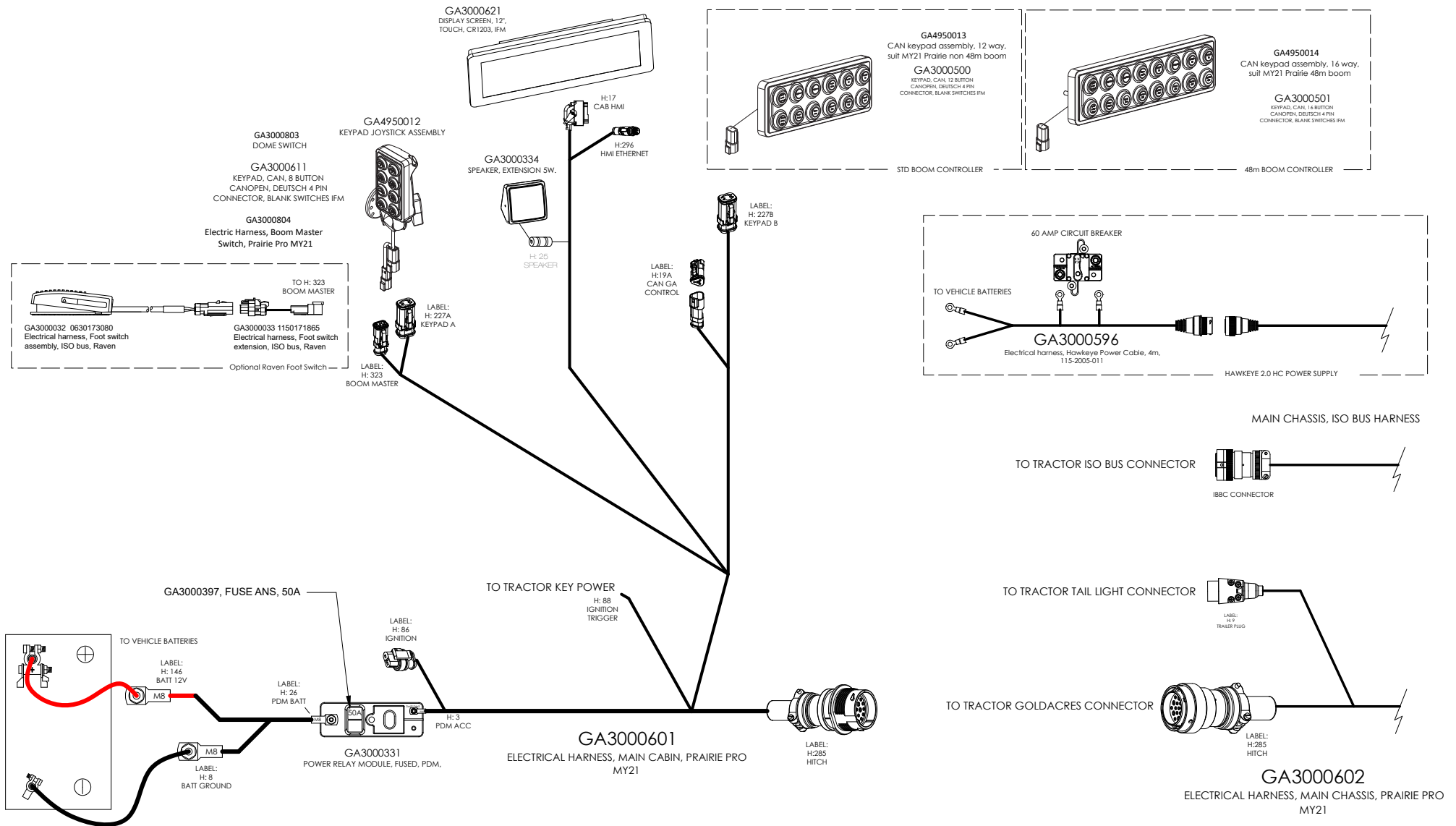
Optional G-Hub 12" Cabin Display

The optional low profile G-Hub 12" full colour touch display allows the operator to easily see & operate all the important sprayer functions.

Optional G-Hub 12" Cabin Display.

Cabin Harnesses Electrical Layout

CABIN

GA3000805
DOME SWITCH

GA3000804
Electric Harness, Boom Master
Switch, Prairie Pro MY21

GA3000611
KEYPAD, CAN, 8 BUTTON
CANOPEN, DEUTSCH 4 PIN
CONNECTOR, BLANK SWITCHES IP44

GA4950012
KEYPAD JOYSTICK ASSEMBLY

Joy Stick Assembly

GA4950013
CAN keypad assembly, 12 way,
suit MY21 Prairie non 48m boom

GA4950004
CAN keypad assembly, 16 way,
suit MY21 Prairie 48m boom

GA3000601
KEYPAD, CAN, 16 BUTTON
CANOPEN, DEUTSCH 4 PIN
CONNECTOR, BLANK SWITCHES IP44

LABEL:
H: 307A
KEYPAD A

LABEL:
H: 525
BOOM MASTER

LABEL:
H: 307B
KEYPAD B

LABEL:
H: 9A
CAN GA
CONTROL

GA3000030, 1150 T1565
Electrical harness, Foot switch
extension, ISO bus, Raven

GA3000032, 6530 T3080
Electrical harness, Foot switch
assembly, ISO bus, Raven

Optional Raven Foot Switch

GA3000334
SPEAKER, EXTENSION SW.

LABEL:
H: 20
SPEAKER

Cross Connect MOLD
CONNECTOR

LABEL:
H: 417
CAB HMI

GA3000621
DISPLAY SCREEN, 12",
TOUCH, OP1003, IP44

LABEL:
H: 22N
HMI ETHERNET

LABEL:
H: 84
IGNITION

LABEL:
H: 66
IGNITION
TRIGGER

GA3000397, FUSE ANS, 50A

LABEL:
H: 186
BATT 12V

LABEL:
H: 35
PDM BATT

LABEL:
H: 3
PDM ACC

GA3000331
POWER RELAY MODULE, FUSED, PDM

LABEL:
H: 9
BATT GROUND

GA3000601
ELECTRICAL HARNESS, MAIN CABIN, PRAIRIE PRO
MY21

LABEL:
H: 281
HITCH

TO GA3000402
REFER TO SHEET 8

Cabin Electrical Harness & Connector Layout

GA3000621
DISPLAY SCREEN, 12",
TOUCH, CR1203, IFM

GA4950013
CAN keypad assembly, 12 way,
suit MY21 Prairie non 48m boom
GA3000500
KEYPAD, CAN, 12 BUTTON
CANOPEN, DEUTSCH 4 PIN
CONNECTOR, BLANK SWITCHES IFM

GA4950014
CAN keypad assembly, 16 way,
suit MY21 Prairie 48m boom
GA3000501
KEYPAD, CAN, 16 BUTTON
CANOPEN, DEUTSCH 4 PIN
CONNECTOR, BLANK SWITCHES IFM

STD BOOM CONTROLLER

48m BOOM CONTROLLER

H:17
CAB HMI

GA4950012
KEYPAD JOYSTICK ASSEMBLY

GA3000803
DOME SWITCH

H:296
HMI ETHERNET

GA3000611
KEYPAD, CAN, 8 BUTTON
CANOPEN, DEUTSCH 4 PIN
CONNECTOR, BLANK SWITCHES IFM

GA3000334
SPEAKER, EXTENSION 5W.

GA3000804
Electric Harness, Boom Master
Switch, Prairie Pro MY21

LABEL:
H: 227B
KEYPAD B

H: 25
SPEAKER

TO H: 323
BOOM MASTER

60 AMP CIRCUIT BREAKER

LABEL:
H:19A
CAN GA
CONTROL

GA3000032 0630173080
Electrical harness, Foot switch
assembly, ISO bus, Raven

GA3000033 1150171865
Electrical harness, Foot switch
extension, ISO bus, Raven

LABEL:
H: 227A
KEYPAD A

TO VEHICLE BATTERIES

GA3000596
Electrical harness, Hawkeye Power Cable, 4m,
115-2005-011

Optional Raven Foot Switch

LABEL:
H: 323
BOOM MASTER

HAWKEYE 2.0 HC POWER SUPPLY

MAIN CHASSIS, ISO BUS HARNESS

TO TRACTOR ISO BUS CONNECTOR

IBBC CONNECTOR

TO TRACTOR KEY POWER
H: 88
IGNITION
TRIGGER

TO TRACTOR TAIL LIGHT CONNECTOR

GA3000397, FUSE ANS, 50A

LABEL:
H: 86
IGNITION

LABEL:
H: 9
TRAILER PLUG

TO VEHICLE BATTERIES

LABEL:
H: 146
BATT 12V

M8

LABEL:
H: 26
PDM BATT

50A

H: 3
PDM ACC

TO TRACTOR GOLDACRES CONNECTOR

M8

LABEL:
H: 8
BATT GROUND

GA3000331
POWER RELAY MODULE, FUSED, PDM,

GA3000601
ELECTRICAL HARNESS, MAIN CABIN, PRAIRIE PRO
MY21

LABEL:
H:285
HITCH

LABEL:
H:285
HITCH

GA3000602
ELECTRICAL HARNESS, MAIN CHASSIS, PRAIRIE PRO
MY21

Raven ISO BUS in Tractor Setup (Optional)

Programing / Diag port

CAN breakout

GA3000030
TERMINATOR
063-0171-964

POWER TRIGGER

IGNITION POWER

IBBC BULKHEAD
CONNECTOR
(REAR OF CABIN)

A B C D
Ultra
Micro
Relay
H G F E
BLK
CFH-ALS

HC power

GA5071315
Harness, Suit non
ISO bus tractor
115-7300-021

DISPLAY 1

GA3000795
Harness, ISO Y splitter
115-7300-132

HC POWER
HC EARTH
LOGIC EARTH
LOGIC POWER

GA3000646
VIPER 4 CABLE
115-0172-090

INCLUDED IN 117-0171-825 KIT

ROOF
ANTENNAS
063-0173-179
121-0000-036
BOTH INCLUDED IN 117-0171-825 KIT

TWIN ROOF MOUNTED ANTENNAS   SLINGSHOT

GA3000660
SLINGSHOT KIT
117-0171-825

MACHINE TELEMATICS ONLY
SUPPORTED ON VIPER 4
RAVEN SLINGSHOT, WIFI READY

GA3000648
SLINGSHOT POWER CABLE, 250mm
115-8000-067

MODEM POWER

GA3000647
VIPER 4 HARNESS
115-7300-045

PORT

OPTIONAL SLINGSHOT SERIAL CABLE, RTK

GA3000644
WEATHER STATION
117-0171-658

GA3000646
VIPER 4 CABLE
115-0172-090
INCLUDED IN 117-0171-825 KIT

WATCH DOG WEATHER STATION

SWITCHED OUTPUT

ISO BUS

GA3000640
VIPER 4+
117-5010-010b

SWITCHED OUTPUT

GA3000645
VIPER 4 HARNESS
115-7300-028

RAVEN AUTO STEERING

GA3000198
Harness, CR7
115-7300-092

GA3000200
RAVEN CR7
115-7302-023

RAVEN BASIC UT DISPLAY

Manual Hitch Jack option.

Manually wind the Hitch Jack up or down to match the hitch tongue to the height of the tractor drawbar.

Rotate the hitch jack handle to lower the hitch tongue onto the tractor drawbar.

Raise the base plate by removing the pin, lift up the base plate, align the holes, then replace the pin.

2 Connect the Drawbar & Hitch

The Prairie Pro Series 2 Trailed Sprayer can be fitted with:

- A Manual Hitch Jack or
- An Hydraulic Hitch Jack.

To Connect the Tractor & Sprayer Using a Manual Hitch Jack:

1 Manually wind the Hitch Jack up or down to match the Sprayer's hitch tongue to the height of the tractor drawbar.

2 Reverse the tractor to align the holes of the tractor drawbar & sprayer hitch tongue.

3 Fit the drawbar pin into the drawbar.

4 Lower the Sprayer hitch tongue onto the tractor drawbar by rotating the hitch jack handle until the Sprayer fully rests on the drawbar and the hitch jack base plate is raised off the ground.

5 Ensure the drawbar pin is locked in position.

6 If extended, raise the hitch jack base plate by removing the pin, lift up the base plate, align the holes, then replace the pin.

7 Uncrew the hitch jack lock pin.

Hydraulic hitch jack option.

Reverse the tractor to align the tongue and drawbar holes, then fit the drawbar pin.

Ensure the drawbar pin is locked in position.

Unscrew the hitch jack lock pin.

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Rotate the hitch jack to the transport position, then screw-in the lock pin until it is fully tightened.

8   Rotate the hitch jack until the lock pin holes aligns to the transport position, then screw-in the hitch jack lock pin until it is fully tightened.

9   Unscew the D-shackles of the sprayer's safety chains to release them from the sprayer hitch.

10 Connect the safety chains to the tractor & fully tighten the D-Shackle bolts.

Connect the safety chains to the tractor & fully tighten the D-Shackle bolts.

Reverse the tractor close enough to connect the hydraulic hitch jack hoses (shown by arrow above) to the tractor.

To Connect the Tractor & Sprayer Using an Hydraulic Hitch Jack:

1   Reverse the tractor close enough to connect the hydraulic hitch jack hoses to the tractor.

2   Connect the hydraulic hitch jack hoses - labelled 'JACK UP' & 'JACK DOWN'.

Connect the hydraulic hitch jack hoses to the tractor - labelled 'JACK UP' & 'JACK DOWN'.

Reverse the tractor to align the tongue and drawbar holes, then fit the drawbar pin.

3   Hydraulically raise or lower the hitch jack to match the Sprayer's hitch tongue to the height of the tractor drawbar.

4   Reverse the tractor to align the holes of the tractor drawbar & sprayer hitch tongue.

5   Fit the drawbar pin into the drawbar.

6   Hydraulically lower the Sprayer hitch tongue onto the tractor drawbar until the Sprayer fully rests on the drawbar.

7   Ensure the drawbar pin is locked in position

Ensure the drawbar pin is locked in position.

Fully raise the hitch jack & its base until it rests neatly under the sprayer hitch.

8   Fully raise the hitch jack until it rests neatly under the sprayer hitch.

9   Unscew the D-shackles of the sprayer's safety chains to release them from the sprayer hitch.

10 Connect the safety chains to the tractor & fully tighten the D-Shackle bolts.

Connect the safety chains to the tractor & fully tighten the D-Shackle bolts.

From left to right: H = Electrical Harnesses; T = Tank; P = Pressure; CD = Case Drain & LS = Load Sensing; J = Jack (option) & B = Brake (option).

3 Connect Hydraulic Hoses

Tractor hydraulics are used to contol the boom level, folding & unfolding functions, hydraulic hitch jack (option) and the hydraulic motors which drive diaphragm pumps, centrifugal pumps and air compressor.

After completing the drawbar and hitch connection, it is necessary to connect the hydraulic hoses correctly.

Each hydraulic hose is tagged & a storage cradle on the hitch of the sprayer is initialed to assist the connection, disconnection & storage of the hydraulic hoses.

From left to right, storage slots are:

E   =   Electrical Harnesses
T   =   Tank
P   =   Pressure
CD =   Case Drain option &
LS =   Load Sensing
J   =   Jack (option) &
B   =   Brake (option)

Optional hydraulic hitch jack.

To Connect the Hydraulic Hoses:

1   If the Hydraulic Jack option is fitted, the Jack hoses are fitted during the drawbar connection.

2   If the Brake option is fitted, connect the Brake hose to the dedicated tractor brake port.

3   Connect the Tank hose to the tractor.

4   Connect the Pressure hose to the tractor.

Each hydraulic hose is tagged for easy recognition - Tank, Pressure hose tags shown below.

Connect the Tank, Pressure, Case Drain & Load Sensing hydraulic hoses to the tractor.

5   Connect the Case Drain and Load Sensing hoses to the tractor.

Each hydraulic hose is tagged for easy recognition - Case Drain & Load Sensing hose tags shown below.

Connect Tail Light electrical harness.

4 Connect Electrical Harnesses

Connect the electrical harnesses of the sprayer to the connectors at the rear of the tractor:

- Tail Light harness connector
- ISO BUS harness connector

Connect ISOBUS electrical harness.

Connect Main Chassis electrical harness.

Adjustable hitch of the Prairie Pro.

With the chassis and hitch firmly supported, loosen & remove the hitch angle adjustment bolts.

- Main Chasis harness connector.

Refer to Chapter 4, 'Setting Up' for more information relating to Cabin controls, harnesses and connectors.

Hitch Adjustment

The angle of the Prairie Pro hitch is adjustable for variations in tyre size and hitch height of towing vehicles to keep the sprayer chassis level.

It may be necessary to adjust the hitch angle to keep the sprayer chassis level if using:

- Different tyre size and/or
- Tow ball hitch.

To Make Hitch Angle Adjustment:

1   Park the sprayer on a flat level surface with both wheels firmly chocked.

2   Unfold the boom & lower it to working position.

3   Use appropriate jacks & supports under the front & rear sprayer chassiss to level the chassis and firmly support the chassis while the hitch angle is being changed.

4   Adjust the hitch jack to support the hitch.

5   Loosen & remove the two hitch angle adjustment bolts. It maybe necessary to adjust the hitch jack to take any weight off the bolts to easily remove them.

6   Using the hitch jack, raise or lower the hitch tongue to the required level to match the towing vehicle hitch point.

7   Refit the hitch angle adjustment bolts to the closest aligned holes and fully tighten.

8   With the hitch jack supporting the front of the sprayer, remove the jacks & supports from under the sprayer chassis

9   Connect the towing vehicle, including safety chains, then fold-up the hitch jack.

10   Ensure the towing vehicle park brake is On, then remove the wheel chocks from the sprayer wheels.

Standard Cabin Controls showing the Auxiliary 12 Buttonpad and Raven Rate Controller

Cabin Controls showing the Optional G-HUB 12" Display with the Auxiliary 12 Buttonpad & Raven Rate Controller

Optional G-Hub 12" Display featuring full colour & touch button controls.

Prairie Pro G-Hub Control System

The Prairie Pro Series 2 Trailed Sprayer is fitted with Goldacres integrated G-Hub control system comprising an external display, PLC (programmable logic controller), I/O modules, sensors & switches which control & monitor all critical machine functions. The G-Hub 12" cabin display is optional.

The system operates with all leading steering and mapping providers using the ISO BUS protocol.

On-board G-Hub diagnostics allows operators to quickly pinpoint problems without the need for laptops, specialised service tools or internet connections. For in depth diagnostics & service the 12" screen is recommended.

Standard Cabin 8 Buttonpad Control Joystick.

Standard Cabin Controls

Standard Cabin Controls of the G-Hub system include:

- An 8 Buttonpad Joystick with a Spraymaster On/Off button at rear
- An Auxiliary 12 Buttonpad (or 16 Buttonpad for the tri-folding 48m boom only)
- Raven Rate Control Module (RCM)

8 Buttonpad Joystick

The 8 Buttonpad Joystick for operating functions has a RAM mount® for mounting flexibility in the tractor cabin.

The 8 Buttonpad Joystick is supplied with a separate universal mounting for remote mounting within the tractor console.

The spray master switch at the rear can be bypassed using a foot switch or similar.

Auxiliary 12 Buttonpad (16 Buttonpad - 48m only)

The Auxiliary Buttonpad is used to operate many other sprayer functions and boom folding. Both 12 & 16 Buttonpads provide back lighting & operating status.

For sprayers not fitted with the Optional 12" G-Hub Cabin Display, the operating status lights provide some level of warnings via flashing or different coloured lights.
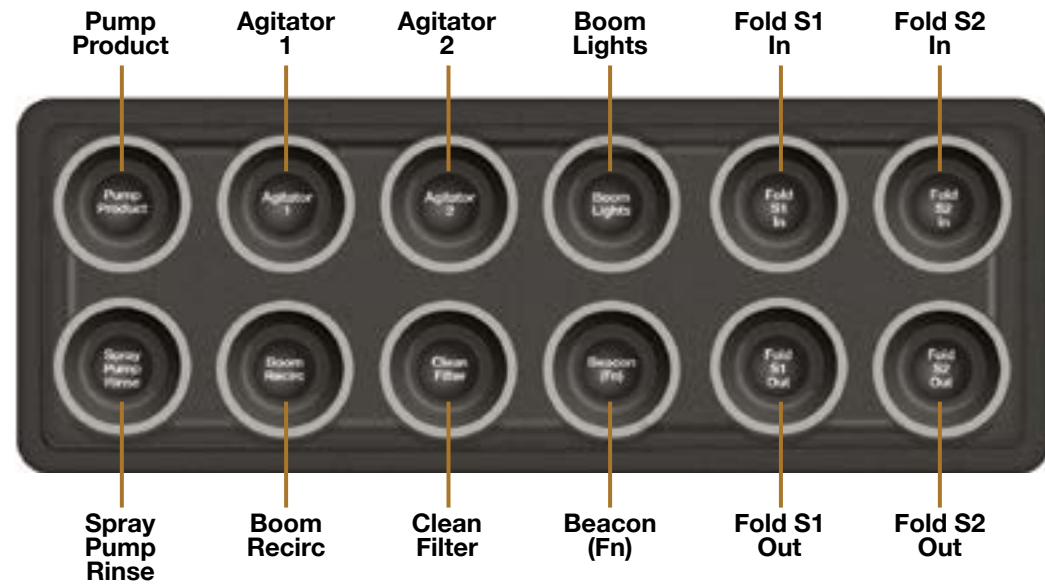
Optional G-Hub 12" Cabin Display

The Optional G-Hub 12" full colour touch display allows the operator to easily see & operate important sprayer functions.

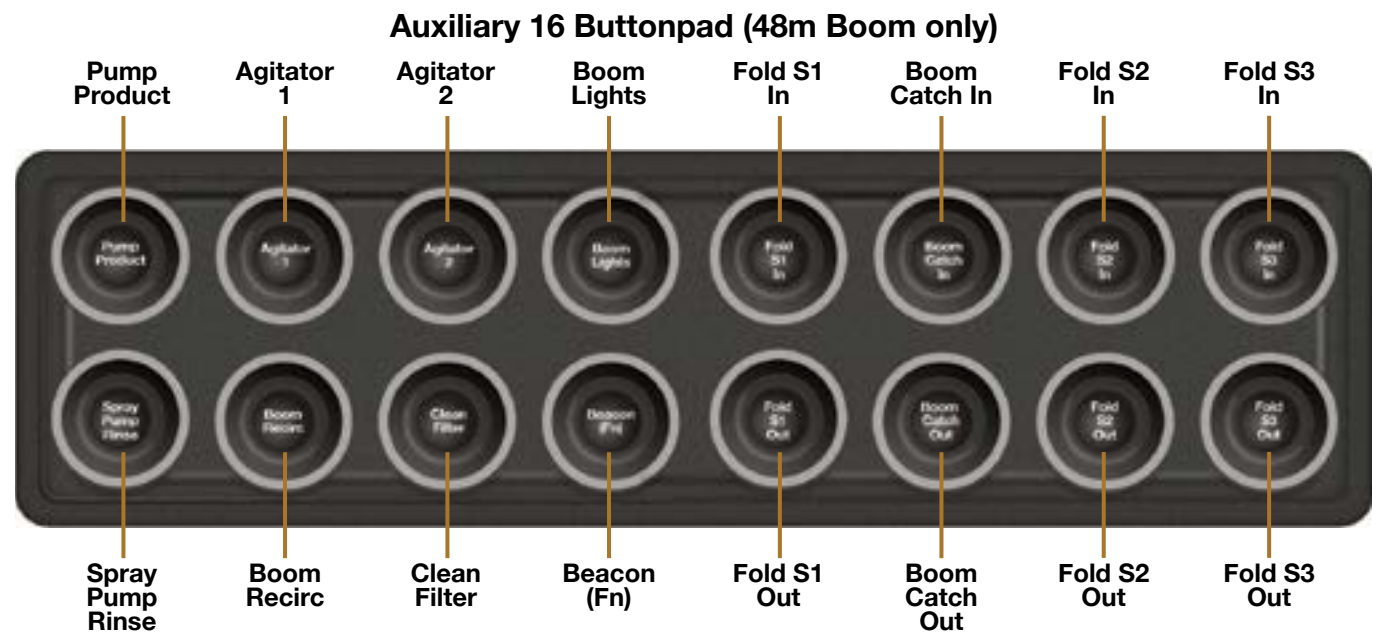*Cabin 8 Buttonpad Control Joystick showing the RHS rear Boom Master Switch.*

Boom Master Switch
(Rear Top RHS)

Tilt Left Up

Tilt Right Up

Tilt Left Down

Tilt Right Down

Boom Up

Boom Down

Fence Left

Fence Right

8 Buttonpad Joystick

Pump Product

Agitator 1

Agitator 2

Boom Lights

Fold S1 In

Fold S2 In

Spray Pump Rinse

Boom Recirc

Clean Filter

Beacon (Fn)

Fold S1 Out

Fold S2 Out

Auxiliary 12 Buttonpad

Auxiliary 16 Buttonpad (48m Boom only)

Pump Product

Agitator 1

Agitator 2

Boom Lights

Fold S1 In

Boom Catch In

Fold S2 In

Fold S3 In

Spray Pump Rinse

Boom Recirc

Clean Filter

Beacon (Fn)

Fold S1 Out

Boom Catch Out

Fold S2 Out

Fold S3 Out

Optional G-Hub 12" touch display.

External Control Panel.
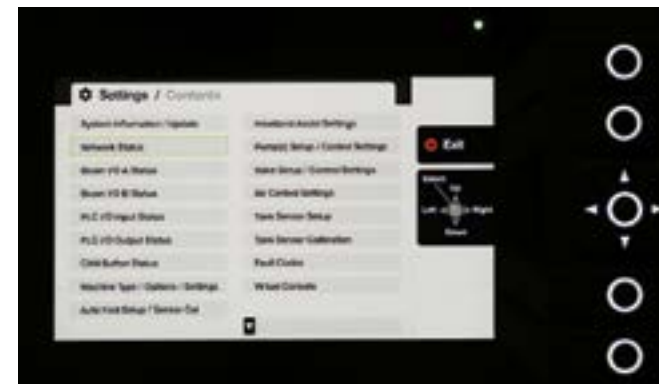
The 'Settings / Contents' Screen appears.

The Goldacres integrated G-Hub control system is pre-set and tested for spraying applications prior to delivery.

However, it is recommended that all settings and operation be checked with the tractor being used, then tested for the accuracy prior to spraying applications.

It is the operator's responsibility to correctly operate all controller and sprayer functions at all times.

The Prairie Pro Series 2 Trailed Sprayer fitted standard with Goldacres G-Hub integrated control system is pre-set either using the:

- External Control Panel, or
- Optional G-Hub 12" touch display.

Pre-Set the G-Hub Controls Using the External Control Panel

When the optional G-Hub 12" touch display is not fitted, it is necessary to use the External Control Panel to pre-set the G-Hub Control system.

To Pre-Set the G-Hub Using the External Control Panel:

1 Turn the tractor ingition key On.

2 Press & Hold the 'Clean Page' push button on the External Controller for 5 seconds to open the 'Settings Tab'.

Press & Hold the 'Clean Page' push button on the External Control Panel.

3 The 'Settings / Contents' Screen appears displaying the following information, diagnostic & machine setting menus:

- System Info/Update
- Network Status
- Boom I/O A Status
- Boom I/O B Status
- PLC I/O Input Status
- PLC I/O Output Status
- CAN Button Status

Refer to Chapter 9, Troubleshooting - for G-Hub System Infromation/Update & Diagnostic Instructions

- Machine Type / Options / Settings
- Auto Fold Setup / Sensor Cal
- Headland Assist Settings
- Pump(s) Setup / Control Settings
- Valve Setup / Control Settings
- Air Control Settings
- Tank Sensor Setup
- Tank Sensor Calibration

Refer to the Pre-Set instructions that follow in this chapter

- Fault Codes
- Virtual Console.

NOTE

The information & status menus of the 'Settings / Contents' screen can be used to check if all system components are properly connected, functioning and up to date (likewise the Fault Codes & Virtual Console menus). See Chapter 9, 'Troubleshooting' for further instructions.
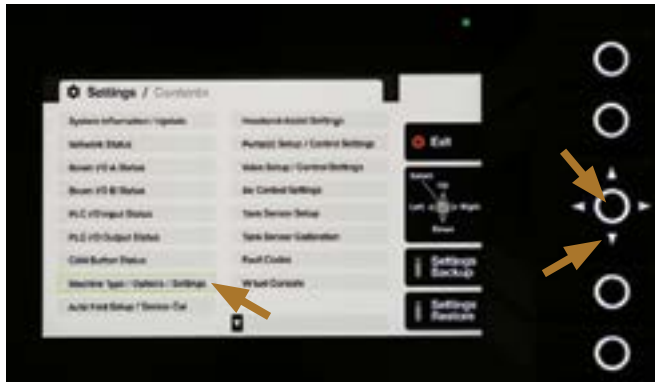
Use the Arrow push button to move the green cursor to the Machine Type / Options / Settings menu, then open the menu.

4   Press the Down Arrow push button to move the green cursor downwards to select the 'Machine Type / Options / Settings' menu (each press moves the cursor down one line), then press the 'O' push button to display the screen.

The 'Machine Type / Options / Settings' menu appears.

Use the Arrow push button to move the green cursor to 'Sprayer Controll (RCM)', then press the 'O' push button to toggle the dot to Green (On).
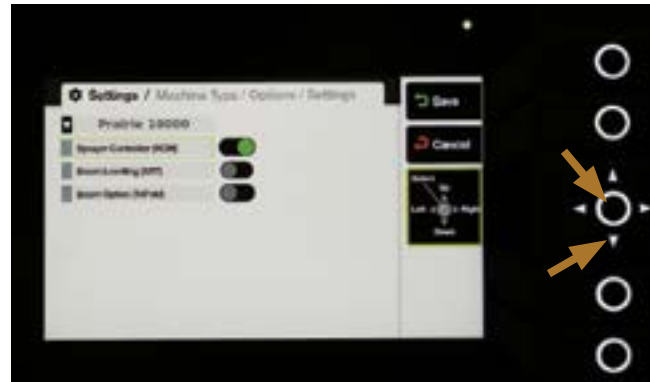
5   Press the Arrow push button to move the green cursor to 'Sprayer Controller (RCM)', then press the 'O' push button to toggle the dot to Green (On).

6   If the Boom Levelling (XRT) option is fitted, press the Arrow push button to move the green cursor to 'Boom Levelling (XRT)', then press the 'O' push button to toggle the dot to Green (On). If not fitted leave the dot Grey.

7   If the Boom Option (TriFold) option is fitted, press the Arrow push button to move the green cursor to 'Boom Option (TriFold)', then press the 'O' push button to toggle the dot to Green (On). If not fitted leave the dot Grey.

The 'Auto Fold' menu screen.

8   Press the Down Arrow push button to move the green cursor downwards to select the 'Auto Fold Setup/Sensor Cal', then press the 'O' push button to display the screen.

9   With the cursor selecting 'Auto Fold', press the 'O' push button to toggle the dot to Green (On).

Refer to Chapter 7, Boom Settings - for instructions 'A. To Set & Test Automatic Boom Folding with the External Control Panel'.

10   Press the top 'O' Save push button to save the menu settings.

The 'Machine Type / Options / Settings' menu appears.

Boom Levelling (XRT) & Boom Option (Trifold).

Press the 'O' push button activate (Green) Auto Fold, then press the top 'O' push button to save the menu settings.
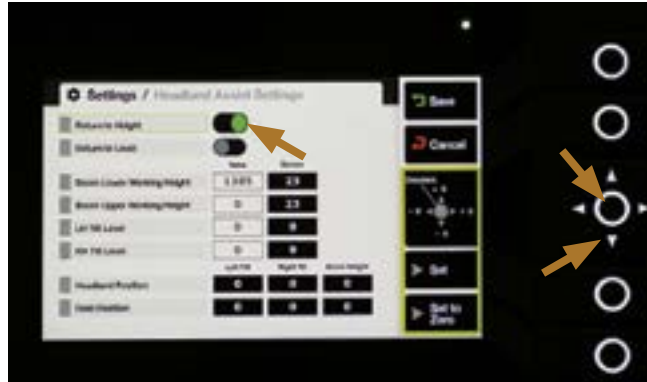
A 'Settings Saved' screen appears.

Use the appropriate push buttons to select & pre-set each of the 'Headland Assist' menu items as required.

Press the 'O' push button to open the 'Pump(s) Setup / Control Settings' menu.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

10 With the cursor selecting 'Headland Assist Settings', press the 'O' push button to open the 'Headland Assist Settings' menu.
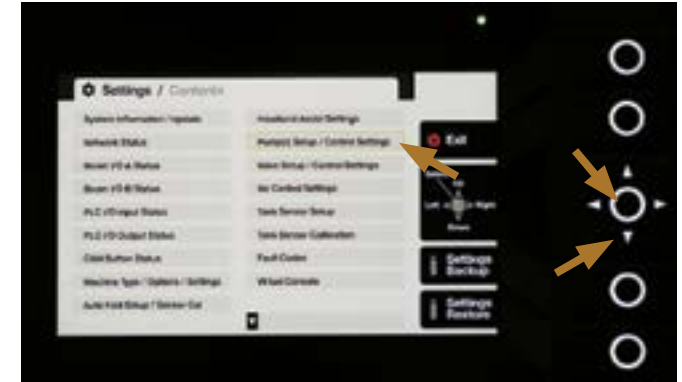
11 Press the Down Arrow push button to move the green cursor towards the 'Headland Assist' & 'Return to Level' functions. Press the 'O' push button to toggle the dot to Green (On).

Press the top 'O' Save push button to save the menu settings. A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

Refer to Chapter 7, Service - Boom Settings for instructions on setting the boom height and tilt positions.

12 With the cursor selecting 'Pump(s) SetUp / Control Settings', press the 'O' push button to open the menu.

13 Use the 'Arrow', 'O', 'Set', 'Set to Zero' & 'Save' push buttons to select and pre-set each of the 'Pump SetUp / Control Settings' menu items as required.
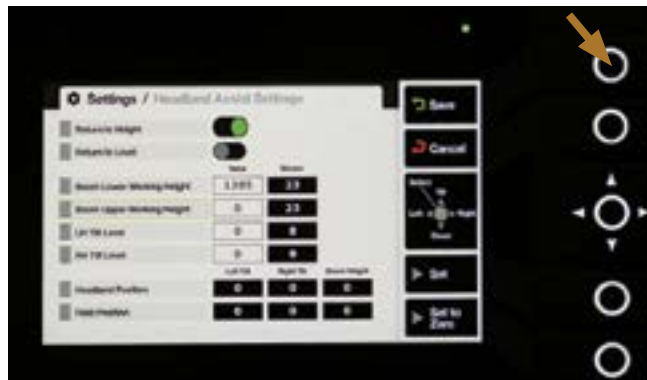
Recommended pump settings are:
- Ramp Up = 2 seconds (Pump 1 & 2)
- Ramp Down = 2 seconds (Pump 1 & 2)
- Spool Valve Cal: Zeta = 45; Arag = 60
- High RPM Alarm: Udor = 550; Arag = 4500
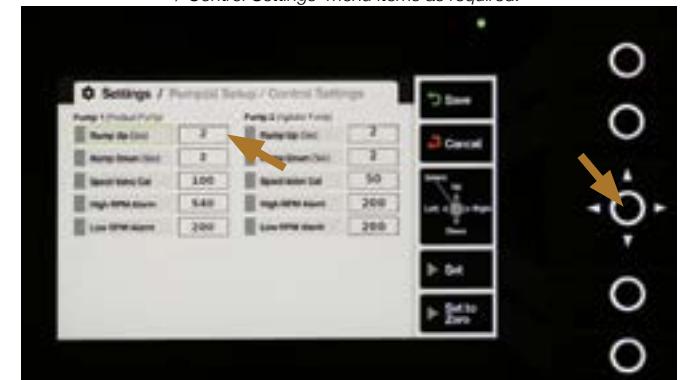- Low RPM Alarm: Udor = 200; Arag = 2000

Press the 'O' push button to open the 'Headland Assist Settings' menu.
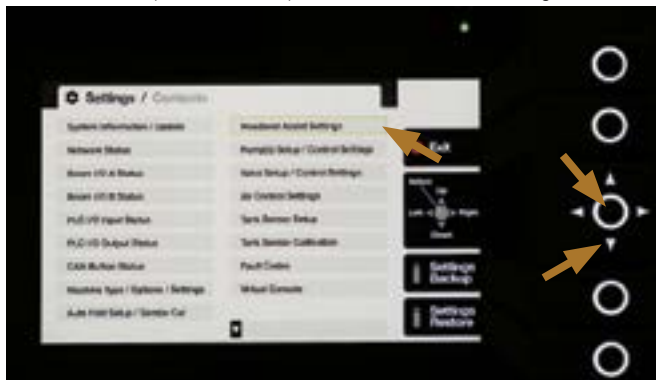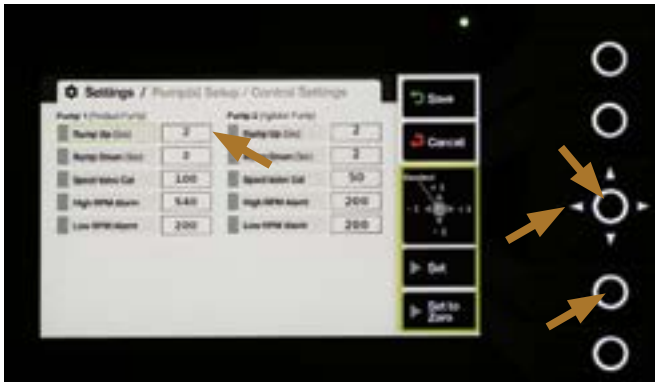

When completed, press the top 'O' Save push button to save the menu settings.

Use the appropriate push buttons to select & pre-set each of the 'Pump(s) Setup / Control Settings' menu items as required.
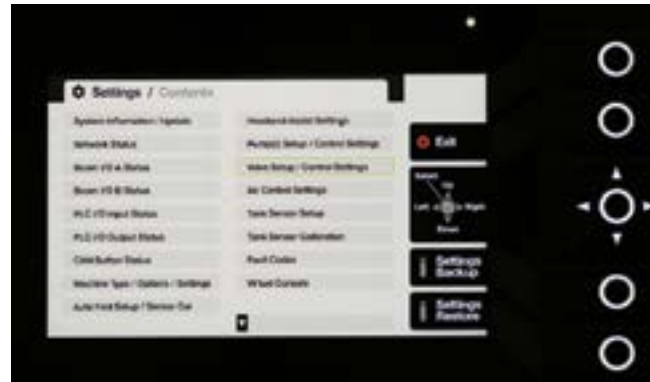
Use the appropriate push buttons to select & pre-set each of numerical value for the pumps used.

Use the '-1 and +1 Arrow' push buttons to change the numerical values as required, then press 'Set' & 'Save' push buttons to pre-set each value.

14 When completed, press the top 'O' Save push button to save the menu settings.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

Press the 'O' push button to open the 'Valve(s) Setup / Control Settings' menu.

15 With the cursor selecting 'Valve(s) SetUp / Control Settings', press the 'O' push button to open the menu.

16 Use the 'Arrow', 'O', 'Set', 'Set to Zero' & 'Save' push buttons to select and pre-set each of the 'Valve(s) SetUp / Control Settings' menu items as required.

Recommended valve settings are:

- Fill Valve Restriction = 45
- Upper Fill Buffer = 150 litres
- Boom Prime = 120 seconds.

Use the appropriate push buttons to select & pre-set each of numerical value for the pumps used.

Use the '-1/-10 and +1/+10 Arrow' push buttons to change the numerical values as required, then press 'Set' & 'Save' push buttons to pre-set each value.

17 When completed, press the top 'O' Save push button to save the menu settings.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

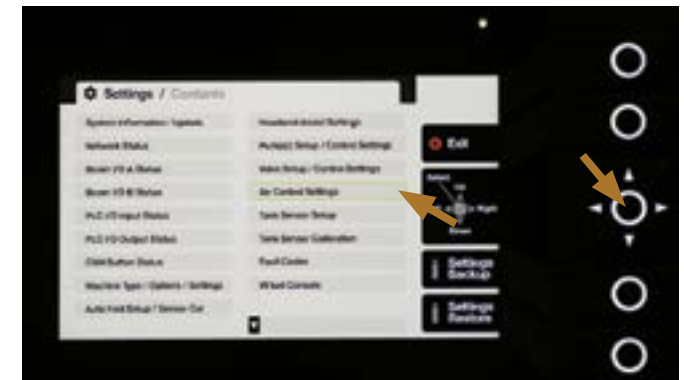18 With the cursor selecting 'Air Control Settings', press the 'O' push button to open the menu.

When completed, press the top 'O' Save push button to save the menu settings.
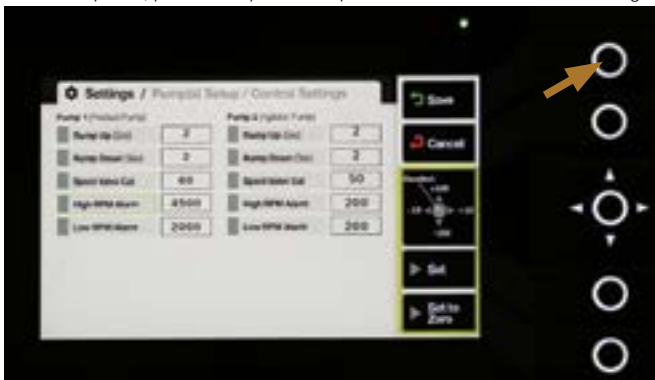
Use the appropriate push buttons to select & pre-set each valve numerical value.

Press the 'O' push button to open the 'Air Control Settings' menu.

Use the appropriate push buttons to select & pre-set each numerical value for the Air Control Settings.

Use the appropriate push buttons to select & pre-set each Air Control numerical value.

Press the 'O' push button to open the 'Tank Sensor Setup' menu.

19 Use the 'Arrow', 'O', 'Set', 'Set to Zero' & 'Save' push buttons to select and pre-set each of the 'Air Control Settings' menu items as required.

Recommended Air Control settings are:

- Start Up Delay = 20 seconds
- Air Pressure High Limit = 900 kPa
- Air Pressure High Limit = 650 kPa
- Low Air Warning = 600 kPa
- Low Boom Air Warning = 550 kPa.

Use the '-10/-100 and +10/+100 Arrow' push buttons to change the numerical values as required, then press 'Set' & 'Save' push buttons to pre-set each value.

20 When completed, press the top 'O' Save push button to save the menu settings.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.
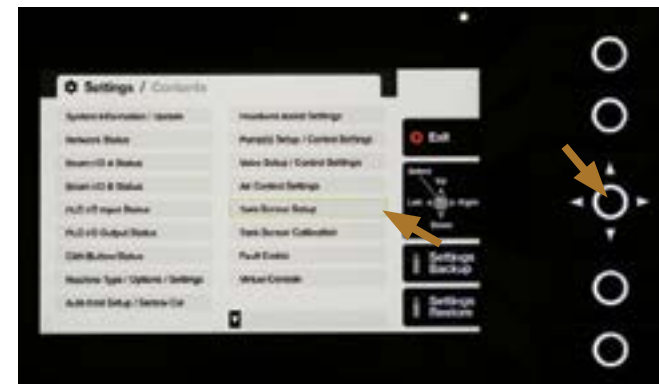
21 With the cursor selecting 'Tank Sensor Setup', press the 'O' push button to open the menu.

22 Use the 'Arrow', 'O', 'Set', 'Set to Zero' & 'Save' push buttons to select and pre-set each of the 'Tank Sensor Setup' menu items as required.

Recommended Tank Sensor settings are:

- Useable Tank Volume = Enter tank size: 5000, 6500, 8500 or 10000 litres
- Low Tank Alarm = Toggle 'On' & Enter 500 litres

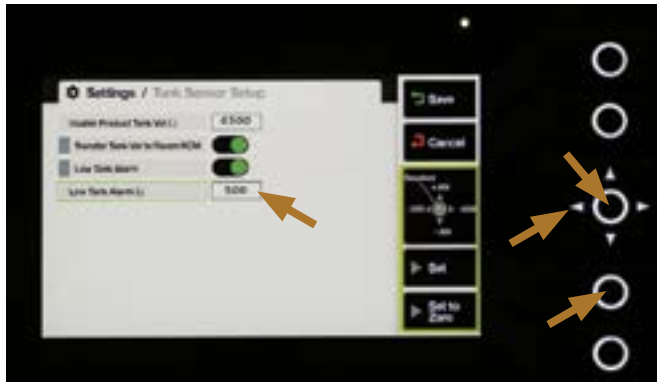*Use the appropriate push buttons to select & pre-set each valve numerical value.*

A 'Settings Saved' screen appears.

Use the appropriate push buttons to select & pre-set each numerical value.

GA8701602 REV 00 JUNE 2022

Use the appropriate push buttons to select & pre-set each Tank Sensor value.

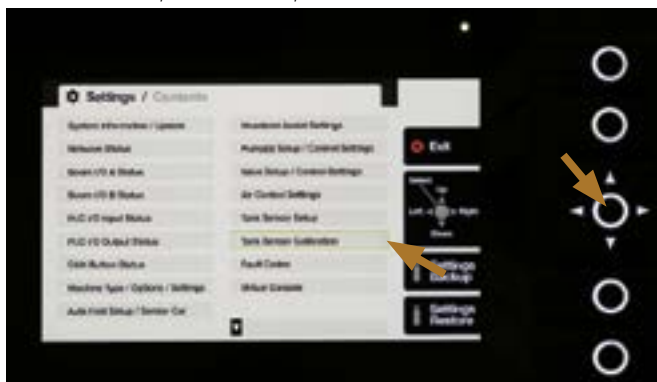Use the '-100 and +100 Arrow' push buttons to change the numerical values as required, then press 'Set' & 'Save' push buttons to pre-set each value.

23 When completed, press the top 'O' Save push button to save the menu settings.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

24 With the cursor selecting 'Tank Sensor Calibration', press the 'O' push button to open the menu.

Press the 'O' push button to open the 'Tank Sensor Calibration' menu.

Use the appropriate push buttons to select & pre-set each Tank Sensor Calibration value.

25 Use the 'Arrow', 'O', 'Set', 'Set to Zero' & 'Save' push buttons to select and pre-set each of the 'Tank Sensor Calibration' menu items as required.

Recommended Tank Sensor Calibration settings are:

• Product Tank Sensor = 4000

• Rinse Tank Sensor = 4000

Use the '-10/-100 and +10/+100 Arrow' push buttons to change the numerical values as required, then press 'Set' & 'Save' push buttons to pre-set each value.

Use the appropriate push buttons to select & pre-set each Tank Sensor Calibration value, then press the top 'O' Save push button.

A 'Settings Saved' screen appears.

26 When completed, press the top 'O' Save push button to save the menu settings.

A 'Settings Saved' screen appears, then the screen returns to the 'Setting / Contents' menu screen.

This concludes the pre-set procedure of the External G-Hub Controller.

See Chapter 8, 'Lubrication & Maintenance" for instructions on 'Flow Meter Calibration'.

NOTE
If a tank does not read Zero when empty, adjust the value to read Zero when empty in the settings.

Menu Touch Buttons

Spraying Functions & Information
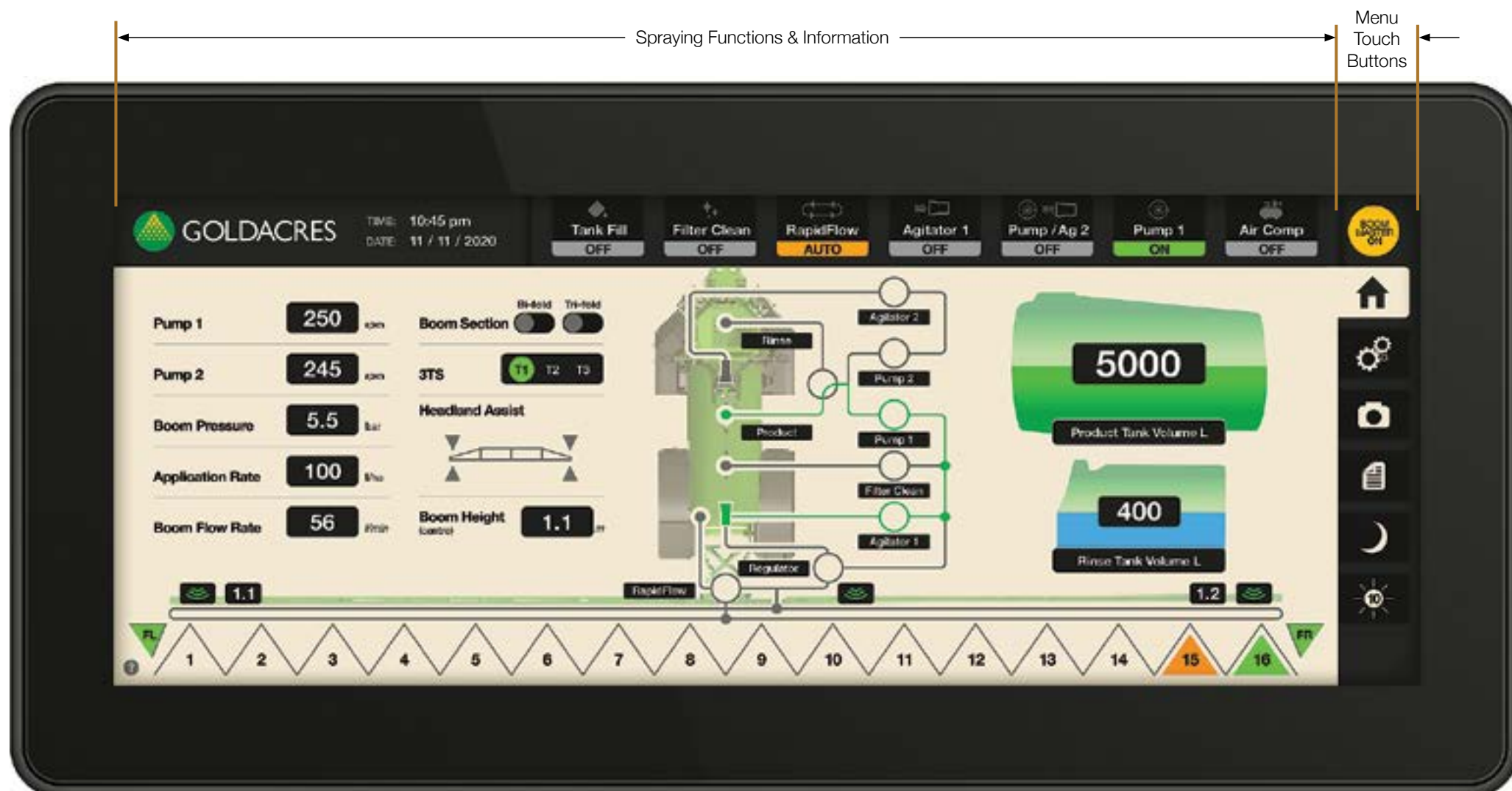
Optional G-Hub Display

Goldacres G-Hub Display with touch button controls *(Main screen shown above)* is a fully integrated electronic control system facilitating easy in-cab control & monitoring of critical spraying functions (see Chapter 6 'Operation' for instructions),

as well as an External G-Hub Control Screen for filling & cleaing functions (Refer to Chapter 6 'Operation', 'Filling the Sprayer').

The G-Hub Controller integrated system is designed to operate seamlessly with leading steering and mapping providers using the ISOBUS protocol.

On-board diagnostics allow the operator to quickly pinpoint problems without the need for laptops, specialised service tools or internet connection (Refer to Chapter 9 'Trouble Shooting' for more information).

Spraying Function Buttons
Manual Touch Control:
    Off (Grey)
    On (Green)
    Auto (Amber)

Tank Fill Button
Off / Density Factor / Custom

Pressure Filter Clean Button
On / Off / Auto

RapidFlow Button
Prime / Auto / On / Off

Pump 2 Button
Auto / Off / On

Agitator Button
Auto / Off / On

Pump 1 Button
Off / Product / Rinse

Air Compressor Button
On / Off

Boom Section Switches:
- **Bi-fold -** (36m & 36m)
    On = green
    Off = grey
- **Tri-fold -** (48m only)

Pump 1 - current speed (rpm)

3TS - Active tiers
    On = green

Pump 2 - current speed (rpm)

Boom Pressure - (bar)

Current Application Rate - (l/ha)

Boom Flow Rate - (l/min)

Boom Height - (m) at centre section

Schematic Flow Diagram - displays current liquid flow:
On = Green/Blue type
Off = Grey

Product Tank Volume - (litres)

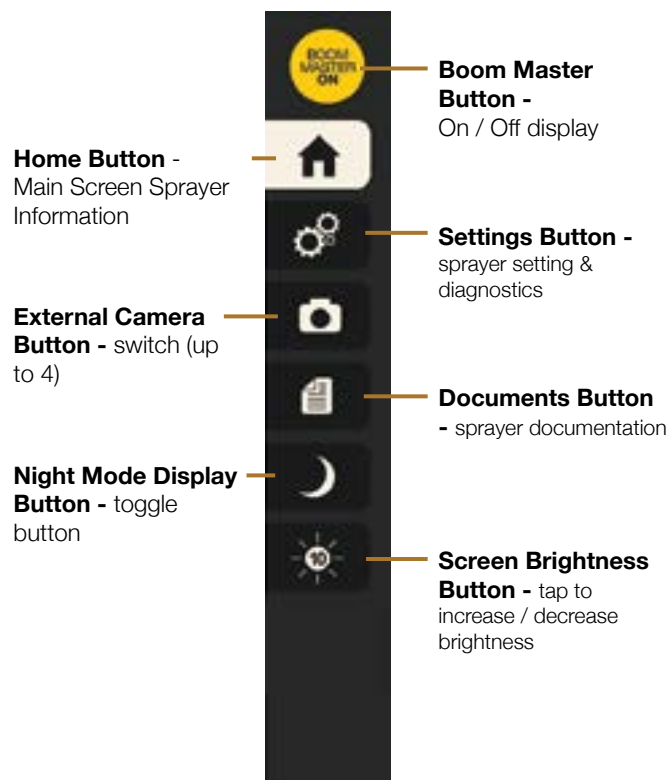**Rinse Tank Volume -** (litres)

Fenceline Nozzle -
Joystick operation:
        On (Green)
        Off (Amber)

Boom Section Buttons -
Manual Touch/Slide Control:
    - On (Green)
    - Waiting (Amber)
    - Off (Clear)

Head Land Assist -
Green = Settings are set

## Optional G-Hub Display Touch Buttons & Information

The Spraying System touch buttons & Information (on the Main screen shown above) illustrate the touch buttons for spraying functions and display information of the G-Hub Controller spraying system.

Home Button - Main Screen Sprayer Information

Boom Master Button - On / Off display

External Camera Button - switch (up to 4)

Settings Button - sprayer setting & diagnostics

Documents Button - sprayer documentation

Night Mode Display Button - toggle button

Screen Brightness Button - tap to increase / decrease brightness

Menu Touch Buttons

The Menu touch buttons on the Home screen (shown above) provide touch buttons to access the G-Hub settings, cameras, documents, display lighting and other functions according to the configuration and settings of the Prairie Pro.
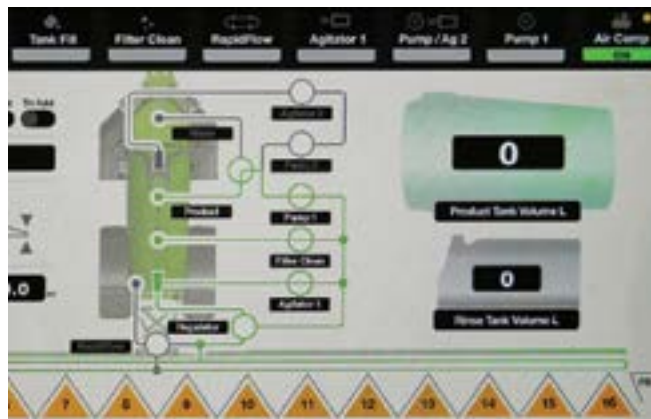
Spraying System Touch Buttons

The Spraying System touch buttons (shown above) provides 6 or 7 button functions along the top the screen (depending on sprayer configuration):

- Tank Fill
- Filter Clean
- Rapid Flow
- Agitator
- Pump 2
- Pump 1
- Air Comp

All touch buttons show:
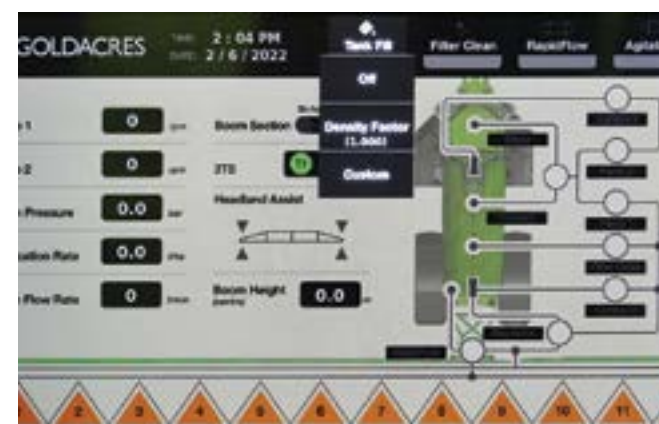
- Grey when Off; Amber in Auto; Green when On

10 or 16 On/Off Boom touch buttons (depending on sprayer configuration) at the base of the screen (one for each boom section) show:

- Amber when Off & Green when On (active).

The FL & FR Fencline symbols are used for display only.

The Boom Section touch buttons & Fencline indicators display:
- Green when On; Amber when Waiting & Clear when Off.

Tank Fill Touch Button

Press the 'Tank Fill' touch button (shown above) and drop a down menu of three touch buttons appears:

- Off

  Press the 'Off' touch button & the screen returns to the 'Tank Fill' touch button 'Off' (grey).

- Density factor - allows the operator to change the density factor according to chemicals being used.

  1 Press the 'Density Factor' touch button and a keypad appears.

  2 Press the touch buttons to enter the Density Factor required (1000 = 1.0 unit), then press Enter.

  The screen returns to the 'Tank Fill' touch button.

- Custom - allows the operator to set the Product Tank fill volume (litres) before filling.

  1 Press the 'Custom' touch button and a keypad appears.

  2 Press the touch buttons to enter the amount of Fill liquid required for the Product Tank, then press Enter.

  The screen returns to the 'Tank Fill' touch button (Orange). The 'Desired Fill' is now set for use on the External Display.
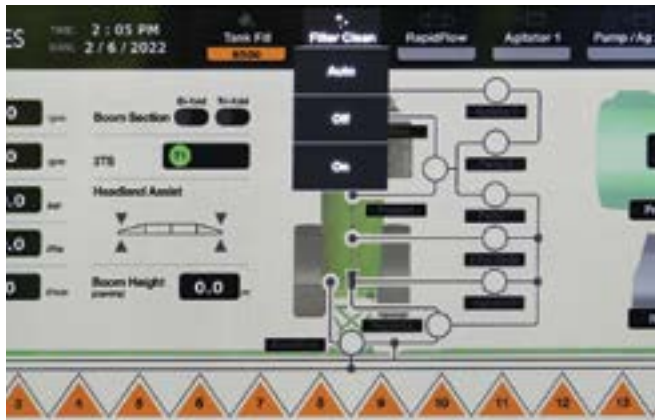
Filter Clean Touch Button

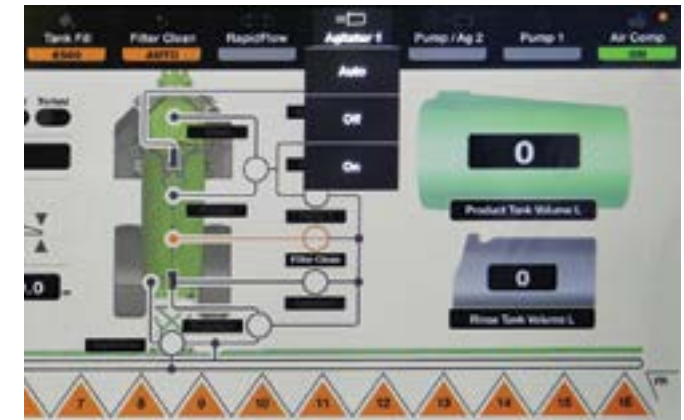Press the 'Filter Clean' touch button (shown above) and drop down menu of three touch buttons appears:

- On

  Press the 'On' touch button & the screen returns with the 'Filter Clean' touch button displaying 'On' (Green)

- Off

  Press the 'Off' touch button & the screen returns with the "Filter Clean' touch button displaying 'Off' (Grey)

- Auto

  Press the 'Auto' touch button & the screen returns with the "Filter Clean' touch button displaying 'Auto' (Amber).

  When set to 'Auto', pressure filter flushing automatically activates when all boom sections are switched Off or the boom Master Switch is turned Off as set by the operator

  Each time the boom sections are turned Off, a valve opens passing flow through the filter to take trapped particles back to product tank thereby clearing the element. The red valve at the base of the pressure filter must be open for this to function.
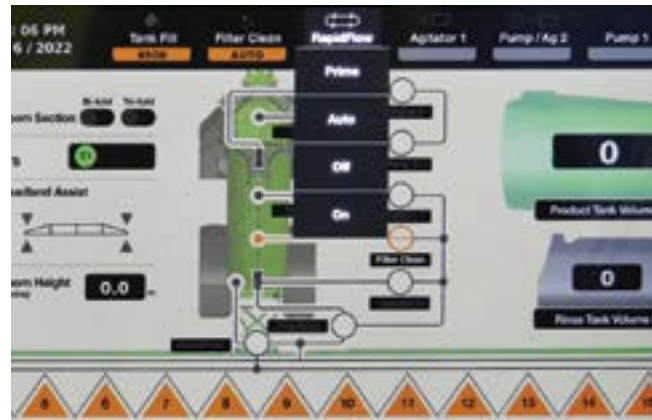
RapidFlow Touch Button

Press the 'RapidFlow' touch button (shown above) and a drop down menu of four touch buttons appears:

- Prime
  Press the 'RapidFlow' touch button & the screen returns with the 'RapidFlow' key displaying 'RapidFlow' (Amber)

  Priming the boom lines begins with a count down timer. When boom priming is completed, the 'RapidFlow' key displays 'Auto' (Amber)

- Auto
  Press the 'Auto' touch button & the screen returns with the 'RapidFlow' touch button displaying 'Auto' (Amber)

  Press the 'Auto' touch button & the screen returns with the "Filter Clean' touch button displaying 'Auto' (Amber).

  When set to 'Auto', pressure filter flushing automatically activates when all boom sections are switched Off or the boom Master Switch is turned Off as set by the operator

- Off
  Press the 'Off' touch button & the screen returns with the 'RapidFlow' touch button displaying 'Off' (Grey)

- On
  Press the 'On' touch button & the screen returns with the 'RapidFlow' touch button displaying 'On' (Green).

Agitator Touch Button

Press the 'Agitator' touch button (shown above) and drop down menu of three touch buttons appears:

- Auto

  Press the 'Auto' touch button & the screen returns with the 'Agitator' touch button displaying 'Auto' (Amber).

  When set to Auto', the agitator automatically switches Off when minimum preset tank level is reached. Refer to Chapter 4 'Setting Up', 'Preset the G-Hub Controller'.

- Off
  Press the 'Off' touch button & the screen returns with the 'Agitator' touch button displaying 'Off' (Grey).

