

CROPLANDS

Pinto

SERIES 2

STOP

BEFORE COMMENCING
operation, ENSURE you
read & understand this
manual, its contents,
and any additional
information
supplied!



Parts & Operator's Manual

Foreword

Important Information	Section 1
------------------------------	------------------

Pre-Operation	Section 2
----------------------	------------------

Sprayer Operation	Section 3
--------------------------	------------------

Sprayer Calibration	Section 4
----------------------------	------------------

Lubrication & Maintenance	Section 5
--------------------------------------	------------------

Trouble Shooting	Section 6
-------------------------	------------------

Assembly Drawings & Parts Listings	Section 7
---	------------------

Foreword

About This Manual

This manual provides assembly, setting up, operating and maintenance instructions for the Croplands Pinto sprayer.

Some features explained in this manual may not be installed on your sprayer.

Please pass on this manual with the sprayer at the time of resale for usage by the new owner.

Terminology

These terms/symbols used throughout this manual:

- **NOTE** - to convey useful operating information.
- **CAUTION** - to highlight potential injury or machinery damage.
- **WARNING** - to stress potential dangers and the importance of personal safety.

NOTE

Refers to important and useful information which should not be overlooked.



CAUTION

Highlights hazards, unsafe/unwise practices which could cause injury, damage to property, machinery or loss of crop yield if instructions are not followed.

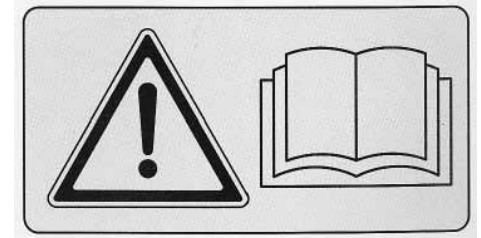


WARNING

Indicates the strong possibility of severe personal injury or damage to machinery if instructions are not followed.

Before Operating Your Sprayer

- 1 Before attempting to use your sprayer, make sure you **read the Operator's Manual** and properly understand:
 - All Safety Issues.
 - Assembly & Installation instructions.
 - Calibration of the sprayer.
 - Sprayer Operation.
 - Sprayer Maintenance.
- 2 Read and follow instructions on chemical manufacturers' labels.
- 3 Always wear applicable protective clothing.



Read and understand this Operators' Manual before operating the sprayer.



Introduction	1.2
General Specifications	1.3
Your Sprayer's Specifications	1.4
Shipping Information & Product ID	1.5
Warranty Policy	1.6
Pre-Delivery Check List	1.7
Warranty Registration	1.9



Sean Mulvaney, General Manager of Croplands

Congratulations on the purchase of your new Croplands sprayer.

Croplands have been in the business of building and selling spraying equipment since 1972. For over 40 years we have been supplying sprayers to farmers, contractors, growers and all our customers involved in growing crops and in the control of pests and diseases.

Croplands is a wholly owned subsidiary of Nufarm Ltd, the largest supplier of crop protection chemicals in Australasia, and one of the fastest growing global suppliers world-wide.

At Croplands, we pride ourselves on our commitment to supplying machinery that is at the forefront of the industry's needs. We believe we can back up our products and through constant research and development, bring to you the best equipment you can find.

We welcome any feedback from you about our equipment.

On this page you will find our contact details, and locations where our staff can be reached during business hours.

After hours, you can e-mail us and expect a reply the following morning.

Please read this manual in its entirety before you operate your sprayer. This will ensure you have a trouble-free start up.

In this manual you will find the parts listings you need should you have any breakdowns in the future.

Bear in mind that over time, some parts may become obsolete or be replaced with better options. You can contact us for alternative options if this is the case.

We trust you will get years of good use from your Croplands Sprayer.

Yours sincerely

Sean Mulvaney
General Manager

Contact details:

AUSTRALIA

Croplands Equipment Pty Ltd
ACN 006 450 184
PO Box 2441, Dry Creek
50 Cavan Road, Dry Creek
S.A. 5094
Australia

FreePhone: 1800 999 162

FreeFax: 1800 623 778

e-mail: sales@croplands.com.au

website: www.croplands.com.au

NEW ZEALAND

Croplands Equipment Ltd
PO Box 2004,
Stotford Lodge, Hastings 4120
Location:
1422 Omahu Road,
Hastings 4120, New Zealand

FreePhone: 0800 106 898

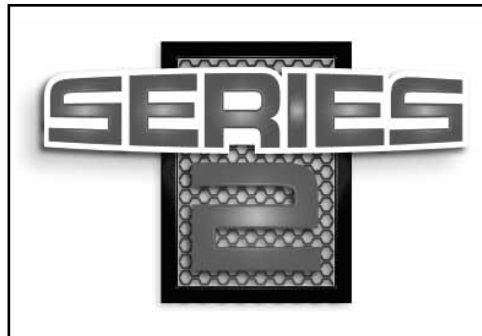
FreeFax: 0800 117 711

e-mail: sales@croplands.com.au

website: www.croplands.com.au



3000 litre Pinto.



2000 litre Pinto.

General Description & Specifications

The new 2000 & 3000 litre Pinto trailed sprayers feature a new height adjustable hitch design and new "wide-rail" chassis for superior strength and ride. The Pinto provides affordable, practical choices to meet a wide range of crop and pasture applications to ensure efficient, high speed, accurate, safe, easy, economic and timely spraying operations even in difficult terrain.

Choose from 16, 18, 21 & 24 metre fully hydraulic booms, 18 metre manual folding suspension boom with hydraulic height adjustment, single or tandem axle wheel configuration and many other options.

Electric sprayer controls, integrated suction probe, 200 litre flushing tank, 30 litre fresh water tank and four point filtration provide easy, safe spraying operation.

The Pinto is fitted with a big 160 litre/min, A & R positive displacement diaphragm pump for trouble free, low maintenance operation. PTO drive is standard.

Tank

2000 or 3000 litre polyethylene tank with quick release hinged lid, filling strainer, top/bottom fill, hydraulic venturi agitation, antivortex suction, tank drain outlet and calibrated tank.

Chassis

Strong, solid fabricated, wide rail chassis designed for maximum durability.

Standard with single wheels (solid axle) 12.4 x 24 for 2000 litre, & 14.9 x 28 for 3000 litre.

Options include tandem Simplicity-style axle c/w/ independent suspension and 15" Landcruiser-style wheels. Other options are 18.4 x 30 single wheels and mudguards.

Boom

- 18 metre (60') manual fold Torquemaster boom - with parallelogram suspension & hydraulic height adjustment. Non-drip, quick release nozzles. Corrosion and chemical resistant poly bond finish.
- 16, 18, 21 & 24 metre (50, 60', 70' & 80') fully hydraulic boom - stronger and designed for smoother, more accurate spraying and long life. Airbag boom suspension system protects the boom and improves the boom ride.

Hydraulic boom lift with easy to read, 1500mm calibrated height adjustment. Adjustable boom breakaways with 90° self returning boom ends.

Boom hydraulically side-folds and locks for transport. Self levelling standard.

Protected nozzle bodies and skids standard. Chemical and corrosion resistant finish. Optional fenceline nozzle & hydraulic wing lift with in-cab controls available.

Pump

A & R positive displacement, oil bath diaphragm pump with chemical resistant diaphragms. AR160 -160 l/min, maximum pressure 2000 kPa (284 psi). Series 4 PTO drive standard.

Filtration

4 point filtration:

- Basket Strainer 18 mesh
- Suction Filter 50 mesh
- Pressure Line Filter 80 mesh
- Nozzle Filters 100 mesh

Foam Marker (Optional)

- 1 Salvarani double-sided foam marker with 20 litre foam tank or RHS 2012 double sided, or

- 2 RHS 2012 double sided, 20 l/min foam marker with 55 litre tank and electrical in cab switch control.

Controller

Electric controls with 3 section boom control & pressure adjustment standard.

Optional: Automatic sprayer controller for greater accuracy and chemical savings.

Chemical Handling

Integrated suction probe transports chemical directly into the tank without putting chemical through the pump. Optional: Chem-e-flush 60 litre.

Flushing & Safety

200 litre polyethylene tank with threaded lid giving large capacity sprayer flushing facility. 30 litre fresh water tank.

Dimensions (Boom folded)

Model	L	x	W	x	H
2000	6.5m	x	2.9m	x	3.0m
3000	6.5m	x	2.9m	x	3.0m

Approx Weight 1550 kg (2000 litre Dry)
1820 kg (3000 litre Dry)

Machine specifications are subject to change without prior notification.

Your Sprayer's Specifications

Important Information

IMPORTANT! Tick the fitted options for your sprayer on this page for future reference.

Pinto Options:

Tank: *Tick Your Sprayer's Options (✓)*

- 2000 ☐
- 3000 ☐

Wheels & tyres:

- 12.4 x 24 ☐
- 14.9 x 28 ☐
- 18.4 x 30 ☐
- 12.4 x 42 ☐
- 15" Tandem on Simplicity Axle ☐

Boom size:

- 16m Hydraulic ☐
- 18m Hydraulic ☐
- 21m Hydraulic ☐
- 24m Hydraulic ☐
- 18m Manual-fold ☐

Boom sections:

- 3-section ☐
- 4-section ☐
- 5-section ☐

Left/right short-fold kit ☐

Left/right wing-lift kit ☐

Tick Your Sprayer's Options (✓)

Triplex Nozzles ☐

Mudguards ☐

Mud Flaps ☐

Filling flowmeter ☐

Chem-e-flush c/w drop leg ☐

Controller:

- Standard Electric ☐
- Automatic Spary-Rate Controller ☐

Foam Marker or Guidance:

- Salvarani Double-sided ☐
- R-M2012 20 l/min RHS ☐
- RHS Outback 6 ☐
- RHS Outback 10 ☐
- Outback Guidance ☐

Fence-line nozzle:

- Manual ☐
- Electric ☐

Tick Your Sprayer's Options (✓)

Pump:

- AR135 ☐
- AR160 ☐
- Hypro- Centrifugal ☐

Pump Drive:

- PTO ☐
- Hydraulic ☐

Gooseneck Hitch Assembly:

- c/w Power Pack with Lift only ☐
- c/w Power Pack with Lift & Fold ☐
- c/w Power Pack with Lift, Fold & Wing Lift ☐

Electric Brakes ☐

Your Product Code:

Your Serial Number:

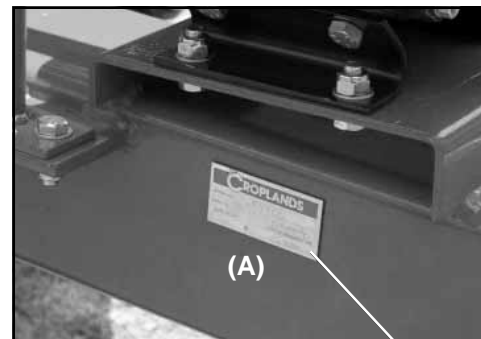
Spray Rate-Controller Model:
(if fitted)



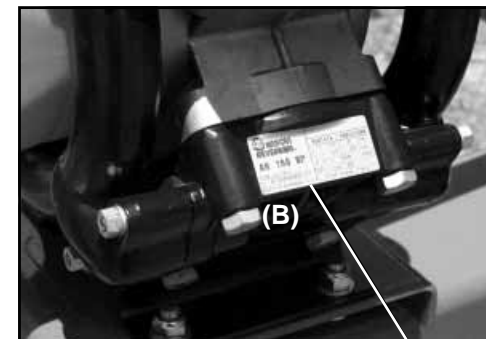
3000 litre Pinto.



2000 litre Pinto.



Pinto Serial Number



AR Pump Serial Number

Shipping Information

The following shipping information is provided but variations can occur without prior notification.

Approx Weight

Model	Dry Weight
3000 litre	1820 kg (21m boom)
2000 litre	1150 kg (21m boom)

Maximum Towing Speed

Do not exceed 30 kph when towing on roads.

Dimensions

Model	W	x	L	x	H (boom folded)
3000 litre	2.9m	x	6.5m	x	3.0m (21m boom)
2000 litre	2.9m	x	6.5m	x	3.0m (21m boom) (with boom folded)

Product Identification

Always use the serial number of the Pinto when requesting service information or when ordering parts.

Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure for specific service operations.

Pinto Serial Number Plate

The Pinto Serial Number Plate is located on the main frame at the front of the frame near the drawbar (A).

This plate shows name of manufacturer, serial number, product code and date of manufacture.

Pump Serial Number Plate

The Pump Serial Number Plate is located on the pump (B).

This plate shows name of manufacturer, serial number, type of pump, year of manufacture, maximum flow rate and maximum working pressure of the pump.

Foam Marker Serial Number Plate (if fitted)

The serial number provides important information about your RHS Foam Marker and may be required to obtain the correct replacement part(s).

The serial number plate for the marker is located on the bottom right side of the enclosure. It is suggested that the serial number be recorded.

RHS Foam Marker Serial Number (if fitted).



Warranty Policy

Croplands Equipment Pty Ltd (trading as Croplands) warrants to its authorised Dealer, who in turn, warrants to the original purchaser (Owner) that each new Croplands' sprayer, part or accessory will be free from proven defects in material and workmanship for twelve (12) months from the date of delivery to the first Owner according to the conditions outlined. This warranty does not cover damages resulting from abuse, accidents, alterations, normal wear or failure to maintain or use the Croplands product with due care.

During the warranty period, the authorised Croplands Dealer shall repair or replace, at Croplands option, without charge for parts and labour any part of the Croplands product, which fails because of defects in material or workmanship. The Owner must provide the authorised Dealer with prompt written notice of the defect (within 14 days of its occurrence), and allow reasonable time for replacement or repair. Repair may, at Croplands option, include the replacement of parts with functionally equivalent reconditioned or new parts. Replacement parts will be warranted for the balance of the original warranty period or for ninety (90) days, whichever is longer. Croplands (at its option) may request failed parts to be returned to the factory. Any travel time of a service technician and/or transportation of the Croplands product to the authorised servicing Dealer for warranty work are the responsibility of the Owner.

EXCLUSIVE EFFECT OF WARRANTY AND LIMITATION OF LIABILITY THIS WARRANTY IS IN LIEU OF ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PURPOSE OR OTHER REPRESENTATIONS, WARRANTIES OR CONDITIONS, EXPRESSED OR IMPLIED. The remedies of the Owner set forth herein are exclusive. CROPLANDS neither assumes nor authorises any person to assume for it any other obligation or liability in connection with the sale of covered machines. Correction of defects, in the manner and for applicable period of time provided above, shall constitute fulfillment of all responsibilities of CROPLANDS to the Owner, and CROPLANDS shall not be liable for negligence under contract or in any manner with respect to such machines. IN NO EVENT SHALL THE OWNER BE ENTITLED TO RECOVER FOR INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES SUCH AS BUT NOT LIMITED TO, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE OR COST OF RENTAL OR REPLACEMENT EQUIPMENT.

Conditions of Warranty

1. The warranty is not transferable.
2. The Warranty Registration Form must be returned to Croplands by the Owner Operator within 14 days of taking delivery of the unit. Only when warranty registration is completed and returned, can Croplands fulfill all warranty obligations.
3. **Schedule of components and conditions not covered by warranty are:**

Abuse	Failure resulting from neglect, such as improper operation, lack of required maintenance or continued use of a sprayer after the discovery of a defect which results in greater damage to the unit.
Environmental Conditions and Application	Deteriorated or failed components such as: diaphragms, O-rings, hoses, seals, electrical wiring and connections damaged by corrosive chemicals, dirt and sand, excessive heat or moisture. Owners should ensure the type and strength of chemicals used in the sprayer are compatible with the design of the unit.

Warranty determination for these types of failures will be made by Croplands only after inspection of failed components. In most instances these will incur inspection charges and cost of replacement parts.

Normal Wear

Normal wear and consumable items such as: oils and lubricants, diaphragms, filter elements, flowmeters, clutches, fan belts, drive belts, pivot pins, paint, light bulbs and nozzles are considered to be normal wear items and are not warranted.

Maintenance

Component failure caused by not performing scheduled maintenance service such as: oils, grease, failure to clean tanks, pumps, filters, spray lines, nozzles or any other blocked components. Not tightening or replacing loose or missing bolts, nuts, fittings, shields and covers.

Damage

Damages or machine failure caused by carelessness or accidental damage, improper operation, excessive speed during travel and operation, inappropriate transportation or storage of the sprayer or attachment.

Power Source

Failures due to faulty or inadequate electrical sources of power. Owners who use their own 12 volt power source must make sure that it is suitable for operating the spraying equipment.

Alterations

Any unauthorised alteration, modification, attachments or unauthorised repairs to the Croplands sprayer or attachments. Written approval must be obtained from Croplands for any such items to maintain warranty.

Removal & Installation

The time taken to remove and re-install a warranted part or component into other brands of sprayers will not be covered by Croplands warranty. Only parts and labour directly attributable to the repair of the Croplands unit is covered.

Clean-up Time

Croplands do not pay for cleaning the sprayer, parts, accessories or work area before or after the warranty repair. Clean-up time is affected primarily by the application or conditions in which the sprayer is operated and maintained. Since clean-up time can be so variable, cleaning time should be considered a customer expense.

Transportation

Warranty does not cover transportation or insurance costs for sprayers or other equipment needing repair or replacement of warranted components. Nor does it cover any freight or insurance costs in obtaining new parts or returning old parts to Croplands for inspection purposes.

Costs

Warranty does not cover time required to diagnose a warranty problem. Diagnostic time is affected greatly by the training and expertise of the technician employed to do the job. With proper training of service personnel, diagnostic time should be at a minimum.

Diagnostic Time

Croplands expects that Dealers will assign a well trained and proficient technician to handle any warranty repairs. Since Croplands is not in control of either of these responsibilities, we elect not to cover diagnostic time.

Non-Genuine Parts

Use of parts other than Croplands parts for repair of warranted parts will automatically negate any warranty. Warranted components must be replaced with genuine Croplands repair parts.

Unauthorised Repairs

Repairs by an unauthorised agent will automatically forfeit any warranty. An authorised Croplands Dealer must carry out warranty repairs.

The Pre-Delivery Check List **must be completed by the Dealer & signed by both the Dealer and the Owner**, and the white copy returned by the Dealer to Croplands.

Tick each box to affirm completion ✓

1 Operator's Manuals Supplied:

- Pinto Parts & Operators Manual ☐
- Auto Spray-Rate Controller Manual (if fitted) ☐

2 Trailer

- Undamaged ☐
- Hitch height adjusted ☐
- Hitch Jack lubricated ☐
- Axle adjustment bolts tight (if applicable) ☐
- Axle nut adjustment, split pin in place ☐
- Lubricate spring rockers (if applicable)..... ☐
- Check mudguards (if fitted) ☐
- Check paint ☐

3 Wheels & Hubs:

- Greased ☐
- Bearings adjusted ☐
- Split pin and dust caps in place ☐
- Wheel nuts tight & threads greased ☐
- Check tyre pressure ☐

4 Tank

- Undamaged ☐
- Agitator adjusted correctly ☐
- Check main lid opens and seals shut correctly ☐
- Basket strainer in place ☐

5 Check All Tank Fittings Are Sealed

- Agitators ☐
- Sump outlets ☐
- Tank rinse nozzle ☐

6 Boom & Lift Device

- Undamaged ☐
- Check hydraulic height adjustment ☐
- Check boom mounting bolts tight ☐
- Unfold the boom, and ☐
- Align wing sections ☐
- Align wing extensions ☐
- Align balancing device ☐
- Adjust sliding surfaces ☐
- Grease the lift ☐
- Check nozzle spacings ☐
- Check nozzle mountings tight ☐
- Check all pins in place ☐
- Check shock absorber springs (if fitted) . ☐
- Lubricate boom hinge points ☐

Tick each box to affirm completion ✓

- Fold boom to transport position, and
- Check transport cradles ☐
- Check that hoses are not kinked or jammed on folding ☐

7 Power Drive

(a) PTO

- Check quick release pins operate easily and lock into place ☐
- Check universal joints work correctly ☐
- Adjust PTO length to suit tractor ☐
- Grease telescopic sliding shaft ☐
- Grease universal joints ☐
- Check safety shields are in place ☐

(b) Hydraulic Pump Drive & Filling Pump (if fitted)

- Check pressure & return lines are identified for Hydraulic pump drive ☐
- Check revs set correctly for hydraulic pump drive ☐
- Check liquid pump operates correctly ☐
- Check filling pump operation & control tap ☐

8 Pump

- Check mountings ☐
- Check oil level ☐
- Check air chamber pressure - 70-100kPa (10-15 psi) ☐
- Check operation ☐

9 Suction Lines

- Undamaged ☐
- Hoses - no kinks or restrictions ☐
- All joins sealed (no air leaks) ☐
- Filter clean & sealed ☐

10 Pressure Lines

- Undamaged ☐
- Hoses - no kinks or restrictions ☐
- All hoses sealed (no leakages) ☐
- Filter clean & sealed ☐

11 Bottom-Fill (Spray/Flush Tanks)

- Check bottom-fill operates ☐
- Filter clean & sealed ☐
- Check hoses properly sealed ☐
- Check caps & plugs in place ☐

Tick each box to affirm completion ✓

12 Nozzles

- Undamaged ☐
- Nozzle filters clean ☐
- Nozzles correct type throughout ☐
- Nozzle caps sealed (no leakages) ☐
- Non-drip diaphragms working ☐
- Check fenceline sprayer operation (if fitted) ☐

13 Agitation

- Check agitator works correctly ☐
- Check hoses are properly sealed ☐

14 Chem-E-Flush (if fitted)

- Check unit is undamaged ☐
- Check hoses/fittings seal correctly ☐
- Check Chem-E-Flush operation ☐

15 Chemical Probe (if fitted)

- Undamaged ☐
- Check fittings seal correctly ☐
- Check probe operation ☐
- Check caps & plugs in place ☐

16 Electric Controls (Standard)

- Check installation ☐
- Check battery connection ☐
- Fully check controls operation ☐

17 Auto Spray-Rate Controller (if fitted)

- Check installation ☐
- Check battery connection ☐
- Calibrate controller ☐
- Fully check controller operation ☐

18 Fresh Water & Flushing Tanks

- Undamaged ☐
- Check fittings ☐
- Check operation ☐

19 Main Control & Drain Valves

- Check there are no leaks ☐
- Check all valves open & close easily ☐

20 Foam Marker (if fitted)

- Check installation ☐
- Check battery connection ☐
- Check foam tank mountings ☐
- Hoses - no kinks or restrictions ☐
- All joins sealed (no air leaks) ☐
- Check filters are clean ☐
- Check foam marker & in-cab control operation ☐

Tick each box to affirm completion ✓

21 Gooseneck Option (if fitted)

- Gooseneck correctly fitted to vehicle ☐
- Electric/hydraulic power pack & loom fitted correctly to vehicle ☐
- Electric brakes working & adjusted correctly (if fitted) ☐
- Gooseneck complies with State & Federal Road Laws ☐
- Honda pump drive fully operational & oil level checked ☐

22 Decals

- Check all decals are in place ☐

Tick appropriate box ✓

OWNER: Farmer ☐ Contractor ☐

Owner's Name: (Print)

.....

Address:

.....

..... Postcode:

Phone:

Mobile:

Email:

Signature of Owner

.....

Date:

DEALER:

Dealership Name: (Print)

.....

Address:

.....

..... Postcode:

Signature of Dealer Representative

.....

Date:

Warranty Registration: The Owner acknowledges that the Owner has read & understood all terms & conditions of the Croplands' warranty policy contained in this manual. The warranty policy will commence upon installation.
This Warranty Registration **must be completed & signed by both the Owner & the Dealer**, & the white copy returned by the Dealer to Croplands.

Implement Type:

Model:

Size:

Product Code:

Serial No:

Purchase Date:

Pre-Delivery Completion Date:

IMPORTANT:

By executing this Warranty Registration:

1 The Owner:

- (a) Agrees that the Owner will read the Operator's Manual before using the Sprayer; will follow all procedures in the operator's manual for the use of the Sprayer, and will exercise due care in the use of the Sprayer;
- (b) Agrees that Croplands' liability for any loss or damage suffered by the Owner in connection with the Owner's use of the Sprayer is limited to the cost of repair or replacement of the Sprayer;
- (c) Agrees that the Owner will bear any loss the Owner suffers as a consequence of any failure by the Owner to comply with 1.1 above;
- (d) Acknowledges that the owner is trained and is fully responsible for the safe and correct operation of the Sprayer; and
- (e) Agrees that the Owner will fully train any person who might be required to operate the Sprayer as to how to operate the Sprayer in a safe and proper manner.

2 The Dealer undertakes that the Dealership has met the obligations of Sprayer pre-delivery, installation, service and warranty start up.

OWNER:

Owner's Name: (Print)

Address:

..... Postcode:

Phone: Mobile:

Email:

Signature of Owner:

Date:

DEALER:

Dealership Name: (Print)

Address:

..... Postcode:

Phone: Mobile:

Email:

Signature of Dealer Representative:

Date:

Owner's Machinery Register: *(This information will assist us in providing first class back-up and parts service)*

- 1 Type of purchaser (please tick): ☐ Owner/Farmer ☐ Share Farmer ☐ Contractor
- 2 Major activities (please number in order of importance):

<input type="checkbox"/> Sheep	<input type="checkbox"/> Nuts	<input type="checkbox"/> Nurseries	<input type="checkbox"/> Vineyards
<input type="checkbox"/> Beef	<input type="checkbox"/> Vegetables	<input type="checkbox"/> Fruit Trees	<input type="checkbox"/> Council/Govt
<input type="checkbox"/> Cereal Grain	<input type="checkbox"/> Flowers	<input type="checkbox"/> Parks & Lanes	<input type="checkbox"/> Other
<input type="checkbox"/> Cotton	<input type="checkbox"/> Dairy	<input type="checkbox"/> Sugar Cane	<input type="checkbox"/>
- 3 What is the size of your holding (hectares)?
- 4 What are your reasons for purchasing the Croplands Sprayer?

5 What other Croplands' machinery do you currently use?

Serial No.	Implement Type	Size	Age	Comments
.....
.....
.....
.....
.....
.....

Safety	2.2
Hook-up	2.10
Unhitching	2.18
Manual Control Valves	
• 3000 Litre	2.19
• 2000 Litre	2.25
Pre-Operation Check	
• 3000 Litre	2.20
• 2000 Litre	2.26

Safety is the Operator's Responsibility

The Pinto is designed to meet the most demanding farming conditions, where large areas, uneven terrain, and weather-controlled deadlines set the toughest challenges.

The Pinto is capable of spraying a wide range of pesticides and fungicides and the operator must be aware of the hazards associated with the Pinto operation.

The dealer explains the capabilities, application and restrictions of the Pinto.

The dealer demonstrates the safe operation of the Pinto according to Croplands instruction material, which are also available to operator.

The dealer can also identify unsafe modifications or use of unapproved attachments.

The following publications provide information on the safe use and maintenance of the Pinto and attachments:

- The Operator's Manual delivered with the Pinto gives operating information, as well as routine maintenance and service procedures. It is a part of the Pinto and must stay with the machine when it is sold.
- Replacement Operator's Manuals can be ordered from your Croplands dealer, Pinto Part No. BT-POM 009703.
- The Pinto has machine signs (decals) which instruct on the safe operation and care. The signs and their locations are shown in the Operator's Manual.

Replacement signs are available from your Croplands dealer (as shown on pages 2.5 - 2.6).

Safe Operation Needs a Qualified Operator

A Qualified Operator Must Do the Following:

1 Understand the Written Instructions, Rules & Regulations

- The written instructions from Croplands are included in the Pinto Operation & Maintenance Manual and on machine decals.
- Check the rules and regulations at your location. The rules may include any Federal and State safety requirements for the chemical applicator.

2 Have Training with Actual Operation

- Operator training must consist of a demonstration & verbal instruction. This training is given by your dealer before the Pinto is delivered.
- The new operator must start in an area without bystanders and use all the controls until they can operate the Pinto safely all conditions of the work area.

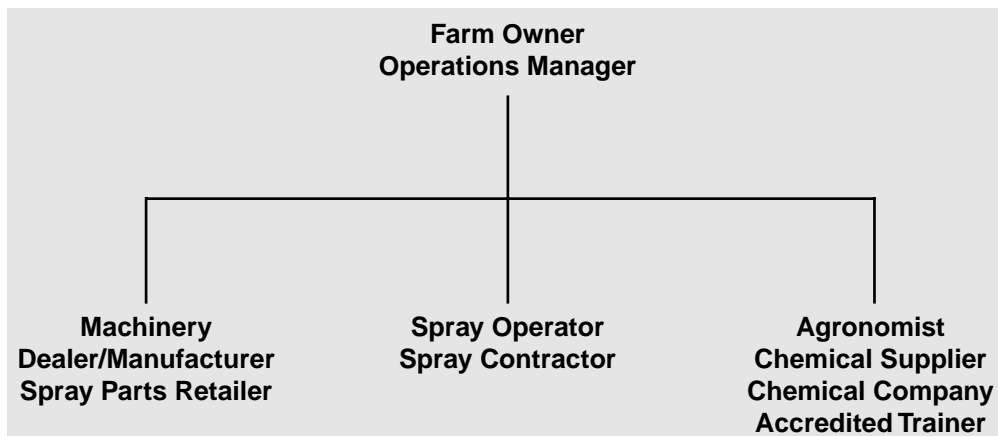
3 Know The Work Conditions

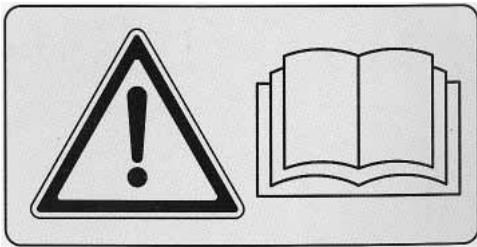
- The operator must know any prohibited uses or work areas. They need to know about excessive slopes and rough terrain.
- Wear protective clothing as recommended by the chemical manufacturer. Always wear safety goggles when maintaining or servicing Pinto.
- For an operator to be qualified, they must not use drugs or alcoholic drinks which impair alertness or coordination while working.

An operator who is taking prescription drugs must get medical advice to determine if they can safely operate a machine.

NOTE

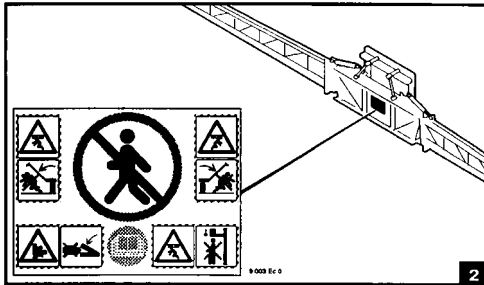
There are accredited training programmes for spray application in each state. We recommend all operators have accredited training.





Rules for Safe Pinto Operation

- Always read your sprayer operator's manual thoroughly before operating. Accidents occur every year because of careless use of farm chemicals and farm machinery. You can avoid these hazards by observing these safety instructions.
- Dispose of all chemical containers as per instructions on label. Failure to do so could result in contaminating the environment with chemicals.
- Inspect hose and hose connections daily. Always wear rubber gloves when tightening connections. Damaged, loose or worn hoses could result in operator being exposed to toxic chemicals which could result in serious illness or faulty sprayer operation.
- Always use the proper application rate. To assure proper application rate calibrate sprayer correctly. The wrong application rate of a pesticide concentration that is too high may expose the operator and the environment to danger.
- Follow the chemical manufacturer's precautions before cleaning the sprayer. Exposure to chemicals could result in serious illness or death.
- Always wear gloves and wash the machine before doing any disassembly repair work. Chemical residues on the machine parts could contaminate operator or service personnel causing serious illness.
- Always relieve system pressure before doing any work on the machine. Failure to do so could cause operator to be exposed to high pressure spray of chemical resulting in serious injury or machine damage.
- Always be sure all guards are properly installed on machine before operating. Failure to do so could result in entanglement in moving parts resulting in serious injury to operator.
- Always keep PTO guard in place when sprayer is operating. Failure to do this might result in entanglement.
- Be sure to disconnect the battery before attempting welding repairs.
- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Failure to do so could result in serious injury.
- Always stay out from under the sprayer unless it is resting on the ground or supported on solid blocks. Hydraulics or jacks could fail letting the sprayer fall. This could result in pinning or crushing of personnel.
- Check the entire sprayer, prior to each use, for any loose bolts or mechanical connections. These precautions can prevent injury to personnel and damage to equipment.
- Only inflate tyres to rated pressures. Over inflating causes tyres to burst resulting in serious injury.
- Use only genuine Croplands parts for any necessary replacement. Special alloy steels are used in many parts which are important to the equipment design. Home made parts may look the same but might be dangerous in operation.
- Do not ride on machine when in motion. This is an unsafe practice and can lead to serious injury should the rider fall from the machine.
- Always replace warning decals when damaged and make certain operator understands proper safety practices.
- Always stand well clear of sprayer when operating. The sprayer is capable of spraying chemicals 20-30 metres from the boom which may be hazardous to humans.
- Do not disconnect any hoses nozzles or filters while sprayer is operating. Disconnecting components while under pressure will result in uncontrolled spray discharge which may be hazardous to humans.
- Always clean the Pinto and disconnect the battery before doing any welding repairs. Cover rubber hoses, and all other flammable parts. Keep a fire extinguisher near the Pinto when welding. Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.



Make sure all boom safety decals are clear and in place. Replace them if damaged



Danger of arms crushing.
This area must be kept clear during equipment operation.



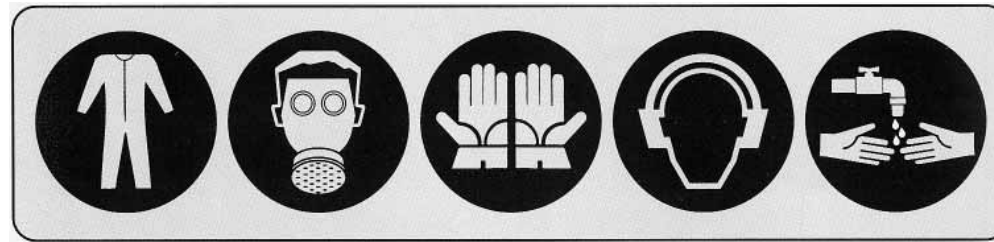
Danger of body crushing.
This area must be kept clear during equipment operation.



Danger of body crushing.
This area must be kept clear during equipment operation. do not stand within range of boom arms



Danger of PTO entanglement.
This is a common injury in farming. Ensure PTO covers are always in place.



Rules for Safe Use of Chemicals

- Always read the label before using chemicals. Follow instructions from chemical manufacturer on how to select, use and handle each chemical. Note protection information each time before opening the container.
- Always observe all warnings on chemical products. Failure to do so could result in operator or others being exposed to toxic chemicals which could result in serious illness. Remember chemical manufacturers go to much research and expense to develop labels for your protection.
- Be sure you recognise the categories of toxicity and their key words.
- Verbal warnings must be given if written warnings cannot be understood by workers.
- Do not spill chemicals on skin or clothing. If chemicals are spilled, remove contaminated clothing immediately and wash skin (and clothing) thoroughly with soap and water.

Wash hands and face with soap and water and change clothing after spraying. Wash clothing each day before reuse.
- The main tank and system should be emptied of chemical mixture and flushed with clean water before servicing the spray system or spraying components. Clean the Pinto of all chemical residue before servicing.
- Avoid inhaling chemicals. When directed on the label, wear protective clothing, face shield or goggles.
- Never smoke while spraying or handling chemicals.
- Cover food and water containers when spraying around livestock or pet areas.
- If symptoms of illness occurs during or shortly after spraying, call a physician or go to a hospital immediately.
- Follow label directions and advice to keep residues on edible portions of plants within the limits permitted by law.
- Keep chemicals out of the reach of children, pets and unauthorised personnel. Store them outside of the home, away from food and feed and lock them in a secure area.
- Keep bystanders away from spray drift.
- Always store chemicals in original containers and keep them tightly closed. Never keep them in anything but the original containers.

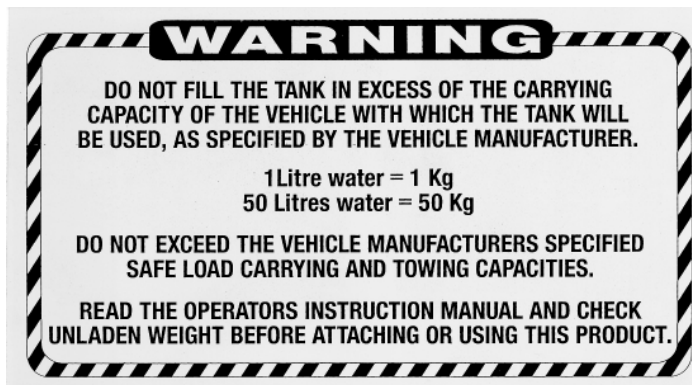
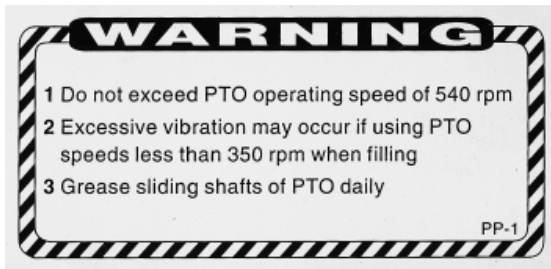
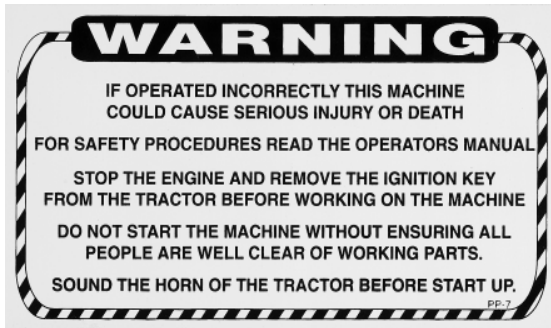
Read labels for hazards about chemical reaction with certain types of metals.

! WARNING

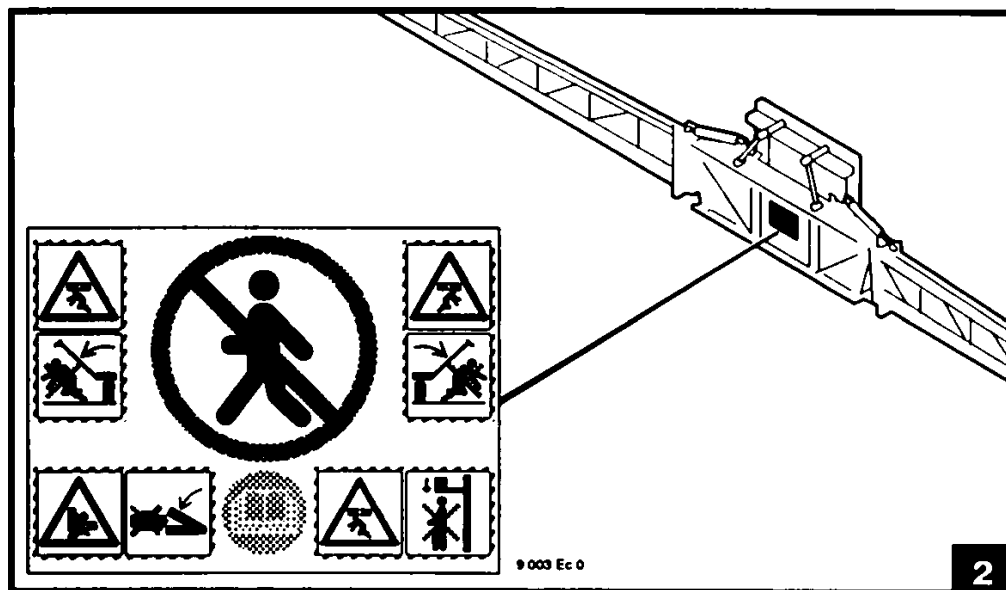
WATER ONLY

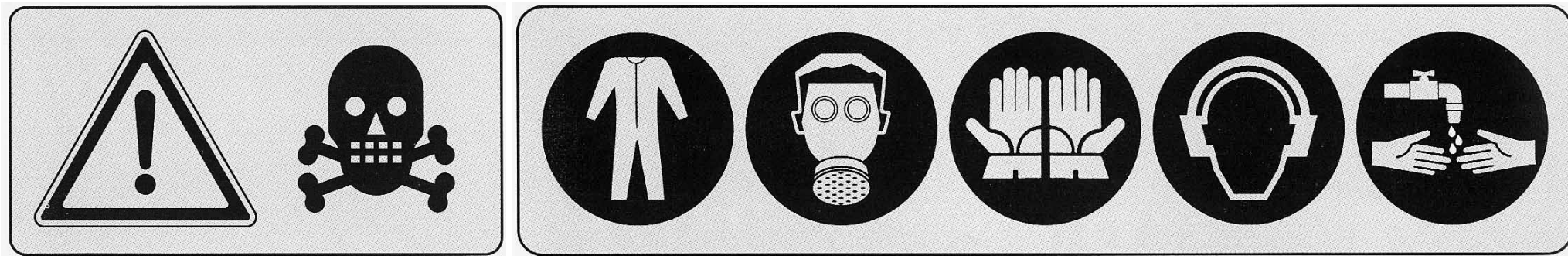
PP-15

Decals - Please order replacements if required



Decals - Please order replacements if required





Safety must be an Integral Part of Chemical Farming Operations

- **Not Just an After Thought!**

The Hazard

All agricultural chemicals or pesticides, as they are commonly called, are biologically active. When handled incorrectly or carelessly, they can be dangerous to all living organisms such as humans, birds, fish, bees, domestic animals and plants.

Method of Pesticide Entry

- ☞ **Oral** - Direct by drinking, splashing into mouth, eating and smoking with contaminated hands, eating sprayed produce, cleaning nozzles with mouth.
- ☞ **Inhalation** - Nose, mouth, but predominately the lungs.
- ☞ **Dermal** - Absorption through the skin. Increased when skin is broken or perspiring.

Rate of Absorption

While pesticides are absorbed more completely orally and by inhalation, greater exposure and more poisonings occur through skin (dermal) contact.

Hazard and Chance of Poisoning

The hazard and chance of poisoning is much higher when handling pesticides in concentrate form than in the dilute form.

Safe Handling

Know your Pesticides:

- ☞ **STOP!!** Read the label
- ☞ Is it the right pesticide?
- ☞ What is its poisons schedule or toxicity?
- ☞ What safety precautions are required?
- ☞ What is its persistence and withholding period?
- ☞ What is its mode of action?
- ☞ Will it be a hazard to neighbouring crops and people?

- ☞ What protective clothing and equipment is needed?
- ☞ Know the correct first aid/safety in case of poisoning.
- ☞ Seek medical advice if health is affected by chemicals.

Mixing the Product

- ☞ Reduce or eliminate operator contact by using closed loading systems, auto fillers, wettable powder mixtures or wettable dispersable granules.
- ☞ Use the right protective clothing when handling the concentrate. The user is at greatest risk when handling chemical in concentrate form.
- ☞ Open bags carefully. Cut to open, do not tear.
- ☞ Do not stir chemicals with hands or arms.
- ☞ Choose the mixing site carefully & the fate of the probable residues.
- ☞ Do not mix more spray solution than is needed and avoid needless disposal of unwanted chemicals.

Plan your Spray Route

- ☞ Observe weather conditions, especially wind direction & speed.
- ☞ Try to travel across wind and into untreated crop.
- ☞ Prevent double or over spraying.
- ☞ Prevent or minimise drift onto other crops, workers, etc.

Disposal of Unwanted Pesticides and Containers

- ☞ Calibrate correctly to ensure you do not have a large quantity of unwanted spray left over.
- ☞ Rinse empty containers and pour residue into the main tank.
- ☞ Dispose of containers in the correct manner and where provided, use pesticide drum disposal schemes.



1, 3, 5 litre measuring jugs & 25 litre mixing bucket.



Kasco helmet, Breathable spray suit & gloves.

Croplands Breathable Spray Suits are especially designed and ideally suited to our climatic conditions. They provide greater protection than ordinary fabric and disposable overalls.



Respirator, Breathable spray suit & gloves.

Decontamination

- ☞ Change out of protective clothing and shower as soon as possible after spraying.
- ☞ Wash before eating, drinking or smoking.
- ☞ Provide clean water at filling site and on sprayer in case of field contamination.
- ☞ Wash and clean respirators regularly.

Keep Sprayers and Safety Equipment in Good Working Condition

- ☞ Replace hoses and fittings when they leak.
- ☞ Clean sprayer regularly.
- ☞ Replace respirator filters regularly.
- ☞ Do not use worn, faulty or contaminated safety equipment.

Storage

- ☞ Store pesticides in a locked, well ventilated store.
- ☞ Do not pour pesticides into other containers, especially not drink containers.

Pesticide Free Tractor Cabs

- ☞ Ensure the cab filter is adequate for the pesticide used.
- ☞ Be careful not to contaminate the cabin environment.
- ☞ Cabin filters alone are not adequate when the operator is required to leave the cab to refill the sprayer. Safety equipment used outside the cab should not be stored in the cab.

Protective Safety Equipment

The amount and type of protective clothing and equipment is determined by the type of chemicals, degree and duration of exposure, weather conditions and application equipment used.

Read and follow the direction on the label.

Over protection can be uncomfortable and unnecessary.

A respirator left hanging around your neck is useless.

Measuring

- ☞ Croplands' calibrated, easypour 1, 3 and 5 litre measuring jugs and 25 litre chemical mixing bucket are practical, easy to clean, U.V. resistant and chemical resistant.

Clothing

- ☞ Cover as much of the body as possible, especially the neck, chest and forearms. Use washable fabric overalls, disposable overalls or preferably waterproof clothing especially when coming in contact with large quantities of pesticides. Wear the trouser legs outside the boots.

Gloves and Boots

- ☞ Never use leather or cloth materials because they absorb pesticides and provide a constant source of contamination. Gloves should be un-lined for this reason.

Croplands Nitrile Chemical Handling Gloves are recommended.



Safety goggles for eye protection.

Head & Face

- ☞ Hard hats, washable hats, goggles, spray helmets and face shields are important when handling concentrates.

Croplands Spray Goggles feature sealed, anti-fog, double lens goggles for practical, comfortable eye protection. Croplands Kasco Spray Hood is fully approved by D.I.R.

Respirators

- ☞ Choose the correct type and have the correct cartridge fitted. Replace cartridges regularly and write the date on each cartridge. Ensure there is an adequate fit to the face.

Croplands' respirators are recommended for most spraying applications.



Respirator.

Operator Safety

When handling pesticides, always use elbow-length gloves, long clothes and above all, a respirator.

If you and your clothing become contaminated with spray, DO NOT WORK ON.

Stop work, remove clothing and wash affected areas thoroughly with soap and water. Put fresh clothing on before starting again.

Ensure that contaminated clothing is washed thoroughly before being used again.

Don't guess when choosing protective equipment. Feel free to call Croplands and make use of our safety database for comprehensive information on safety, handling and storage exposure levels, symptoms, health effects, first aid and personal protection.



Sample of Agrichemical Manual.

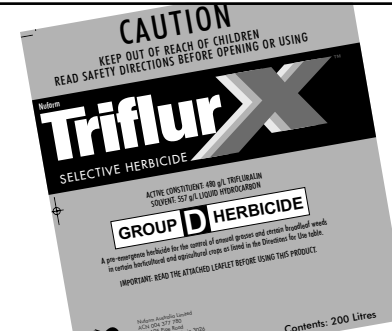
Spraying Precautions

Agricultural chemicals applied under unfavourable weather conditions or from poorly adjusted and operated equipment can cause damage due to run-off and/or drift problems.

Crops and pastures are more susceptible to spray drift of herbicides while people, stock and water supplies are generally more susceptible to insecticide drift.

Pollution, crop damage and the potential health hazards are something agriculture can ill afford. It is simply not acceptable, socially or environmentally.

Additionally, pesticide which drifts or runs off the target reduces the efficiency of the pesticide on the target. Spray failures are a waste of money and effort.



Read the Chemical Label

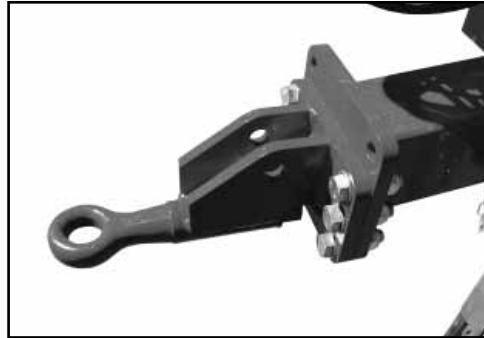
- ☞ **Be SURE** the equipment is functioning correctly. Check that nozzles are in good condition. Check all other aspects of machine operation are correct.
- ☞ **Be SURE** pesticides are mixed thoroughly and according to the label.
- ☞ **Be SURE** the recommended registered pesticide is used for the job at hand.
- ☞ **Be SURE** pesticides are applied at recommended rates.
- ☞ **Be SURE** only target plants are sprayed.
- ☞ **Be SURE** to follow the safety precautions on the label.

NOTE

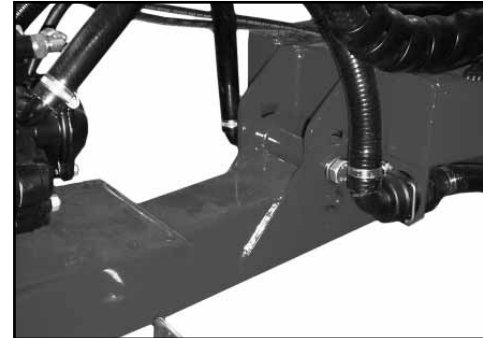
A full agri-chemical manual is available in Australia and New Zealand. Talk to your local Agronomist for more information.



The Pinto is fully assembled at the factory.



The hitch tongue in its lowest setting.



Hitch height adjustment bolt in the centre position.



Connect the PTO shaft to the Pinto.

Assembly Instructions

The Pinto is supplied fully assembled with up to six items requiring assembly after shipping from the factory:

- 1 Adjustments to the hitch and PTO may be necessary to match tractor drawbar & PTO requirements.
- 2 Connect the Pinto hitch and PTO shaft to the tractor (see page 2.10).
- 3 Connect the Pinto hydraulic hoses to the tractor (see page 2.12) &/or electric in-cab control for wing-lift (optional).
- 4 Connect and fit the
 - Standard Electric Controller (see page 2.15),
 - Optional MT3405 Controller (see page 2.16)
- 5 Connect and fit the Foam Marker Controller (optional) to the Tractor. (See instruction 4 "Fit Foam Marker Control [Optional]) (see page 2.17).
- 6 Connect hydraulic pump drive hoses & adjust (if fitted as an option for centrifugal or diaphragm pumps).

1 Adjust the Pinto Hitch Tongue & Hitch

The Pinto hitch tongue and hitch can be height adjusted to match your tractor PTO and drawbar.

To adjust the height of the hitch tongue:

- a) Loosen and remove the bolts holding the hitch tongue.
- b) Move/rotate the tongue to the desired position.
- c) Refit the tighten the hitch tongue bolts.

To adjust the height of the hitch:

- a) Use a jack to support the front of the Pinto chassis and then, remove the hitch height adjustment bolt.
- b) Raise or lower the Pinto chassis using the support jack until the correct height is reached.
- c) Replace and tighten the hitch height adjustment bolt. If removed, refit the pump hose.

CAUTION

Ensure the tractor linkage arms are well clear of the pump on the Pinto drawbar when turning. If tractor linkage arms are not removed or adjusted to clear the pump when turning then damage to the pump may occur.

NOTE

When connected to your tractor drawbar, the Pinto should be level or slope slightly downwards at the front.

NOTE

Incorrect hitching of PTO shaft will result in excessive pump vibration and damage to the pump.

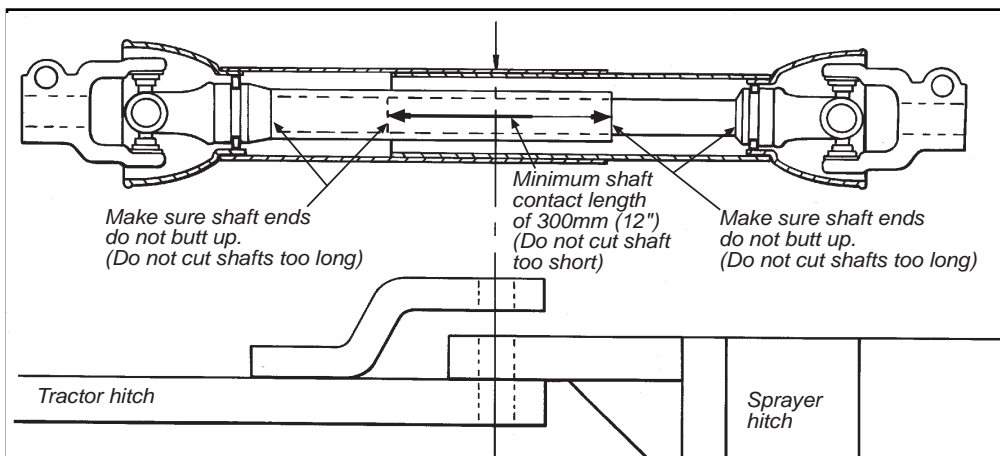
NOTE

IMPORTANT: *Do not allow more than 10% difference in the two halves of drawbar length. If more than 10% difference occurs, a wide angle shaft must be used.*

2 Connect the Pinto Hitch & PTO Shaft to the Tractor

The Pinto must be connected to a suitable tractor, making sure the drawbar hitch and PTO shaft are fitted according to the instructions that follow:

- 1 Align drawbars of tractor and Pinto, insert and lock drawbar pin in position ensuring the drawbar pin cannot come out while transporting or operating.
- 2 Remove the jack supporting the Pinto chassis, and store it on the frame lug provided.
- 3 Check the Pinto is level fore and aft. The sprayer should be slightly lower at the front. If not adjust the sprayer drawbars and axle to achieve level position.



On Standard PTO shafts, the drawbar pin connecting the tractor & Pinto should be centred between the two universal joints of the PTO shaft.

Follow the instructions below to fit the PTO shaft onto the Pinto after transit:

- 1 Remove the PTO shaft which is strapped to the Pinto frame.
- 2 Check the PTO shaft has not been damaged in transit.
- 3 Measure and fit the PTO to the Pinto ensuring the locking pin is correctly located. Make sure you read and understand "The important factors for fitting the PTO shaft" on the next page.
- 4 Grease the universal joints and telescoping shafts.
- 5 Fit the PTO to the Pinto ensuring the locking pin is correctly located.
- 6 Before operating the drive shaft, be sure that all safety guards are in place.

Important Factors when Fitting the PTO Shaft

The following three factors must be correct to avoid pump damage and maximise PTO operating life:

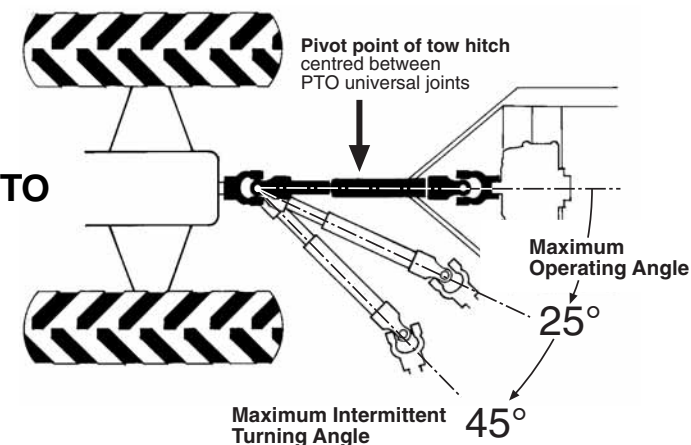
- 1 When travelling straight ahead, the point at which the sprayer drawbar pin is joined to the tractor should be halfway between the universal joints of a Standard PTO shaft, as illustrated.

The tractor is then able to make maximum turns with minimal bending of the universals.



Ensure that the drive shaft is the correct length to avoid any "butt up" damage to the pump.

Standard PTO



Standard PTO Operating Limits

- 2 When the tractor is towing the sprayer straight ahead, the two telescopic sections of the power take-off shaft are at maximum extension.

When turning or crossing an inversion, the telescopic shaft sections close up.

- 3 The height difference between the tractor PTO spline and the PTO spline of Pinto should not be more than 100mm.

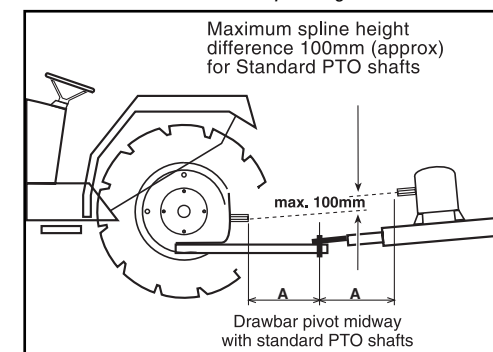
This ensures PTO joint angles are approx equal and do not exceed limits. If greater than 100mm, a wide angle (constant velocity) PTO should be used. See Hitch height adjustment instructions on page 2.10.

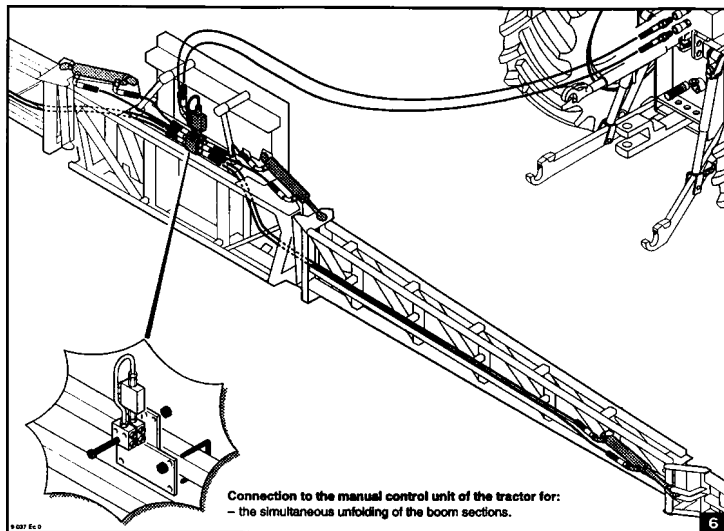
Heed the Operating Limits of the Standard PTO Shaft

The standard Pinto is fitted with a STANDARD PTO shaft.

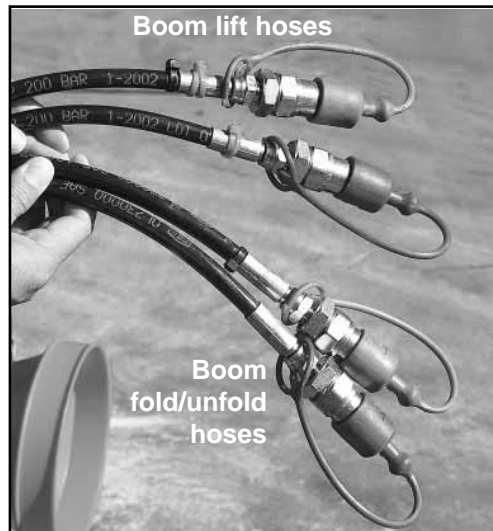
The maximum intermittent turning angles of the Standard PTO shaft is only recommended where should not exceed 45° turning angle of the PTO.