- On
  Press the 'On' touch button & the screen returns with the 'Agitator' touch button displaying 'On' (Green).
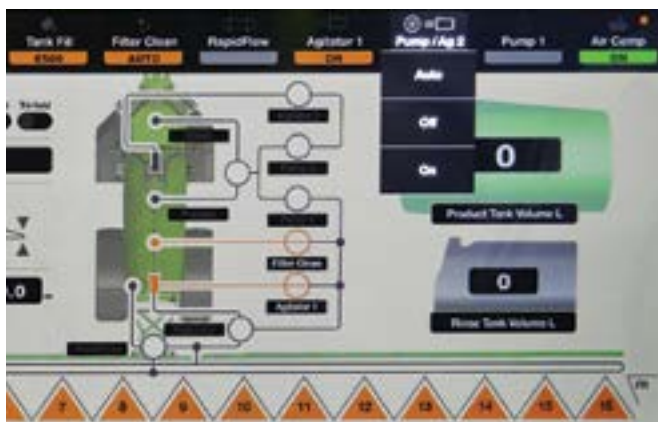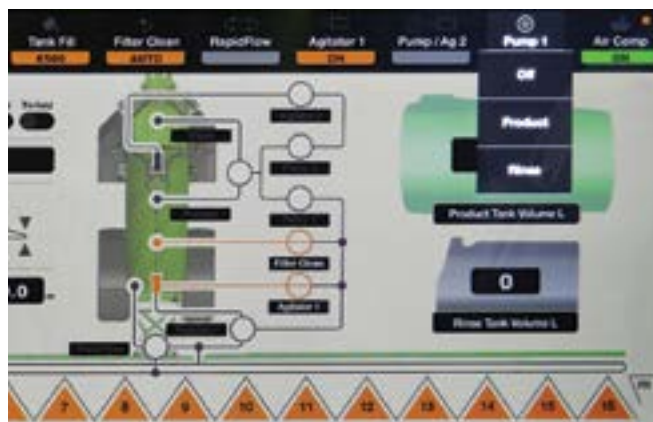
Pump 2 Touch Button

The 'Pump 2' touch button, which only appears if a 2nd pump is fitted, provides selection of the Rinse tank or Product tank as the water source.

Press the Pump 2 touch button (shown above) and a drop down menu of three touch buttons appears.

Press the touch button required:

- Auto
  Press the 'Auto' touch button & the screen returns with the 'Pump 2' touch button displaying 'Auto' (Amber)

  Auto switches Pump 2 Off when minimum tank level is reached.

- Off
  Press the 'Off' touch button & the screen returns with the 'Pump' touch button displaying 'Off' (Grey)

- On
  Press the 'On' touch button & the screen returns with the 'Agitator' touch button displaying 'On' (Green).

Pump 1 Touch Button

The 'Pump 1' touch button provides selection of the Rinse tank or Product tank as the water source.

Press the Pump 1 touch button (shown above) and a drop down menu of three touch buttons appears.

Press the touch button required:

- Off
  Press the 'Off' touch button & the screen returns with the 'Pump' touch button displaying 'Off' (Grey)

- Product
  Press the 'Product' touch button & the screen returns with the 'Pump' touch button displaying 'Product' (Green)

- Rinse
  Press the 'Rinse' touch button & the screen returns with the 'Pump' touch button displaying 'Rinse' (Blue).

Air Comp Touch Button

Press the 'Air Comp' touch button (shown above) and drop down menu of two touch buttons appears:

- On
  Press the 'Air Comp' touch button & the screen returns with the 'Air Comp' touch button displaying 'On' (Green)

- Off
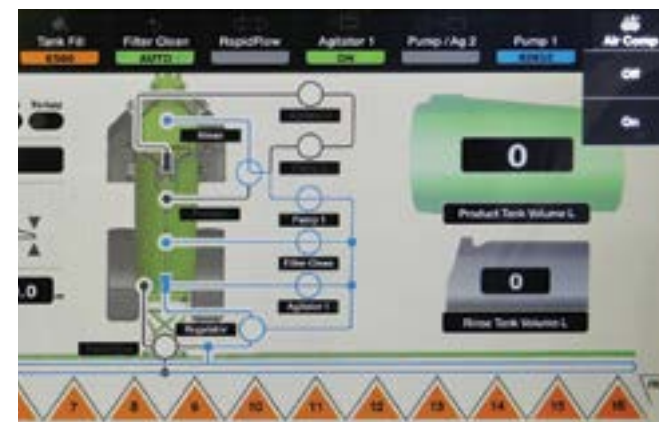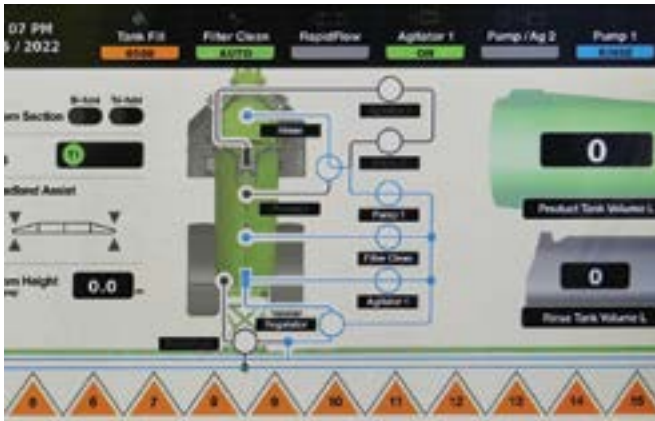 Press the 'Off' touch button & the screen returns with the "Air Comp' touch button displaying 'Off' (Grey).

Fit the optional USB connection cable to USB connector on the Display back.

Boom Section Touch Buttons

The Boom Section touch buttons, along the bottom of the screen, are used to switch selected boom sections On & Off.

Press the Boom Section touch button to cycle between On & Off as required:

- Boom Sections
  Press each touch button as required to activate or deactivate boom sections as required.

  Section touch buttons display:
  - Amber while waiting for the Spray Controller
  - Green when On
  - Clear when Off.

Fenceline Nozzle Indicators

The Fenceline Nozzle symbols (FL & FR) on the left & right ends of the boom, show whether the fenceline nozzles are On or Off.

- Fenceline Nozzle touch buttons display:
  - Amber while waiting for the Spray Controller
  - Green when On
  - Clear when Off.

Switching the fenceline nozzles 'On' or 'Off' is done by using the 'Fence Nozzle Left & Right' bottom push buttons on the 8 Button pad Joystick.

Back-Up/Restore USB

Use the Back-Up/Restore USB facility to back-up system data onto a USB stick & to restore system data from the USB stick.

To Back-Up System Settings & Data to a USB Memory Stick:

1. An optional USB connection cable GA3000470 is required.
2. Remove the plug, then fit the optional USB cable to USB connector on the back of the Display unit *(shown below left)*.
3. Turn On the tractor ignition key.

Remove the plug to fit the optional USB cable to USB connector on the back of the Display unit.
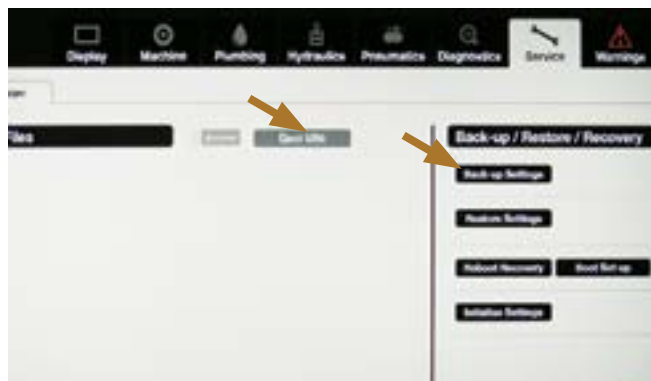
Use the 'Settings' & 'Service Tab' touch buttons & 'Software' tab to open the Software screen, then unlock the screen.

Wait for the Eject USB touch button to go Black, then press the 'Back-up Settings' touch button to begin backing up settings.

Wait for the Eject USB touch button to go Black, then press the 'Restore Settings' touch button to begin restoring the settings.

4   Press the 'Settings' touch button on the G-Hub Display screen to open the Settings screen.

Press the 'Service Tab' touch button to open the Service screen, then press the Software tab. The Software screen displays Pump Hours, USB File & Back-up/Restore/ Recovery functions.

5   Unlock the screen (see instructions this chapter under 'Pre-Set the G-Hub Using the Optional G-Hub Cabin Display').

6   Remove the cap of the Back-Up/Restore USB fitting.

7   Insert a USB Memory Stick into the fitting & wait for the USB stick to display on 'USB Files' screen (Eject USB touch button illuminates Black).

8   Press the 'Back-up Settings' touch button & the screen changes to 'G-HUB Backing up... DO NOT SWITCH OFF MACHINE'.

9   When Back-Up is completed, press the 'Eject USB' touch button, then safely remove the USB Memory Stick.

10 Refit the cap to the USB fitting.

To Restore System Settings & Data from the USB Stick:

1   Follow steps 1 to 7 'To Back-Up System Settings & Data to a USB Memory Stick'.

2   Press the 'Restore Settings touch button & the screen changes to 'G-HUB Restoring... DO NOT SWITCH OFF MACHINE'.

3   When Restoring is completed, press the 'Eject USB' touch button, then safely remove the USB Memory Stick.

4   Refit the cap to USB fitting.

Setting Up – Preparation for Use   4

The Settings 'Display' tab screen showing 8 tabs along the top of the screen.

Press the 'Enter' push button of the start-up screen to open the Main screen.

Press the appropriate touch buttons to set local Date & Time.

Pre-Set the G-Hub Using the Optional G-Hub Cabin Display

Goldacres G-Hub Controller is pre-set and tested for spraying applications prior to delivery.

However, it is recommended that all settings and operation be checked and tested for accuracy prior to spraying applications.

It is the operator's responsibility to correctly operate all controller and sprayer functions at all times.

The 'Settings' touch button in the Menu column on the right hand side of the G-Hub screen gives access to 8 tab screens for settings, diagnostics and service, namely:

1. Display
2. Machine
3. Plumbing
4. Hydraulics
5. Pneumatics
6. Diagnostics (refer to chapter 9. 'Troubleshooting' for details)
7. Service (refer to chapter 8, 'Lubrication & Maintenance' for details).
8. Warnings.

Pre-setting the G-Hub uses the first 5 of these screens.

To Pre-Set the G-Hub Using the 12" Cabin Display:

1. Start the tractor engine.
2. After G-Hub cabin display start-up screen appears, press the Enter touch button and the Main screen appears.
3. Press the 'Settings' touch button on the G-Hub Main screen touch button 'Menu' to open the Display screen.

Press the 'Settings' touch button on the G-Hub 'Menu' to open the Display screen.
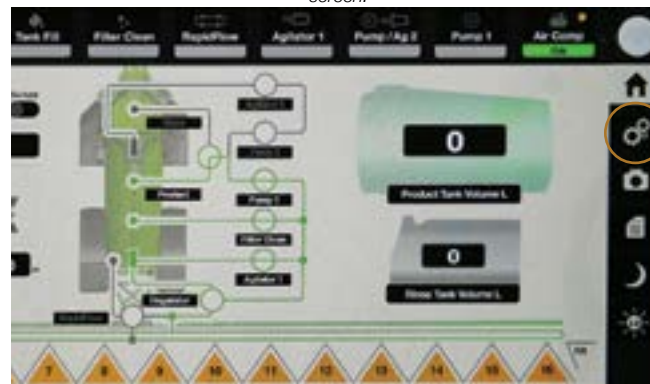
1   Display

The Display screen gives access to set both Date & Time.

To Set the Date:

 i) Press the Day Minus (-) or Plus (+) touch buttons to select the correct day.

 ii) Press the Month Minus (-) or Plus (+) touch buttons to select the correct month.

 iii) Press the Year Minus (-) or Plus (+) touch buttons to select the correct year.

To Set the Time:

 i) Press the Hour Minus (-) or Plus (+) touch buttons to select the correct hour of the day.

 ii) Press the Minutes Minus (-) or Plus (+) touch buttons to select the correct time in minutes.

 iii) Press the 24 Hour Time touch button if 24 hour is preferred. The touch button will go Green when selected & Grey when deselected.

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Press appropriate touch buttons to set Display Backlight', then press 'SAVE'.

Press the 'Machine' Tab touch button, then press the 'Unlock to change' touch button to unlock the screen for editing.

Press the password space touch button, then press the touch buttons on the numerical keypad and Press enter.

To Set the Display Backlight:

i) Press the 'Auto Brightness' touch button if preferred. The touch button will go Green when selected & Grey when deselected.

ii) Press the 'Day Mode' Set touch button and a numerical keypad appears.

Press the numbers to set the value eg, 85, then press Enter. The screen returns to the display tab screen with eg, 85 displayed in the 'Day Mode'display.

iii) Press the 'Night Mode' Set touch button and a numerical keypad appears.

Press the numbers to set the value eg, 2, then press Enter. The screen returns to the display tab screen with eg, 2 displayed in the 'Night Mode'display.

iv) When completed, press the 'SAVE' touch button to save the settings.

2 Machine

Press the Machine Tab touch button to open the Machine Tab screen. The Machine Setup tab screen opens displaying:
i) Sprayer Model
ii) Boom Type
iii) Height Readout Non XRT
iv) Pump 1 Type
v) Pump 2 Type.

There is also a second tab 'Boom Automation". Refer to Chapter 7, 'Boom Settings' for instructions on Boom Automation.

The Machine Settings screen is locked for protection from uninformed or accidental alteration.

The screen must be unlocked before any setting or alterations can be made.

To Unlock the Machine Tab Screen:

1 Press the 'Unlock to change' touch button at the bottom RHS of the panel and a password request appears.

2 Press the password space and a numerical keypad appears.

3 Press the numerical touch buttons to enter the password '1978', and press the 'Enter' touch button. The screen returns to the 'Password' with '****' displayed.

4 Press the 'OK' touch button and the screen returns to the Machine Screen with the 'Unlocked to change' symbol unlocked and coloured Green.

Press the 'OK' touch button to unlock the screen for changes to be made.

NOTE

The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system.

If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain.

The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost.

The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

NOTE

The 'Boom Automation" tab is not covered in this chapter. Refer to Chapter 7, 'Boom Settings' for instructions on Boom Automation.
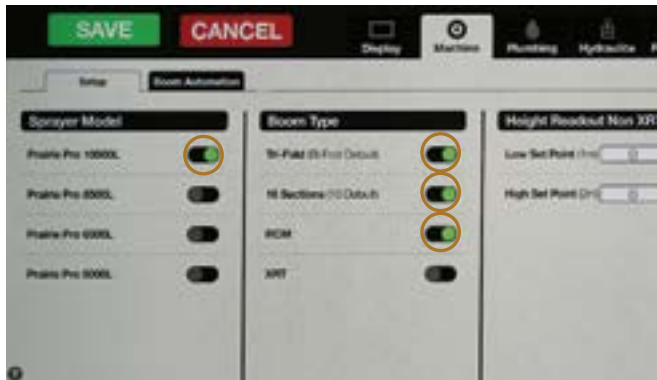

Select the appropriate Sprayer Model and Boom Type settings.

Select & press the appropriate touch buttons to set boom height & Pump 1 Type settings according to your sprayer.

Press the appropriate touch button to set the Pump 2 Type settings (if fitted).

To Select the Appropriate Settings for your Prairie Pro:

i)   Sprayer Model

Press the touch button applicable to your machine:

- 10000
- 8500
- 6500
- 5000

The touch button goes Green when selected & Grey when deselected.

ii) Boom Type

Press the touch buttons applicable to your machine:

- Tri-fold (Bi-fold default)
- 16 Sections (10 default)
- RCM
- XRT

Touch buttons go Green when selected & Grey when deselected.

iii) Height Readout Non XRT

To Set the Low Set Point:

Unfold the boom and position the nozzels exactly 1m from the ground.

Press the 'Set' touch button to set the 'Low Set Point'.

To Set the Low High Point:

Unfold the boom and position the nozzels exactly 2m above the ground.

Press the 'Set' touch button to set the 'High Set Point'.

iv) Pump 1 Type

Press the touch button applicable to your Prairie Pro:

- Zeta 260 (500 rpm) or
- High flow centrifugal.

The touch button goes Green when selected & Grey when deselected.

iv) Pump 2 Type (if fitted)

Press the touch button applicable to your sprayer:

- Zeta 260 (500 rpm) or
- High flow centrifugal.

The touch button goes Green when selected & Grey when deselected.

When Machine settings are completed, press the 'SAVE' touch button on top left hand side of the screen to save the settings into the G-Hub system.

If you don't press 'SAVE' touch button, the settings entered on the G-Hub screen will be lost.

After Save is pressed, the G-Hub Home screen will return. Press the 'Setting' touch button to continue with pre-setting.

Press the 'Pumbing' Tab touch button to open the Plumbing Settings screen.

Press the 'Unlock to change' touch button to unlock the screen for editing.

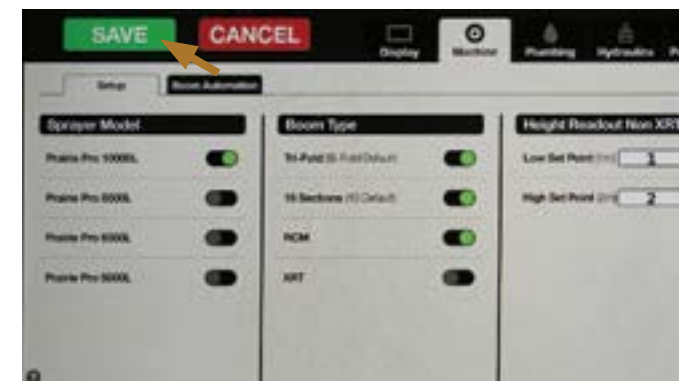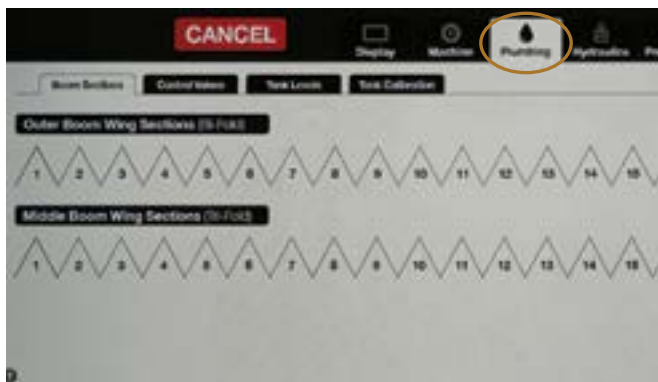*If required, select & press the touch buttons of the 'Tri-fold' booms sections to remain On.*

3 Plumbing

Press the 'Plumbing' Tab touch button to open the Plumbing settings screen and the Plumbing settings screen opens displaying series of tabs (opening on the first tab):

 A. Boom Sections

 B. Control Valves

 C. Tank Levels

 D. Tank Calibration.

A. Boom Sections Tab

The 'Boom Section' tab screen provides setting options for:

 i) Selecting boom sections to be automatically shut off when using the Bi-fold boom functions.

 ii) Selecting boom sections to be automatically shut off when using the Tri-fold boom functions.

 iii) Enabling or disabling Auto Fold Section Shut-off.

 vi) Emergency virtual control of boom functions if needed.

NOTE

The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system.

If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain.

The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost.

The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

The Plumbing Tab screen is locked for protection from uninformed or accidental alteration. The screen must be unlocked before any setting or alterations can be made.

To Make Changes to the Boom Sections:

First unlock the 'Plumbing' screen, by pressing the 'Unlock to change' touch button at the bottom RHS of the panel and follow the instructions given under '2 Machine' in this chapter.

 i) **Outer Boom Wing Sections (Bi-fold)**

  If using 'Bi-fold', select & press the touch buttons of the boom sections to remain On when the Bi-fold function is being used. Selected sections go Green.

If required, select & press the touch buttons of the 'Bi-fold' booms sections to remain On.

 ii) **Middle Boom Wing Sections (Tri-fold)**

  If using 'Tri-fold', select & press the touch buttons of the boom sections to remain On when the Tri-fold function is being used. Selected sections go Green.

 iii) **Auto Fold Section Shut-off**

  Press the 'Enable' touch button to automatically shut off the boom sections not used when Bi-fold or Tri-fold is used. The touch Button is Green when enabled & Grey when disabled.

 vi) **Virtual Switch Box**

  The Virtual Switch Box can be switched Off to disable the ability to switch sections On/Off via the G-Hub screen. This allows switching to be done via the Iso Bus display only.

Press the 'Auto Fold Section Shut-off' touch button booms to activate the the Auto Shut-off.

Press the 'Control Valve' Tab touch button to open the Control Valve Settings screen.

Press the 'Fill Valve (Slow)' & 'Upper Fill Buffer (L)' touch buttons respectively to set the values required.

Press the 'Auto Master Off' touch button activate auto-off function of the Boom Master Switch.
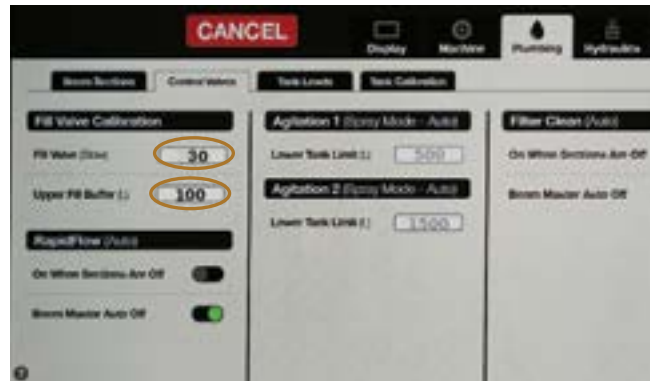
B. Control Valves Tab

Press the Control Valves Tab touch button to open the Control Valves settings screen and the Control Valves screen opens displaying:

- i)   Fill Valve Calibration
- ii) Rapid Flow (Auto)
- iii) Agitation 1 (Spray Mode - Auto)
- iv) Agitation 2 (Spray Mode - Auto)
- v)   Filter Clean (Auto)
- vi) Boom Prime.

i)   Fill Valve Calibration

The Fill Valve Calibration settings comprise:

- 'Fill Valve (Slow)' setting - used to create back pressure when filling the product tank (sufficient back pressure is required to provide enough pressure for operating the rinse nozzles).
- 'Upper Fill Buffer (L)' setting - used to set an upper fill level for the product tank as a buffer for slowing and stopping tank filling. At the point set, the product fill valve with reduce flow into the product tank before it reaches the target fill volume.

To Set the Fill Valve (Slow):

1   Press the 'Fill Valve (Slow)' display touch button and a numerical keypad appears.

2   Press the numbers to set the value eg, 30, then press Enter. The screen returns to the Control Valves tab screen with eg, 30 displayed in the Fill Valve (Slow) display.

To Set the 'Upper Fill Buffer (L)':

1   Press the 'Upper Fill Buffer (L)' display touch button and a numerical keypad appears.

2   Press the numbers to set the value eg, 100 (litres), then press Enter. The screen returns to the Control Valves tab screen with eg, '100' displayed in the 'Upper Fill Buffer (L)' display.

NOTE
The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system. If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain. The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost. The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

ii) Rapid Flow (Auto)

The Rapid Flow (Auto) settings (for boom recirculation) comprise:

- 'On When Sections Are Off':
  - Engages the Rapid Flow when selected boom sections are turned Off
  - Disengages Rapid Flow when boom sections are turned On.
- 'Boom Master Auto Off':
  - Engages Rapid Flow when the Boom Master Switch is used to stop spraying
  - Disengages Rapid Flow when the Boom Master Switch is used to start spraying.

To Select the 'On When Sections Are Off' setting:

Press the 'On When Sections Are Off' touch button. The touch button displays Green when selected & Grey when deselected,

OR

To Select the 'Boom Master Auto Off' setting:

Press the 'Boom Master Auto Off' touch button. The touch button displays Green when selected & Grey when deselected.

NOTE
Rapid Flow Auto & Filter Clean Auto cannot use the same setting.

Press the 'Agitation 1' & 'Agitation 2' 'Lower Tank Limit (L)' touch buttons respectively to set the values required.

Press the 'Boom Master Auto Off' touch button activate auto-off function of the Boom Master Switch.

Press the 'Boom Prime Time (Sec)' touch button to set the time required.

iii) Agitation 1 (Spray Mode - Auto)

The Agitation 1 (Spray Mode - Auto) function determines the lower tank level that triggers the product tank agitator to stop operating in order to reduce foaming at low tank levels.

**To Set the 'Lower Tank Level (L)':**

1 Press the 'Lower Tank Level (L)' display touch button and a numerical keypad appears.

2 Press the numbers to set the value at 500, then press 'Enter'. The screen returns to the Agitation Spray Mode (Auto) screen with 500 displayed in the 'Lower Tank Level (L)' display.

iv) Agitation 2 (Spray Mode - Auto)

The Agitation 2 (Spray Mode - Auto) function determines the lower tank level that triggers the 2nd product tank agitator (fitted option to 8500 & 10000 litre models) to stop operating in order to reduce foaming at low tank levels.

To Set the 'Lower Tank Level (L)':

1 Press the 'Lower Tank Level (L)' display touch button and a numerical keypad appears.

2 Press the numbers to set the value at 1500, then press 'Enter'. The screen returns to the Agitation Spray Mode (Auto) screen with 1500 displayed in the 'Lower Tank Level (L)' display.
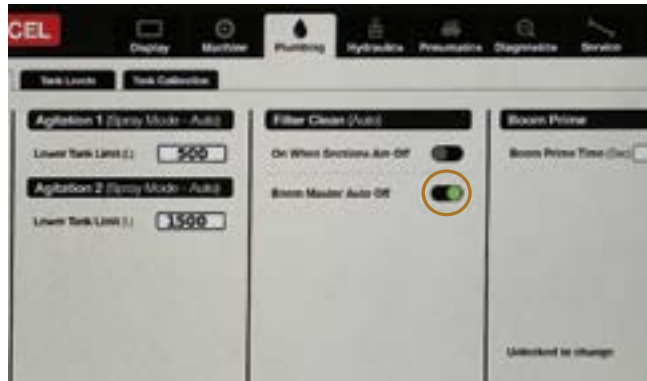
vi) Filter Clean (Auto)

The Filter Clean (Auto) provides a back-flush cleaning function to clean the pressure filter element. Select either:

- 'On When Sections Are Off' which automatically engages the filter cleaning function when all booms sections are turned off, or

- 'Boom Master Auto Off' which automatically engages the filter cleaning function when the Boom Master switch is switched Off.

To Select the 'On When Sections Are Off' setting:

Press the 'On When Sections Are Off' touch button. The touch button goes Green when selected & Grey when deselected,

OR

To Select the 'Boom Master Auto Off' setting:

Press the 'Boom Master Auto Off' touch button. The touch button goes Green when selected & Grey when deselected.

v) Boom Prime

Boom Prime is used for filling or priming the boom and also to rinse the boom. Boom Prime sets a time period in which Rapid Flow will operate before stopping.

To Set the 'Boom Prime Time (sec)':

1 Press the 'Boom Prime Time (sec)' display touch button and a numerical keypad appears.

2 Press the numbers to set the value at 120 (seconds), then press Enter. The screen returns to the Agitation Spray Mode (Auto) screen with '120' displayed in the 'Boom Prime Time (sec)' display.

It is not recommended to set below 120 seconds.

NOTE

The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system.

If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain.

The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost.

The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

Press the 'Tank Levels' tab touch button to open the 'Tank Levels' settings screen.

Press the 'Useable Tank Volume (L)' & set the useable volume and press the 'Low Tank Volume (L)' & set the low tank alarm volume.

Press the 'Low Tank Alarm (L)' to enable the low alarm and press the 'Transfer Tank Volume to RCM (L)' activate the transfer.

C. Tank Levels Tab

Press the Tank Levels Tab touch button to open the Tank Levels settings screen and the Tank Levels screen opens displaying:

i)   Product Tank
ii) Rinse Tank.

The Tank Calibration tab screen is locked for protection from uninformed or accidental alteration. The screen must be unlocked before any setting or alterations can be made.

To Make Changes to Tank Calibration:

First unlock the 'Plumbing' screen, by pressing the 'Unlock to change' touch button at the bottom RHS of the panel and follow the instructions given under '2 Machine' in this chapter.

i)   Product Tank

The Product Tank settings comprise:

- 'Useable Tank Volume (L)' - sets the maximum usable volume in the product tank and should always be less than the total volume of a tank. For example if the total volume is 6200L set the useable volume at 6000L. This setting is used in auto-filling.
- 'Low Tank Alarm Vol (L)' setting - sets the volume in litres for the low level alarm in the product tank.

- 'Low Tank Alarm' setting - selects or deselects the low level alarm of the product tank. The Low Tank Alarm when selected warns when the product tank level goes below the level set.
- 'Transfer Tank Volume to RCM' - when enabled the G-Hub will transfer tank volume to the Raven RCM.
- 'Tank Volume Difference (L)' - for setting an alarm if the Goldacres G-Hub display and the Iso Bus screens are displaying different amounts by volume in litres.

To Set the Usable Tank Volume (L):

1   Press the 'Useable Tank Volume (L)' display touch button and a numerical keypad appears.

2   Press the numbers to set the value eg, 6000 then press Enter. The screen returns to the Tank Levels tab screen with 6000 displayed in the 'Useable Tank Volume (L)' display.

Actual tank volume may be more eg, 6200 & can be used if desired.

To Set the Low Tank Alarm Vol (L):

1   Press the 'Low Tank Volume (L)' display touch button and a numerical keypad appears.

2   Press the numbers to set the value at 1000, then press Enter. The screen returns to the Tank Levels tab screen with 1000 displayed in the 'Low Tank Volume (L)' display.

To Set the Low Tank Alarm:

Press the 'Low Tank Alarm' touch button to enable or disable the alarm.

The touch button displays Green when enabled & Grey when disabled.

To Set Transfer Tank Vol to RCM:

Press the 'Low Tank Alarm' touch button to enable or disable the alarm.

The touch button displays Green when enabled & Grey when disabled.

To Set the Tank Vol Difference (L):

1   Press the 'Tank Volume Difference (L)' display touch button and a numerical keypad appears.

2   Press the numbers to set the value at 5, then press Enter. The screen returns to the Tank Levels tab screen with '5' displayed in the 'Tank Volume Difference (L)' display.

NOTE

*The recommended "Tank Volume Difference (L) is a value from 1 to 9.
If the volume is set to zero (0), the alarm will be disabled.*

Press the 'Low Tank Alarm Vol (L)' to set the low alarm volume and press the 'Transfer Tank Volume to activate the alarm.

ii) Rinse Tank

The Rinse Tank settings comprise:

- 'Low Tank Alarm Volume (L)' - sets the volume in litres for the low level alarm in the rinse tank.
- 'Low Tank Alarm' - enables or diables the low level alarm of the rinse tank.

To Set the Low Tank Alarm Vol (L):

1 Press the 'Low Tank Volume (L)' display touch button and a numerical keypad appears.

2 Press the numbers to set the value at 50, then press Enter. The screen returns to the Tank Levels tab screen with '50' displayed in the 'Low Tank Volume (L)' display.

To Set the Low Tank Alarm:

Press the 'Low Tank Alarm' touch button to enable or disable the alarm.

The touch button displays Green when enabled & Grey when disabled.
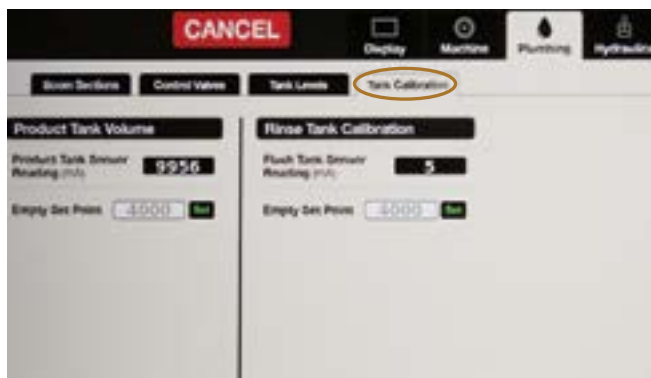
Press the Hopper Tank 'Empty Set Point' - 'Set' touch button to set the value with the tank empty.

D. Tank Calibration Tab

Press the Tank Calibration tab touch button to open the Tank Calibration settings screen and the Tank Calibration screen opens displaying:

i) Product Tank Volume

iii) Rinse Tank Calibration.

The Tank Calibration tab screen is locked for protection from uninformed or accidental alteration. The screen must be unlocked before any setting or alterations can be made.

To Make Changes to Tank Calibration:

First unlock the 'Plumbing' screen, by pressing the 'Unlock to change' touch button at the bottom RHS of the panel and follow the instructions given under '2 Machine' in this chapter.

i) Product Tank Volume

The Product Tank Volume settings comprise:

- 'Product Tank Sensor Reading (mA)' - is the current value of the product tank pressure transducer sensor. This will vary depending on volume between 4000 & 20000.
- 'Empty Set Point' - is the value of the product tank pressure transducer sensor when the tank is empty. This will offset the tank calibration values if changed.

Press the Rinse Tank 'Empty Set Point' - 'Set' touch button to set the value with the tank empty.

To Set the Empty Set Point:

Press the 'Set' touch button when the product tank is empty to set the value.

ii) Rinse Tank Calibration

The Rinse Tank Calibration settings comprise:

- 'Rinse tank sensor reading (mA)' - is the current value of the rinse tank pressure transducer sensor. This will vary depending on volume between 1000 & 5000.
- 'Empty Set Point' - is the value of the rinse tank pressure transducer sensor when the rinse tank is empty.

To Set the Empty Set Point:

Press the 'Set' touch button when the product tank is empty to set the value.

NOTE
The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system.
If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain.
The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost.
The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

Press the 'Hydraulics' Tab touch button to open the 'Hydraulics' settings screen.

Press the 'Ramp Up (Sec)' touch buttons to set the values required.

Press the 'Ramp Down (Sec)' touch buttons to set the values required.

4 Hydraulics

Press the Hydraulics Tab touch button to open the Hydraulics settings screen and the Hydraulics settings screen opens displaying:

- Pump 1 (Product)
- . Pump 2 (Agitator)
- . Fill Pump

The Hydraulics Tab screen is locked for protection from uninformed or accidental alteration. The screen must be unlocked before any setting or alterations can be made.

To Make Changes to the Boom Sections:

First unlock the 'Hydraulics' screen, by pressing the 'Unlock to change' touch button at the bottom RHS of the panel and follow the instructions given under '2 Machine' in this chapter.

Spray Pumps 1 & 2

Both Spray Pump settings comprise:

- i) Ramp Up (sec)
- ii) Ramp Down (sec)
- iii) Spool Valve Cal (%)
- iv) High Speed Alarm (rpm)
- v) Low Speed Alarm (rpm)

i) Ramp Up (sec)

'Ramp Up (sec)' is the number of seconds the pump takes to reach full speed. It can be set from 1 to 5 seconds.

To Set the 'Ramp Up (sec) time:

According to pump type & number fitted:

1 Press the 'Ramp Up (sec)' display touch button and a numerical keypad appears.

2 Press the numbers to set a value between 1 & 5, then press Enter. The screen returns to the Hydraulics tab screen with eg, 3 displayed in the 'Ramp Up (sec)' display.

ii) Ramp Down (sec)

'Ramp Down (sec)' is the number of seconds the pump takes to stop. It can be set from 1 to 5 seconds.

To Set the 'Ramp Down (sec) time:

According to pump type & number fitted:

1 Press the 'Ramp Down (sec)' display touch button and a numerical keypad appears.

2 Press the numbers to set the value between 1 & 5, then press Enter. The screen returns to the Hydraulics tab screen with eg, 3 displayed in the 'Ramp Down (sec)' display.

NOTE

'Ramp Up' is the time in seconds for pump to reach set speed.
 Set the value between 0 and 5.
'Ramp Down' is the time in seconds for pump to switch to off.
 Set the value between 0 and 5.

Press the 'Spool Valve Cal (%)' touch buttons to set the values required.

Press the 'High Speed Alarm (rpm)' touch buttons to set the values required.

Press the 'Low Speed Alarm (rpm)' touch buttons to set the values required. The Fill Pump is read only a this point in time.

iii) Spool Valve Cal (%)

The 'Spool Valve Cal (%)' setting controls the percentage of oil flow (0-100%) to the pump and therefore effects pump speed.

To Set the 'Spool Valve Cal (%):

According to pump type & number fitted:

1. Press the 'Spool Valve Cal (%)' display touch button and a numerical keypad appears.
2. Press the numbers to set the required value, then press Enter. The screen returns to the Hydraulics tab screen with eg, 45 displayed in the 'Spool Valve Cal (%)' display.

iv) High Speed Alarm (rpm)

'High Speed Alarm (rpm)' touch button is used to set the pump high speed value to warn an operator if the pump over speeds.

To Set the 'High Speed Alarm (rpm):

According to pump type & number fitted:

1. Press the 'High Speed Alarm (rpm)' display touch button and a numerical keypad appears.
2. Press the numbers to set the required value, then press Enter. The screen returns to the Hydraulics tab screen with eg, 540 displayed in the 'High Speed Alarm (rpm)' display.

v) Low Speed Alarm (rpm)

'Low Speed Alarm (rpm)' - is used to set a pump low speed value to warn an operator if the pump under speeds.

To Set the 'Low Speed Alarm (rpm):

According to pump type & number fitted:

1. Press the 'Low Speed Alarm (rpm)' display touch button and a numerical keypad appears.
2. Press the numbers to set the required value, then press Enter. The screen returns to the Hydraulics tab screen with eg, 200 displayed in the 'Low Speed Alarm (rpm)' display.

Fill Pump

The Fill Pump 'Spool Valve Cal' provides a readout value only at this point in time.

NOTE

The Spool Valve Cal (%) requires an engine operating speed of 1800 rpm (not idle) and the setting value depends on the type of pump being used:
- Positive displacement pumps (ie, Zeta) - set a value of 45 & adjust as needed.
- Centrifugal pumps (ie, Arag) - start with a value of 60 & adjust as needed.

For Hawkeye fitted machines - set the value to 100.

NOTE

The High Speed Alarm (rpm) setting value depends on the type of pump being used:
- Positive displacement pumps (ie, Zeta) - maximum operating speed is 540 rpm.
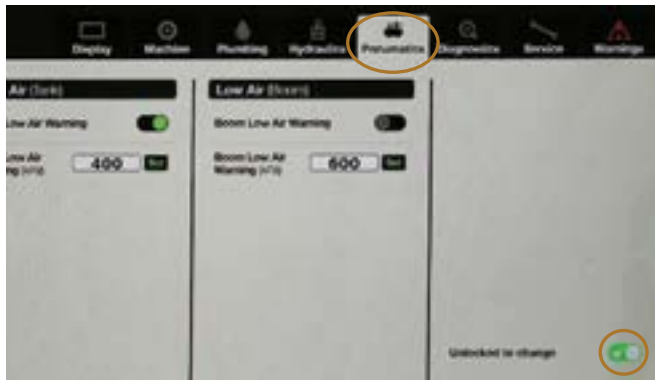- Centrifugal pumps (ie, Arag) - maximum operating speed is 4500 rpm.

NOTE

The Low Speed Alarm (rpm) setting value depends on the type of pump being used:
- Positive displacement pumps (ie, Zeta) - minimum operating speed is 200 rpm.
- Centrifugal pumps (ie, Arag) - - minimum operating speed is 2000 rpm.

Press the 'Pneumatics' Tab touch button to open the Pneumatics setting screen, then Unlock to change.

Press the 'Start Up Delay' touch button display and set the value.

Press the 'Air Pressure Upper Limit (kPa)' touch button display and set the value.

5 Pneumatics

Press the Pneumatics Tab touch button to open the Pneumatics settings screen and the Pneumatics settings screen opens displaying:

- Air Pressures
- Low Air (Tank)
- Low Air (Boom)

The Pneumatics Tab screen is locked for protection from uninformed or accidental alteration. The screen must be unlocked before any setting or alterations can be made.

To Make Changes to the Boom Sections:

First unlock the 'Pneumatics' screen, by pressing the 'Unlock to change' touch button at the bottom RHS of the panel and follow the instructions given under '2 Machine' in this chapter.

Air Pressures

Air Pressure settings comprise:
- i) Start Up Delay (sec)
- ii) Air Pressure Upper Limit (kPa)
- iii) Air Pressure Lower Limit (kPa)
- iv) Air Pressure (kPa).

i) Start Up Delay (sec)

'Start Up Delay (sec)' is the delay time from when the G-Hub boots up to when the air compressor will start - in order to reduce the start-up hydraulic load on the tractor & sprayer.

To Set the 'Start Up Delay (sec)' time:

1   Press the 'Start Up Delay (sec)' display touch button and a numerical keypad appears.

2   Press the numbers to set a value between 10, then press Enter. The screen returns to the Pneumatics tab screen with eg, 10 displayed in the 'Start Up Delay (sec)' display.

ii) Air Pressure Upper Limit (kPa)

'Air Pressure Upper Limit (Sec)' sets the upper limit for the air compressor to run until the air compressor switches Off at this pressure. Recommend upper limit pressure is 900kPa.

To Set the 'Air Pressure Upper Limit (kPa)':

1   Press the "Air Pressure Upper Limit (Sec)' display touch button and a numerical keypad appears.

2   Press the numbers to set a value eg, 900, then press Enter. The screen returns to the Pneumatics Tab screen with eg, 900 displayed in the "Air Pressure Upper Limit (Sec)' display.

OR
Press the 'Set' touch button when the air tank is at full pressure to set the value.

⚠ CAUTION

Ensure the difference between the Upper and Lower Limits of the Air Pressure settings are greater than 100kPa.

Setting Upper and Lower Limits within 100kPa will result in reduced air compressor life.

Press the 'Air Pressure Lower Limit (kPa)' touch button display and set the value.

Enable the 'Tank Low Air Warning' alarm & press the Tank Low Air Warning touch button display and set the value.

Enable the 'Boom Low Air Warning' alarm & press the Boom Low Air Warning touch button display and set the value.

iii) Air Pressure Lower Limit (kPa)

'Air Pressure Lower Limit (Sec)' sets the lower limit for the air compressor to run until the air compressor switches Off at this pressure. Recommend lower limit pressure is 650kPa.

To Set the 'Air Pressure Lower Limit (kPa)':

1 Press the "Air Pressure Lower Limit (Sec)' display touch button and a numerical keypad appears.

2 Press the numbers to set a value eg, 650, then press Enter. The screen returns to the Pneumatics Tab screen with eg, 650 displayed in the "Air Pressure Lower Limit (Sec)' display.
OR
Press the 'Set' touch button when the air tank has lower pressure to set the value.

iv) Air Pressure (kPa)

'Air pressure' is the current air pressure value in kPa from pressure sensor transducer.

NOTE

The 'SAVE' touch button will appear on the left hand side of the screen if a new value is entered or a change made in the G-Hub system.

If the 'SAVE' touch button is not pressed, then any current changes or entered value or values will be lost and previous settings will remain.

The 'SAVE' touch button can be pressed at any stage or screen change to ensure new settings are saved and not accidentally lost.

The screen will return to the G-Hub home screen after the 'SAVE' touch button is pressed.

Low Air (Tank)

Low Air (Tank) settings comprise:
   i)   Tank Low Air Warning
   ii) Tank Low Air Warning (kPa)

i) Tank Low Air Warning

'Tank Low Air Warning' is used to enable or disable a low air warning when the tank air pressure is below the value set.

To set the 'Tank Low Air Warning':

Press the 'Tank Low Air Warning' touch button to enable or disable the alarm.

The touch button displays Green when enabled & Grey when disabled.

To Set the 'Tank Low Air Warning (kPa)':

1 Press the 'Tank Low Air Warning (kPa)' display touch button and a numerical keypad appears.

2 Press the numbers to set a value eg, 600, then press Enter. The screen returns to the Pneumatics Tab screen with eg, 600 displayed in the 'Tank Low Air Warning (kPa)' display.

OR
Press the 'Set' touch button when the tank air has lower pressure to set the value.

Low Air (Boom) - Optional

Low Air (Tank) settings comprise:
   i)   Boom Low Air Warning
   ii) Boom Low Air Warning (kPa)

i) Boom Low Air Warning

'Boom Low Air Warning' is used to enable or disable a low air warning when the boom air pressure is below the value set.

To set the 'Boom Low Air Warning':

Press the 'Boom Low Air Warning' touch button to enable or disable the alarm.

The touch button displays Green when enabled & Grey when disabled.

To Set the 'Boom Low Air Warning (kPa)':

1 Press the 'Boom Low Air Warning (kPa)' display touch button and a numerical keypad appears.

2 Press the numbers to set a value eg, 600, then press Enter. The screen returns to the Pneumatics Tab screen with eg, 600 displayed in the 'Boom Low Air Warning (kPa)' display.

OR
Press the 'Set' touch button when the boom has lower pressure to set the value.

This completes pre-setting the G-Hub optional display.

Optional Raven Control screen (CR7) fitted in the cabin.

Opening Warning screen of the optional Raven CR7.

Press the 'Edit' touch button.

Select & press 'Self-Propelled Sprayer'

Pre-Set the Raven Control Module (RCM) - Optional

The Raven Control Module (RCM) (Spray Rate Controller) if fitted is pre-set and tested for spraying applications prior to delivery.

However, it is recommended that all settings and operation be checked and tested for the accuracy prior to spraying applications.

It is the operator's responsibility to correctly operate all controller and sprayer functions at all times.

To Pre-Set the RCM (Optional):

1 Start the engine.

2 "WARNING DO NOT OPERATE ON ROADWAYS OR NEAR OBSTACLES" appears on the optional Raven CR7 screen.

   Press the OK touch button and the home screen appears.

3 Press the 'Set-Up' touch button on the home screen, and the 'Applicator Setup' screen appears.

4 Press the 'Edit' touch button or 'Change/New' touch button and a 'Confirmation' screen appears.

5 Press the 'Tick' (Next) touch button and the 'Name Profile' screen appears.

6 Press the 'Profile Name' touch button and an alphabetical keypad appears.

   Press the touch buttons to create a profile name. eg. 'Goldacres', then press the Next touch button.

   The screen returns to the Name Profile screen with "Goldacres' displayed.

7 Press the 'Machine Type' touch button and a machine type menu appears.
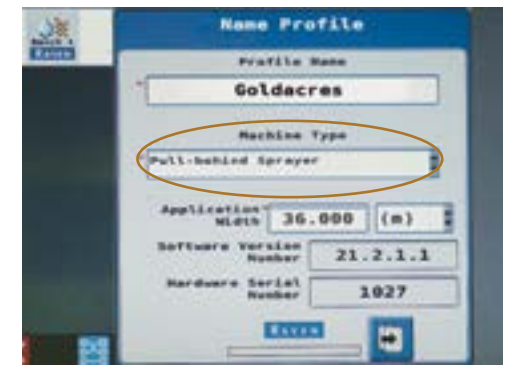
Press the 'Machine' touch button of the optional Raven CR7 menu screen.

Press the Set-Up touch button on the home screen.

Press the 'Tick' (Next) touch button.

Press the 'Machine Type' touch button.
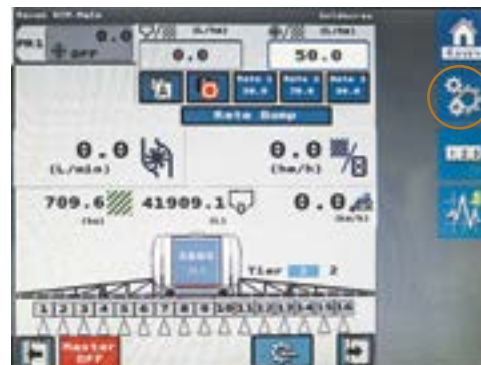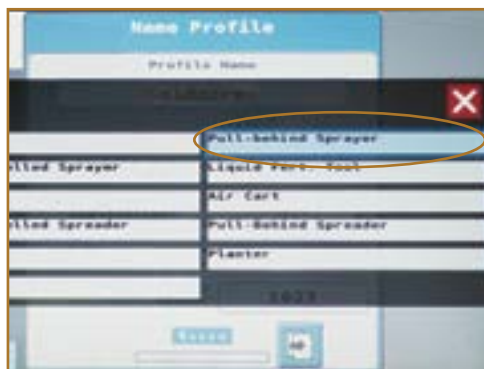
Select & press 'Pull-Behind Sprayer'

Press the 'Application Width' touch button.

Press 'Units' touch button.

8   Select & press 'Pull-Behind Sprayer' and the screen returns to the Name Profile screen with selection 'Pull-Behind Sprayer' displayed.

9   Press the 'Application Width' touch button and a numerical keypad appears.

It is important that the 'Application Width' of the machine is entered correctly.

Determine how the boom is plumbed.

Booms may be plumbed with either:

- Centreline (rowcrop) plumbing - A single nozzle at the boom centre or

- Broadacre plumbing - Two nozzles either side of the boom centre.

Each has a different spray application width, for example, on a 36m boom:

- Centreline plumbing has 73 nozzles x 500mm = 36.5m application width.

- Broadacre plumbing has 72 nozzles x 500mm = 36m application width.

To calculate Applicaton Width, count the number of nozzles on the boom line, then multiply by the nozzle spacing.

Press the touch buttons to enter the boom width. eg. '36.5' metres, then press the 'Next' touch button.

The screen returns to the Name Profile screen with '36.500' displayed.

10 Press the 'Units' touch button and a units menu appears.

Select & press 'm' (metres) and the screen returns to the Name Profile screen with selection 'm' displayed.

11 Press the 'Next' touch button and a 'Setup System' screen appears.

12 Press the 'ECU #' touch button and a drop down menu appears.

Select & press the appropriate 'ECU #' and the number 1 appears in the Setup System screen.

Press the 'ECU #' touch button, then, press'Number of Products' touch button.

A single nozzle plumbing to the centre of the boom- refered to as centreline or row crop plumbing.

Two nozzles plumbed either side of the centre of the boom - refered to as broadacre plumbing.

Press the Next touch button.
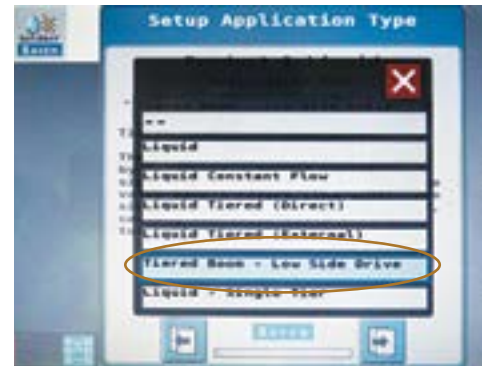
Select & press 'Tiered Boom - Low Side Drive'.
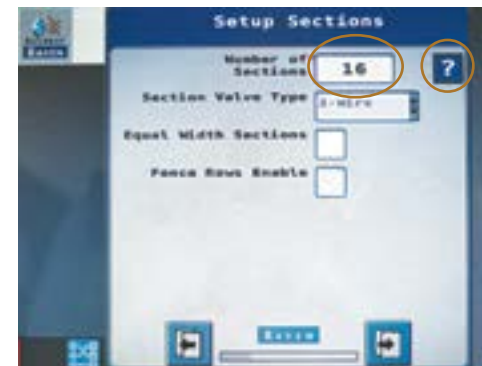
Press the 'Number of Sections' touch button. Leave the 'Equal Widths Sections' blank. Press the Help Menu '?' touch button.
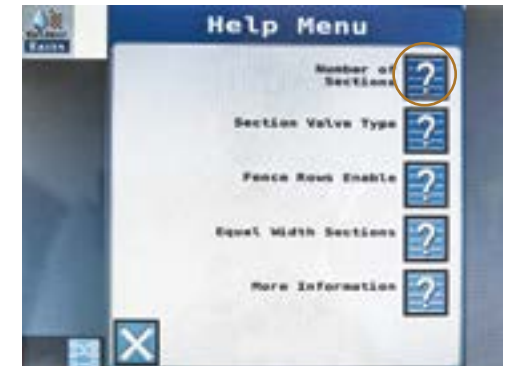
Select & press the Help Menu '?' touch button required. To exit press the 'X' touch button.

13 Press the 'Number of Products' touch button and a drop down menu appears.

Select & press the appropriate '1' product and '1' appears in the Setup System screen.

14 Press the 'Next' touch button and a 'Setup Application Type' screen appears.

15 Press the 'Application Mode' touch button and a drop down menu appears.

16 Select & press the 'Tiered Boom - Low Side Drive' mode, and 'Tiered Boom - Low Side Drive' appears in the Setup Application Type screen.

17 Press the 'Next' touch button and a 'Setup Sections' screen appears.

18 Press the 'Number of Sections' touch button and a drop down menu appears.

19 Select & press '16', then '16' appears in the Setup Sections screen.

20 Leave the 'Equal Width Sections' box unchecked (blank) as Goldacre booms are plumbed with varying section widths.

21 Leave the 'Fence Rows Enable' box unchecked (blank) as the Fence Rows are enabled in the Goldacre G-Hub.

22 If more information is needed, press the Help Menu '?' touch button and a Help menu appears.

23 Select & press the appropriate Help Menu '?' touch button for more information on settings. Another screen appears with more informaton.

To exit the Help screen, press the 'X' touch button & the screen returns to the Setup Section.

24 Press the 'Next' touch button and a 'Setup Section Width' screen appears.

Press the 'Application Mode' touch button.
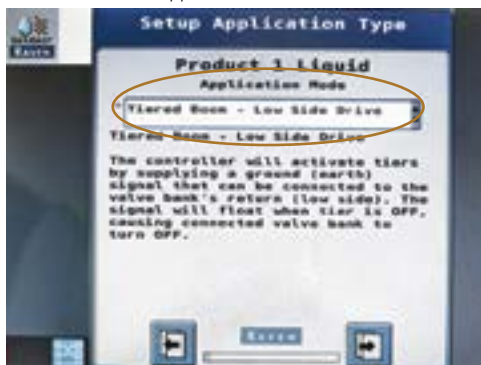
NOTE

The easiest way to determine the Width of a Section is to count the nozzles.

Start at section 1 which is on the left end of the boom by counting the number of nozzles in the section.

For example, section 1 has 4 nozzles. Four nozzles at 500mm spacing gives a section width of 2.0m.

Repeat the procedure for each section.

This procedure is applicable to both Broadacre & Rowcrop plumbed booms.

Section Details of a 36m Boom with Centreline Plumbing			
Section Number (L to R)	Nozzle Spacing (m)	No Nozzles in Section	Section Width (m)
1	0.5	4	2.0
2	0.5	4	2.0
3	0.5	5	2.5
4	0.5	5	2.5
5	0.5	4	2.0
6	0.5	4	2.0
7	0.5	5	2.5
8	0.5	5	2.5
9	0.5	6	3.0
10	0.5	5	2.5
11	0.5	4	2.0
12	0.5	4	2.0
13	0.5	5	2.5
14	0.5	5	2.5
15	0.5	4	2.0
16	0.5	4	2.0
Total No of nozzles:		73	
Spray Application Width:			36.5m

Section Details of a 36m Boom with Broadacre Plumbing			
Section Number (L to R)	Nozzle Spacing (m)	No Nozzles in Section	Section Width (m)
1	0.5	4	2.0
2	0.5	4	2.0
3	0.5	5	2.5
4	0.5	5	2.5
5	0.5	4	2.0
6	0.5	4	2.0
7	0.5	5	2.5
8	0.5	5	2.5
9	0.5	5	2.5
10	0.5	5	2.5
11	0.5	4	2.0
12	0.5	4	2.0
13	0.5	5	2.5
14	0.5	5	2.5
15	0.5	4	2.0
16	0.5	4	2.0
Total No of nozzles:		72	
Spray Application Width:			36.0m
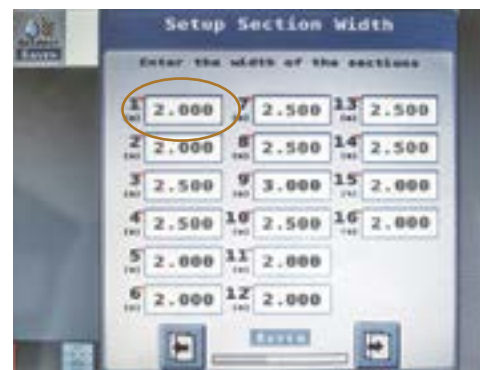
Individually press each 'Section' touch button from 1st to 16th & set each width in metres.

25 Individually press each 'Section Width' touch button and a numerical keypad appears.

Press touch buttons to enter the section width, then pres the 'Tick' touch button.

26 Press the touch buttons to enter a section width. eg. '2.0, 2.5 or 3.0' metres as required, then press the 'Tick' touch button.

The screen returns to the Setup Section Widthscreen with '2.0, 2.5 or 3.0' respectively displayed.

Repeat for each section as required.

An illustration of a 36m Centreline (rowcrop) plumbed boom showing the details of the 16 boom sections @ 250mm.
Sections are numbered 1 to16 starting from the left hand side. Dotted vertical lines illustrate Centreline (rowcrop) plumbing nozzle locations. Solid vertical lines illustrate the broadacre plumbing nozzle location option.

Left boom end   Right boom end

| Section 1 4 x 500 = 2.0m | Section 2 4 x 500 = 2.0m | Section 3 5 x 500 = 2.5m | Section 4 5 x 500 = 2.5m | Section 5 4 x 500 = 2.0m | Section 6 4 x 500 = 2.0m | Section 7 5 x 500 = 2.5m | Section 8 5 x 500 = 2.5m | Section 9 6 x 500 = 3.0m | Section 10 5 x 500 = 2.5m | Section 11 4 x 500 = 2.0m | Section 12 4 x 500 = 2.0m | Section 13 5 x 500 = 2.5m | Section 14 5 x 500 = 2.5m | Section 15 4 x 500 = 2.0m | Section 16 4 x 500 = 2.0m |
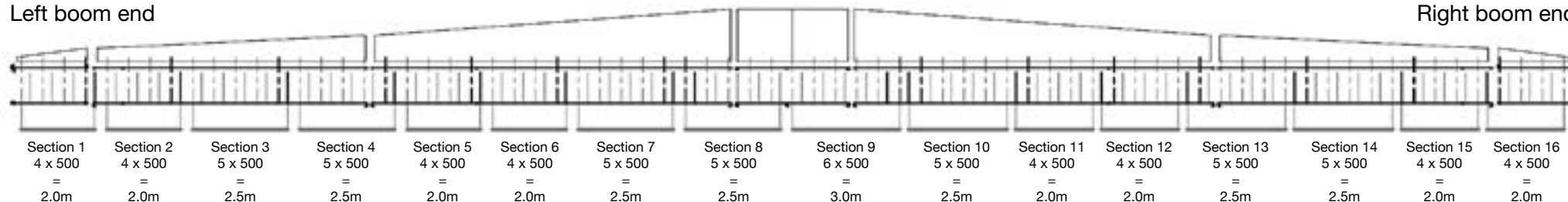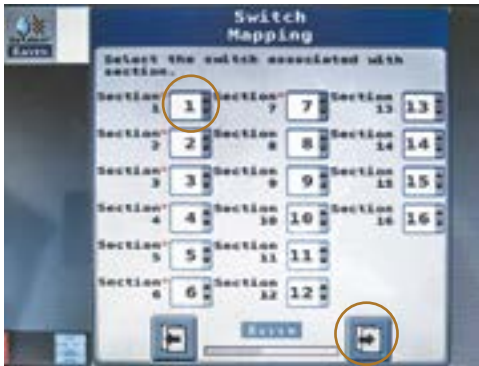
Individually press each 'Section' touch button from 1st to 16th to set the individual switches.

27 Press the Next touch button and a 'Switch Mapping' screen appears.

28 Individually press each 'Section' (1-16) touch button and a numerical list appears.

Select & press the switch number. eg. '1' and the screen returns to the Switch Mapping screen with '1' displayed.

Repeat for each section.

29 On completion press the Next touch button and a 'Section Summary' screen appears.

Select & press the switch number required.

Review the information on the Section Summary screen. Press the 'Next' touch button.

30 Review the information on the Section Summary screen.

If any change is required, press the 'Back' touch button to the screen(s) required to make the change(s).

31 Press the 'Next' touch button and a 'Setup Pressure Sensors' screen appears.

32 Press the 'Pressure Sensor 1' touch button and a Pressure Sensors menu appears.

33 Select & press the '0-250psi (1-5v)' pressure sensor setting and the screen returns to the Setup Pressure Sensors screen with '0-250psi (1-5v)' displayed.

Press the 'Pressure Sensor 1' touch button. Press the 'Next' touch button.
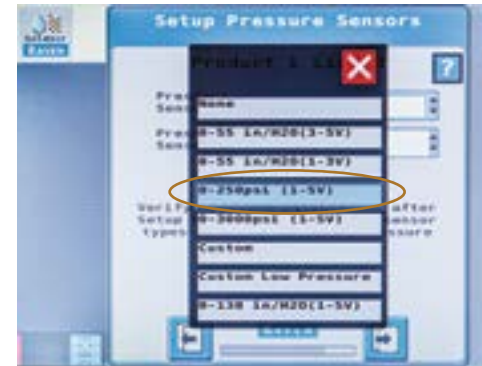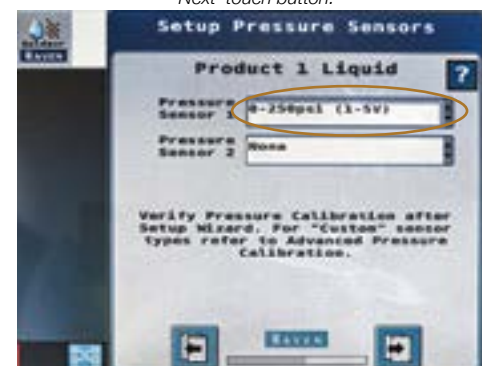
Select & press the '0-250psi (1-5v)' touch button pressure sensor setting.

34 Press the 'Next' touch button and a 'Setup Pressure Alarms' screen appears.

35 Press the 'Min' touch button and a 'Set Pressure Alarms' keypad appears.

Press the 'Min' Pressure 1 touch button. Press the 'Max' Pressure 1 touch button. Press the 'Next' touch button.

Press the touch buttons to set minimum pressure value eg, '100', then press the 'Tick' touch button.

36 Press the touch buttons to set the minimum pressure value eg, '100', then press the 'Tick' touch button.

The 'Setup Pressure Alarms' screen returns with the value eg, '100' showing in the 'Min' display.

37 Press the 'Max' touch button and a 'Set Pressure Alarms' keypad appears.

Press the touch buttons to set the minimum pressure value eg, '800', then press the 'Tick' touch button.

The 'Setup Pressure Alarms' screen returns with the value eg, '800' showing in the 'Max' display.

Press the touch buttons to set maximum pressure value eg, '800', then press the 'Tick' touch button.
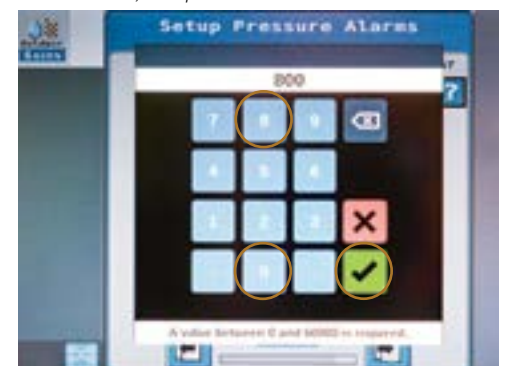
Press the 'Alarm?' touch button to enable the Alarms. Press the Help Menu '?' touch button for Alarm setting notes. Press 'Next'.

Press & 'Tick' the 'Flow Return Installed' box as shown. Press the 'Next' touch button.