Standard PTO Operating Limits

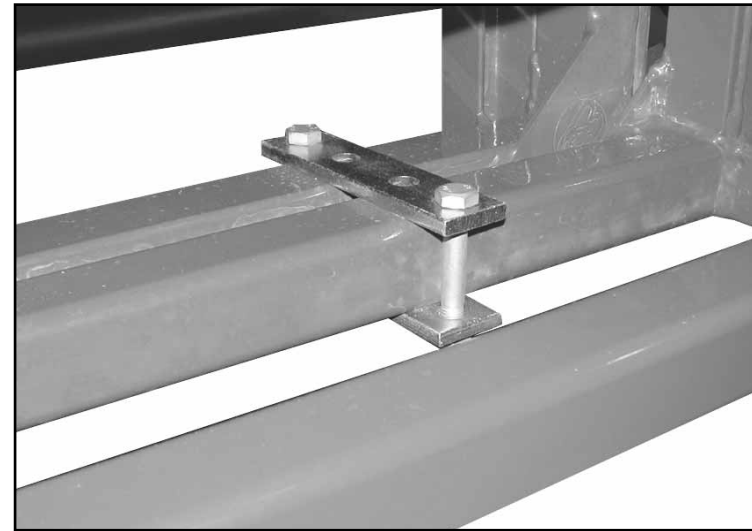




Boom fold hose connection.



Standard hose connectors for boom lift and fold.



Ensure the boom lock-plate is removed prior to operation.

3 Connect Hydraulic Hoses to the Tractor

The standard Pinto Boom provides simultaneous unfolding of boom sections and hydraulic lift adjustment of boom height.

Prior to connecting your boom hydraulic hoses, remove the boom lock-plate (see pic). This plate is in place for transport to your dealer from the Croplands' factory.

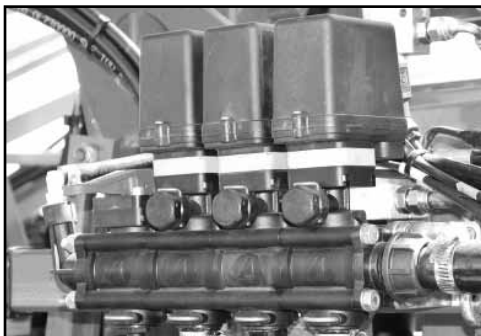
Connect the boom hydraulic hoses to the tractor, namely:

- Boom fold hoses.
- Boom parallelogram lift hoses.
- If fitted, connect the hoses for the wing lift (optional) - see following pages.
- If fitted, connect the hoses for the hydraulic pump drive (optional) - see following pages.



WARNING

Prior to operating the boom hydraulics, remove the boom lock-plate as shown above.



Electric/hydraulic valves.

3a Electric/Hydraulic Valves

If your sprayer is fitted with wing-lift, and/or independent outer wing fold, the hydraulic system on the sprayer consists of electric over hydraulic valves to enable all functions to be operated from one set of hydraulic remotes.

- 1 Hook up the hydraulic hoses to the tractor remotes.
- 2 Install the electric/hydraulic control console in the cab in a suitable location.



Electric/hydraulic control console.



Connect the electric/hydraulic console cables at rear of the tractor.

- 3 Ensure the power leads are connected to the battery terminals (See page 2.18 "auxiliary power leads").
- 4 Connect black trailer plugs at rear of tractor (see pictures above & below).

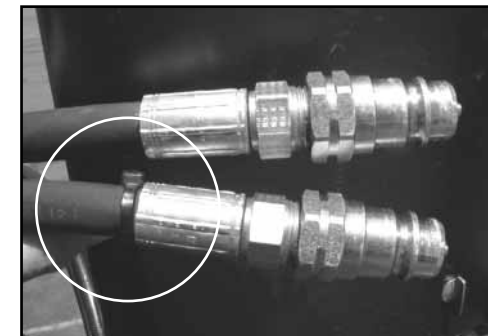
Once the boom & lift hydraulic system is hooked up correctly, test the boom functions with the tractor running. Ensure your working/testing area is clear of bystanders.

Push the electric/hydraulic connectors together until they lock together.



Hydraulic drive pump.

If your sprayer is fitted with a hydraulic pump drive, connect the hydraulic hoses to the tractor remotes.



Hose marked with cable-tie is for the PRESSURE line.

3b Hydraulic Pump Drive Set-up

- 1 If your pump is fitted with a hydraulic pump-drive, connect the hydraulic pressure and return lines to your tractor remote.

Instruction tag attached to the hydraulic drive pump.



Turn valve fully clockwise and use tractor oil flow control if fitted -OR- Tractor without oil flow control as follows: -
Turn valve fully anticlockwise and regulate to control pump speed.
Maximum pump speed not to exceed 550RPM!

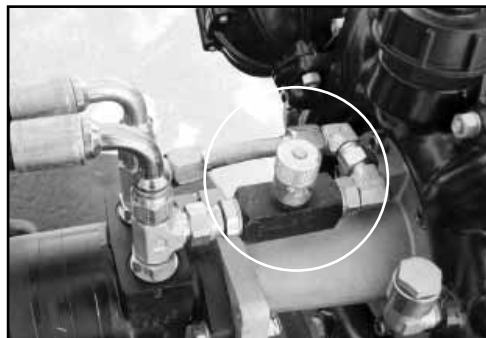
NOTE

Please read the following page to ensure you know if your tractor has open or closed centre hydraulics.

This is VERY IMPORTANT to ensure your pump drive works correctly.

NOTE

Ensure the marked hydraulic line is designated as your pressure line (see pic above)



Speed adjustment flow-control valve.

- 2 Open the speed adjustment flow-control valve fully by winding it out anti-clockwise – this must be done prior to engaging your hydraulics
- 3 Engage the hydraulic control in the cab of the tractor
- 4 Close the speed adjustment flow-control valve slowly by turning it clockwise until the desired RPM of the pump is reached. Ensure the RPM DO NOT exceed 540.

Open Centre vs Closed Centre Hydraulics

For the best operation of your hydraulic-drive Diaphragm pump or hydraulic-drive filling pump, there are some adjustments that can be made by your dealer on your tractor hydraulics for best performance & lower heat generation to protect your tractor.

In general terms, there are three systems, which are described below:

Open Centre Systems

In an open centre system, the hydraulic pump on the tractor puts out a constant flow. If the pump puts out more oil than the hydraulic-drive motor can use, a portion of the oil must be bypassed around the motor.

When the oil is bypassed around a loop and does no work, the energy put into it by the pump turns into heat. Therefore, the amount of oil bypassed should be kept to a minimum.

Tractor adjustments may be necessary, consult your dealer if you are unsure.

Closed Centre (Pressure Compensated) Systems.

The closed centre pressure-compensated system has a variable displacement pump which will deliver flow at the necessary rate to maintain a specified pressure.

It is best to have the pump operating at around 1800 to 2100 psi with the relatively low-flow hydraulic drive motor fitted to the Pegasus (if fitted).

Tractor adjustments may be necessary, consult your dealer if you are unsure.

Closed Centre Load Sensing Systems (Flow and Pressure Compensating).

The closed centre flow-compensated system is a variation of the pressure-compensated system, designed primarily for more efficient operation and the generation of less heat.

It works on the principle of maintaining a constant pressure drop from the pump to the work port of the selector valve.

Any variation in the demand at the motor will cause a change in flow.

The system senses this change in flow due to the change in pressure drop across the valve, and causes the pump to compensate by varying the pump flow.

No restrictor is required in the pressure line and no oil is bypassed.

Check with your dealer to see if your tractor has this system.

NOTE

Consult your Croplands dealer if you require assistance with determining pump RPM.

The dealer will be able to calibrate this using an RPM meter or rev counter.



Standard Controller.

4 Fit the Spray Controller to the Tractor

The Pinto is fitted standard with an electric controller or can be fitted with an optional MT3405 controller.

Spray Controllers are fitted and fully tested at the factory but are disconnected and packed for transit.

Spray controllers must be fitted to the tractor according to the instructions that follow:



Connect the leads to the rear of the console.

a) Fit the Standard Electric Controller

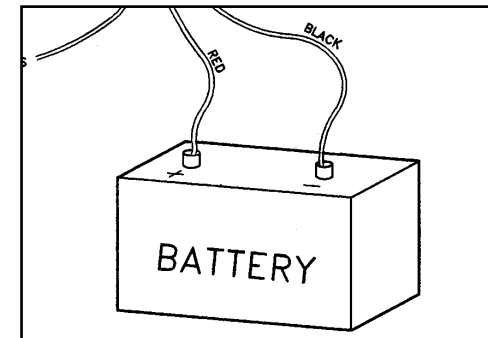
To fit the standard controller after transit follow the instructions below:

- 1 Unpack the electric controller and cable from the Pinto.
- 2 Place all switches into Off position.
- 3 Fit the controller console into the tractor cab in a convenient and safe location for the operator.



Connect the loom plugs.

- 4 Connect the controller loom to the console, and the power connection.
- 5 Connect the controller loom couplings at the rear of the tractor.



Connect the electric power leads to the tractor battery

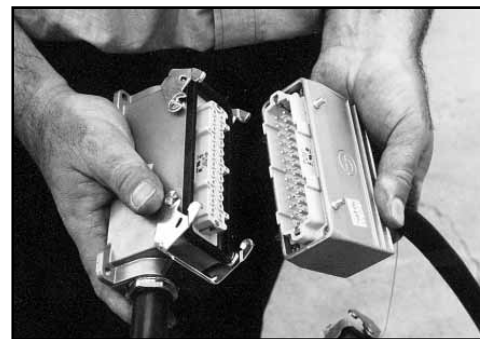
- 6 Connect the controller power leads to the tractor battery - connecting the red wire to the positive terminal and the black wire to the negative terminal. Refer to the wiring diagram on page ?.
- 7 Follow the instructions on page ? to test, calibrate and operate the controller.



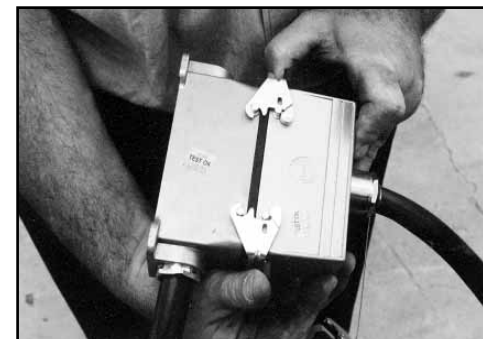
Optional MT3405 Controller.



Connect the leads of the Controller to loom.



Connect the main loom couplings.



Lock the Controller couplings together.

b) Fit the MT3405 Controller (Optional)

To fit the MT3405 Spray Controller:

- 1 Unpack the Spray Controller and cables.

- 2 Connect the leads at the rear of the Spray Controller (shown connected).
- 3 Fit the Spray Controller console into the tractor cab in a convenient and safe location for the operator.

- 4 Connect and lock together the main loom couplings at the rear of the tractor.

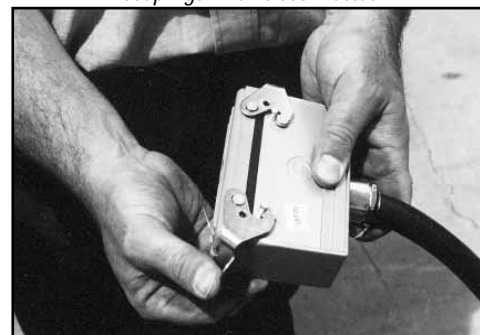
NOTE

For operating instructions for the model of spray controller you have been supplied, refer to the controller manual supplied separately.

NOTE

Ensure any colour coded cable-ties on the looms are matched.

Ensure dust caps are fitted to the Controller cable couplings when disconnected.



NOTE

The loom coupler has locating holes for fixing the plug to the tractor which is recommended. Ask your dealer for assistance, if required.

Likewise, if you have an electric/hydraulic control console for a wing-lift boom; it is recommended the black trailer plug also be fixed next to the main loom connector (see page 2.14).



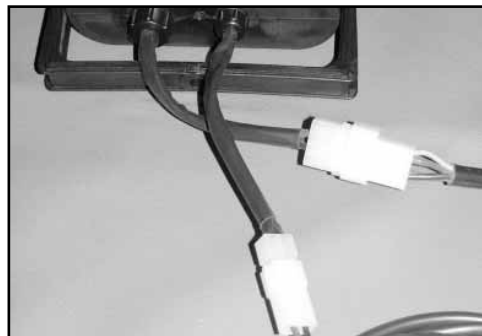
Mount the Foam Marker Controller in the cab.

5 Fit the Foam Marker Controller (Optional)

The standard fitted foam marker option is the Salvarani Double-Sided Foam Controller or an alternative RHS Double-Sided Foam Controller option can be fitted.

When ordered, optional Foam Marker Controllers are fitted and fully tested at the factory but are disconnected and packed for transit.

Foam Markers must be fitted to the tractor according to the instructions that follow:

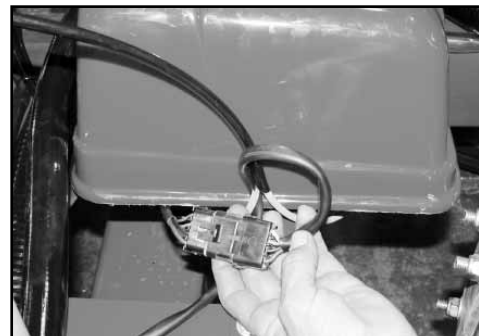


Connect the power & main looms at rear of the console.

a) Fit the Standard Salvarani Double-Sided Foam Controller

To fit the Salvarani Double-Sided Foam Controller:

- 1 Unpack the foam marker controller and cable from the Pinto.
- 2 Install the foam marker controller in a convenient place close to the operator seat.



Connect the Foam Marker loom plug.

- 3 Connect and lock the foam marker plugs together.



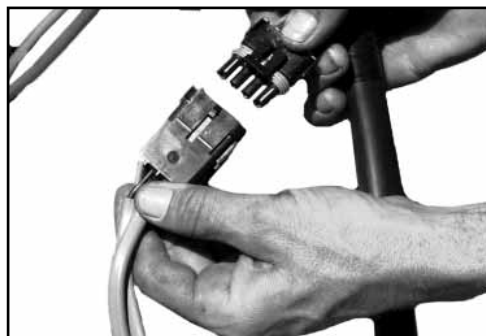
Mount the Foam Marker Controller in the cab.

b) Fit the RHS Double-Sided Foam Controller (Optional)

To fit the optional RHS Double -Sided Foam Controller:

- 1 Unpack the foam marker controller and cable from the Pinto.
- 2 Install the foam marker controller in a convenient place close to the operator seat.

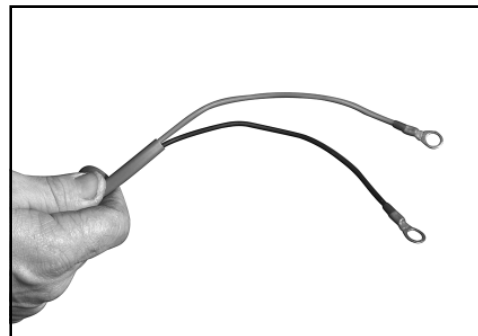
For the RHS marker, use either the Velcro patches provided or replace the box screws with longer ones for a bolted mount.



Connect the Foam Marker leads to the loom.



Connect the main harness cables to the battery.



Connect the Foam marker power cables to the battery (if fitted).

- 3 Connect and lock the foam marker plugs together.

6 Connect Power Leads to the Tractor Battery

Ensure the power leads are connected to a good source of 12 volt power.

Connect all power leads **directly to the battery**, namely the:

- Spray Controller leads
- Foam Marker Controller leads
- Electric/hydraulic control console auxiliary leads

NOTE

If you are not attaching the power leads directly to the battery, make certain the wires feeding your hook-up location are at least 12 gauge.

It is not necessary to provide a circuit breaker on the RHS marker, since the breaker is provided on the MKR control.

See the wiring diagram on page 7.26.



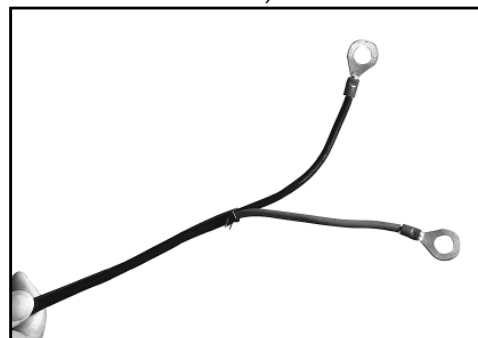
WARNING

Make absolutely certain that:

- Red leads are connected to the positive terminal, and
- Black leads are connected to the negative terminal.

Damage can occur to units if power leads are reversed or incorrectly fitted.

Connect the auxillary power cables to the battery (if fitted).



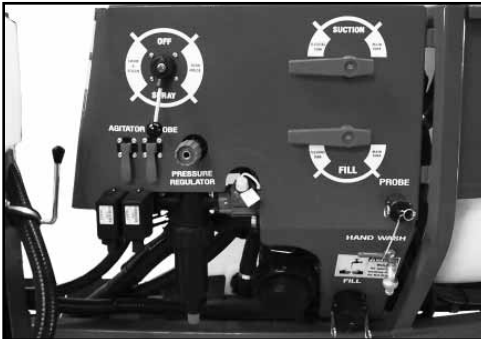
Unhitching the Pinto from the Tractor

To disconnect the Pinto to the tractor, follow the procedure below:

- 1 Locate sprayer on level ground and chock wheels so that sprayer does not roll when drawbar pin is removed.
- 2 Disconnect:
 - The PTO shaft,
 - The hydraulic hoses, &
 - The sprayer controller looms.
- 3 Fold down and pin the hitch jack, adjust the height and then remove the drawbar pin.

Disconnect hydraulic hoses & PTO shaft.





Manual Control Panel -
located on the front left hand side of the
Pinto 3000 litre.



Tank Agitator & Probe Valves -
located on lower left hand side of the
manual control panel.



Function Selector Valve -
located on top left hand side of the
manual control panel -
sets the following functions:

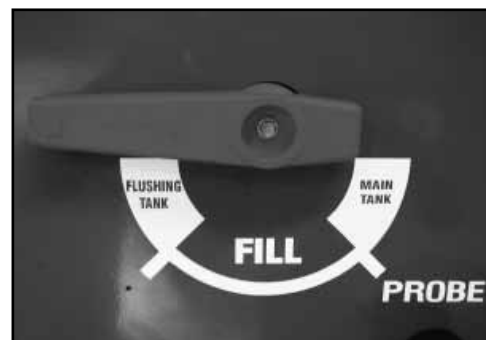
1. Chem-E-Flush
2. Spray
3. Tank Rinse
4. Off.



Fresh Water/Hand Rinse Tap -
located above the Bottom Fill Inlet.



Suction Selector Valve -
located on top right hand side of the
manual control panel.



Fill Selector Valve -
located on lower right hand side of the
manual control panel.



Bottom Fill Inlet -
located beside the suction filter.

Chem-E-flush (Option) Valves



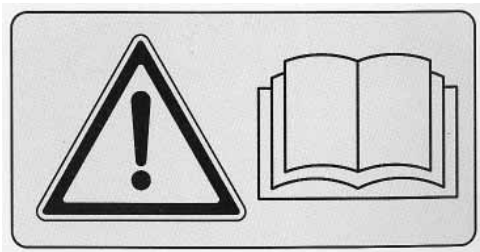
Chem-E-Flush Nozzle Valve

Chem-E-Flush Drum Rinse Valve

Chem-E-Flush Transfer Valve

Pre-Operation Check - 3000 Litre

Pre-Operation



Read Operators' Manuals before operating machine.



Check the pump oil level.



Check the suction filter is clean.

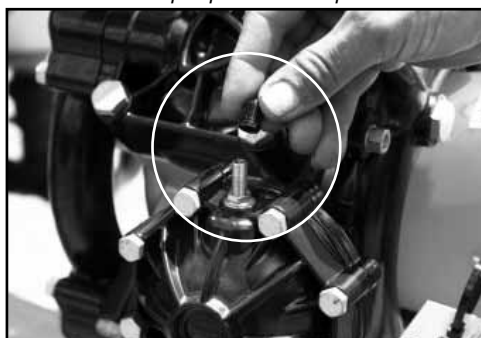


Check the foam marker operates correctly.

Pre-Operation Checklist

- 1 Before attempting to use the Pinto 3000 litre, Read Operator's Manuals thoroughly.
- 2 Read and follow instructions on chemical manufacturers labels.
- 3 Always wear applicable protective clothing.
- 4 Check that all maintenance procedures have been followed.
- 5 Check all plumbing and fittings to ensure they are tight, not damaged or leaking.
- 6 Check PTO shaft or hydraulic pump drive is correctly set up.
- 7 Grease the PTO shaft if necessary.

- 8 Check diaphragm pump oil level.
(Not applicable if fitted with Hypro centrifugal pump).
- 9 Check air pressure in the diaphragm pump air chamber is 70 - 100 kPa (10-15 psi). As a general guideline it should be 10% - 20% of operating pressure. (Not applicable if fitted with Hypro centrifugal pump)



Check the pump air chamber pressure.

- 10 Check that the suction and pressure filters are clean.

Clean the suction and pressure filters out after initial use, and nozzles if necessary.



Check the pressure filters are clean.

- 11 Check that the foam marker operates correctly (Refer to foam marker operating instructions on page 3.4).

- 12 Check overall spraying functions using the:

The Standard controller -
(Refer to "Check Standard Controller Operation" instructions page 2.21).

OR

The MT3405 Controller -
(Refer to "Check MT3405 Controller Operation" instructions page 2.23).

NOTE

IMPORTANT: Clean the suction filter out after initial use.

Whilst all precautions are taken during assembly, it is possible to get fillings in the tank and lines. These will accumulate in the suction filter during first use.



Standard Controller

Check Controller Operation

Check the functions and operation of the Pinto controller. It may be fitted with a standard controller or optional MT3405 controller.

a) Check Standard Controller Operation (if fitted)

This electric controller provides boom switch and pressure controls.

To operate the unit:

- 1 Connect Pinto to tractor (see instructions page 2.21) connecting the hitch, PTO and controller.
- 2 Fill appropriate quantity of clean water into main tank. Always fill the tank through the main lid with the basket filter in place.



WARNING

Important: Do not have pesticides in the spray tank when checking the sprayer.

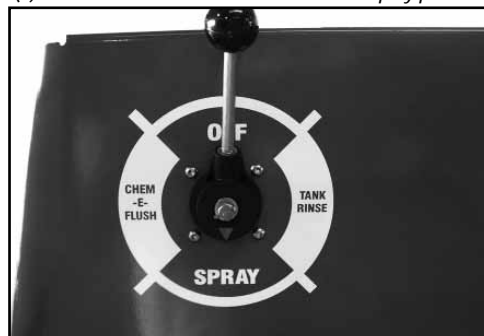


(3) Suction Selector Valve set for the main tank.

- 3 Check that the Suction Selector Valve is set for the main tank.
- 4 Check the Function Selector Valve is in "Spray" position.
- 5 Place sprayer controller into start up position by ensuring the master switch in OFF position.
- 6 Engage PTO and bring the PTO (pump) speed up to 540 RPM.

All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

(4) Check the Function Selector Valve is in Spray position.



(7) Pressurise the system by placing the Master switch in ON position.

- 7 Pressurise the system and operate the tank agitator by placing the Master switch into ON position.
- 8 Adjust pressure to desired operating pressure by first closing the electrical regulating valve (servo) using the pressure up/down switch on the console, and then by adjusting the manual Pressure Regulator valve to maximum working pressure.

Maximum working pressure **should not exceed** 8 bar.

(8) Adjust the Pressure Regulator valve.



(9) Check the Agitator Valve is open & agitator operating.

- 9 Check that the Agitator Valve is open.
- 10 Check that the tank agitator is working.



CAUTION

Maximum working pressure with the electric regulating valve closed should not exceed 8 bar.



(10) Turn the boom switches On & Off to check operation.



(13) Check & adjust the pressure with boom sections On.

- 10 Turn spray booms ON and OFF to check that they are operating.
- 11 Turn fenceline sprayer ON and OFF to check that it is working correctly (if fitted).
- 12 While water is being pumped through the boom, check for any leakages or blockages throughout the sprayer.

Check all hoses, connections, valves, filters, boom fittings etc. Check the nozzles are operating correctly.

Rectify any problems.

- 13 With all boom sections operating, check operating pressure and make appropriate adjustment.
- 14 Switch booms ON and OFF several times and check that the non-drip diaphragms are working.

- 15 On completion of checking the sprayer turn controls off by placing the master switch and boom switches in OFF position.
- 16 Disengage PTO after the Controller master switch is turned OFF.

NOTE

Ensure the operating pressure, when the boom nozzles are operating, does not exceed recommended maximum for the nozzles you are using.

WARNING

Do not have pesticides in the spraytank when checking the sprayer.



MT3405 Controller - optional.

b) Check MT3405 Controller Operation (if fitted)

The automatic Spray Controller controls all aspects of the spray application rate.

Set the rates you want and the Controller ensures constant application rate - irrespective of undulating terrain, engine speed, ground speed and variations in nozzle wear.

To operate the unit:

- 1 Connect Pinto to tractor (see instructions pages 2.10).
- 2 Fill an appropriate quantity of clean water into main tank (see instructions pages 3.2).

NOTE

Additional copies of the Spray Controller manual can be downloaded in a PDF file format from the Internet.

For the micro-trak MT3405 or MT900 controllers, log onto www.micro-trak.com and follow the menu.



(3) Suction Selector Valve set for the main tank.

- 3 Check that the Suction Selector Valve is set for the main tank.
- 4 Check the Function Selector Valve is in "Spray" position.

(4) Check the Function Selector Valve is in Spray position.



(5) Enter the flow meter calibration factor.

- 5 Follow the instructions in the Spray Controller Instruction Manual - to calibrate and operate the Controller.
- 6 Place the master switch of the Spray Controller in OFF position for start up. Ensure the controller power switch is ON.
- 7 Engage the PTO and bring the PTO (pump) speed up to 540 RPM.

In the case of a hydraulic drive, engage the appropriate hydraulic remote.



(8[d]) Adjust the Pressure Regulator valve.

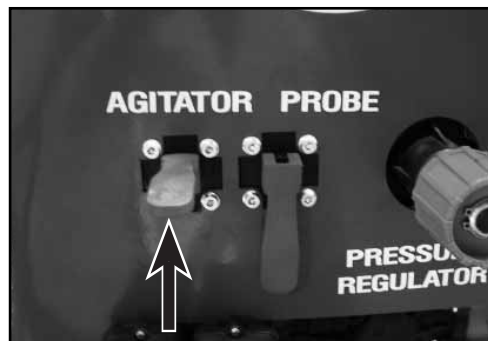
- 8 Adjust the spraying pressure as follows with the tractor & sprayer stationary:
 - (a) On the Spray Controller, select the MANUAL mode using the appropriate key.
 - (b) Switch on all boom valves, and switch the controller into the "RUN" position. Water will now be flowing out the nozzles.

It is recommended to do this with the boom open in the spraying position.
 - (c) Use the "+" key on the Spray Controller to fully close the electric servo valve. This will take a few seconds.
 - (d) When the servo is fully closed, adjust the Pressure Regulator valve as shown to the maximum working pressure. In the case of the Pinto, we recommend the maximum working pressure be set at 8 BAR (120 psi).

If the maximum pressure is above this, damage to your sprayer may result.

NOTE

To properly check the controller operation, unfold the boom and complete steps 1 - 16.



Check the tank agitator valve is open.



+/- keys and auto/man key.



Boom switches Off; Master switch in Hold.

- (e) Use the “-” key to reduce the pressure to your normal spraying pressure - 2-4 BAR (30-60 psi).
- 8 Check the tank agitator valve is open.
- 9 Visually check that both tank agitators are working.

- 10 Turn the Controller Master switch ON & OFF and check that all boom sections are switched off together.

- 11 Turn fenceline* nozzle ON & OFF to check it is working correctly (*if fitted)

- 12 While water is being pumped through the boom, check for any leakages or blockages throughout the sprayer.

Check all hoses, connections, valves, filters, boom fittings etc.

Check the nozzles are operating correctly.

Rectify any problems.

- 13 With all boom operating, re-check pressure range by alternating from “+” to “-” on the Spray Controller while in MANUAL mode.

Ensure maximum pressure does not exceed 8 BAR. Minimum pressure should reach almost zero.

- 14 Switch booms ON & OFF several times, ensuring each section is operating individually, and that the non-drip nozzle bodies are working.

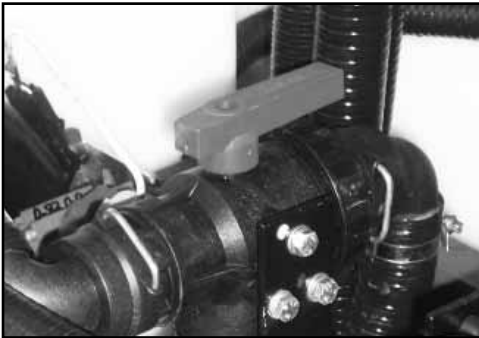
- 15 On completion of checking the sprayer, turn controls Off by placing the master switch and boom switches in OFF position.

- 16 Disengage PTO or Hydraulic pump drive after the Spray Controller is switched off.

NOTE

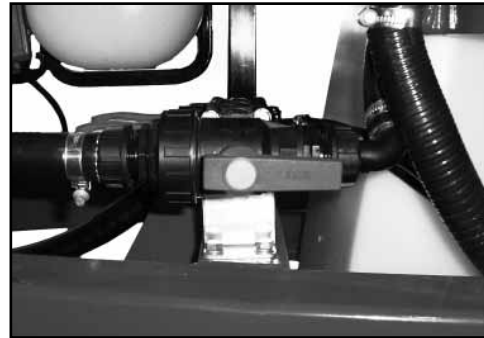
The maximum spraying pressure will vary with different nozzles.

We recommend you re-adjust your maximum pressure if you change your nozzle selection.



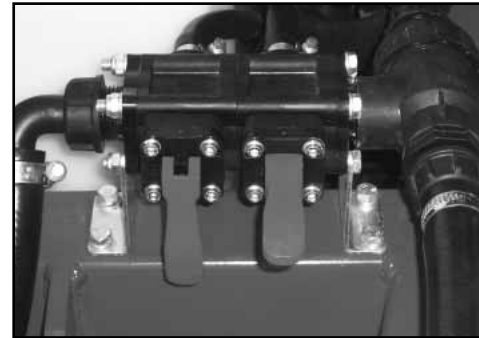
Directional Suction Valve -

located above the suction filter in front of the main tank on the left hand side
- used for sourcing liquid from the Main tank or Flush tank.



Pressure Flow Valve -

located at the front of the main tank on the left hand side.



Tank Agitator & Probe Valves -

located at the front of the main tank on the left hand side.



Fresh Water/Hand Rinse Tap -

located at the left front corner of the main tank.

Bottom Fill Inlet -

located at front of the main tank on the left hand side.



Chem-E-flush (Option) Valves



Chem-E-Flush Nozzle Valve

Chem-E-Flush Drum Rinse Valve

Chem-E-Flush Transfer Valve

Pre-Operation Check - 2000 Litre

Pre-Operation



Read the Operators' Manuals before operating the machine.



Check the pump oil level.



Check the suction filter is clean.

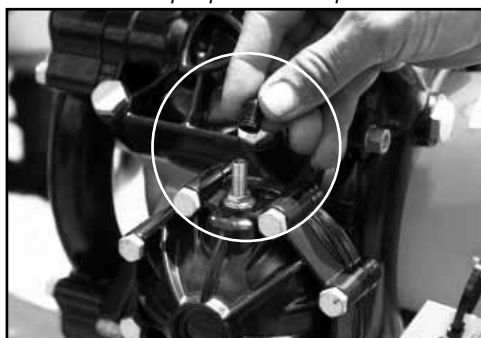


Check the foam marker operates correctly.

Pre-Operation Checklist

- 1 Before attempting to use the Pinto 2000 litre, Read Operator's Manuals thoroughly.
- 2 Read and follow instructions on chemical manufacturers labels.
- 3 Always wear applicable protective clothing.
- 4 Check that all maintenance procedures have been followed.
- 5 Check all plumbing and fittings to ensure they are tight, not damaged or leaking.
- 6 Check PTO shaft or hydraulic pump drive is correctly set up.
- 7 Grease the PTO shaft if necessary.

- 8 Check diaphragm pump oil level.
(Not applicable if fitted with Hypro centrifugal pump).
- 9 Check air pressure in the diaphragm pump air chamber is 70 - 100 kPa (10-15 psi). As a general guideline it should be 10% - 20% of operating pressure. (Not applicable if fitted with Hypro centrifugal pump)



Check the pump air chamber pressure.

- 10 Check that the suction and pressure filters are clean.

Clean the suction and pressure filters out after initial use, and nozzles if necessary.



Check the pressure filters are clean.

- 11 Check that the foam marker operates correctly (Refer to foam marker operating instructions on page 3.4).

- 12 Check overall spraying functions using the:

The Standard controller -
(Refer to "Check Standard Controller Operation" instructions page 2.27).

OR

The MT3405 Controller -
(Refer to "Check MT3405 Controller Operation" instructions page 2.29).

NOTE

IMPORTANT: Clean the suction filter out after initial use.

Whilst all precautions are taken during assembly, it is possible to get fillings in the tank and lines. These will accumulate in the suction filter during first use.



Standard Controller

Check Controller Operation

Check the functions and operation to the Pinto controller. It may be fitted with a standard controller or optional MT3405 controller.

a) Check Standard Controller Operation (if fitted)

This electric controller provides boom switch and pressure controls.

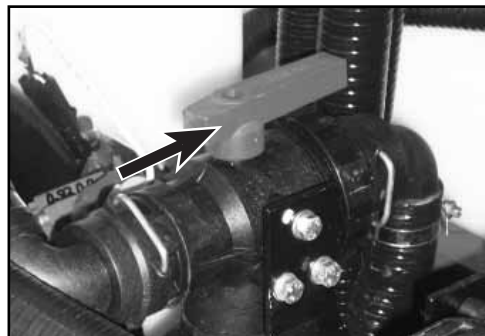
To operate the unit:

- 1 Connect Pinto to tractor (see instructions page 2.21) connecting the hitch, PTO and controller.
- 2 Fill appropriate quantity of clean water into spray tank. Always fill the tank through the main lid with the basket filter in place.



WARNING

Important: Do not have pesticides in the main tank when checking the sprayer.

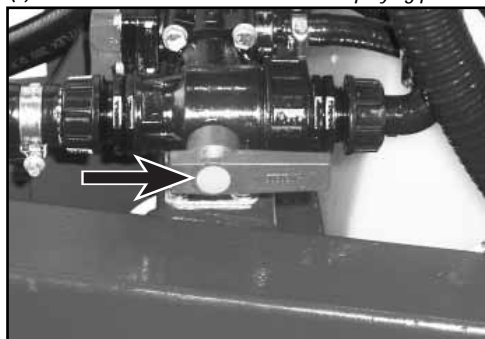


(3) Check the Directional Suction Valve is from the main tank.

- 3 Check that the Directional Suction Valve is sourcing from the main tank.
- 4 Check the Pressure Flow Valve is in spraying position.
- 5 Place sprayer controller into start up position by ensuring the master switch in OFF position.
- 6 Engage PTO and bring the PTO (pump) speed up to 540 RPM.

All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

(4) Check the Pressure Flow Valve is in Spraying position.

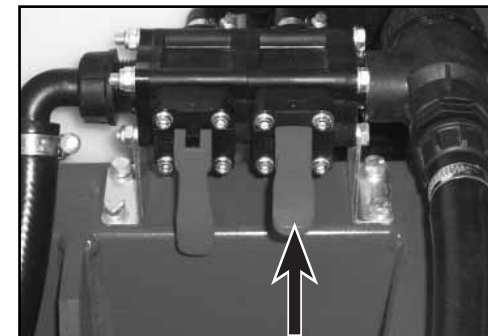
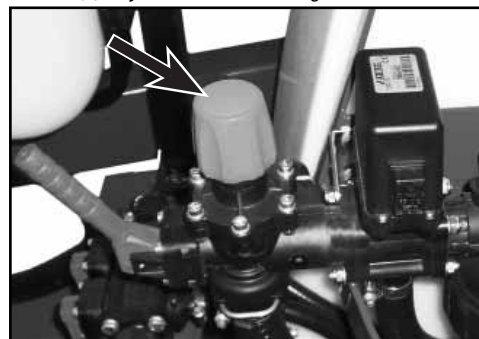


(7) Pressurise the system by placing the Master switch in ON position.

- 7 Pressurise the system and operate the tank agitator by placing the Master switch into ON position.
- 8 Adjust pressure to desired operating pressure by first closing the electrical regulating valve (servo) using the pressure up/down switch on the console, and then by adjusting the manual Pressure Regulator valve to maximum working pressure.

Maximum working pressure **should not exceed** 8 bar.

(8) Adjust the Pressure Regulator valve.



(9) Check the Agitator Valve is open & agitator operating.

- 9 Check that the Agitator Valve is open.
- 10 Check that the main tank agitator is working.



CAUTION

Maximum working pressure with the electric regulating valve closed should not exceed 8 bar.



(10) Turn the boom switches On & Off to check operation.



(13) Check & adjust the pressure with boom sections On.

- 10 Turn spray booms ON and OFF to check that they are operating.
- 11 Turn fenceline sprayer ON and OFF to check that it is working correctly (if fitted).
- 12 While water is being pumped through the boom, check for any leakages or blockages throughout the sprayer.

Check all hoses, connections, valves, filters, boom fittings etc. Check the nozzles are operating correctly.

Rectify any problems.

- 13 With all boom sections operating, check operating pressure and make appropriate adjustment.
- 14 Switch booms ON and OFF several times and check that the non-drip diaphragms are working.

- 15 On completion of checking the sprayer turn controls off by placing the master switch and boom switches in OFF position.
- 16 Disengage PTO after the Controller master switch is turned OFF.

NOTE

Ensure the operating pressure, when the boom nozzles are operating, does not exceed recommended maximum for the nozzles you are using.

! WARNING

Do not have pesticides in the spraytank when checking the sprayer.



MT3405 Controller - optional.

b) Check MT3405 Controller Operation (if fitted)

The automatic Spray Controller controls all aspects of the spray application rate.

Set the rates you want and the Controller ensures constant application rate - irrespective of undulating terrain, engine speed, ground speed and variations in nozzle wear.

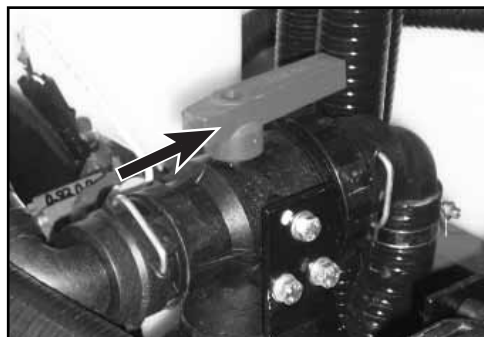
To operate the unit:

- 1 Connect Pinto to tractor (see instructions pages 2.10).
- 2 Fill an appropriate quantity of clean water into main tank (see instructions pages 3.2).

NOTE

Additional copies of the Spray Controller manual can be downloaded in a PDF file format from the Internet.

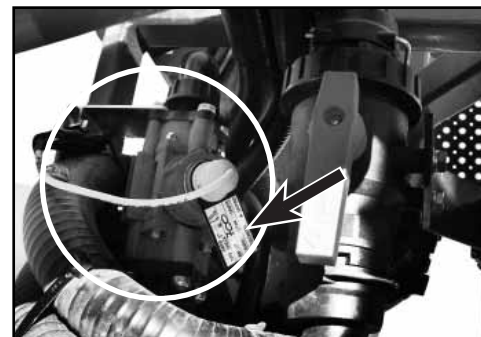
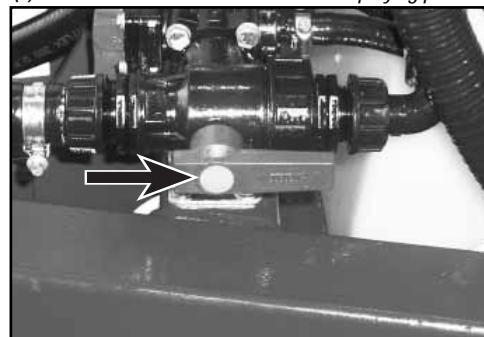
For the micro-trak MT3405 or MT900 controllers, log onto www.micro-trak.com and follow the menu.



(3) Check the Directional Suction Valve is from the main tank.

- 3 Check that the Directional Suction Valve is sourcing from the main tank.
- 4 Check the Pressure Flow Valve is in spraying position.

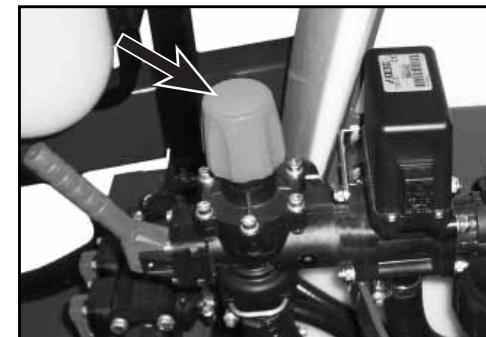
(4) Check the Pressure Flow Valve is in Spraying position.



(5) Enter the flow meter calibration factor.

- 5 Follow the instructions in the Spray Controller Instruction Manual - to calibrate and operate the Controller.
- 6 Place the master switch of the Spray Controller in OFF position for start up. Ensure the controller power switch is ON.
- 7 Engage the PTO and bring the PTO (pump) speed up to 540 RPM.

In the case of a hydraulic drive, engage the appropriate hydraulic remote.



(8[d]) Adjust the Pressure Regulator valve.

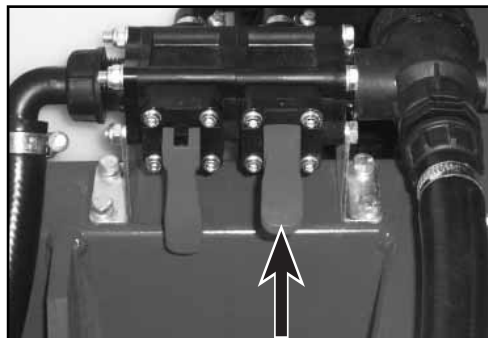
- 8 Adjust the spraying pressure as follows with the tractor & sprayer stationary:
 - (a) On the Spray Controller, select the MANUAL mode using the appropriate key.
 - (b) Switch on all boom valves, and switch the controller into the "RUN" position. Water will now be flowing out the nozzles.

It is recommended to do this with the boom open in the spraying position.
 - (c) Use the "+" key on the Spray Controller to fully close the electric servo valve. This will take a few seconds.
 - (d) When the servo is fully closed, adjust the Pressure Regulator valve as shown to the maximum working pressure. In the case of the Pinto, we recommend the maximum working pressure be set at 8 BAR (120 psi).

If the maximum pressure is above this, damage to your sprayer may result.

NOTE

To properly check the controller operation, unfold the boom and complete steps 1 - 16.



(8) Check the Agitator Valve is open & agitator operating.



+/- keys and auto/man key.



Boom switches Off; Master switch in Hold.

(e) Use the “-” key to reduce the pressure to your normal spraying pressure - 2-4 BAR (30-60 psi).

8 Check the tank agitator valve is open.

9 Visually check that both tank agitators are working.

10 Turn the Controller Master switch ON & OFF and check that all boom sections are switched off together.

11 Turn fenceline* nozzle ON & OFF to check it is working correctly (*if fitted)

12 While water is being pumped through the boom, check for any leakages or blockages throughout the sprayer.

Check all hoses, connections, valves, filters, boom fittings etc.

Check the nozzles are operating correctly.

Rectify any problems.

13 With all boom operating, re-check pressure range by alternating from “+” to “-” on the Spray Controller while in MANUAL mode.

Ensure maximum pressure does not exceed 8 BAR. Minimum pressure should reach almost zero.

14 Switch booms ON & OFF several times, ensuring each section is operating individually, and that the non-drip nozzle bodies are working.

15 On completion of checking the sprayer, turn controls Off by placing the master switch and boom switches in OFF position.

16 Disengage PTO or Hydraulic pump drive after the Spray Controller is switched off.

NOTE

The maximum spraying pressure will vary with different nozzles.

We recommend you re-adjust your maximum pressure if you change your nozzle selection.

Filling	3.2
Foam Marker	3.5
Filters & Tank Agitation	
• 3000 Litre	3.9
• 2000 Litre	3.13
Cleaning	
• 3000 Litre	3.11
• 2000 Litre	3.15
Boom Set-Up	3.17
Chemical Mixing	
• 3000 Litre	3.20
• 2000 Litre	3.25
Operating Pointers	3.28

Filling the Pinto Tanks

The Pinto has four tanks which require filling. Each tank (main tank, flush tank, freshwater tank & foam marker) can be filled via its top lid.

The main tank and flushing tank can also be filled via a top/bottom-filling inlet.

1 Main Tank

Use clean, fresh water (preferably rainwater), free of suspended organic matter or clay. Some chemicals are deactivated when they contact these materials.

Always calculate the correct water quantity required, and when filling, allow sufficient water quantity for adding and mixing chemicals.

If necessary top up the tank to required quantity after adding chemicals.



Open the main tank lid for top-filling.

Top Filling

To top-fill the main tank:

- 1 Open the main tank lid and ensure the basket filter is in place.
- 2 Fill the main tank with the required amount of water.
- 3 Close the main tank lid.



(1) Remove the cap of the Fill Inlet (3000 litre).

Bottom-Filling

Bottom-filling requires a pressured water source.

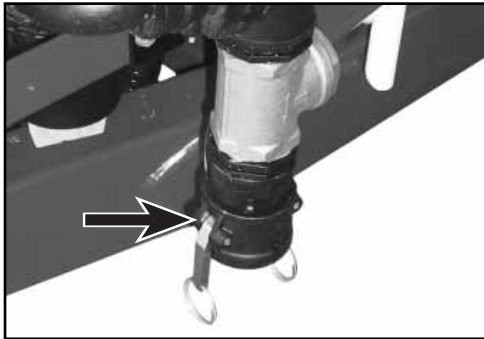
• 3000 Litre

To bottom-fill the main tank:

- 1 Remove the end cap from the fill inlet & connect the filling hose.
- 2 Turn the Fill Selector Valve to the main tank.
- 3 Fill the main tank with the amount of water required.
- 4 Disconnect filling hose and replace the end cap.

(2) Turn the Fill Selector Valve to the main tank.





(1) Remove the end cap of the Fill Inlet (2000 litre).

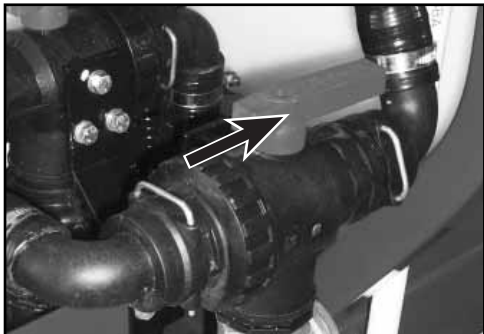
• 2000 Litre

The bottom-fill facility requires a pressured water source and is used to fill both the main tank and flushing tank.

To bottom-fill the main tank:

- 1 Remove the end cap from the fill inlet & connect the filling hose.
- 2 Turn the Bottom Fill Inlet Valve to the main tank.
- 3 Fill the main tank with the amount of water required.
- 4 Disconnect filling hose and replace the end cap.

(2) Turn the Bottom Fill Inlet Valve to the main tank.



(1) Unscrew the flush tank lid for top-filling.

2 Flush Tank

Use clean, fresh water (preferably rainwater) in the 200 litre flush tank.

Always fill the flushing tank before spraying.

Top Filling

To top-fill the flush tank:

- 1 Unscrew the flush tank lid.
- 2 Fill the flush tank.
- 3 Replace the flush tank lid.



(1) Remove the end cap of the Fill Inlet (3000 litre).

Bottom-Filling

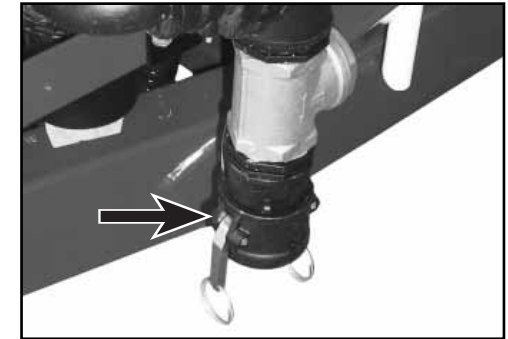
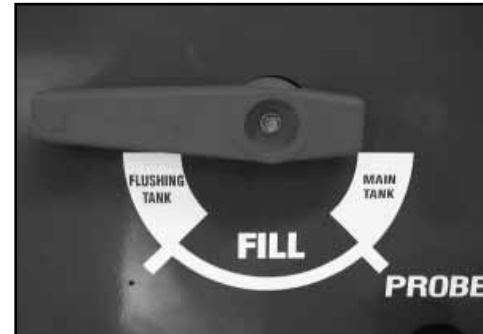
Bottom-filling requires a pressured water source.

• 3000 Litre

To Bottom-fill the Flush tank:

- 1 Remove the end cap from the fill inlet & connect the filling hose.
- 2 Turn the Fill Selector Valve to the "Flushing tank".
- 3 Fill the Flush tank with the amount of water required.
- 4 Disconnect filling hose and replace the end cap.

(2) Turn the Fill Selector Valve to "Flushing tank".



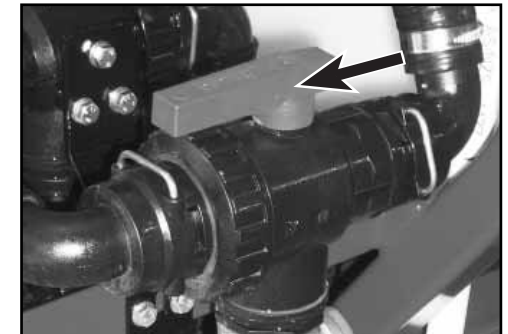
(1) Remove the cap of the Fill Inlet (2000 litre).

• 2000 Litre

To Bottom-fill the Flush tank:

- 1 Remove the end cap from the fill inlet & connect the filling hose.
- 2 Turn the Bottom Fill Inlet Valve to the Flush tank.
- 3 Fill the Flush tank with the amount of water required.
- 4 Disconnect filling hose and replace the end cap.

(2) Turn the Bottom Fill Inlet Valve to the Flush tank.





Optional Salvarani foam marker tank.



Optional RHS 20 l/min foam marker.

3 Foam Marker Tanks

If your Pinto is fitted with the optional Salvarani or RHS foam marker, fill with clean fresh water (preferably rainwater).

Use the tank lid for top-filling and adding foam concentrate.

To fill foam marker tanks:

- 1 Unscrew the tank lid.
- 2 Fill the tank with the required amount of water
- 3 Replace the lid after filling.



The Fresh Water/Hand rinse tap - 3000 litre.

4 Fresh Water Tank

The Pinto incorporates a 30 litre fresh water tank for personal safety when operating the unit in the field.

Always fill the fresh water tank before spraying.



(1) Unscrew the tank lid for filling (3000 litre).

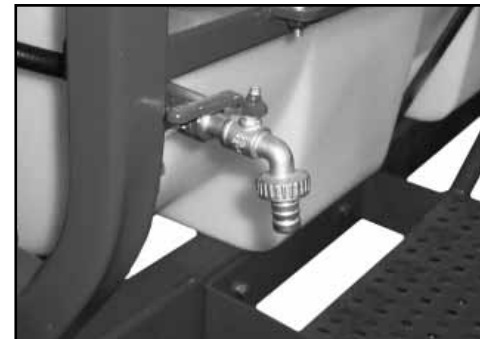
To fill the fresh water tank:

- 1 Unscrew the tank lid.
- 2 Fill the tank using only rainwater.
- 3 Replace the lid after filling.

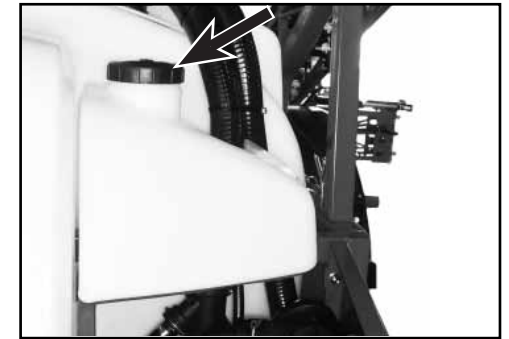
NOTE

Always add foam concentrate after filling tank with water to minimise foaming when filling.

The Fresh Water/Hand rinse tap - 2000 litre.



(1) Unscrew the tank lid for filling (2000 litre).





White foam concentrate.



Pink foam concentrate.

Foam Solution

The performance of the the foam marker will depend greatly on using a high quality foam concentrate and good water quality.

Selecting a Concentrate

Always use high quality foam concentrate. We recommend Croplands brand White or Pink Foam for all general purpose marking.

Be aware that a lot of poor quality foam concentrate is sold every year to unsuspecting customers. Some concentrates may work well in some circumstances and not others, so be careful.

Water Conditioner

Croplands also offer a water conditioner if your water has a high mineral content.

If the foam appears watery, it may need more concentrate or a water conditioner. With some experimentation, you will easily find the right mix.

Operating the Foam Marker

Mixing the Solution

The bottom-fill facility of the Pinto allows concentrate to be added while filling.

Always add concentrate to water and not water to concentrate when top-filling.

When topping-up a tank of mix with a water hose, place the end of the hose under the surface so as not to agitate the solution causing the tank to fill up with foam. Always follow label directions.

Place a known volume of water in foamer tank. Measure out the required amount of foam concentrate and optional water softener and add to the tank.

It may be necessary to stir the tank to get the solution mixed. Normally the solution will be adequately mixed after transport to the field.



Adjust the foam output with the flow-rate regulating valve.



Use the left/right selector switch to send foam to the left or right foam nozzle



Always release air-pressure in the tank before undoing the cap to refill, and when finished for the day.

Salvarani Foam Marker Controller (if fitted)

If your Pinto is fitted with an ARAG foam marker, follow these instructions for its operation:

- 1 Mix the appropriate amount of foam concentrate with water in the tank.

You can put the foam concentrate in first, then fill the tank with clean rainwater making sure the filling hose goes to the bottom of the tank (underwater) to avoid excessive foaming of the solution while filling.

Alternatively, add the foam concentrate after filling the tank with water.

- 2 With the control panel wired direct to battery, flick the switch on the control panel to the left.

Foam should now be coming out of the left-hand side foam nozzle at the end of the boom.

- 3 On the cap of the foam tank, adjust the flow-rate regulating valve to achieve the desired output of foam.

- 4 Flick the selector switch to the right-hand position on the control panel, and check that the right-hand side foam nozzle is putting out the desired amount of foam (to match the left).

- 5 When re-filling, first make certain you relieve the pressure in the tank by pulling the pressure relief valve ring and letting the pressurized air escape BEFORE undoing the tank lid.

Fill the tank again to continue working.

- 6 Ensure the operator leaves the selector switch on the control panel in the neutral (middle) position when the unit is not in use, or drainage of the tractor battery will occur.

The lights on the control panel are lit, either left or right, if the selector switch is in the operating position.

- 7 Before finishing your day, ensure the air pressure in the tank is released overnight.

For maintenance of your Salvarani foam marker, go to page 5.7.

For trouble-shooting tips, go to page 6.6.

NOTE

The foam marker will output foam at the rate of approximately 10.6 Litres/hour, depending on your foam mix concentration and adjustment of output.

NOTE

The compressor requires a continuous 12-volt supply at 9 amps.

Do not operate the unit at more than 40 Deg C or less than 0 Deg C.



The foam marker control with switch in OFF position.

RHS Foam Marker Controller (if fitted)

The foam marker works by pumping air through the FoamTube™ on its way to the boom. Liquid is injected through an orifice into the air stream just prior to entering the foam mixing tube. A directional valve (on two sided models) then diverts the foam either left or right.

To operate the foam marker:

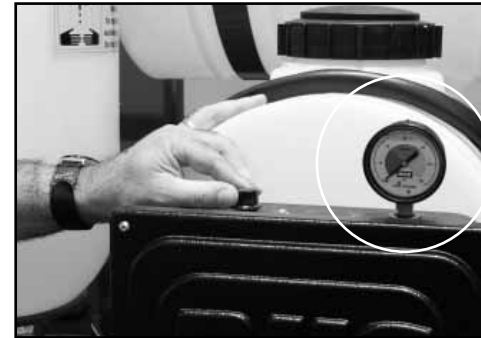
- 1 Make sure the filter is clean.
- 2 Make sure the foam marker tank tap is open.
- 3 To start the foam marker, move the switch either LEFT or RIGHT. The option of left or right selects which side you want the foam to go.

The unit operates 100% either way. The only difference is the position the Directo-Valve is set.



The foam marker adjustment knob & pressure gauge.

- 4 Turn OFF the foam marker by placing the switch in the central position.
- 5 The reset switch (resettable circuit breaker) on the controller, allows resetting if a prolonged high current condition occurs.



The foam marker pressure gauge.

Setting Liquid Pressure

The foam marker injects the foam liquid mixture under pressure into the air stream to make foam. Liquid pressure is adjusted using the in-cab control (see page 3.6).

The foam control knob adjusts the relative mixture of air and water, which in turn controls the output and quality of foam.

The pressure gauge shows the pressure at which the liquid is being injected (higher pressure means more liquid is being injected into the air stream)

When the knob is turned fully **counter-clockwise**, the liquid pump is shut completely off. By rotating the knob **clockwise**, the pump will speed up, increasing liquid flow and liquid pressure will rise.



Low foam output.

Adjust the pressure to obtain the best foam result for your conditions.

- Do not operate under 20 psi. It will often result in intermittent foam because there simply isn't enough liquid pressure to overcome the foam discharge pressure.



WARNING

Never operate the unit continuously over 60 psi. Operating continuously above 60 psi will overload the system and may cause damage.



WARNING

Air pressure is factory set at a maximum of 28 psi. Do not increase above 28 psi or damage may result.



High foam output.

- Generally you won't operate over 55 psi as it will use excessive solution and create a very wet foam.
- In very hot, dry conditions, it may be necessary to use very wet foam to increase the life of the foam.

Foam Pressure Setting Characteristic Chart		
CHARACTERISTIC	LOW PRESSURE	HIGH PRESSURE
Pressure Range	20 to 30 psi	Above 30 psi
Foam Density	Light	Heavy
Foam Consistency	Fluffy, larger bubbles	Thick, smaller bubbles
Solution Usage	Lower	Higher
Average Blob Size	Larger	Smaller
Hot Weather Durability	Less	More



Outback 10 model pictured above.

Optional Outback 10 Foam Markers

If your Pinto is fitted with a higher output model Outback 10 Foam Marker, the use and adjustment will be the same as pages 3.6 - 3.7.

The only difference is that the adjustment dial for the foam output is on the in-cab control unit for the Outback 10.



Separate 100 litre foam tank

The Outback 10 models also have a separate 100 litre tank.



WARNING

Always wear protective gloves when cleaning filters containing toxic chemicals.

Cleaning Filters

Filters are used to stop solids entering the liquid system and blocking lines, nozzles or damaging the pump.

The Pinto main tank is fitted with a basket filter. The system also incorporates a large suction filter, boom pressure filter, nozzle filters and a small filter is fitted to the foam marker.

- 1 Always ensure the basket filter is in place when filling the main tank through the lid.
- 2 All filters should be cleaned regularly or after each spraying period.

If the filter screen is damaged, replace with a new screen.

NOTE

Be careful not to damage or deform the mesh or O-ring while cleaning and refitting the filters.



(2) Turn the Suction Selector Valve to "Off" position.

Suction Filter

The suction filter should be cleaned regularly or after each main tank has been emptied.