Press the 'Tier 1' & 'Tier 2' touch buttons to enter the appropriate Tier Maximum Flow Rates.

Press the 'Percent Tier Disable' touch button and enter 10% as shown, then press the 'Next' touch button.

38 Press the 'Alarms' touch button to enable the Alarms.

A 'Tick" appears when Enabled (the checkbox is blank when Disabled).

39 Press the Help Menu '?' touch button to read notes on Alarm settings.

40 Press the 'Next' touch button and a 'Setup Auxiliary Functions' screen appears.

41 In the Setup Auxiliary Function panel:
- Leave the 'Agitator Installed' box blank as agitator is controlled by the G-Hub.
- Press the 'Flow Return Installed' box to select the Flow Return Installed. A "Tick" appears when Selected (the box is blank when unselected).

This stops the 'Warning Pop-Up' when the boom RapidFlow is On (Automatic mode).

If using Manual Mode, an operator may choose to leave this box unchecked to be reminded of switching Off the RapidFlow for spraying.
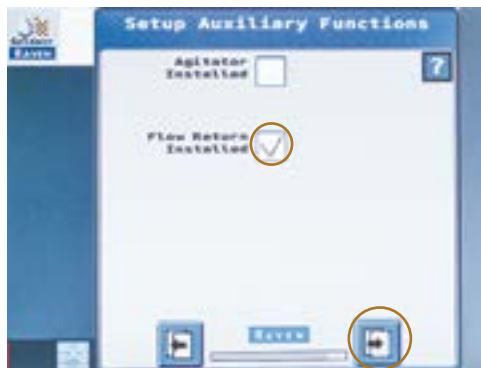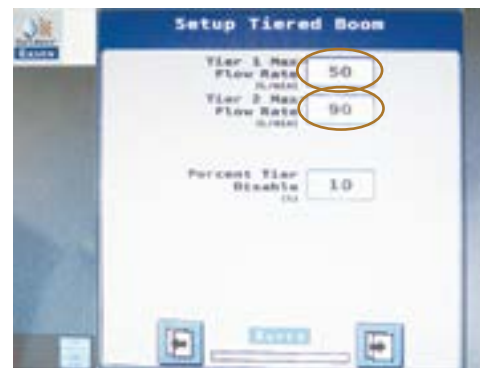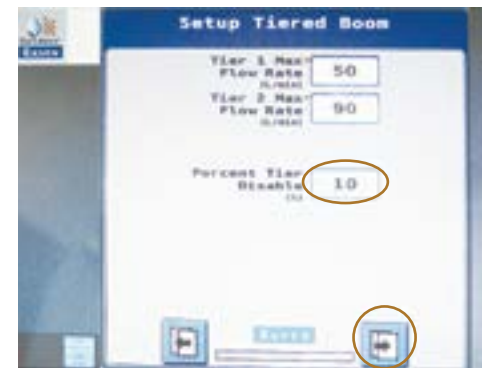
42 Press the 'Next' touch button and a 'Setup Tiered Boom' screen appears.

This screen requires the operator to calculate the maximum flow rates of nozzles fitted to Tier 1 & Tier 2 boom sections.

Refer to Chapter 6 'Calibration' for the information required to determine Maximum Tier Flow Rates & Nozzle Charts.

43 Press the 'Tier 1 Max Flow Rate' touch button and a keypad appears. Press the touch buttons to set the minimum pressure value eg '50' (L/min), then press the 'Tick' touch button.

The 'Setup Tiered Boom' screen returns with eg '50' (L/min) displayed in the 'Tier 1 Max Flow Rate' display.

44 Press the 'Tier 2 Max Flow Rate' touch button and a keypad appears. Press the touch buttons to set the minimum pressure value eg, '90' (L/min), then press the 'Tick' touch button.

The 'Setup Tiered Boom' screen returns with eg, '90' (L/min) showing in the 'Tier 2 Max Flow Rate' display (example only).

45 Press the 'Percent Tier Disable' touch button and a keypad appears. Press the touch buttons to set the value eg, '10' (%), then press the 'Tick' touch button.

The 'Setup Tiered Boom' screen returns with eg, '10' (%) showing in the 'Percent Tier Disable' display.

Max Flow Rates & Tier Disable values will vary with nozzle type selected.

46 Press the 'Next' touch button and and a 'Setup Control Valve' screen appears.

NOTE

HELP MENU INFORMATION

Minimum Pressure

Enter the minimum desired pressure for the system while applying.

When the pressure sensor is assigned to a liquid product, the alarm is enabled and the minimum pressure threshold has been met, the rate controller will override flow control and attempt to maintain the minimum pressure setting. This condition may result in over-application.

NOTE

HELP MENU INFORMATION

Maximum Pressure

Enter the maximum desired pressure for the system while applying.

When the pressure sensor is assigned to a liquid product, the alarm is enabled and the maximum pressure threshold has been met, the rate controller will override flow control and attempt to maintain the maximum pressure setting. This condition may result in under-application.

NOTE

Valve Response Rate

The Response Rate has a range of 1 to 100 and the setting determines how aggressively the target rate is controlled to. Increasing this value will cause the system to respond more quickly. Decreasing it will cause a slower response. If the flow is slow to reach the target value, consider increasing it.

NOTE

Percent Tier Disable

The 'Percent Tier Disable' value is usd to minimise unnecessary tier switching when spraying close to the switch point of a tier. Increasing the value, reduces the sensitivity when switching tiers.

The '10% Percent Tier Disable' value means a spraying Tier will not change down until the spray rate is 10% below the target rate.

Press the 'Control Valve Type' & 'Valve Response Rate' touch buttons to set the values as shown.

47 Press the 'Control Valve Type' touch button and a menu appears.

Select & press the 'Fast Close' Control Valve Type and the screen returns to the Setup Control Valve screen with 'Fast Close' displayed.

48 Press the 'Valve Response Rate' touch button and a keypad appears.

Press the touch buttons to set the value to '25', then press the 'Tick' touch button.

The 'Control Valve Type' screen returns with '30' showing in the 'Valve Response Rate' display.

Select & press the 'Fast Close' Control Valve Type.
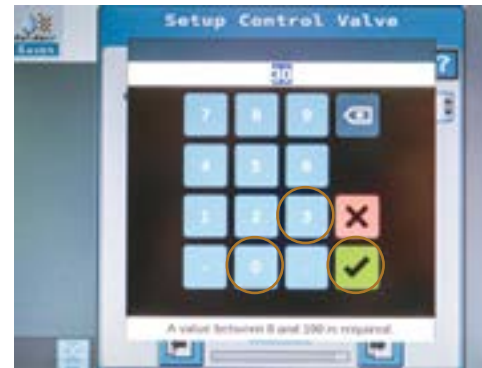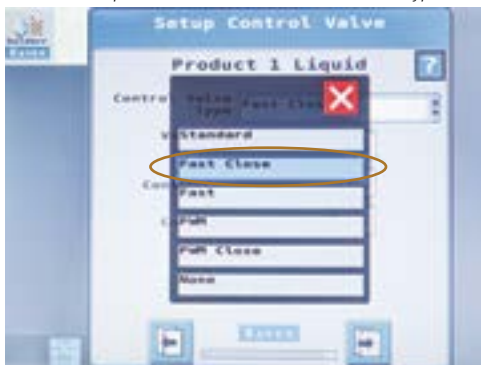
Press the touch buttons to set the Valve Response Rate value to '30', then press the 'Tick' touch button.

49 Press the 'Control Deadband' touch button and a keypad appears. Press the touch buttons to set the value to '3' (%), then press the 'Tick' touch button.

The 'Control Valve Type' screen returns with '3' (%) showing in the 'Valve Response Rate' display.

50 Press the 'Control Effort' touch button and a keypad appears.

Press the touch buttons to set the value to '3' (%), then press the 'Tick' touch button.

The 'Control Valve Type' screen returns with '3' (%) showing in the 'Control Effort' display.

Press the Control Deadband & Control Effort and enter the values as shown.
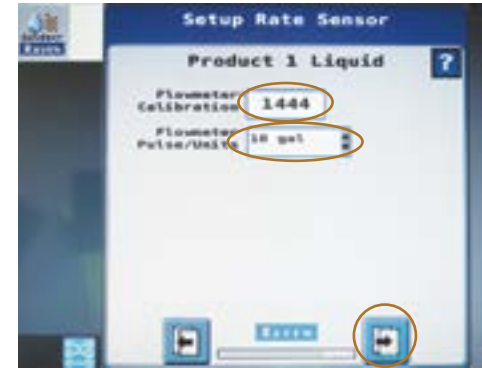
Press the 'Flowmeter Calibration' touch button. Press the 'Flowmeter Pulses/Units' touch button. Press Next.

51 Press the 'Next' touch button and a 'Setup Rate Sensor' screen appears.

52 Press the 'Flowmeter Calibration' touch button and a keypad appears.

Press the touch buttons to enter the flowmeter calibration value (obtained from the flowmeter tag *[shown below]*) eg, '1444', then press the 'Tick' touch button.

The 'Setup Rate Sensor' screen returns with eg, '1444' showing in the 'Flowmeter Calibration' display.

Check the tag of flowmeter located on the top rear boom centre section.

Select & press the '10 gal' option.

53 Press the 'Flowmeter Pulses/Units' touch button and a menu appears. Select & press the '10 gal', then '10 gal' appears in the 'Flowmeter Pulses/Units' display.

54 Press the 'Next' touch button and a 'Setup Tank/Bin' screen appears.

NOTE

Control Deadband

Enter the percent of target rate the control valve will control to. For example, if 2% is entered the rate controller will attempt to adjust the flow rate until the actual rate is with 2% of the target rate.

Control Effort

Enter the minimum percentage needed for the control valve to change position.

NOTE

Flowmeter Calibration

Enter the Flowmeter Calibration. Most flowmeter have an attached tag indicating recommended calibration number. Enter this number as initial flowmeter calibration value.

Flowmeter Pulse/Units

Select the flowmeter units from this drop-down. The Flowmenter Pulses/Units is the number of pulses the flowmeter will generate for a given amount product passed through that flowmeter. For example, a flowmeter calibration of 710 Pulses/10gal (37.85 litres) would indicate that for every 710 pulses from the flowmeter, 10 gal (37.85 litres) of product will pass through the flowmeter.
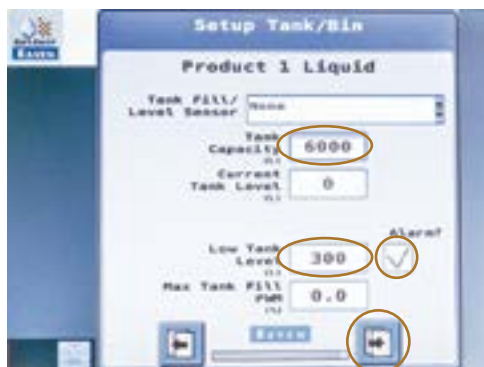
Press the 'Tank Capacity' touch button. Press the 'Low Tank Level' touch button. Enable the Alarm. Press 'Next'.

55 The 'Tank Fill/Level Sensor' should display 'None'.

56 Press the 'Tank Capacity' touch button and a keypad appears. Press the touch buttons to enter the total tank volume in litres eg, '6000', then press the 'Tick' touch button.

The 'Setup Tank/Bin' screen returns with eg, '6000' displayed in 'Tank Capacity'.

Actual tank volume may be more eg, 6200 & may be used if desired.

57 Press the 'Low Tank Level' touch button and a keypad appears. Press the touch buttons to enter the total tank volume in litres '300', then press the 'Tick touch button.

The 'Setup Tank/Bin' screen returns with '300' displayed in the 'Low Tank Level'.

58 Press the 'Low Tank Level Alarm' checkbox to enable the Alarm. A 'Tick' appears when the Alarm is enabled (the checkbox is blank if disabled).

59 Press the 'Next' touch button and a 'Setup Rates' screen appears.

Press 'Preset Rate Values' touch button and set the rate required, then set the 'Rate Bump' value.

60 Press the 'Preset Rate Values - Rate 1' touch button and a keypad appears. Press the touch buttons to enter the rate required in litres, eg. '50' (L/ha), then press the 'Tick' touch button.

The 'Setup Tank/Bin' screen returns with '50' displayed in 'Tank Capacity'.

61 Repeat for rates required in 'Rate 2' and 'Rate 3'

62 Press the 'Rate Bump' touch button and a keypad appears. Press the touch buttons to enter the rate value, eg '5', then press the 'Tick' touch button.

The 'Setup Rates' screen returns with '5' displayed in 'Rate Bump'.

NOTE

Rate Bump

When spraying in Manual Mode, the operator can adjust the Spray Application Rate (using touch buttons on the Controller) by the amount (l/ha) pre-set in the Spray Bump setting.

Press 'Rate Selection' touch button & select 'Predefined or Rx' Smoothing'.

64 Press the 'Rate Selection' touch button and a menu appears. Select & press 'Predefined or Rx'.

The 'Setup Rates' screen returns with 'Predefined or Rx' displayed.

Press the 'Rate Selection' touch button & select the 'Predefined or Rx' setting. Press the 'Next' touch button.

Press the 'Enable 'Display Smoothing' checkbox, then. Set the 'Decimal Shift' value. Press the 'Next' touch button.

65 Press the 'Display Smoothing' checkbox to enable display smoothing. A 'Tick' appears when the 'Display Smoothing' is enabled (the checkbox is blank if disabled).

64 Press the 'Decimal Shift' touch button and a menu appears. Select & press '1'.

The 'Setup Rates' screen returns with '1' displayed in decimal shift.

65 Press the 'Next' touch button and a 'Setup Alarms' screen appears.

Press the 'Off Rate Alarm' touch button. Enable the 'Alarm?'. Press the 'Next' touch button.

Review the setting summary, then press the 'Next' touch button.
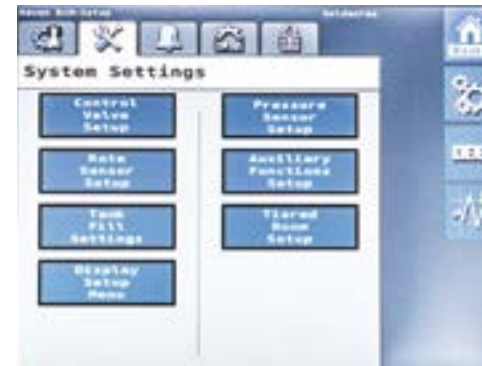
Use this screen to make futher application or system changes.

66 Press the 'Off Rate Alarm' touch button and a keypad appears. Press the touch buttons to enter the rate value, eg '20' (%), then press the 'Tick' touch button.

The 'Setup Rates' screen returns with '20' displayed in "Off Rate Alarm".

67 Press the 'Alarm?' checkbox to enable the alarm. A 'Tick' appears when the 'Alarm' is enabled (the checkbox is blank if disabled).

68 Press the 'Next' touch button and a 'Setup Summary' screen appears.

69 Review the Setup Summary page to check all is correct.

This completes the RCM initial setup procedure. After completion of the RCM setup, no further setup in this procedure is necessary unless the boom and its components are physically altered or changed.

70 Press the 'Next' touch button and a 'System Settings' screen appears.

Now that the RCM is preset, any required application rate changes and most system changes are made from this screen.

NOTE

If the number of boom sections and/or section widths are phyically altered at anytime, then the Application Width and Section Width inputs need to be changed accordingly.

Goldacres' TriTech booms feature a unique three directional suspension system.

Check Boom Settings

The Prairie Pro Series 2 can be fitted with 24, 28, 30, 36 & 48 metre boom widths.

Each boom features hydraulic lift, fold and individual wing tilt controlled from the cabin, as well as pitch, roll and yaw suspension for superior boom ride & efficient, targeted spray application.

Wing tips are fitted with spring loaded breakaway ends to prevent damage when striking objects.

Prior to delivery each boom is pre-set and tested for spraying application.

However, it is recommended that the boom settings checked and tested for the accuracy prior to spraying application.

It is the operator's responsibility to correctly operate all sprayer functions at all times.

Boom Centre Section

The TriTech boom centre section comprises two components - a Paralift rear and a boom centre section held together by delta links. The delta links allow the boom to provide roll and yaw suspension.

Roll suspension is when the boom pitches up and down at the tips. Yaw suspension is when the boom moves fore and aft at the tips.

If the boom did not feature yaw suspension there would be excessive stresses exerted on the boom and centre section when cornering or corrections of line are made.

The yaw suspension allows the chassis of the machine to move left and right without any movement being transferred to the boom.

The Paralift rear can move with the machine while the boom centre section can remain static or level as it rotates around the delta links connecting it to the Paralift rear.

Goldacres unique TriTech boom suspension system provides three directional suspension:

- **Pitch Suspension**

  Vertical boom movement & forces encountered over rough ground conditions are dampended using hydraulic cylinders connected to a nitrogen filled accumulator.

- **Roll Suspension**

  Constant boom height over sloping and uneven ground is maintained with the use of shock absorbers

- **Yaw Suspension**

  Any erratic whipping movement (fore & aft) of the boom is mimimised using hydraulic cylinders connected to nitrogen filled accumulators. Whipping of a boom can create undue stress on the boom frame and uneven spray application.

Front Cover of the Raven AutoBoom XRT Calibration & Operation Manual.

Pre-Set the AutoBoom XRT (Option)

If fitted the AutoBoom XRT controller is pre-set and tested for spraying applications prior to delivery.

However, it is recommended that all settings and operation be checked and tested for accuracy prior to spraying applications.

It is the operator's responsibility to correctly operate all controller and sprayer functions at all times.

For instructions on the configuring & operating the AutoBoom XRT controller, refer to the Raven XRT Operation Manual supplied.

The Raven Control Module (RCM) home screen showing 'Automatic' mode.

The Raven Control Module (RCM) home screen showing 'Manual' mode.

Application rates & droplet size for a situation can be sourced from chemical & nozzle manufacturers and the local agronomist.

Sprayer Calibration

Sprayer Calibration is the process of determining the amount of spray solution to be applied to a given area and ensuring the target or application rate is being applied according to its product label.

The application rate of a sprayer operating manually remains constant as long as ground speed, spray pressure, number of nozzles and nozzle orifices remain unchanged. If there is any change in these factors, the application rate will change.

The automatic spray controller, however, maintains a constant application rate while allowing for some variation in ground speed and boom width.

To achieve a constant application rate, the spraying system must be correctly maintained and calibrated

Calibration Procedure

Five steps are required to complete calibration:

1   Application Rate Required - Calculating & clearly understanding the volume of liquid (chemical & water) required for the specific application over a given area.

2   Nozzle Output Required - Calculating the output required for the application.

3   Nozzle Selection - Selecting and fitting the appropriate nozzles.

4   Controller Set-Up - Checking controller set-up values and entering values for the nozzles & spray rates required.

5   Test Actual Sprayer Output - Test the actual output to ensure the accuracy of the nozzle application rate before spraying.

1 Application Rate Required

The application rate is entirely dependant on the chemical manufacturer's application specifications and conditions of the target at the time of application.

Refer to the manufacturer's information and/or consult with the local agronomist for the best application rates and droplet size for your situation.

NOTE

Nozzle spray patterns & outputs must be checked regularly to ensure correct & uniform application rates because nozzles wear with use.

NOTE

Uneven volumes from individual nozzles will result in variations in the application rate across the width of the boom. Spray efficiency will be reduced. Crop damage may result.

If you have any further questions, Goldacres recommends that you contact your nozzle supplier or your Goldacres dealer for additional information.

NOTE

All nozzles have a pressure and flow rate range to acheive the best results. Ensure you have selected the nozzle which best suit the application to avoid any problems.

Calculate the required nozzle output.

Selected & fit the appropriate nozzles for the application.

	bar	DROP SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	l/ha 50 cm						
					5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h
AIXR110015 (100)	1.0	XC	–	0.34	81.6	68.0	58.3	51.0	40.8	34.0	25.5
	2.0	C	–	0.48	115	96.0	82.3	72.0	57.6	48.0	36.0
	3.0	C	–	0.59	142	118	101	88.5	70.8	59.0	44.3
	4.0	M	–	0.68	163	136	117	102	81.6	68.0	51.0
	5.0	M	–	0.76	182	152	130	114	91.2	76.0	57.0
	6.0	M	–	0.83	199	166	142	125	99.6	83.0	62.3
AIXR11002 (50)	1.0	XC	–	0.46	110	92.0	78.9	69.0	55.2	46.0	34.5
	2.0	VC	–	0.65	156	130	111	97.5	78.0	65.0	48.8
	3.0	C	–	0.79	190	158	135	119	94.8	79.0	59.3
	4.0	M	–	0.91	218	182	156	137	109	91.0	68.3
	5.0	M	–	1.02	245	204	175	153	122	102	76.5
	6.0	M	–	1.12	269	224	192	168	134	112	84.0
AIXR110025 (50)	1.0	XC	**	0.57	137	114	97.7	85.5	68.4	57.0	42.8
	2.0	VC	**	0.81	194	162	139	122	97.2	81.0	60.8
	3.0	VC	**	0.99	238	198	170	149	119	99.0	74.3
	4.0	C	**	1.14	274	228	195	171	137	114	85.5
	5.0	C	**	1.28	307	256	219	192	154	128	96.0
	6.0	M	–	1.40	336	280	240	210	168	140	105

The Teejet AXIR11002 nozzle @ 3 Bar gives 0.79l/min and an output of 0.91l/min @ 4 Bar.

2 Calculate Required Nozzle Output

Once an application rate is chosen, the required nozzle output can be calculated using the following factors:

- Application rate required (eg, 80 l/ha)
- Speed of travel (eg, 12km/hr)
- Swath width (eg, 36m) and
- Number of nozzles on the boom (eg, 72).

Nozzle output can be calculated using the following formulae:

- **Nozzle Flow Rate (l/min) =** Speed (km/hr) x Swath Width (m) x Application Rate (l/ha) ÷ 600 ÷ Number of nozzles

  eg, ([12 x 36 x 80] ÷ 600) ÷ 72 = 0.8 l/min for each nozzle.

  An alternative formula is:

- **Nozzle Flow Rate (l/min) =** Speed (km) x Nozzle Spacing (cm) x Application Rate (l/ha) ÷ 60,000

  eg, (12 x 50 x 80) ÷ 60,000 = 0.8 l/min.

NOTE

Nozzles manufacturers' downloadable Apps may be useful in helping to calculate required nozzle rates, as well as displaying suitable nozzles for various applications.

3 Nozzle Selection

Use a manufacturer's Nozzle Chart (refer to Nozzle Charts further on in this chapter) and/or a manufacturer's App to find & select the most appropriate nozzles for the application according to:

- Application rate (eg, 80 l/ha)
- Speed of travel (eg, 12km/hr)
- Pressure setting (eg, 300kPa [3 bar])
- Boom configuration & nozzle control system fitted to the Prairie Pro - single line, 3TS option, 3TS Pro option or Hawkeye option.

NOTE

Nozzles must be selected & fitted for the appropriate application.

Nozzle orifices are subject to wear and must be checked regularly.

Use the Jug Test to check accuracy of application whenever nozzles are changed or wear.

Single Line Boom

Find one nozzle which is nearest to the applicaiton requirements.

Check the speed variation available maintaining the same application rate & droplet size.

It is recommended to select a nozzle on mid-range pressure as this allows the spray controller to adjust pressure up or down with some but limited speed variation.

Using the appropriate nozzle chart, look down the nozzle capacity column (l/min) and select a nozzle to suit the output (eg 0.8 l/min), droplet size and travel speed.

Example: Nozzle Selection for a Single line Boom

Using the AIXR Teejet Application Chart (see page 104):
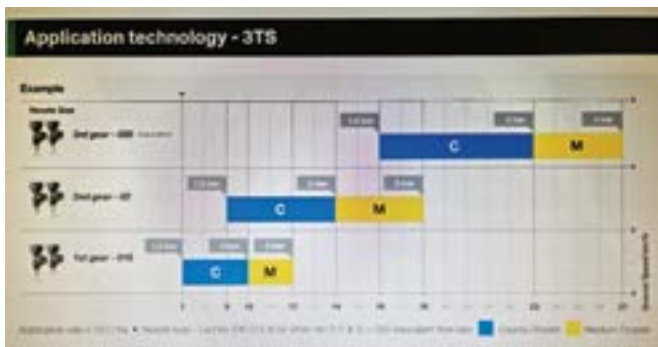
Look down the nozzle capacity column (l/min) and select a nozzle to suit an output of 0.8 l/min (shown above).

The AXIR11002 nozzle @ 3 Bar gives 0.79l/min and an output of 0.91l/min @ 4 Bar.

This nozzle should allow the controller to apply 80 litres per ha with a speed range of approxiamately 12 to 15kmh and with pressure range of 3 to 5 Bar.

Fit the selected nozzle to the boom.

An illustration of the speed range & output (70l/ha) available of two nozzles fitted with the 3TS Option.

		bar	DROP SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	l/ha 50 cm						
						5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h
AIXR110015 (100)		1.0	XC	–	0.34	81.6	68.0	58.3	51.0	40.8	34.0	25.5
		2.0	C	–	0.48	115	96.0	82.3	72.0	57.6	48.0	36.0
		3.0	C	–	0.59	142	118	101	88.5	70.8	59.0	44.3
		4.0	M	–	0.68	163	136	117	102	81.6	68.0	51.0
		5.0	M	–	0.76	182	152	130	114	91.2	76.0	57.0
		6.0	M	–	0.83	199	166	142	125	99.6	83.0	62.3
AIXR11002 (50)		1.0	XC	–	0.46	110	92.0	78.9	69.0	55.2	46.0	34.5
		2.0	VC	–	0.65	156	130	111	97.5	78.0	65.0	48.8
		3.0	C	–	0.79	190	158	135	119	94.8	79.0	59.3
		4.0	M	–	0.91	218	182	156	137	109	91.0	68.3
		5.0	M	–	1.02	245	204	175	153	122	102	76.5
		6.0	M	–	1.12	269	224	192	168	134	112	84.0
AIXR110025 (50)		1.0	XC	**	0.57	137	114	97.7	85.5	68.4	57.0	42.8
		2.0	VC	**	0.81	194	162	139	122	97.2	81.0	60.8
		3.0	VC	**	0.99	238	198	170	149	119	99.0	74.3
		4.0	C	**	1.14	274	228	195	171	137	114	85.5
		5.0	C	**	1.28	307	256	219	192	154	128	96.0
		6.0	M	–	1.40	336	280	240	210	168	140	105

The 1st AXIR110015 nozzle @ 2 Bar gives 0.48l/min & an output of 0.68l/min @ 4 Bar & 2nd AXIR11002 nozzle @ 3 Bar gives 0.79l/min & an output of 1.02l/min @ 5 Bar.

3TS Option

Find two nozzles which are nearest to the application requirements..

Check the speed variation available maintaining the same application rate & droplet size.

It is recommended to select two nozzles which allow the spray controller to adjust pressure & switch nozzles On & Off with required speed variations while maintaining consistent droplet size and application rate.

Using the appropriate nozzle chart, look down the nozzle capacity column (l/min) and select a nozzle to suit the output (eg 0.8 l/min), droplet size and travel speed.

Refer to the commonly used Teejet and Lechler broadacre nozzle charts at the end of this chapter. For more information, go to:

www.teejet.com
www.lechler.com

Example: Nozzle Selection for the 3TS Option

Using the AIXR Teejet Application Chart:

Look down the nozzle capacity column (l/min) and select two nozzles to suit an output of 0.8 l/min (shown above).

The AXIR110015 nozzle @ 2 Bar gives 0.48l/min which is 82.3 l/ha at 7 kmh and an output of 0.68l/min @ 4 Bar which is 81.6 l/ha at 10 kmh.

The AXIR11002 nozzle @ 2 Bar gives 0.65l/min which is 78.0 l/ha at 10 kmh and an output of 1.02l/min @ 5 Bar which is 76.5 l/ha at 16 kmh.

These nozzles should allow the controller to apply 80 litres per ha with a speed range of 7 to 16 kmh and a pressure range of 2 to 5 Bar switching between the 1st & 2nd Tiers.

By adding these two outputs together to use the 3rd Tier @ 3-4 Bar to give 1.38 -1.59 l/min would provide 80 l/ha application rate at increased speeds of 20 to 22kmh.

Fit the selected nozzles to the boom.

3TS Pro Option

Find three nozzles nearest to the requirements.

Check the required speed variations are available maintaining the same application rate & droplet size.

It is recommended to select three nozzles which allow the spray controller to adjust pressure & switch nozzles On & Off with the required speed variations while maintaining consistent droplet size and application rate.

Using the appropriate nozzle chart, look down the nozzle capacity column (l/min) and select a nozzle to suit the output (eg 0.8 l/min), droplet size and travel speed.

Refer to the most commonly used Teejet and Lechler broadacre nozzle charts at the end of this chapter.

NOTE

Download the free copy of 'A user's guide to spray nozzles' from the TeeJet website. Also Lechler nozzle selection catalogue and Users guides to spray nozzles are available from your Goldacres dealer, or as a free download from the TeeJet web site: www.teejet.com or Lechler web site: www.lechler.de

NOTE

When selecting nozzle outputs, higher pressures & wider spray angles generally give finer droplet sizes than lower pressures & narrower spray angles.

NOTE

Calculation is required to ensure spraying pressures do not exceed operating parameters.

bar	DROP SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	l/ha ◁ 50 cm ▷								
				5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h
AIXR110015 (100)												
1.0	XC	–	0.34	81.6	68.0	58.3	51.0	40.8	34.0	25.5	22.7	20.4
2.0	C	–	0.48	115	96.0	82.3	72.0	57.6	48.0	36.0	32.0	28.8
3.0	C	–	0.59	142	118	101	88.5	70.8	59.0	44.3	39.3	35.4
4.0	M	–	0.68	163	136	117	102	81.6	68.0	51.0	45.3	40.8
5.0	M	–	0.76	182	152	130	114	91.2	76.0	57.0	50.7	45.6
6.0	M	–	0.83	199	166	142	125	99.6	83.0	62.3	55.3	49.8
AIXR11002 (50)												
1.0	XC	–	0.46	110	92.0	78.9	69.0	55.2	46.0	34.5	30.7	27.6
2.0	VC	–	0.65	156	130	111	97.5	78.0	65.0	48.8	43.3	39.0
3.0	C	–	0.79	190	158	135	119	94.8	79.0	59.3	52.7	47.4
4.0	M	–	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6
5.0	M	–	1.02	245	204	175	153	122	102	76.5	68.0	61.2
6.0	M	–	1.12	269	224	192	168	134	112	84.0	74.7	67.2
AIXR110025 (50)												
1.0	XC	**	0.57	137	114	97.7	85.5	68.4	57.0	42.8	38.0	34.2
2.0	VC	**	0.81	194	162	139	122	97.2	81.0	60.8	54.0	48.6
3.0	VC	**	0.99	238	198	170	149	119	99.0	74.3	66.0	59.4
4.0	C	**	1.14	274	228	195	171	137	114	85.5	76.0	68.4
5.0	C	**	1.28	307	256	219	192	154	128	96.0	85.3	76.8
6.0	M	–	1.40	336	280	240	210	168	140	105	93.3	84.0

The 3TS Pro option requires three nozzles to be selected giving the operator a greater range of application rates and travel speeds.

Opening Warning screen of the optional Raven CR7.

Example: Nozzle Selection for the 3TS Pro Option

Using the AIXR Teejet Application Chart:

Look down the nozzle capacity column (l/min) and select two nozzles to suit an output of 0.8 l/min (shown above).

The AXIR110015 nozzle @ 2 Bar gives 0.48l/min which is 82.3 l/ha at 7 kmh and an output of 0.68l/min @ 4 Bar which is 81.6 l/ha at 10 kmh.

The AXIR11002 nozzle @ 2 Bar gives 0.65l/min which is 78.0 l/ha at 10 kmh and an output of 1.02l/min @ 5 Bar which is 76.5 l/ha at 16 kmh.

The AXIR110025 nozzle @ 2 Bar gives 0.81l/min which is 81.0 l/ha at 12 kmh and an output of 1.28l/min @ 5 Bar which is 76.8 l/ha at 20 kmh.

These nozzles should allow the controller to apply 80 litres per ha at speeds ranging from 7 up to 40 kmh

Fit the selected nozzle to the boom.

NOTE

There are often very serious limitation to possible maximum spray speeds.

Maximum spray speeds are limited by safety factors, chemicals used, maximum boom output in l/min, type of target, field conditions, terrrain and weather conditions.

Hawkeye Option (Nozzle Control System)

The Hawkeye Pulse Width Modulated (PWM) technology is an available option. If fitted refer to the manufacturer's manual.

4 Controller Set-Up

New application rate values must be entered into Automatic Control Module (RCM) according to the boom's nozzle configuration.

The Prairie Pro may be fitted with one of four nozzle control option technologies:

a) Single line boom
b) 3TS option
c) 3TS Pro option
d) Hawkeye option (nozzle control system).

a) Enter Values for the Single Line Boom

After nozzle selection, a single line boom configuration requires the application rates to be entered into the controller according to the nozzle selected.

To Enter New Values:

1 Start the engine.

2 "WARNING DO NOT OPERATE ON ROADWAYS OR NEAR OBSTACLES" appears on the optional Raven CR7 screen or ISO bus screen.

Press the OK button and the home screen appears.

Set & Check Application Rates – **Calibration**

Press the 'Set-Up' touch button on the Raven home screen.
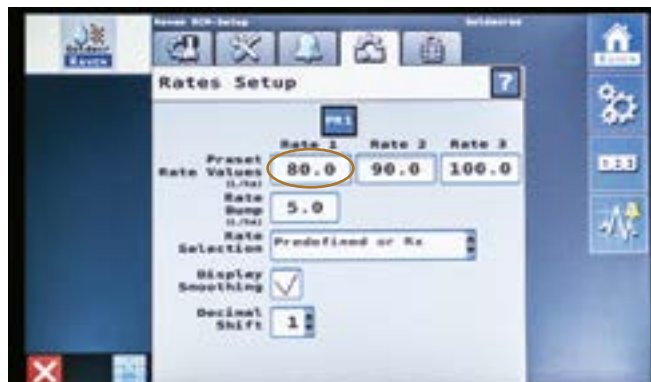
Press the 'Preset Rate Value Rate 1' touch button.

The screen returns to the Rates Setup screen with the new rates displayed. Press the home screen touch button to return to the home screen.

3   Press the 'Set-Up' touch button on the home screen, and the 'Applicator Setup' screen appears.

4   Press the 'Rates Setup' touch button and the 'Rates Set-up' screen appears.

5   Press the 'Preset Value Rate 1' touch button and and a numerical keypad appears.

6   Press the 'X' touch button to clear the existing number and press the touch buttons to enter the Application Rate, eg, 70, then press the 'Tick' touch button.

The screen returns to the Rates Setup screen with '70' displayed in the Preset Value Rate 1 value.

7   Repeat steps 5 & 6 to enter preset rate values for Rate 2 (eg, 80 l/ha) and Rate 3 (eg, 90 l/ha).

The screen returns to the Rates Setup screen with all rates (eg, 70, 80, & 90) displayed.

8   Press the 'Rate Bump' touch button and and a numerical keypad appears.

6   Press the touch buttons to enter the desired 'Rate Bump' value (l/ha), eg, 5, then press the 'Tick' touch button.

The screen returns to the Rates Setup screen with eg, '5' shown in the Rate Bump display.

8   Press the home touch button to return to the home screen.

This completes the controller entries for the single line boom calibration.

NOTE

The spraying system has the caability to enter up to 3 pre-set application rates.

Press the 'Rates Setup' touch button.

Press the appropriate touch buttons to enter the spray application rate required for Rate 1 (eg, 70 l/ha), then press the 'Tick' touch button.
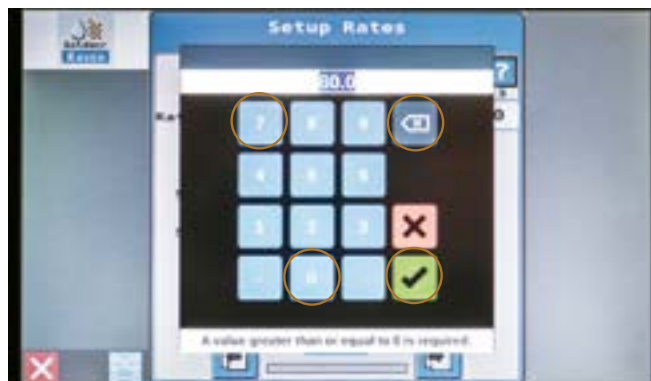
NOTE

Rate Bump
When spraying in Manual Mode, the operator can adjust the Spray Application Rate (using touch buttons on the Controller) by the amount (l/ha) pre-set in the Spray Bump setting.
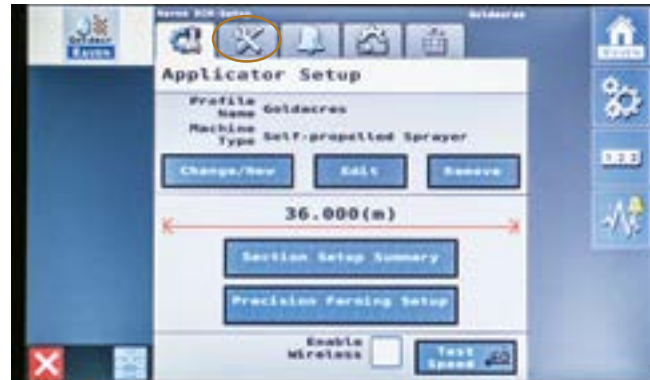
Press the 'Systems Settings' touch button.
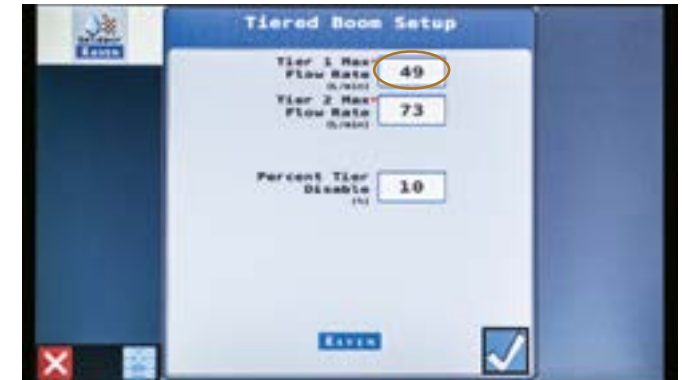
Press the 'Tier 1 Max Flow Rate' touch button.

b) Enter Values for the 3TS Option

After nozzle selection, the 3TS configuration requires new values to be entered into the controller according to the nozzles selected, namely.

- Spray application rates
- Maximum flow rate (for each tier/nozzle fitted [2 tiers]).

To Enter New Application Rates:

Follow the steps 1 - 8 previously given under 'Enter Values for the Single Line Boom'.

To Enter Maximum Flow Rates:

1 Press the 'Systems Settings' touch button and the 'Systems Settings' screen appears.

2 Press the 'Tiered Boom Setup' touch button and the 'Tiered Boom Set-up' screen appears.

3 Press the 'Tier 1 Max Flow Rate' touch button and and a numerical keypad appears.

4 Calculate Max Flow Rate of the 1st Tier nozzles fitted to the boom, eg, AXIR110015 nozzle @ 5 Bar 0.761 l/min.

Multiply 0.76 x 72 (number of nozzles) = 54.7 l/min.

5 Press the 'X' touch button to clear the existing number and press the touch buttons to enter the Max Flow Rate, eg, 54.7, then press the 'Tick' touch button.

The screen returns to the Tiered Boom Setup screen with '54.7' in the Tier 1 Max Flow Rate value.

NOTE

Tier Max Flow Rates
The Tier Max Flow Rates is the maximum boom flow rate that a tier will reach before switching On the next tier.

Press the 'Tiered Boom Setup' touch button.

Press the appropriate touch buttons to enter the Max Flow Rate for Tier 1 (eg, 54.7 l/min), then press the 'Tick' touch button.

Press the 'Tier 2 Max Flow Rate' touch button.

Press the 'Tier 3 Max Flow Rate' touch button.

6   Press the 'Tier 2 Max Flow Rate' touch button and and a numerical keypad appears.

7   Calculate Max Flow Rate of the 2nd Tier nozzles fitted to the boom, eg, AXIR11002 nozzle @ 5 Bar 1.02 l/min.

Multiply 1.02 x 72 (number of nozzles) = 73.5 l/min.

8   Press the 'X' touch button to clear the existing number and press the touch buttons to enter the Max Flow Rate, eg, 73.5, then press the 'Tick' touch button.

The screen returns to the Tiered Boom Setup screen with '73.5' in the Tier 2 Max Flow Rate value.

9   Press the 'Tick' touch button and the screen returns to the System Setting screen.

This completes the controller entries for the 3TS Option boom calibration.

c) Enter Values for 3TS Pro Option

After nozzle selection, the 3TS Pro configuration requires new values to be entered into the controller according to the nozzles selected, namely:

• Spray application rates

• Maximum flow rate (for each tier/nozzle fitted [3 tiers]).

To Enter New Application Rates:

Follow the steps 1 - 8 previously given under 'Enter Values for the Single Line Boom'.

To Enter New Maximum Flow Rates:

1   Follow the steps 1 - 8 previously given for the 3TS Option entering the appropriate values, then

2   Press the 'Tier 3 Max Flow Rate' touch button and a numerical keypad appears.

3   Calculate Max Flow Rate of the 3rd Tier nozzles fitted to the boom, eg, AXIR110025 nozzle @ 5 Bar 1.28 l/min.

Multiply 1.28 x 72 (number of nozzles) = 92.2 l/min.

4   Press the 'X' touch button to clear the existing number and press the touch buttons to enter the Max Flow Rate, eg, '92.2', then press the 'Tick' touch button.

Press the appropriate touch buttons to enter the Max Flow Rate for Tier 3 (eg, 92.2 l/min), then press the 'Tick' touch button.

NOTE

Percent Tier Disable

The 'Percent Tier Disable' value is usd to minimise unnecessary tier switching when spraying close to the switch point of a tier. Increasing the value, reduces the sensitivity when switching tiers.

The '10% Percent Tier Disable' value means a spraying Tier will not change down until the spray rate is 10% below the target rate.

Press the 'Tick' touch button.

Nozzle by nozzle turn compensation with the Hawkeye option.

Unfold the boom in a suitable area & set the height of the boom to allow easy access to nozzles.

The screen returns to the Tiered Boom Setup screen with '92.2' displayed in the Tier 3 Max Flow Rate value.

5   Press the 'Tick' touch button and the screen returns to the System Setting screen.

This completes the controller entries for the 3TS Pro Option boom calibration.
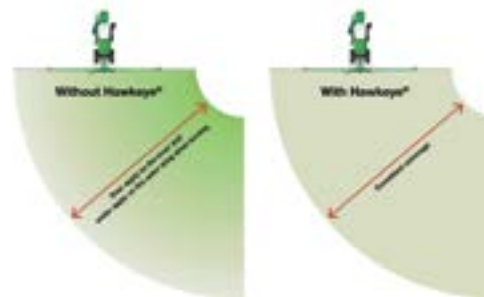
d) Hawkeye Option (Nozzle Control System)

The Hawkeye Pulse Width Modulated (PWM) technology is an available option.

Hawkeye 2.0 is offered on 36m and 48m booms with nozzle spacing at 250mm & 500mm providing:

- Nozzle by nozzle turn compensation with each nozzle featuring its own microprocessor & perform diagnostic functions.

- Up to 16 virtual sections & individual nozzle control.

For instructions on configuring & operating the Hawkeye, refer to the Raven Hawkeye Operation Manual supplied.

5 Test Actual Sprayer Output

Testing the Actual Sprayer Output to ensure the accuracy of the application rate before spraying is essential.

This part of calibration uses the 'Jug Test' to check spray nozzles deliver the correct amount of liquid, according to the nozzle manufacturer's rate chart.

Jug Test

Items required for the 'Jug Test' are:

- Calibrated 2 litre measuring jug which measures in no less than 10 ml increments

- Timing device that counts in seconds

- Device or pen & paper for recording nozzle outputs

- Pressure gauge mounted on a nozzle tip to verify pressure being delivered at the nozzle.

Goldacres part number GA5077983 (suitable gauge mount) is available for attaching a gauge to nozzle body bayonet fittings (gauge not included).

⚠ CAUTION
Do not proceed with nozzle testing with mixed chemicals, pesticides or an uncleaned liquid system. Ensure the liquid system is completely decontaminated and use only clean water for testing.
Contamination or use of any chemicals or pesticides when testing is extremely hazardous to human health.

Press the 'A' touch button to change the Raven Rate Controller from Automatic to Manual mode.

Press the '-/+' (Minus/Plus) touch buttons to adjust the spray pressure '(kPa)' and bring the operating pressure up to 300kPa.

Before measuring nozzle outputs, check for both air & liquid plumbing leaks, kinked or obstructed hoses and good nozzle spray patterns.

To Do the "Jug Test"

1   Start the tractor & Prairie Pro to unfold the boom in a suitable area & set the height of the boom to allow easy access to nozzles.

2   Press the 'A' touch button (Automatic/Manual) on the Raven Rate Controller shift to Manual mode. The touch button changes to 'M' and MANUAL appears in the '(L/ha) display'.

3   Press the touch buttons to start the 'Product Pump' on the G-Hub screen, then press the 'Boom Master On' touch button to start the nozzles spraying.

4   Press the '-/+' (Minus/Plus) touch buttons to adjust the spray pressure '(kPa) display' to the mid range operating pressure of a chosen nozzle output, eg, AXIR110015 nozzle @ 3 Bar (300kPa). Press the touch button(s) until 300 kPa is displayed.

5   Check the Raven Controller screen is showing 300 kPa. Adjust if needed, using the '-/+' touch buttons.

6   Check the Tier display on the screen (near boom illustration) to ensure all Tiers are spraying for the Jug test:
   • Single line boom - all nozzles operating for the Jug test
   • 3TS option - all nozzles operating for the Jug test
   • 3TS Pro option - all nozzles operating for the Jug test.

Adjust pressure upwards to 400 or 500 kPa using the '-/+' touch buttons until all tiers are spraying (relative to the boom used).

Pressure increments of 100 kPa must be used to be able to check the nozzle chart pressures & outputs.

7   Before measuring the nozzle outputs, check for both air & liquid plumbing leaks, kinked or obstructed hoses and uniform nozzle spray patterns.

If necessary, stop the machine & repair or replace any leaks or hoses which disrupt or reduce the normal air or liquid flows and fix non-uniform nozzle spray patterns.

Press the touch buttons on the G-Hub screen to start the nozzle spraying.

Check the Raven Controller screen to ensure all Tiers are spraying. If not, use the '-/+' touch buttons to increase pressure by increments of 100 kPa until all Tiers show.

If necessary, stop the machine & repair or replace any leaks or hoses that might restrict the normal flow of the liquid and correct any non-uniform spray patterns.

Place the measuring jug under one nozzle to collect nozzle output for exactly 1 minute, then remove it.

Illustration of the RapidFlow and RapidFire nozzle technologies.

Check boom width & section set-up values in the RCM.

8   Place the measuring jug under one nozzle to collect the nozzle volume output for exactly 1 minute, then remove it.

9   Measure and record the nozzle output, nozzle size (Tier) and section location.

10 Repeat steps 8 & 9 for each nozzle in each of the 16 boom sections.

11 Compare the volume collected from each nozzle to the stated volume in the nozzle manufacturer's rate chart at the operating pressure used.

Any variation must be less than 10% (plus or minus).

Discard and replace all nozzles that deviate more than 10% from the specified output, for example:

- AXIR110015 chart @ 5 Bar (500kPa) = 0.76 l/min
  plus 10% is 0.84 l/min, less 10% 0.68 l/min
- AXIR11002 chart @ 5 Bar (500kPa) = 1.02 l/min
  plus 10% is 1.12 l/min, less 10% 0.92 l/min.

TeeJet advise nozzles with a flow greater than +10% of their stated volume are 'worn out' and should be replaced.

12 Test and check any replacement nozzles by collecting and measuring the output of each replacement.

13 Record each replacement and its output.

14 For each nozzle type tested, add the measured outputs together, then divide the total by the number of test nozzles to obtain the average nozzle output per minute.

eg, Using the 3TS two tier system:

- AXIR110015 Nozzle - Total spray output 15.4 litres ÷ 20 nozzles tested = 0.77 l/min per nozzle.
- AXIR11002 Nozzle - Total spray output 22 litres ÷ 20 nozzles tested = 1.1 l/min per nozzle.

Other Calibration Items

Other items critical to accurate calibration & application include:

1   Boom Width

2   Flow Meter

3   Regulator Valve.

1 Boom Width

The Boom Width values are entered into the RCM controller during the initial set-up of the machine. Check controller settings have not been changed.

Refer to Chapter 4 'Setting Up', 'Pre-Set the Raven Control Module (RCM)' for instructions.

NOTE

Do not use a worn nozzle to set the pressure setting and nozzle rates. If the boom is not fitted with new nozzles, fit one new nozzle and use it to set the flow rate and pressure setting. This sets the standard flow rate, pressure setting and spray pattern with which to test the performance of other nozzles.

NOTE

While doing the 'Jug Test' visually check the nozzle spray patterns and spray angles for accuracy and, if necessary, replace any faulty nozzles.

NOTE

In the event of any nozzles not delivering the required volume, investigate futher, including but not be limited to;
- Cleaning the nozzles using a method recommended by the nozzle supplier
- Cleaning nozzle filters
- Replacing the nozzles.

The Flow Meter, located on top of the boom centre section, should regularly inspected & cleaned.

The Boom Flow Regulating Valve should regularly checked & calibrated.

2   Flow Meter

The Flow Meter (used by the controller to monitor flow rates) is critical to the accuracy of application rates.

The Flow Meter should be regularly inspected and cleaned of debris.

The ISO Bus UT has a built-in feature to conduct a flow meter calibration test.

For information on the test procedure, refer to the Raven Rate Control Module Operation Manual (RCM) supplied with the Prairie Pro.

See Chapter 8 'Lubrication & Maintenance', for 'Flow Meter' service information.

3   Regulator Valve

The Boom Flow Regulating Valve or Flow Control Valve (used to adjust & control pressure & flow rates) is critical to the accuracy of spraying rates and should be checked & calibrated on a regular basis.

Regulator Valve Performance Adjustments

The Regulator Valve can be adjusted to alter its performance. The **factory set 'Valve Cal' is [30] [3] [3]**. Each value adjusts the performance of the valve:

[30] is the 'Valve Speed Onto Rate' (time it takes to reach set rate). The range is 0 – 100.

The valve speed can be adjusted to increase or decrease the time taken to achieve the set rate after switching the Boom Master On.

[3] is the 'Ramping Onto Rate' (allowable overshoot of set rate). The range is 1 – 10.

The valve speed can be adjusted to increase or decrease the allowable overshoot.

[3] is the 'Percentage Off Rate until Valve Reacts' (Off Rate percentage before valve makes correction).

The range is 1 – 10%. The valve can be adjusted to increase or decrease Off-Rate percentage.

NOTE

The flow meter & regulator valve used by the controller are critical components of the spraying system and must be checked & calibrated on a regular basis to ensure accurate application.

NOTE

Each flow meter has a unique calibration number printed on a tag attached to the flow meter.

NOTE

Nozzle spray patterns & outputs - must be checked regularly to ensure correct & uniform application rates (nozzles wear with use).

Record All Data For Future Reference
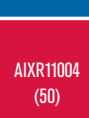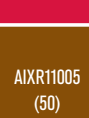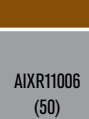
Record the set-up and calibration data on a work sheet similar to the one shown at the end of this chapter ('Calibration/ Application Work Sheet') for future reference and information.

Photocopy the blank work sheet for operational use as required.

AIXR Teejet Application Chart

DROPLET SIZE CATEGORIES: XF EXTREMELY FINE | VF VERY FINE | F FINE | M MEDIUM | C COARSE | VC VERY COARSE | XC EXTREMELY COARSE | UC ULTRA COARSE

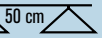| Nozzle	bar	DROP SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	l/ha @ 50 cm									CAP PART NUMBER
					5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h	
AIXR110015 (100)	1.0	XC	–	0.34	81.6	68.0	58.3	51.0	40.8	34.0	25.5	22.7	20.4	11441A-*-CELR
	2.0	C	–	0.48	115	96.0	82.3	72.0	57.6	48.0	36.0	32.0	28.8	
	3.0	C	–	0.59	142	118	101	88.5	70.8	59.0	44.3	39.3	35.4	
	4.0	M	–	0.68	163	136	117	102	81.6	68.0	51.0	45.3	40.8	
	5.0	M	–	0.76	182	152	130	114	91.2	76.0	57.0	50.7	45.6	
	6.0	M	–	0.83	199	166	142	125	99.6	83.0	62.3	55.3	49.8	
AIXR11002 (50)	1.0	XC	–	0.46	110	92.0	78.9	69.0	55.2	46.0	34.5	30.7	27.6	
	2.0	VC	–	0.65	156	130	111	97.5	78.0	65.0	48.8	43.3	39.0	
	3.0	C	–	0.79	190	158	135	119	94.8	79.0	59.3	52.7	47.4	
	4.0	M	–	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6	
	5.0	M	–	1.02	245	204	175	153	122	102	76.5	68.0	61.2	
	6.0	M	–	1.12	269	224	192	168	134	112	84.0	74.7	67.2	
AIXR110025 (50)	1.0	XC	**	0.57	137	114	97.7	85.5	68.4	57.0	42.8	38.0	34.2	
	2.0	VC	**	0.81	194	162	139	122	97.2	81.0	60.8	54.0	48.6	
	3.0	VC	**	0.99	238	198	170	149	119	99.0	74.3	66.0	59.4	
	4.0	C	**	1.14	274	228	195	171	137	114	85.5	76.0	68.4	
	5.0	C	**	1.28	307	256	219	192	154	128	96.0	85.3	76.8	
	6.0	M	–	1.40	336	280	240	210	168	140	105	93.3	84.0	
AIXR11003 (50)	1.0	XC	**	0.68	163	136	117	102	81.6	68.0	51.0	45.3	40.8	
	2.0	VC	**	0.96	230	192	165	144	115	96.0	72.0	64.0	57.6	
	3.0	VC	**	1.18	283	236	202	177	142	118	88.5	78.7	70.8	
	4.0	C	**	1.36	326	272	233	204	163	136	102	90.7	81.6	
	5.0	C	**	1.52	365	304	261	228	182	152	114	101	91.2	
	6.0	M	–	1.67	401	334	286	251	200	167	125	111	100	
AIXR11004 (50)	1.0	UC	***	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6	
	2.0	XC	**	1.29	310	258	221	194	155	129	96.8	86.0	77.4	
	3.0	VC	**	1.58	379	316	271	237	190	158	119	105	94.8	
	4.0	VC	**	1.82	437	364	312	273	218	182	137	121	109	
	5.0	C	**	2.04	490	408	350	306	245	204	153	136	122	
	6.0	C	–	2.23	535	446	382	335	268	223	167	149	134	
AIXR11005 (50)	1.0	UC	***	1.14	274	228	195	171	137	114	85.5	76.0	68.4	
	2.0	XC	***	1.61	386	322	276	242	193	161	121	107	96.6	
	3.0	VC	**	1.97	473	394	338	296	236	197	148	131	118	
	4.0	VC	**	2.27	545	454	389	341	272	227	170	151	136	
	5.0	C	**	2.54	610	508	435	381	305	254	191	169	152	
	6.0	C	–	2.79	670	558	478	419	335	279	209	186	167	
AIXR11006 (50)	1.0	UC	***	1.37	329	274	235	206	164	137	103	91.3	82.2	11443A-*CELR
	2.0	XC	***	1.94	466	388	333	291	233	194	146	129	116	
	3.0	VC	***	2.37	569	474	406	356	284	237	178	158	142	
	4.0	VC	**	2.74	658	548	470	411	329	274	206	183	164	
	5.0	C	**	3.06	734	612	525	459	367	306	230	204	184	
	6.0	C	–	3.35	804	670	574	503	402	335	251	223	201	
AIXR11008 (50)	1.0	UC	–	1.82	437	364	312	273	218	182	137	121	109	
	2.0	XC	–	2.58	619	516	442	387	310	258	194	172	155	
	3.0	VC	–	3.16	758	632	542	474	379	316	237	211	190	
	4.0	VC	–	3.65	876	730	626	548	438	365	274	243	219	
	5.0	VC	–	4.08	979	816	699	612	490	408	306	272	245	
	6.0	C	–	4.47	1073	894	766	671	536	447	335	298	268	
AIXR11010	1.0	UC	–	2.28	547	456	391	342	274	228	171	152	137	
	2.0	UC	–	3.23	775	646	554	485	388	323	242	215	194	
	3.0	XC	–	3.95	948	790	677	593	474	395	296	263	237	
	4.0	VC	–	4.56	1094	912	782	684	547	456	342	304	274	
	5.0	VC	–	5.10	1224	1020	874	765	612	510	383	340	306	
	6.0	VC	–	5.59	1342	1118	958	839	671	559	419	373	335	

AIXR TEEJET® AIR INDUCTION XR FLAT SPRAY TIPS

MOST VERSATILE AIR INDUCTION TIP

The AIXR TeeJet Flat Spray Tip offers excellent drift resistance without compromising spray coverage. AIXR spray tips are suitable for a wide variety of systemic herbicides and applications where drift control is critical.

Features & Benefits

- The unique UHMWPE material provides significantly longer wear life and better acid resistance, making the AIXR ideal for highly acidic applications, such as applying defoliation products

- Air-induction design enhances coverage of larger droplets through air inclusion

- A perfect balance of drift control and coverage – precisely sized, large, air-filled drops stay on target and cover the entire plant

USE WITH: HERBICIDES, SYSTEMIC FUNGICIDES, SYSTEMIC INSECTICIDES

VP MATERIALS: VISIFLO ACETAL

SPRAY ANGLE: 110°

PRESSURE: 1.5–6 BAR

NOTE

The nozzle charts shown in this manual are for instruction purposes only. Always jug test the accuracy of your nozzles. Also check with the nozzle manufacturer to ensure you are using the correct charts as updates may occur at any time.

TTJ60 Teejet Application Chart

DROPLET SIZE CATEGORIES: XF EXTREMELY FINE | VF VERY FINE | F FINE | M MEDIUM | C COARSE | VC VERY COARSE | XC EXTREMELY COARSE | UC ULTRA COARSE

bar	DROP SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	l/ha 50 cm									CAP PART NUMBER
				5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h	
TTJ60-11002 (100)													
1.5	C	–	0.56	134	112	96.0	84.0	67.2	56.0	42.0	37.3	33.6	
2.0	C	–	0.65	156	130	111	97.5	78.0	65.0	48.8	43.3	39.0	
3.0	M	–	0.79	190	158	135	119	94.8	79.0	59.3	52.7	47.4	
4.0	M	–	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6	
5.0	M	–	1.02	245	204	175	153	122	102	76.5	68.0	61.2	
6.0	M	–	1.12	269	224	192	168	134	112	84.0	74.7	67.2	
TTJ60-110025 (100)													
1.5	VC	**	0.70	168	140	120	105	84.0	70.0	52.5	46.7	42.0	
2.0	C	**	0.81	194	162	139	122	97.2	81.0	60.8	54.0	48.6	
3.0	C	--	0.99	238	198	170	149	119	99.0	74.3	66.0	59.4	
4.0	M	--	1.14	274	228	195	171	137	114	85.5	76.0	68.4	
5.0	M	--	1.28	307	256	219	192	154	128	96.0	85.3	76.8	
6.0	M	--	1.40	336	280	240	210	168	140	105	93.3	84.0	
TTJ60-11003 (100)													
1.5	VC	**	0.83	199	166	142	125	99.6	83.0	62.3	55.3	49.8	
2.0	C	**	0.96	230	192	165	144	115	96.0	72.0	64.0	57.6	
3.0	C	--	1.18	283	236	202	177	142	118	88.5	78.7	70.8	
4.0	M	--	1.36	326	272	233	204	163	136	102	90.7	81.6	
5.0	M	--	1.52	365	304	261	228	182	152	114	101	91.2	
6.0	M	--	1.67	401	334	286	251	200	167	125	111	100	
TTJ60-11004 (50)													
1.5	VC	**	1.12	269	224	192	168	134	112	84.0	74.7	67.2	
2.0	C	**	1.29	310	258	221	194	155	129	96.8	86.0	77.4	
3.0	C	--	1.58	379	316	271	237	190	158	119	105	94.8	
4.0	M	--	1.82	437	364	312	273	218	182	137	121	109	
5.0	M	--	2.04	490	408	350	306	245	204	153	136	122	
6.0	M	--	2.23	535	446	382	335	268	223	167	149	134	
TTJ60-11005 (50)													
1.5	VC	**	1.39	334	278	238	209	167	139	104	92.7	83.4	
2.0	C	**	1.61	386	322	276	242	193	161	121	107	96.6	
3.0	C	**	1.97	473	394	338	296	236	197	148	131	118	
4.0	M	--	2.27	545	454	389	341	272	227	170	151	136	
5.0	M	--	2.54	610	508	435	381	305	254	191	169	152	
6.0	M	--	2.79	670	558	478	419	335	279	209	186	167	
TTJ60-11006 (50)													
1.5	VC	–	1.68	403	336	288	252	202	168	126	112	101	
2.0	VC	–	1.94	466	388	333	291	233	194	146	129	116	
3.0	C	–	2.37	569	474	406	356	284	237	178	158	142	
4.0	C	–	2.74	658	548	470	411	329	274	206	183	164	
5.0	M	–	3.06	734	612	525	459	367	306	230	204	184	
6.0	M	–	3.35	804	670	574	503	402	335	251	223	201	
TTJ60-11008 (50)													
1.5	VC	–	2.23	535	446	382	335	268	223	167	149	134	
2.0	VC	–	2.58	619	516	442	387	310	258	194	172	155	
3.0	C	–	3.16	758	632	542	474	379	316	237	211	190	
4.0	C	–	3.65	876	730	626	548	438	365	274	243	219	
5.0	C	–	4.08	979	816	699	612	490	408	306	272	245	
6.0	M	–	4.47	1073	894	766	671	536	447	335	298	268	
TTJ60-11010 (50)													
1.5	XC	–	2.79	670	558	478	419	335	279	209	186	167	
2.0	VC	–	3.23	775	646	554	485	388	323	242	215	194	
3.0	VC	–	3.95	948	790	677	593	474	395	296	263	237	
4.0	C	–	4.56	1094	912	782	684	547	456	342	304	274	
5.0	C	–	5.10	1224	1020	874	765	612	510	383	340	306	
6.0	C	–	5.59	1342	1118	958	839	671	559	419	373	335	

CAP PART NUMBER: TI4441A-*CELR

TTJ60 TURBO TWINJET® FLAT SPRAY TIPS

IDEAL COVERAGE & TURBO-CHARGED DROPLETS

The TTJ60 produces a symmetrical twin spray pattern which provides superior coverage of small, hard-to-reach vertical targets. Due to the unique Turbo construction of the spray tip, it produces optimally-sized droplets for high coverage, with anti-drift characteristics resulting in a high quality spray application.

Features & Benefits

- Twin fan provides uniform coverage and penetration to the canopy
- Consistent droplet size spectrum and less driftable droplets for better coverage
- Medium to very coarse drift-resistant Turbo droplets

USE WITH:
**CONTACT HERBICIDES
CONTACT FUNGICIDES
CONTACT INSECTICIDES**

MATERIALS:
VISIFLO ACETAL VP

PRESSURE:
1.5-6 BAR

SPRAY PATTERN:
TWIN FAN

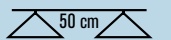**NOTE**

The nozzle charts shown in this manual are for instruction purposes only. Always jug test the accuracy of your nozzles. Also check with the nozzle manufacturer to ensure you are using the correct charts as updates may occur at any time.

ID3 Lechler Application Chart

Nozzle	ISO 25358	bar	l/min	5.0 km/h	6.0 km/h	7.0 km/h	8.0 km/h	10.0 km/h	12.0 km/h	14.0 km/h	16.0 km/h	18.0 km/h
ID-120-01 (80 M)	XC	3.0	0.39	94	78	67	59	47	39	33	29	26
	VC	4.0	0.45	108	90	77	68	54	45	39	34	30
	VC	5.0	0.51	122	102	87	77	61	51	44	38	34
	VC	6.0	0.55	132	110	94	83	66	55	47	41	37
	C	7.0	0.60	144	120	103	90	72	60	51	45	40
	C	8.0	0.64	154	128	110	96	77	64	55	48	43
ID-120-015 (60 M)	VC	3.0	0.59	142	118	101	89	71	59	51	44	39
	VC	4.0	0.68	163	136	117	102	82	68	58	51	45
	VC	5.0	0.76	182	152	130	114	91	76	65	57	51
	C	6.0	0.83	199	166	142	125	100	83	71	62	55
	C	7.0	0.90	216	180	154	135	108	90	77	68	60
	C	8.0	0.96	230	192	165	144	115	96	82	72	64
ID-120-02 (60 M)	XC	2.0	0.65	156	130	111	98	78	65	56	49	43
	VC	3.0	0.80	192	160	137	120	96	80	69	60	53
	VC	4.0	0.92	221	184	158	138	110	92	79	69	61
	VC	5.0	1.03	247	206	177	155	124	103	88	77	69
	C	6.0	1.13	271	226	194	170	136	113	97	85	75
	C	7.0	1.22	293	244	209	183	146	122	105	92	81
	M	8.0	1.30	312	260	223	195	156	130	111	98	87
ID-120-025 (60 M)	UC	2.0	0.81	194	162	139	122	97	81	69	61	54
	XC	3.0	0.99	238	198	170	149	119	99	85	74	66
	VC	4.0	1.15	276	230	197	173	138	115	99	86	77
	VC	5.0	1.28	307	256	219	192	154	128	110	96	85
	VC	6.0	1.40	336	280	240	210	168	140	120	105	93
	VC	7.0	1.52	365	304	261	228	182	152	130	114	101
	VC	8.0	1.62	389	324	278	243	194	162	139	122	108
ID-120-03 (60 M)	UC	2.0	0.97	233	194	166	146	116	97	83	73	65
	XC	3.0	1.19	286	238	204	179	143	119	102	89	79
	VC	4.0	1.37	329	274	235	206	164	137	117	103	91
	VC	5.0	1.53	367	306	262	230	184	153	131	115	102
	VC	6.0	1.68	403	336	288	252	202	168	144	126	112
	VC	7.0	1.81	434	362	310	272	217	181	155	136	121
	VC	8.0	1.94	466	388	333	291	233	194	166	146	129
ID-120-04 (60 M)	XC	2.0	1.29	310	258	221	194	155	129	111	97	86
	XC	3.0	1.58	379	316	271	237	190	158	135	119	105
	VC	4.0	1.82	437	364	312	273	218	182	156	137	121
	VC	5.0	2.04	490	408	350	306	245	204	175	153	136
	VC	6.0	2.23	535	446	382	335	268	223	191	167	149
	VC	7.0	2.41	578	482	413	362	289	241	207	181	161
	VC	8.0	2.58	619	516	442	387	310	258	221	194	172
ID-120-05 (25 M)	UC	2.0	1.61	386	322	276	242	193	161	138	121	107
	XC	3.0	1.97	473	394	338	296	236	197	169	148	131
	VC	4.0	2.28	547	456	391	342	274	228	195	171	152
	VC	5.0	2.55	612	510	437	383	306	255	219	191	170
	VC	6.0	2.79	670	558	478	419	335	279	239	209	186
	VC	7.0	3.01	722	602	516	452	361	301	258	226	201
	VC	8.0	3.22	773	644	552	483	386	322	276	242	215
ID-120-06 (25 M)	XC	2.0	1.93	463	386	331	290	232	193	165	145	129
	XC	3.0	2.36	566	472	405	354	283	236	202	177	157
	VC	4.0	2.73	655	546	468	410	328	273	234	205	182
	VC	5.0	3.05	732	610	523	458	366	305	261	229	203
	VC	6.0	3.34	802	668	573	501	401	334	286	251	223
	VC	7.0	3.61	866	722	619	542	433	361	309	271	241
	VC	8.0	3.86	926	772	662	579	463	386	331	290	257
ID-120-08 (25 M)	XC	2.0	2.58	619	516	442	387	310	258	221	194	172
	XC	3.0	3.16	758	632	542	474	379	316	271	237	211
	VC	4.0	3.65	876	730	626	548	438	365	313	274	243
	VC	5.0	4.08	979	816	699	612	490	408	350	306	272
	VC	6.0	4.47	1073	894	766	671	536	447	383	335	298
	VC	7.0	4.83	1159	966	828	725	580	483	414	362	322
	VC	8.0	5.16	1238	1032	885	774	619	516	442	387	344
ID-120-10 (25 M)	UC	2.0	3.22	773	644	552	483	386	322	276	242	215
	XC	3.0	3.94	946	788	675	591	473	394	338	296	263
	XC	4.0	4.55	1092	910	780	683	546	455	390	341	303
	VC	5.0	5.09	1222	1018	873	764	611	509	436	382	339
	VC	6.0	5.57	1337	1114	955	836	668	557	477	418	371
	VC	7.0	6.02	1445	1204	1032	903	722	602	516	452	401
	VC	8.0	6.43	1543	1286	1102	965	772	643	551	482	429

ISO 25358
Droplet size classification

New measuring system!
Further information see page 13.

VF	Very fine
F	Fine
M	Medium
C	Coarse
VC	Very coarse
XC	Extremely coarse
UC	Ultra coarse

Classifications are subject to change.

- Spray pressure at the nozzle tip (gauged with a diaphragm valve)
- The stated liter-per-hectare rates apply to water
- Prior to each spraying season, verify the table data by gauging the flow rates
- Make sure that all nozzles have the same settings

Online nozzle calculator

Apple   Android

Air-Injector flat spray nozzles ID3

Drift reduction: 90/75/50 %
Current list under www.lechler-agri.com/drift-reduction

G 1965
G 1966
G 1968
G 1969
G 1970
G 1971
G 1972
G 1973
G 1974
G 2088

ID3   ID3-C   AF 10

Dimensions in mm.

Crop production   Ground care

Extremely low-drift, air-injector flat spray nozzle for professional use.

Advantages
- Up to 90 % drift reduction depending on nozzle size, pressure and country
- Long injector design ensures high drift stability over a wide pressure range
- Timely application even under adverse weather conditions
- Increased workrate due to flexible use over a wide pressure range
  – Adaptation by changing the driving speed and l/ha rate without nozzle changes
- Very good deposition structure and crop penetration

Nozzle size
01 – 10

Spray angle
120°

Material
POM, ceramic

Pressure range
– ID-01 to -015: 3 – **4 – 8** bar
– ID-02 to -10: 2 – **4 – 8** bar
– UAN: 2 – 4 bar

Recommended filters
80 M 01
60 M 02 – 04
25 M 05 – 10

Droplet size
Ultra coarse – medium

Width across flats
10 mm

Application areas

Plant protection products and growth regulators

Liquid fertilizer

Border application can be combined with border nozzle IS 80

Golf course
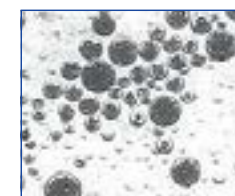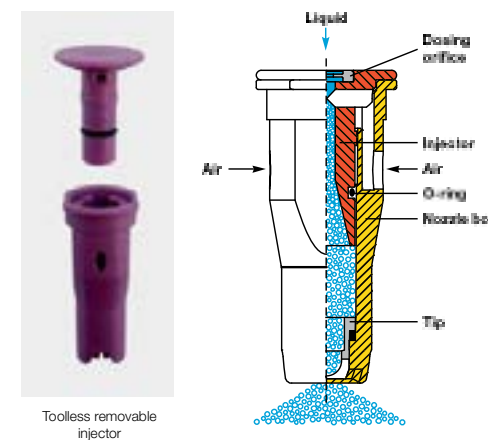
Toolless removable injector

Aeration effect

Liquid
Dosing orifice
Injector
Air
O-ring
Nozzle body
Tip

NOTE
The nozzle charts shown in this manual are for instruction purposes only. Always jug test the accuracy of your nozzles.
Also check with the nozzle manufacturer to ensure you are using the correct charts as updates may occur at any time.

IDK/IDKN Lechler Application

Model	IDKN	IDK	bar	l/min	5.0 km/h	6.0 km/h	7.0 km/h	8.0 km/h	10.0 km/h	12.0 km/h	14.0 km/h	16.0 km/h	18.0 km/h
IDK 120-01 90-01 (80 M)		VC	1.0	0.23	55	46	39	35	28	23	20	17	15
		VC	1.5	0.28	67	56	48	42	34	28	24	21	19
		VC	2.0	0.32	77	64	55	48	38	32	27	24	21
		VC	2.5	0.36	86	72	62	54	43	36	31	27	24
		VC	3.0	0.39	94	78	67	59	47	39	33	29	26
		C	4.0	0.45	108	90	77	68	54	45	39	34	30
		M	5.0	0.51	122	102	87	77	61	51	44	38	34
		M	6.0	0.55	132	110	94	83	66	55	47	41	37
IDK 120-015 90-015 (60 M)			1.0	0.34	82	68	58	51	41	34	29	26	23
		VC	1.5	0.42	101	84	72	63	50	42	36	32	28
		VC	2.0	0.48	115	96	82	72	58	48	41	36	32
		VC	2.5	0.54	130	108	93	81	65	54	46	41	36
		C	3.0	0.59	142	118	101	89	71	59	51	44	39
		C	4.0	0.68	163	136	117	102	82	68	58	51	45
		M	5.0	0.76	182	152	130	114	91	76	65	57	51
		M	6.0	0.83	199	166	142	125	100	83	71	62	55
IDK 120-02 90-02 (60 M)			1.0	0.46	110	92	79	69	55	46	39	35	31
		VC	1.5	0.56	134	112	96	84	67	56	48	42	37
		VC	2.0	0.65	156	130	111	98	78	65	56	49	43
		VC	2.5	0.73	175	146	125	110	88	73	63	55	49
		VC	3.0	0.80	192	160	137	120	96	80	69	60	53
		C	4.0	0.92	221	184	158	138	110	92	79	69	61
		C	5.0	1.03	247	206	177	155	124	103	88	77	69
		M	6.0	1.13	271	226	194	170	136	113	97	85	75
IDK 120-025 90-025		XC	1.0	0.57	137	114	98	86	68	57	49	43	38
		VC	1.5	0.70	168	140	120	105	84	70	60	53	47
		VC	2.0	0.81	194	162	139	122	97	81	69	61	54
		VC	2.5	0.91	218	182	156	137	109	91	78	68	61
		C	3.0	0.99	238	198	170	149	119	99	85	74	66
		C	4.0	1.15	276	230	197	173	138	115	99	86	77
		M	5.0	1.28	307	256	219	192	154	128	110	96	85
		M	6.0	1.40	336	280	240	210	168	140	120	105	93
IDK 120-03 90-03 IDKN 120-03 (60 M)	UC	XC	1.0	0.69	166	138	118	104	83	69	59	52	46
	XC	VC	1.5	0.84	202	168	144	126	101	84	72	63	56
	XC	VC	2.0	0.97	233	194	166	146	116	97	83	73	65
	VC	VC	2.5	1.08	259	216	185	162	130	108	93	81	72
	VC	VC	3.0	1.19	286	238	204	179	143	119	102	89	79
	C	C	4.0	1.37	329	274	235	206	164	137	117	103	91
	C	C	5.0	1.53	367	306	262	230	184	153	131	115	102
		M	6.0	1.68	403	336	288	252	202	168	144	126	112
IDK IDKN 120-04 (60 M)	UC	UC	1.0	0.91	218	182	156	137	109	91	78	68	61
	XC	XC	1.5	1.12	269	224	192	168	134	112	96	84	75
	XC	XC	2.0	1.29	310	258	221	194	155	129	111	97	86
	VC	VC	2.5	1.44	346	288	247	216	173	144	123	108	96
	VC	VC	3.0	1.58	379	316	271	237	190	158	135	119	105
	VC	C	4.0	1.82	437	364	312	273	218	182	156	137	121
	C	C	5.0	2.04	490	408	350	306	245	204	175	153	136
	C	C	6.0	2.23	535	446	382	335	268	223	191	167	149
IDK 120-05 (25 M)		XC	1.0	1.14	274	228	195	171	137	114	98	86	76
		XC	1.5	1.39	334	278	238	209	167	139	119	104	93
		VC	2.0	1.61	386	322	276	242	193	161	138	121	107
		VC	2.5	1.80	432	360	309	270	216	180	154	135	120
		VC	3.0	1.97	473	394	338	296	236	197	169	148	131
		VC	4.0	2.28	547	456	391	342	274	228	195	171	152
		C	5.0	2.55	612	510	437	383	306	255	219	191	170
		C	6.0	2.79	670	558	478	419	335	279	239	209	186
IDK 120-06 (25 M)		XC	1.0	1.36	326	272	233	204	163	136	117	102	91
		VC	1.5	1.67	401	334	286	251	200	167	143	125	111
		VC	2.0	1.93	463	386	331	290	232	193	165	145	129
		VC	2.5	2.15	516	430	369	323	258	215	184	161	143
		VC	3.0	2.36	566	472	405	354	283	236	202	177	157
		C	4.0	2.73	655	546	468	410	328	273	234	205	182
		C	5.0	3.05	732	610	523	458	366	305	261	229	203
		C	6.0	3.34	802	668	573	501	401	334	286	251	223

ISO 25358
Droplet size classification

New measuring system!
Further information see page 13.

VF	Very fine
F	Fine
M	Medium
C	Coarse
VC	Very coarse
XC	Extremely coarse
UC	Ultra coarse

Classifications are subject to change.

- Spray pressure at the nozzle tip (gauged with a diaphragm valve)
- The stated liter-per-hectare rates apply to water
- Prior to each spraying season, verify the table data by gauging the flow rate
- Make sure that all nozzles have the same settings

Online nozzle calculator

Apple　　　Android

Best Protection of IDK/IDKN/IDKS/IDKT nozzles through long side walls of MultiCap (see page 108).

Available assembled with IDK-, IDKT- and IDKN nozzle

Air-injector flat spray compact nozzles IDK/IDKN

Drift reduction: 90/75/50 %
Current list under www.lechler-agri.com/drift-reduction

Very low-drift, compact air-injector flat spray nozzle with wide droplet spectrum (from ultra coarse to medium).

Advantages
- Up to 90 % drift reduction depending on nozzle size, pressure and country
- Very low drift and loss-reducing in the pressure range up to 3.0 bar (depending on size)
- Inexpensive alternative to conventional standard nozzles
- Very good deposition structure and crop penetration

G 1661
G 1662
G 1663
G 1683
G 1718
G 1799
G 1800
G 1801
G 1802
G 1936

IDK　　IDK-C　　IDKN*
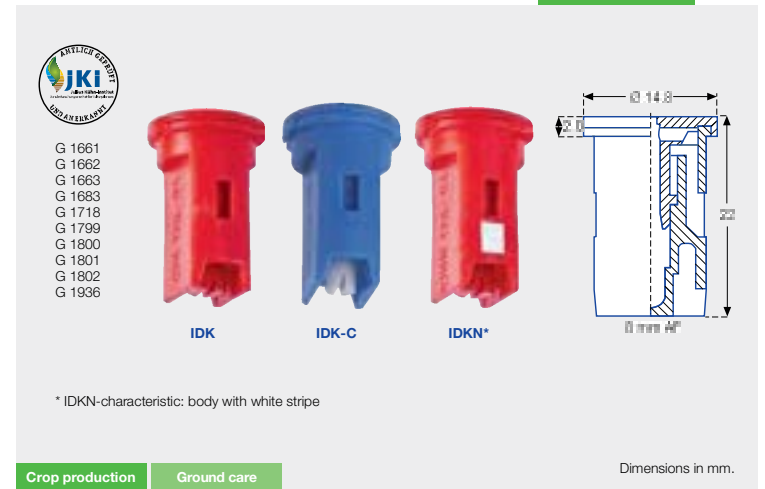
* IDKN-characteristic: body with white stripe

Crop production　Ground care

Dimensions in mm.

Application areas
- Plant protection products and growth regulators
- Liquid fertilizer
- Spray frame
- Border application can be combined with border nozzle IDKS 80
- Golf course
- Knapsack sprayer
- Greenhouse

Nozzle size
01 – 10

Spray angle
90°, 120°

Material
POM, ceramic

Pressure range
– IDK-01 to -03: **1.5 – 3** – 6 bar
– IDK-04 to -10: 1 – **1.5 – 3** – 6 bar
– UAN
  IDK -01 to -03: 1.5 – 2.5 bar
  IDK -04 to -10: 1 – 2.5 bar
  IDKN: 1 – 2.5 bar

Recommended filters
80 M 01
60 M 015 – 04
25 M 05 – 10

Droplet size
Ultra coarse – medium

Toolless removable injector

Liquid
Injector
Nozzle body
Air　　Air

NOTE
The nozzle charts shown in this manual are for instruction purposes only. Always jug test the accuracy of your nozzles.
Also check with the nozzle manufacturer to ensure you are using the correct charts as updates may occur at any time.

Calibration/Application Work Sheet

Measured Boom Section Widths & No of Nozzles:

Boom section 1:   Width (m)................... No. Nozzles: ....
Boom section 2:   Width (m)................... No. Nozzles: ....
Boom section 3:   Width (m)................... No. Nozzles: ....
Boom section 4:   Width (m)................... No. Nozzles: ....
Boom section 5:   Width (m)................... No. Nozzles: ....
Boom section 6:   Width (m)................... No. Nozzles: ....
Boom section 7:   Width (m)................... No. Nozzles: ....
Boom section 8:   Width (m)................... No. Nozzles: ....
Boom section 9:   Width (m)................... No. Nozzles: ....
Boom section 10: Width (m)................... No. Nozzles: ....
Boom section 11: Width (m)................... No. Nozzles: ....
Boom section 12: Width (m)................... No. Nozzles: ....
Boom section 13: Width (m)................... No. Nozzles: ....
Boom section 14: Width (m)................... No. Nozzles: ....
Boom section 15: Width (m)................... No. Nozzles: ....
Boom section 16: Width (m)................... No. Nozzles: ....

Nozzle Type & Size:

- Chemical: ....
- Nozzle Type: ....
- Pressure Setting: ....
- Travel speed (km/hr): ....
- Total number of nozzles to be used: ....

Nozzle Flow Rate (l/min) =

Speed (km/hr) x Swath Width (m) x Application Rate (l/ha) ÷ 600 ÷ Number of nozzles

.... x .... x .... ÷ 600 ÷ ....

= .... l/min for each nozzle

Boom Nozzles Fitted:

Set-Up Option: Single Line / 3TS / 3TS Pro / Hawkeye

Nozzle Type: ....

Nozzle Sizes: ....

Nozzle Colours: ....

Nozzle Accuracy & Nozzle Output (Jug Test):

Thoroughly check nozzles & test actual output of each nozzle:

- Pressure Setting: ....
- Individual Nozzle Outputs: ....

  ....

  ....

  ....

  ....

  ....

  ....

  ....

- Sum of Nozzle Outputs: ....

Calculated Application Rate:

The automatic Spray Controller calculates & shows the rate of application.

Application Rate (l/ha) =

Spray Output (l/min) x 600 ÷ Speed (km/hr) x Swath Width (m)

[................. x 600] ÷ [................... x ....]

= ....l/ha

Add Correct Amount of Chemical:

- Chemical: ....
- Water Quantity: ....
- Chemical Added: ....

Boom Application Height: ....

Application Data:

Date: ....

Farm location: ....

Field Name/No: ....

Crop sprayed: ....

Spray Volume litres/ha: ....

Nozzle Pressure: ....

Tested Output (l/min): ....

Applied Litres per Hectare: ....

Notes:

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6 - **Operation** – Ready to Spray 97

Prairie Pro Series 2 Trailed Sprayer Operator's Manual.

Check the suction filter is clean.

Check tyre inflation and wheel nuts.

Pre-Operation Check

Before Starting the Prairie Pro:

- Read the Prairie Pro Series 2 Trailed Sprayer Operator's Manual thoroughly, before attempting to use this machine
- Read & follow instructions on chemical manufacturers labels
- Refer to instructions provided in other operator manuals supplied
- Always wear appropriate protective clothing.
- Before operating the machine, check all fluid levels (oil & water).
- Check all maintenance procedures have been followed
- Complete scheduled lubrication

- Inspect the machine to ensure there is no damage or wear which could lead to injury, further damage or reduced performance
- Check all plumbing lines & fittings to ensure they are tight, not damaged or leaking
- Check to ensure frost and/or vermin have not damaged the machine
- Check the suction filter is clean
- Check the pressure filter is clean
- Check nozzles are spraying correctly
- Check all hydraulic connections
- Check boom controls functions
- Check all spraying control functions (refer to the instructions in this manual)
- Check tyres are correctly inflated

- Check all lights are working correctly
- Check all bolts & nuts are tight & secure
- Ensure there is a sufficient clean water in the hand wash tank for personal hygiene and chemical safety
- Organise communication with someone to come to your aid, if required.

A more comprehesive checklist of routine checks is provided in chapter 8, 'Lubrication & Maintenance'.

NOTE

A high quality multi-purpose grease is essential for the machine to operate with maximum effectiveness and life-expectancy.

It is important to keep the lubricant and lubricant applicator clean. Wipe all dirt from the fittings before use.

NOTE

Be sure to adequately clean and flush all chemical handling equipment.

All spray equipment should be cleaned at the start and end of each spray season including all filters and nozzles.

NOTE

Test the pump with clean water. Switch on the pump at the lowest revolutions possible & gradually increase revolutions until the pump reaches its operating speed.

Do not exceed 4200 rpm on centrifugal pump or 540 rpm on diaphragm pump.

Ensure the Prairie Pro Series 2 meets your state vehicle height & width restrictions before driving on roads.

Lighting around the Prairie Pro at night needs to be sufficient for all labels and warnings on the machine to be clearly visible to an operator.

Machine Transit Safety

The largest Prairie Pro Series 2 Trailed Sprayer height is approximately 4.55m high when folded & tractor roof aerials may be higher.

Check the regulations in your state for maximum vehicle height & width restrictions. Bigger booms may require an escort in some areas.

When driving the machine on roads it may be necessary to remove aerials to meet the required height restrictions.

Aerials on the roof may also need to be removed to meet clearance requirements for over head power lines - on the road & in some paddocks.

Overhead Power Lines

Check areas to be sprayed for any overhead power lines.

If there are power lines in the area, contact the relevant energy provider for information on safe use of machinery near live power lines.

Night Spraying

When conducting spraying operations at night:

- Lighting around the machine needs to be sufficient for all labels and warnings on the machine to be clearly visible to the operator.

- Lighting of the area to be sprayed needs to be sufficient for obstacles in the path of the machine to be clearly visible to the operator.

⚠ DANGER
Check the area to be sprayed for over head power lines. Any contact of the machine & power lines can result in serious injury or death. If power lines are in the spray area, exercise extreme caution when tilting, raising/lowering & folding booms & especially when using automatic fold.

NOTE
Some options like 48m booms and/or large tyres may put a machine over-width. Check the road regulations for your State.

⚠ DANGER
Do NOT walk on the machine platform when near power lines.

⚠ CAUTION
If spraying is to be done at night, ensure that adequate lighting is available around the machine and the area to be sprayed.

Standard Cabin Controls showing the Auxiliary 12 Buttonpad & Raven Rate Controller

Cabin Controls showing the Optional G-HUB 12" Display with the Auxiliary 12 Buttonpad & Raven Rate Controller

Air pressure gauges & an hydraulic gauge with indicator light located at the front the Prairie Pro for present performance information.

Start-Up Guide

The Prairie Pro can be fitted with:

- Standard Cabin Controls of the G-Hub system or
- Additional G-Hub 12" full colour touch display option (and other options).

Instructions follow for operating with the Standard Cabin Controls and the optional G-Hub 12" full colour touch display.

It is the responsibility of the operator to familiarise themselves with and understand the information in this manual to ensure competent and safe operation.

Follow these instructions when starting the tractor engine, drive and shut-down the Prairie Pro.

Starting & Stopping the Prairie Pro

Follow these instructions when starting & stopping the Prairie Pro.

To Start-Up the Prairie Pro:

1 Conduct the 'Pre-operation Check' of the Prairie Pro.
2 Check the tractor park brake is ON.
3 Start the tractor engine.
4 Run the Prairie Pro Air Compressor for at least 30 seconds to allow the compressor to build the required system air pressure before to moving or operating.
5 After starting the tractor engine allow hydraulic oil to warm up before operating hydraulic functions.
6 Disengage the tractor park brake before moving.

Before Starting in Cold Conditions

If the Prairie Pro is in a cold environment, always check components to make sure that they have not been damaged and that there is no ice in the system before starting spraying.

If the water has frozen in the pump and/or in the lines, wait until it has completely thawed before use.

To Shut-Down the Prairie Pro:

1 Bring the unit to a complete stop.
2 Engage the tractor park brake.
3 Stop the tractor engine.
4 Wait 30 seconds to allow the G-Hub Controller system enough time to save the data before shutting off its power source.

NOTE

The operator must wear the operator safety belt at all times when seated in the tractor or when the machine is in motion.

Push buttons on the Auxiliary 12 Buttonpad are used for the Boom Folding (Boom S1 & S2 In) & Unfolding (Boom S1 & S2 Out) functions.

Boom Folding/Unfolding

The Auxiliary Buttonpad is used for the Boom Folding and Unfolding functions.

As well as usual folding and unfolding of the boom, a Bifold function allows the outside boom sections to be folded reducing spray width for purposes such as finishing along fencelines and other applications.

The 'Boom Unfolding' process is manually operated using the Auxiliary Buttonpad & Joystick push buttons.

Boom Folding can be done either, manually or automatically (depending on G-Hub settings) for 24m, 28m, 30m & 36m booms.

The 48m boom is folded & unfolded manually. Automatically, the 48m boom only part folds which is then completed manually.

Always ensure the Prairie Pro is stationary, with tractor park brake engaged, before attempting to fold or unfold the boom.

Fully folded boom sections shown in the boom rests. Use the Joystick 'Boom Up' push button to lift them out of the boom rests, then unfold the boom.

Manually Unfolding the Boom (24 - 36m)

The Boom Unfolding Procedure is manually controlled using the Boom Unfolding push buttons ('Fold S1 Out' & 'Fold S2 Out') on the Auxiliary 12 Buttonpad & the push buttons ('Boom Up' & 'Boom Down') of the Joystick Buttonpad

To Unfold the Boom Manually:

i) Press & hold the 'Tilt Left Up' & 'Tilt Right Up' push buttons on the Joystick Buttonpad to raise the boom until it clears the Boom Rests, then release the push buttons.

ii) Press & hold the 'Fold S1 Out' push button on the Auxiliary buttonpad to unfold both sides of the boom from their folded position. Fully unfold the boom until it is aligned with the boom centre section, then release the push button.

    S2 folds automatically with S1.

iii) Press & hold the 'Boom Down' push button on the Joystick Buttonpad to lower the boom to the operating height.

Right hand side, inner Boom Rest lock which locks the outer boom section when folded onto the inner boom section for Folding & Bi-Fold functions.

Manually Folding the Boom (24 - 36m)

The boom can be folded manually, but only when the calibration values in the G-hub controller are set to zero for tilt left, tilt right & boom lift.

To Fold the Boom Manually:

i) Press & hold the 'Boom Up' push button on the Joystick Buttonpad to raise the boom to its full height then release the push button.

ii) Press & hold the 'Tilt Left Up' & 'Tilt Right Up' push buttons on the Joystick Buttonpad to to tilt boom wings up approximately 5 degrees above horizontal - high enough to clear boom rests. Release the push buttons when desired tilt is reached.

⚠CAUTION

The booms must not be folded or unfolded, while the sprayer is moving.

While a boom moves from fully open to fully closed (and vice versa), greater stresses are placed on many components.

If the sprayer moves while folding or unfolding the boom, any bumps or uneven travel may result in severe damage to the boom.

NOTE

To make the boom fold cylinders extend or compress equally on both sides:

Continue holding the 'Fold S1 Out' push button for a few extra seconds when the boom is fully unfolded.

Conversely, hold down the 'Fold S1 In' push button for a few extra seconds when the boom is fully folded.

NOTE

The 48 metre boom option does not feature an hydraulically adjustable boom rest.

After lowering the booms into the Boom Rests, press & hold the 'Fold S1 In' push button, momentarily, to tighten the boom wings in the Boom Rests.

iii) Press & hold the 'Fold S1 In' push button on the Auxiliary buttonpad to fold the inner & outer boom sections to their folded position, then release the push button. Make adjustment with the 'Tilt Left Up' & 'Tilt Right Up' push buttons if necessary to clear the boom rests.

v) When fully folded-in, press & hold the 'Tilt Left Down' & 'Tilt Right Down' push buttons on the Joystick Buttonpad to lower the boom into the boom rests, then release the push buttons.

vi) Finally, press & hold the 'Fold S1 In' push button, momentarily, to tighten the boom wings in the Boom Rests.

The Prairie Pro Boom folding to transport position.

Automatic Boom Folding (24 - 36m)

To fold the boom automatically, the calibration values must first be entered into the G-hub Controller for tilt left, tilt right & boom lift. Refer to Chapter 7, 'Boom Settings' for instruction on setting & testing boom folding.

To Automatically Fold the Boom:

i) Press & hold the 'Fold S1 In' push button on the Auxiliary buttonpad to:

- Raise the boom
- Raise the wing tilts
- Fold the inner & outer boom sections to their folded position.

Fully fold the sections until closed onto the inner boom sections and the Boom Locks are locked down, then release the push button.

The Prairie Pro Boom Bifold function allows the outside boom sections to be folded for reducing spray width.

ii) When fully folded-in, press & hold the 'Tilt Left Down' & 'Tilt Right Down' push button on the Joystick Buttonpad to lower the boom into the boom rests, then release the push button.

iii) Press & hold the 'Fold S1 In' push button, momentarily, to tighten the boom wings in the Boom Rests.

⚠ **CAUTION**

Do not release the Boom Bi-fold switch until the boom outer wing sections are fully folded-out or boom stress may occur.

⚠ **CAUTION**

Do not release the Boom Fold & Bi-fold switches until the boom inner and outer wing sections are fully folded-out or boom stress may occur.

⚠ **CAUTION**

The booms must be folded continuously without stopping and starting during the sequence. Stopping & starting boom folding may result in damage to the boom.

48m boom folded.

Bi-fold Boom Folding (24 - 36m)

Press & hold the 'Fold S2 In' push button on the Auxiliary buttonpad to fold the boom outer wings sections in and saddle them onto the inner boom sections. Fully fold the outer sections until the boom catch lock is locked, then release the push button.

Do not release the push button until the boom outer wing sections are fully folded-in or boom stress may occur.

Bi-fold Boom Unfolding (24 - 36m)

Press & hold the 'Fold S2 Out' push button on the Auxiliary buttonpad to unfold outer boom sections from their folded position. Fully unfold the section until aligned with the boom centre sections, then release the push button.

Do not release the push button until the boom outer wing sections are fully folded-out or boom stress may occur.

Unfolding the Boom Manually (48m)

The Boom Unfolding Procedure is manually controlled using the Boom Unfolding push buttons ('Fold S1 Out', 'Fold S2 Out' & 'Fold S3 Out') on the Auxiliary 16 Buttonpad & the push buttons ('Boom Up' & 'Boom Down') of the Joystick Buttonpad

To Unfold the Boom Manually:

i)   Press & hold the 'Tilt Left Up' & 'Tilt Right Up' push buttons on the Joystick Buttonpad to raise the boom until it clears the Boom Rests, then release the push buttons.

ii) Press & hold the 'Fold S1 Out' push button on the Auxiliary buttonpad to unfold both sides of the boom from their folded position. Fully unfold the boom until it is aligned with the boom centre section, then release the push button.

     S2 folds automatically with S1.

iii) Press & hold the 'Fold S3 Out' push button on the Auxiliary buttonpad to unfold both sides of the boom from their folded position. Fully unfold the boom section until it is aligned with the boom, then release the push button.

iv) Press & hold the 'Boom Down' push button on the Joystick Buttonpad to lower the boom to the operating height.

Manually Folding the Boom (48m)

The boom can be folded manually, but only when the calibration values in the G-hub controller are set to zero for tilt left, tilt right & boom lift.

To Fold the Boom Manually:

i)   Press & hold the 'Boom Up' push button on the Joystick Buttonpad to raise the boom to its full height then release the push button.

ii) Press & hold the 'Tilt Left Up' & 'Tilt Right Up' push buttons on the Joystick Buttonpad to to tilt boom wings up approximately 5 degrees above horizontal - high enough to clear boom rests but low enough to avoid hitting the rear vision mirrors when folding into position. Release the push buttons when desired tilt is reached.

iii) Press & hold the 'Fold S3 In' push button on the Auxiliary buttonpad to fold the outermost boom sections to their folded position, then release the push button.

48m boom unfolded.

iv) Press & hold the 'Fold S1 In' push button on the Auxiliary buttonpad to fold the inner & outer boom sections to their folded position, then release the push button.

Make adjustment with the 'Tilt Left Up' & 'Tilt Right Up' push buttons if necessary to clear the boom rests.

v) When fully folded-in, press & hold the 'Tilt Left Down' & 'Tilt Right Down' push buttons on the Joystick Buttonpad to lower the boom into the boom rests, then release the push buttons.

vi) Finally, press & hold the 'Fold S1 In' push button, momentarily, to tighten the boom wings in the Boom Rests

Automatic Boom Folding (48m)

To fold the boom automatically, the calibration values must first be entered into the G-hub Controller for tilt left, tilt right & boom lift. Refer to Chapter 7, 'Boom Settings' for instruction on setting & testing boom folding.

To Automatically Fold the Boom:

i) Press & hold the 'Fold S1 In' push button on the Auxiliary buttonpad to:

- Raise the boom
- Raise the wing tilts.

ii) Press & hold the 'Fold S3 In' push button on the Auxiliary buttonpad to fold the outermost boom sections to their folded position, then release the push button.

iii) Press & hold the 'Fold S1 In' push button on the Auxiliary buttonpad to fold the inner & outer boom sections to their folded position, then release the push button.

S2 folds automatically with S1.

Make adjustment with the 'Tilt Left Up' & 'Tilt Right Up' push buttons if necessary to clear the boom rests.

iv) When fully folded-in, press & hold the 'Boom Down' push button on the Joystick Buttonpad to lower the boom into the boom rests, then release the push button.

vi) Press & hold the 'Fold S1 In' push button, momentarily, to tighten the boom wings in the Boom Rests.

Bi-fold Boom Folding (48m)

Press & hold the 'Fold S2 In' push button on the Auxiliary buttonpad to fold the boom outer wings sections in and saddle them onto the inner boom sections. Fully fold the outer sections until the boom catch lock is locked, then release the push button.

S3 folds automatically with S2.

Do not release the push button until the boom outer wing sections are fully folded-in or boom stress may occur.

Bi-fold Boom Unfolding (48m)

Press & hold the 'Fold S2 Out' push button on the Auxiliary buttonpad to unfold outer boom sections from their folded position. Fully unfold the section until aligned with the boom centre sections, then release the push button.

S3 unfolds automatically with S2.

Do not release the push button until the boom outer wing sections are fully folded-out or boom stress may occur.

Joystick Boom Controls

Joystick push buttons provide the following boom functions:

- Boom Tilt - Left Up/ Right Up
- Boom Tilt - Left Down/ Right Down
- Boom Up/Boom Down
- Fence Left / Fence Right
- Boom Master On/Off (located on the back top right hand corner).

Boom Tilt Up/Down

The Boom Tilt push buttons (Left Up/ Right Up & Left Down/ Right Down) are used to individually lift or lower the angle the boom from left to right and right to left. in order to:

- More closely follow ground contour during spraying operations.

  The boom wings pivot on the centre section. As the left or right boom wing is raised or lowered - the outer end of the wing moves furtherest.

- Adjust the boom wing tilt for folding & unfolding the boom.

To Tilt Up the Left Hand Boom:

i) Press & hold the 'Tilt Left Up' push button.

ii) Release the push button when the desired tilt is achieved.

To Tilt Down the Left Hand Boom:

i) Press & hold the 'Tilt Right Down' push button.

ii) Release the push button when the desired tilt is achieved.

To Tilt Up the Right Hand Boom:

i) Press & hold the 'Tilt Right Up' push button.

ii) Release the push button when the desired tilt is achieved.

To Tilt Down the Right Hand Boom:

i) Press & hold the 'Tilt Right Down' push button.

ii) Release the push button when the desired tilt is achieved.

Boom Raise/Lower

The 'Boom Up'/BoomDown' push buttons are used to raise or lower the vertical height of the boom.

To Raise the Boom:

i) Press & hold the 'Boom Lift' push button to raise the boom to its desired level.

ii) Release the push button to hold the desired boom level.

To Lower the Boom:

i) Press & hold the 'Boom Lower' push button to lower the boom to its desired level.

ii) Release the push button to hold the desired boom level.

The Boom Master On/Off push button on the back of the Joystick control.

Check items closely during the first 8 hours of operation as instructed in Chapter 8 'Lubrication & Maintenance'.

Fenceline Nozzles

The 'Fence Left'/'Fence Right' push buttons are used to individually switch On or Off the Left & Right Fenceline Nozzles.

To Switch On/Off the Left Fence Nozzle:

i)   Press the 'Fence Left' push button to Start spraying from the left Fenceline nozzle.

When the Fenceline nozzle is spraying, a red LED light on the left hand boom tip is illuminated & the G-Hub main screen fenceline emblem lights Green.

ii) Press the 'Fence Left' push button again to Stop the left Fenceline nozzle spraying.

To Switch On/Off the Right Fence Nozzle:

i)   Press the 'Fence Right' push button to Start spraying from the right Fenceline nozzle.

When the Fenceline nozzle is spraying, a red LED light on the right hand boom tip is illuminated & the G-Hub main screen fenceline emblem lights Green.

ii) Press the 'Fence Right' push button again to Stop the right Fenceline nozzle spraying.

Boom Master On/Off

The Boom Master On/Off push button cycles the Boom Master switching boom spraying On & Off.

To Switch On/Off the Boom Spraying:

i)   Press to Boom Master On/Off push button to Start the boom spraying.

The Boom Master On/Off symbol in the top RH cormer of the G-Hub Display screen will automatically illuminate.

ii) Press to Boom Master On/Off push button again to Stop the boom spraying.

During First 8 Hours Of Operation

Refer to chapter 8, 'Lubrication & Maintenance' for the items to be checked closely during the first 8 hours of operation of the Prairie Pro (from new).

NOTE

The pump must be running for nozzles to spray.
Refer to instructions on engaging & disengaging the product pump and boom On/Off switches.

NOTE

Boom Section 1 must be On and spraying for the Left Fenceline nozzle to operate.
Boom Section 16 must be On and spraying for the Right Fenceline nozzle to operate.

NOTE

Check nozzle patterns for irregularities. If there are irregularities, clean the nozzles and refit. If the problem persists they could be worn so remove and replace.

The External G-Hub Controls located in the storage box of the Quick Filling Station.

The 3" Clean Fill (left) & Dirty Fill (right) inlets with camlock caps fitted.

The 3" Clean Fill inlet with camlock cap fitted.

The 3" Dirty Fill inlet with camlock cap fitted.

Filling the Sprayer

The Prairie Pro is fitted with:

- Product tank (5000/6500/8500/10000L)
- Rinse tank (500 or 800 litre)
- Hand Wash tank (30 litre)

When filling it is recommended that the Prairie Pro be safely parked in an appropriate area with the tractor engine running.

All filling & cleaning functions of the Prairie Pro are controlled and monitored on the External G-Hub Controller & Filling Station Pod of the Quick Filling Station on the right hand side of the Prairie Pro.

Water Source

To fill the Prairie Pro tanks ready for spraying, requires an external water source.

Filling the Main Product Tank

The main tank can be filled through the 3" connection points on the Quick Filling Station, using either the:

- 'Clean Fill' connection point (3") or
- 'Dirty Fill' connection point (3").

Clean Fill

The Clean Fill line uses the Prairie Pro's onboard hydraulically driven Fill Pump (optional).

This connection must be used only with clean fresh water sources as the pump connects to all rinsing circuits.

Rinsing circuits must not be contaminated with dirty, contaminated or unclean liquid.

If the optional 3" Fill Pump is not fitted, an external clean water pump is required.

Dirty Fill

The Dirty Fill line requires a separate external fill pump.

Used for premixed water & chemical from a batching system such as the Goldacres Batch Mate.

NOTE

Always use clean, fresh water, free of suspended organic matter or clay.

Some chemicals are deactivated when they contact these materials

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⚠ **CAUTION**

It is very inportant to understand that water weighs 1.0 kg per litre and conversion factors must be used when spraying liquids that are heavier than water.

The **total weight of the liquid** being sprayed **must not exceed the equivalent weight of a full tank of water** Exceeding this weight can lead to machine damage.

For example, liquid Nitrogen has a density of 1.28 kg per litre. The Prairie Pro tank size might be 6000 litres BUT the equivalent water weight of liquid Nitrogen is calculated by dividing 6000 by 1.28 kg = 4690 litres.

This means the total volume of liquid Nitrogen allowed in a 6000 litre tank is 4690 litres. It is very important not exceed weight limits.

This rule applies for all tanks sizes.

If unsure about the density/weight of chemicals being applied, contact your local agronomist or chemical supplier for more information.
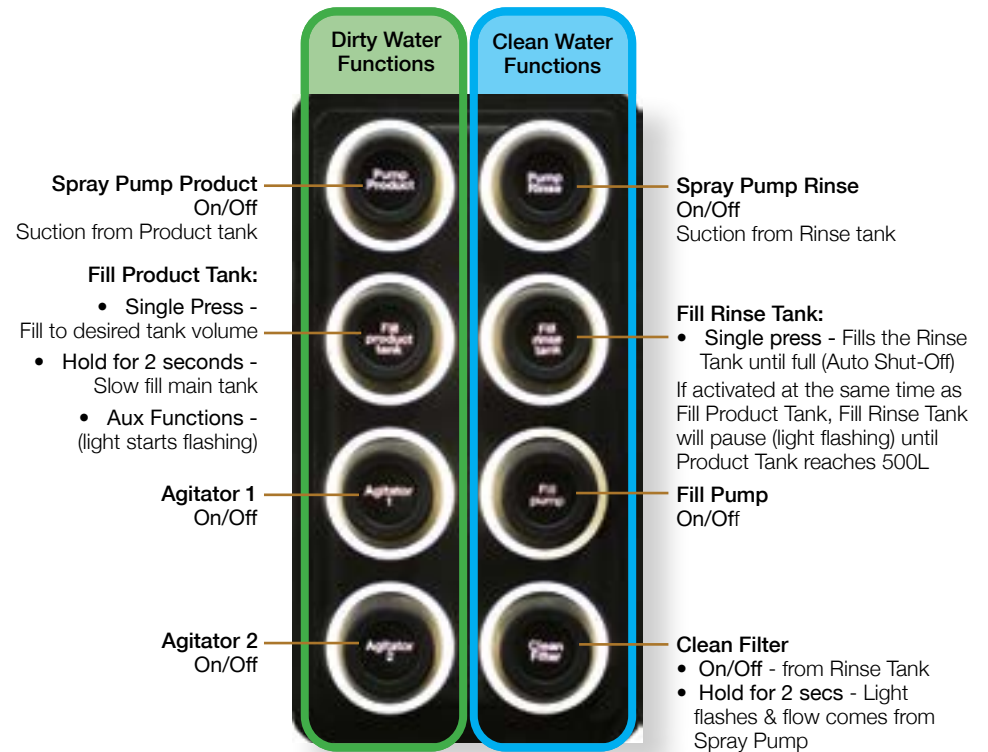
Density Factor of Product Tank solution

Product Tank **Volume** in litres

Density Factor Increase/Decrease x .1 per press

Fill & Clean Screen Selector

Fill Volume recalls preferred product tank volume

Fill	Clean	
Product Tank Vol		Clean Page
4000		Fill Vol
Density Factor **1.0**		Density Factor Dec 0.1 — Inc 0.1
Desired Tank Vol	Rinse Tank	Tank Increase
5000	**400**	Tank Decrease

Fill Pressure	Pump 1 Pressure	Pump 1 RPM	Pump 2 RPM
40	543	952	1025

Fill Pump **Pressure** (psi)

Spray **Pump 1 Pressure** (psi)

Spray **Pump 1 RPM**

Spray **Pump 2 RPM**

Tank Increase Vol x 100L

Tank Decrease Vol x 100L

Desired Product Tank Volume in litres

Rinse Tank Volume in litres

The 'Fill Screen' layout, functions & control touch buttons.

External G-Hub Controls

The External G-Hub Controls are used to control spray pump, fill pump, agitator, rinse nozzles and induction hopper functions independently of the cabin controls.

The External G-Hub Control features a 5" full colour screen and separate Push Button Panel.

The Control Screen & Push Button Panel are located under the Quick Filling Station Cabinet door.

Dirty Water Functions

Clean Water Functions

Spray Pump Product On/Off Suction from Product tank

Fill Product Tank:
• Single Press - Fill to desired tank volume
• Hold for 2 seconds - Slow fill main tank
• Aux Functions - (light starts flashing)

Agitator 1 On/Off

Agitator 2 On/Off

Spray Pump Rinse On/Off Suction from Rinse tank

Fill Rinse Tank:
• Single press - Fills the Rinse Tank until full (Auto Shut-Off)

If activated at the same time as Fill Product Tank, Fill Rinse Tank will pause (light flashing) until Product Tank reaches 500L

Fill Pump On/Off

Clean Filter
• On/Off - from Rinse Tank
• Hold for 2 secs - Light flashes & flow comes from Spray Pump

The 'Push Button Panel' with push buttons that illuminate Green (Dirty Water) or Blue (Clean Water) when engaged.

NOTE

The push button switches of the Push button Panel (shown above) are organised to illuminate green or blue when engaged. Blue light indicates Clean water engagement (clean fill, pump, rinse tank, rinsing circuits & fresh water tank) while Green indicates Dirty water (product tank, pump, agitation, dirty fill, chemical mixing/uploading & spraying circuits .

The External G-Hub Control Screen displays either the:
• Fill Screen - for all filling functions (shown above left) or the
• Clean Screen - for all cleaning functions (shown next page)

The Push Button Panel (shown above) is positioned below the Control Screen and is used to switch liquid flows On & Off for all filling and cleaning functions.

The G-Hub External Control allows the operator to simply enter the desired tank volume, connect the Fill hose and the G-Hub integrated controller system automatically shuts Off when fill volume is met.

The functional procedures for operating the Quick Filling Station & External G-Hub Controls are given on the following pages.

Current **Product Tank Volume** in litres

Current **Rinse Tank Volume** in litres

Settings & Diagnostics

Reset

Start / Stop cleaning functions

Fill & Clean Screen Selector

Fill

Clean

| Product Tank | 4000 | Rinse Tank | 400 |

	Seconds		Seconds
Pressure Filter		Hopper	
RapidFlow		Main Tank Fill Line	
Bypass Valve		Tank Rinse from Pump	
Agitator		Tank Rinse from Fill	
Deadheap Pump		Main Tank Suction Line	

Fill Page

Start Timer

Reset ●

Select Up ▲

Select Down ▼

| Fill Pressure | Pump 1 Pressure | Pump 1 RPM | Pump 2 RPM |
| 40 | 543 | 125 | 1025 |

Fill Pump **Pressure** (psi)

Spray **Pump 1 Pressure** (psi)

Spray **Pump 1 RPM**

Spray **Pump 2 RPM**

Rinse **Cycle Time** *Starting at zero*

Select Up - each cleaning function

Select Down - each cleaning function

Basic Cleaning Functions with rinse cycle time of each function starting at zero

Full Decontamination Functions with rinse cycle time of each function starting at zero

The 'Clean Screen' layout, functions & control touch buttons.

The G-Hub External Control 'Clean Screen' (shown above) provides full decontamination functions giving both 'Basic' & 'Full' touch button lists that must be done.

NOTE

Only one of the two controllers - the optional G-Hub 12" full colour touch display (if fitted in the cabin) OR the External G-Hub Controller (external filling station) - can be active at any given time. The screen will be Off on the inactive controller. Press any push button on either Controller to switch from inactive to active.

Chemical Pump Outlet Selector - Fill to Main Tank or Hopper

Chemical Pump On/Off - Draws from Chemical Probe & pumps to Main Tank or Hopper

Micromatic Rinse Coupling - For chemical rinsing Micromatic chemical supply systems

Tank Rinse • Pump • Off (Spray mode) • Fill

Bypass - Hopper Valve • Hopper • Off • Bypass (Spray mode)

Hand Wash Valve (Clean water)

Aux Air Outlet - General use air line (Prairie Pro air tank pressurised)

Fill Pump Aux Water Valve & Outlet - Connect 1" hose here for general purpose cleaning

Clean Fill Inlet & Open/Close Valve - Connect 3" external hose here.

Chemical Probe Valve On/Off

Chemical Probe Inlet - Connect Chemical Probe 1" hose here & other liquid chemical sources

Dirty Fill Inlet & Open/Close Valve - Connect external pump 3" hose here

Filling Station showing hose connectors, switches & valves.

Quick Filling Station

The Quick Filling Station Pod (show above) comprises the hose connectors, valves and controls used for filling & cleaning functions.

*Connect a 3" fill hose to the 'Clean Fill' inlet & Open the ball valves.*

Press the Screen Selector push button (A) to select the Fill screen, then press the 'Tank Increase' (B) or 'Tank Decrease' (C) push buttons to set the required fill volume.

Press the 'Fill Product' push button (illuminates Green when On), then press the 'Fill Pump' push button (illuminates Blue when On) to start filling the Product tank.

Suction & Delivery Lines

Use good quality suction hose and fittings that will not collapse or leak air under suction.

If pumping water from structures other than storage tanks, the use of an appropriate sized floating filter equipped with a check valve is recommended.

The suction line diameter should match the suction port diameter of 3" to maximise pump performance.

All filling functions require the Prairie Pro to be safely parked in an appropriate area with the tractor engine running.

To Fill the Product Tank - Clean water source

1   Connect a 3" suction hose (not supplied) to the 3" 'Clean Fill' camlock coupling with the other end of the hose connected to a clean water source.

2   Open the 'Clean Fill' ball valves by moving the handle down.

3   Open the Filling Station storage cabinet to access the G-hub External Controls.

4   Press the Screen Selector push button to select the Fill screen.

5   Set the desired Fill Volume on the External G-Hub Control by pressing the 'Tank Increase' or 'Tank Decrease' push buttons as required.

The desired fill volume can be entered on the optional G-Hub Display Screen (if fitted) before leaving the cabin.

The External G-Hub Control screen will always default to the usable tank volume set in the G-Hub Controller.

6   With the tractor engine running at low idle, press the 'Fill Product' push button to On (illuminates Green).

The Fill speed can be reduced by holding the 'Fill Product' push button for 2 seconds if more time is required or to use auxiliary functions.

7   Press the 'Fill Pump' push button to On (illuminates Blue) to start filling the Product Tank.

8   The Fill Pump automatically switches Off when the target product volume is reached.

The filling process can be stopped at any time by pressing 'Fill Pump' Off.

9   When filling is complete, close the 'Clean Fill' ball valves (Prairie Pro & suction hose) and disconnect the suction hose from the camlock coupling.

NOTE

It is recommended to calculate the correct quantity of liquid required, and when filling, allow sufficient quantity for adding and mixing chemicals.
If necessary top up the tank to to required quantity after adding chemicals is completed.

NOTE

All filling, adding chemicals and rinsing functions require the tractor engine to be running and the tractor park brake applied.

NOTE

If filling the Rinse Tank at the same time as the Product Tank, the 'Fill Rinse Tank' push button will flash to indicate pausing until the Product Tank reaches 500 litre level. Rinse Tank filling will then resume as indicated by a solid colour of the push button. Individual tank filling rate is reduced when filling both tanks at the same time.

Connect a 3" fill hose to the 'Dirty Fill' inlet & Open the 'Dirty Fill' ball valves.

Press the 'Fill Product' push button (illuminates Green when On), then start the external pump to fill the Product Tank.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the ball valves.

To Fill the Product Tank - Dirty water source

1. Connect a 3" fill hose (not supplied) from a suitable pumping system to the 'Dirty Fill' camlock coupling of the Filling Station.

2. Follow all relevant safety & set-up pumping guidelines for the system being used.

3. Open the 'Dirty Fill' ball valves by moving the handle down.

4. Open the Filling Station storage cabinet to access the G-hub External Controller.

5. Press the Screen Selector push button to select the Fill screen

6. Set the desired Fill Volume on the External G-Hub Control by pressing the 'Tank Increase' or 'Tank Decrease' push buttons as required.

   The desired fill volume can be entered on the optional G-Hub Display Screen (if fitted) before leaving the cabin.

   The External G-Hub Control screen will always default to the usable tank volume set in the G-Hub Controller.

7. With the tractor engine running at low idle, press the 'Fill Product' push button to On (illuminates Green), then start the external fill pump to fill the Product Tank. Fill progress can be monitored on the External G-Hub Controller screen.

8. When the tank is filled to the desired level, a 3" Fill Control Valve will close (stopping flow to the tank). Stop the external pump.

9. Close the 'Dirty Fill' ball valves (Prairie Pro & supply hose) and disconnect the supply hose from the camlock coupling.

To Fill the Rinse Tank - Clean water source only

1. Connect a 3" suction hose (not supplied) to the 'Clean Fill' camlock coupling with the other end connected to a clean water source

2. Open the 'Clean Fill' ball valves by moving the handles down.

⚠CAUTION

It is important to not close the 'Clean Fill' valve while the pump is running. Running the pump with a closed suction inlet may damage the pump.

NOTE

Before disconnecting the suction hose from the Clean Fill Inlet, it should be noted the Drum Rinse & Hopper Rinse nozzles both require the use of suction hose for the supply clean water when rinsing.

If hopper rinsing will be required, keep the suction hose connected to the clean water source until completion of the rinsing functions.

Press the Screen Selector push button (A) to select the Fill screen, then press the 'Tank Increase' (B) or 'Tank Decrease' (C) push buttons to set the required fill volume.

3   Open the Filling Station storage cabinet to access the G-hub External Control.

4   Press the Screen Selector push button to select the Fill screen.

Press the 'Fill Rinse' push button (illuminates Blue when On), then press the 'Fill Pump' push button (illuminates Blue when On) to start filling the Rinse tank.

5   With the engine running at low idle, press the 'Fill Rinse' push button On (illuminates Blue), then 'Fill Pump' On (illuminates Blue) to start filling the tank.

6   The Fill Pump automatically switches Off when the Rinse Tank is full. Filling can be stopped at any time by pressing the 'Fill Pump' push button Off.

7   When the Rinse tank is filled, close the 'Clean Fill' ball valves and disconnect the suction hose from the camlock coupling.
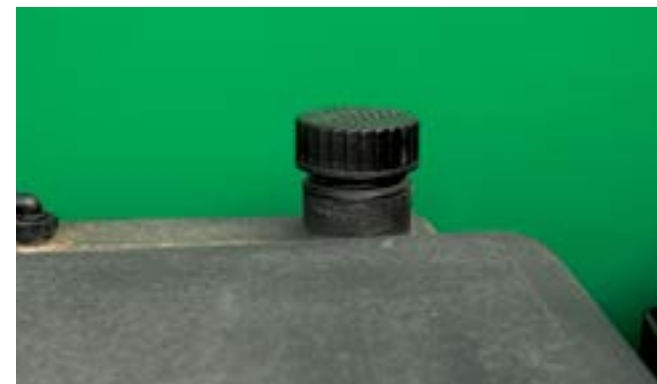
The top filling lid of the Hand Wash Tank located at the top rear right side of the Quick Filling Station storage cabinet.

To Fill the Hand Wash Tank

1   Connect a fresh water hose to a fresh water source.

2   Open the lid on top of the fresh water tank located above the storage cabinet.

An alternative method of filling the tank is to connect a hose to the camlock fitting on the Hand Wash Tank outlet.

3   Use the hose to fill the tank with fresh water.

4   Remove the hose and close the fresh water tank lid, or alternatively, close the valve and remove the hose.

NOTE
Always ensure the tank has sufficient water in it for rinsing purposes. The Rinse Tank capacity is approximately 550 litres.

⚠ **CAUTION**
It is important to not close the 'Clean Fill' valve while the pump is running. Running the pump with a closed suction inlet may damage the pump.

⚠ **WARNING**
Always ensure the hand wash tank is filled with clean water at all times. Never fill the hand wash tank with dirty or contaminated water. Always use fresh clean water to fill the tank. In case of emergency, this water must be used to clean chemical off an operator.

Fresh water tap for personal washing & safety, located at the base of the Quick Filling Station Storage Cabinet.

The external G-Hub Controller located in the storage cabinet of the Quick Filling Station.

Adding Chemicals to the Product Tank

Chemicals are added to the Product Tank using the:

- Chemical Induction Hopper (granular & liquid)
- Chemical Probe (liquid only).

Before adding chemical to the Product tank, at least 500 litres of clean water must be in the Product Tank - required to ensure the Product Pump operates to create the venturi effect required for transfer fluid from the Chemical Induction Hopper to the Product Tank and to ensure adequate agitation when chemical is added.

All functions for adding chemicals require the Prairie Pro to be safely parked in an appropriate area with the tractor engine running.

NOTE

Wear the necessary protective clothing and use the required safety equipment to avoid exposure to chemicals.

Remove the hopper safety pin & locking pin.

Chemical Induction Hopper

The Chemical Induction Hopper provides mixing, measuring and induction functions for adding required chemicals to the Product Tank.

The Bottom Drain Valve can be used as an entry point for Chemical Induction directly to the Product Tank.

To Lower the Chemical Induction Hopper

1   Remove the safety pin, then the locking pin from the hopper lifting arms.

Support the hopper weight & lift the lever to unlock the holding latch & lower the hopper.

Pull the hopper down into its working position.

2   Support the weight of the hopper, then pull the latch lever beside the hopper to unlock the latch holding the hopper in position.

3   Pull down the hopper slowly to its work position.

4   Check the hoses connecting to the hopper are not restricted or kinked.

With hopper in working position, check hoses are not restricted or kinked.

Undo the latch & open the Hopper lid.

To Add & Mix Chemical in the Chemical Induction Hopper

1   Undo the latch & open the Hopper lid.

2   Turn the 'Bypass Hopper Valve' to 'Hopper'.

Turn the Bypass Hopper Valve to Hopper

Press the 'Pump Product' push button On & the 'Hopper' push button On.

Add the chemical granules or powder to the flowing liquid.

Lift-up to Open the foot operated ball valve at the bottom of the hopper.

Turn the Bypass Hopper Valve to Hopper

3   Press the 'Pump Product' push button On to engage suction from Product tank.

The pump should operate at the speed necessary to generate at least 80 psi (with hopper On) delivery pressure (displayed on the External G-Hub Control screen).

4   Add the required chemical granules or powder into the flowing liquid.

5   Open the Mixing Jet valve on the right hand side of the hopper to start mixing.

If required turn On the mixing jet to assist induction.

6   Open the foot operated 3" ball valve at the base of the Hopper to transfer product into the Main Tank.

8   Rinse all chemicals from the Induction Hopper (refer to instructions in this Chapter 'Hopper Rinse Functions')

NOTE

When transfering contents of the hopper to the Product Tank, avoid letting the hopper run empty or suck air because it may cause foaming in the Product Tank.

To Transfer Chemical to the Product Tank using the Bottom Drain Valve

The Bottom Drain Valve can be used for Chemical Induction.

1   Lift up the lever to Open the foot operated ball valve at the bottom of the hopper.

2   Close the Bottom Ball Valve & remove the camlock coupling.

3   Connect a micromatic hose to the Bottom Ball Valve camlock coupling.

4   Turn the 'Bypass Hopper Valve' to 'Hopper'

5   Press the 'Pump Product' push button On to engage suction from Product tank.

The pump should operate at the speed necessary to generate at least 80 psi delivery pressure (with hopper On) delivery pressure (displayed on the External G-Hub Controller screen).

Open the Mixing Jet valve on the RHS of the Hopper.

On completion of mixing, Close the Mixing Jet valve.

Close the Bottom Drain valve & remove the camlock coupling plug.

Press the 'Pump Product' push button On & the 'Hopper' push button On.

Open the Bottom Ball Valve to transfer chemical to the main tank.

Connect a hose for chemical probe filling to the Chemical Probe Inlet.

Rotate the Chemical Pump Output to Hopper position.

Rotate the Chemical Pump valve to ON.

6   Open the Bottom Ball Valve to transfer chemical to the main tank.

7   Close the Bottom Ball Valve on completion of chemical transfer.

8   Disconnect the micromatic hose for the chemical source, then rinse with clean water by opening & closing the Bottom Ball Valve as required.

9   Disconnect the micromatic hose from the Bottom Ball Valve camlock coupling and refit the camlock coupling plug.

Chemical Probe Inlet

The Chemical Probe Inlet can be used to add chemical to the Chemical Induction Hopper or directly to the Product Tank. This is only available if the chemical pump option is fitted.

To Add Liquid Chemical to the Chemical Induction Hopper

The Induction Hopper can be used with a:

   a)   Chemical Probe, or

   b)   Micromatic Coupling.

A)   To Add Liquid Chemical to the Hopper Using the Chemical Probe

1   Connect a Chemical Probe hose to the 1" Chemical Probe Inlet

2   Open the Chemical Probe inlet valve

3   Rotate the Chemical Pump Output valve to 'Hopper' position.

4   The air operated Chemical Pump requires the tractor engine to be running and the pneumatic system to be pressurised before use.

   Adjust the tractor engine RPM to maximise pump performance.

5   Rotate the Chemical Probe valve to On position.

6   Place the Chemical Probe into the chemical & Open the Probe Valve to transfer the chemical to the Hopper.

   Chemical will begin transfering to the Hopper.

Disconnect the micromatic hose & refit the camlock coupling plug.

Open the Chemical Probe inlet valve.

Place the Chemical Probe into the chemical & open the Probe Valve to transfer chemical to the Hopper.

NOTE

The higher the Product Pump delivery pressure, the greater the venturi suction and the quicker the hopper will transfer the chemical.

The delivery pressure should not exceed 120 PSI as set by the pressure relief valve setting.

After the required amount of chemical has been transferred to the Hopper, close the Probe Valve.

Rotate the Chemical Pump valve to Off.

Connect a hose for chemical probe filling to the Chemical Probe Inlet.

Rotate the Chemical Pump Outlet valve to Hopper position.

7   After the required amount of chemical has been transfered to the hopper, pull the Probe out out the drum to allow the pump to suck air & purge all chemical mixture out.

8   To rinse the Chemical Probe and hose, place the Probe into a container of clean water, then Open the Probe to suck clean water through the Probe and hose.

On completion of rinsing, Close the Probe Valve.