To clean the suction filter:

- 1 Completely stop all sprayer functions.
- 2 Turn the Suction Selector Valve to "Off" position to shut Off liquid from the main tank.



(3) Remove & clean the suction filter regularly.

- 3 Remove the outer filter screw and bowl from the suction filter, and then remove the filter element. Thoroughly clean the filter parts, then re-assemble the filter.
- 4 Return the Suction Selector valve to source from the main tank.

(4) Return the Suction Selector Valve to source from main tank.



Clean the pressure line filter regularly.

Pressure Filter

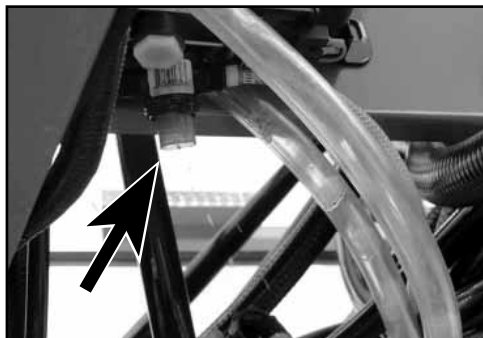
The pressure line filter (located on the control panel) should be cleaned regularly or after each main tank has been emptied.

To clean the pressure line filter:

- 1 Completely stop all sprayer functions.
- 2 Open the valve at the bottom of the filter to ensure all pressure is removed from the filter.
- 3 Remove the outer filter bowl, and then remove the filter and thoroughly clean it before re-assembling the filter.



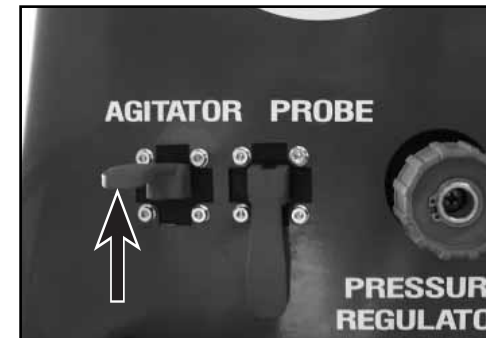
Clean the nozzle filters regularly.



Remove the foam marker filter bowl & 50 mesh screen.



After cleaning, replace the screen & filter bowl.



Ensure the agitator valve is open before adding chemical.

Nozzle Filters

Nozzle filters should be cleaned regularly and when a nozzle spray pattern is effected by blockage.

To clean the nozzle filters:

- 1 Completely stop all sprayer functions.
- 2 Ensure all pressure is removed from the spray lines.
- 3 Remove the nozzle cap and nozzle, and then remove nozzle filter.

Thoroughly clean nozzle filter (and nozzle if necessary) before re-fitting the nozzle & nozzle cap.

- 4 Repeat step 3 for each nozzle.

Foam Marker Filters (if fitted)

The foam marker is protected by:

- A 50 mesh filter under the cabinet, &
- A 100 mesh filter located in the line before the liquid orifice.

These should be cleaned periodically, depending on cleanliness of operations.

To clean foam marker filters:

- 1 Completely stop all sprayer functions.
- 2 Close the tap next to foam marker filter (underneath the Outback cabinet).

- 3 Remove the outer filter bowl, remove the filter (50 mesh) and thoroughly clean it before re-assembling the filter.
- 4 Re-open the tap next to the filter.

Tank Agitation

When chemical is added to the main tank, the pump and agitator(s) must be operating at all times to ensure chemical does not settle in the tank.

Check to see that tank agitation is correctly adjusted.

If agitation causes too much foaming in the tank, try closing Off one agitator to reduce foaming

If chemical settles, through pump break down or another reason, start up the sprayer after the fault has been rectified and let the mixture in the tank agitate for a length of time to ensure thorough mixing of the chemical.

NOTE

Be careful not to damage or deform the mesh or gasket while cleaning and refitting the filters and nozzle caps.

NOTE

In some circumstances you may find the nozzle filters are best not used.

If your nozzle filters continuously block, check that your main pressure filter is not torn or that the product you are using is not the cause.

NOTE

Be careful not to damage or deform the mesh or O-ring while cleaning and refitting the filters.



(2) Pull & lock the tank drain valve open to drain main tank.

Flushing the Pinto

The Pinto is equipped with a flush tank for cleaning the sprayer when changing chemicals, and at the end of the day.

To flush the Pinto:

- 1 Ensure the site for flushing and cleaning the Pinto meets with environmental and statutory regulations.
- 2 Pull & lock the drain valve open to drain the main tank.

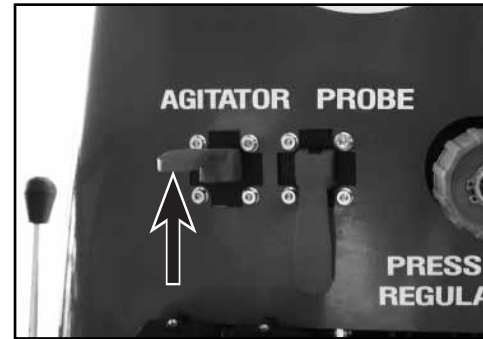


(3) Turn the Suction Selector Valve to source from the flush tank.

- 3 Turn the Suction Selector Valve to source from the flush tank.
- 4 Turn the Function Selector valve to "Tank Rinse".
- 5 Check the agitator valve is open.
- 6 Start tractor and place sprayer controls in start up position according to the instructions of the controller fitted.
- 7 Engage PTO and bring the PTO speed up to 540 RPM.

All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

(4) Turn the Function Selector valve to "Tank Rinse".



(5) Check the Agitator Valve is open & agitator operating.

- 8 Pressurise the system by placing the Master switch ON and switch No 5 ON. This will operate the tank agitator.
- 9 Adjust pressure to desired operating pressure by adjusting pressure up or down.
- 10 Turn the spray boom sections ON.

Fresh water now flushes through the suction line, suction filter, pump, agitator(s), pressure lines, boom sections and nozzles and mixing basket.

All water comes into the main tank from the flush tank. Water remaining in the tank drains out of the tank through the drain outlet.

- 11 On completion of flushing, shut down all controls and disengage the PTO.



(12) Turn the Suction Selector valve to "Off" position.

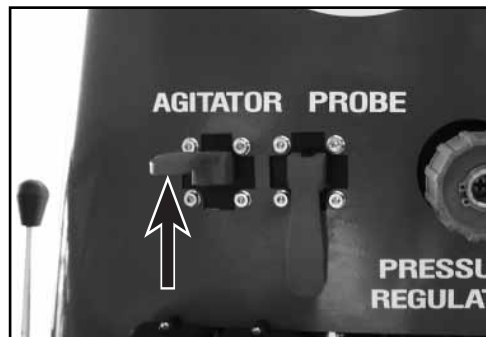
- 12 Turn the Suction Selector valve to "Off" position to shut-off liquid from the main tank.
- 13 Remove and clean the suction filter & screen, and reassemble.
- 14 Adjust all valves back to operating mode:
 - a) Turn the Function Selector valve to "Off".
 - b) Release & close the tank drain valve.
- 15 Wash/hose down the outside of the sprayer.

(13) Remove & clean the suction filter.



NOTE

Ensure the drained mixture is disposed of as required by law. Read chemical instructions.



(3) Check the Agitator Valve is open.



(5) Turn the Function Selector valve to "Tank Rinse".



(8) Place the Master switch "On".



(14) Pull & release the tank drain to open drain valve when the tank cleaning is completed.

Using Tank and Equipment Cleaners

If a cleaning agent is required (refer to chemical label), first completely flush the Pinto with water as outlined in Steps 1 - 15 on page 3.10, then:

- 1 Fill the main tank with fresh water to the desired level.
- 2 Add cleaning agent into the main tank (use according to instructions).
- 3 Check the Agitator valve is open.
- 4 Turn the Suction Selector Valve to source from the main tank.

(3) Turn the Suction Selector Valve to source from the main tank.



- 5 Turn the Function Selector valve to "Tank Rinse".
- 6 Start tractor and place sprayer controls in start up position according to Controller operating instructions (see page 2.24).
- 7 Engage PTO and bring the PTO speed up to 540 RPM.
All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

- 8 Pressurise the system by placing the Master switch ON and Boom switch number 5 ON
- 9 Adjust pressure to desired operating pressure by adjusting pressure up or down.
- 10 Turn the spray boom sections ON.
Fresh water now flushes through the suction line, suction filter, pump, agitator(s), pressure lines, boom sections and nozzles.
- 11 If you require the cleaning agent to soak or stand for a period, turn the spray booms Off, and completely shut down the sprayer for a period.

- 12 Repeat steps 7 - 10 after soaking is completed.
- 13 Turn the spray booms OFF and shut down the sprayer.
- 14 Pull & release the tank drain to open the drain valve when tank when the tank cleaning is completed.
- 15 After the tank is drained completely, flush the Pinto again following steps 1 - 15, on page 3.10, with clean water.



WARNING

Always wear protective gloves when cleaning filters containing toxic chemicals.

Cleaning Filters

Filters are used to stop solids entering the liquid system and blocking lines, nozzles or damaging the pump.

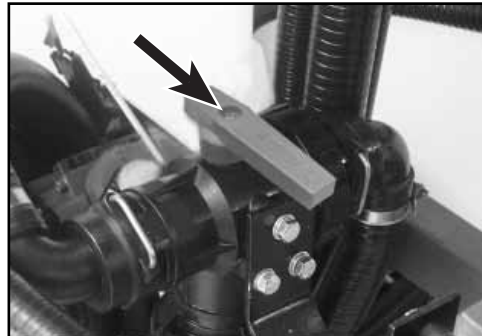
The Pinto main tank is fitted with a basket filter. The system also incorporates a large suction filter, boom pressure filter, nozzle filters and a small filter is fitted to the foam marker.

- 1 Always ensure the basket filter is in place when filling the main tank through the lid.
- 2 All filters should be cleaned regularly or after each spraying period.

If the filter screen is damaged, replace with a new screen.

NOTE

Be careful not to damage or deform the mesh or O-ring while cleaning and refitting the filters.



(2) Turn the Directional Suction Valve to "Off" position.

Suction Filter

The suction filter should be cleaned regularly or after each main tank has been emptied.

To clean the suction filter:

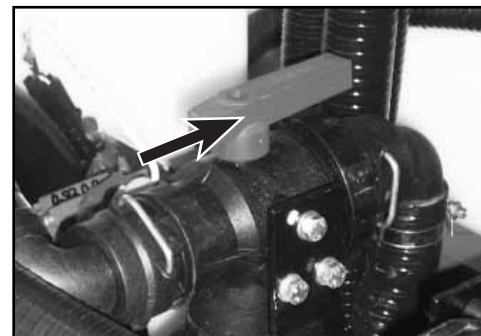
- 1 Completely stop all sprayer functions.
- 2 Turn the Directional Suction Valve to "Off" position to shut Off liquid from the main tank.



(3) Remove & clean the suction filter regularly.

- 3 Remove the outer filter screw and bowl from the suction filter, and then remove the filter element. Thoroughly clean the filter parts, then re-assemble the filter.
- 4 Return the Suction Line valve to "Spray" position.

(4) Turn Directional Suction Valve to source from main tank.



Clean the pressure line filter regularly.

Pressure Filter

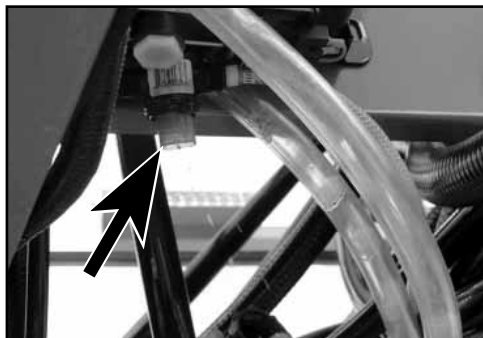
The pressure line filter (located on the control panel) should be cleaned regularly or after each main tank has been emptied.

To clean the pressure line filter:

- 1 Completely stop all sprayer functions.
- 2 Open the valve at the bottom of the filter to ensure all pressure is removed from the filter.
- 3 Remove the outer filter bowl, and then remove the filter and thoroughly clean it before re-assembling the filter.



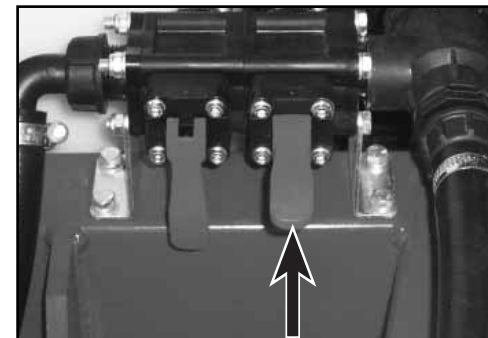
Clean the nozzle filters regularly.



Remove the foam marker filter bowl & 50 mesh screen.



After cleaning, replace the screen & filter bowl.



Ensure the agitator valve is open before adding chemical.

Nozzle Filters

Nozzle filters should be cleaned regularly and when a nozzle spray pattern is effected by blockage.

To clean the nozzle filters:

- 1 Completely stop all sprayer functions.
- 2 Ensure all pressure is removed from the spray lines.
- 3 Remove the nozzle cap and nozzle, and then remove nozzle filter.

Thoroughly clean nozzle filter (and nozzle if necessary) before re-fitting the nozzle & nozzle cap.

- 4 Repeat step 3 for each nozzle.

Foam Marker Filters (if fitted)

The foam marker is protected by:

- A 50 mesh filter under the cabinet, &
- A 100 mesh filter located in the line before the liquid orifice.

These should be cleaned periodically, depending on cleanliness of operations.

To clean foam marker filters:

- 1 Completely stop all sprayer functions.
- 2 Close the tap next to foam marker filter (underneath the Outback cabinet).

- 3 Remove the outer filter bowl, remove the filter (50 mesh) and thoroughly clean it before re-assembling the filter.
- 4 Re-open the tap next to the filter.

Tank Agitation

When chemical is added to the main tank, the pump and agitator(s) must be operating at all times to ensure chemical does not settle in the tank.

Check to see that tank agitation is correctly adjusted.

If agitation causes too much foaming in the tank, try closing Off one agitator to reduce foaming

If chemical settles, through pump break down or another reason, start up the sprayer after the fault has been rectified and let the mixture in the tank agitate for a length of time to ensure thorough mixing of the chemical.

NOTE

Be careful not to damage or deform the mesh or gasket while cleaning and refitting the filters and nozzle caps.

NOTE

In some circumstances you may find the nozzle filters are best not used.

If your nozzle filters continuously block, check that your main pressure filter is not torn or that the product you are using is not the cause.

NOTE

Be careful not to damage or deform the mesh or O-ring while cleaning and refitting the filters.



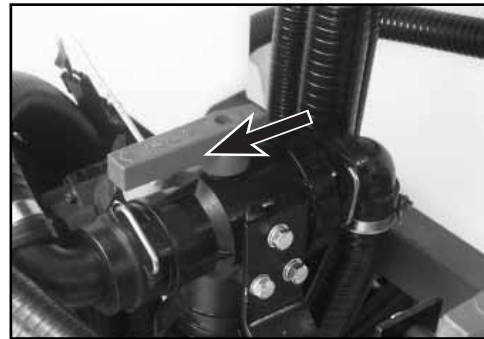
(2) Pull & lock the tank drain valve open to drain the main tank.

Flushing the Pinto

The Pinto is equipped with a flush tank for cleaning the sprayer when changing chemicals, and at the end of the day.

To flush the Pinto:

- 1 Ensure the site for flushing and cleaning the Pinto meets with environmental and statutory regulations.
- 2 Pull & lock the drain valve open to drain the main tank.

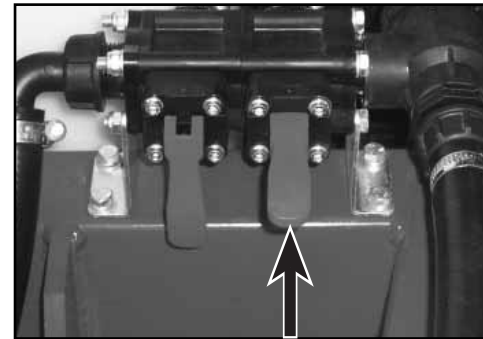
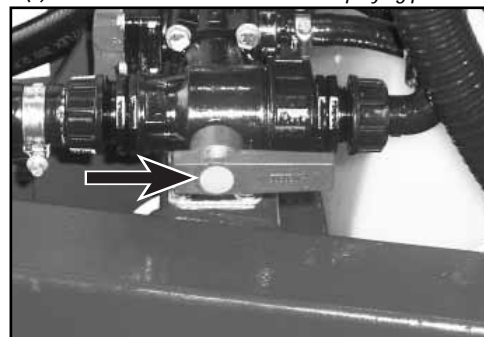


(3) Turn the Directional Suction Valve to source from the flush tank.

- 3 Turn the Directional valve to source from the flush tank.
- 4 Turn the Pressure Flow valve to the Spraying position.
- 5 Check the agitator valve is open.
- 6 Start tractor and place sprayer controls in start up position according to the instructions of the controller fitted.

- 7 Engage PTO and bring the PTO speed up to 540 RPM.
All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

(4) Turn the Pressure Flow Valve in Spraying position.

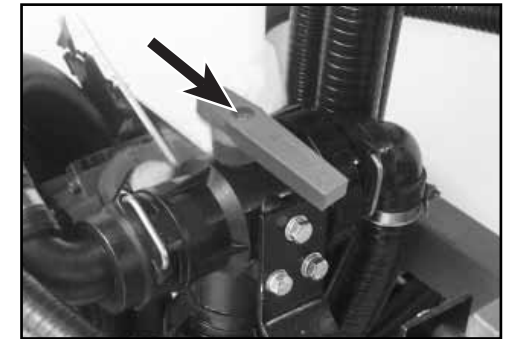


(5) Check the Agitator Valve is open.

- 8 Pressurise the system by placing the Master switch ON and switch No 5 ON. This will operate the tank agitator.
- 9 Adjust pressure to desired operating pressure by adjusting pressure up or down.
- 10 Turn the spray boom sections ON.
Fresh water now flushes through the suction line, suction filter, pump, agitator(s), pressure lines, boom sections and nozzles and mixing basket.

All water comes into the main tank from the flush tank. Water remaining in the tank drains out of the tank through the drain outlet.

- 11 On completion of flushing, shut down all controls and disengage the PTO.



(12) Turn the Directional Suction Valve to "Off" position.

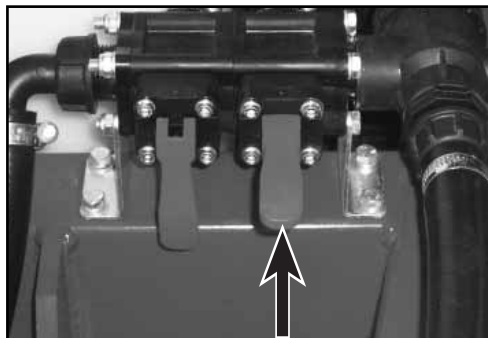
- 12 Turn the Directional Suction Valve to "Off" position to shut Off liquid from the main tank.
- 13 Remove and clean the suction filter & screen, and reassemble.
- 14 Adjust all valves back to operating mode:
 - a) Turn the Function Selector valve to "Off".
 - b) Release & close the tank drain valve.
- 15 Wash/hose down the outside of the sprayer.

(13) Remove & clean the suction filter.

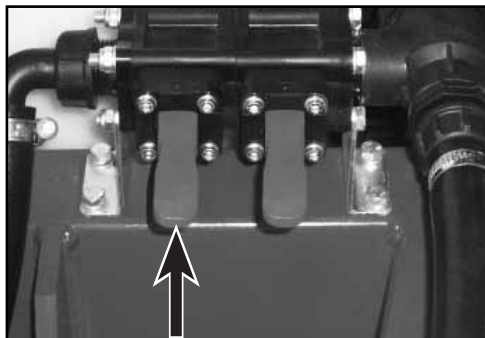


NOTE

Ensure the drained mixture is disposed of as required by law. Read chemical instructions.



(3) Check the Agitator Valve is open.



(5) Open the Tank Rinse Valve.



(8) Place the Master switch "On".



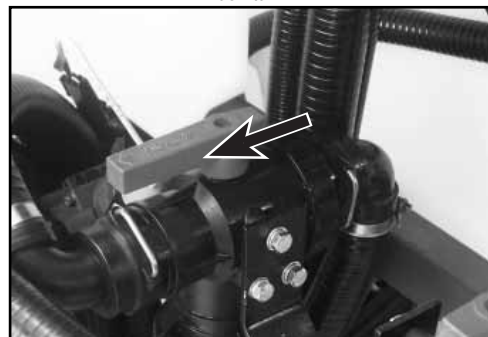
(14) Pull & release the tank drain to open drain valve when the tank cleaning is completed.

Using Tank and Equipment Cleaners

If a cleaning agent is required (refer to chemical label), first completely flush the Pinto with water as outlined in Steps 1 - 15 on page 3.10, then:

- 1 Fill the main tank with fresh water to the desired level.
- 2 Add cleaning agent into the main tank (use according to instructions).
- 3 Check the Agitator valve is open.
- 4 Turn the Directional valve to source from the flush tank.

(4) Turn the Directional Suction Valve to source from the flush tank.



- 5 Open the Tank Rinse Valve.
- 6 Start tractor and place sprayer controls in start up position according to Controller operating instructions (see page 2.24).
- 7 Engage PTO and bring the PTO speed up to 540 RPM.

All pumped liquid is now being passed through the dump valve back into the tank. The system is not pressurised and tank agitators are not working.

- 8 Pressurise the system by placing the Master switch ON and Boom switch number 5 ON.
- 9 Adjust pressure to desired operating pressure by adjusting pressure up or down.
- 10 Turn the spray boom sections ON.

Fresh water now flushes through the suction line, suction filter, pump, agitator(s), pressure lines, boom sections and nozzles.

- 11 If you require the cleaning agent to soak or stand for a period, turn the spray booms Off, and completely shut down the sprayer for a period.

- 12 Repeat steps 7 - 10 after soaking is completed.
- 13 Turn the spray booms OFF and shut down the sprayer.
- 14 Pull & release the tank drain to open the drain valve when tank when the tank cleaning is completed.
- 15 After the tank is drained completely, flush the Pinto again following steps 1 - 15, on page 3.10, with clean water.

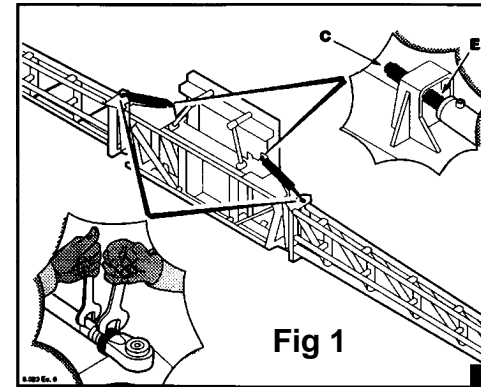
Boom Set-Up

The boom requires adjustment for optimum operation and wear life:

1 The boom assembly requires:

- (a) Wing alignment.
- (b) Wing extension alignment.

- (c) Balancing device alignment.
- (d) Backlash between sliding surfaces alignment.
- (e) Locking the balancing device adjustment.



Adjust the cylinder rods.

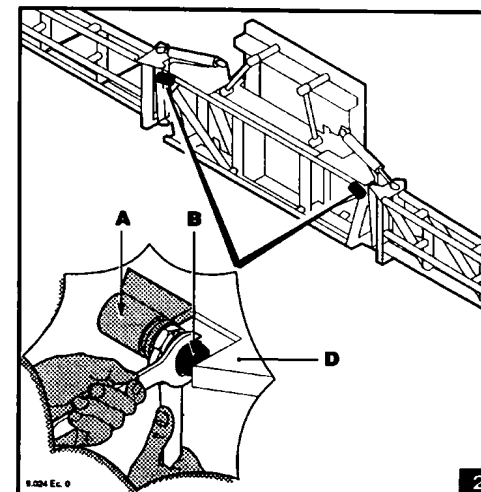
a) Wing alignment

Wings are aligned to the central frame via the adjusting rods (C) shown in figure 1 (above).

To align wings:

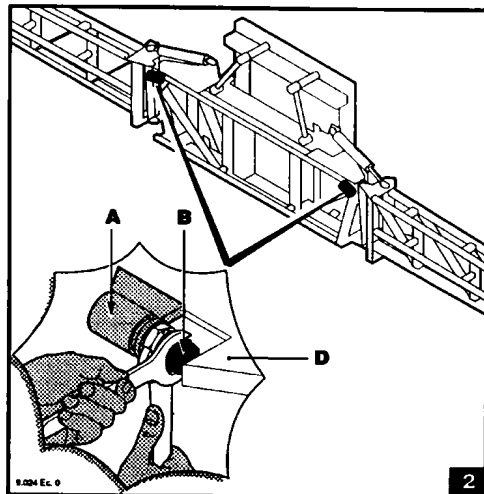
- 1 Release pressure from the shock absorbers (A) shown in figure 2 (shown below).

- 2 Align the wings by adjusting the cylinder rods shown in figure 1.
- 3 Once aligned, tighten the lock nuts on the cylinder rods.

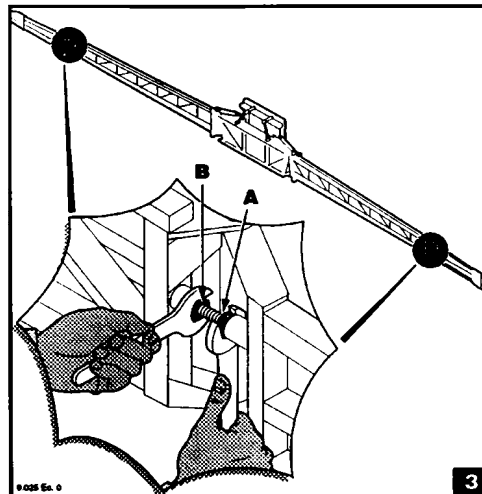


NOTE

The initial boom alignment is carried out at the factory and checked by your dealer.



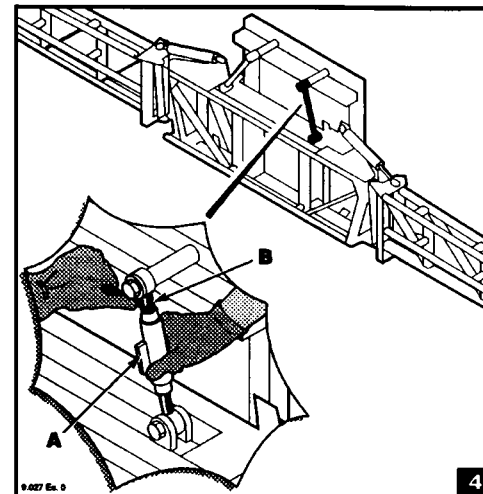
- 2 Adjust the shock absorbers (A), shown in figure 2 above, as follows:
- Tighten cap (B) against the limit stop (D) until springs are slightly pressurised.
 - Tighten the lock nut when adjustment is finalised.



b) Wing extension alignment

After inner wing alignment is completed, align the wing extensions by:

- Loosening the lock nuts B, shown in figure 3 above.
- Tighten or loosen adjusting screws (A) until the wing extensions are aligned with the inner wings.
- Tighten lock nuts (B), after alignment is finalised.

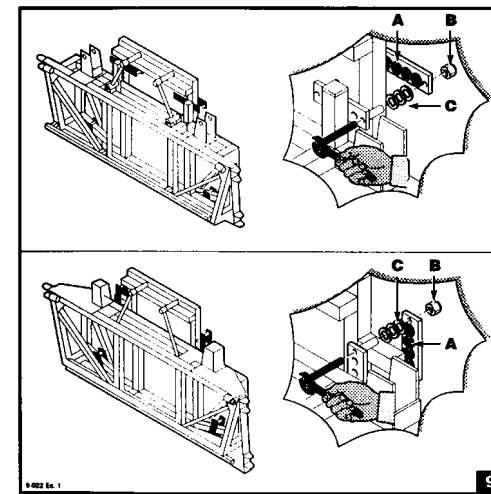


c) Balancing device alignment

The boom is fitted with an adjustable connecting rod which allows the boom to tilt $0^\circ \pm 3^\circ$ on the horizontal axis.

Adjust the boom to the require horizontal plane by:

- Loosening the lock nuts (B,) shown in figure 4 above.
- Turn the turnbuckle (A) as required.
- Tighten the lock nut (B).

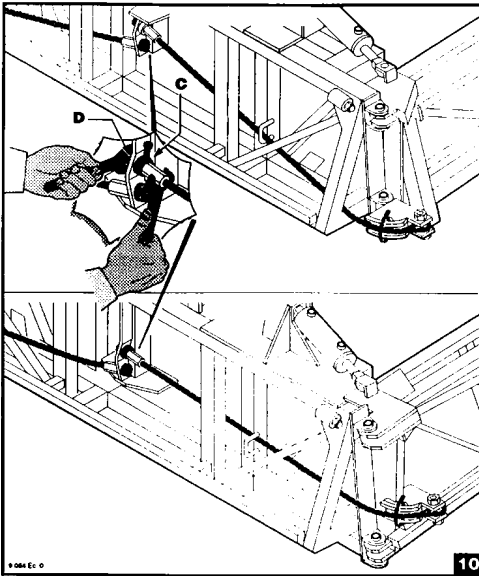


d) Backlash between sliding surfaces alignment

The balancing device oscillation must be adjusted so that the surfaces slide freely and without backlash.

To eliminate backlash:

- Tighten nuts (B), shown in figure 9 above.
- If necessary, depending on wear of sliding pads (A), remove spring sections (C) as needed to take up the wear and remove backlash.



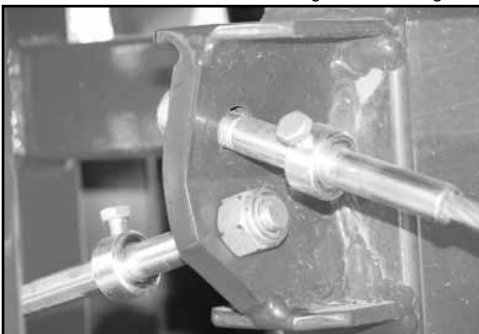
e) Locking the balancing device adjustment.