9   Then, rotate the Chemical Pump valve to Off position.

10 Rotate the Chemical Probe valve to Off position.

11 Disconnect the Chemical Probe hose from the 1" Chemical Probe Inlet & replace the camlock cap.

B) To Add Liquid Chemical to the Hopper Using the Micromatic Coupling

1   Connect a Micromatic hose to the 1" Chemical Probe Inlet.

2   Open the Chemical Probe inlet valve

3   Connect the other end of hose to a chemical source using the Micromatic coupling.

4   Rotate the Chemical Pump Output Valve to 'Hopper' position.

5   Turn the 'Chemical Pump' On (rotate the air valve to On).

Chemical will begin transfering to the Chemical Induction Hopper.

Rotate the Chemical Pump valve to ON.

Rotate the Chemical Pump valve to Off.

Connect Micromatic hose to the Micromatic Rinse Coupling.

Rotate the Chemical Pump valve to ON.

Close the valve and disconnect the hose from the Chemical Probe inlet.

6   After the required amount of chemical has been transfered to the hopper, the Enviro coupler can be partially disconnected to allow air to suck into and clear fluids in the pump and hoses.

7   Close the Chemical Pump Valve.

8   Transfer chemical from the Hopper to the Product Tank as explained previously in this chapter.

To rinse the Micromatic Hose & Fittings:

1   Disconnect the Micromatic hose end from the chemical source, then connect it to the Micromatic Rinse Coupling on the Prairie Pro & Open the Rinse Coupling Valve (located above the coupling).

2   Select either Hopper or Product Tank to rinse the desired circuit.

3   Turn the 'Chemical Pump' On (rotate the air valve to On).

Rinse will transfer to the Chemical Induction Hopper or Product Tank according to choice.

4   Disconnect the micromatic coupling from the rinse socket and allow air to suck.

5   Rotate the 'Chemical Pump' valve to Off position.

6   Rotate the Probe Inlet valve to Off position and disconnect the hose from the 1" Probe Inlet & refit the camlock cap.

8   Refer to instructions "To Add & Mix Chemical in the Chemical Induction Hopper" and "To Transfer Chemical from the Hopper to the Product Tank") to complete the hopper procedures.

Chemical Pump Outlet valve turned to Hopper position.

Rotate the Chemical Pump valve to Off.

NOTE

Micromatic Hose Rinse

The Micromatic Hose Rinse function can only be used while filling the Product & Rinse tanks with clean water and the 'Fill Product' push button is On.

NOTE

Ensure the Rinse tank has a sufficient quantity of fresh water before using the rinse functions.

Connect a hose for chemical probe filling to the Chemical Probe Inlet.

Rotate the Chemical Pump Outlet valve to Tank.

Place the Chemical Probe into the chemical & open the Probe Valve to transfer chemical to the Hopper.

After completion of rinsing close the Probe Valve.

To Add Liquid Chemical Directly to the Product Tank Using the Chemical Probe Inlet

The Chemical Probe Inlet can be used with a:

a) Chemical Probe, or

b) Micromatic fitting.

a) To Add Liquid Chemical to the Product Tank Using the Chemical Probe

1 Connect a Chemical Probe hose to the 1" Chemical Probe Inlet.

2 Open the Chemical Probe inlet valve.

3 Connect the other end of hose to a chemical source using the Chemical Probe.

4 Rotate the Chemical Pump Output valve to 'Tank' position.

5 Turn the 'Chemical Pump' On (rotate the air valve to On).

The air operated Chemical Pump requires the tractor engine to be running & the pneumatic system pressurised before use.

6 Rotate the Chemical Probe valve to On position.

7 Place the Chemical Probe into the chemical & Open the Probe Valve to transfer the chemical to the Product Tank.

Chemical will begin transfering to the Product Tank.

8 After the required amount of chemical has been transfered to the hopper, lift the Probe out of the drum to suck air and purge the system.

9 To rinse the Chemical Probe and hose, place the Probe into a container of clean water, then Open the Probe to suck clean water through the Probe and hose.

On completion of rinsing, Close the Probe Valve.

10 Then, rotate the Chemical Pump valve to Off position.

11 Rotate the Chemical Probe valve to Off position.

12 Disconnect the Chemical Probe hose from the 1" Chemical Probe Inlet & replace the camlock cap.

Rotate the Chemical Pump valve to ON.

⚠️ **CAUTION**

Do not let the 'Chemical Pump' run with a closed suction inlet as it may damage the pump.

Connect a hose for chemical probe filling to the Chemical Probe Inlet.

Rotate the Chemical Pump valve to ON.

Connect Micromatic hose to the Micromatic Rinse Coupling.

Rotate the Chemical Pump valve to Off.

b) To Add Liquid Chemical Direclty to the Product Tank Using the Micromatic Fitting

1   Connect a Micromatic hose to the 1" Chemical Probe Inlet.

2   Open the Chemical Probe inlet valve.

3   Connect the other end of hose to a chemical source using the Micromatic coupling.

4   Rotate the Chemical Pump Output Selector to 'Tank' position.

5   Turn the 'Chemical Pump' On (rotate the air valve to On).

The air operated Chemical Pump requires the Prairie Pro's pneumatic system to be pressurised before use.

6   Open the Micromatic chemical source.

Chemical will begin transfering to the Product Tank.

7   After the required amount of chemical has been transfered to the Product Tank, rotate the 'Chemical Pump' valve to Off position.

To rinse the Micromatic Hose & Fittings:

1   Disconnect the Micromatic hose end from the chemical source, then connect it to the Micromatic Rinse Coupling on the Prairie Pro & Open the Rinse Coupling Valve (located above the coupling).

2   Turn the 'Chemical Pump' On (rotate the air valve to On).

Rinse will transfer to the Product Tank.

3   After rinsing, disconnect the micromatic coupling from the rinse socket and allow air to suck.

5   Rotate the 'Chemical Pump' valve to Off position.

6   Rotate the Probe Inlet valve to Off position and disconnect the hose from the 1" Probe Inlet & refit the camlock cap.

8   Refer to instructions "To Add & Mix Chemical in the Chemical Induction Hopper" and "To Transfer Chemical from the Hopper to the Product Tank") to complete the hopper procedures.

Rotate the Chemical Pump Outlet valve to Tank.

Rotate the Chemical Pump valve to Off.

Rotate the Chemical Pump valve to ON.

Close the valve and disconnect the hose from the Chemical Probe inlet.

The Hopper Rinse Nozzle located under the hopper lid.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the 'Clean Fill' ball valves.

Open the hopper lid to access the Drum Rinse Nozzle.

Press the 'Fill Pump' push button (illuminates Blue when On) to begin rinsing.

Hopper Rinse Functions

The Chemical Induction Hopper provides several rinsing functions:

   a)   Drum Rinse Nozzle

   b)   Hopper Rinse Nozzle

   a)   Wash Down Gun

After rinsing, the Chemical Induction Hopper can be emptied by:

- Transfering contents to the Product Tank (see previous instruction) or

- Emptying the Hopper via the Bottom Drain valve.

The Wash Down Handgun on the outside of the hopper.

a) To Use the Drum Rinse Nozzle

Connect a 3" suction hose (not supplied) to the 'Clean Fill' camlock coupling with the other end connected to a clean water source.

2   Open the 'Clean Fill' ball valves by moving the handles down (Prairie Pro & Suction hose).

3   Check the 'Hopper Rinse' valve on the top of the hopper is Closed.

Check the 'Hopper Rinse' valve on the top of the hopper is Closed.

4   Open the Hopper lid to access the Drum Rinse Nozzle.

5   Press the 'Fill Pump' push button On.

6   Place the opening of the chemical drum over & onto the Drum Rinse Nozzle inside the hopper.

7   Press the drum down on the Drum Rinse Nozzle to engage the rinsing function.

8   When the drum rinsing is complete, lift & remove the drum from the Drum Rinse Nozzle, then press the 'Fill Pump' push button Off.

9   Empty the Hopper rinse by:

- Emptying the Hopper to the Product Tank, or

- Draining the Hopper via the Bottom Drain valve.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the 'Clean Fill' ball valves.

Press 'Fill Pump' push button (illuminates Blue when On) to begin rinsing.

Close the Rinse Valve on top of the hopper lid.

Lift & remove the Wash Down Handgun from its holder on the side of the hopper.

b) To Rinse the Chemical Induction Hopper

1 Connect a 3" suction hose (not supplied) to the 'Clean Fill' camlock coupling with the other end connected to a clean water source.

2 Open the 'Clean Fill' ball valve by moving the handle down.

3 Close & lock down the Hopper lid..

4 Press the 'Fill Pump' push button On.

5 Open the Rinse Valve on the top of the hopper.

6 Empty the rinse liquid from the hopper by:
- Transfering contents of the Hopper to the Product Tank, or
- Emptying the Hopper via the Bottom Drain valve.

7 Once the Hopper tank is clean, press the 'Fill Pump' push button Off.

8 Close the Rinse Valve on the top of the hopper.

9 When all rinse functions are completed, close the 'Clean Fill' ball valves (both Prairie Pro inlet valve & Suction hose valve) and disconnect the suction hose from the camlock coupling.

c) To Use the Wash Down Gun

The Wash Down Gun is provided to assist rinsing & cleaning of the hopper and other items.

Clean water is suppied to the gun by a 12V electric pump which draws water from the rinse tank.

To use the Wash Down Gun:

1 Lift & remove the Wash Down Gun from its holder on the side of the hopper.

2 Check the hose is not kinked or pinched.

Close & lock down the hopper lid.

Open the Rinse Valve on top of the hopper lid.

NOTE

Ensure the Rinse tank has a sufficient quantity of fresh water before using the wash down gun.

Push the 'Wash Down Gun' toggle switch On (upwards) to engage the pump.

3 Push the 'Wash Down Gun' toggle switch On (upwards) to engage the pump.

4 Point the Wash Down Gun towards the hopper area to be rinsed/cleaned, then squeeze the gun trigger to spray & wash as required.

5 Release the gun trigger to stop spraying.

Push the 'Wash Down Gun' toggle switch On (downwards) to disengage the pump.

6 On completion, push the 'Wash Down Gun' toggle switch Off (downwards) to disengage the pump.

7 Return the gun to its holder on the side of the hopper.

Lift-up to Open the foot operated ball valve at the bottom of the hopper.

To Empty the Hopper via the Bottom Drain Valve:

1 Lift up the lever to Open the foot operated ball valve at the bottom of the hopper.

2 Remove the camlock coupling plug & Open the Bottom Drain valve.

This will drain the Hopper tank & hoses.

On completion of emptying the hopper, Close the Bottom Drain valve.

3 On completion Close the Bottom Hopper Drain valve.

4 Refit the camlock coupling plug.

Point the Wash Down Gun & squeeze the trigger to spray.

> ⚠️**CAUTION**
>
> Wash the spray gun with clean water, not rinsate
> Be mindful of where rinsate is deposited as it may contain chemical residue.

Remove the camlock coupling plug & Open the Bottom Drain valve.

Refit the camlock coupling plug.

Lift & push the hopper up into its transport position.

To Raise the Chemical Induction Hopper into Transport Postion

1   Check the hopper lid is closed and latched.

2   Lift and push the hopper up until it latches into its transport position.

3   Refit the locking pin to lock-in the hopper lifting arms and refit the safety clip.

Refit the locking pin & safety clip.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the 'Clean Fill' ball valves.

Fill Pump Auxillary Valve

The Fill Pump Auxilliary Valve, located on the Quick Filling Station, provides a clean water outlet to facilitate auxilliary cleaning functions.

The facility utilises the clean fill inlet and fill pump & requires a pressure hose for your cleaning operations.

To Use the Fill Pump Aux Valve:

1   Connect a 3" suction hose (not supplied) to the 3" 'Clean Fill' camlock coupling with the other end of the hose connected to a clean water source.

2   Open the 'Clean Fill' ball valves (both Inlet valve & Suction hose valve) by moving the handles down.

NOTE

After adding chemical to the Product Tank, ensure both Pump Product and Agitator push buttons are On to keep the chemical evenly mixed in the tank ready for spraying.

Remove the dust cap & connect a pressure hose to the 'Fill Pump Aux' outlet (hose not supplied).

3   Remove the dust cap and connect a pressure hose to the 'Fill Pump Aux' outlet - 1" camlock fitting (hose not supplied).

4   Open the 'Fill Pump Aux' outlet valve.

5   With the tractor engine running at low idle, press & hold for 2 seconds the 'Fill Product' push button to use auxiliary outlet function.

This slow fills the main tank (with Auto shut-off) while increasing pressure for the use of Auxiliary functions.

Open the 'Fill Pump Aux' outlet valve.

Press & hold the 'Fill Product' push button for 2 seconds, then press 'Fill Pump' push button to start water flowing.

7   Press the 'Fill Pump' push button to On (illuminates Blue) to start clean water pumping.

6   Proceed to use the pressure hose for your auxilliary cleaning operations.

7   When cleaning is complete, press the 'Fill Pump' to stop pumping clean water.

8   Close the 'Fill Pump Aux' valve & disconnect the pressure hose and replace the camlock plug.

9   Close the 'Clean Fill' ball valves (Prairie Pro & suction hose) and disconnect the suction hose from the camlock coupling.

On completion of the filling and rinsing functions:

- Ensure all fill and pressure hoses are disconnected/packed away.

- Close & lock the storage box of the Quick Filling Station.

Home screen of the Spray Rate Controller & Raven Control Module (RCM).

Press the Auxiliary Buttonpad push buttons 'Product Pump', 'Agitator 1 & 2' and 'Boom Recirc' On to start the pump, agitator(s) and boom recirculation.

Press the Boom Master push button On to start spraying.

Product Tank Agitation

It is vital tank agitators are used while filling the sprayer and during the majority of spray application. Poorly dissolved, mixed or suspended chemicals may result in uneven chemical application causing crop damage and chemical resistance.

Product agitation can be controlled manually or automatically through the G-Hub system. For example, the agitator can be set for the centre high pressure jet to automatically switch Off below certain tank level to reduce chances of foaming with less water.

Check agitators for efficiency because agitator nozzles can block. Refer Chapter 8 'Lubrication & Maintenance' for details.

To Agitate While Stationary:

1   Add a minimum volume of 500 litres of fresh water to the Product Tank

2   Add all chemicals. See instructions - 'Filling the Sprayer' & 'Adding Chemicals to the Product Tank'.

3   Add remaining water as required.

4   Press the 'Pump Product' push button On to activate the spray pump, then press the 'Agitator 1' & Agitator 2' (if fitted) push buttons to On.

> **NOTE**
>
> After adding chemical to the Product Tank, ensure both Pump Product and Agitator push buttons are On to keep the chemical evenly mixed in the tank ready for spraying.

Spraying Application with Standard Cabin Controls

After completion of filling, the Prairie Pro is ready for spraying.

While travelling from filling to a field, both Product Pump & Agitator must be On to ensure chemicals are mixed adequately prior to spraying.

To Commence Spraying:

1   Enter the field and unfold the boom (for instructions, refer to 'Boom Folding/Unfolding'.

2   Set the boom to the desired height above the application target.

3   Switch On the Raven Control Module (RCM) - Spray Rate Controller.

4   Check to ensure correct application rates have been entered.

5   Press the 'Pump Product' push button of the Auxiliary Buttonpad to start the pump (if not already started).

6   Press the 'Agitator 1' (& Agitator 2 if fitted)' push button on the Auxiliary Buttonpad to start the agitator(s) (if not already started).

7   Press the 'Boom Recirc' push button on the Auxiliary Buttonpad to start boom recirculation (priming). When fully primed, commence travelling on the spray swath. Refer to air pressure & spray pressure gauges to see when the machine is fully primed.

8   Press the 'Boom Master' touch button On (on the back of the Joystick) to commence spraying.

The Raven Control Module (RCM) now controls the spraying application rate according to the preset values entered by the operator.

9   Fenceline nozzles can be individually switched On & Off as required by using the 'Fenceline' push buttons on the Joystick. Boom end sections 1 & 10 or 16 (depending on total boom sections) must be On for the fenceline nozzles to operate:

•   Press the 'Fence Left' push button to switch On the left boom tip Fenceline nozzle.

•   Press the 'Fence Right' push button to switch On the right boom tip Fenceline nozzle.

•   Press the 'Fence Right' push button to switch On the right boom tip Fenceline nozzle.

When activated, push buttons illuminate Green and a red LED on the boom tip Illuminated.

To switch Off the fence line nozzle, press the push buttons on the Joystick.

Press the Boom Master push button Off to Stop spraying.

On completion of spraying, follow the appropriate rinsing instructions to ensure all plumbing is flushed & completely clean

10　Use the Joystick push buttons to make adjustments as required while spraying:

- 'Tilt Left Up' & 'Tilt Right Up'
- 'Tilt Left Down' & 'Tilt Right Down'
- 'Boom Up' & 'Boom Down'
- 'Fence Left' & 'Fence Right'

11　As the Product Tank gets closer to minimum tank level (300 litres), it may be necessary press the 'Agitator 1' push button (on the Joystick) to switch Off the agitator to reduce foaming.

Alternatively, agitators can be set to switch Off automatically when a minimum tank volume is reached.

12　When the Product Tank is empty:

- Press the 'Boom Master On/Off' push button Off (on the Joystick) to stop spraying
- On the Auxiliary Buttonpad, press the:
  - 'Boom Recirc' push button to stop the boom recirculation
  - 'Agitator 1' (& Agitator 2 if fitted)' push button, then
  - 'Pump Product' push button to stop the pump.
- Return to water source to refill (refer to 'Filling the Sprayer' & 'Adding Chemicals to the Product Tank'.

13　On completion of spraying at:

- End of the day
- End of a product or
- End of season,

follow the appropriate rinsing instructions to ensure all plumbing is flushed & completely clean.

⚠**CAUTION**

Always ensure the sprayer is properly calibrated & tested before beginning to spray (refer to chapter 5, "Calibration - Checking your Application Rates").

Failure to properly calibrate and test chemical mixtures & nozzles may result in undesirable and damaging outcomes.

NOTE

If a tank has been filled & spray mixture has settled, agitate for as long as it takes to pump the total quantity of water in the tank to remix the chemicals.

For example: For a tank with 6000 litres using a 250 L/min pump, agitate for 6000 ÷ 250 = 15 minutes

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Home screen of the Spray Rate Controller & Raven Control Module (RCM).
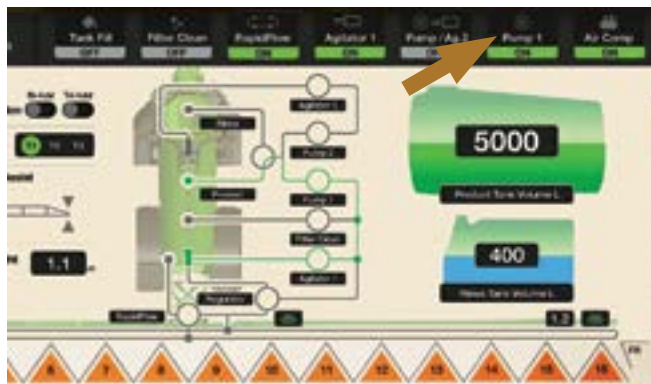
Press the push button & select from the menu to start 'Pump 1'.
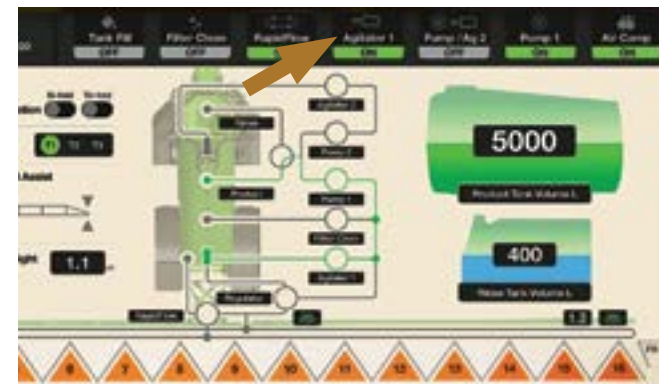
Press the push button & select from the menu to start 'Agitator 1'.

Spraying Application with G-Hub 12" Cabin Display Option

When fitted the G-Hub 12" Display Option provides on-screen infomation of spraying functions and alternative push button for function controls.

After completion of filling, the Prairie Pro is ready for spraying.

While travelling from filling to the field, both Product Pump & Agitator must be On to ensure chemicals are mixed adequately prior to spraying.

To Commence Spraying:

1   Enter the field and unfold the boom (for instructions, refer to 'Boom Folding/Unfolding'.

2   Set the boom to the desired height above the application target (for instructions.

3   Switch On the Raven Control Module (RCM) - Spray Rate Controller.

4   Check to ensure correct application rates have been entered into the RCM.

5   Press the 'Pump 1' push button on the G-Hub Home screen and select the function required from the drop down menu, ie, 'Product' to start the pump (if not already started) sourced from the product tank. The menu disappears and the push button displays 'Product' illuminated Green.

   Alternatively an operator can press the 'Pump Product' push button of the Auxiliary Buttonpad to start the pump (if not already started).

   Repeat step 5 for 'Pump 2' if fitted.

6   Press the 'Agitator 1' push button on the G-Hub Home screen and select the function required from the drop down menu: 'Auto' or 'On' to start 'Agitator 1' (if not already started). The menu disappears and the push button displays, eg, 'On' illuminated Green.

   Repeat step 6 for 'Pump 2' if fitted.

⚠ DANGER

Always check for power lines while folding and unfolding the boom, as getting too close or any contact with power lines can be fatal.

⚠ CAUTION

Always ensure the sprayer is properly calibrated & tested before beginning to spray (refer to chapter 5, "Calibration - Checking your Application Rates").

Failure to properly calibrate and test chemical mixtures & nozzles may result in undesirable and damaging outcomes.

NOTE

The information above is provided as a guide only.

It is the full responsibility of the operator to have correctly set-up & calibrated the sprayer and to assess the field conditions in all spraying applications.
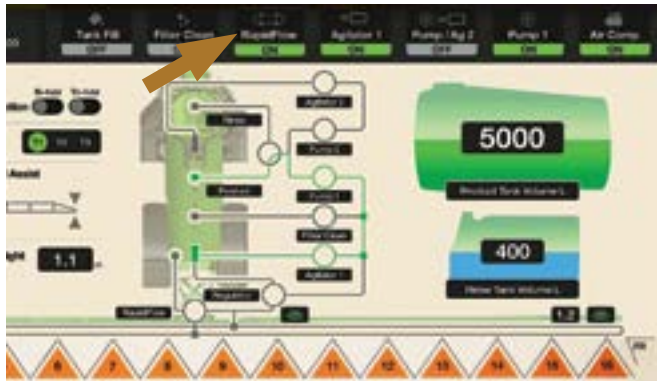
Press the push button & select from the menu to start boom 'Recirculation'.

Press the 'Boom Master' push button from Off to ON to commence spraying.

On the Home screen, the fenceline nozzle symbols illuminate Green when On.

7   Press the 'Rapid Flow' push button on the G-Hub Home screen and select the function required from the drop down menu: 'Prime', 'Auto' or 'On' (refer to Chapter 4, 'Setting Up' for function details). The menu disappears and the push button displays, eg, 'Prime' illuminated Amber; 'On' illuminates Green.

Alternatively an operator can press the 'Boom Recirc' push button on the Auxiliary Buttonpad to start boom recirculation (priming). When fully primed, commence travelling on the spray swath. Refer to air pressure & spray pressure gauges to see when the machine is fully primed.

8   Press the 'Boom Master On/Off' touch button to commence spraying. The 'Boom Master' touch key illuminates Grey when Off & Yellow when On.

The G-Hub Home screen plumbing lines change from Grey to Green colour as spraying functions are engaged.

Alternatively, an operator can press the 'Boom Master' touch button On (on the back of the Joystick) to commence spraying.

The Raven Control Module (RCM) now controls the spraying application rate according to the preset values entered by the operator.

9   The 'Boom Section' (1-16) or (1-10) touch buttons (along the bottom of the G-Hub Home Screen can be used to manually switch boom sections On & Off.

10 Fenceline nozzles are switched On & Off as required by using the 'Fenceline' push button on the Joystick. Boom end sections 1 & 10 or 16 (depending on total boom sections) must be On for the fenceline nozzles to operate:

- Press the 'L' end of the 'Fence Nozzle' push button to switch On the left boom tip Fenceline nozzle.

  When activated, a red LED on the boom tip is illuminated. The LF indicator on the Home screen illuminates Green when active.

  To switch Off the fence line nozzle, press the push button.

- Press the 'R' end of the 'Fence Nozzle' push button to switch On the left boom tip Fenceline nozzle.

  When activated, a red LED on the boom tip is Illuminated. The RF indicator on the Home screen illuminates Green when active.

  To switch Off the fence line nozzle, press the push buttons on the Joystick.

NOTE

The operator must wear the operator safety belt at all times when seated in the cabin or when the machine is in motion.
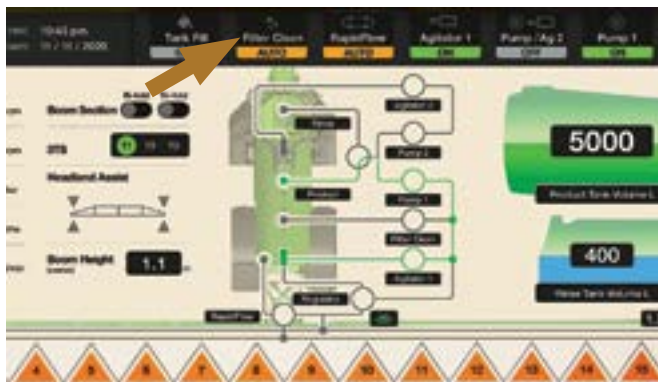
Press the push button & select from the menu the 'Filter Clean' function.

On completion of spraying, follow the appropriate rinsing instructions to ensure all plumbing is flushed & completely clean

11 The 'Filter Clean' function of the G-Hub Controller can be:
- Set to 'Auto' setting so that the pressure filter flushing automatically activates when all boom sections are switched Off or the boom Master Switch is turned Off.
- Manually switched to On to flush the pressure filter when not actively spraying.

   Refer to Chapter 4 'Setting Up', for further function details).

12 As the Product Tank gets closer to minimum tank level (300 litres), it may be necessary to switch Off the Agitator to reduce foaming.

   Alternatively, agitators can be set to switch Off automatically when a minimum tank volume is reached.

13 When the Product Tank is empty:
- Press the 'Boom Master On/Off' push button Off (on the G-Hub Home screen) or (Joystick) to stop spraying.
- Stop the Agitator(s)
- Stop the Pump(s), and
- Return to water source to refill (refer to 'Filling the Sprayer' & 'Adding Chemicals to the Product Tank'.

14 On completion of spraying at:
- End of the day
- End of a product or
- End of season,

   follow the appropriate rinsing instructions to ensure all plumbing is flushed & completely clean.

> **⚠ CAUTION**
>
> Do not run a centrifugal pump dry as damage will occur to the pump.

Headland Assist Operation

Headland Assist enables the boom centre and wing tilt to be raised to a pre-determined headland height or lowered to a pre-determined field working height.

Headland Assist is not compatible when XRT is in use (XRT has its own headland functionality).

To Operate Headland Assist:

1 Double press 'Left Tilt Up' or 'Right Tilt Up' Joystick push buttons to move boom to headland position

2 Double press 'Left Tilt Down' or 'Right Tilt Down' Joystick push buttons to move boom to field position

Return To Level

Return To Level operation enables the boom wing tilts to be returned to a pre-determined level relative to the centre section. Return to Level does not move the centre section.

To Return to Level:

Double press the 'Boom Up' or 'Boom Down' Joystick push buttons to return tilts to level.

For information on setting the Headland Assist Height and Return to Level Height, refer to Chapter 7, 'Boom Settings'.

Press the Auxiliary Buttonpad push buttons 'Spray Pump Rinse' and 'Boom Recirc' On to quick rinse the boom.

Press the 'Rapid Flow' push button & select ON for rinsing the boom.

Pull the lever out to open the 'Main Tank Drain' valve.

Rinsing the Sprayer After Spraying

Never leave chemical or contaminated liquid within the Prairie Pro's spraying system. After spraying the spraying system must be rinsed clean. Three modes of rinsing provided:

1. Quick Rinse or Boom Rinse
2. Basic Rinse
3. Total Rinse & Decontamination.

Quick Rinse or Boom Rinse

Boom Rinse is recommend for use only at end of the day or for short operational breaks where it is intended to continue with the same chemicals.

Quick Rinse operates from the G-Hub Controller and draws clean water from the Rinse Tank. This rinse function requires the Rinse Tank to be full prior to start of Quick Rinsing (refer to 'Tank Filling' instructions earlier in this chapter).

⚠**CAUTION**

When rinsing is taking place, the rinsate is potentially very hazardous depending on chemical content.

Use recommended personal protective equipment (PPE).

For specific information on rinsing & decontamination of the chemicals being applied, it is recommended to consult the chemical manufacturer's label and/or your chemical supplier.

To Quick Rinse the Boom

1. Press the 'Spray Pump Rinse' push button On located on the Auxiliary Buttonpad.
2. Press the 'Boom Recirc' push button On located on the Auxiliary Buttonpad.
   Or
   Press the 'RapidFlow' touch button On located on the G-Hub Main screen (option if fitted).
3. Open the spray gauge valve (located on the side of the hitch) to flush out chemical, then close the valve.
4. On completion of the boom rinse, switch Off the boom circulation and pump rinse functions.

Gauge Drain valve closed (shown left) & Gauge Drain valve closed (shown right).

Basic Rinse

A Basic Rinse is necessary at end of the day or operation if intending to later continue with the same chemicals.

Basic Rinsing draws clean water from an external source using the Fill Pump & 3" clean water inlet.

To Basic Rinse the Spray System:

1. Safely park the Prairie Pro & unfold the boom.
2. Open the 'Main Tank Drain' valve by pulling the lever (next to the Dirty Fill Inlet valve) outwards. Completely drain the tank. Close the valve when empty.
3. Unhook the 'Sump Hose Drain' valve, open the valve and let it lower to completely drain the main tank sump. Close the valve & re-hook the hose position when completed.

Open the Sump Drain Valve & lower it to completely empty the main tank sump.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the ball valves.

Press the Screen Selector push button to select the 'Clean' screen.

Press the Auxiliary Buttonpad push buttons 'Spray Pump Rinse' and 'Boom Recirc' On to do the Basic Rinse.

4   Lower the Chemical Induction Hopper keeping the hopper lid closed.

5   Connect a 3" suction hose (not supplied) to the 'Clean Fill' camlock coupling with the other end of the hose connected to a clean water source (refer to 'Tank Filling' instructions in this chapter).

6   Open the 'Clean Fill' ball valves by moving the handles down (refer to 'Tank Filling' instructions in this chapter).

7   Open the storage cabinet of the Quick Filling Station to access the External G-Hub Controls.

8   Press the Screen Selector push button to select the 'Fill' screen.
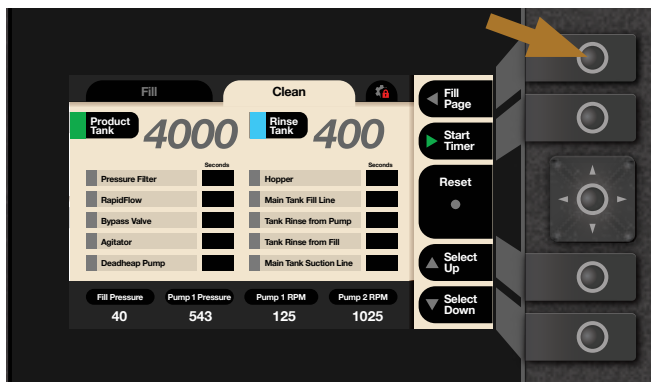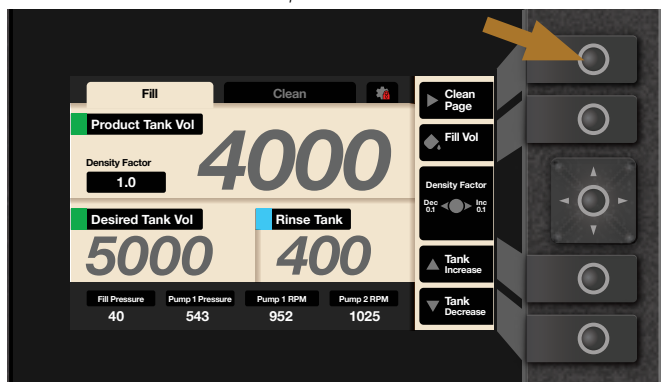
Press the Screen Selector push button to select the 'Fill' screen.

9   Fill the Product Tank with about 200 litres of clean water (refer to 'Tank Filling' instructions in this chapter).

10 Fill the Rinse Tank full of clean water (refer to 'Tank Filling' instructions in this chapter).

11 Press the Screen Selector push button to select the 'Clean' screen.

12 Using Standard Controls, press 'Spray Pump Rinse' push button On.

Using the Optional G-Hub 12" Display, press the 'Pump 1' touch button and select "Rinse".

13 Process each Rinse function of the left hand list on the External Controller 'Clean' screen:

•   Pressure Filter
•   RapidFlow
•   Bypass Valve - *Manual valve On/Off & push button timer*
•   Agitator
•   Deadheap Pump (diaphragm pump only) - *Manual ball valve On/Off & push button timer.*

Individually using the push buttons to:

•   Select
•   Start - allowing each function suitable time to rinse thoroughly *(Bypass Valve & Deadheap Pump - timer only & manual ball valve start/stop)*, then
•   Stop the function *(Bypass Valve & Deadheap Pump - timer only & manual ball valve start/stop)).*

Several functions can be started & running together but then stopped individually with the Start/Stop push button.

14 Using Standard Controls, keep the 'Spray Pump Rinse' push button On & press the 'Boom Recirc' push button on the G-Hub Main screen to On and proceed to rinse the boom and nozzles.

Using the Optional G-Hub 12" Display, keep the 'Pump Rinse' touch button On & press the 'RapidFlow' touch button on the G-Hub Main screen to On and proceed to rinse the boom and nozzles.

Press the Boom Master button On & Off several times to clean the nozzles.

15 Open the spray gauge valve to flush out chemical, then Close the valve.

16 On completion of the boom rinse, press the 'RapidFlow' and 'Pump Rinse' touch buttons to Off.

17 Open the Product Tank drain valve & completely drain the tank. Close the valve when empty.

18 Clean the suction & pressure filters.

19 Store & shut-down the Prairie Pro as required.

> ⚠️ **CAUTION**
>
> It is important to not close the 'Clean Fill' valve while the pump is running. Running the pump with a closed suction inlet may damage the pump.

Lower the Chemical Induction Hopper & open the Hopper lid.

Pull the lever out to open the 'Main Tank Drain' valve.

Connect a 3" fill hose to the 'Clean Fill' inlet & Open the ball valves.

Total Rinse & Decontamination

Total Rinse & Decontamination of the Prairie Pro's spraying system is important whenever changing chemicals or applications and at the end of the spraying application.

Total Rinse & Decontamination draws clean water from an external source using the Fill Pump & 3" clean water inlet, plus an appropriate cleaner/decontaminant is added to clean & neutralise the chemicals previously used.

The procedure requires a minimum of 1000 litres of clean water in the Product Tank and the Rinse Tank must be filled before proceeding.

To Totally Rinse & Decontaminate the Spray System:

1 Safely park the Prairie Pro & unfold the boom.

2 Open the 'Main Tank Drain' valve by pulling the lever (next to the Dirty Fill Inlet valve) outwards. Completely drain the tank. Close the valve when empty.

3 Unhook the 'Sump Hose Drain' valve, open the valve and let it lower to completely drain the main tank sump. Close the valve & re-hook the hose position when completed.

4 Open the storage cabinet of the Quick Filling Station to access the External G-Hub Controller.

Open the Sump Drain Ualve and unhook it to lower it to completely empty the main tank sump (Inset shows unhooked, lowered valve).

5 Connect a 3" suction hose (not supplied) to the 3" 'Clean Fill' camlock coupling with the other end of the hose connected to a clean water source (refer to 'Tank Filling' instructions in this chapter).

6 Open the 'Clean Fill' ball valves (Prairie Pro & suction hose) by moving the handles down (refer to 'Tank Filling' instructions in this chapter).

7 Fill the Product Tank with about 1000 litres of clean water.

8 Fill the Rinse Tank full of clean water.

9 Lower the Chemical Induction Hopper & open the hopper lid (refer to 'Chemical Induction Hopper' instructions in this chapter).

10 Ensure the 'Pump Product' push button On and press the 'Fill Pump' push button On.

11 Add the appropriate decontaminating agent to the hopper.

NOTE

After Rinsing, it is recommended to remove and clean the pressure filter and the suction filter.

NOTE

If filling the Rinse Tank at the same time as the Product Tank, the 'Fill Rinse Tank' push button will flash to indicate pausing until the Product Tank reaches 500 litre level. Rinse Tank filling will then resume as indicated by a solid colour of the push button. Individual tank filling rate is reduced when filling both tanks at the same time.

NOTE

After Total Rinse & Decontamination, it is recommended to remove and clean the pressure filter and the suction filter.
Both filters should be cleaned regularly.
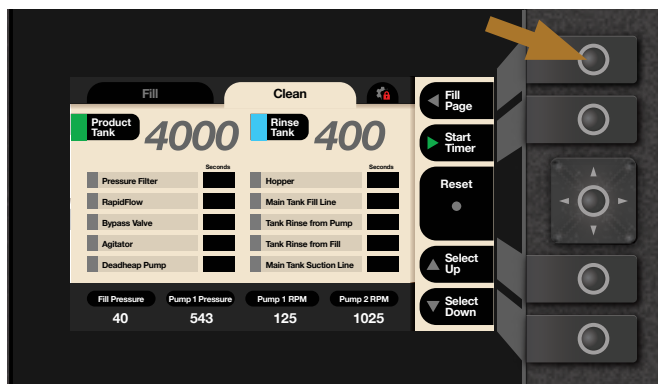
Press the Screen Selector push button to select the 'Clean' screen.
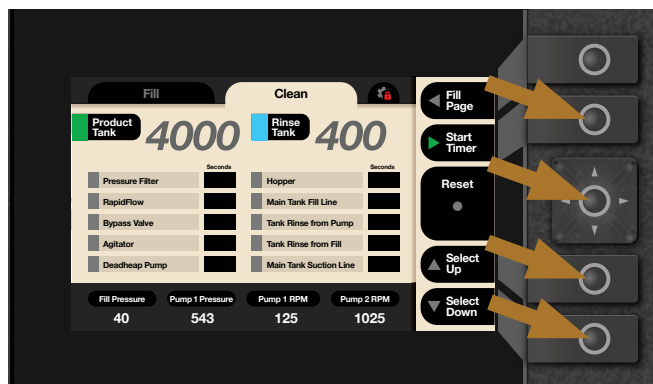
Individually use the push buttoms to select, start, rinse and stop each rinse function.

The Pressure Filter (left) & Suction Filter (right).

12 Press the Screen Selector push button to select the 'Clean' screen.

13 Press the 'Pump Product' push button On and liquid flows from the Main tank.

14 Process each Rinse function of the list on the External Controller 'Clean' screen:
- Pressure Filter
- RapidFlow - Open Gauge Flush
- Bypass Valve (+ manual valve functions)
- Agitator
- Deadheap Pump (diaphragm pump only)
- Hopper (+ manual valve functions)
- Main Tank Fill Line
- Tank Rinse from Pump
- Tank Rinse from Fill
- Main Tank Suction Line - Only do this if the tank is empty. The pump must be Off & suction filter drain Open.

Individually use the push buttons to:
- Select
- Start - allowing each function suitable time to rinse thoroughly, then
- Stop the function.

Several functions can be started & running together but then stopped individually with the Start/Stop push button.

15 Open & Close the Spray Gauge valve to decontaminate & flush out any chemical.

18 After decontaminating the whole system, proceed to the next step of flushing the system with fresh water.

Flush the Spray System with Clean Water

Repeat the Basic Rinse process to flush the Spray System with clean water (after total cleaning and contamination has been performed) to remove any remaining Rinsate and boom cleaner.

Pressure Filter Removal & Cleaning

It is recommended to remove & clean the Pressure Filter regularly - before each tank fill. Frequency of cleaning will depend on the quality of water and chemicals used.

The Pressure Filter receives liquid from either the Product Tank or the Rinse Tank via the spray pump.

The G-Hub Controls provide a Self Cleaning function controlled by via an electronic valve.

This Self Cleaning function of the G-Hub will only purge some material from the screen. It is NOT a full reverse flush.

NOTE

Dispose of chemical & pesticide waste safely.

If possible, reuse the rinsate when preparing the next batch of tank mixture. Make sure all the dirt and debris in the rinsate are filtered out before adding the rinsate to a spray tank. Small amounts of solids left should be dried, then taken to a hazardous waste disposal site or pesticide collection location.

NOTE

The Rinse functions (shown above) show the electrical push button functions. Some manual valve functions are also needed (as shown).

Each function must be performed to properly rinse the sprayer.

Timing of each function begins with the push button start and end when the push button is pushed again.

NOTE

It is recommended to remove & clean the Pressure Filter after Quick Rinse, Basic Rinse and Total Rinse & Decontamination procedures are completed in which case self cleaning the pressure filter is already done.

Self cleaning the pressure filter at other times requires at least 200 litres of clean water in the Product Tank.

⚠CAUTION

The chemicals & rinsate are potentially very hazardous depending on chemical contents. Use recommended personal protective equipment (PPE).

For information specific to your circumstances, the spraying equipment being used and the chemicals being applied, consult your agronomist or chemical supplier.

Unscrew the pressure filter bowl nut & remove the bowl.

Carefully, remove, clean and refit the Pressure Filter.

Open the drain valve to drain the Suction Filter.

Prior to removal of the filter for cleaning, self clean the filter using the G-Hub External Controls:

1   Open the storage cabinet of the Quick Filling Station to access the External G-Hub Controls.

2   Press the Screen Selector push button to select the 'Clean' screen.

3   Press the Selector push button to select Pressure Filter, then press the Start push button

4   Press the 'Pump Product' push button On and allow the pump to run for several seconds to flush the filter out.

5   Press 'Pump Product' push button Off.

The Pressure Filter is now ready for manual removal & cleaning.

To Remove & Clean the Pressure Filter:

1   Make sure the 'Pump Product push button is Off.

2   Loosen the filter bowl nut slowly using the filter spanner supplied. Be aware some residual chemical may dribble out. Use supplied filter spanner if required.

3   After liquid stops coming from the filter, fully unscrew the filter bowl nut and remove the filter bowl.

    Be careful of any chemical and avoid any damage to the O-Rings.

4   Clean the filter screen and O-rings, then refit the components making sure the filter bowl & O-rings are correctly placed. Fully tighten the filter bowl nut.

Suction Filter Removal & Cleaning

It is recommended to remove & clean the Suction Filter regularly - before each tank fill. Frequency of cleaning will depend on the quality of water and chemicals used

The Suction Filter receives liquid from either the Product Tank. or the Rinse Tank. All liquid to be sprayed or flushed through the system passes through this filter.

Fluid supply to the suction filter is controlled by an electronically operated valve. The valve operation is controlled by the presets in the G-Hub controller (refer to Chapter 4).

The suction filter valve is plumbed before the filter housing.

⚠️**CAUTION**

If operating with Centrifugal spray pump, running the centrifugal spray pump dry will damage it.

The pressure filter must be fully assembled with the red drain valve open before operaing the pump to avoid damage.

⚠️**CAUTION**

When rinsing is taking place, the rinsate is potentially very hazardous depending on chemical content. Use recommended personal protective equipment (PPE).

For specific information on rinsing & decontamination of the chemicals being applied, it is recommended to consult the chemical manufacturer's label and/or your chemical supplier.

⚠️**CAUTION**

Read and heed the chemical label warnings regarding PPE before cleaning any filter.

Remove the Suction Filter screen.

Ensure the Prairie Pro is properly cleaned and stored at the end of day & end of season.

To Remove & Clean the Suction Filter:

1   Make sure the 'Pump Product push button is Off.

2   Open the drain valve on the filter & allow the filter to drain fully.

 Be sure to collect any hazardous chemical and wear appropriate PPE.

3   Close the drain and loosen the filter bowl collar slowly using the spanner provided. Be aware some residual chemical may dribble out.

4   After liquid stops flowing from the filter, fully unscrew the filter bowl collar and remove the filter bowl.

 Be careful not to damage the O-Rings.

5   After removing the filter bowl, carefully remove the filter screen, then clean the filter bowl, body, screen & O-rings.

6   After cleaning, refit the components making sure the filter bowl & O-rings are correctly placed.

7   Fully tighten the filter bowl collar & close the drain valve.

8   Repeat the procedure for the Agitator pump suction filter.

> ⚠️**CAUTION**
>
> Always wear gloves and other recommended protective clothing before attempting to remove and clean filters.
> Be careful of chemicals and avoid any damage to the O-Rings when cleaning filters.

End of Day

At the end of each spraying day, follow the instructions for Basic Rinsing or Total Rinse & Decontamination.

> ⚠️**CAUTION**
>
> If icing occurs, it is important to ensure any ice has thawed before using the Prairie Pro.
> Failure to thaw ice prior to use will cause damage to the machine.

> ⚠️**CAUTION**
>
> Machine components should be coated with a suitable protectant during storage, then washed down, thoroughly, before use.
> Consult the supplier of protectants, if you require specific advice about the effectiveness of any particular protectant to prevent premature degradation of machine components.

> ⚠️**CAUTION**
>
> All chemicals have corrosive properties to some degree. Prevent damage to the machine by always consulting the chemical MSDS or the chemical supplier for advice concerning the corrosive properties of the chemical.
> It is the responsibility of the operator to carry out preventative and ongoing maintenance to the machine, particularly while applying chemicals with highly corrosive properties.

End of Season

If the Prairie Pro is to be stored for a long period of time without use, several procedures must be performed.

1   Follow the instructions for Total Rinse & Decontamination.

2   Thoroughly examine the Prairie Pro to determine if there is any damage.

3   Park the Prairie Pro where it will not be affected by frosts, and preferably out of direct sunlight.

4   Ensure all spray tanks are empty.

5   If necessary, remove consoles from the tractor cabin and store them in a safe & secure location.

> **NOTE**
>
> Store the machine in a suitable location to prevent freezing. If the machine is to be left where freezing may occur, cover the pump & flow meter with a material bag, empty the pump & flow meter of all water (run pump (diaghragm only) dry for 15-20 seconds).
> It is recommended a small quantity of anti freeze be added to the main tank and circulated through the machine to minimise the chance of freezing.

> **NOTE**
>
> Do not run a centrifugal pump dry as damage will occur to the pump.
> Remove the suction filter to drain the line and pump if a centrifugal pump is installed.

7 - **Boom Settings** – Service 135

Goldacres Paralift Rear connection to the boom.

On level ground, engage the tractor park brake, chock wheels & have the boom in its working position before making

'Smiling Forward' on a 36m boom.

Adjustment Thread
Remove Bolt
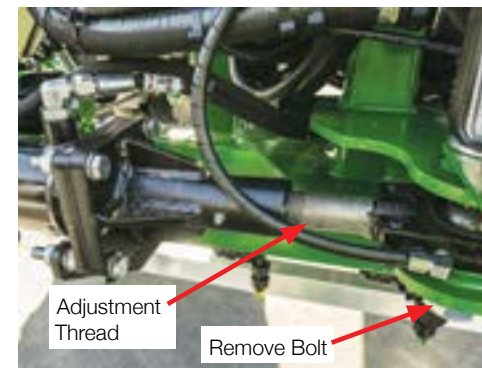
Detach the end of the fold cylinder from the boom pivot to adjust the 1st wing section forward.

Boom Settings & Adjustments

Boom Settings & Adjustments include:

1   Smiling Forward Settings (24-36m & 48m).

2   Tilt Angle Settings (24-36m & 48m).

3   Yaw Alignment.

4   Yaw Hydraulic Pressure.

5   Bi-Fold Breakaway Pressure.

6   Three-Way Tip Breakaway.

7   Test Folding the Boom - to check the boom fold adjustments (tilt angle & boom rest alignment & locks).

8   Boom Centre Levelling.

Before Making Boom Adjustments:

- Park the sprayer on a flat level surface with the tractor park brake engaged & wheels chocked.

- Place the boom in its working (unfolded) position.

1   Smiling Forward Setting (24-36m Booms)

The wings of the 24m - 36m booms comprise two sections and a breakaway end. The first and second sections are adjusted forward at the inner pivot points.

To Adjust the First Section of the RH Wing:

1   Follow the 'Before Making Boom Adjustments' instruction this page.

2   The first wing section adjustment should bring outer end of the section 50 mm forward of the centre section.

A string line can be used as a guide. Alternatively, it may be helpful to observe the boom from underneath as the bottom chords are 50 mm wide all along the section and provide a visual reference for the forward offset.

3   The first wing section of the smiling forward adjustment is made by rotating the rose end adjuster thread of the fold cylinder at pivot A (see illustration next page).

Loosen and remove the 1" bolt, nuts and washers attaching the fold cylinder to the boom pivot.

⚠CAUTION

When folding the boom, either manually or automatically, ensure the sprayer chassis is laterally level.

If the chassis is sloping laterally, sprayer stability and boom folding can be compromised.

⚠CAUTION

Before adjusting the boom alignment, the hydraulic fold and bi-fold circuit must be free of air. Hydraulic circuits that contain air can make the boom appear that it is too far forward.

Adjustment of the boom without "bleeding" the hydraulic circuit first will result in a boom that becomes misaligned after a short period of use.

NOTE

It is important that both wings are adjusted the same. If one wing is adjusted further forward or back than the other, the boom may not sit level.

⚠CAUTION

When making adjustment to the wing fold cylinders, it is strongly recommended to use the help of a 2nd person to hold the boom wing in position especially when removing the 1" bolt attaching fold cylinders - for both safety and ease of making the adjustments.

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| Paralift Centre Section | 1st Wing Section | 2nd Wing Section | Breakaway End |
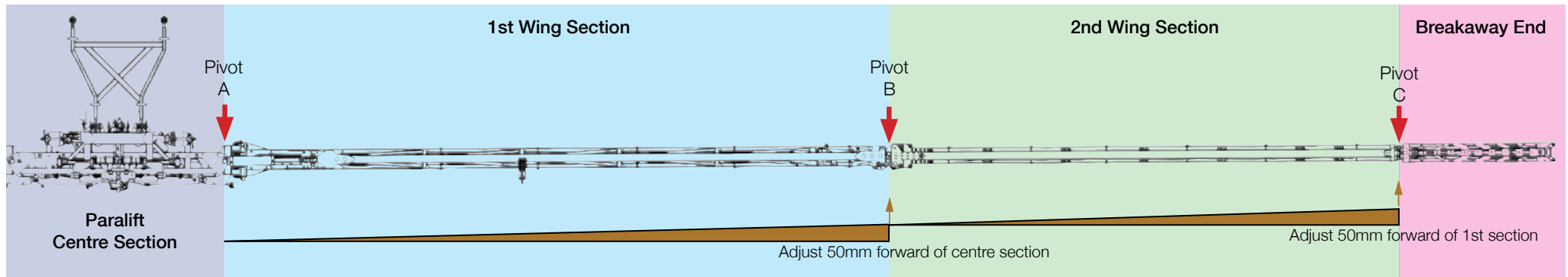
36 metre Boom: Plan view of right hand side boom wing & the 'Smiling Forward' adjustment points (Pivot A & B).

4   Rotate the rose end counter-clockwise to lengthen the cylinder and push wing section forward.

   After adjustment has been made, replace the bolt in the rose end & boom pivot without the nut and check the adjustment.

5   Repeat steps 2 and 3 until correct adjustment is achieved.

6   Once the correct adjustment is achieved, replace the bolt, washer & nut and retighten.

To Adjust the Second Section of the RH Wing:

1   The second wing section adjustment brings the outer end of the section 50 mm forward of the first section. The adjustment is set using the stopper bolts and Bi-Fold cylinder rod adjustment.

   Loosen the lock nut on the stopper bolts using a spanner.

2   Rotate the stopper bolt either in or out with a spanner until the correct boom adjustment is made.

3   Loosen the lock nut on the fold cylinder clevis.

4   Rotate the fold cylinder shaft with a spanner so the boom is pulled hard onto its stopper. Tighten the fold cylinder but do not lift the breakaway cylinder base rose end off its hexagon bolt head stop.

5   Re-tighten the lock nut on the fold cylinder clevis.

6   Re-tighten the lock nut on the stopper bolt.

To Adjust the First Section of the LH Wing:

   Repeat the procedure for the right wing.

To Adjust the Second Section of the LH Wing:

   Repeat the procedure for the right wing.

NOTE

The boom should be adjusted as firm as possible against its stopper without engaging the breakaway mechanism (without lifting the breakaway cylinder base clevis off its hexagon bolt head stop).

At Pivot B: Adjust the stopper bolt to bring the 2nd wing section forward, then adjust the fold cylinder clevis.
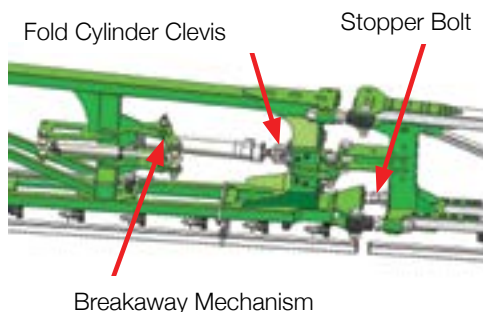
Loosen the locknut & rotate the stopper bolt in or out until the correct forward-adjustment is made.

Loosen clevis locknut and rotate the fold cylinder shaft to bring the boom hard onto its stopper.

Tighten the fold cylinder but do not lift the breakaway cylinder base clevis off the hexagon bolt head stop.
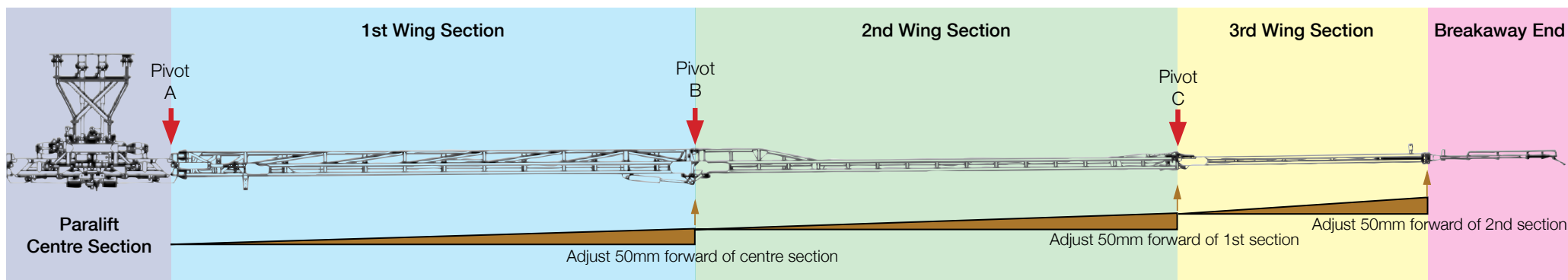
Fold Cylinder Clevis

Stopper Bolt

Breakaway Mechanism

Lock nut

| Paralift Centre Section | 1st Wing Section | 2nd Wing Section | 3rd Wing Section | Breakaway End |

Pivot A

Pivot B

Pivot C

Adjust 50mm forward of centre section

Adjust 50mm forward of 1st section

Adjust 50mm forward of 2nd section

48 metre Boom: Plan view of right hand side boom wing & the 'Smiling Forward' adjustment points (Pivot A, B & C).

1 Smiling Forward Setting (48m)

The wings of the 48m boom comprise three sections and a breakaway end. The first, second & third sections are adjusted forward at the inner pivot point.

To adjust the first section of the RH wing:

1. Follow the 'Before Making Boom Adjustments' instruction.
2. The first wing section adjustment should bring outer end of the section 50 mm forward of the centre section.

A string line can be used as a guide Alternatively, it may be helpful to observe the boom from underneath as the bottom chords are 50 mm wide all along the section and provide a visual reference for the forward offset.

The first wing section of the smiling forward adjustment is made by adding or removing shim plates from the fold rams mounted on the centre section at pivot A.

3. Loosen and remove two top bolts, nuts and washers holding the fold ram and dampers together.
4. Loosen the two lower bolts, nuts and washers but do not remove them as the shim plates require them to rest on.

5. Insert or remove shims by trial and error until the 50 mm forward setting is achieved.

   The two open slots in the shim plates should be facing downward when inserted to sit on the loosened but not fully removed bolts.

6. Once the correct adjustment is achieved, replace and tighten all nuts, bolts and washers (18 & 19mm spanner/socket).

The first wing section 'Smiling Forward' adjustment is made by adding or removing shim plates.

Add or remove shim plates
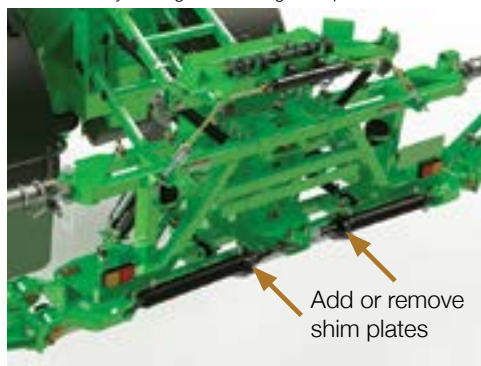
Loosen and remove the top 2 bolts, nuts & washers.

Face the open slot of the shims downwards.

GA8701602 REV 00 JUNE 2022

Top stopper.

Lower stopper.

Damper stopper bolt.

To Adjust the Second Section of the RH Wing:

1　The second wing section adjustment brings the outer end of the section 50 mm forward of the first section. The adjustment is set using using two stopper bolts and a catch at pivot B.

2　Loosen the lock nut on the stopper bolt using a spanner.

　　Then, back the stoppers off so that they are not touching the second stage.

3　The catch position should be extended or retracted to place the end of the second section 50 mm in front of the end of the first section.

　　Loosen the lock nut on the catch on the side to be shortened and tighten the nut on the side to be lengthened.

4　Once the catch is in the desired position, wind out the upper and lower stoppers to touch the second stage.

　　Check that the catch hooks are just barely touching to ensure smooth operation of the mechanism.

5　When the setting is correct, re-tighten the lock nuts on the stoppers.

To Adjust the Third Section of the RH Wing:

1　The third wing section adjustment brings the outer end of the section 50 mm forward of the second section. The adjustment is set using using the stopper bolt on the end of the damper at pivot C.

　　Loosen the lock nut on the stopper.

2　Wind the stopper out to push the third stage forward or wind it in to let it come backwards.

3　Once the position is correctly adjusted, re-tighten the lock nut on the stopper.

To adjust the sections of the LH wing:

　　Repeat the procedure for the right wing.

To adjust the second section of the LH wing:

　　Repeat the procedure for the right wing.

To adjust the third section of the LH wing:

　　Repeat the procedure for the right wing.

NOTE

It is important that both wings are adjusted the same. If one wing is adjusted further forward or back than the other, the boom may not sit level.

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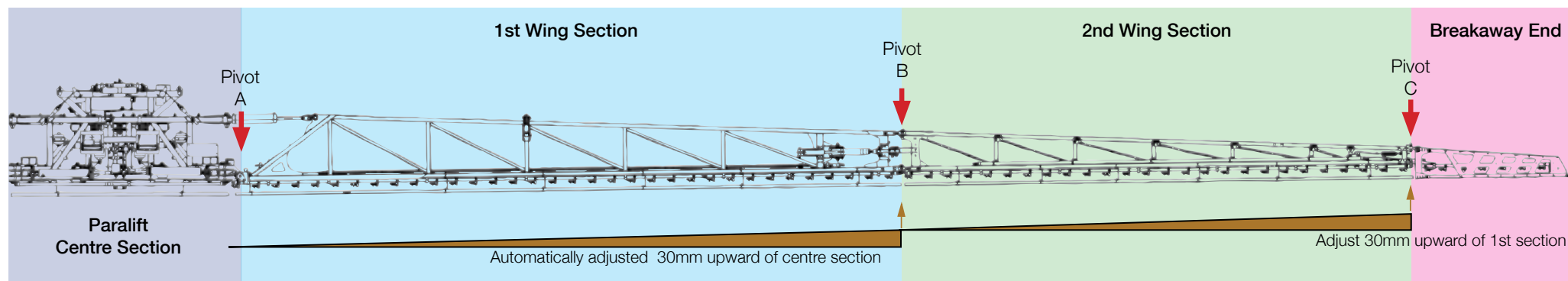
36 metre Boom: Rear view of right hand side boom wing & the Tilt Angle adjustment points (Pivot A & B).

2 Tilt Angle Setting (24-36m)

The wings of the 24m - 36m booms comprise two sections and a breakaway end. The first & second wing sections are adjusted upward at the inner pivot point.

The first section tilt angle, at pivot A, is adjusted automatically by the boom control system and does not need to be manually adjusted.

A tilt sensor is present on the tilt cylinder pivot is used by the system to maintain the tilt level.

The second stage tilt angle is adjusted using the clevis joint threads at pivot B.

The tilt angle of each 1st section is automatically controlled by a tilt sensor.

Tilt Sensor

To Adjust the Second Section of the RH Wing:

1   Follow the 'Before Making Boom Adjustments' instruction in this chapter .

2   The second wing section adjustment brings the outer end of the section 30 mm upward of the first section. The adjustment made on the clevis joints of pivot B.

    Loosen the locknuts on the upper and lower clevis joint threads.

Adjust the upper & lower clevis joint threads to tilt the 2nd wing section upwards.
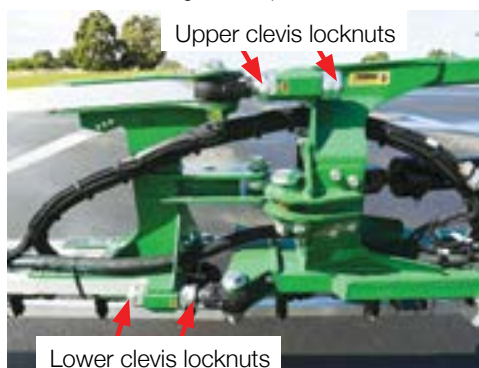
Upper clevis locknuts

Lower clevis locknuts

3   Wind the top rose end closer to the first section to raise the second section.

    Wind the top adjuster away from the first section to lower the second section.

    Once the correct alignment is acheived, the second stage height must be checked and adjusted in the Bi-fold position.

4   Fold the boom into the Bi-fold position. The second stage should couple into the boom support saddle with minimal clearance to the base plate.

If the second boom section is too low, both the upper rose end & the lower rose end must be lengthened by an equal amount.

If the second boom section is too high, both the upper rose end & the lower rose end must be shortened by an equal amount.

This will correct the height of the second stage boom in the Bi-fold position without effecting the working position.

5   Fold the boom into the working position to confirm correct alignment is still achieved.

6   On completion, re-tighten the locknuts on the upper and lower clevis joint threads.

To Adjust the Second Section of the LH Wing:

Repeat the above procedure for the left wing.

NOTE
It is important that both wings are adjusted the same. If one wing is adjusted higher or lower than the other, the boom may not sit level.

48 metre Boom: Plan view of right hand side boom wing & the 'Tilt Angle' adjustment points (Pivot A, B & C).

Labels on diagram:
- Pivot A
- Pivot B
- Pivot C
- 1st Wing Section
- 2nd Wing Section
- 3rd Wing Section
- Breakaway End
- Paralift Centre Section
- Automatically adjusted 30mm upward of centre section
- Adjust 30mm uprward of 1st section
- Adjust 30mm upward of 2nd section
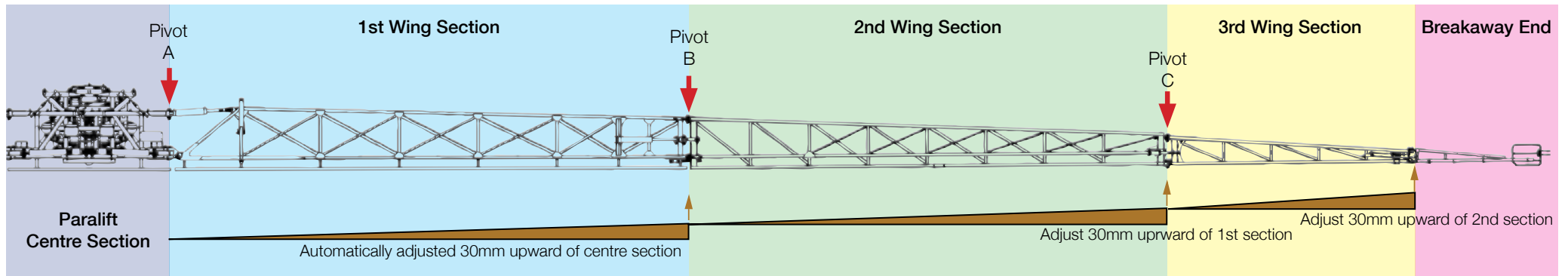
2 Tilt Angle Setting (48m)

The wings of the 48m boom comprise three sections and a breakaway end. The first, second & third sections are adjusted upwards at the inner pivot point.

The first section tilt angle, at pivot A, is adjusted automatically by the boom control system and does not need to be manually adjusted.

A tilt sensor present on the tilt cylinder pivot is used by the system to maintain the tilt level.

The second stage tilt angle is adjusted using the clevis joint threads at pivot B.

The tilt angle of the 1st section is automatically controlled by the tilt sensor.
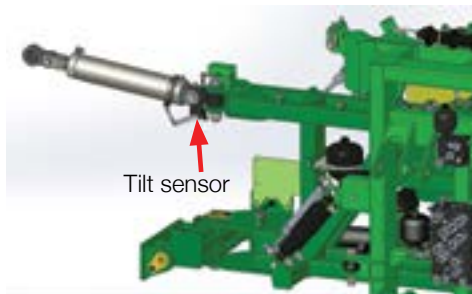
Tilt sensor

To Adjust the Second Section of the RH Wing:

1   Follow the 'Before Making Boom Adjustments' instruction.
2   The second wing section adjustment brings the outer end of the section 30 mm upward of the first section. The adjustment made on the clevis joints of pivot B.
   Loosen the locknuts on the upper and lower clevis joint threads.
3   Wind the top rose end closer to the first section to raise the second section.
   Wind the top adjuster away from the first section to lower the second section.

Adjust the upper & lower clevis joint threads to tilt the 2nd wing section upwards.

Upper clevis locknuts

Lower clevis locknuts

Once the correct alignment is acheived, the second stage height must be checked and adjusted in the Bi-fold position.

4   Fold the boom into the Bi-fold position. The second stage should couple into the boom support saddle with minimal clearance to the base plate.
   If the second boom section is too low, both the upper rose end & the lower rose end must be lengthened by an equal amount. If the second boom section is too high, both the upper rose end & the lower rose end must be shortened by an equal amount. This will correct the height of the second stage boom in the Bi-fold position without effecting the working position.
5   Fold the boom into the working position to confirm correct alignment is still achieved.
6   On completion, re-tighten the locknuts on the upper and lower clevis joint threads.

NOTE

It is important that both wings are adjusted the same. If one wing is adjusted higher or lower than the other, the boom may not sit level.

To Adjust the Second Section of the LH Wing:

Repeat the above procedure for the left wing.

To Adjust the Third Section of the RH Wing:

The third wing section adjustment brings the outer end of the section 30 mm upward of the second section. The adjustment made on the clevis joints of pivot C.

Repeat the steps of the second section.

To Adjust the Third Section of the LH Wing:

Repeat the above procedure for the left wing.

Adjust the upper & lower clevis joint threads to tilt the 3rd wing section upwards.
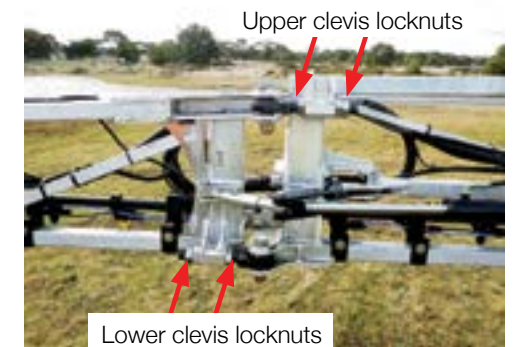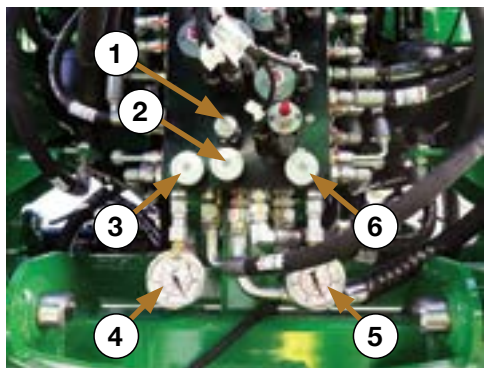
Upper clevis locknuts

Lower clevis locknuts

The hydraulic manifold on the centre secton (24-36m booms).

1 Pressure Reducing Valve
2 Yaw Bleed Valve
3 Yaw A Valve
4 Test Port/Pressure Gauge Yaw A
5 Test Port/Pressure Gauge Yaw B
6 Yaw B Valve

Identification of items on the hydraulic block (shown left).

Move the boom by hand to adjust the Yaw Alignment.

Two Yaw hydraulic cylinders (located on the boom centre section) & an accumulator form the independent pressurised Yaw hydraulic circuit.
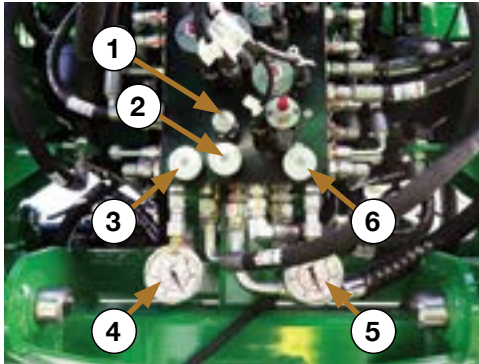
3 Yaw Alignment

The boom should be positioned parellel to the rear of the sprayer chassis. To check Yaw Alignment, measure the exposed cylinder rods on both the left & right Yaw hydraulic cylinders.

Each cylinder rod extension should be the same if the boom is running parellel to the end of the chassis.

To Adjust the Yaw Alignment:

1 Follow the 'Before Making Boom Adjustments' instruction.
2 The boom yaw is controlled by a pair of hydraulic cylinders & accumulators.

Loosen the locknuts, then wind out (counterclockwise) both 'Yaw A' and 'Yaw B' valves (shown above 3 & 6) until fully open.

3 Move the boom by hand until it is sitting perpendicular to the chassis line of the machine - Each Yaw cylinder rod extension must be the same.
4 Wind in (clockwise) both both 'Yaw A' and 'Yaw B' valves (shown above 3 & 6) to until fully closed, then tighten the locknuts.

The default Aligned Yaw position is now set.

4 Yaw Hydraulic Pressure

The Yaw Hydraulic Pressure controls the Yaw suspension

Two hydraulic cylinders and accumulators are charged with hydraulic pressure and closed off creating a closed circuit for the yaw suspension.

The base end of each yaw cylinder is connected to the rod end of the opposite cylinder with one nitrogen charged (70 bar) accumulator connected separately to each.

When the rod end of one cylinder compresses, it causes the base end of the opposite cylinder to extend and vice versa.

The accumulators help dampen movement & keep the boom centred.

Wind out the Yaw valve A until fully open.

Wind out the Yaw valve B until fully open.

Exposed cylinder rod (on both left & right hand Yaw cylinders) must be the same.

The hydraulic manifold on the centre secton (24-36m booms).

1 Pressure Reducing Valve

2 Yaw Bleed Valve

3 Yaw A Valve

4 Test Port/Pressure Gauge Yaw A

5 Test Port/Pressure Gauge Yaw B

6 Yaw B Valve

Three valves are normally closed to create a closed circuit so oil movement is restricted to the precharged pressure in the accumulator.

The precharged pressure restricts the ease of boom yaw movement away from the centered position. This pressure needs to be monitored and maintained.

Pressure gauges on the manifold display the closed loop hydraulic yaw pressures.

If set too high the boom centre damping will be too stiff and the boom will be prone to damage under normal operating conditions.

If set too low the boom will move too easily and not return to centre properly - making booms more vulnerable to damage.

To Set the Yaw Hydraulic Pressure:

The Hydraulic Yaw Pressure determines the effective stiffness of the Yaw damping.

Pressure gauges capable of reading up to 3000 PSI are fitted to the Yaw Test Ports (4 & 5 above) of the hydraulic manifold.

1 Follow the 'Before Making Boom Adjustments' instruction.

2 Check that the test port gauges are fitted to the test ports 'Yaw A' and 'Yaw B'.

3 Loosen the locknuts and wind out (counterclockwise) both 'Yaw A' (3) & 'Yaw B' (6) valves to open them fully.

   The Yaw bleed (2) must be fully closed (clockwise).

Adjust the Yaw Pressure with the Pressure Reducing Valve.

4 The hydraulic system will build pressure when a boom function is activated.

   Preferably engage 'Stage 1 Fold' OUT as the boom is already folded out and will not move in a hazardous way.

5 Once pressure has built up fully, use the Pressure Reducing Valve (1 above left) to set it higher or lower as necessary.

   Loosen the lock nut, then:

   • Wind in (clockwise) - to increase pressure or

   • Wind out (counterclockwise) - to decrease pressure.

   Target pressure for:

   - 24-36m booms is 103 Bar (1500 psi)

   - 48m boom is 117 Bar (1700 psi).

6 Re-tighten the lock nut of the pressure reducing valve once correct pressure is achieved.

Check rubber bumpers for wear. Replace if worn.

Paralift Rubber Bumpers

Overall Yaw travel is limited by rubber bumpers mounted on the Paralift boom centre section.

If the boom centre section yaws excessively, the centre section will come into contact with the bumpers which will cushion the travel by collapsing the blocks. If the blocks collapse totally, the yaw travel will be stopped.

If the boom is excessively & continually yawed, the bumpers will wear out and require replacement.

NOTE

When the hydraulic yaw system is installed or any components are replaced, the closed loop hydraulic circuit needs to be bled of any air:

• The maximum pressure needs to be reset

• The system re-charged and

• The booms re-aligned.

NOTE

If the pressure is too high then wind out (counter clockwise) the 'Yaw Bleed' valve to reduce it in addition to the pressure reducing valve. Then, close the 'Yaw Bleed' valve and check the maximum pressure achieved again.

Pressure will not decrease on the gauge if only the pressure reducing valve is wound out.
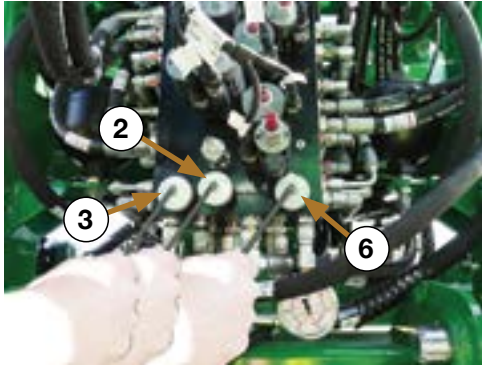
Fully open the Yaw Bleed' (2), 'Yaw A' (3) & 'Yaw B' (6) valves to purge air from the circuit.

Move the boom fore & aft to purge air from the Yaw hydraulic circuit.

The Hydraulic Bi-fold manifold on the boom centre section.
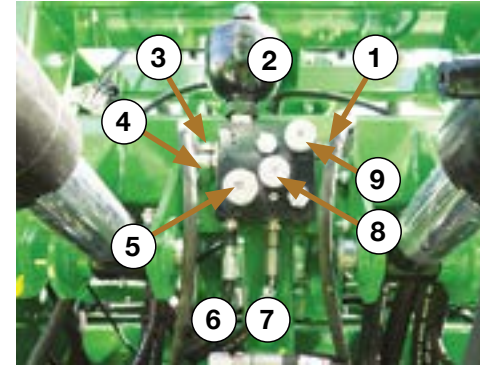
1 To Breakaway Cylinder B
2 Accumulator 0.5L (70 bar)
3 To Breakaway Cylinder A
4 Gauge Test Port
5 Breakaway Pressure Reducing Valve
6 Tank (outlet)
7 Pressure (inlet)
8 Pressure Bleed Valve
9 Breakaway Return Speed **Valve**

Identification of items on the Bi-fold hydraulic manifold (shown left).

To Purge Air from the Yaw Hydraulic Circuit:

This procedure is typically only necessary when the hydraulic Yaw circuit has been opened, such as when replacing a component eg, a hose or fitting.

1 Follow the 'Before Making Boom Adjustments' instruction.

2 Loosen the locknuts and wind out (counterclockwise) the 'Yaw Bleed' (2), 'Yaw A' (3) & 'Yaw B' (6) valves until fully open.

3 Start the engine, then move the boom around by hand for a minute or so to help force air out of the hydraulic Yaw circuit.

4 Wind in (clockwise) the 'Yaw Bleed' (2), 'Yaw A' (3) & 'Yaw B' (6) valves until fully closed, then tighten the locknuts.

5 Finally, re-adjust both Yaw Alignment and Yaw pressure - for instructions see previous pages.

5 Bi-Fold Breakaway Pressure

Breakaway cylinders are fitted to a stage two Bi-fold mechanism on 24-36 metre booms. Oil in these circuits flows through the hydraulic block mounted on the back of the boom centre section.

The hydraulic breakaway pressure setting determines the effective stiffness of the breakaway damping and return force.

Remove one of the Yaw pressure gauges and attach it to the test port 'BR MP' on the block.

To Set the Bi-Fold Breakaway Pressure:

1 Follow the 'Before Making Boom Adjustments' instruction.

2 Remove the cap and attached to the pressure gauge to the Gauge Test Port (4).

3 The 'Breakaway Bleed Valve' (8) must be fully closed (clockwise).

4 The hydraulic system will build pressure when a function is activated.

Preferably engage 'Stage 1 Fold' OUT as the boom is already folded out and will not move in a hazardous way.

Remove the cap & attach a pressure gauge to the Gauge Test Port (4).

NOTE

If the pressure is too high then wind out (counterclockwise) the 'Breakaway bleed' valve to reduce it in addition to the pressure reducing valve. Then, close the 'Breakaway bleed' valve and check the maximum pressure achieved again. Pressure will not decrease on the gauge if only the pressure reducing valve is wound out.

Loosen the locknut and adjust the pressure with the Pressure Reducing Valve (8).

5   Once pressure has built up fully, use the Pressure Reducing Valve (5) to set the pressure higher or lower as necessary.

Loosen the lock nut, then wind the Pressure Reducing Valve (5):

- IN to increase pressure or wind it
- OUT to decrease pressure.

Target pressure for:

-   24 - 36 metre booms is 100 Bar

6   Re-tighten the locknut on the Pressure Reducing Valve (5) once the pressure is set.

Loosen the locknut and adjust the breakaway return speed with the Breakawy Speed Valve (9).

7   Use the 'Breakawy Speed Valve' (9) to set the breakaway return speed:

- Fully open (counterclockwise) will set maximum speed.
- Fully closed (clockwise) will set minimum speed.

8   Re-tighten the locknut on the Breakway Speed Valve (9) once the speed is set

9   Shut down the engine, remove the pressure gauge and refit the cap.

Slightly loosen the hydraulic hose fitting on a breakaway cylinder (approximately one full turn).

To Purge Air from the Bi-Fold Breakaway Hydraulic Circuit:

This procedure is typically only necessary when the bi-fold breakaway hydraulic circuit has been opened, such as when replacing a component eg, a hose or fitting.

1   Follow the 'Before Making Boom Adjustments' instruction.

2   Slightly loosen the hydraulic hose fitting on a breakaway cylinder (approximately one full turn).

3   Place an oil catch container below the loose fitting.

Loosen the locknut and adjust the Breakawy Bleed Valve (8).

4   Press & hold the Bi-Fold OUT push button in cabin to supply high pressure to the cylinders. Continue for 30 seconds.

Beware of the dangers of loose fittings and high pressure oil. Ensure all persons are clear before engaging oil pressure.

5   Release the Bi-Fold OUT push button and re-tighten hose fitting.

6   Repeat steps above for the second side.

NOTE
Setting the Bi-Fold Breakaway Pressure is a 2 person job - one person is required to hold the boom fold-out switch to keep the circuit pressurised while the another person adjusts the pressure.

⚠ **CAUTION**
DO NOT operate the Cruiser with the Breakaway Speed Valve fully closed. The valve must be positioned at least one (1) turn open.
If the Breakaway Speed Valve is fully closed when operating, excess stresses will hit the boom structure eventually causing structural failure.

NOTE
The Bi-Fold Cusion Speed only functions for the last 50mm of cylinder stroke when the outer boom is folding into the bi-folded or transport postion.

⚠ **DANGER**
When purging air from bi-fold breakaway hydraulic circuits, ensure all persons are clear of loose fittings & detached hoses before engaging oil pressure.
Failure to follow these instructions may result in severe injury.

24-36m boom end with Three-Way Breakaway protection.

Close the ball valve on each lift cylinder (2) for safety.

B → 53mm

A — Lower Pivot Plates should be Parallel & Level

C

Hole used to lock Sprocket when performing maintenance

Hole in Sprocket aligns with hole in Pivot Plate when adjusted correctly

6 Three-Way Tip Breakaway

Each boom wing tip or end incorporates a three-way tip breakaway hinge which allows the wing tip to break-away:

- Forwards,
- Backwards and/or
- Upwards
  - minimising possible damage to the boom should an obstacle be hit.

It is important the breakaway hinge is properly adjusted for operating (just tightening the spring does not facilitate the breakaway function).

Upwards Tip Breakaway function.

To Set-Up the Three-Way Tip Breakaway:

1 Follow the 'Before Making Boom Adjustments' instruction.

2 Lower the boom to a good working height fully opened (working position).

3 Close the ball valves on the two hydraulic lift cylinders for safety purposes.

4 The lower pivot plates need to be in line with each other (A).

5 If the rose end is removed for any reason, anti-seize should be applied to the thread before it is screwed into the boom tip.

   The rose end should be screwed into the breakaway tip so that it measures 53 mm from the boom tip face plate to the centre of the rose end (B) or until correct vertical alignment is achieved.
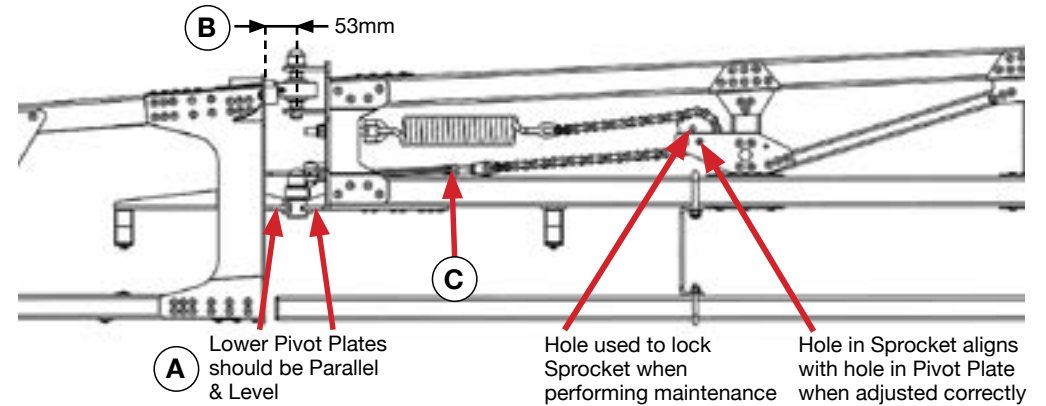
6 The small hole in the sprocket must align with the hole in the side of the pivot plate. This is adjusted by tightening or loosening the turnbuckle (C).

7 The spring tension must be adjusted so there is a 1-2 mm gap between the coils. This applies the ideal amount of resistance when breaking away.

   The spring tension can be adjusted by tightening or loosening the eye bolt.

The small hole in the sprocket must align with the hole in the side of the pivot plate.

To Adjust the Turnbuckle:

1 Use an assistant to pull the boom wing tip back until the large hole in the sprocket aligns with the hole in the pivot side plate, then place a pin (such as a screwdriver) through the holes.

2 Have the assistant return the wing tip only enough to remove spring tension.

   Do not let the wing tip fully return, otherwise the chain may jump off its sprocket and cause injury.

With the boom tip pulled back, place a pin through the holes to hold the sprocket to adjust the turnbuckle.

Adjust the turnbuckle to adjust spring tension as required.

Rearwards Tip Breakaway function.

Forwards Tip Breakaway function.

3   Make adjustments to turnbuckle. Pull tip back and remove the pin. Release the tip and check alignment of small hole in sprocket with pivot plate.

4   Repeat previous steps until the small hole in the sprocket and hole in the side plate align.

Maintenance

Several things are required to ensure that the breakaway will be functioning properly.

Two things are critical to the breakaway functioning correctly:

- The small hole in the sprocket must align with the hole in the side of the pivot plate, and
- The spring tension.

Check these on a regular basis and adjust as required.

The spring will stretch over time and will lose tension. Worn springs & chain should be replaced if there is insufficient tension on the spring to fully retract.

Lubricate the Three-Way Breakaway mechanism on a regular basis to ensure smooth & long lasting operation:

- **Oil** the sprocket pivot, chain and lower rose joints with a wet lubricant **every 8 hours**.
- **Grease** the upper rose joint **every 8 hours.**

7 Set & Test Boom Folding Automation

Boom Folding Automation is only available on 24m - 36m booms and only applies to folding-up booms for transport (not unfolding).

The 48m boom manually folds only.

Setting & Testing Automatic Boom folding involves:

- Firstly, manually operating the boom using the boom switches & joystick push buttons to calibrate the boom in the G-Hub Control system and
- Secondly, Test Folding the boom to check settings of automatic folding.

The Setting & Testing of the Automatic Boom folding function can be done using either the:

A   External Control Panel, or

B   Optional G-Hub 12" Touch Display.

⚠ **DANGER**

Adjusting the Turnbuckle is a 2 person job:

Firstly, one person is required to pull the wing tip back while the other person places the pin.

Secondly, one person must hold wing tip to just release the spring tension while the other person adjusts the turnbuckle.

Do not let the wing tip fully return fully while making adjustment, otherwise the chain may jump off its sprocket and cause injury.
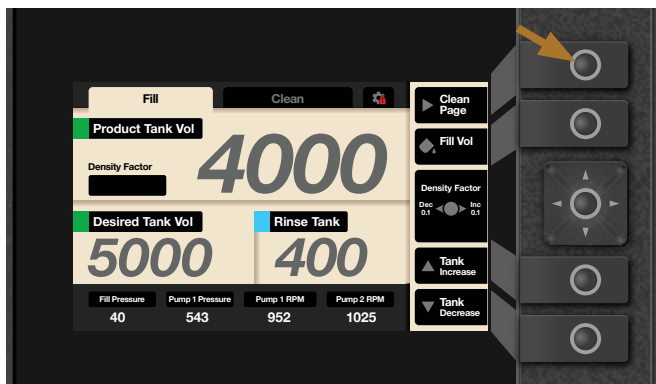
Press & Hold the 'Clean Page' push button on the External Control Panel.

Press the 'O' push button activate (Green) Auto Fold, then press the top 'O' push button to save the menu settings.

Press the up arrow to select the 'Lower Limit (mA)', then (with the boom lowered) press the 'O' push button to 'Set' the sensor reading.

A. To Set & Test Automatic Folding - External Controls:

1   Follow the 'Before Making Boom Adjustments' instruction.

2   With the tractor engine running, press & Hold the 'Clean Page' push button on the External Controller for 5 seconds to open the 'Settings Tab'.

3   Press the Down Arrow push button to move the green cursor down to select the 'Auto Fold Setup/Sensor Cal', then press the 'O' push button to display the screen.

4   With the cursor selecting 'Auto Fold', press the 'O' push button to toggle the dot to Green (On). The dot illuminates Green when enabled.

The 'Settings / Contents' Screen appears. Press the down arrow, then 'O' push button to display the 'Auto Fold Setup/Sensor Cal screen.
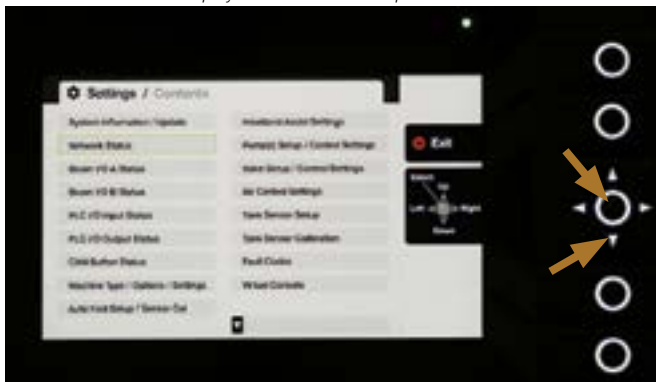
5   Press the Down Arrow push button to move the green cursor down to 'Fold out Position (mA)'

6   Fully open the boom using the 'Boom Up' & 'Boom Down' push buttons on the Joystick and the push buttons 'Fold S1 Out' & 'Fold S2 Out' on the Auxiliary Buttonpad.

7   When the boom is fully open, press the 'Set' push button of the 'Fold out Position (mA)' and the Sensor value appears in the 'Fold out Position (mA)' 'Value'display.

8   Press the Up Arrow push button to move the green cursor up to 'Lower Limit (mA)'

Press the down arrow to select the 'Fold Out Position (mA)', then press the 'O' push button to 'Set' the sensor reading.

9   Press & hold the 'Boom Down' push button on the Joystick to lower the boom to the lowest position, then press the 'Boom Up' push button to raise the boom slightly so that there is a minimum 40mm of boom cylinder rod showing on the paralift cylinders, then release the push button.

40mm of cylinder rod is the lowest recommended 'Lower Limit' position to be set allowing sufficient rod length for boom cushioning movement in spraying applications.

10   After the boom is lowered, press the 'Set' push button of the 'Lower Limit (mA)' and a new set value appears in the 'Lower Limit (mA)' display.

11   Press the Up Arrow push button to move the green cursor up to 'Boom Height Fold (mA)'.

NOTE
When set to zero, a Boom Calibration sensor is manually over-ridden by the operator.

Press the up arrow to select the 'Boom Height Fold (mA)', then (with the boom fully raised) press the 'O' push button to 'Set' the sensor reading.

12 Press & hold the Boom Lift push button on the Joystick to raise the boom until it reaches full height, then release the push button.

13 After the boom is fully raised, press the 'Set' touch button of the 'Boom Height Fold (mA)' and a new set value appears in the 'Boom Height Fold (mA)' display.

14 Use the 'Tilt Left Up & Tilt Right Up' push buttons on the Joystick to tilt the boom wings up for folding, then press & hold the 'Fold S1 In' push button on the Auxiliary Buttonpad to fold-in the boom until it is close enough to the boom rests to check the tilt alignment, then release the push button.

15 Check that each boom clears its boom rest:

- On the RHS & if adjustment is needed, press & hold the 'Tilt Right Up' push button on the joystick to make the adjustment to clear the RHS boom rest, then release the push button.

- On the LHS & if adjustment is needed, press & hold the 'Tilt Left Up' push button on the joystick to make the adjustment to clear the LHS boom rest, then release the push button.
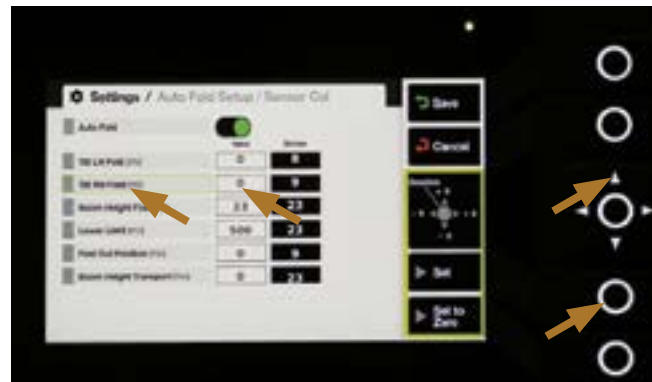
Press the up arrow to select the 'Tilt RH Fold (mV)' and (with the boom fully open) press the 'O' push button to 'Set' the sensor reading.

16 Once the boom wings are correctly adjusted for the boom rests, press & hold down the 'Fold S1 Out' push button on the Auxiliary Buttonpad to completely unfold the boom (until it aligns with the boom centre section), then release the push button.

17 Press the Up Arrow push button to move the green cursor up to 'Tilt RH Fold (mV)'

18 Press the 'Set' touch button of the 'Tilt RH (mV)' and the Set touch button of the 'Tilt LH (mV)' and new set values appear in the 'Tilt RH (mV)' display.

19 Press the Up Arrow push button to move the green cursor up to 'Tilt LH Fold (mV)', then press 'Set' touch button of the 'Tilt LH (mV)' and new set value appears in the 'Tilt LH (mV)' display.

NOTE

The Tilt Setting must be set while the boom is in its working position.
Do not attempt to set the tilt when the boom is in the folded position.

Press the up arrow to select the 'Tilt LH Fold (mV)' and (with the boom fully open) press the 'O' push button to 'Set' the sensor reading.

20 Press & hold down the 'Fold S1 In' push button on the Auxiliary Buttonpad to completely to fold-in the boom until both boom ends fully closed over the boom rests, then release the push button.

21 Press the 'Tilt Left Down' & Tilt Right Down' push buttons on the Joystick to tilt down the wings onto the boom rests.

22 Press the Down Arrow push button to move the green cursor up to 'Boom Height Transport (mA)'

23 Press the 'Set' touch button for the 'Boom Height Transport (mA' and a new set value appears in the 'Boom Height Transport (mA' display.

Press the down arrow to select the 'Boom Height Transport (mA)' and (with the boom fully folded) press the 'O' push button to 'Set' the sensor reading.

Service – **Boom Settings**

Press the 'Save' 'O' push button to save the boom settings into the G-Hub.

Cushion Adjustment Valve.
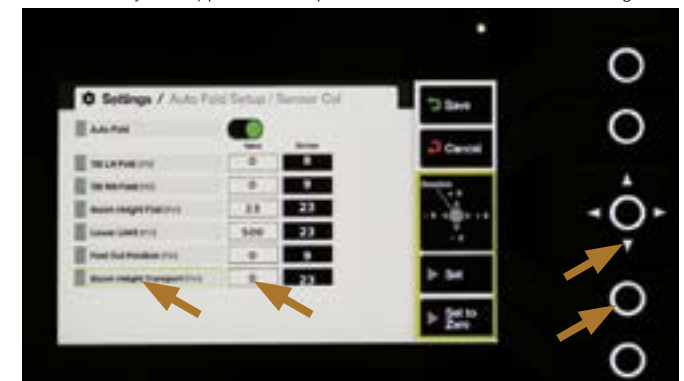
24 Press the 'Save' 'O' push button to save the boom settings into the G-Hub.

If you don't press the 'Save' push button, the boom calibration settings will be lost.

The boom calibration procedure for the Boom Fold Calibration is now complete.

25 Next check the Automatic Folding of the boom to ensure it operates correctly. Refer to the next section, 'To Test Fold G-Hub Automatic Folding' for instructions.

If it is not operating correctly, seek qualified help to diagnose the problem, then re-calibrate.

26 On successful completion of automatic folding for transport, press the 'Fold S1 In' push button (on the Auxiliary Buttonpad), momentarily, to tighten the booms on the Boom Rests.

To Test Fold the G-Hub Automatic Folding

Automatic boom folding of 24m - 36m booms only applies to folding-up booms for transport (not unfolding). The 48m boom manually folds only.

1 Follow the 'Before You Begin' instructions.
2 Press the 'Fold S1 In' push button on the Auxiliary Buttonpad. The boom will fully rise, tilt & fold-in over the boom rests.
3 When fully folded-in, press the 'Tilt Down' (LH & RH) push buttons on the Joystick to lower the boom onto the boom rests.
4 Press the 'Fold S1 In' push button (on the Auxiliary Buttonpad), momentarily, to tighten the booms on the Boom Rests.

If booms do not properly align with the boom rest when automatically folding, recalibrate the G-Hub boom settings.

If the final folding of the outer booms at the boom rests it too fast or too slow, adjust the Cushion Adjustment Valve on the Bi-fold cylinder to slow or increase the movement of the boom when approaching the boom rests.

To Adjust the Bi-Fold Cushion Speed:

1 Follow the 'Before You Begin' instructions.
2 Loosen the locknut of the Cushion Adjustment Valve.
3 Use an Allen key to wind the valve:
   - Inwards (clockwise) to slow the boom bi-fold speed.
   - Outwards (anti-clockwise) to speed-up the boom bi-fold speed.
4 Tighten the locknut on the Adjustment Valve.

⚠ **CAUTION**

When folding the boom, either manually or automatically, ensure the sprayer chassis is laterally level.

If the chassis is sloping laterally, sprayer stability and boom folding can be compromised.

NOTE

The Bi-Fold Cusion Speed only functions for the last 50mm of cylinder stroke when the outer boom is folding into the bi-folded or transport postion.
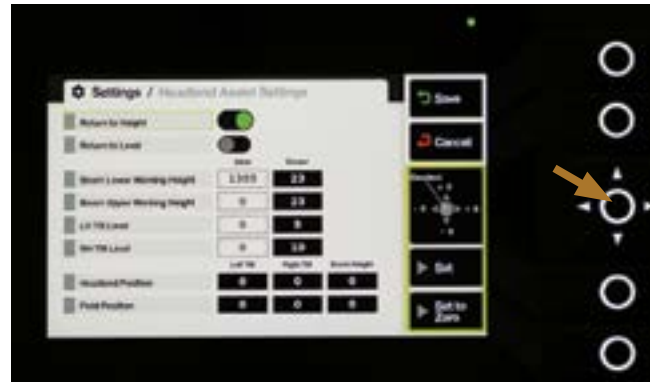

Press the 'O' push button to open the 'Headland Assist Settings' screen.

Press the 'Headland Assist' 'O' push button to activate the function.

Press & hold the Beacon (fn) push button on the Auxiliary Buttonpad.

8 Headland Assist

The External G-Hub provides Headland Assist Settings used to lift the boom to a predetermined height when in Headland Assist mode, then return to required spray height when back in Field (Spray) mode.

The Low & High Set Points set the boom height above the target when not using XRT options.

To Select the 'Headland Assist':

Press the 'Headland Assist' touch button to select or deselect the function.

The touch button displays Green when selected & Grey when deselected.

To Select the 'Return to Level':

Press the 'Return to Level' touch button to select or deselect the function.

The touch button displays Green when selected & Grey when deselected.

Setting 'Headland Assist' Positions

Boom tilt for the Headland Assist position can be set to any height depending on the tilt clearance desired.

To Set the 'Headland' Position:

1 Adjust the boom centre section to the desired headland height.

2 Position the LH & RH boom tilt to the desired headland height.

3 Press & hold the Beacon (fn) push button, then press the 'Tilt Right Up' push button to set headland position.

Select, then press the 'Return to Level' 'O' push button to activate the function.

NOTE

Select the Headland Assist to activate the Headland Assist function.

However, when a Prairie Pro has the optional XRT installed, deselect to de-activate the Headland Assist function.

The 'Tilt Right Down' and 'Boom Up/Boom Down' push buttons on the Joystick control.

The 'Headland Assist' & 'Return to Level' postion sensor values will be displayed on the 'Headland Assist' settings screen after a power cycle (Off & On).

To Set the 'Field' Position:

1   Adjust the boom centre section to the desired working height.

2   Position the LH & RH boom tilt to the desired working height.

3   Press & hold the Beacon (fn) push button, then press the 'Tilt Right Down' push button to set the 'Field' working position.

Setting 'Return to Level' Positions

To Set the 'Return to Level' Position:

1   Position the LH & RH boom tilt to the desired level alignment.

2   Press & hold the Beacon (fn) push button, then press the 'Boom Up' or 'Boom Down' push button to set the level position.

The Headland Assist set up is now complete.

After the 'Headland Assist' & 'Return to Level' positions have been set, the sensor values will be displayed on the 'Headland Assist' settings screen after a power cycle (Off & On).

Sensor values range from 4000 to 20000.

NOTE

The values & sensor readings shown on the 'Headland Assist Settings' screen are not used to set the Headland Assist function.

The screen information is used for diagnostic functions when required.

On level ground, engage the tractor park brake, chock wheels & have the boom in its working position before making adjustments.

Press the password space touch button, then press the touch buttons on the numerical keypad and Press enter.


Enable the Auto Fold and press the 'Set' touch button of the 'Fold out Position (mV)' to set the Fold Out position value.

B. To Set & Test Automatic Folding - 12" G-Hub Display:

1   Follow the 'Before Making Boom Adjustments' instruction.

2   With the tractor engine running, press the 'Settings' touch button, then the Machine tab touch button (on the G-Hub Display screen) to access the Boom Automation tab screen.

3   Press the 'Boom Automation' tab to display the Boom Automation screen

4   Press the 'Unlock to change' touch button at the bottom RHS of the panel and a password request appears.

   The Machine Settings screen is locked for protection from uninformed or accidental alteration.

Press the 'Boom Automation' tab to display the Boom Automation screen.

5   Press the password space and a numerical keypad appears.

6   Press the numerical touch buttons to enter the password '1978', and press the 'Enter' touch button. The screen returns to the 'Password' with '****' displayed.

7   Press the 'OK' touch button and the screen returns to the Machine Screen with the 'Unlocked to change' symbol unlocked and coloured Green.

Press the 'OK' touch button to unlock the screen for changes to be made.

8   Press the 'Auto Fold Enable' touch button to enable the Auto Fold Function. The button illuminates Green when enabled.

9   With the boom fully open, press the 'Set' touch button of the 'Fold out Position (mA)' and a new set value appears in the 'Fold out Position (mA)' display.

10   Press & hold the 'Boom Down' push button on the Joystick to lower the boom to the lowest position, then press the 'Boom Up' push button to raise the boom slightly so that there is a minimum 40mm of boom cylinder rod showing on the paralift cylinders, then release the push button.

   40mm of cylinder rod is the lowest recommended 'Lower Limit' position to be set allowing sufficient rod length for boom cushioning movement in spraying applications.

> **NOTE**
>
> When set to zero, a Boom Calibration sensor is manually over-ridden by the operator.
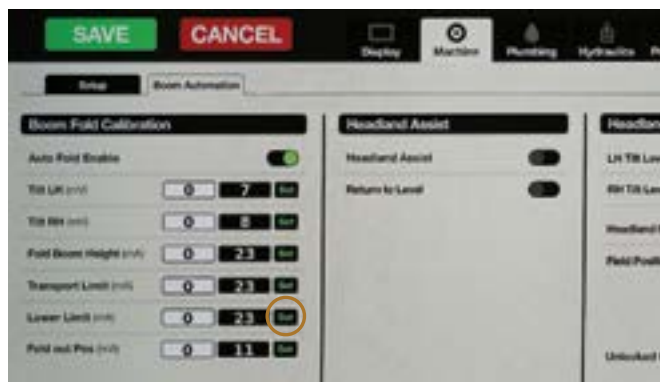
Press the 'Set' touch button of the 'Lower Limit (mA)' to set the Lower LImit position value.

11 Press the 'Set' touch button of the 'Lower Limit (mA)' and a new set value appears in the 'Lower Limit (mA)' display.

12 Press & hold the Boom Lift push button on the Joystick to raise the boom until it reaches full height, then release the push button.

13 Press the 'Set' touch button of the 'Fold Boom Height (mA)' and a new set value appears in the 'Fold Boom height (mA)' display.

Press the 'Set' touch button of the 'Fold Boom Height (mA)' to set the Boom Height position value.

Press & hold the 'Fold S1 In' push button to fold the boom wings in close to the Boom Rests, then release the push button.

15 Press & hold the 'Fold S1 In' push button on the Auxiliary Buttonpad to fold-in the boom until it is close enough to the boom rests to check the tilt alignment, then release the push button.

16 Check that each boom clears its boom rest:

- On the RHS & if adjustment is needed, press & hold the 'Tilt Right Up' push button on the joystick to make the adjustment to clear the RHS boom rest, then release the push button.

- On the LHS & if adjustment is needed, press & hold the 'Tilt Left Up' push button on the joystick to make the adjustment to clear the LHS boom rest, then release the push button.

Press the 'Set' touch buttons of the 'Tilt RH (mA)' & 'Tilt LH (mA)' to set the Tilt position values.

17 Once the boom wings are correctly adjusted for the boom rests, press & hold down the 'Fold S1 Out' push button on the Auxiliary Buttonpad to completely unfold the boom (until it aligns with the boom centre section), then release the push button.

18 Press the 'Set' touch button of the 'Tilt RH (mV)' and the Set touch button of the 'Tilt LH (mV)' and new set values appear in the 'Tilt RH (mV)' and 'Tilt LH (mV)' displays.

19 Press & hold down the 'Fold S1 In' push button on the Auxiliary Buttonpad to completely to fold-in the boom until both boom ends fully closed over the boom rests, then release the push button.

20 Press the 'Tilt Left Down' & Tilt Right Down' push buttons on the Joystick to tilt down the wings onto the boom rests.

NOTE

The Tilt Setting must be set while the boom is in its working position.
Do not attempt to set the tilt when the boom is in the folded position.
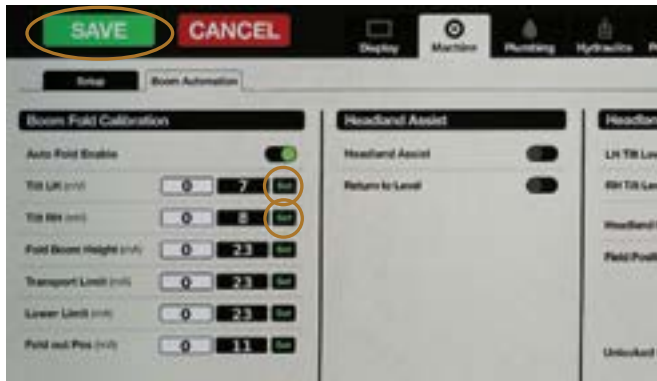
Press the 'Set' touch button of the 'Transport Limit (mA)' to set the Tilt position value. Be sure to press the 'SAVE' touch button to save the calibration settings.

21 Press the 'Set' touch button of the 'Transport Limit (mA)' and a new set value appears in the 'Transport Limit (mA)' display.

22 Press the SAVE touch button on the left hand side of the screen to save the boom calibration settings into the G-Hub.

If you don't press SAVE, the boom calibration settings will be lost.

The boom calibration procedure for the Boom Fold Calibration is now complete.

On successful completion of automatic folding for transport, press the 'Fold S1 In' push button, momentarily, to tighten the boom wings on the Boom Rests.

23 Next check the Automatic Folding of the boom to ensure it operates correctly. Refer to the next section, 'To Test Fold G-Hub Automatic Folding' for instructions.

If it is not operating correctly, seek qualified help to diagnose the problem, then re-calibrate.

24 On successful completion of automatic folding for transport, press the 'Fold S1 In' push button (on the Auxiliary Buttonpad), momentarily, to tighten the booms on the Boom Rests.

When fully folded, press the 'Boom Down' push button on the Joystick to lower the boom until it stops at its preset height.

To Test Fold the G-Hub Automatic Folding

Automatic boom folding of 24m - 36m booms only applies to folding-up booms for transport (not unfolding). The 48m boom manually folds only.

1 Follow the 'Before You Begin' instructions.

2 Press & hold the 'Fold S1 In' push button on the Auxiliary Buttonpad.The boom will fully rise, tilt & fold-in over the boom rests.

3 When fully folded-in, release the push button, then press the 'Tilt Down' (LH & RH) push buttons on the Joystick to lower the boom onto the boom rests.

The RHS for the boom in final boom rest position shown below.

The LHS for the boom in final boom rest position shown below.

Press the 'Fold S1 In' push button, momentarily, to tighten the booms on the Boom Rests.

4   Press the 'Fold S1 In' push button (on the Auxiliary Buttonpad), momentarily, to tighten the booms on the Boom Rests.

If booms do not properly align with the boom rest when automatically folding, recalibrate the G-Hub boom settings.

If the final folding of the outer booms at the boom rests it too fast or too slow, adjust the Cushion Adjustment Valve on the Bi-fold cylinder to slow or increase the movement of the boom when approaching the boom rests.

Cushion Adjustment Valve.

To Adjust the Bi-Fold Cushion Speed:

1   Follow the 'Before You Begin' instructions.

2   Loosen the locknut of the Cushion Adjustment Valve.

3   Use an Allen key to wind the valve:

- Inwards (clockwise) to slow the boom bi-fold speed.

- Outwards (anti-clockwise) to speed-up the boom bi-fold speed.

4   Tighten the locknut on the Adjustment Valve.

Press the 'Headland Assist' & 'Return to Level' touch buttons to select or deselect the functions as required.

8 Headland Assist

The G-Hub Display provides Headland Assist Settings used to lift the boom to a predetermined height when in Headland Assist mode, then return to required spray height when back in Field (Spray) mode.

The Low & High Set Points set the boom height above the target when not using XRT options.

To Select the 'Headland Assist':

Press the 'Headland Assist' touch button to select or deselect the function.

The touch button displays Green when selected & Grey when deselected.

To Select the 'Return to Level':

Press the 'Return to Level' touch button to select or deselect the function.

The touch button displays Green when selected & Grey when deselected.

NOTE

Select the Headland Assist to activate the Headland Assist function.

However, when a Prairie Pro has the optional XRT installed, deselect to de-activate the Headland Assist function.

Press & hold the Beacon (fn) push button on the Auxiliary Buttonpad.

The 'Tilt Right Up' and 'Boom Up'/'Boom Down' push buttons on the Joystick control.

The 'Headland Assist' & 'Return to Level' postion sensor values will be displayed on the 'Headland Assist' settings screen after a power cycle (Off & On).

Setting 'Headland Assist' Positions

Boom tilt for the Headland Assist position can be set to any height depending on the tilt clearance desired.

To Set the 'Headland' Position:

1   Adjust the boom centre section to the desired headland height.

2   Position the LH & RH boom tilt to the desired headland height.

3   Press & hold the Beacon (fn) push button, then press the 'Tilt Right Up' push button to set headland position.

To Set the 'Field' Position:

1   Adjust the boom centre section to the desired working height.

2   Position the LH & RH boom tilt to the desired working height.

3   Press & hold the Beacon (fn) push button, then press the 'Tilt Right Up' push button to set the 'Field' working position.

Setting 'Return to Level' Positions

To Set the 'Return to Level' Position:

1   Position the LH & RH boom tilt to the desired level alignment.

2   Press & hold the Beacon (fn) push button, then press the 'Boom Up' or 'Boom Down' push button to set the level position.

The Headland Assist set up is now complete.

After the 'Headland Assist' & 'Return to Level' positions have been set, the sensor values will be displayed on the 'Headland Assist' settings screen after a power cycle (Off & On).

Sensor values range from 4000 to 20000.

NOTE

The Low Set Point & High Set Point are only required for Prairie Pro Sprayers not fitted with XRT options.

Height is measured from the target to the tip of the nozzle.

⚠CAUTION

When folding the boom, either manually or automatically, ensure the sprayer chassis is laterally level.

If the chassis is sloping laterally, sprayer stability and boom folding can be compromised.

Boom Centre Levelling chains keep the boom from tilting out of level when the boom is being folded.

Make adjustment to the Boom Centre Level chain adjusters as required.

9 Boom Centre Levelling

The Boom Centre Levelling system keeps the boom in the same plane as the machine so that the boom folds evenly.

If one side is heavier than the other, the boom will tend to hang lower on the heavy side, therefore, both sides need to be levelled to maintain boom ends at the same height.

If the centre and the booms tilt excessively during folding, the centre level chains may need to be adjusted. With time & use, chains may stretch and will require adjustment.

Chain tension can be adjusted by tightening or loosening the nuts on the end of the chain bolts on either side.

To Adjust Chain Tension:

1   Follow the 'Before You Begin Making Boom Adjustments' instruction.
2   Lower the boom to a suitable working level.
3   Loosen the upper nut at each end of the chain (each side).
4   Tighten the lower nuts on each end of the chain to set the desired chain tension.
5   Tighten the nut firmly against the bracket to hold its position.
6   Now check the boom folds correctly.

    Get someone to stand behind the sprayer (out of the booms reach) and watch which side the boom is tilting excessively down when folding.
7   If necessary, unfold the boom and re-adjust the chain tension to correct any tilt problems.
8   Repeat steps 2 - 5 until the boom is level when folding.

Regularly do the routine checks on the Prairie Pro while stationary.

Check the air compressor filter.

Check air, hydraulic & spray operating pressures.

Air tank drain valve.

Pre-Operation Checklist

Stationary Checks

The following should be routinely done while the Prairie Pro is stationary:

- Check all tyre pressures for the recommended pressures in the manual
- Check all wheel nut torque (320 ft lb)
- Check mudguard mountings (where fitted)
- Inspect axles for fractures or cracks
- Check axle retaining hardware
- Check all pump mounting bolt tensions
- Check tension of tank straps
- Check all fasteners are tight

- Check & tighten hose clamps on main hose from pump to manifold
- Check pump (diaphragm) oil levels
- Clean suction filters
- Clean pressure filters
- Check all filter bowl nuts and O-rings
- Check air compressor oil level
- Clean the air compressor air filter
- Check boom alignment.

Check all light functions on the Prairie Pro.

Running Checks

The following should be routinely done while the Prairie Pro is in operation:

- Check all light functions
- Check air operating pressures
- Check hydraulic operating pressures
- Check spray operating pressures
- Check all electrical functions
- Check all warning sound alarms function correctly
- Check boom functions operate
- Check all hoses for leaks and/or excessive movement
- Check air bag axle ride height
- Check air bag system for air leaks
- Inspect air tank reservoir & drain any liquid

Maintenance

Correct & timely service & maintenance of the Prairie Pro are among the most important elements of safe, efficient & accurate operation.

Servicing and maintenance should be carried out according to the schedules in this chapter 'Lubrication & Maintenance'.

Inspect rear axles.

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During the first 8 hours of operation, check wheel (shown above) & other retaining nuts frequently - until fully imbedded.

First 8 Hours Of Operation

During the first 8 hours of operation, it is important to closely check the following:

1 Torque Settings

- Check the torque on retaining nuts frequently
- Wheel nuts should be checked to ensure 320 ft/lb is maintained.

Check all pump oil levels.

2 Lubrication Fluids

- Ensure grease points are lubricated effectively
- Inspect for leaks in the hydraulic system
- Check the hydraulic oil filter
- Check pump oil level
- Check compressor oil level.

Check the tank restraining straps - front & rear (shown above).

3 Tank Retaining Straps

- Check tank retaining strap bolts to ensure they are not loose. Tighten if loose.

Check the pump & other mounting bolts.

4 Pump Mounting Bolts

- Check all pump mounting & other mounting bolts to ensure they are not loose.

5 Lights

- Check each light around the sprayer for correct function.

Check the hydraulic oil filter.

NOTE

Goldacres recommends a multi-purpose grease should be used for all grease lubrication. Make sure all open-end bearings are lubricated their full length by forcing lubricant into them until it begins to appear at the sides.

Protect all surfaces with corrosion inhibitor G15.

⚠ **CAUTION**

Before doing maintenance on the Prairie Pro, read this manual & be aware of the encumbent risk of injury with all sprayer maintenance. Refer to the 'Crush, Pinch, Burn, Injection, Hose Whip Striking Hazards' in Chapter 2 'Safety'.

Check the Prairie Pro lights.

8 Service – **Lubrication & Maintenance**

Maintenance Schedule - First 50 Hours

Chassis	50 Hours
Tow Eye Bolts	Check
Pull Mounting bolts	Check
Tank Retaining Straps	Check
3D Breakaway adjusment	Check
Boom lower limit	Check

Wheels & Axles	50 Hours
Tyre Pressures	Check
Wheel Nuts	Check
Axle Retaining Bolts	Check

Pumps	50 Hours
Pump 1 - Zeta 260	
Pump 1 - Oil	Check
Pump 1 - Speed RPM	Check
Pump 2 - Zeta 260 (Agitator Pump)	
Pump 2 - Oil	Check
Pump 2 - Speed RPM	Check
Pump 1 - Centrifugal Arag MSP400	
Pump 1 - Speed RPM	Check
Pump 2 - Centrifugal Arag MSP400 (Agitator	
Pump 2 - Speed RPM	Check

Pneumatic System	50 Hours
Pneumatic Reservoir	Drain
Compressor Oil	Check
Compressor Air Filter	Clean
Airbag Ride Height	Check
Pneumatic Plumbing Leaks	Inspect
Compressor cut out pressure	Check

Hydraulics	50 Hours
Hydraulic Hose Leaks	Inspect
Hydraulic Cylinders Leaks	Inspect
Hydraulic Manifold Leaks	Inspect
Hydraulic Filter	Change

Booms	50 Hours
Boom Alignment	Check
Boom Level	Check
Boom Centre Yaw Alignment	Check
Hydraulic Yaw Pressure	Check
Hydraulic Breakaway Pressure	Check
Boom Pivot Adjuster Lock Nuts	Check
Breakaway Hinge Mechanism	Lubricate
Boom Plumbing	Inspect
3D Breakaway adjusment	Check
Boom lower limit	Check

Ongoing Maintenance Schedule

Chassis	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1 Year
Pull						
Tow Eye Bolts	x	x	Inspect	Inspect	Inspect	Inspect
Tow Eye Wear	x	x	Inspect	Inspect	Inspect	Inspect
Pull Mounting bolts	x	x	Inspect	Inspect	Inspect	Inspect
Jack (Hydraulic & Mechanical)	x	x	Inspect	Inspect	Inspect	Inspect
Chassis						
Handrail Bolts	x	x	Inspect	Inspect	Inspect	Inspect
Ladders Bolts	x	x	Inspect	Inspect	Inspect	Inspect
Boom Support Frame Bolts	x	x	Inspect	Inspect	Inspect	Inspect
Boom Rest Wear Strips	x	x	Inspect	Inspect	Inspect	Inspect
Tank Retaining Straps	x	x	Inspect	Inspect	Inspect	Inspect
Paralift Arms	x	x	Inspect	Inspect	Inspect	Inspect

Wheels & Axles	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	2000 Hr 1 Year
Tyre Pressures	x	Inspect	Inspect	Inspect	Inspect	Inspect
Wheel Nuts	x	Inspect	Inspect	Inspect	Inspect	Inspect
Wheel Bearings	x	x	x	x	x	Inspect
Axle Retaining Bolts	x	x	Inspect	Inspect	Inspect	Inspect

Ongoing Maintenance Schedule cont.

Pumps	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1 Year
Pump 1 - Zeta 260						
Pump 1 - Oil	Inspect	Inspect	Replace	Replace	Replace	Replace
Pump 1 - Diaphragms	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 1 - Check Valves	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 1 - Seals	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 1 - Drive Motor Shaft	x	x	Lubricate	Lubricate	Lubricate	Lubricate
Pump 2 - Zeta 260 (Agitator Pump)						
Pump 2 - Oil	Inspect	Inspect	Replace	Replace	Replace	Replace
Pump 2 - Diaphragms	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 2 - Check Valves	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 2 - Seals	Inspect	Inspect	Inspect	Inspect	Inspect	Replace
Pump 2 - Drive Motor Shaft	x	x	Lubricate	Lubricate	Lubricate	Lubricate
Pump 1 - Centrifugal Arag MSP400						
Pump 1 - Impellors	x	x	x	x	x	Replace
Pump 1 - Seals	x	x	x	x	x	Replace
Pump 1 - Drive Motor Shaft	x	x	Lubricate	Lubricate	Lubricate	Lubricate
Pump 2 - Centrifugal Arag MSP400 (Agitator Pump)						
Pump 2 - Impellors	x	x	x	x	x	Replace
Pump 2 - Seals	x	x	x	x	x	Replace
Pump 1 - Drive Motor Shaft	x	x	Lubricate	Lubricate	Lubricate	Lubricate

Ongoing Maintenance Schedule cont.

Pumps	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	2000 Hr 1 Year
Pump Chemical Transfer Graco						
Diaphragms	x	x	x	x	x	Replace
Pneumatic Valve	x	x	x	x	x	Replace
Pump 3" Fill						
Motor Drive Shaft	x	x	Lubricate	Lubricate	Lubricate	Lubricate

Pneumatic System	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1 Year
Pneumatic Reservoir	Drain	Drain	Drain	Drain	Drain	Drain
Compressor Oil	Inspect	Inspect	Replace	Replace	Replace	Replace
Compressor Air Filter	Inspect	Clean	Replace	Replace	Replace	Replace
Compressor Pistons & Rings	x	x	x	x	x	Replace 5000 Hr
Airbag Ride Height	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Ride Height Valves	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Pneumatic Plumbing Leaks	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect

Ongoing Maintenance Schedule cont.

Wheels & Axles	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1Year
Tyre Pressures	x	Inspect	Inspect	Inspect	Inspect	Inspect
Wheel Nuts	x	Inspect	Inspect	Inspect	Inspect	Inspect
Wheel Bearings	x	x	x	x	x	Inspect
Axle Retaining Bolts	x	x	Inspect	Inspect	Inspect	Inspect

Hydraulics	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1 Year
Hydraulic Pressure Filter	x	x	Replace	Replace	Replace	Replace
Hydraulic Hose Leaks	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Hydraulic Cylinders Leaks	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Hydraulic Manifold Leaks	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect

Ongoing Maintenance Schedule cont.

Booms	10 Hr Daily	50 Hr Weekly	250 Hr 3 Month	500 Hr 6 Month	750 Hr 9 Month	1000 Hr 1 Year
Boom Alignment	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Level	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Centre Yaw Alignment	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Hydraulic Yaw Pressure	Inspect	Inspect	Inspect	Inspect	Inspect	Inspect
Hydraulic Breakaway Pressure	x	x	Inspect	Inspect	Inspect	Inspect
Fold Cylinder Rose Ends	x	Inspect	Inspect	Inspect	Inspect	Inspect
Fold Cylinder Adjuster Threads	x	Inspect	Inspect	Inspect	Inspect	Inspect
Tilt Cylinder Bearing & Knuckle	x	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Pivot Bearings - Bi Fold	x	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Pivot Bearings - Tri Fold	x	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Pivot Adjuster Lock Nuts	x	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Pivot Rubber Stops	x	Inspect	Inspect	Inspect	Inspect	Inspect
Breakaway Hinge Mechanism	Lubricate	Lubricate	Lubricate	Lubricate	Lubricate	Lubricate
Boom Rest Rollers	x	Inspect	Inspect	Inspect	Inspect	Inspect
Boom Plumbing	x	Inspect	Inspect	Inspect	Inspect	Inspect
3D Breakaway adjustment		Inspect	Inspect	Inspect	Inspect	Inspect
Boom lower limit		Inspect	Inspect	Inspect	Inspect	Inspect

Service Parts

Filters

Part Number	Description	Quantity Required
GA3501114	Filter Element, Hydraulic Pressure Filter, Pro S2	1
GA5049460	Filter Element, Air Compressor Intake	1
GA2000347	Filter Element, Pressure Filter, Yellow, 80 Mesh, Arag	1
GA2000561	Filter screen 32 mesh, 3" Suction, 319 Arag	1

Lubricants

Product:	Part Number	Description	Volume Required
Pump, Zeta 260	GA5012457	Oil, SAE 15W40 - 20L Drum	2.68L
Compressor	GA5074230	Oil, Compressor, ACO2000, 1L	1.5L
Grease Nipples	GA5078604	Grease, General Purpose, SKF, 400g	1
Arag Pump Spline	GA5074395	Grease, Kluber paste, 46 MR 401, 750gm	1

Further Lubrication Recommendations:

- Ensure that lubricants are stored in a place where the lubricants are protected from contamination (such as dirt and moisture). Always use clean containers when handling lubricants

- Do not mix lubricants. Lubrication may be adversely effected by differences in chemical composition

- Seek advice from your petroleum dealer on the correct use of lubricants & additives

- At time of manufacture, G15 is applied to all fasteners (bolts, washers & nuts) and zinc plated components

- Onwards, G15 Anti-Corrosion Spray should be applied to the sprayer pre-season & post-season

- As a guide, application to following areas is recommended, but not limited, to these areas - pump mounting bolts, boom rests, left hand pod, mudguard mounting bolts, induction hopper bolts & latches, hydraulic manifold, boom hinge bolts, airbag hose fittings & hydraulic hose crimp fittings, etc.

Pressure relief valve located on the diaphragm pump.

Two centrifugal pumps fitted to a Prairie Pro.

Diaphragm pump.

Service Instructions

Maintenance & service instructions follow.

Pressure Relief Valve

The Pressure Relief Valve provides relief when the pressure exceeds a pre-determined value. The pressure is preset to 110 psi and, in most conditions, should not be altered.

Turning the stem clockwise will increase the pressure relief setting. Altering the adjusting stem will affect the setting at which the relief valve will come into operation.

To Check or Alter Pressure Setting:

1   Stop the pump, remove the pin & turn relief valve counter clockwise.

2   Turn the solenoids Off, then close all control manifold ball valves so that all flow passes through the relief valve.

3   Run the pump at maximum operating speed (540 rpm) and slowly turn the relief valve clockwise until the pressure is achieved.

4   Refit the pin so the setting is maintained.

   If the relief setting is too low, the miniminal pressure setting is maintained and excess flow bypasses back to the product tank.

Spray Pump - Centrifugal

250 HOURS
- Remove hydraulic drive motor
- Clean out & lubricate drive splines
- Use GA5074395 (Kluberpaste 46 MR 401) or equivalent.

Spray Pump - Diaphragm

8 HOURS
- Check pump oil level & condition.

50 HOURS
- Pump oil should be changed after the first of 50 hours of operation
- Pump oil level should be between the two level markers on the oil reservoir
- If the oil level continually gets low or is turning milky, there is possibly a split in a diaphragm. The oil will need to be drained and all the diaphragms replaced. Use SAE 15W40 oil

250 HOURS
- Change Pump oil. The pump oil should be changed every 250 hours
- Use SAE 15W40 oil

   The oil drain plug is located between the two pump mounts on the underside.

Grease the wheel hubs.
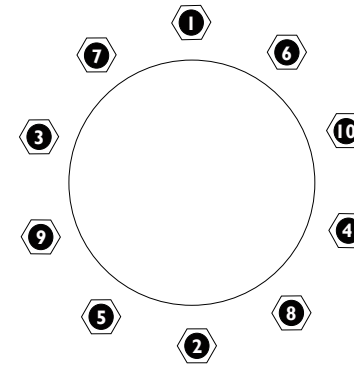
Follow this tightening sequence to ensure even wheel nut torque distribution (320 ft/lb).
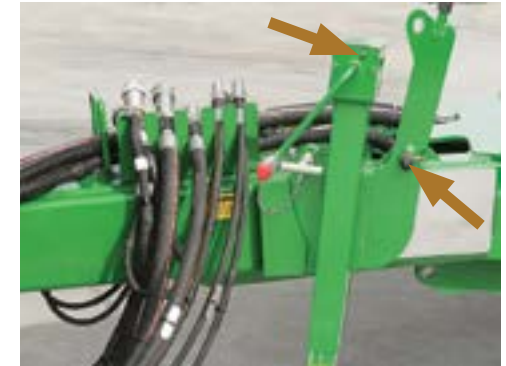
Grease the manual hitch jack.