The cables of the balancing device must be tight.

To adjust the balancing device:

- 1 Fold the wings to transport position.
- 2 Tighten the cables by adjusting the nuts (D), shown in figure 10 above.
- 3 Move the lock (C) closer and lock it with the locking screw.

Ensure the cables of the balancing device are tight.



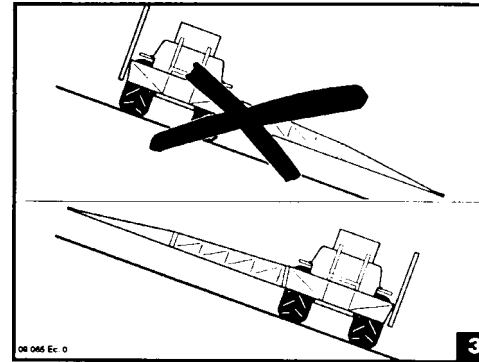
Unfolding & folding the Spray Boom

Understand the safety precautions below before operating the folding mechanism of the spray boom.



DANGER - WARNING:

Make sure there are no people, things or power lines with in range of the spray boom when folding or unfolding



CAUTION:

If working on steep terrain, please note the following:

- Lock the balancing device (if the unit is provided with hydraulic locking).
- For vehicle stability, always unfold the uphill side boom before unfolding downhill side boom, see figure 3 above .
- For vehicle stability, always fold the downhill side boom before folding up hill side boom.
- Never operate with the down hillside boom lowered and uphill side boom folded.

To operate the boom:

- 1 Use the tractor remote controls to fold and unfold the spray boom.
- 2 Use the tractor remote controls to raise and lower the spray boom height as required.



WARNING

Make sure there are no people, things or power lines with in range of the spray boom when folding or unfolding



CAUTION

If working on steep terrain, please note the following:

- Lock the balancing device (if the unit is provided with hydraulic locking).
- For vehicle stability, always unfold the up hill side boom before unfolding down hill side boom, see figure 3 above .



CAUTION

If working on steep terrain, please note the following:

- For vehicle stability, always fold the down hill side boom before folding up hill side boom.
- Never operate with the down hill side boom lowered and up hill side boom folded.



Accurately calculate the amount of chemical required.

Calculate Water & Chemical Quantities

Before spraying it is necessary to calculate the exact quantities of water and chemical needed to spray the required area. The following formulae may be useful:

- 1 **For chemical rates** expressed in litres or kg per hectare (land area), calculate the amount of chemical needed, using the formula:

Chemicals required (litres) =

Tank Volume (l) x Recommended Chemical Rate (l/ha) ÷ Spray Application Rate (l/ha)

eg. $[4000 \times 3] \div 150$
= 80 litres.

- 2 **For volume of mixture required** to spray the selected area, calculate the liquid required, using the following formula:

Tank Volume Required (litres) =

Area (ha) x Spray Application Rate (l/ha)

eg. 300×150
= 45,000 litres

- 3 **For area covered by a given volume of mixture**, calculate the area, using the following formula:

Area Covered (ha) =

Tank Volume (litres) ÷ Spray Application Rate (l/ha)

eg. $4000 \div 150$
= 26.7 hectares

NOTE

IMPORTANT! Be sure to mix only enough spray mixture to cover the area required. Avoid wastage and problems of needless chemical disposal.

Adding Chemical To the Main tank

Chemical can be added to the main tank using the Chem-E-Flush hopper, and/or if fitted, the optional Chemical Probe.

1 Optional Chem-E-Flush Hopper

To add chemical to the main tank, follow the steps outlined:

- a) Make sure sufficient water is added to the main tank and the flush tank.



(b) Unlock the Chem-E-Flush dropdown leg lock.

- b) Unlock the Chem-E-Flush dropdown leg lock by placing your foot on the bottom of the leg and rotating the latch.

- c) Lower the hopper to filling position.

(c) Lower the hopper to filling position.

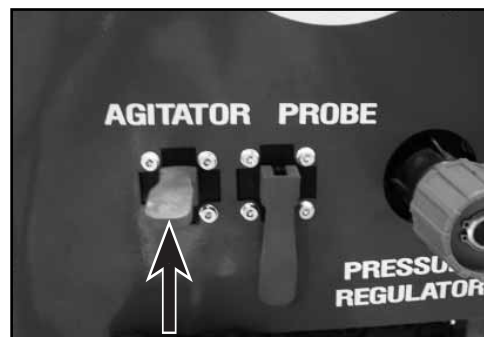




(d) Turn the Function Selector valve to "Chem-E-Flush".

d) Turn the Function Selector valve to "Chem-E-Flush".

e) Turn Suction Selector Valve to source from the main tank.



(f) Open the agitator valve.

f) Open the agitator valve.



(g) Close Transfer valve at the base of the hopper.

g) Close the Transfer valve at the base of the hopper.

h) Start the tractor and **operate the pump with PTO & tractor engine at idling speed only.**

i) Pressurise the system by placing the Master switch ON & switch No 5 ON. Keep boom switches OFF.



(j) Open hopper lid & add chemical powder or liquid.

j) Open the hopper lid & add chemical powder or liquid to the hopper.

k) Close the hopper lid & open the Nozzle Rinse valve to mix chemical.

l) Close the Nozzle Rinse valve when chemical is mixed.

(e) Turn the Suction Selector Valve to source from main tank.



NOTE

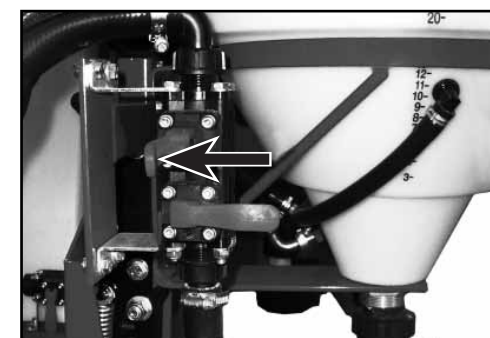
The plumbing circuit of the Pinto incorporates a relief valve which automatically dumps pressure when the boom is switched off. Therefore Switch No 5 must be turned ON if pressure is required when the boom is off, ie agitation & chemical probe operation.



WARNING

Operating the pump at faster than idling speed may burst lines.

(k) Close hopper lid & open the Nozzle Rinse valve to mix chemical.





(m & o) Open Transfer valve to transfer mixture to the main tank.



(p) Close Transfer valve at the base of the hopper.



(q) Return the Function Selector valve to "Spray" position.



(b) Remove the end cap from the Probe inlet.

- m) Open the Transfer valve at the base of the hopper to transfer chemical mixture to the main tank.
- n) To rinse the hopper, close the transfer valve at the base of the hopper and open the Drum Rinse valve.
- o) Open the Transfer valve at the base of the hopper to transfer the rinse mixture to the main tank.

- p) Close the Transfer valve at the base of the hopper after mixture is transferred.

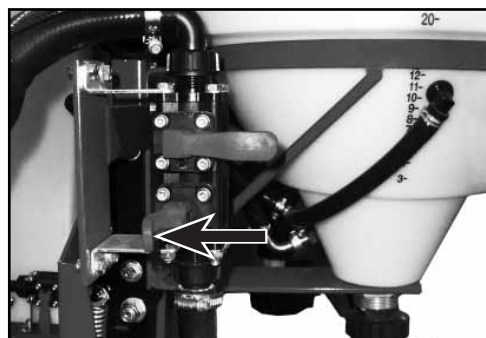
- q) Return the Function Selector valve to "Spray" position when completed.
- r) Lift the hopper back to transport position when mixing is completed.

2 Chemical Probe

To add chemical to the main tank using the chemical probe, follow the steps outlined:

- a) Make sure sufficient water is added to the main tank and the flush tank.
- b) Remove the end cap from the Probe inlet, and and connect the Probe hose.

(n) Open the Drum Rinse valve to rinse the hopper.



NOTE

IMPORTANT! Ensure agitation of main tank continues after chemical is added to the main tank.

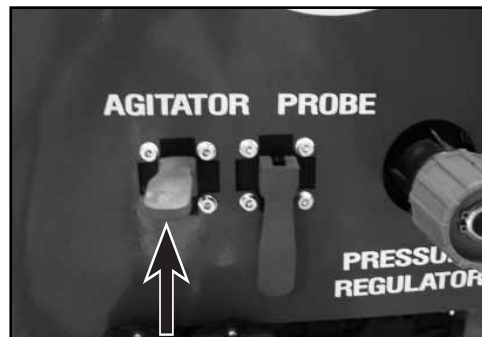
(r) Lift the hopper back to transport position.





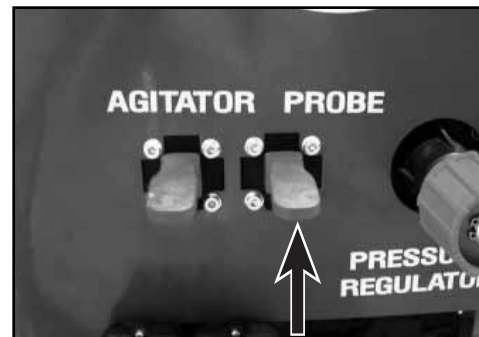
(b) Turn the Suction Selector Valve to source from main tank.

- c) Turn Suction Selector Valve to source from the main tank.



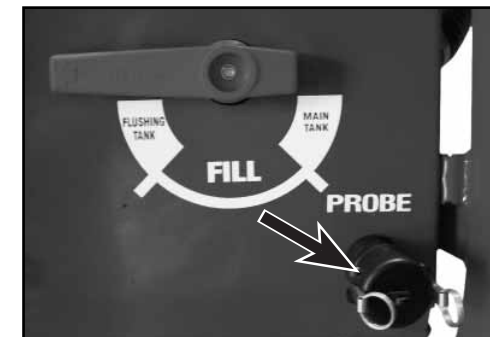
(c) Open the agitator valve.

- d) Open the agitator valve.
e) Start the tractor and **operate the pump with PTO & tractor engine at idling speed only.**
f) Pressurise the system by placing the Master switch ON & switch No 5 ON. Keep boom switches OFF.



(g) Open the Probe valve.

- g) Open the Probe valve.
h) Place the probe into the chemical, then open the probe valve to transfer chemical to the main tank.
i) Close the probe valve when chemical transfer is completed.
j) Rinse the probe and chemical container with fresh water and repeat steps "h & i" to transfer rinse materials to the tank.



(k) Replace the end Probe inlet cap.

- k) Disconnect the Probe hose and replace the Probe inlet end cap.
l) Return the Probe to its holder when completed.



WARNING

Operating the pump at faster than idling speed may burst lines.

NOTE

The plumbing circuit of the Pinto incorporates a relief valve which automatically dumps pressure when the boom is switched off.

Therefore Switch No 5 must be turned ON if pressure is required when the boom is off, ie, for agitation & chemical probe operation.



Accurately calculate the amount of chemical required.

Calculate Water & Chemical Quantities

Before spraying it is necessary to calculate the exact quantities of water and chemical needed to spray the required area. The following formulae may be useful:

- 1 For chemical rates expressed in litres or kg per hectare (land area), calculate the amount of chemical needed, using the formula:

$$\text{Chemicals required (litres)} = \frac{\text{Tank Volume (l)} \times \text{Recommended Chemical Rate (l/ha)}}{\text{Spray Application Rate (l/ha)}}$$

eg. $[4000 \times 3] \div 150$
= 80 litres.

- 2 For volume of mixture required to spray the selected area, calculate the liquid required, using the following formula:

$$\text{Tank Volume Required (litres)} = \text{Area (ha)} \times \text{Spray Application Rate (l/ha)}$$

eg. 300×150
= 45,000 litres

- 3 For area covered by a given volume of mixture, calculate the area, using the following formula:

$$\text{Area Covered (ha)} = \frac{\text{Tank Volume (litres)}}{\text{Spray Application Rate (l/ha)}}$$

eg. $4000 \div 150$
= 26.7 hectares

NOTE

IMPORTANT! Be sure to mix only enough spray mixture to cover the area required. Avoid wastage and problems of needless chemical disposal.

Adding Chemical To the Main tank

Chemical can be added to the main tank using the Chem-E-Flush hopper, and/or if fitted, the optional Chemical Probe.

1 Optional Chem-E-Flush Hopper

To add chemical to the main tank, follow the steps outlined:

- a) Make sure sufficient water is added to the main tank and the flush tank.



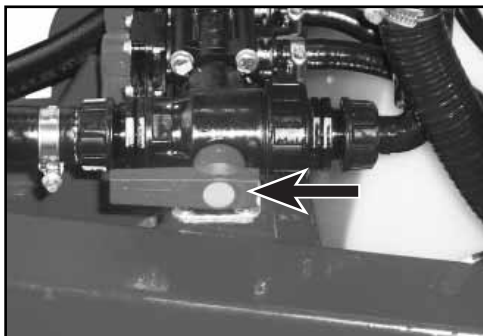
(b) Unlock the Chem-E-Flush dropdown leg lock.

- b) Unlock the Chem-E-Flush dropdown leg lock by placing your foot on the bottom of the leg and rotating the latch.

- c) Lower the hopper to filling position.

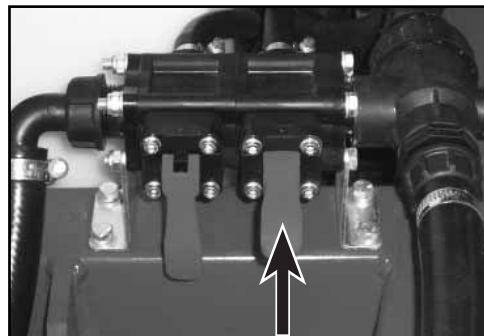
(c) Lower the hopper to filling position.





(d) Turn the Pressure Flow valve to flow to the Chem-E-Flush.

- d) Turn the Pressure Flow valve to the Chem-E-Flush.
- e) Turn Directional Suction Valve to source from the main tank.



(f) Open the agitator valve.

- f) Open the agitator valve.



(g) Close transfer valve at the base of the hopper.

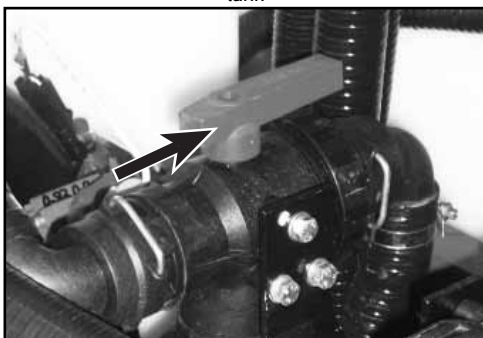
- g) Close the Transfer valve at the base of the hopper.
- h) Start the tractor and **operate the pump with PTO & tractor engine at idling speed only.**
- i) Pressurise the system by placing the Master switch ON & switch No 5 ON. Keep boom switches OFF.



(j) Open hopper lid & add chemical powder or liquid.

- j) Open the hopper lid & add chemical powder or liquid to the hopper.
- k) Close the hopper lid & open the Nozzle Rinse valve to mix chemical.
- l) Close the Nozzle Rinse valve when chemical is mixed.

(e) Turn Directional Suction Valve to source from main tank



NOTE

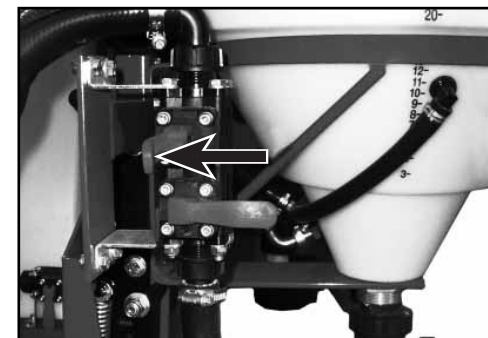
The plumbing circuit of the Pinto incorporates a relief valve which automatically dumps pressure when the boom is switched off. Therefore Switch No 5 must be turned ON if pressure is required when the boom is off, ie agitation & chemical probe operation.



WARNING

Operating the pump at faster than idling speed may burst lines.

(k) Close hopper lid & open the Nozzle Rinse valve to mix chemical.

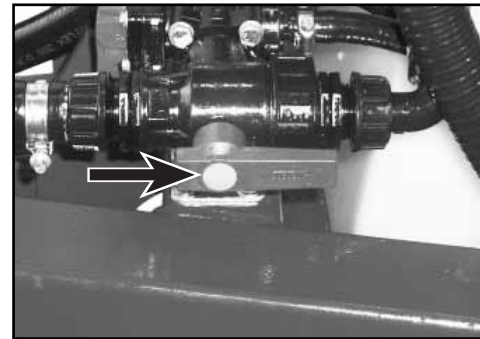




(m & o) Open Transfer valve to transfer mixture to the main tank.



(p) Close Transfer valve at the base of the hopper.



(q) Return the Pressure Flow Valve to spraying position.



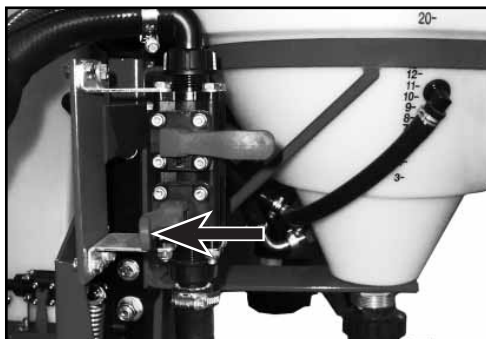
(b) Remove the Probe from its holder.

- m) Open the Transfer valve at the base of the hopper to transfer chemical mixture to the main tank.
- n) To rinse the hopper, close the transfer valve at the base of the hopper and open the Drum Rinse valve.
- o) Open the Transfer valve at the base of the hopper to transfer the rinse mixture to the main tank.

- p) Close the Transfer valve at the base of the hopper after mixture is transferred.

- q) Return the Pressure Flow Valve to spraying position when completed.
- r) Lift the hopper back to transport position when mixing is completed.

(n) Open the Drum Rinse valve to rinse the hopper.



NOTE

IMPORTANT! Ensure agitation of main tank continues after chemical is added to the main tank.

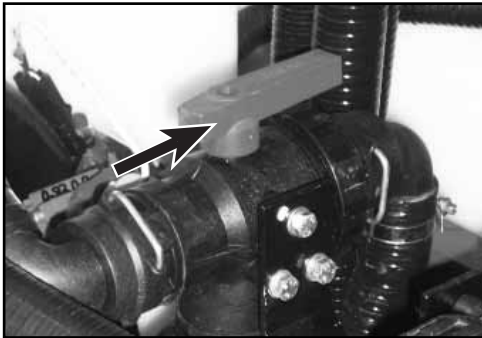
(r) Lift the hopper back to transport position.



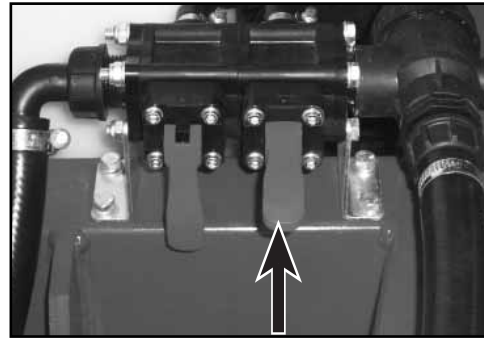
2 Chemical Probe

To add chemical to the main tank using the chemical probe, follow the steps outlined:

- a) Make sure sufficient water is added to the main tank and the flush tank.
- b) Remove the Probe from its holder.



(e) Turn Directional Suction Valve to source from main tank



- c) Turn Directional Suction Valve to source from the main tank.
- d) Open the agitator valve.
- e) Start the tractor and **operate the pump with PTO & tractor engine at idling speed only.**
- f) Pressurise the system by placing the Master switch ON & switch No 5 ON. Keep boom switches OFF.
- g) Place the probe into the chemical, then open the probe valve to transfer chemical to the main tank.
- h) Close the probe valve when chemical transfer is completed.
- i) Rinse the probe and chemical container with fresh water and repeat steps "g & h" to transfer rinse materials to the tank.
- j) Return the Probe to its holder when completed.



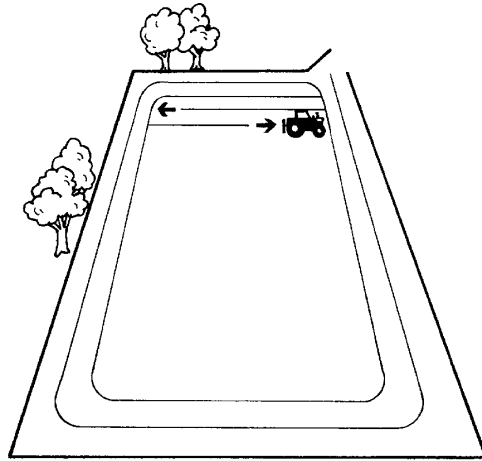
WARNING

Operating the pump at faster than idling speed may burst lines.

NOTE

The plumbing circuit of the Pinto incorporates a relief valve which automatically dumps pressure when the boom is switched off.

Therefore Switch No 5 must be turned ON if pressure is required when the boom is off, ie, for agitation & chemical probe operation.



Operating Methodology for Broadacre Spraying

It is always preferable to spray travelling across the wind direction.

This minimises any drift effect caused by the wind especially with flat fan nozzles because the wind only hits the narrow end of the pattern rather than the full face of the fan spray.

It also maximises the effect of the wind forcing droplets downwards into contact with the target.

Travelling with the wind increases the tendency of spray droplets to float away from the target, and travelling against the wind effectively multiplies the force of the wind (depending on speeds) increasing drift and reducing target contact.

Proceed to Spray

Once the chemical mixture is in the tank, proceed to spray:

- 1 Adjust the pressure to the correct operating pressure by adjusting pressure (up or down) according to the instructions of the Controller.
- 2 Turn spray booms ON and OFF as required to spray according to the instructions of the controller fitted.

Refer to pages 2.21 - 2.24 for spray controller operating instructions, & pages 3.4 - 3.6 for foam marker operating instructions.

Operating Pointers

While spraying, continually observe that:

- 1 Engine and PTO speed are correct.
- 2 Correct operating pressure is being maintained.
- 3 Ground speed is correct and within the operating range of the nozzles and application rates selected.

CAUTION

Running a diaphragm pump faster than specified will not improve performance, but will damage and wear out moving parts.

Warranty will be made void by speeds in excess of those indicated on the pump name plate.

Calibration Procedure	4.2
XR & AI TeeJet Nozzle Chart	4.9
Air-Mix & Turbodrop® Nozzle Chart	4.10
Calibration Work Sheet	4.12



Proper calibration considers all spraying variables.

Applying the correct amount of chemical to a crop is only possible if:

- the sprayer is calibrated correctly.
- the sprayer is operated correctly.
- the sprayer is maintained correctly.

The variables of spray application (distance, time, working width, liquid and chemical volumes) must be measured and controlled accurately to ensure chemicals are applied at the correct rate.

The automatic spray controller measures and controls the variables of speed and flow rate to give constant application.

However proper nozzle selection, checking calibration of nozzles, speed and flow rate as well as correct mixing of chemicals must be done to ensure the accuracy and performance of the sprayer and its controller.

Accurate calibration is essential to ensure uniform application of the recommended dose of chemical to the target.

Proper calibration involves setting up the sprayer (nozzle selection, pressure, speed), calculating chemical and water rates and measuring the performance of the sprayer itself. Only then can you be totally confident in applying chemical correctly.

Fully Automatic Spray Controller (Optional)

The fully automatic spray controller maintains the application rate (set by the operator) when operated in Auto position.

The controller monitors speed of travel (speed sensor) and flow rate (flow meter) and automatically adjusts flow rate (via a servo valve) to maintain correct application rate irrespective of speed variations within the limits of the nozzles used.

IMPORTANT:

- 1 It should be remembered that the spray controller does not eliminate the necessity to measure and check the accuracy of nozzle spray patterns and outputs. These must be checked regularly to ensure correct and uniform application rates because nozzles wear with use.
- 2 Flow meters used by the controller also needs to be checked and calibrated on a regular basis.

On the following page, you will see how to maintain and check your Rapid-check flowmeter. It is recommended you do this regularly during the spraying season.



Rapid Check Flowmeter

Calibration Procedure

For accurate spray rate application, follow this calibration procedure:

Step 1 Ensure Equipment Is In Good Working Order.

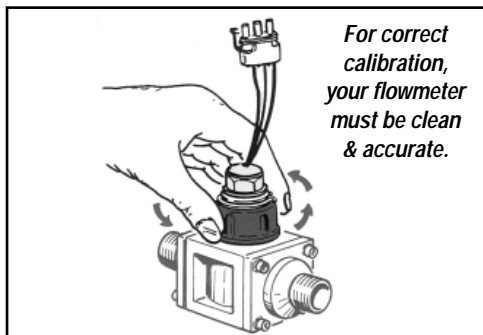
Tank, pump, boom, filters and nozzles must be clean, free of leakages and functioning properly.

Follow the pre-operation checklist, maintenance and operating instructions in this manual.

Install, calibrate and operate the spray controller according to the spray controller Installation/Operators Manual.

NOTE

See the Controller Operator's Manual for detailed information and calibrating procedures specific to you spray controller.

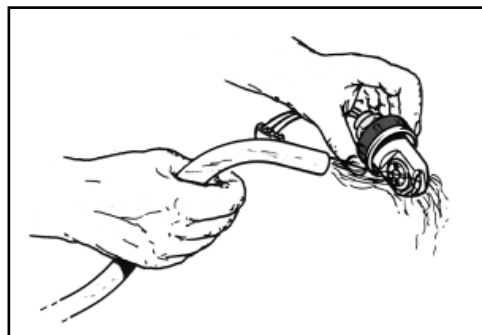


Unscrew the the Rapid Check assembly.

Daily Check & Maintenance of Flowmeter

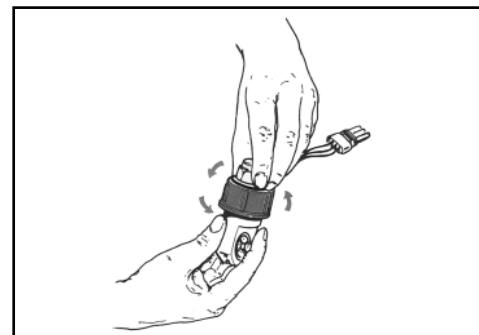
This is to be performed every day after work is finished:

- 1 Unscrew the assembly that holds the Rapid Check unit in the body.
- 2 Remove the Rapid Check unit from the body.



Wash any impurities out of the removable turbine unit.

- 3 Use clean water to wash any impurities out of the removable turbine unit.
- 4 Use compressed air to verify that the turbine unit rotates freely (maximum air pressure 1 BAR [15 psi]).

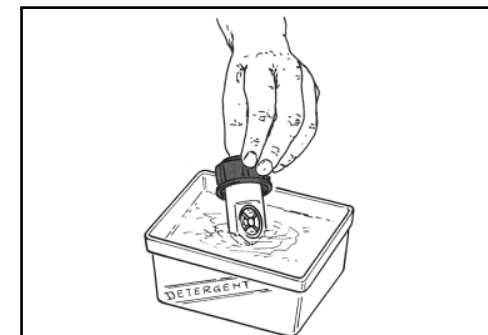


Unscrew the sensor.

Every 50 Hours

Carry out the following procedure after every 50 hours of operation:

- 1 Unscrew the sensor.
- 2 Separate the sensor from the Rapid Check unit.



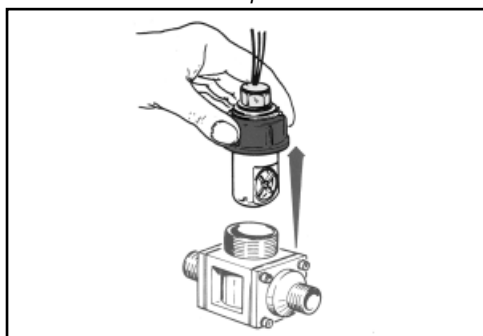
Place the Rapid Check unit in a detergent bath.

- 3 Place the Rapid Check unit in a detergent bath for a few hours.
- 4 Remove the Rapid Check unit from detergent bath.

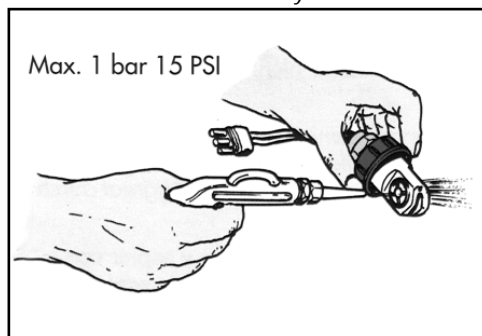
Use compressed air to verify that the turbine unit rotates freely (maximum air pressure 1 BAR [15 psi]).

If necessary, replace the Rapid Check unit with a new one.

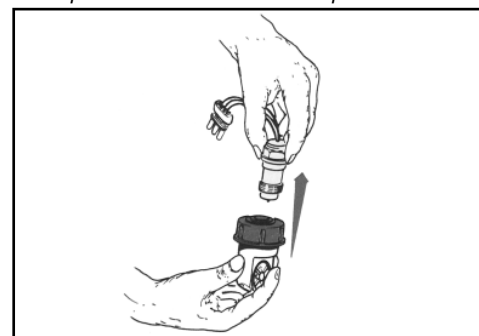
Remove the Rapid Check unit.



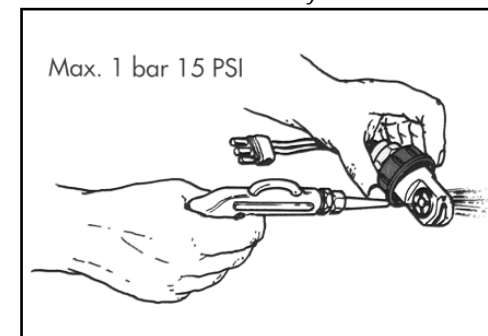
Use compressed air to check that the turbine unit rotates freely.