SEASONALLY

- Check pump air accumulator (where fitted). The air pressure in the air accumulator must be maintained to the correct pressure (approximately half of the spray pressure).

- If the accumulator constantly loses pressure, the valve or diaphragm may need replacing.

- To recharge the accumulator, charge it to approximately half of the spray pressure then run the pump at normal operating rpm.

- Looking at the pressure gauge, release some pressure until there is as little pulsation as possible. This will ensure a very even & constant pressure delivery.

Chassis, Wheels & Brakes

8 HOURS

- Check tyre pressure. It is very important to maintain correct tyre pressures to optimize sprayer stability and the load rating.

  To determine the required tyre pressure, refer to the tyre specification chart in the general information section of the operator manual.

- If the tyre has a constant leak, the valve may be loose or need replacing, or the tyre may have a puncher.

- Wheel nuts must be checked every 8 hours and re-torqued to 320 ft/lb if required.

  Follow the sequence *(shown above)* to ensure an even torque distribution.

25 HOURS

- Grease the wheel bearings.

- Apply grease to the ADR axle bearing via a grease nipple on front of the hub

- Refer to lubricants in this chapter.

250 HOURS

- Check wheel bearings for sideways movement

- To check wheel bearings for free play, jack up that side of the sprayer until the wheel can spin freely

  Rock the wheel from side to side. If the is any movement the bearings will need to be tightened or replaced.

3 MONTHS

- Grease the manual jack - two grease nipples (one on the winding mechanism & the other on the jack swing pivot). Grease every three months to ensure easy operation

- Check bolts on axle bearing cap bolts. Checked & tightened if required

  If dust enters axle bearings it it will increase wear & contribute to bearing failure

- If the dust cap gasket is damaged or not sealing properly, it must be replaced.

Check braked axles.

Check Brake System & Service Braked Axles

- The brakes should be tested before using for the first time and after the first laden journey
- Check the actuator and return spring mountings
- Check the actuator stroke and return travel. Check it operates and releases correctly
- Tighten screws & nuts (covers, fulcrum, etc)
- Check the cotter pins, pins, circlips, etc
- Check for hydraulic fluid & air leaks

250 HOURS

- Check brake clearance & wear. Check & test the brakes before intensive use and thereafter, every 3 months
- Visually check for brake wear & clearance between brake linings and drum (through the inspection hole in the dust cover at the rear of the drum).

  It is probable that linings are worn when the actuator travel has significantly increased
- Check thickness of brake shoe linings (minimum allowable 5 mm)
- Brake shoes should be replaced as soon as the minimum lining thickness is reached
- Check brakes are clean.

  Clean if necessary. Do not clean with compressed air becasue it contains small amounts of oil
- Lightly lubricate brake cam shaft bearings with grease. Avoid grease deposits forming on brake linings & drums.

Fixed Lever Brake Adjustment

- Take up actuator slack when its stroke reaches about two thirds of the maximum travel
- To take up slack, turn the lever by one or more splines. Ensure brakes are not touching when released (to avoid brake overheating & excessive wear)
- Never change the linkage position of the actuator on the lever without authorization from the vehicle manufacturer.

  The vehicle has been tested with the actuator at this position (the brake operating levers have several holes, always use the original hole)
- For braking systems with a yoke, the yoke must remain parallel with the axle especially when the brakes are fully applied.

  This means that the stroke of the levers on the brakes at each side must be identical.

Adjustable Lever Brake Adjustment

- Take up actuator slack when its stroke reaches about two thirds of the maximum travel
- To take up slack, turn the adjustment screw on the lever adjusting the relative position of cam & lever. The direction of screw turning depends on its configuration.

  Push the lever to turn in the direction required to take up slack

  Ensure brakes are not touching when released (to avoid brake overheating & excessive wear)
- Never change the linkage position of the actuator on the lever without authorization from the vehicle manufacturer

  The vehicle has been tested with the actuator at this position (the brake operating levers have several holes, always use the original hole).

Recommended wheel nut torque tension is 320 ft/lb.

Chock opposite wheel of the sprayer before raising the other wheel off the ground.

Wheel Bearings
SEASONALLY
- Clean wheel bearings, inspect, re-grease & re-set the bearing pre-load
- Replace axle bearings if worn or damaged.

The following procedure should be followed:

1 Remove wheel as per instructions.
2 Remove bolts from bearing dust cap & clean out as much grease as possible.
3 Remove the split pin, castle nut & washer.
4 Slide the outer bearing & hub off the axle (a bearing puller may be required).
5 Remove the inner bearing.
6 Remove the seal. if it is to be replaced during this service.
7 Clean all existing grease from the axle & hub, then wash in solvent.
8 Insert a new rear seal.
9 Pack the two new bearings with grease prior to fitting on the axle.

Ensure grease has penetrated completely through the bearing.

10 Slide new inner bearing onto the shaft.
11 Place hub back onto axle and fill the cavity with grease.
12 Insert new outer bearing.
13 Fit washer & nut, then firmly tighten.
14 Perform a Pre-load Test on the hub to determine how tightly to set the nut.

Pre-load must be:
- 90 Series = 10 - 15 kg
- 110 Series = 15 - 25 kg.

Perform the Pre-load Test by tying a string or rope to a stud, then wrapping it around the outside of all studs.

With a set of tension scales connected to the rope, pull the scales until the hub begins to turn.

The hub should begin to rotate at th epreload specified in step 14.

Tighten or loosen the axle nut to achieve the this setting.

15 Fit the split pin & bolt the bearing dust cap in place.
16 Finally, grease the hub until grease emerges from the rear seal.

Changing Wheels
Changing of wheels should only be done by an experienced person safely using rated and approved equipment.

To Remove a Wheel
Follow this proceddure to safely remove a wheel:

1 Ensure the Prairie Pro is on hard, flat level ground and wheels are chocked at the opposite end of lifting.
2 Ensure the boom is fully closed before raising the machine off the ground.

Empty the spray tank if possible before lifting the machine.
3 The sprayer must be hitched to the appropriate towing vehicle & the engine of the towing vehicle must be turned off & park brake applied.

4 Chock the wheel(s) not to being removed with an appropriate item to prevent the sprayer from moving.
5 With a wheel nut wrench, loosen all the wheel nuts on the wheel to be removed. Do not remove wheel nuts until the tyre is lifted off the ground.
6 Place a jack on a level, firm and stable foundation under the sprayer axle - between two axle bolts near the wheel to be removed.

A large piece of timber or steel placed under the jack may be needed to prevent the jack from sinking into the soil.
7 Use the jack to raise the sprayer axle so the wheel and tyre is off the ground.
8 Place an auxiliary jack block under the axle so that if the jack fails the sprayer will not fall.
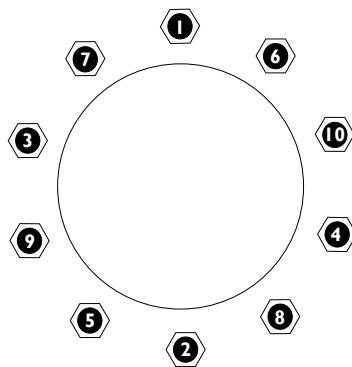
⚠ DANGER

When the tank is fully loaded each wheel may support a weight up to approximately 5 tonnes.
Always ensure that the jack is designed to operate under this pressure.

⚠ DANGER

Do not chock or support the machine using materials that may crumble.
Use only load rated supports.
Do not work under the machine when supported solely by a jack.

Regularly check tyre pressure and wheel nut tension.

Follow this tightening sequence to ensure even wheel nut torque distribution (320 ft/lb).

Tyre Size	Model (L)	Recommended Pressure @ (kPa/PSI)
18.4 x 38	5000	290 / 42
18.4 x 38	6500	315 / 46
480/80R46	5000	140 / 20
480/80R46	6500	240 / 35
480/80R50	6500	220 / 32

480/80R50	8500	310 / 45
480/80R50	8500	410 / 65
520/85R42	5000	140 / 20
520/85R42	6500	220 / 32
520/85R42	8500	315 / 46
520/80R46	8500	240 / 35
710/70R42	8500	240 / 35
710/70R42	10000	315 / 46

See Chapter 1, 'Important Information' for full details of tyre options & recommended tyre pressures for the Prairie Pro.

9   Remove all wheel nuts & remove wheel from sprayer.

Be careful the wheel does not fall on anyone or cause bodily harm.

10   Ensure the sprayer is stable, safe & not able to be moved if being left for an extended period of time.

To Refit a Wheel

1   Check the sprayer is stable with both jack & jack block in place and hitched to its appropriate towing vehicle.

2   Ensure the replacement wheel is in good condition & the tyre is inflated to its correct tyre pressure.

3   Clean the contact surfaces between the wheel & hub.

4   Carefully lift the replacement wheel up to align the centre rim holes and fit the wheel onto the studs of the hub.

5   Carefully refit all wheel nuts to finger tight.

6   Use a torque wrench to tighten the wheel nuts alternately (sequence shown above) and evenly to a torque rating of 320 ft/lb.

7   Remove the jack block from under the sprayer.

8   Carefully lower the sprayer slowly with the jack until the tyre touches the ground.

9   Re-tighten all wheel nuts to the required torque rating.

10   Lower the jack completely so that all weight is off the jack, then remove the jack (& any supports from under the jack) from under the sprayer.

11   Remove all wheel chocks (placed to prevent the sprayer from moving).

12   Check the tyre pressure before moving sprayer.

13   Check & re-tighten all wheel nuts to the required torque rating:

- One hour after refitting the wheel,
- Before filling the main spray tank & again
- After emptying the first tank load.

Tyre Maintenance

All tyres used on Goldacres sprayers have been designed to carry the maximum loaded weight of the sprayer when travelling at 25 km/h. The load capacity of the tyres decreases as travelling speed increases so it is important to heed the travelling speed limit.

Rated tyre pressure & capacity shown in charts is applicable for stationary machines.

Tyre pressure is the most important factor for maintaining correct load rating of the tyre.

Tyres should be checked regularly as per the maintenance schedules outlined in this chapter.

Correct tyre pressures maintained at all times. Inflation above or below recommended pressures may cause damage to the tyres.

High road speeds & heavy loads may cause tyres to wear prematurely.

If a tyre is replaced with a different brand or size, please contact the supplier for correct air pressures to suit the load carrying capacity of the Prairie Pro.

Protect the tyres as much as possible to minimise wear and deterioration.

Chemicals are harmful to the rubber in the tyres and should be washed off immediately after use.

Refer to the weight chart at the start of this manual for calculating load weights.

Allow for each tyre to carry half the maximum loaded weight when calculating tyre loads.

NOTE

Tension wheel nuts daily when new & whenever wheel nuts are removed and refitted. Follow the wheel nut tightening sequence to ensure even wheel nut torque distribution

Once wheel nuts hold tension, inspection can done at approx 50 hours. Wheel nut tension specification on the Prairie Pro wheels is 320 ft/lb.

⚠ DANGER

Take extreme care when inflating tyres and use an accurate inflation gauge when doing so.

If tyres are inflated at a rapid rate then the tyre rim combination may explode. This can result in serious or fatal injuries.

NOTE

If a tyre is replaced with a different brand or size, please contact the supplier for correct air pressures to suit the load carrying capacity of this sprayer.

1 psi = kPa x 0.145, eg. 240 kPa x 0.145 = 34.8 psi

Pressure Filter (centre) & Suction Filters (left & right).

Open the drain valve to drain the Suction Filter.

Carefully remove the Suction Filter screen for washing & cleaning.

Carefully remove the Pressure Filter screen for washing & cleaning.

Filter Maintenance

It is essential to maintain all filters and filter screens in good condition. Filters & screens not regularly cleaned can severely impede liquid flow & delivery pressure.

Worn or damaged screens will allow foreign materials to enter the pumping system which in turn can damage pumps, solenoids, valves & cause blockages in nozzle tips.

Always safely unfold & lower the boom before attempting to unscrew and service filters.

First remove the filter bowl, then the filter screen for cleaning.

Filter screens are best washed & cleaned with a soft brush in clean water and using compressed air after washing.

Ensure the filter screens, o-rings and bowls are correctly re-fitted after cleaning.

Filter screens & components not properly fitted, may allow air to enter the pumping lines reducing pump and spraying performance.

Suction Filters

Always ensure suction filter(s) and screen(s) are clean & in good condition. Filters & screens not regularly cleaned can severely impede liquid flow & delivery pressure.

Follow these steps to clean the filter & screen:

1   Ensure the spray pump is Off & its three-way ball valve Off - to prevent liquid flow to the filter.

2   Open the filter drain valve to drain the filter.

3   Carefully unscrew filter nut & remove the bowl, then carefully remove the screen.

4   Wash & clean the screen.

5   Check the screen, bowl, body & O-rings for any damage. Replace if damaged.

6   Carefully re-fit screen ensuring the O-ring is in position for proper seal.

7   Replace bowl, filter nut, then tighten the nut but do not over-tighten.

> ⚠️ **CAUTION**
>
> Read and heed the chemical label warnings regarding PPE before cleaning any filter.

Pressure Filters

Always ensure pressure filter(s) and screen(s) are clean & in good condition. Filters & screens not regularly cleaned can severely impede liquid flow & delivery pressure.

Follow these steps to clean the filter & screen:

1   Ensure the spray pump is Off to stop liquid flow to the filter.

2   Carefully unscrew filter nut & remove the bowl, then carefully remove the screen.

3   Wash & clean the screen.

4   Check the screen, bowl, body & O-rings for any damage. Replace if damaged.

5   Carefully re-fit screen ensuring the O-ring is in position for proper seal.

7   Replace bowl, filter nut, then tighten the nut but do not over-tighten.

> ⚠️ **CAUTION**
>
> Always wear gloves and other recommended protective clothing before attempting to remove and clean filters.
>
> Be careful of chemicals and avoid any damage to the O-Rings when cleaning filters.

Air compressor located on the right hand side of the sprayer.

Manual drain valve (at the base of the Air Tank) in closed position.

Manual drain valve (at the base of the Air Tank) in closed position.

Left hand airbag inflated is 250mm (10"). Measure from the base of the top plate to the bottom of the airbag.

Pneumatic System

The Pneumatic System of the Prairie Pro is used for:

- Airbag suspension
- Chemical pump
- RapidFire system
- Auxiliary Air Outlet.

Air Compressor

The Air Compressor is driven by an hydraulic drive. Follow the maintenance schedule outlined in this chapter.

To Change the Oil:

1   Remove the oil drain plug & catch the oil in a container.
2   When fully drained, refit the plug.
3   Refill the compressor with compressor oil (1.55 litres is required).

⚠**CAUTION**

Beware when releasing air from the air tank, there can be dangerous particles being released at high-speed.

Be aware due to the rapid expansion of air, the tank release valve may become very cold.

Air Tank

The Air Tank (located on the rear of the chassis) is a reservoir of compressed air used to supply pneumatic all functions on the Prairie Pro.

A manual drain tap at the bottom of the air tank, can be used to decompress the pneumatic system or check for presence of any moisture and debris.

Pressure Relief Valve

A Pressure Relief Valve incorporated on the Air Tank tank prevents air pressure within the system acceptable limits.

The valve is set to open if 150 PSI is reached.

Air compressor oil drain plug.

Compressor Air Filter

The Compressor Air Filter (located on the top left side boom rest frame) should be checked & cleaned regulary.

It is recommended to check and clean the filter daily when in use.

Replace the filter if damaged or uncleanable. Follow the maintenance schedule outlined in this chapter.

Air gauge showing RapidFire pressure on the left hand side at the front of the sprayer.

Airbag Ride Height Adjustment

A Ride Height Valve regulates the air pressure within the airbags to achieve a consistent ride height.

The Ride Height Valve is located underneath, on the inside left hand suspension arm.

Ride Height is adjusted by loosening the bolt attaching the linkage rod to the chassis.

Left hand airbag fully deflated (140mm). Measure from the base of the top plate to the bottom of the airbag.
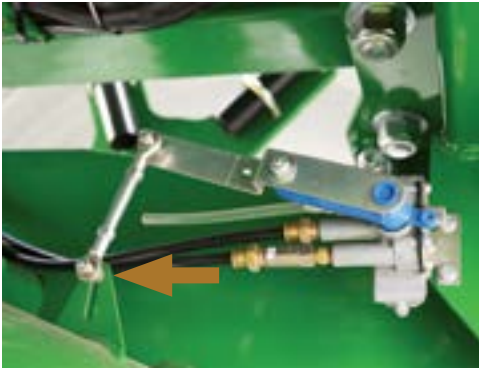
Adjustment to ride height is made by adjusting the linkage bolt in the slot where it attaches to the chassis.

To Adjust the Ride Height:

1   Park the Prairie Pro on a flat level surface.

2   Loosen the bolt attaching the linkage rod to the chassis.

3   Slide the attaching bolt up or down in the slot to either raise or lower the ride height.

Inflated airbag ride height is 250mm +/- 5mm (measuring from the base of the top plate to the bottom of the airbag.

4   Re-tighten the linkage bolt to fix the position.

5   Retighten the lock nuts on completion of the adjustment.

Open the Airbag Dump Valve to lower a sprayer for trailertransport & end of season storage.

To Deflate Air Bags for Trailer Transport:

1   Load and park the Prairie Pro on transport platform.

2   Open the drain valve on the air tank and let the air empty out.

3   Open the air dump valve of the airbags on the rear LHS of the sprayer

4   The air bags will lower on to the bump stops.

5   Once the Prairie Pro is on the bump stops, close the air tank & dump valves.

One of the shock absorbers shown under the sprayer.

Shock Absorbers

Shock absorbers are fitted to the Prairie Pro on each side of the axle. These dampen movement of the air bags & prevent recoil.

Shockers absorbers should be regularly checked for damaged rubbers or oil leaks.

If leakage or damage occurs replace the shock absorber.

Rear Manifold at the front of the boom centre section.

Rear Hydraulic Manifold

The Rear Manifold with compact cartridge style valves, located on the front of the boom centre section, controls all boom functions including lift, fold, tilt, bi-fold, centre level and hydraulic yaw.

The hydraulic block is divided into left and right sections with hydraulic hoses directed to each side of the boom.

Manual overrides are fitted to the solenoids.

Refer to Chapter 7, 'Boom Settings' for Hydraulic Manifold, instructions.

⚠ DANGER

Due to the crush hazard that exists from working on the centre section, hydraulic functions should NOT be overridden at the spool block.

NOTE

The ride height valve has a dead band position where the valve does not let air in or out of the airbags.
Over time, seals in the ride height valve may wear causing the dead band to decrease. If this is occurs, the ride height valve requires re-adjustment or possibly replacement.

NOTE

When the Prairie Pro has been unused for a period of time, the air bags may deflate. This is normal. The airbags will re-inflate after the engine is started.

⚠ CAUTION

When deflating the air bags, keep clear of all chassis parts as the machine can move suddenly downwards.
Failure to heed this caution may result in personal injury.
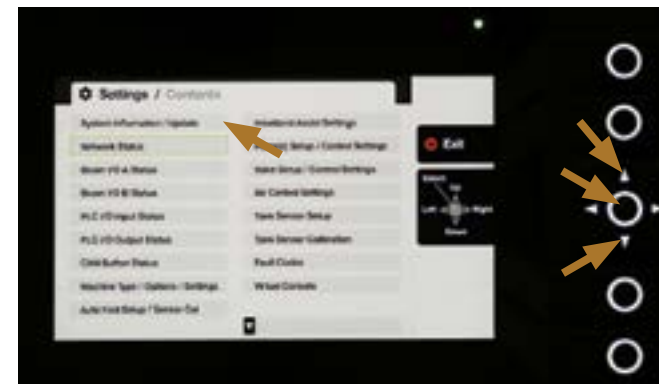
⚠ DANGER

DO NOT operate the hydraulic functions while adjusting the flow. All people & objects should be clear of the boom wing radius while operating the hydraulic functions.

Optional G-Hub 12" touch display.

External Control Panel.

The 'Settings / Contents' Screen appears. Use the Arrow & 'O' push buttons to move the green cursor to 'System Info/Update' & open the screen.

Service Information

The Prairie Pro Series 2 Trailed Sprayer is fitted standard with Goldacres G-Hub integrated control system. Depending on configuration service information is available either using the:
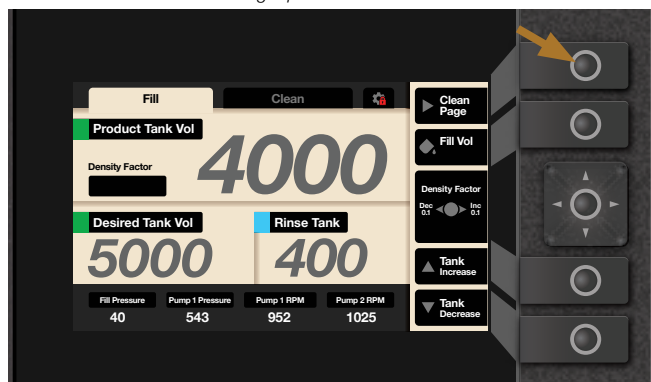
- External Control Panel, or
- Optional G-Hub 12" touch display.

System Info/Update & Virtual Controls - External Control Panel

When the optional G-Hub 12" touch display is not fitted, it is necessary to use the External Control Panel to access System Info/Update & Virtual Console.

To Access Service Info/Update & Virtual Console on the External Control Panel:

1   Turn the tractor ingition key On.

2   Press & Hold the 'Clean Page' push button on the External Controller for 5 seconds to open the 'Settings Tab'.

Press & Hold the 'Clean Page' push button on the External Control Panel.

3   The 'Settings / Contents' Screen appears displaying the following information, diagnostic & machine setting menus:

- System Info/Update
- Network Status
- Boom I/O A Status
- Boom I/O B Status
- PLC I/O Input Status
- PLC I/O Output Status
- CAN Button Status

Refer to Chapter 9, Troubleshooting - for G-Hub System Infromation/Update & Diagnostic Instructions

- Machine Type / Options / Settings
- Auto Fold Setup / Sensor Cal
- Headland Assist Settings
- Pump(s) Setup / Control Settings
- Valve Setup / Control Settings
- Air Control Settings
- Tank Sensor Setup
- Tank Sensor Calibration

Refer to the Pre-Set instructions in chapter 4, 'Setting Up'

- Fault Codes
- Virtual Console.

NOTE

The information & status menus of the 'Settings / Contents' screen can be used to check if all system components are properly connected, functioning and up to date (likewise the Fault Codes & Virtual Console menus). See Chapter 9, 'Troubleshooting' for further instructions.

The 'Settings / System Info/Update' Screen.

System Info/Update

This 'System Info/Update' screen allows the operator to view current information, update software and save information & updates.

1   Press the Up Arrow push button to move the green cursor upwards to select the 'System Information / Update' menu (each press moves the cursor down one line), then press the 'O' push button to display the screen.

    The 'System Info/ Update' screen appears displaying:

    • Pump 1 Hours
    • Pump 2 Hours
    • System Hours
    • PCL Version
    • PCL Firmware
    • Display Version
    • Display Firmware.

    Contact your local Goldacres Dealer for G-Hub system updates.

    Each item displays current information.

2   Use the Arrow push buttons to move the green cursor to a selected item, then press the 'O' push button to open the item.

    For updating software versions & firmware, contact your local Goldacres Dealer.
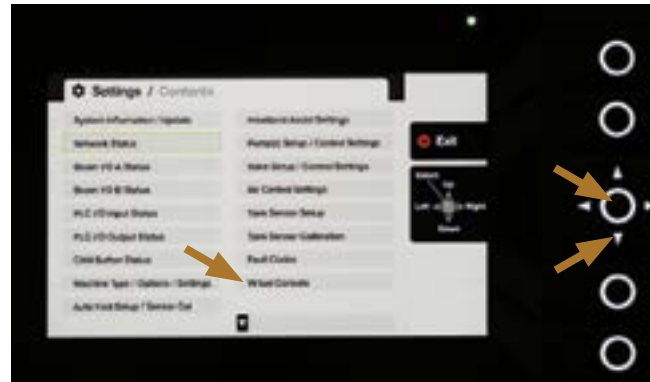
Use the Arrow push button to move the green cursor to 'Virtual Console', then press the 'O' push button to open the screen.

Virtual Console

1   Press the Down Arrow push button to move the green cursor downwards to select the 'Virtual Console' menu (each press moves the cursor one line), then press the 'O' push button to display the screen.

    The 'Virtual Console' screen appears displaying:

    • Product Pump   • RH Tilt Up   • Fold S1 In
    • Pump Rinse   • RH Tilt Down   • Fold S1 Out
    • Fill Product   • Boom Up   • Fold S2 In
    • Fill Rinse   • Boom own   • Fold S2 Out
    • Fill Pump   • LH Fenceline   • Fold S3 In
    • Agitator 1   • RH Fenceline   • Fold S3 Out
    • Agitator 2   • Beancon (Fn)   • Boom Catch In
    • Clean Filter   • Boom Lights   • Boom Catch Out
    • LH Tilt Up
    • LH Tilt Down

    Each item on the 'Virtual Console' screen provides an alternative virtual method of operation for each function shown.

With the blue cursor on 'Product Pump', press the 'O' push button to start the 'Pump Product'..

If a problem occurs with the Joystick or Auxiliary Buttonpad push button not working, the virtual option provides a way to operate the function, temporarily, until the fault is rectified.

Virtual Controls are also used for diagnosing and locating existing problems. Refer to Chapter 9, 'Troubleshooting' for futher information on Fault Codes & Status menus.

To Operate Virtual Functions:

Product Pump

1   With the blue cursor on 'Product Pump', press the 'O' push button to start the pump.

    The adjacent grey area illuminates green & its corresponding 'Pump Product' push button on the Auxiliary Buttonpad will 'illuminate & flash' when operating.

2   To stop 'Pump Product', press the 'O' push button.


⚠ DANGER

When using vertical controls externally, parts of the sprayer may move in a dangerous manner.

Exercise extreme caution.

Ensure all by standers are well clear of the sprayer before making any adjustments.

Move the blue cursor to the 'Product Rinse', then press the 'O' push button to start 'Spray Pump Rinse'.

Product Rinse

1   With the blue cursor on 'Product Rinse', press the 'O' push button to start the 'Spray Pump Rinse' function.

The adjacent grey area illuminates green & its corresponding 'Spray Pump Rinse' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Spray Pump Rinse', press the 'O' push button.
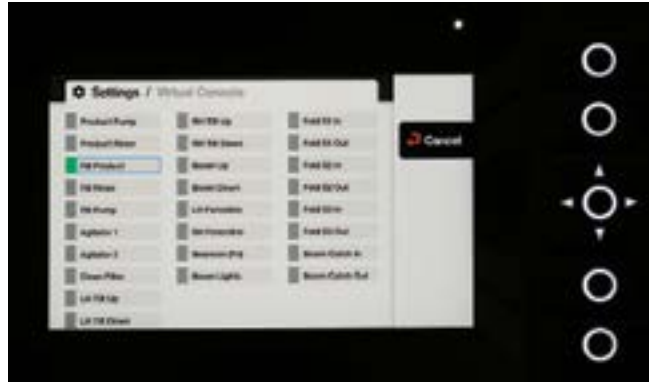
Use the Arrow & 'O' push buttons to operate the Fill Product function.

Fill Product

1   With the blue cursor on 'Fill Product', press the 'O' push button to start the 'Fill Product' function.

The adjacent grey area illuminates green & its corresponding 'Fill Product' push button on the External Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fill Product', press the 'O' push button.

Fill Rinse

1   With the blue cursor on 'Fill Rinse', press the 'O' push button to start the 'Fill Rinse' function.

The adjacent grey area illuminates green & its corresponding 'Fill Rinse' push button on the External Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fill Rinse', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the Fill Rinse function.
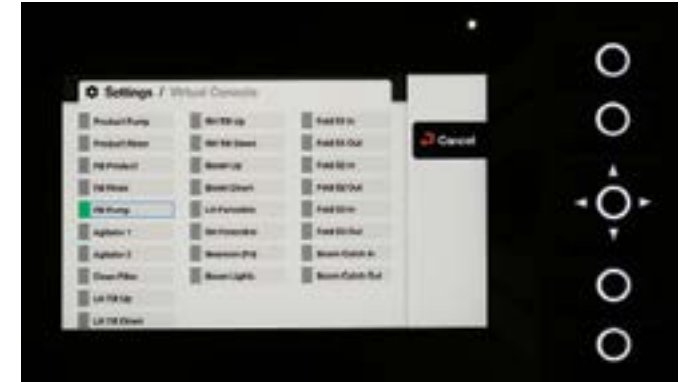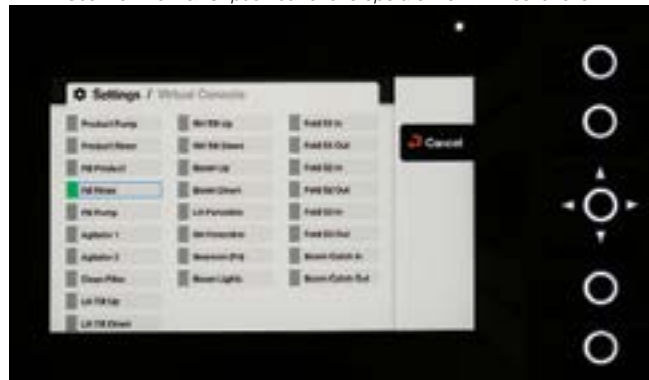
Use the Arrow & 'O' push buttons to operate the Fill Pump function.

Fill Pump

1   With the blue cursor on 'Fill Pump', press the 'O' push button to start the 'Fill Pump' function.

The adjacent grey area illuminates green & its corresponding 'Fill Pump' push button on the External Buttonpad 'illuminates & flashes' when operating.

2   To stop the 'Fill Pump', press the 'O' push button.

Agitator 1

1   With the blue cursor on 'Agitator 1', press the 'O' push button to start the 'Agitator 1' function.

The adjacent grey area illuminates green & its corresponding 'Agitator 1' push button on the External Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Agitator 1', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the Agitator 1 function.
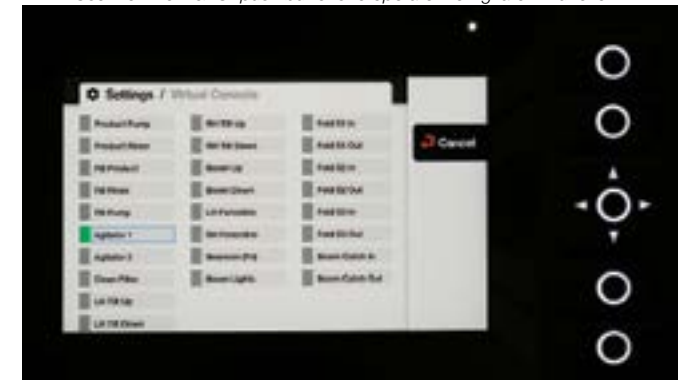
Use the Arrow & 'O' push buttons to operate the Agitator 2 function.
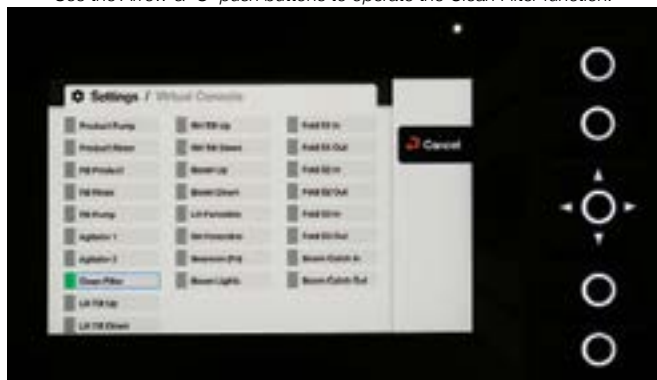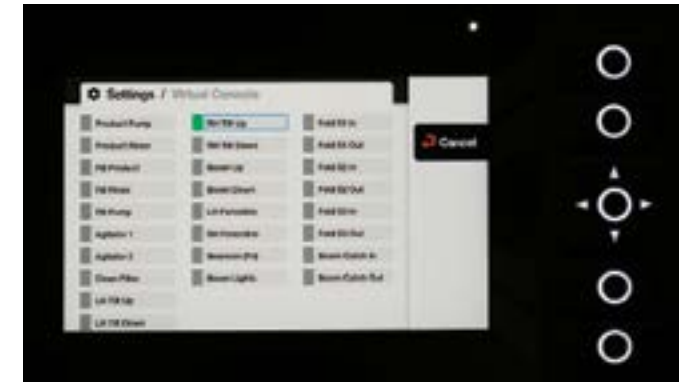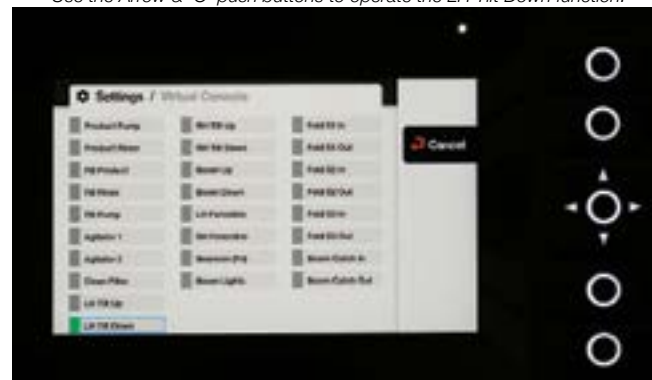
Agitator 2 (Optional)

1 With the blue cursor on 'Agitator 2', press the 'O' push button to start the 'Agitator 2' function.

   The adjacent grey area illuminates green & its corresponding 'Agitator 2' push button on the External Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Agitator 2', press the 'O' push button.

Clean Filter

1 With the blue cursor on 'Clean Filter', press the 'O' push button to start the 'Clean Filter' function.

   The adjacent grey area illuminates green & its corresponding 'Clean Filter' push button on the External Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Clean Filter', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the Clean Filter function.

Use the Arrow & 'O' push buttons to operate the LH Tilt Up function.

LH Tilt Up

1 With the blue cursor on 'LH Tilt Up', press the 'O' push button to start the 'LH Tilt Up' function.

   The adjacent grey area illuminates green & its corresponding 'Tilt Left Up' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Tilt Left Up', press the 'O' push button.

LH Tilt Down

1 With the blue cursor on 'LH Tilt Down', press the 'O' push button to start the 'LH Tilt Down' function.

   The adjacent grey area illuminates green & its corresponding 'Tilt Left Down' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Tilt Left Down', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the LH Tilt Down function.

Use the Arrow & 'O' push buttons to operate the RH Tilt Up function.
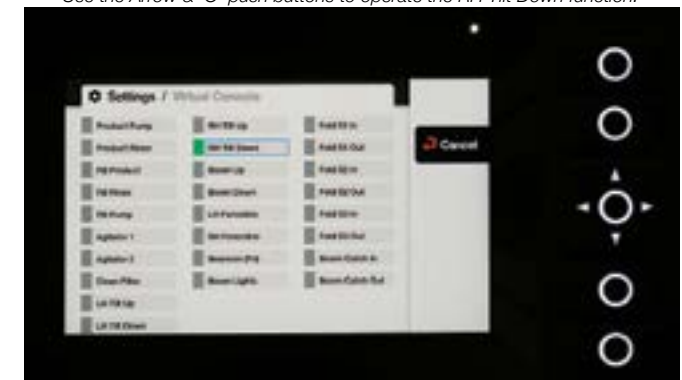
RH Tilt Up

1 With the blue cursor on 'Tilt Right Up', press the 'O' push button to start the 'Tilt Right Up' function.

   The adjacent grey area illuminates green & its corresponding 'Tilt Right Up' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Tilt Right Up', press the 'O' push button.

RH Tilt Down

1 With the blue cursor on 'Tilt Right Down', press the 'O' push button to start the 'Tilt Right Down' function.

   The adjacent grey area illuminates green & its corresponding 'Tilt Right Down' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2 To stop 'Tilt Right Down', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the RH Tilt Down function.

Use the Arrow & 'O' push buttons to operate the Boom Up function.

Use the Arrow & 'O' push buttons to operate the LH Fenceline function.

*Use the Arrow & 'O' push buttons to operate the Beacon (Fn) function.*

Boom Up

1. With the blue cursor on 'Boom Up', press the 'O' push button to start the 'Boom Up' function.

   The adjacent grey area illuminates green & its corresponding 'Boom Up' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Boom Up', press the 'O' push button.

Boom Down

1. With the blue cursor on 'Boom Down', press the 'O' push button to start the 'Boom Down' function.

   The adjacent grey area illuminates green & its corresponding 'Boom Down' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Boom Down', press the 'O' push button.

*Use the Arrow & 'O' push buttons to operate the Boom Down function.*
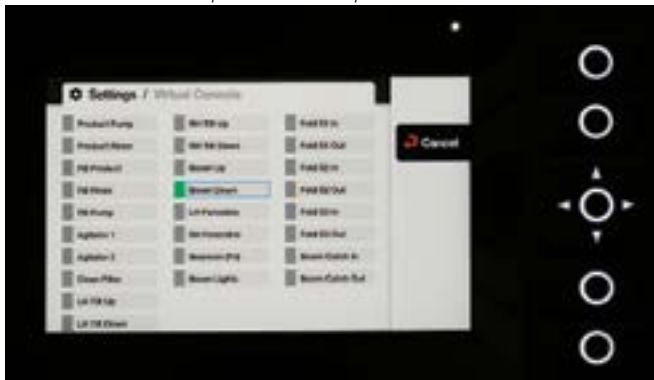
LH Fenceline

1. With the blue cursor on 'LH Fenceline', press the 'O' push button to start the 'LH Fenceline' function.

   The adjacent grey area illuminates green & its corresponding 'LH Fenceline' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2. To stop 'LH Fenceline', press the 'O' push button.

RH Fenceline

1. With the blue cursor on 'RH Fenceline', press the 'O' push button to start the 'RH Fenceline' function.

   The adjacent grey area illuminates green & its corresponding 'RH Fenceline' push button on the Joystick Buttonpad 'illuminates & flashes' when operating.

2. To stop 'RH Fenceline', press the 'O' push button.

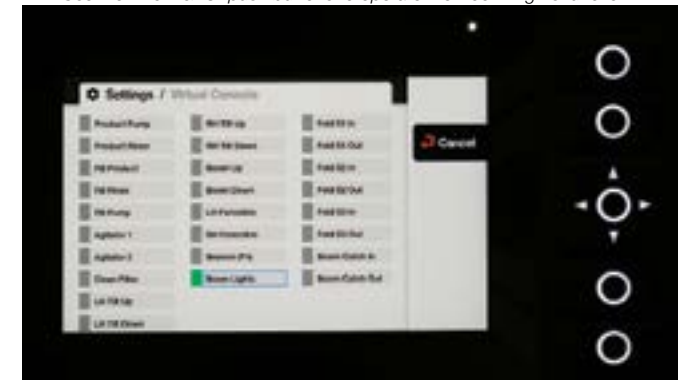*Use the Arrow & 'O' push buttons to operate the RH Fenceline function.*
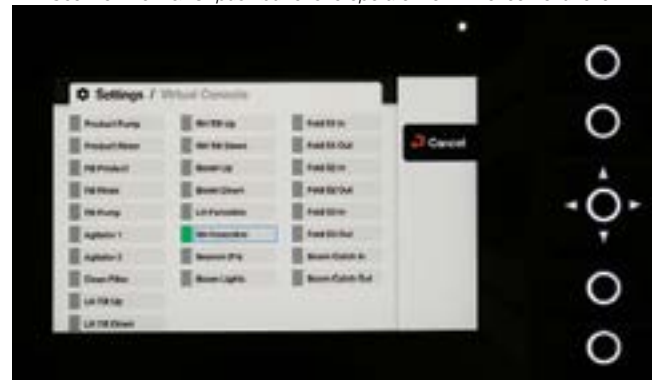
Beacon (Fn)

1. With the blue cursor on 'Beacon (Fn)', press the 'O' push button to start the 'Beacon (Fn)' function.

   The adjacent grey area illuminates green & its corresponding 'Beacon (Fn)' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Beacon (Fn)', press the 'O' push button.

Boom Lights

1. With the blue cursor on 'Boom Lights', press the 'O' push button to start the 'Boom Lights' function.

   The adjacent grey area illuminates green & its corresponding 'Boom Lights' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Boom Lights', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the Boom Lights function.

Use the Arrow & 'O' push buttons to operate the Fold S1 In function.

Use the Arrow & 'O' push buttons to operate the Fold S2 In function.

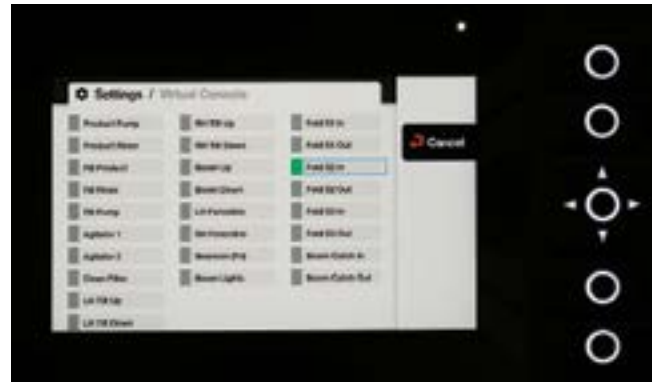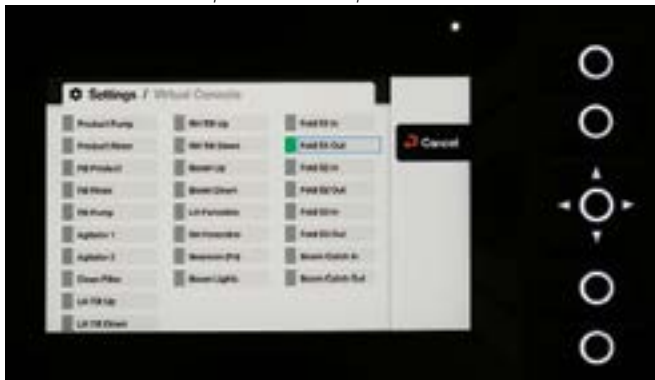*Use the Arrow & 'O' push buttons to operate the Fold S3 In function.*

Fold S1 In

1   With the blue cursor on 'Fold S1 In', press the 'O' push button to start the 'Fold S1 In' function.

The adjacent grey area illuminates green & its corresponding 'Fold S1 In' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fold S1 In', press the 'O' push button.

Fold S1 Out

1   With the blue cursor on 'Fold S1 Out', press the 'O' push button to start the 'Fold S1 Out' function.

The adjacent grey area illuminates green & its corresponding 'Fold S1 Out' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

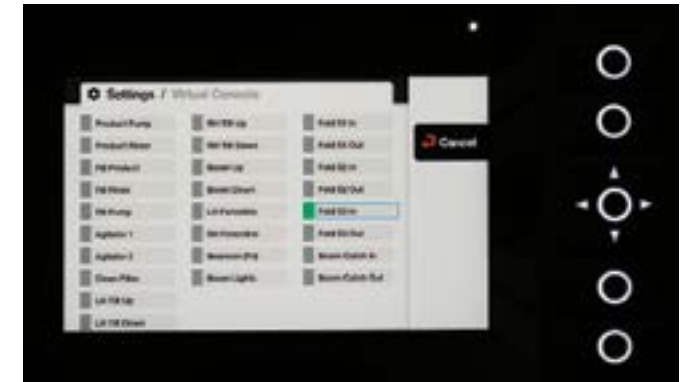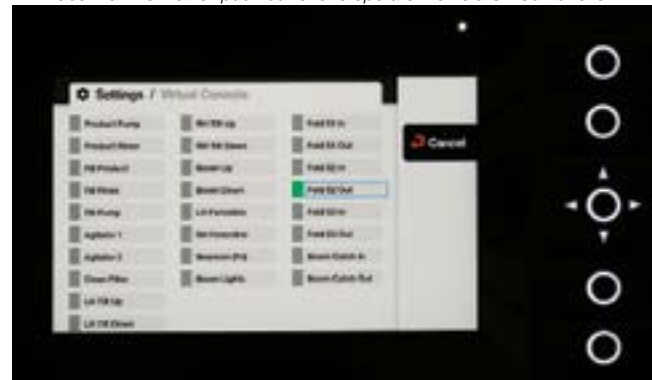2   To stop 'Fold S1 Out', press the 'O' push button.

Fold S2 In

1   With the blue cursor on 'Fold S2 In', press the 'O' push button to start the 'Fold S2 In' function.

The adjacent grey area illuminates green & its corresponding 'Fold S2 In' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fold S2 In', press the 'O' push button.

Fold S2 Out

1   With the blue cursor on 'Fold S2 Out', press the 'O' push button to start the 'Fold S2 Out' function.

The adjacent grey area illuminates green & its corresponding 'Fold S2 Out' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

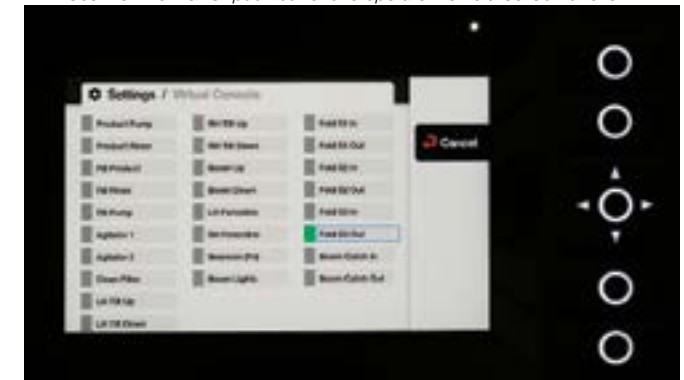2   To stop 'Fold S2 Out', press the 'O' push button.

Fold S3 In

1   With the blue cursor on 'Fold S3 In', press the 'O' push button to start the 'Fold S3 In' function.

The adjacent grey area illuminates green & its corresponding 'Fold S3 In' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fold S3 In', press the 'O' push button.

Fold S3 Out

1   With the blue cursor on 'Fold S3 Out', press the 'O' push button to start the 'Fold S3 Out' function.

The adjacent grey area illuminates green & its corresponding 'Fold S3 Out' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2   To stop 'Fold S3 Out', press the 'O' push button.

Use the Arrow & 'O' push buttons to operate the Fold S1 Out function.

Use the Arrow & 'O' push buttons to operate the Fold S2 Out function.

Use the Arrow & 'O' push buttons to operate the Fold S3 Out function.

Use the Arrow & 'O' push buttons to operate the Boom Catch In function.

Press the 'Enter' push button of the start-up screen to open the Main screen.

Press the 'Service' tab touch button open the 'Service' screen.

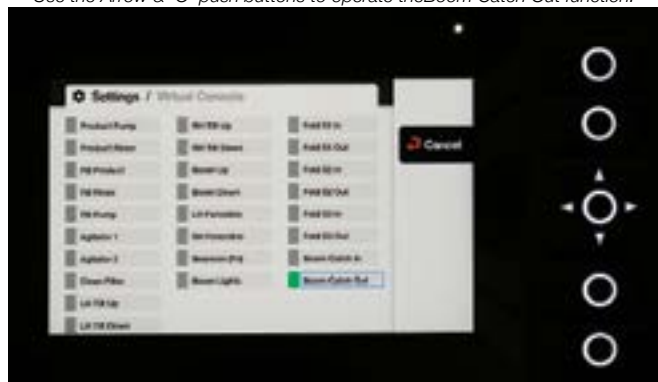## Boom Catch In

1. With the blue cursor on 'Boom Catch In', press the 'O' push button to start the 'Boom Catch In' function.

   The adjacent grey area illuminates green & its corresponding 'Boom Catch In' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Boom Catch In', press the 'O' push button.

Boom Catch Out

1. With the blue cursor on 'Boom Catch Out', press the 'O' push button to start the 'Boom Catch Out' function.

   The adjacent grey area illuminates green & its corresponding 'Boom Catch Out' push button on the Auxiliary Buttonpad 'illuminates & flashes' when operating.

2. To stop 'Boom Catch Out', press the 'O' push button.

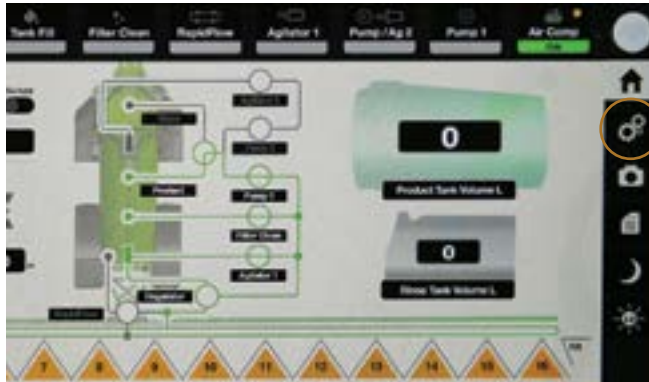*Use the Arrow & 'O' push buttons to operate theBoom Catch Out function.*

Information, Updates & Virtual Controls - G-Hub Display (Optional)

The G-Hub 12" Touch Display provides quick reference to service functions such as Pump Hours, GA Fault Codes, Fault Logs & Software Versions & Back-up/Restore/Recovery. Virtual Controls are under the Diagnostics tab.

To Access the Service Screen:

1. Start the tractor engine.

2. After G-Hub cabin display start-up screen appears, press the Enter touch button and the Main screen appears.

3. Press 'Settings' touch button to display the Settings menu.

Press the 'Settings' touch button on the G-Hub 'Menu' to open the Display screen.

4. Press the 'Service' tab touch button to display the 'Service' screen.

   The 'Service' screen appears & provides three tab screens:
   i)   GA Fault Codes
   ii) Fault Codes
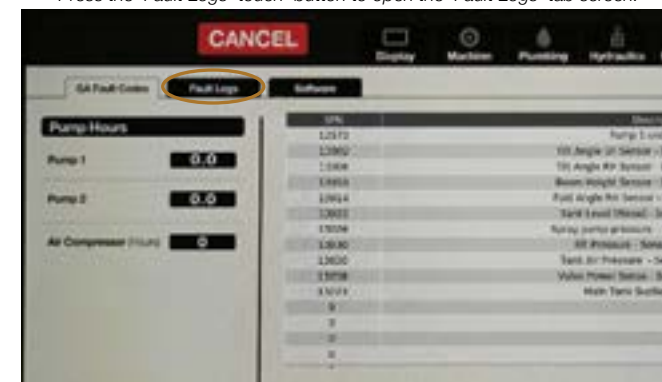   iii) Software

GA Fault Codes

The 'GA Fault Codes' tab screen displays Pump Hours (Pump 1 & 2) and Air Compressor (hours), SPN fault code numbers & description.
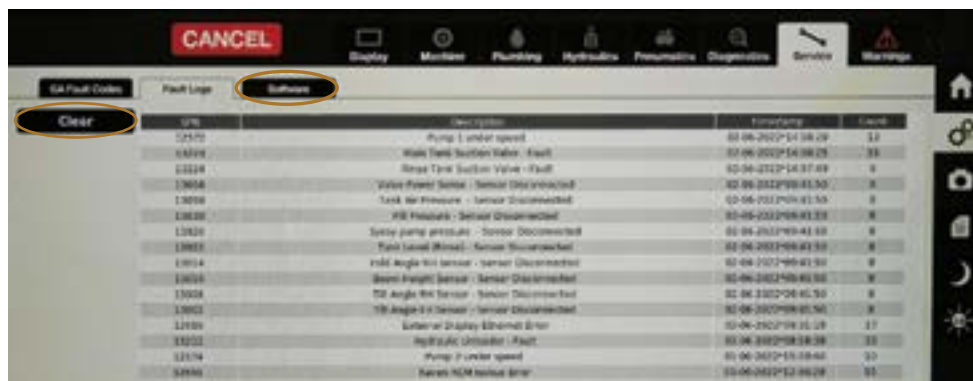
Only active faults are displayed.

Once corrected the fault code automatically clears.

The Service 'GA Fault Codes' tab screen.
Press the 'Fault Logs' touch button to open the 'Fault Logs' tab screen.

The 'Fault Logs' tab screen. Press the 'Clear' touch button to clear the logs.
Press the 'Software' touch button to open the 'Software' tab screen.

The 'Virtual Controls' tab screen.
Press the 'Unlocked to change' touch button to unlock the screen to enable the virtual control functions.

Fault Logs

Press the 'Fault Logs' tab touch button and the 'Fault Logs' screen appears displaying SPN fault code numbers, Timestamp and Count.

Press the 'Clear' touch button to clear the logs.

Software

Press the 'Software' tab touch button and the 'Software' screen appears displaying Software Versions, USB Files & Back-up/Restore/Recovery functions.

To make changes to this screen, the screen must first be unlocked.

Refer to Chapter 4, 'Setting Up' for instructions.

Press the 'G-Hub Cabin Display' touch button to update the software and ...

Press the 'G-Hub External Display' touch button to update the software and ...

Press the 'PLC' touch button to update the software and ...

Virtual Controls

The 'Virtual Console' tab screen provides the operator with an alternative method (virtual) for operating functions if a fault occurs with the Joystick or Buttonpad push buttons.

The virtual option makes it possible to operate each function, temporarily, until the fault is rectified.

To access the Virtual Controls:

1 Press 'Settings' touch button to display the Settings menu.

2 Press the 'Diagnostic' tab touch button to display the Diagnostics screen, then press the 'Virtual Controls' tab to display the virtual contols.

3 This screen must first be unlocked To enable virtual control functions. Refer to Chapter 4, 'Setting Up' for instructions.

4 Press the appropriate touch button(s) to operate the virtual function(s) required.

For more information on GA Fault Codes, Fault Logs & Diagnostics, refer to chapter 9 'Trouble Shooting'.

The 'Software' tab screen.
Press the appropriate touch buttons for updating software and to back-up, restore & recover data.

'Virtual Controls' tab screen showing virtual 'Pump Product '& 'Agitator 1' push buttons active (illuminated green).

Thoroughtly clean & corrosion protect the Prairie Pro for storage for long trouble free operation.

Boom grease points.

Boom grease points.

Corrosion Prevention

Goldacres apply G15 anti corrosion spray to all fasteners (bolts, washers and nuts) and zinc plated components at the time of manufacture.

G15 should also be applied to the sprayer pre-season & post-season.

Use the following as item/area guide list to apply corrosion inhibitor:

1   Towing eye bolts.
2   Jack mounting bolts & locking pins.
3   Spray pump.
4   Steps & hand rails.
5   Handrails.
6   Boom rests.
7   Pod frame mounting bolt.
8   Induction hopper bolts & latches.
9   Mudguard mounting bolts.
10 Right hand pod frame mounting bolts.
11 Wheel nuts.
12 Axle airbag frame mounting.
13 Breakaway hinges & boom end protectors.
14 Nozzle bracket bolts.
15 Hydraulic manifold.
16 Hydraulic cylinder fittings.
17 Hydraulic hose crimp fittings on all hoses.
18 Centre section paralift rear pins & bolts.

This guide is not necessarily comprehensive and the amount of corrosion protection necessary ultimately depends on local climate & operating conditions.

Boom Lubrication

Refer to 'Grease Points' at the end of this chapter for grease point location charts & information.

8 HOURS

- Grease tilt arm pivot pins.
- Grease cable drum bearing block pivots.

25 HOURS

- Grease cable adjuster pivots.

50 HOURS

- Grease boom mount rose ends
- Grease all delta links on centre section.
- Grease paralift arm rose ends.

Grease Points

The location & greasing schedules of the Prairie Pro Series 2 grease nipples are shown in the following illustrations:

1   Chassis & Suspension Points
2   Boom Paralift Grease Points
3   Boom Centre Grease Points 1
4   Boom Centre Grease Points 2
5   24m - 36m Boom Wing Grease Points
6   48m Boom Wing Grease Points.

'Grease' Decals are used to assist in locating each grease point.

'Remote Grease Banks' with a Grease Decal are also used to simplify greasing access.

1 Chassis & Suspension Grease Points

NON BRAKED AXLE
IF OPTIONED

50hrs
M

BRAKED AXLE
IF OPTIONED

50hrs
M

50hrs
M

HYDRAULIC JACK
IF OPTIONED

50hrs
M

8hrs
M

MANUAL JACK
IF OPTIONED

50hrs
M

Lubrication Legend:

M = **Manual Greasing**

R = **Remote Grease Bank or**

A = **Automatic (option if fitted)**

2 Boom Paralift Grease Points

8hrs
R

PARALIFT ARMS

8hrs
R

8hrs
R

8hrs
R

PARALIFT ARMS

8hrs
R

8hrs
R

LIFT CYLINDERS

Lubrication Legend:

M = **Manual Greasing**

R = **Remote Grease Bank or**

A = **Automatic (option if fitted)**

3 Boom Centre Grease Points 1

8hrs
R_A

8hrs
R_A

8hrs
R_A

8hrs
R_A

36m - 42m
FOLD & TILT
CYLINDERS

8hrs
R_A

8hrs
R_A

8hrs
R_A

8hrs
R_A

8hrs
R_A

ROLLER SHOCKER
& DELTA LINKS

Lubrication Legend:

M = Manual Greasing

R = Remote Grease Bank or

A = Automatic (option if fitted)

8hrs
R_A

8hrs
R_A

36m - 42m BOOM PIVOT
HINGE - BOTH SIDES
FRONT VIEW - RH HINGE

8hrs
R_A

48m FOLD &
TILT CYLINDERS

8hrs
R_A

8hrs
R_A

48m BOOM PIVOT
HINGE - BOTH SIDES
FRONT VIEW - RH HINGE

4 Boom Centre Grease Points 2

Lubrication Legend:

M = Manual Greasing

R = Remote Grease Bank or

A = Automatic (option if fitted)

'C'

'B'

8hrs
R_A

'D'

8hrs
R_A

8hrs
R_A
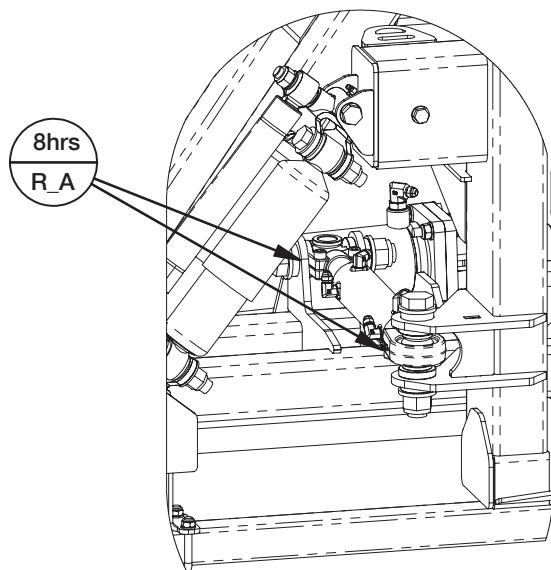
DETAIL 'B'
YAW CYLINDERS
LH & RH
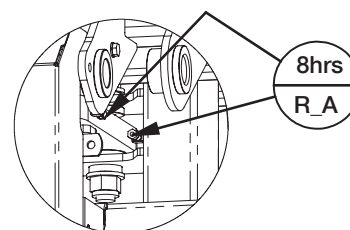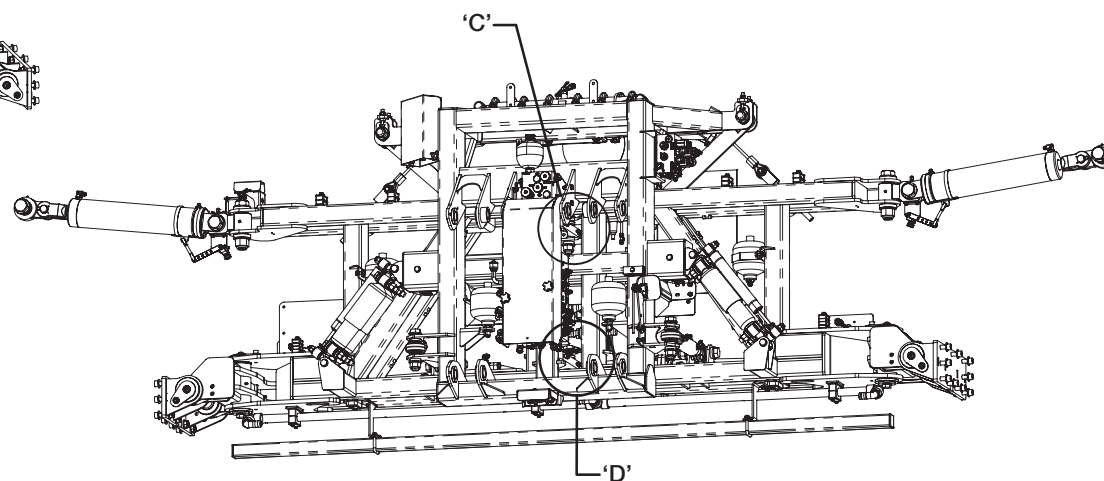
DETAIL 'C'
DELTA LINK UPPER
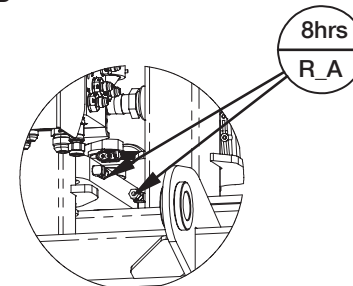
DETAIL 'D'
DELTA LINK LOWER

5 24m - 36m Boom Wing Grease Points

8hrs
M_A

8hrs
M_A

BI-FOLD CYLINDERS
& LINKAGES DETAIL

8hrs
M

DETAIL 'G'
BI-FOLD CATCH

'G'

FRONT

'E'

LH BOOM

'F'

8hrs
M_A

8hrs
M

8hrs
M

DETAIL 'F'
BREAKAWAY DETAILS

8hrs
M_A

DETAIL 'E'
BI-FOLD CYLINDERS
& LINKAGES DETAIL

Lubrication Legend:

M = Manual Greasing

R = Remote Grease Bank or

A = Automatic (option if fitted)

6 48m Boom Wing Grease Points

FRONT

'K'

8hrs
M_A

DETAIL STAGE '2' BI-FOLD
CYLINDERS & LINKAGES

DETAIL STAGE '2' BI-FOLD
CYLINDERS & LINKAGES

FRONT

8hrs
M

8hrs
M_A

8hrs
M_A

RH BOOM

STAGE '2' BI-FOLD

DETAIL 'K'
BI-FOLD CATCH

FRONT

STAGE '3' BI-FOLD

'H'

8hrs
M

8hrs
M_A

DETAIL STAGE '3' BI-FOLD
CYLINDERS & LINKAGES

DETAIL 'H'
BREAKAWAY DETAILS

Lubrication Legend:

M = **Manual Greasing**

R = **Remote Grease Bank or**

A = **Automatic (option if fitted)**

Optional G-Hub 12" touch display.

Trouble Shooting Preface

The following troubleshooting information is provided as a reference if your machine is not functioning correctly.

To ensure that you receive the best possible service, it is recommended that you exhaust all applicable troubleshooting solutions shown in this chapter prior to calling your dealer, or Goldacres for service advice

Parts information and schematics can be found in the Parts Manual supplied.

Integrated G-hub System

Goldacres Integrated G-hub System offers full system diagnostics, including warnings and operation states.

Pop up on-screen dialogs will display any system information and warnings.

Some problems may simply be resolved by cycling the G-Hub system off and on again.

It is recommended to try this first before resorting to more advanced troubleshooting.

All valves will be reset to their initial position on the G-Hub System start up.

The G-Hub 'Diagnostics' screens provide detailed information on all system components.