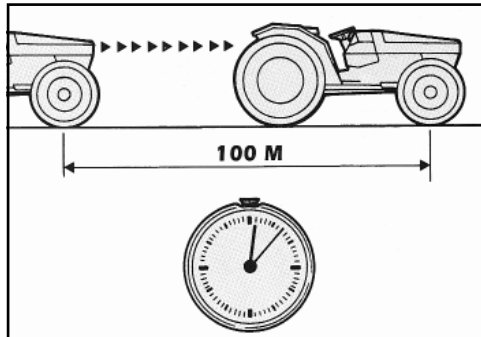


Separate the sensor from the Rapid Check unit.



Use compressed air to check that the turbine unit rotates freely.





Determine the actual speed of travel.

Step 2 Determining the Actual Speed Of Travel

Your Pinto has been factory set with a calibration number. This should be fine-tuned prior to commencement of spraying and checked by your dealer. This is done by traveling a known distance (usually 100 metres) and comparing the distance measured by the Spray Controller to the known distance. If there is a discrepancy, the Spray Controller Manual explains how to easily adjust the calibration number automatically.

For the electric Spray Control, refer to page 2.21.

For the optional MT3405 Spray Controller, refer to page 2.23, or consult the Spray Controller manual.

Step 3 Measure Swath Width

The spray controller requires the boom width to be entered in 3/4/5 parts.

Measure the nozzle spacing and multiply nozzle spacing by the number of nozzles on each boom section to establish the width of each boom section.

eg, $0.5\text{m} \times 12 = 6\text{m}$

$0.5\text{m} \times 12 = 6\text{m}$

$0.5\text{m} \times 12 = 6\text{m}$

NOTE

Boom sections may vary on some booms.



Buyers Guide - courtesy of Teejet.

Step 4 Select Nozzle Type & Size

Select Nozzle Type & Size according to:

- Chemical recommendations.
- Application rate required.
- Pressure setting.
- Swath width.
- Chosen speed of travel. (Use actual speed of travel, refer to step 2)

Two methods of selecting nozzle output are:

- Use the charts on pages 4.9 to 4.11 or the manufacturer's nozzle chart
- Calculate Required Nozzle Flow Rate.

NOTE

Use your own experience or a registered rate calibration consultant to determine effective application rates in litres per hectare.



AI nozzle - courtesy of Teejet.

a) Use Your Manual's Chart Or Manufacturer's Nozzle Chart.

Using the chart on pages 4.9 to 4.11 or the manufacturer's nozzle rate chart, reference:

- Application rate (eg 50 l/ha),
- Speed of travel (eg 12km/hr), &
- Pressure setting (eg 250kPa), find the nearest nozzle to suit your requirements.

Also check to see what speed variations are available for applying the same rate. See pages 4.9 to 4.11.

It is usually best to select mid range pressure as this will allow the spray controller to adjust pressure up or down when speed variations occur.

Nozzles	Retractable				Pangolin			
	Self-Propelled	Pre-Emergence	Post-Emergence Contact	Post-Emergence Systemic	Contact	Systemic	Contact	Systemic
XR Tejet (2-4 bar)	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
XRC Tejet (2-4 bar)	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
Turbo Tejet (2-4 bar)	GOOD	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
AI Tejet (1-2 bar)	VERY GOOD	VERY GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
ARC Tejet (1-2 bar)	VERY GOOD	VERY GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
DC Tejet (1-2 bar)	VERY GOOD	VERY GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
Twinjet			EXCELLENT		EXCELLENT		EXCELLENT	
Turbo Floodjet	EXCELLENT	EXCELLENT		GOOD		GOOD		GOOD
Turfjet	EXCELLENT	EXCELLENT	VERY GOOD		VERY GOOD		VERY GOOD	
AI Tejet vva		EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT
Tejet vva		GOOD	VERY GOOD	GOOD	VERY GOOD	GOOD	VERY GOOD	GOOD
Twinjet vva			EXCELLENT		EXCELLENT		EXCELLENT	
Conjet			EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD
Disc-Core			EXCELLENT	GOOD	EXCELLENT	GOOD	EXCELLENT	GOOD

Nozzle selection chart- courtesy of Teejet.

b) Calculate Required Nozzle Flow Rate

If you know:





- the application rate required (eg 50 l/ha),
- speed of travel (eg 12km/hr),
- swath width (eg 18m), &
- the number of nozzles on the boom (eg 36).

The following formula can be used to establish required flow rate per nozzle:

Nozzle Flow Rate (l/min) =

Speed (km/hr) x Swath Width (m) x Application Rate (l/ha) ÷ 600 ÷ Number of nozzles

eg, $[(12 \times 18 \times 50) \div 600] \div 36$
= 0.5 l/min for each nozzle

 	 bar	l/min	l/ha 							
			4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	
XR8001 XR11001 (100 mesh)	1.0	0.23	69.0	55.2	46.0	39.4	34.5	27.6	23.0	
	1.5	0.28	84.0	67.2	56.0	48.0	42.0	33.6	28.0	
	2.0	0.32	96.0	76.8	64.0	54.9	48.0	38.4	32.0	
XR80015 XR110015 (100 mesh)	0.42		93.6	76.8	66.9	58.5	46.8	39.0		
	0.48		108.0	90.0	77.1	67.5	54.0	45.0		
	0.59		128.0	104.0	89.6	78.4	63.2	52.0		
XR8002 XR11002 (50 mesh)	0.68		118.0	96.0	82.3	72.0	57.6	48.0		
	0.76		136.0	110.4	94.7	81.6	65.3	54.0		
	0.85		158.4	128.0	109.4	95.0	76.0	63.2		
XR8002 XR11002 (50 mesh)	0.46		132.0	108.0	92.0	78.9	69.0	55.2		
	0.56		152.0	124.0	106.4	92.0	75.0	61.6		
	0.65		176.0	142.4	120.0	104.0	84.0	69.6		

L/min column on nozzle chart - courtesy of Teejet.

An alternative formula is:

Nozzle Flow Rate (l/min) =

Speed (km) x Nozzle Spacing (cm) x Application Rate (l/ha) ÷ 60,000

eg, $[12 \times 50 \times 50] \div 60,000$
= 0.5 l/min

Now using the nozzle chart look down the nozzle capacity column (l/min) and select a nozzle to suit the output (eg 0.5 l/min). Refer to pages 4.9 to 4.11 for nozzle charts.

NOTE

Always use Actual Speed of Travel for speed in the above formula.

NOTE

Remember when selecting nozzle outputs that higher pressures and wider spray angles usually give finer droplet sizes than lower pressures and narrower spray angles.



Test the actual output of the nozzles.

Step 5

Fit the Selected Nozzles to the Boom

Fit the selected nozzles to the boom as per the nozzle manufacturers specifications.

Step 6 (Recommended)

Check Nozzle Accuracy & Determine Nozzle Output

Test the actual output of the nozzles using the following procedure:

- Ensure there is adequate water in the tank.

IMPORTANT: Do not use mixed pesticides for testing.

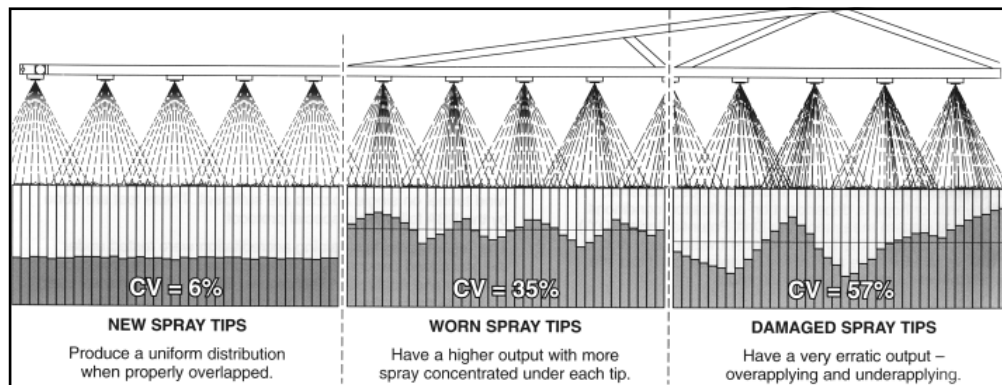
- Start the sprayer and set the spray Controller master switch into MANUAL position and adjust the operating pressure (PTO to continue instructions).



WARNING

Do not use mixed pesticides for testing. Use only clean water.

Use of pesticides when testing is hazardous to your health.



Spray tip wear - courtesy of Teejet.

- c) Collect and measure the volume of spray from one nozzle and adjust pressure so that the nozzle gives the specified output (eg 0.5 l/min).

IMPORTANT:

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.

- d) When the pressure is set to give a specified nozzle output (using a new nozzle), collect and measure the volume of spray from each nozzle for one minute in a collection jar or calibrating jug.

Specially designed nozzle testing equipment such as nozzle calibrating jugs can be used to simplify nozzle calibration.

- e) Visually check nozzle spray patterns and spray angle for accuracy and, if necessary, replace any faulty nozzles.

- f) Discard and replace any nozzle that deviates more than 10% from the specified output (eg with a 0.5 l/min specification- discard any nozzles 0.45 l/min and under or 0.55 l/min and over).
- g) Check replacement nozzles by collecting and measuring output from each replacement.
- h) Record the output of each nozzle on the boom. Add the outputs together and divide by the number of nozzles to get the required output of each nozzles in one minute.
- eg, Total spray output 18 l/min ÷ 36 nozzles = 0.5 l/min per nozzle.

Step 7

Calculate Application Rate

When operating the spray controller, the controller automatically calculates and shows the rate of application.

Application Rate (l/ha) =

Spray Output (l/min) x 600 ÷
Speed (km/hr) x Swath Width (m)

eg, $[18 \times 600] \div [12 \times 18]$
= 50 l/ha



Do not use a worn nozzles to set the pressure setting and nozzle rates, otherwise inaccurate calibration will occur.



+/- keys.

Step 8

If tested application is not satisfactory:

a) In **Auto mode** - if application rate is not being achieved:

- i) Operating pressure will climb if nozzles are too small or blocked or speed is too slow.

Likewise, if your pressure filter is blocked (even partially), you may experience excessive pressure at the pump.

Make adjustments accordingly.

- ii) Operating pressure will fall if nozzles are too large or speed is too slow. Make adjustments accordingly.

b) In **Manual mode** - the Controller application rate can be altered by:

- i) Adjusting pressure up or down to increase or decrease rate of application (use +/- keys).
- ii) Adjusting spraying speed up or down to decrease or increase rate of application.
- iii) Changing to a different nozzle capacity.

Repeat necessary testing procedures and calculation of application rate if adjustments or changes are made.

NOTE

Full instructions of controller operation are contained in your separate Controller Manual.

NOTE

All nozzles have a pressure and flow rate range to achieve the best results.
Ensure you have selected the nozzle which best suits your application to avoid any problems.

Step 9

Add The Correct Amount Of Chemical To The Tank

a) For **land area rates** (litres or kg per hectare), use the following formula:

Chemical Required (litres) =

Tank Volume (litres) x Recommended Chemical Rate (l/ha) ÷ Spray Application Rate (l/ha)

eg, $[2000 \times 2.0] \div 50$
= 80 litres

b) If **chemical recommendation is given in water volume rates** use the following formula:

Chemical Required (litres) =

Tank Volume (litres) x Recommended Chemical Rate (l/100 litres) ÷ 100

eg, $[2000 \times 4] \div 100$
= 80 litres

c) For **land area covered**, use the formula:

Area Covered (ha) =

Tank Volume (litres) ÷ Spray Application Rate (l/ha)

eg, $2000 \div 50$
= 40 hectares

d) For **tank volume required**, use the formula:

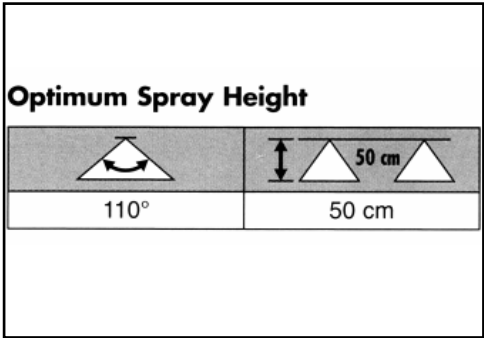
Tank Volume Required (litres) =

Area (ha) x Spray Application Rate (l/ha)

eg, 20×50
= 1000 litres

NOTE

Mix only the amount required. Avoid wastage and the problem of needless chemical disposal.



Boom height - courtesy of Teejet.

Step 10
Adjust Boom Height

Boom height should be adjusted to suit the type of nozzle used, terrain and crop or soil being sprayed.

Minimum boom height recommendations depend on the nozzle spray angle and nozzle spacing.

Refer to Nozzle chart recommendations.

Step 11
Record All Data For Future Reference

Record all your calibration data on the work sheets given at the end of this section.

Photocopy the work sheets to obtain the number of work sheets required.

Nozzle (filter)	Bar	l/min	Litres/ha @ 500mm nozzle spacing												
			4km/h	5km/h	6km/h	7km/h	8km/h	10km/h	12km/h	16km/h	18km/h	20km/h	25km/h	30km/h	35km/h
XR11001 AI11001 (100 mesh)	1.0	0.23	69.0	55.2	46.0	39.4	34.5	27.6	23.0	17.3	15.3	13.8	11.0	9.2	7.9
	1.5	0.28	84.0	67.2	56.0	48.0	42.0	33.6	28.0	21.0	18.7	16.8	13.4	11.2	9.6
	2.0	0.32	96.0	76.8	64.0	54.9	48.0	38.4	32.0	24.0	21.3	19.2	15.4	12.8	11.0
	3.0	0.39	117	93.6	78.0	66.9	58.5	46.8	39.0	29.3	26.0	23.4	18.7	15.6	13.4
	4.0	0.45	135	108	90.0	77.1	67.5	54.0	45.0	33.8	30.0	27.0	21.6	18.0	15.4
XR110015 AI110015 (100 mesh)	1.0	0.34	102	81.6	68.0	48.3	51.0	40.8	34.0	25.5	22.7	20.4	16.3	13.6	11.7
	1.5	0.42	126	101	84.0	72.0	63.0	50.4	42.0	31.5	28.0	25.2	20.2	16.8	14.4
	2.0	0.48	144	115	96.0	82.3	72.0	57.6	48.0	36.0	32.0	28.8	23.0	19.2	16.5
	3.0	0.59	177	142	118	101	88.5	70.8	59.0	44.3	39.3	35.4	28.3	23.6	20.2
	4.0	0.68	204	163	136	117	102	81.6	68.0	51.0	45.3	40.8	32.6	27.2	23.3
XR11002 AI11002 (50 mesh)	1.0	0.46	138	110	92.0	78.9	69.0	55.2	46.0	34.5	30.7	27.6	22.1	18.4	15.8
	1.5	0.56	168	134	112	96.0	84.0	67.2	56.0	42.0	37.3	33.6	26.9	22.4	19.2
	2.0	0.65	195	156	130	111	97.5	78.0	65.0	48.8	43.3	29.0	31.2	26.0	22.3
	3.0	0.79	237	190	158	135	119	94.8	79.0	59.3	52.7	47.4	37.9	31.6	27.1
	4.0	0.91	273	218	182	156	137	109	91.0	68.3	60.7	54.6	43.7	36.4	31.2
XR11003 AI11003 (50 mesh)	1.0	0.68	204	163	136	117	102	81.6	68.0	51.0	45.3	40.8	32.6	27.2	23.3
	1.5	0.83	249	199	166	142	125	100	83.0	62.3	55.3	49.8	39.8	33.2	28.5
	2.0	0.96	288	230	192	165	144	115	96.0	72.0	64.0	57.6	46.1	38.4	32.9
	3.0	1.18	354	283	236	202	177	142	118	88.5	78.7	70.8	56.6	47.2	40.5
	4.0	1.36	408	326	272	233	204	163	136	102	90.7	81.6	65.3	54.4	46.6
XR11004 AI11004 (50 mesh)	1.0	0.91	273	218	182	156	137	109	91.0	68.3	60.7	54.6	43.7	36.4	31.2
	1.5	1.12	336	269	224	192	168	134	112	84.0	74.7	67.2	53.8	44.8	38.4
	2.0	1.29	387	310	258	221	194	155	129	96.8	86.0	77.4	61.9	51.6	44.2
	3.0	1.58	474	379	316	271	237	190	158	119	105	94.8	75.8	63.2	54.2
	4.0	1.82	546	437	364	312	273	218	182	137	121	109	87.4	72.8	62.4
XR11005 AI11005 (50 mesh)	1.0	1.14	342	274	228	195	171	137	114	85.5	76.0	68.4	54.7	45.6	39.1
	1.5	1.39	417	334	278	238	209	167	139	104	92.7	83.4	66.7	55.6	47.7
	2.0	1.61	483	386	322	276	242	193	161	121	107	96.6	77.3	64.4	55.2
	3.0	1.97	591	473	394	338	296	236	197	148	131	118	94.6	78.8	67.5
	4.0	2.27	681	545	454	389	341	272	227	170	151	136	109	90.8	77.8

Air-Mix & Turbodrop® Teejet AI (Air Induction) Nozzle Chart Sprayer Calibration

Nozzle	Bar	l/min	Litres/ha @ 500mm nozzle spacing												
			5km/h	6km/h	7km/h	8km/h	10km/h	12km/h	16km/h	20km/h	25km/h	30km/h	35km/h		
TDAM015 TD015 (Green) TEEJET AI 110015	1	0.346	83	69	59	52	42	35	26	21					
	2	0.490	118	98	84	74	59	49	36	29					
	3	0.600	144	120	103	90	72	60	45	36					
	4	0.693	166	139	119	104	83	69	52	42					
	5	0.775	186	155	133	116	93	77	58	47					
	6	0.849	204	170	146	127	102	85	64	51					
TDAM02 TD02 (Yellow) TEEJET AI 11002	1	0.462	111	92	79	69	55	46	35	28					
	2	0.653	157	131	112	98	78	65	49	39					
	3	0.800	192	160	137	120	96	80	60	48					
	4	0.924	222	185	159	139	111	92	69	56					
	5	1.033	248	207	177	155	124	103	77	62					
	6	1.131	271	226	94	170	136	113	85	68					
TDAM025 TD025 (Lilac) TEEJET AI 110025	1	0.577	138	115	99	87	69	58	43	35					
	2	0.816	196	163	140	122	98	82	61	49					
	3	1.000	240	200	171	150	120	100	75	60					
	4	1.154	278	231	199	174	139	115	86	70					
	5	1.291	310	259	221	194	155	129	96	78					
	6	1.414	339	283	243	213	170	141	106	85					
TDAM03 TD03 (Blue) TEEJET AI 11003	1	0.693	166	139	119	104	83	69	52	42					
	2	0.980	234	196	168	147	118	98	74	59					
	3	1.200	288	240	206	180	144	120	90	72					
	4	1.385	333	278	238	208	166	138	104	84					
	5	1.549	372	310	266	232	186	154	116	94					
	6	1.697	408	340	292	254	204	170	128	102					

Nozzle	Bar	l/min	Litres/ha @ 500mm nozzle spacing												
			5km/h	6km/h	7km/h	8km/h	10km/h	12km/h	16km/h	20km/h	25km/h	30km/h	35km/h		
TDAM04 TD04 (Red) TEEJET AI 11004	1	0,924	222	185	158	139	111	92	69	55					
	2	1,306	313	261	224	196	157	131	98	78					
	3	1,600	384	320	274	240	192	160	120	96					
	4	1,847	444	370	318	278	222	184	138	112					
	5	2,066	496	414	354	310	248	206	154	124					
	6	2,263	542	452	388	340	272	226	170	136					
TDAM05 TD05 (Brown) TEEJET AI 11005	1	1,155	277	231	198	173	139	116	87	69					
	2	1,633	392	327	280	245	196	163	122	98					
	3	2,000	480	400	342	300	240	200	150	120					
	4	2,309	556	462	398	348	278	230	172	140					
	5	2,582	620	518	442	388	310	258	192	156					
	6	2,828	678	566	486	426	340	282	212	170					
TDAM06 TD06 (Grey) TEEJET AI 11006	1	1,386	333	277	238	208	166	139	104	83					
	2	1,960	470	392	336	294	235	196	147	118					
	3	2,400	576	480	412	360	288	240	180	144					
	4	2,771	666	556	476	416	332	276	208	168					
	5	3,098	744	620	532	464	372	308	232	188					
	6	3,394	816	680	584	508	408	340	256	204					

Step 1

Check the Sprayer is in Good Working Order

Step 2

Determine Actual Speed of Travel

Follow Instructions on page 60 (Pinto Calibration page).

Tractor model	
Gear	
Range	
Dual power	
Engine RPM	
Speed in Km/h	

Step 3

Measure Boom Widths

- Boom section 1:
- Boom section 2:
- Boom section 3:
- Boom section 4:
- Boom section 5:
- Boom section 6:

Step 4

Select Nozzle Type & Size

- **Chemical:**
- **Type of Nozzle:**
- **Pressure Setting:**
- **Travel speed (km/hr):**
- **Total number of nozzles** to be used

Nozzle Flow Rate (l/min)

$$\text{Speed (km/hr)} \times \text{Swath Width (m)} \times \text{Application Rate (l/ha)} \div 600 \div \text{Number of nozzles}$$

$$\text{.....} \times \text{.....} \times \text{.....} \div 600 \div \text{.....}$$

$$= \text{..... l/min for each nozzle}$$

Step 5

Fit Selected Nozzles to Boom

Nozzle Type:

Nozzle Size:

Nozzle Colour:

Step 6

Check Nozzle Accuracy & Determine Nozzle Output

Thoroughly check nozzles & test the actual output of each nozzle.

- **Pressure Setting:**
- **Individual Nozzle Outputs:**
-
-
- **Sum of Nozzle Outputs:**

Step 7

Calculate Application Rate

The spray Controller automatically calculates and shows the rate of application.

Application Rate (l/ha)

$$\text{Spray Output (l/min)} \times 600 \div \text{Speed (km/hr)} \times \text{Swath Width (m)}$$

$$[\text{.....} \times 600] \div [\text{.....} \times \text{.....}]$$

$$= \text{.....}$$

Step 8

If Tested Application is Not Satisfactory - Make Changes & Repeat Procedure

.....
.....

Step 9

Add Correct Amount of Chemical

- **Chemical:**
- **Water Quantity:**
- **Chemical Added:**

Step 10

Boom Height

.....

Step 11

Record Data

Date

Farm location

Crop to be sprayed

Spray Volume litres/ha

Nozzle type

Nozzle size & colour

No. of nozzles used

Nozzle pressure

Tested Output in l/min

Actual Litres/Hectare

Step 1 Check the Sprayer is in Good Working Order	
Step 2 Determine Actual Speed of Travel Follow Instructions on page 60 (Pinto Calibration page).	
Tractor model	
Gear	
Range	
Dual power	
Engine RPM	
Speed in Km/h	
Step 3 Measure Boom Widths Boom section 1: Boom section 2: Boom section 3: Boom section 4: Boom section 5: Boom section 6:	
Step 4 Select Nozzle Type & Size <ul style="list-style-type: none"> • Chemical: • Type of Nozzle: • Pressure Setting: • Travel speed (km/hr): • Total number of nozzles to be used 	

Nozzle Flow Rate (l/min) = $\text{Speed (km/hr)} \times \text{Swath Width (m)} \times \text{Application Rate (l/ha)} \div 600 \div \text{Number of nozzles}$ x x ÷ 600 ÷ = l/min for each nozzle
Step 5 Fit Selected Nozzles to Boom Nozzle Type: Nozzle Size: Nozzle Colour:
Step 6 Check Nozzle Accuracy & Determine Nozzle Output Thoroughly check nozzles & test the actual output of each nozzle. <ul style="list-style-type: none"> • Pressure Setting: • Individual Nozzle Outputs: • Sum of Nozzle Outputs:
Step 7 Calculate Application Rate The spray Controller automatically calculates and shows the rate of application. $\text{Application Rate (l/ha)} = \frac{\text{Spray Output (l/min)} \times 600}{\text{Speed (km/hr)} \times \text{Swath Width (m)}}$ $[..... \times 600] \div [..... \times]$ =

Step 8 If Tested Application is Not Satisfactory - Make Changes & Repeat Procedure																													
Step 9 Add Correct Amount of Chemical <ul style="list-style-type: none"> • Chemical: • Water Quantity: • Chemical Added: 																													
Step 10 Boom Height																													
Step 11 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Record Data</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Date</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Farm location</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Crop to be sprayed</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Spray Volume litres/ha</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Nozzle type</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Nozzle size & colour</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">No. of nozzles used</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Nozzle pressure</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Tested Output in l/min</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Actual Litres/Hectare</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>		Record Data		Date		Farm location		Crop to be sprayed		Spray Volume litres/ha		Nozzle type		Nozzle size & colour		No. of nozzles used		Nozzle pressure		Tested Output in l/min		Actual Litres/Hectare							
Record Data																													
Date																													
Farm location																													
Crop to be sprayed																													
Spray Volume litres/ha																													
Nozzle type																													
Nozzle size & colour																													
No. of nozzles used																													
Nozzle pressure																													
Tested Output in l/min																													
Actual Litres/Hectare																													

Step 1

Check the Sprayer is in Good Working Order

Step 2

Determine Actual Speed of Travel

Follow Instructions on page 60 (Pinto Calibration page).

Tractor model	
Gear	
Range	
Dual power	
Engine RPM	
Speed in Km/h	

Step 3

Measure Boom Widths

- Boom section 1:
- Boom section 2:
- Boom section 3:
- Boom section 4:
- Boom section 5:
- Boom section 6:

Step 4

Select Nozzle Type & Size

- **Chemical:**
- **Type of Nozzle:**
- **Pressure Setting:**
- **Travel speed (km/hr):**
- **Total number of nozzles** to be used

Nozzle Flow Rate (l/min)

$$\text{Speed (km/hr)} \times \text{Swath Width (m)} \times \text{Application Rate (l/ha)} \div 600 \div \text{Number of nozzles}$$

$$\text{.....} \times \text{.....} \times \text{.....} \div 600 \div \text{.....}$$

$$= \text{..... l/min for each nozzle}$$

Step 5

Fit Selected Nozzles to Boom

Nozzle Type:

Nozzle Size:

Nozzle Colour:

Step 6

Check Nozzle Accuracy & Determine Nozzle Output

Thoroughly check nozzles & test the actual output of each nozzle.

- **Pressure Setting:**
- **Individual Nozzle Outputs:**
-
-
- **Sum of Nozzle Outputs:**

Step 7

Calculate Application Rate

The spray Controller automatically calculates and shows the rate of application.

$$\text{Application Rate (l/ha)}$$

$$= \text{Spray Output (l/min)} \times 600 \div \text{Speed (km/hr)} \times \text{Swath Width (m)}$$

$$[\text{.....} \times 600] \div [\text{.....} \times \text{.....}]$$

$$= \text{.....}$$

Step 8

If Tested Application is Not Satisfactory - Make Changes & Repeat Procedure

.....

.....

Step 9

Add Correct Amount of Chemical

- **Chemical:**
- **Water Quantity:**
- **Chemical Added:**

Step 10

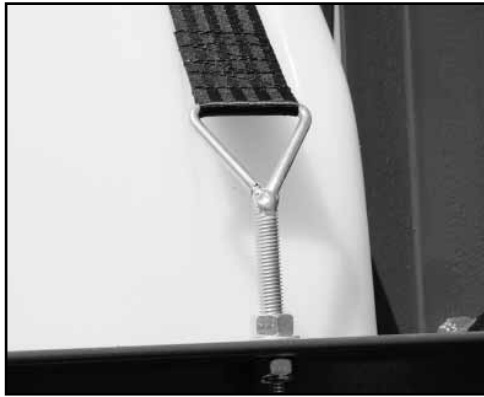
Boom Height

.....

Step 11

Record Data	
Date	
Farm location	
Crop to be sprayed	
Spray Volume litres/ha	
Nozzle type	
Nozzle size & colour	
No. of nozzles used	
Nozzle pressure	
Tested Output in l/min	
Actual Litres/Hectare	

Greasing & Service Procedures	5.2
Grease Point Diagrams	5.3
Pumps	5.4
Filters	5.6
Diaphragms, Straps	5.7
Foam Markers	5.7
Motor Valves	5.10
Booms	5.10



Check the tank straps.



Clean the Rapid Check Flowmeter.

Greasing & Service Procedures

- 1 Clean suction line filter with each tank load.
- 2 Clean pressure line filter.
- 3 Check nozzle filters.
- 4 Check tyre pressure (350kPa), and check wheel nuts.
- 5 Check flush tank straps and tighten if necessary.
- 6 Clean Rapid-check flowmeter (refer to page 4.3).

- 7 Grease tractor to sprayer PTO universal joints every 8 hours.
Grease lightly until grease becomes firm in seals. Over greasing will break seals and allow dust and moisture to penetrate - increasing wear.
- 8 Grease PTO inner tubes every 8 hours.
To lubricate the inner tube, slide PTO shaft apart, clean the telescopic tubes, grease and reassemble.
- 9 Grease the PTO covers every 20 hours.

NOTE

Ensure the sliding inner tubes of the PTO are greased every 8 hours (working around the clock equals 3 times/day), especially when doing a lot of tight turning



Grease the Pinto jack.