Start with the Network Diagnostic page to make sure all CAN components are online and operational, then move onto the targeted area of the fault.

The CAN-link between the PLC and the main display are critical for the system to function correctly.

If a CAN component has been replaced, it is important that the correct software be uploaded and the correct CAN address is set for it to function correctly.

Troubleshooting with the G-HUb

The Prairie Pro Series 2 Trailed Sprayer is fitted standard with Goldacres G-Hub integrated control system. Depending on configuration service information is available either using the:

- External Control Panel or
- Optional G-Hub 12" touch display.

Both provide diagnostic information to assist the operator find faults and progess toward a remedy.

External Control Panel.

The 'Settings / Contents' Screen.

Use the Arrow & 'O' push buttons to move the green cursor to 'Network Status' & open the screen.

Troubleshooting - External Control Panel

When the optional G-Hub 12" touch display is not fitted, it is necessary to use the External Control Panel for troubleshooting

To Access Diagnostics - External Control Panel:

1 Turn the tractor ingition key On.

2 Press & Hold the 'Clean Page' push button on the External Controller for 5 seconds to open the 'Settings Tab'.

3 The 'Settings / Contents' Screen appears displaying the following information, diagnostic & machine setting menus:

Press & Hold the 'Clean Page' push button on the External Control Panel.
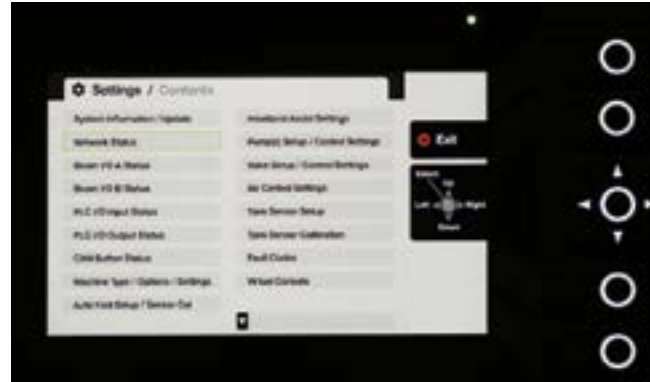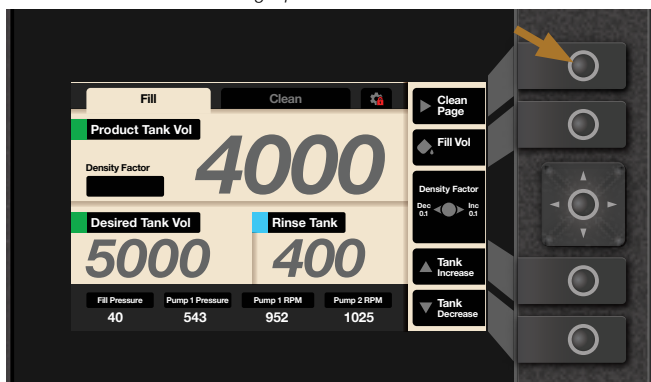
- • System Info/Update   (*See Chapter 8, 'Lubrication & Maintenance' for Update instructions*)
- • Network Status
- • Boom I/O A Status
- • Boom I/O B Status
- • PLC I/O Input Status
- • PLC I/O Output Status
- • CAN Button Status
- • Machine Type / Options / Settings
- • Auto Fold Setup / Sensor Cal   *Refer to the Pre-Set instructions in chapter 4, 'Setting Up'*
- • Headland Assist Settings
- • Pump(s) Setup / Control Settings
- • Valve Setup / Control Settings
- • Air Control Settings
- • Tank Sensor Setup
- • Tank Sensor Calibration
- • Fault Codes
- • Virtual Console.

NOTE

The information & status menus of the 'Settings / Contents' screen can be used to check if all system components are properly connected, functioning and up to date (likewise the Fault Codes & Virtual Console menus). See Chapter 8, 'Lubrication & Maintenance' for Virtual Console instructions.

if a problem occurs, it is recommended to first look at the Network Status screen which provides connectivity information for each section of the G-Hub system, then go to the network section indicating a problem. Secondly look at Fault Codes.

Network Status

Press the Down Arrow push button to move the green cursor downwards to select the 'Network Status' menu (each press moves the cursor one line), then press the 'O' push button to display the screen. The 'Network Status' screen appears:

- • Illuminated Green indicates an active network.
- • Illuminated Red indicates a network problem.
- • Illuminated Grey indicates inactive (not connected).

The 'Network Status' Screen.
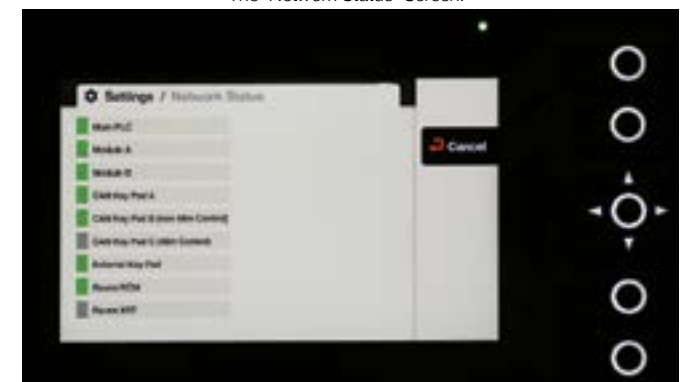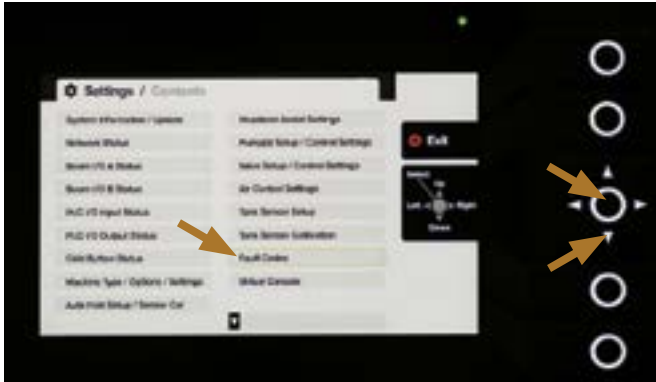
Use the Arrow push button to move the green cursor to 'Fault Codes', then press the 'O' push button to open the screen.

Use the Arrow push button to move the green cursor to 'Boom I/O A Status Outputs', then press the 'O' push button to open the screen.

Use the Arrow push button to move the green cursor to 'Boom I/O B Status Outputs', then press the 'O' push button to open the screen.

Fault Codes

Press the Arrow push buttons to move the green cursor to select the 'Fault Codes' menu, then press the 'O' push button to display the screen. The 'Fault Codes' screen appears.

The 'Fault Codes' screen appears.

Proceed to investigate/rectify any fault(s) listed.

Faults listings automatically disappear from the "Fault Codes' screen when corrected.

Boom I/O A Status Outputs

Press the Arrow push buttons to move the green cursor to select the 'Boom I/O A Status Outputs' menu, then press the 'O' push button to display the screen.

The 'Boom I/O A Status Outputs' screen appears:

- Illuminated Green indicates an active circuit.
- Illuminated Red indicates a circuit problem.
- Illuminated Grey indicates inactive (not connected).

Boom I/O B Status Outputs

Press the Arrow push buttons to move the green cursor to select the 'Boom I/O B Status Outputs' menu, then press the 'O' push button to display the screen.

The 'Boom I/O B Status Outputs' screen appears:

- Illuminated Green indicates an active circuit.
- Illuminated Red indicates a circuit problem.
- Illuminated Grey indicates inactive (not connected).
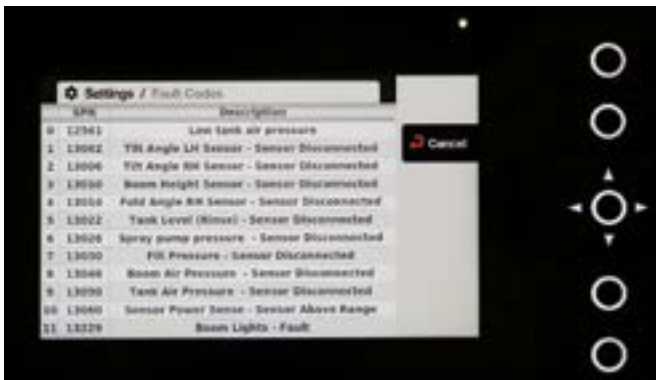
The 'Fault Codes' screen.
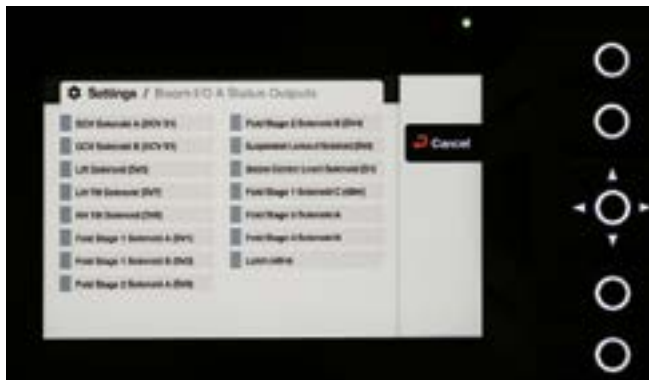
The 'Boom I/O A Status Outputs' screen.

The 'Boom I/O B Status Outputs' screen.

Use the Arrow push button to move the green cursor to 'PLC I/O Input Status', then press the 'O' push button to open the screen.

PLC I/O Input Status

Press the Arrow push buttons to move the green cursor to select the 'PLC I/O Input Status' menu, then press the 'O' push button to display the screen.

The 'PLC I/O Input Status' screen appears:

- Illuminated Green indicates an active circuit.
- Illuminated Red indicates a circuit problem.
- Illuminated Grey indicates inactive (not connected).

Use the Arrow push button to move the green cursor to 'PLC I/O Output Status', then press the 'O' push button to open the screen.
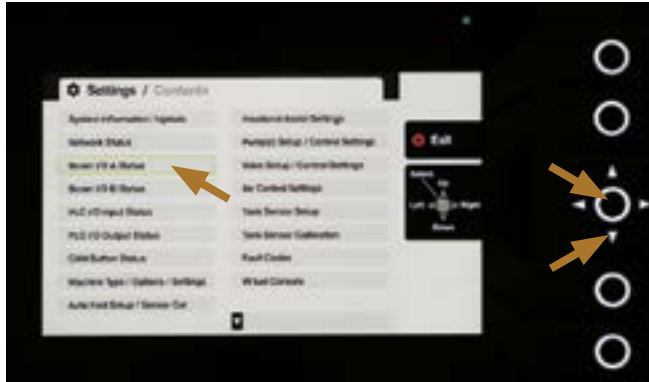
PLC I/O Output Status

Press the Arrow push buttons to move the green cursor to select the 'PLC I/O Output Status' menu, then press the 'O' push button to display the screen.

The 'PLC I/O Output Status' screen appears:

- Illuminated Green indicates an active circuit.
- Illuminated Red indicates a circuit problem.
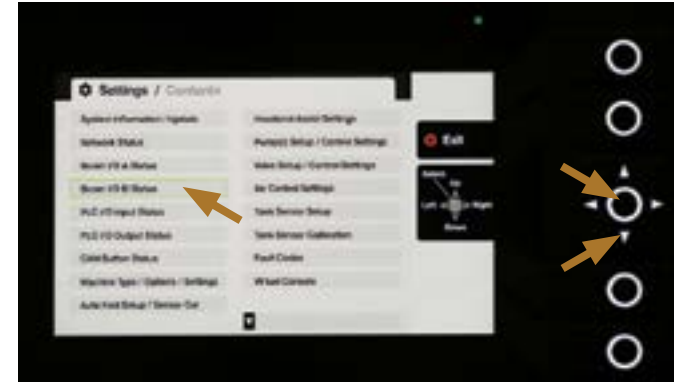- Illuminated Grey indicates inactive (not connected).

Use the Arrow push button to move the green cursor to 'CAN Button Status', then press the 'O' push button to open the screen.

CAN Button Status

Press the Arrow push buttons to move the green cursor to select the 'CAN Button Status' menu, then press the 'O' push button to display the screen.

The 'CAN Button Status' screen appears showing the control buttonpads - Joystick (Key Pad A [1-8]), External (Key Pad Ex [1-8]) and Auxiliary (Key Pad B [1-12] & (Key Pad C [1-16]) Buttonpads.

- Illuminated Green indicates an active circuit.
- Illuminated Red indicates a circuit problem.
- Illuminated Grey indicates inactive (not connected).

The 'PLC I/O Input Status' screen.

The 'PLC I/O Output Status' screen.

The 'CAN Button Status' screen.

Example: Pressing the Joystick 'Tilt Left Down' push button, lights-up Green the corresponding 'Tilt Left Down' push button on the 'CAN Button Status' screen.

The push buttons of each active control unit can be tested using this screen.

To Test the Push Buttons:

1   Press a push button, for example, on the Joystick control.

The corresponding button shown on the screen will light-up:
- Green, if functioning
- Will not light-up, if not functioning.

2   Repeat the procedure for each push button and control, as required.

Use the Arrow push button to move the green cursor to 'Virtual Console', then press the 'O' push button to open the screen.
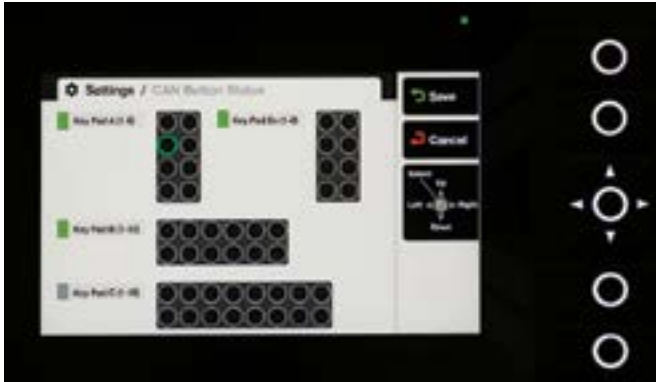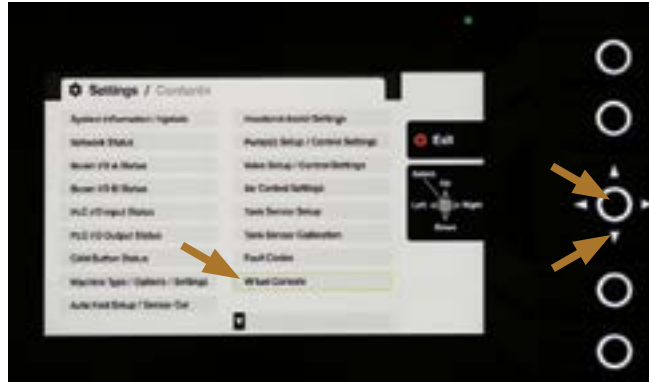
Virtual Console

Press the Down Arrow push button to move the green cursor downwards to select the 'Virtual Console' menu, then press the 'O' push button to display the screen.

The 'Virtual Console' screen appears.

Each item on the 'Virtual Console' screen provides an alternative virtual method of operating each function shown.

If a fault occurs with a push button, the 'Virtual Console' makes it possible to operate the function, temporarily, until the fault is rectified.

The 'Virtual Console' screen.

The Virtual Control screen also provides another way of testing the integrity of the functions, circuits & switches when fault finding.

Refer to Chapter 8, 'Lubrication & Maintenance' for instructions on each of the 'Virtual Control' screens.

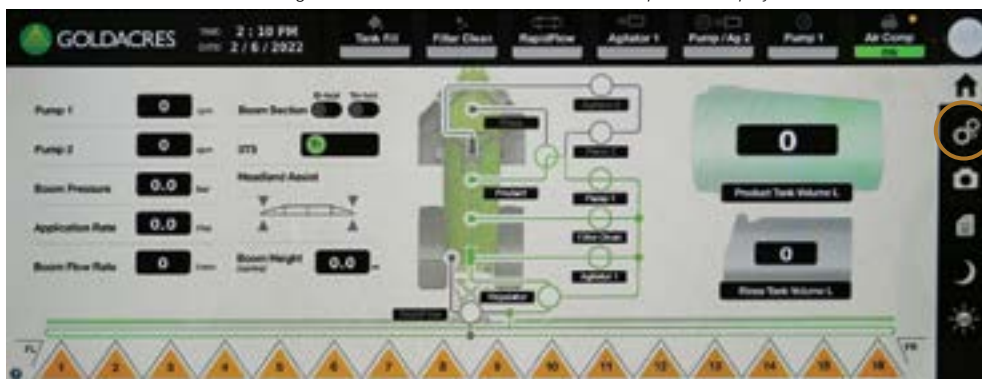*Press the 'Enter' push button of the start-up screen to open the Main screen.*

The 'Network Status' screen - the opening screen of the 'Diagnostics Tab'.
Press the 'Keypad Status' touch button to open the 'Keypad Status' screen.

Troubleshooting - G-Hub 12" Display

The G-Hub 12" Touch Display provides quick reference to all Diagnostic functions.

To Access the Diagnostic Functions:

1 Start the tractor engine.
2 After G-Hub cabin display start-up screen appears, press the Enter touch button and the Main screen appears.
3 Press 'Settings' touch button to display the Settings menu.
4 Press the 'Diagnostics' tab touch button to display the 'Diagnostics' screen.
The screen opens showing:
  - Network Status screen (open)
  - Keypad Status tab
  - Boom I/O A/B tab
  - PLC I/O tab
  - Virtual Controls tab.

Network Status

The 'Network Status' screen provides the current status of the G-Hub Networks:
  - Green/OK - Connected & working
  - Red/! - Network is not working
  - Grey - Network not connected.

Keypad Status

Press the 'Keypad Status' tab touch button to display the 'Keypad Status' screen.

The screen appears showing control Keypads:
  - Keypad A (1-8) - Joystick
  - Keypad Ex (1-8) - External
  - Keypad B (1-12) - Auxiliary
  - Keypad C (1-16) - Auxiliary [48m].

The push buttons of each control unit can be tested using this screen.

To Test Push Buttons:

1 Press a push button, for example, on the Joystick control.
The corresponding button shown on the screen will light-up:
  - Green, if functioning
  - Will not light-up, if not functioning.
2 Repeat the procedure for each push button and control, as required.

Press the 'Settings' touch button on the G-Hub 'Menu' to open the Display screen.

The 'Keypad Status' screen.
Press the 'Boom I/O A/B' touch button to open the 'Boom I/O A/B' screen.
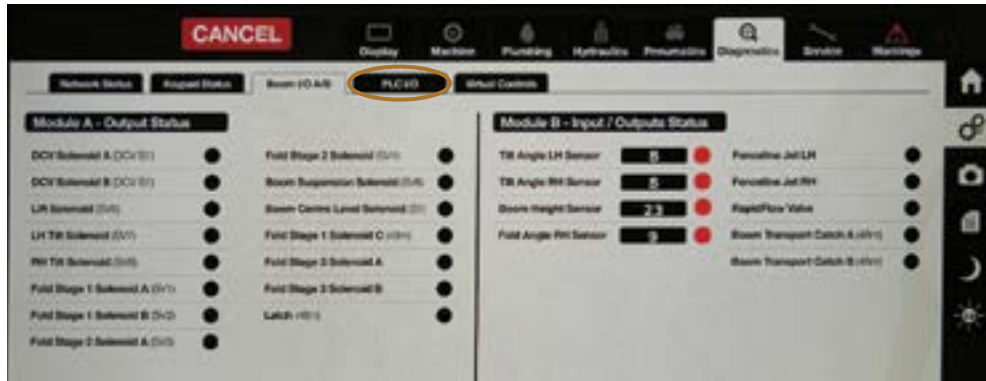
The 'Boom I/O A/B' screen.
Press the 'PLC I/O' touch button to open the 'PLC I/O' screen.

The 'Virtual Control' screen.

Boom I/O A/B

Press the 'Boom I/O A/B' tab touch button to open the 'Boom I/O A/B' screen.

The screen appears showing:
- Module A - Output Status
- Module B - Inputs / Output Status.

Item status is:
- Green dot = Connected & working
- Black dot = Not connected.
- Red dot   = Not working (error state)
  If Red, go to the Main Control Module & check the Input connections.

PLC I/O

Press the 'PLC I/O' tab touch button to open the 'Boom 'PLC I/O' screen.

The screen appears showing:
- PLC I/O Input Status
- PLC I/O Output Status.

Item status is:
- Green dot = Connected & working
- Black dot = Not connected.
- Red dot   = Not working (error state)
  If Red, go to the Main Control Module & check the Input connections.

The 'PLC I/O' screen.
Press the 'Virtual Controls' touch button to open the 'Virtual Controls' screen.
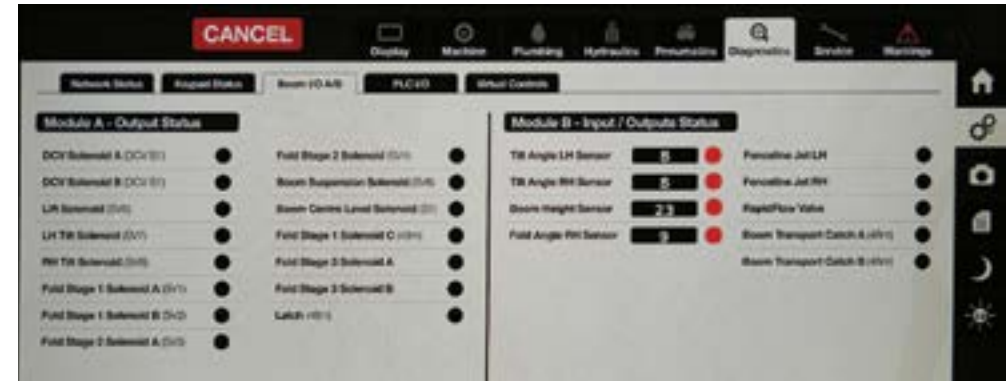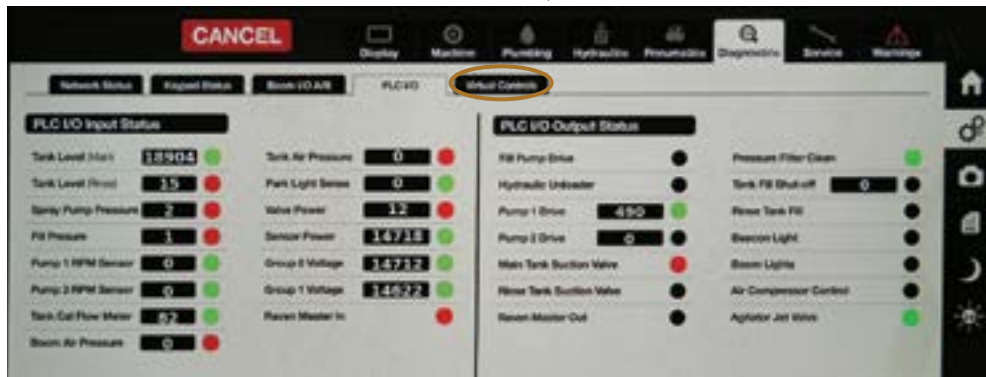
Virtual Controls

Press the 'Virtual Controls' tab touch button to open the 'Virtual Controls' screen.

The screen appears showing a series of push buttonpads, from left to right:

- External Buttonpad push buttons
- Auxiliary Buttonpad push buttons,

plus:
- Tank Level display
- Desired Tank Level display
- Tank Density display.

Each touch button on the 'Virtual Console' screen provides an alternative virtual method of operating each function displayed.

If a fault occurs with a push button, the 'Virtual Console' makes it possible to operate the function, temporarily, until the fault is rectified.

The Virtual Control screen also provides another way of testing the integrity of the functions, circuits & switches when a fault occurs.

To Check a Function in Virtual Mode:

1 Press the Virtual Mode touch button to engage/disengage the Virtual Mode.

   The touch button displays Green when engaged & Grey when disgaged.

2 When testing is completed, press the Virtual Mode touch button to disengage Virtual Mode.

   The touch button displays Grey when disgaged & Green when engaged.

Refer to Chapter 8, 'Lubrication & Maintenance' for instructions for further 'Virtual Control' operation.

The ISOBus Module (also called Chassis Controller or Main Control Module) located in the Quick Fill storage cabinet.

G-Hub Main PLC Controller

The G-Hub Main PLC Controller, also known as the Chassis Controller or Main Control Module, is located in the storage cabinet of the Quick Fill Station.

The following illustration & table provide key troubleshooting information for each light function on the ISOBus Module (Main PLC Controller).

NOTE

When nothing appears on the G-Hub Display, first, check the lights of the PCL Controller (located in the filling station storage box) for more information.

Check the LED colours and if a problem is showing according to the LED lights descriptions, contact your local Dealer for service.

Boom Module A & Boom Module B located on RHS boom centre section.

LED lights & keys on the ISOBus Module

Indicator	LED Color		Description
SYS 0			
SYS 1			
ETH 0	Green		Ethernet ok and working.
	Off		Ethernet off.
ETH 1	Green		Ethernet ok and working.
	Off		Ethernet off.
APP 0	Cyan		System cold start no connection established.
	Green	(slow flash)	System link operational valid connection.
	Magenta	(fast flash)	Messaging timeout no connection.
	Cyan/Green	(fast flash)	Conneciton established system settings altered.
	Magenta/Green	(fast flash)	Connection active data packets missing or dropped.
APP 1	White	(solid)	System connection running.
	White/Blue	(fast flash)	System starting.
	Magenta	(fast flash)	Single module connection fault.
	Yellow	(fast flash)	Both modules connection fault.
	Blue	(solid)	No communication with modules.
	Blue	(fast flash)	Data received out of range.
APP 2	White	(solid)	Can open system connection running.
	White/Blue	(fast flash)	System starting.
	White/Magenta	(fast flash)	Cabin module fault joystick or main control keypad.
	White/Red	(fast flash)	Rear boom module fault with module.
	White/Yellow	(fast flash)	Fill station keypad module fault.
	White/Green	(fast flash)	Virtual control active, all keypads deactivated.
APP 3	Blue/Red	(fast flash)	Flush tank calculation error.
	Green/Red	(fast flash)	Main taink calculation error.
	Green	(solid)	All calculations correct.
	Yellow	(fast flash)	No system settings defined (Machine not initialised).
	Yellow/Red	(fast flash)	Tank calibration in progress.

Spray Pump - Diaphragm

PROBLEM	COMMON CAUSES	COMMON SOLUTION
The pressure on gauge is higher than the nozzle flow indicates	Blocked filters of nozzles	Check and clean all pressure and nozzle filters
	Flow loss due to resistance in lines, valves and filters.	Re-calibrate console to allow for pressure loss
The flow rate is correct but my pressure is too low or high.	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 speed to 400 - 540 RPM range
	Faulty pump valves	Replace pump valves
Pump pressure pulsating	Air accumulator pressure is incorrect (if fitted)	Reset the pressure in air accumulator
	Air accumulator diaphragm has a leak (if fitted)	Replace air accumulator diaphragm
	Incorrect pump speed	Adjust speed to 400 - 540 RPM range
	Air leak on suction side of pump	Check pump suction for air leaks
Pump oil is becoming milky	Cracked diaphragm	Replace all diaphragms

Spray Pump - Diaphragm

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Pump is noisy	Low oil level	Refill or replace oil
	Damaged pump valves	Replace pump valves
	Pump suction line has air leak or is restricted	Clean suction filter and check for leaks in suction lines
Pump housing or mounting cracked.	Extremely cold weather can cause liquid in the pump to freeze	Check for ice in the pump and let defrost if required
Pressure & Flow rate are too low	Diaphragm pump speed	Check pump speed is 400 - 540 RPM.
	Diaphragm pump diaphragms	Check oil for colour change. If the oil appears milky, a diaphragm will be damaged and needs to be replaced
	Diaphragm pump valves	Check pump valves for wear or blockage

Spray Pump - Centrifugal

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Pressure & Flow rate are too low	Incorrect pump speed	Check pump speed is 4000 - 4200 RPM
	Suction line air leak	Check suction line for air leak.
	Suction blockages	Check the tank sump, suction line & suction filter for blockage
	Nozzle wear	Measure the flow per minute coming out of one nozzle, then check the nozzle chart for the corresponding flow.
	Regulator valve function	Check the regulator valve is rotating the full 90 degrees when the boom valves are switched Off
	Excessive bypass on pressure manifold	Verify the Console calibration settings
Pressure & Flow rate are too high	Bypass line is restricted or blocked.	Verify console calibration settings Check for restriction in bypass line Check pump speed is not too fast Check if Bypass valve is turned On
Pressure gauge reads higher than the nozzle flow indicates	Blocked filters of nozzles	Check and clean all pressure and nozzle filters
	Flow loss due to resistance in lines, valves & filters.	Check and clean all pressure and nozzle filters

Spray Pump - Centrifugal

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Pressure fluctuation	Air leak on suction side of pump	Check suction pump for air leaks.
	Incorrect pump speed	Adjust pump speed: 4000 - 4200 RPM
Pump pressure pulsating	Incorrect pump speed	Adjust pump speed: 4000 - 4200 RPM
	Air leak on suction side of pump	Check pump suction for air leaks
	Pump suction line has air leak or is restricted	Clean suction filter and check for leaks in suction lines
Pump housing or mounting cracked.	Extremely cold weather can cause liquid in the pump to freeze	Check for ice in the pump and let defrost if required

Booms

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Inner and outer wing are not in line with each other when the boom is unfolded	Stopper bolt holding out the boom	Adjust the boom stopper bolt
Booms will not fully fold to the boom rests	Insufficient lubrication	Lubricate all boom pivots
	Fold cylinder adjusters have moved	Adjust fold cylinder mounts
Boom unfolds unevenly	Air trapped in the hydraulic lines	Unfold booms completely and hold switch for a few seconds. Then, fold booms completely and hold switch for a few seconds. Do this multiple times as necessary to purge any air out of the hydraulic lines
	Centre section level chains loose	Re-tension chains
Outer boom does not line up with the inner wing when unfolded	Incorrect boom adjustment	Fold the boom out and note the position the outer boom is in. Fold the boom in to transport position and note position outer boom is in. Follow the table below to adjust boom so it sits level in the out (work) position and to have the bottom chords sitting parallel in the folded (transport) position
Boom inners folding unevenly	Centre level chains loose	Re-adjust centre levelk chains to level centre when folding
	Flow divider FD1 blocked	Remove flow divider FD1 and clean with compressed air
		Replace flow divider FD1 if damaged
Boom outers folding unevenly	Centre level chains loose	**Re-adjust centre level chains to level centre when folding**
	Flow divider FD2 blocked	Remove flow divider FD2 and clean with compressed air
		Replace flow divider FD2 if damaged

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.

Wing Adjustment

Use the table below to adjust rose end mounts.

The table shows the position of the boom & the adjustment necessary to bring them level.

> **NOTE**
>
> By nature, booms fitted with flow dividers don't fold 100% evenly.
> Hold the boom fold switch for a few seconds after the first boom has folded completely to give the other boom the chance to match the fully folded position.

OUTER WING POSITION (UNFOLDED)	OUTER WING POSITION (FOLDED)	TOP PIVOT ADJUSTMENT	BOTTOM PIVOT ADJUSTMENT
Up	Up	NIL	Shorten
Up	Down	Lengthen	NIL
Level	Up	Shorten	Shorten
Down	Down	NIL	Lengthen
Down	Up	Shorten	NIL
Level	Down	Lengthen	Lengthen

Hydraulics & Pneumatics

PROBLEM	COMMON CAUSES	COMMON SOLUTION
No hydraulic pressure	Blocked pressure filter	Replace hydraulic pressure filter
	Yaw valves open	Close yaw valves on rear boom manifold
	Load sense signal bleeding off	Fit smaller orifice in chassis manifold
		Adjust tractor internal load sense bleed
The air bags are not inflating	Low system pressure	The bags will not inflate until the pressure in the system is above 75 PSI, check system pressure.
	Compressor not working correctly	Check the compressor is working correctly
Vehicle sits unevenly	Incorrectly adjusted ride height valves.	Adjust the ride height valves as per the instructions in the Lubrication and Maintenance chapter.

Plumbing

PROBLEM	COMMON CAUSES	COMMON SOLUTION
No water at boom.	No Tier valve value entered or is at 0	Enter value greater than 0

Induction Hopper

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Induction hopper is not performing as well as it should	Insufficient flow to venturi in the hopper bottom	Check the pressure supplied to the hopper bottom is around 550 kPa (80 PSI).
	Air leaks on induction system	Check all hoses, clamps, and cam lever fittings are sealed

Tanks, Chassis & Wheels

PROBLEM	COMMON CAUSES	COMMON SOLUTION
The drawbar of the sprayer has become noisy and loose	Worn, or missing, plastic insert in towing eye	Replace plastic insert

Flow Meter

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Application rate is inaccurate, unstable or zero	Incorrect console calibration	Re-calibrate console
	Inconsistent ground speed reading	Check cabling
	Inconsistent flow meter reading	Replace flow meter
	Faulty control valve	Replace control valve
		Check - manual increase/decrease flow control
Speed sensor display is inaccurate, unstable or zero	Incorrect speed calibration	Re-calibrate console speed
	Faulty cable	Test cable as per instructions following
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
	Faulty cable	Test cable as per instructions following
	Calibration figure is incorrect	Reset meter calibration
Application rate or pressure will not alter	Faulty control valve	Test valve manually and replace if required

Flow Meter cont.

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Control valve has failed	Faulty cable Faulty valve	Replace control valve
		Temporary solution - Remove the motor from the 3 way ball valve & manually adjust the flow by turning the shaft with a spanner.
Raven Console not working	No power supply	Check loom connection at the back of the console
		Check connection to battery terminals
		Check the fuse in the back of the console
		With a multi meter, check the voltage potential across pins 1(-) and 16(+) on the 16 pin plug going into the console (Should be at least 12v)

If a flow meter fails to give accurate readings, the following actions should be taken:

- Adjust the spraying pressure by putting the flow control switch into manual and using the increase/decrease switch to adjust to the desired pressure shown on the pressure gauge of 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 the test can be performed in order to correct the problem.

  Repair or replace the flow meter as soon as possible.

+5V DC

Keyway

10 O'Clock Power   *2 O'Clock Ground*

+5V DC

6 O'Clock Signal
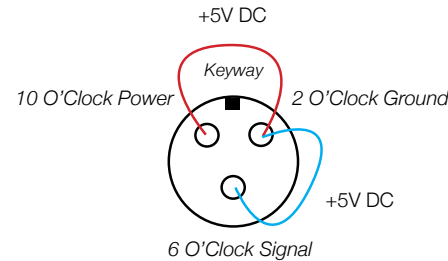
Voltage Readings:
   2 o'clock - 6 O'clock (+5V DC)
   10 o'clock - 2 O'clock (+5V DC).

Cable connector test points.

Flow Control Valve Override

To Override the Flow Control Valve:

1   Remove electric motor from three way fast close valve, and manually rotate valve until desired spraying pressure is achieved.

2   Drive sprayer at a constant speed in order to apply the required application volume as determined by the nozzle selection chart.

3   The sprayer should then be able to be operated in order to empty the tank.

4   Once the sprayer is empty of chemical, partially fill the tank with fresh water (no chemical) so further testing can be performed to correct the problem.

5   Repair or replace the Raven console as soon as possible.

Testing Raven Flow Meter Cable

To Test the Raven Flow Meter Cable:

1   Change meter Cal number (in the Raven console) to 1 with the [Meter Cal] key.

2   Press [total volume] key & place the boom switches ON.

3   With a jumper wire (eg, paper clip), short between the 6 O'clock & 2 O'clock sockets with a short", then "no short" motion.

   Each time contact is made the [total volume] should move up in increments of 1 or more.

4   If total volume does not count up, the previous section of cable must be faulty & should be repaired.

5   Perform the voltage checks shown above.

6   Change [Meter Cal] number back to previous number.

NOTE

Care should be taken because there is no agitation while the nozzles are not spraying.

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9 | Fast Tracking Problems – **Trouble Shooting**

Chemical Probe

PROBLEM	COMMON CAUSES	COMMON SOLUTION
Chemical probe is not working or is working too slow	Air leak in the vacuum system	Check all hose clamps and fittings are tight
	Lack of pressure to venturi in top of tank	Check there are no kinked hoses and the water pressure is about 100 PSI

To Isolate Possible Probe Air Leaks:

1   Check the operation of the chemical probe. If this will transfer water at a minimum of 30 L/min then this part of the system is okay.

    If not check for air leaks at:

    • Cam lever fitting of the probe

    • Hose fittings

2   If the probe works correctly but an Envirodrum will not operate, check for air leaks in the Envirodrum fitting (this must be thoroughly cleaned after each use).

    Also check interior pipes of the Envirodrum for air leaks or damage.

To Summarise:

Firstly, check the flow of water into venturi.
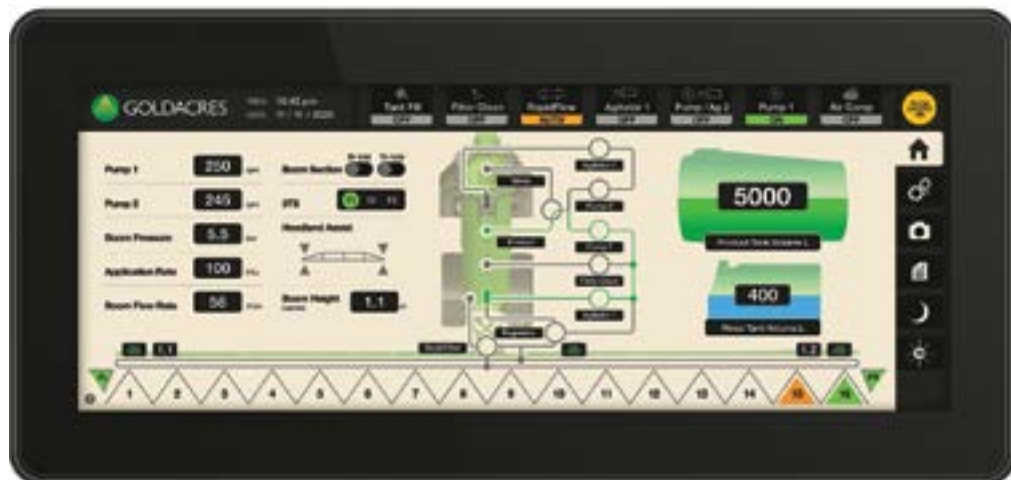
Secondly, check the probe only.

Thirdly, check both the probe and Envirodrum section.

NOTE

All tests must be done with water because the speed of the transfer is affected by the increased viscosity of added chemicals.

Appendix – **Integrated Systems**

Optional G-Hub 12" Cabin Display - Goldacres Integrated Control System.

G-Hub - Goldacres Integrated Control System

G-Hub Glossary of Terms:

CANBUS - Controller Area Network which allows devices to communicate

Crash - PLC code run failure; Requires restart

Ethernet - Network technology like CANBUS but 100 times the bandwidth

G-hub - Goldacres integrated machine control system

HC - High current

ifm - Company brand name of PLC hardware used

I/O - Input/output

PDM - Power distribution module

PLC - Programmable logic controller

RCM - Raven control module used for product rate control

XRT - Raven boom height control system (replaces Norac).

Auxiliary Buttompad & RCM Controller.

Optional G-Hub Cabin Display:

- Full colour, 12" 8:3 ratio Touch screen, running embedded Linux OS, IP 67which displays important machine data to the operator from all connected systems

- Full system diagnostics, including warnings and operation states "Right to repair ready"

- Displays all relevant machine data for the operator

- Goldacres have custom designed the user interface with inbuilt help

- The system has been designed to keep going even if individual components fail.

- Full virtual controls in case of component failures with input switches and joystick.

- Full virtual control of external display in case of external display failure.

- Interface to change settings and configure the system.

External G-Hub Controller Display.

External Controller Display:

- Full colour, 5" Non Touch screen, running embedded Linux OS, IP 67

- Activating the external display temporally locks the main display screen

- External CAN Key pad with function indicator LED's, 8 push button can pad with coloured indicator lights

- Automatic tank fill function

- System Rinse functionality

- Control of electric plumbing valves, valves including colour indicator lights for easy diagnostics.

Main Control Module located in the storage box of the

Boom I/O module.

Main PLC:

- Main 'brain' of the control system, contains all the chassis I/O for sensors and control

- The diagnostic lights on the PLC tell inform the user if software is loaded and if there are any problems (see PLC LED table in Chapter 11 'Troubleshooting')

- The software has been written to allow continued operation even when sensors fail, if a sensor is faulty it can be disconnected. But please note that some system functionality may be lost until the sensor can be replaced.

- Links via CAN to Raven XRT for control and sense when in operation

- Correct operation of the PLC is critical to machine operation.

I/O Modules:

- There are two basic I/O modules that convert the input from the console switches and joystick into CAN bus messages

- The CAN bus messages are then sent to and interpreted by the PLC to operate machine functions

- The I/O modules are not programmed, rather they are configured with mechanical selectors that set the CAN address and the CAN data speed. If not set correctly they will not be detected on the network.

- Each module has built in power and input status lights for each input allowing quick and easy diagnostics.

Boom I/O Modules:

- In order to reduce the amount of wires running to the rear of the machine, two smaller I/O modules do the work for the PLC at the rear

- The two modules look the same but they are different

- Each module has a unique CAN bus address as displayed on their screens

- The CAN bus address and data rate can be manually set and adjusted as required with the buttons

- The modules house diagnostic LEDs to assist troubleshooting

- The indicator lights will display when the output is on and flash if there is an output disconnected. The small screen displays the node address and the status of the CAN bus connection.

- The modules do not contain software and do not require updating.

Valves & Solenoids:

- Most of the plumbing valves have a built in light, red or green, that primarily indicates the valve position but also the fact that they have power connected

- Note that the main suction valve has three positions and is normally in the centered OFF position. There will be no light on in this position but it may still have power connected as normal.

- The main plumbing valves have a breakout harness for easy assembly and diagnostics if required with the use of a break in tee harness

- The main hydraulics also have a breakout harness for easy assembly and diagnostics

- The rear I/O modules will also flash a red LED when a solenoid is disconnected (they run a small amount of current into the output to detect presence of connections).

CANBUS

The machine control systems can use up to six independent CANBUS networks & these are critical to complete operation of the G-Hub:

1 Goldacres CAN network (PLC to displays)

2 Goldacres CAN control (PLC to I/O modules)

3 ISOBUS CAN (RCM, Raven XRT and GPS, etc

4 Goldacres CAN open (Keypad to external display screen).

Raven & Hawkeye run their own sub-CANBUS networks. These networks are separate and must not be joined.

They must be fully installed before they will operate, ie, fully installed including installation of terminators (see CANBUS layout schematics on the following pages).

G-Hub Settings Backup

The internal controller display gives the operator the ability to back up the G-Hub settings, this can save information such as the machine setup and the tank calibration values to an external USB drive for future use if required.

Software Updates

The three components that can be updated include:

- Main PLC
- Internal display
- External display.

The customer can enjoy improvements and added functionality from future software updates as it is designed and released.

Software updates are performed using:

- USB port to the internal controller display in the cabin (G-hub Controller updates [see instructions at the end of chapter 3 'Cabin']) and

- IFM maintenance tool (PLC updates).

Further information on how to perform updates will be provided with each software update release.

It is highly recommended that all settings are backed up before performing a software update in case of issues.

CANBUS Network Schematics

MAX 7 RADAR SENSORS.
MUST BE ODD NUMBER.

RADAR #5

RADAR #4

RADAR #3

RADAR #2

RADAR #1

T

BOOM OUTPUT MODULE CR2052 ID: 30

BOOM I/O MODULE CR2051 ID: 20

CAN GA CONTROL (OPEN)

ID: 117

TRAILOR / TRACTOR

ID: 101 ID: 112 (48M) ID: 113 (36M)

XRT MODULE ID: 92

RATE CONTROL MODULE ID: 81

XRT ABM

ID: 130 ID: 144 ID: 12

TRACTOR ISO BUS

CAN ISO

ID: XX

HAWKEYE MODULE

CHASSIS PLC

192.168.82.220

HMI CABIN

192.168.82.230

FILL HMI

192.168.82.210

MAX 192 HAWKEYE NCV. NUMBER OF NCV
DEPENDANT ON BOOM SIZE AND NOZZLE SPACING

	CAN LINES
- - - - -	ETHERNET LINE

CANBUS NETWORKS

CABIN KEYPAD   KEYPAD JOYSTICK

G-HUB PLC

I/O CR2052   I/O CR2051

GA CONTROL (CAN OPEN)

GA3000601   GA3000602   GA3000328

ISO CAN BUS

G-HUB PLC

RCM

XRT   ABM

ISO CABIN

115-7302-057   GA3000602   115-7302-057   115-7302-047

GA3000373 (XRT)

GA3000205 (NON XRT OR HAWKEYE)

CANBUS Network Schematics cont.

HAWKEYE RIGHT BOOM

115-2005-065

BOOM HARNESSING (HAWKEYE)

HAWKEYE LEFT BOOM

HAWKEYE RCM

ETHERNET NETWORKS

USB ACCESS PORT

192.168.82.240

CABIN HMI

GA3000601

GA3000602

FILL STATION HMI

G-HUB PLC

——————— CAN LINES

– – – – – – – ETHERNET LINE

Cabin Harnesses Electrical Layout

CABIN

Cabin Electrical Harness & Connector Layout

Raven ISO Bus Setup in Tractor (Optional)
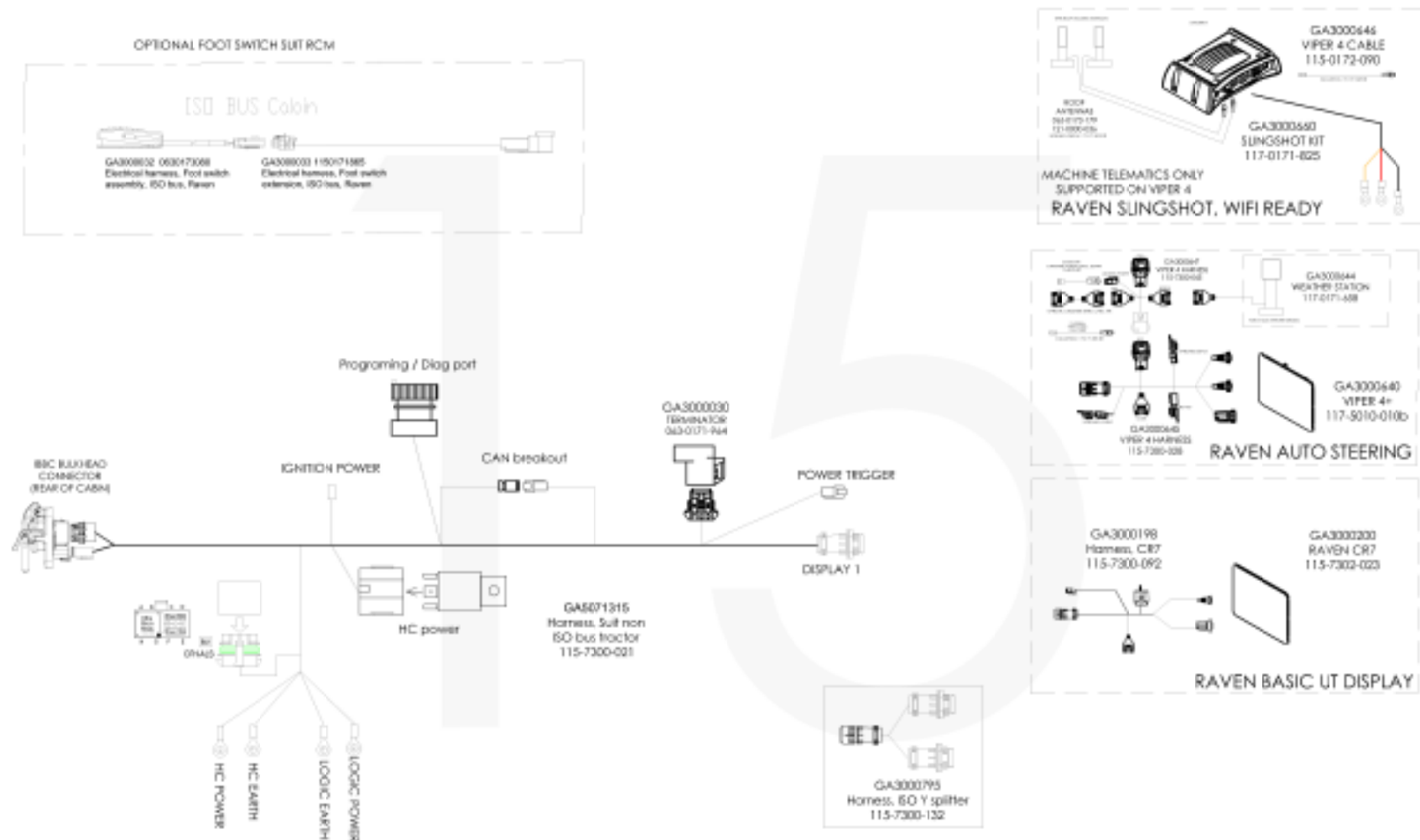
The cover of the Chassis Fuse Box.

The RCM fuse capsule under the hitch.

Filling & Cleaning - Quick Fill Station.

Fuses

The Chassis Fuse Box is located Qick Fill Cabinet.

The RCM fuse capsule is located on the cables under the hitch.

The Chassis Fuse Box with cover removed.

Liquid Application System

The Liquid Application System comprises the liquid & chemical:

- Filling & Cleaning system
- Spraying system

Filling & Cleaning System

Filling & Cleaning functions of the Prairie Pro are primarily controlled and monitored on the External G-Hub Controller & Filling Station Pod of the Quick Filling Station on the left hand side of the sprayer. Refer to chapter 6 'Operation - Ready to Spray' for operating details.

Primary components include:

- Fill pump
- Chemical transfer pump.

Optional 3" Fill pump.

Dual centrifugal pumps.

Diaphragm pump.

Fill Pump (Optional)

A 3" high-capacity fill pump combined with high flow fluid plumbing and hydraulics is capable of filling the sprayer at rates of up to 1150 l/min. The pump & distribution valves are controlled by the G-Hub system to regulate fill rate & tank level soft shut-off .

Chemical Transfer Pump (Optional)

A pneumatic twin diaphragm high-capacity chemical transfer pump (up to 40 l/min) ideal for high viscosity chemicals allows neat chemical to be delivered directly to the main product tank or diverted to the induction hopper to be measured before being transferred

Optional chemical transfer pump.

Spraying System

Optimum droplet sizing, pressure, nozzle flow rate and spray uniformity across the boom width are all critical to accurate chemical application.

Goldacres Rapid flow, boom recirculation, 3 tiered nozzle system (3TS, 3TS-Pro) options and Hawkeye Pulse Width Modulated (PWM) system option offer many application benefits.

All Spraying application functions of the Prairie Pro are controlled and monitored on the G-Hub Controller in the cabin. Refer to chapter 6 'Operation - Ready to Spray' for operating details.

Primary components include:

- Spray pump, filters & valves
- Rate Control Module (RCM)
- Spray pump & liquid controls
- RapidFlow & RapidFire
- Boom sections & height control
- Driveline & speed control

Spray Pumps

The Prairie Pro is optioned with a diaphragm or centrifugal spray pump:

- A Udor Zeta 260 l/min diaphragm pump with nearly 85% of the pump capacity available to the spray line. This increased capacity allows spray application rates of up to 140 l/ha @ 25km/h to be achieved (220 l/min total flow rate across a 36m boom) OR

- A five-stage centrifugal pump can deliver up to 400 l/min at 8 bar of pressure. The multi-stage pump technology proved far more linear relationship between flow and pressure which is crucial in keeping large volumes of chemical in solution whilst spraying at relatively high pressures.

The centrifugal pump is standard with all 48m booms and when the Hawkeye PWM option is fitted.

Both pumps are protected by a large suction filter as well as rpm and run-dry sensors for peace of mind spraying.

RCM screen.

Illustration of the RapidFlow and RapidFire nozzle technologies.

Centralised Filters & Valves

Many filling, rinsing and spraying fluid circuits are controlled using motorised electric ball valves which are centralised to minimise pressure drop which is essential for maximising pump performance.

Electric motorised ball valves feature LED status lights and valve position indicators to aid trouble shooting.

A large single pressure filter featuring a self-flushing flushing function helps keep contaminates from blocking nozzles.

Rate Control Module (RCM)

The Raven Control Module (RCM) fitted as standard. It uses innovative control algorithms for precise application including up to 16 section boom control to eliminate expensive skips and overlaps.

The RCM is compatible with many ISOBUS universal terminals on the market, including the CR7 from Raven - ISOBUS compliant CAN channel, plus 3 available CAN subnets. Compatible with ISOBUS Universal Terminal and Task Controllers Integrated Bluetooth providing long range line-of-sight wireless connectivity for control, monitoring & testing.

Refer to the Raven RCM operation manual supplied for detailed setup and calibration information.

RapidFlow

RapidFlow boom recirculation, fitted as standard, allows the sprayer boom lines to be fully primed without spraying a single drop, significantly reducing wastage at the start of spraying, changing chemicals and cleaning. RapidFlow is used to thoroughly flush out the boom lines without the need to physically spray on the ground.

Boom recirculation can also be controlled through the G-Hub system and can be set to be either manual or automatic in its operation.

RapidFire - Air Solenoid Nozzles

The nozzle system contains a master and slave arrangement for each section. One master air solenoid per section is electrically operated, which sends air to activate a number of slave cylinders which are pneumatic only.

Master cylinders have dual or single nozzle bodies, depending on the spacing option at time of purchase, but operate in the same way.

In the event of nozzles not operating as expected, there are checks to help diagnose and solve the problem -16section version only.

First check the electrical connections to the master air solenoids. There should be power at the connector when the nozzles are activated from the cabin and the connectors should be securely plugged in to the nozzle.

Secondly, check the air lines for secure fitment and presence of air pressure in the 6 mm supply lines to the masters when the machine is running.

Boom poly
Check Valve
Electric operated air solenoid
Breather
Slave air outlet (4mm) with release ring
Master air inlet (6mm) with release ring
Nozzle

Master air solenoid valve.

Centreline plumbed boom with optional 3TS single nozzles at 250mm spacing.

Boom with 3TS Pro with alternating single & double nozzles at 250mm spacing.

RapidFire - Nozzle & Air Check

Test the air check nozzles for instantaneous response at the nozzle tip. With the lines at spraying pressure switch the nozzles On & Off. Each nozzle must respond quickly without dribbling, as the pressure builds up or subsides.

The air checks Close under a spring tension of 45 psi. This traps the liquid in the spray line at the same pressure that it was being applied.

When the booms are turned On, air pressure (acting against the 45 psi springs) instantly opens flow to the nozzle applying the boom line liquid pressure at the rated pressure and droplet size with full fan angle.

The air check valve is located on the side of the nozzle, it has 2 O-rings in it. Over time, the O-ring may swell or be damaged. This may result in the nozzle dripping or being slow to shut when it has been turned off.

If the nozzle leaks the outer O-ring requires replacement. If the air shut off has poor or delayed response, the inner O-ring requires replacement.

3 Tier System - 3TS & 3TS Pro (Options)

The 3 Tier System (3TS) provides a wider range of flexibility with application rates and spraying speed. The 3TS effectively gives a much wider operating band whilst still maintaining optimum droplet size.

The 3TS might be described as a three step gearbox or in the case of the 3TS Pro, a seven step gearbox.

3TS Option

Each nozzle type on 2 tiers has an operating pressure band for a given droplet size. As the first nozzle set or tier reaches the top of its pressure band, the next larger size nozzle tier is activated.

When the second tier reaches the top of its pressure band, the first tier will be reactivated to spray at the same time. This effectively gives three operating bands.
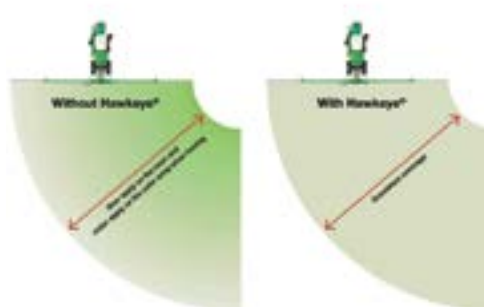
3TS Pro Option

The 3TS Pro option is an extension of this idea using three different nozzle sizes and gives seven effective bands of operation for even greater application control.

It requires an unlock code for the Raven RCM which is provided when the feature is optioned.

The Raven RCM controls the 3TS system. For specific calibration and operating instructions, see Raven RCM operation manual supplied.

Nozzle by nozzle turn compensation with the Hawkeye option.

Flow Control Valve.

AutoBoom XRT radar sensor.

Hawkeye (Option)

The optional Raven Hawkey is a Pulse Width Modulated (PWM) spray system. Known as Hawkeye 2.0, this PWM is offered on 36m and 48m booms with nozzle spacing at 250mm (& 500mm on request). This system provides:

- Nozzle by nozzle turn compensation. Each nozzle features its own microprocessor which can perform diagnostic functions.
- Up to 16 virtual sections or individual nozzle control.

The system runs at 10Hz with blended pulse application & is controlled through the ISO BUS terminal.

Speed Sensors

The Raven Automatic Rate Controller utilises a speed reading from the transmitted GPS speed over ISOBUS network.

The GPS system must be configured to transmit the gound speed over the ISOBUS network.

Flow Control Valve

The flow control valve (mounted on the chassis) regulates the amount of liquid going to the boom sections as directed by the console. It controls the flow to the boom by regulating the amount of liquid which bypasses and flows back to tank.

The flow control valve is a positive ball valve which means it can control flow infinitely to the boom from 0 L/min to the maximum pump output, dependant on the system pressure.

The flow control valve can be operated in manual mode from the console for boom priming, flushing & troubleshooting.

XRT Auto Boom Height Control (Optional)

Boom height control is automated using the Raven AutoBoom XRT radar sensor system. This system is standard on 48 metre equipped machines and optional for other boom sizes.

Centre section stability is physically managed using variable rate roll dampeners.

Variable rate dampeners are used to stiffen the centre section roll action which allows the boom wing tilts to be operated much faster without effecting the boom stability.

The XRT operating status is displayed on the G-Hub internal screen whilst the setup is configured through the ISO BUS terminal.

The XRT height sensors are radar based. They enable a larger height measurement range over ultrasonic types and can detect both ground and crop canopy and are less affected by spray drift, dust and mud.

The sensors are also very compact, allowing simple fitment along the boom.

The Raven XRT system uses extra sensors to monitor:

- The machine chassis rate of roll
- The boom centre position relative to the chassis &
- Boom wing tilt angle.

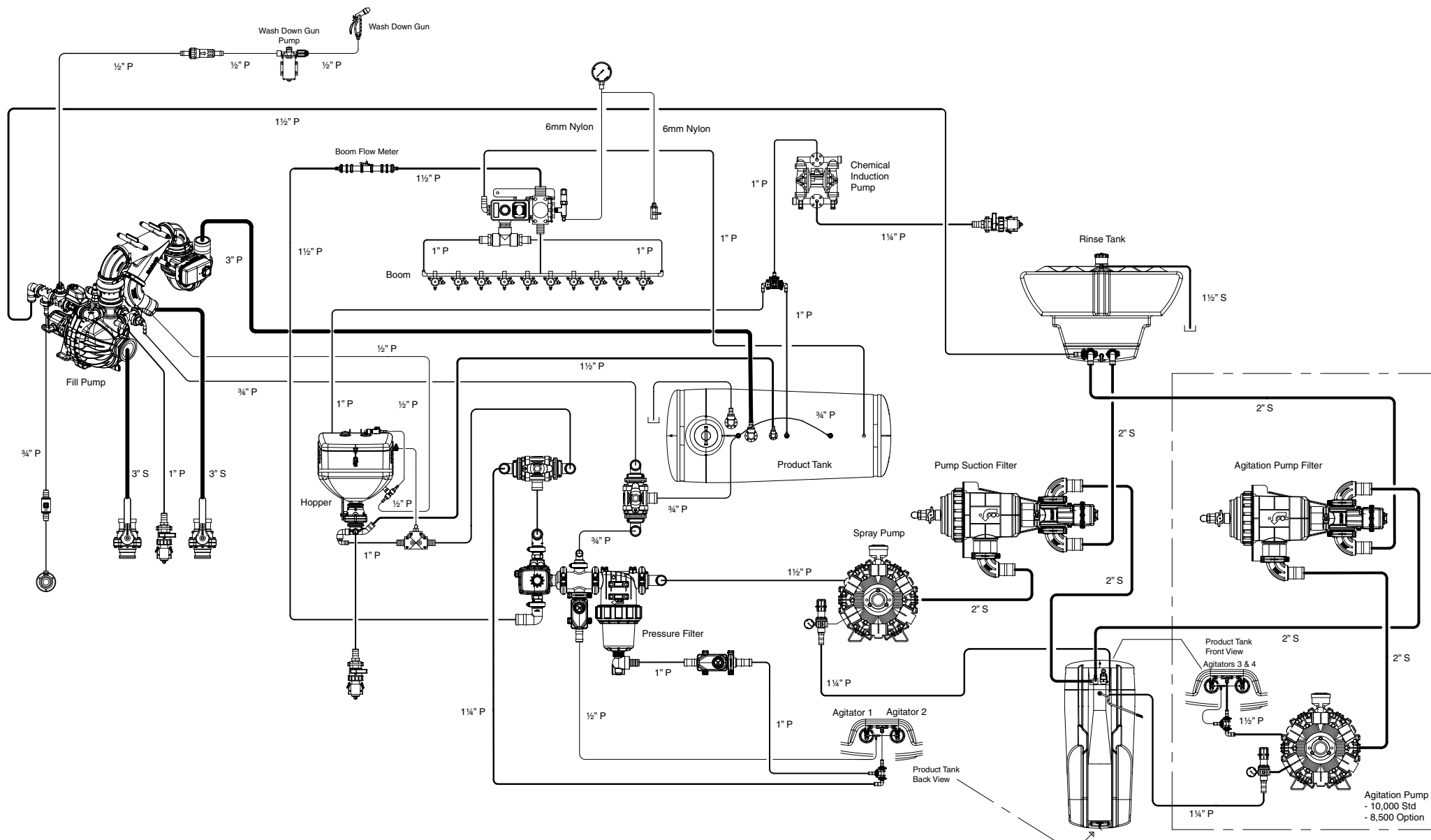These extra sensors allow the computer to predict how the boom will react well before the radar sensors even see the change in boom height. The end result is a more stable boom in uneven terrain.

More detailed and specific information can be found in the product documentation from the Goldacres and Raven websites.

www.goldacres.com.au

www.ravenprecision.com

Plumbing Schematic - Diaphragm Pump

Plumbing Schematic - Centrifugal Pump

Wash Down Gun Pump

Wash Down Gun

½" P

½" P

½" P

1½" P

6mm Nylon

6mm Nylon

Boom Flow Meter

1½" P

Chemical Induction Pump

1" P

Rinse Tank

3" P

1½" P

1" P

1" P

1¼" P

1½" S

Boom

1" P

1" P

1" P

1" P

½" P

Fill Pump

¾" P

1½" P

Product Tank

¾" P

2" S

2" S

Agitation Pump Filter

¾" P

1" P

½" P

¾" P

Pump Suction Filter

¾" P

Hopper

½" P

¾" P

8mm Nylon

8mm Nylon

1" P

Pressure Filter

1½" P

8mm Nylon

2" S

2" S

2" S

Spray Pump

Product Tank Front View Agitators 3 & 4

1½" P

1" P

2" S

1¼" P

½" P

1" P

Agitator 1   Agitator 2

Product Tank Back View

Agitation Pump
- 10,000 Std
- 8,500 Option

10 Appendix – **Integrated Systems**