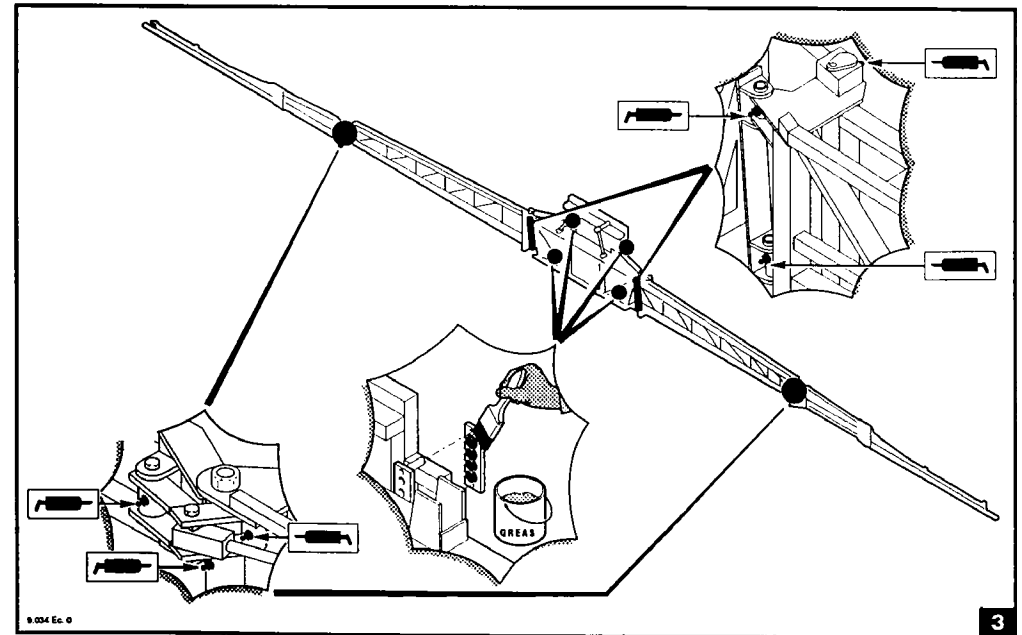
- 10 Check pump air chamber pressure on a regular basis. As a general guideline it should be 10%-20% of operating pressure (70-100 kPa [10-15 psi]). Refer to page 54 for more information.
- 11 To ensure trouble free spraying, flush the sprayer with fresh water thoroughly each day, and before changing chemicals.
Dispose of tank wash according to chemical manufacturers instructions.
- 12 Grease all boom joints, height adjuster points and other grease points (refer diagram on page 5.3).
- 13 Grease the Pinto jack.



Repack the wheel bearings at 200 hours.

Every 200 Hours

- 1 Lubricate quick release lock pins on PTO shaft.
- 2 Re-pack wheel bearings with grease.
- 3 Inspect the bushes & pins on the tandem axle (if fitted).
- 4 Change air filter for foam marker.
- 5 Fully flush foam marker.
- 6 Grease all tank lid seals with vaseline.



Boom Grease Points

Diaphragm Pump Maintenance

Annovi & Reverberi (A&R) pumps are of the piston-diaphragm type. All parts in contact with the spray liquid, which are subject to corrosion, are protected, making them ideal for spraying (herbicides, insecticides, fungicides, fertilisers, etc.), disinfection and washing.

Daily Before Starting the Pump

- 1 Check that oil is visible in sight glass (half way up) and top up if necessary with good clean motor oil 20W/30 or 20W/40.
- 2 Clean all sprayer filters. Blocked or semi blocked filters place extra stress on diaphragms.
- 3 Start with zero pressure and the pump will self prime immediately and clear air locks in suction line.

Daily after Use

- 1 Flush pump with clean water.
- 2 Drain filters and clean. A high percentage of pump failures are due to blocked filters.

Every 50 Hours

Check surge chamber pressure and adjust as follows:

- Air pressure 70-100kPa (10- 15psi) [Should be 10-20% of operating pressure].

Vibration of the delivery hose usually indicates that the air pressure in the surge chamber is incorrect.

The main cause of surge chamber diaphragm fracture is low pressure in this chamber.

Surge chamber pressure can be checked with an ordinary tyre gauge.

The above pressure range is a guide to the correct pressure.

However, if difficulties recur, adjust the pressure until an even flow is obtained from the pump (no pulsing of liquid at operating RPM). The pressure is best increased with a bicycle pump.

Every 250 hours or Every Season - Whichever Comes Sooner

- 1 Change oil and refill with 20W/30 oil.

Attention should be made to remove trapped air behind the diaphragms by rocking from side to side as instructed.

It is also good practise to run the pump for 10 minutes without pressure, and then, top up with oil before working the pump.

- 2 When changing the pump oil, check diaphragms and replace them if they are showing signs of wear.

This is normally a pre-season maintenance procedure which can be done easily as no special tools are required.

You can avoid unnecessary down time in spraying seasons by carrying out the proper maintenance.

- 3 Also check inlet and outlet valves and replace if worn. Worn valves not only reduce the output of the pump, but may reduce the life of the diaphragms.



CAUTION

Running a diaphragm pump faster than specified will not improve performance, but will damage and wear out moving parts.

Warranty will be made void by speeds in excess of those indicated on the pump name plate.

Excessive Diaphragm Failure

If you have excessive diaphragm failure check the following points. These will cause failure of diaphragms due to added stress or chemical attack.

- 1 **Most Important** - Pump not being flushed out daily with clean water after use.
- 2 Oil level too low allowing air between piston and diaphragm.
- 3 Air leaks in suction line.
- 4 Restricted suction line.
- 5 Restriction through suction filter.
- 6 Not cleaning suction filter regularly.
- 7 Worn suction and discharge valves.
- 8 Bypass line too small to carry full capacity of pump.
- 9 In cold climates - frozen suction/ discharge lines or water remaining in the pump after flushing.
- 10 Incorrect air setting or no air in air chamber.
- 11 Agitator excessively restricting bypass from pump.
- 12 Diaphragm material construction incorrect for chemical or solution being pumped.
- 13 Chemicals containing toluene or other aggressive solvents may require viton diaphragms - particularly if the pump is not properly flushed after use.

Pre-Season Servicing

For thorough pre-season servicing - check all aspects of the Pinto and its operating components as outlined in the pre-delivery check list on page 1.7.

Pump Storage and Corrosion Protection

1 Warm Climates

If you operate in a warm climate with no chance of frost in the winter, you will not have any problems with frost damage.

If you are storing your sprayer between seasons, ensure your pump has been thoroughly flushed with clean water. A good idea is to run a mixture of 1% solution of summer mineral spraying oil through the pump and plumbing system. Summer spraying oil is water-soluble oil such as DC-Tron. This will coat and protect all internal pump parts. Ensure this mixture is flushed out before spraying commences in the new season.

2 Cold Climates

For prolonged storage, an anti-freeze mixture can be flushed through the pump. Ensure this is thoroughly flushed out prior to the commencement of spraying again.

If the pump is being stored overnight and a risk of freezing is imminent, drain all liquid from the pump and lines, including boom lines.



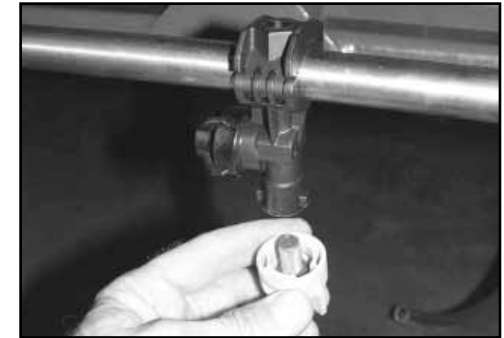
Remove the outer screw and bowl of suction filter.



Remove & clean the filter element & components.



Reassemble & tighten the outer screw of suction filter..



Regularly check and clean the nozzle filters.

Filter Maintenance

Clean filters ensure that no solids enter the spraying system to block or damage pump or nozzles.

All filters should be cleaned regularly or after each spraying period.

Suction Filter

The suction filter should be cleaned regularly, or after each spray tank has been emptied.

See cleaning instructions:

- 3000 litre on page 3.9.
- 2000 litre on page 3.13.

Pressure Filters

The pressure filters should be cleaned regularly, or after each spray tank has been emptied.

See cleaning instructions:

- 3000 litre on page 3.9.
- 2000 litre on page 3.13.

Nozzle Filters

Nozzle filters should be cleaned regularly to avoid nozzle blockages.

See cleaning instructions:

- 3000 litre on page 3.10.
- 2000 litre on page 3.14.

If leaking occurs from the nozzle cap, check caps are correctly fitted with seals &/or the condition of the seals. Replace if necessary.

Foam Marker Filter

The foam marker filter should be cleaned regularly or after each tank of foam has been emptied.

See cleaning instructions:

- 3000 litre on page 3.10.
- 2000 litre on page 3.14.



Remove & clean the non-drip diaphragms regularly.

Non-Drip Diaphragms

Non-drip diaphragms should be cleaned regularly to prevent dripping from nozzles.

To clean the non-drip diaphragms:

- 1 Completely stop all sprayer functions.
- 2 Unscrew and remove the diaphragm cap.
- 3 Remove and clean any sediment Off the diaphragm membrane.
Replace the diaphragm membrane if damaged.
- 4 Refit the diaphragm.
- 5 Refit the diaphragm cap and carefully tighten.

NOTE

Do not over tighten the diaphragm cap. Over tightening the cap may impede flow through the diaphragm.

Foam Marker Maintenance

Salvarani Double Sided Foam Markers

Pressure relief valve

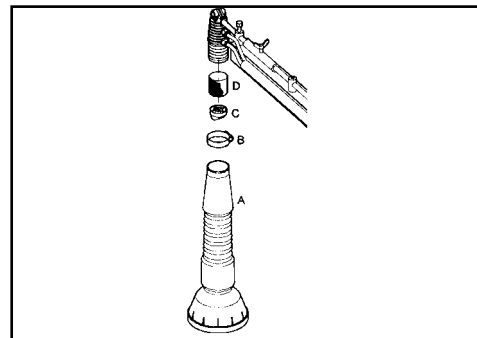
The pressure relief valve on the tank cap needs no maintenance.

Operating the pressure discharge ring under the tank cap prevents incrustations forming on the pressure relief valve at the same time checks its efficiency.

NOTE

Tank clamps should be checked two or three times a day when the sprayer is new and the tank and frame are bedding-in.

Thereafter, the tank clamps should be checked regularly.



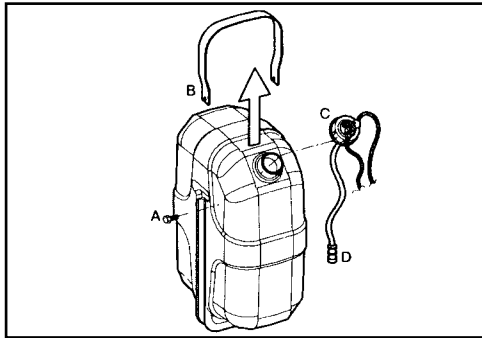
Weekly Cleaning (Figure 11).

Machine Down for Up to 7 Days

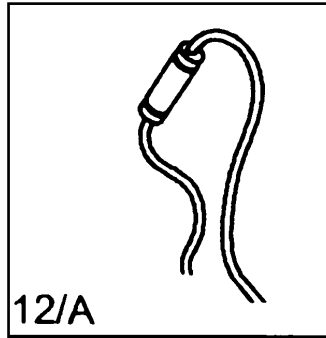
For periods of inactivity of at most 7 days, carry out the following operations:

- Slacken the band "B" and remove the diffuser "A".
- Remove the grid "C" turning it anticlockwise.
- Take the sponge "D" out of the foam nozzle.
- Carefully wash the foam diffusers and sponge with water.

- Reassemble the parts, taking care when inserting the sponge that must go freely into its seat without crushing that would alter the operation of the foam marker.
- Repeat the above operations for the other foam nozzle as well.



Monthly Cleaning (Figure 12).



12/A

Machine Down for Up to 30 Days

For periods of inactivity of at most 30 days, carry out the following operations:

- **Slacken and remove the cap "C"**
- Remove the screws "A" and take off the tank bracket "B".
- Remove the tank and wash with clean water.
- Wash the bottom filter "D".
- Insert the tank into the support bracket.
- Add a few litres of water into the tank, put the cap back on.
- Restore the electrical connections.
- Wash the hydraulic circuit, operating alternately the lever selector in the position corresponding to the boom section involved until clean water comes out of the diffusers.

- **Slacken and remove the cap**, empty the tank of the remaining water.
- Dismantle the waterlaid pipes from the cap and join them using the section of pipe supplied as shown in the frame 12/A.
- Empty the hydraulic circuit by operating the lever selector in the position corresponding to the boom section involved until only air comes out of the diffusers.
- Fit all the parts back together to restore the initial conditions.
- Carry out the operations described in the "Machine down for up to 7 days" paragraph.

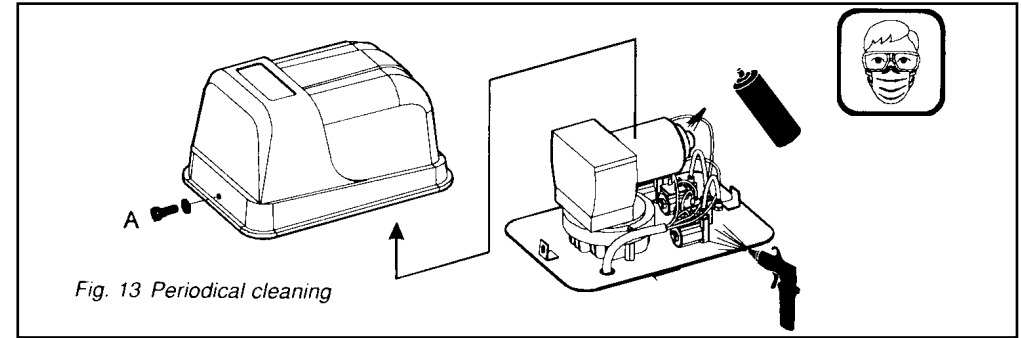


Fig. 13 Periodical cleaning

Periodical Cleaning (Figure 15).

Machine Down for Longer than 30 Days

For long periods of inactivity, proceed as follows:

- Carry out the operations described in the "Machine down for up to 30 days" paragraph.
- Clean the electric compressor unit:
- Remove the cover by taking out the screws "A";
- Clean the inside with compressed air (wearing a face-mask and safety goggles);
- Spray the self-cleaning liquid for electrical contacts through the slots on the electric motor;
- Fit the cover back on.
- To ensure dense and lasting formation of foam, replace the sponges code 520000.160 (D, Fig. 11) every year.

Pipe Repairs

If the pipes burst, do the repair using a section of pipe diameter 6 (inside) x 8 (outside), supplied in the outfit.

Pipe Repairs (Figure 14).

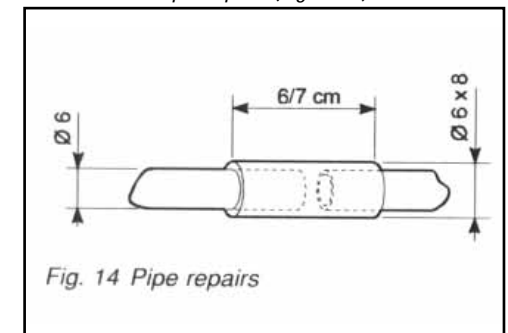


Fig. 14 Pipe repairs

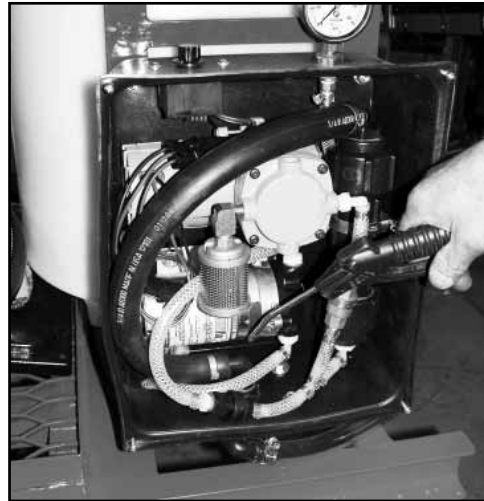


Clean the air filter regularly.

RHS 2012 Double Sided Foam Marker

Air Pump Filter

The air pump filter should be inspected and cleaned weekly in normal operating conditions. More often in very dusty conditions. Otherwise, clean as often as experience dictates.



Blow out the cabinet every 50 hours.

Foam Marker Cabinet

It's also a good idea to use an air hose to blow out the cabinet and air pump motor cavity after each 50 hours of operation. (Or more often in very dusty conditions.)

Tank

Keep dirt and debris out of the tank at all times.

The foam marker is protected by:

- A 50 mesh filter under the cabinet, &
- A 100 mesh filter located in the line before the liquid orifice.

These may need cleaning periodically, depending on cleanliness of operations.

End-of-Season Storage

To prepare the foam marker for storage, following these steps:

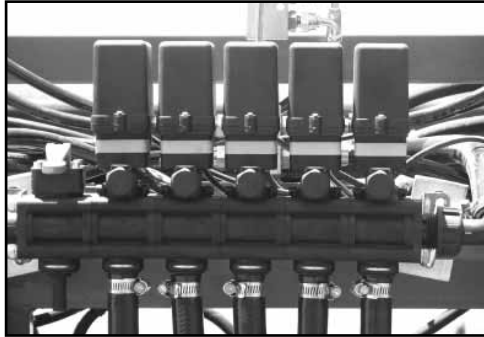
- 1 Drain the tank by removing the filter bowl.
- 2 Clean filter and replace filter bowl.
- 3 Add approximately 10 litres of weak foam solution mixture to the tank.
- 4 Using an air hose, blow the cabinet clean.
- 5 Clean the inlet air-filter (page 5.8).
- 6 Protect unplugged connectors from the weather.

NOTE

Do not drain the tank & plumbing for storage as it is better to store the unit wet rather than dry.

NOTE

If you experience freezing temperatures during the Off season, use an anti-freeze solution rather than a weak foam solution in the above steps.



5-bank motor valves pictured.

Electric Motor-Valve Maintenance

- 1 Flush system with clean water after each day's use, especially when using wettable powders.
- 2 Clean and drain the system for storage.
- 3 Do not apply lubricating oils or other petroleum products to the valves, as this may cause swelling of the rubber parts.
- 4 Check with the chemical manufacturer to be sure chemicals being used are compatible with the valve parts.
- 5 Check the ON/OFF operation of the valves periodically, especially if nozzles cannot be seen while operating.
- 6 Visually check electrical connections to ensure they are clean and secure.

Boom Maintenance

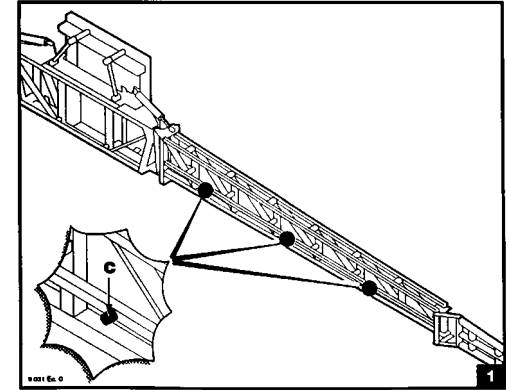
Careful and regular maintenance will ensure good, long operational life.

Daily Maintenance

Clean the boom at the end of each working day or whenever the equipment is stopped for a period of time exceeding one hour. Rinse the plumbing lines and let clean water flow from the nozzles. Clean external surface with a water jet.

Ensure nozzles and nozzle bodies are correctly fixed and sealed when operating. also ensure non-drip mechanism are working.

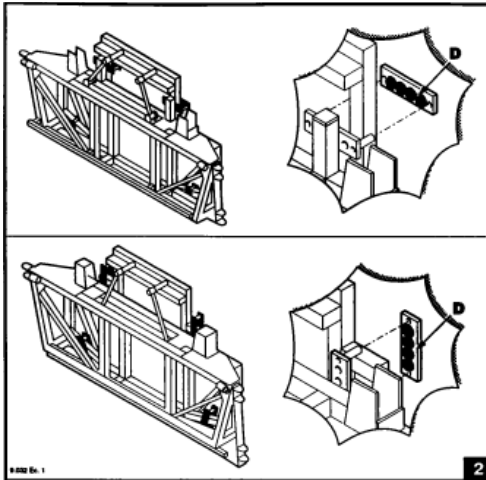
Grease all grease-points as indicated on these pages.



Every 50 Hours Maintenance

Carry out the following maintenance procedures every 50 hours:

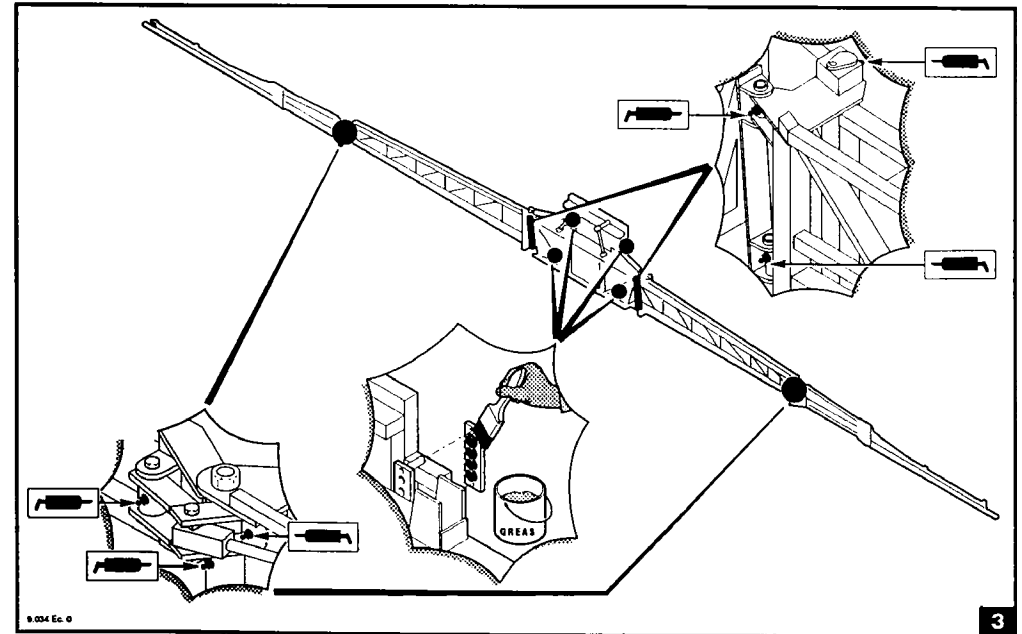
- 1 Make sure screws of all boom components are intact and tightened.
- 2 Retouch damage painted parts.
- 3 Check stop plugs (C), shown in figure 1 (above). Replace them if necessary.
- 4 Check wear of sliding shoes (D), shown in figure 2 (above).



5 Grease the boom, as shown in figure 3 (below).



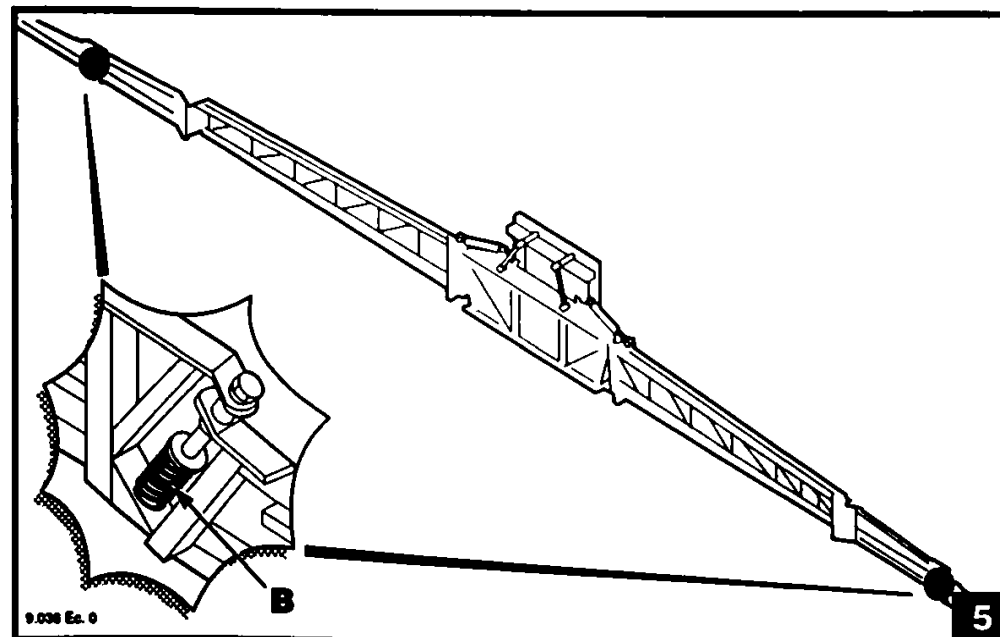
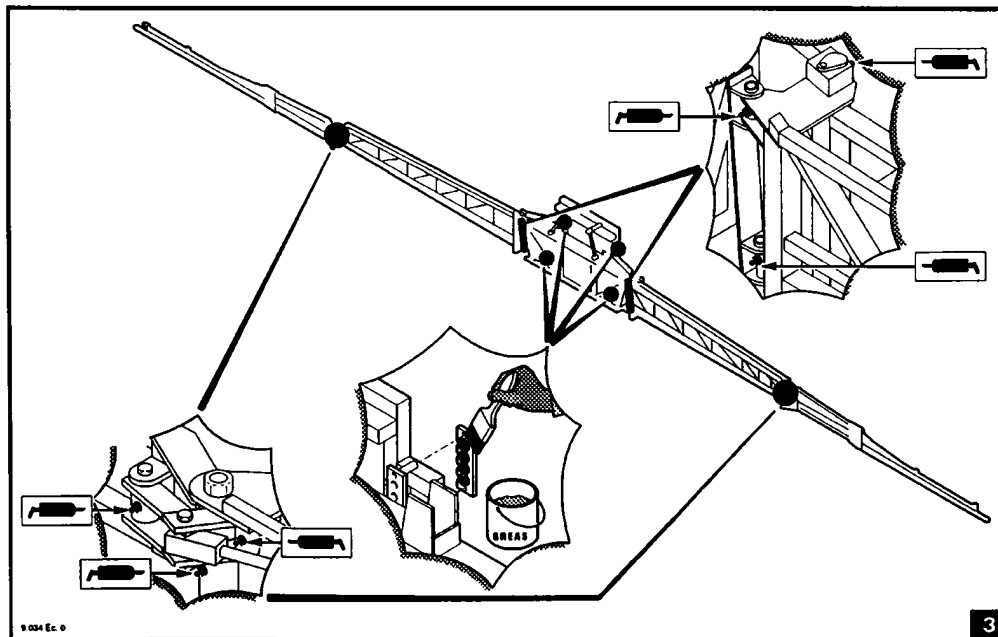
6 Grease the boom parallelogram lift & suspension pivot points.



- 7 Check the pneumatic spring pressures and if needed, reset pressure (refer to page 33).
- 8 Check seals of shock absorber air system by brushing suds on joints. If needed repair leakage.

- 9 Grease slide guides of the boom mast using a brush.
- 10 Check slacks between the guides and the mast and adjust them if necessary.





Periodical Maintenance

1 Clean nozzles

Remove nozzle clogging using compressed air or a soft bristle brush. Never use sharpened or pointed tools.

2 Check springs(A) and (B) shown in figure 4 above; replace them if flattened or damaged.

3 Check springs (B) shown in figure 5 above; replace them if yielded.

4 Periodically check all hydraulic hoses and fittings for wear and replace if necessary.

End of Season Maintenance

- 1 Before storage clean all equipment thoroughly.
- 2 If necessary protect sprayer plumbing components with antifreeze fluid to avoid damage in severe temperatures.



CAUTION

Always use protective gloves when cleaning nozzles.

Diaphragm Pump Problems	6.2
General Sprayer Problems	6.4
Hydraulic Pump Drive Problems	6.5
Foam Marker Problems	6.6
Boom Problems	6.9
Motor Valve Problems	6.10

PROBLEM	PROBABLE CAUSE	REMEDY
A Pump does not draw or deliver liquid. Pressure gauge fluctuates badly.	<ol style="list-style-type: none"> 1 One or more valves are not seating properly. 2 The pump is sucking in air through suction line. 3 Air has not been entirely evacuated from the pump. 4 Blocked suction filter. 5 Damaged or worn suction valves. 	<ol style="list-style-type: none"> 1 Clean valve seating. 2 Examine the suction hose and ensure it is firmly secured. 3 Rotate the pump with outlet hose and taps open. 4 Clean suction filter. 5 Replace suction valves.
B Liquid flow is irregular (Also check items under A)	<ol style="list-style-type: none"> 1 The air in the air chamber of the pump is incorrectly set. 2 Diaphragm split. 3 Damaged or worn valves. 4 Foreign matter holding valves open. 	<ol style="list-style-type: none"> 1 Check pressure in air chamber of pump. Set at 210-280Kpa (30-40 psi), or 10% of you average spraying pressure. 2 Replace diaphragm. 3 Replace valves. 4 Clean valves.
C Pump delivers insufficient pressure	<ol style="list-style-type: none"> 1 Regulating valve: <ul style="list-style-type: none"> • Sticking open • Not set for pressure. • Damaged or worn seat or spring. 2 Cylinder diaphragm ruptured. 3 Pump valves blocked, worn or damaged. 4 Spray nozzles worn, missing or exceed pump capacity. 	<ol style="list-style-type: none"> 1 Fix the regulator: <ul style="list-style-type: none"> • Unstick the valves. • Set the pressure. • Replace the spring. 2 Replace diaphragms. 3 Unblock valves and or replace. 4 Replace spray nozzles with appropriate size.
D Output drops & pump is noisy.	<ol style="list-style-type: none"> 1 Oil level is too low. 	<ol style="list-style-type: none"> 1 Top up with oil to correct level (1/2 way up the sump sight glass).

PROBLEM	PROBABLE CAUSE	REMEDY
E Oil being discharged through delivery line or discoloured oil in sight glass of pump.	1 One or more diaphragms split or ruptured.	1 Immediately drain oil from pump and flush to remove all spray residues from sump. Remove pump heads & fit new diaphragms. Fill to correct level with motor oil 20W/30.
SUCTION SIDE OF PUMP		
F Suction hose vibration.	1 Air getting into suction.	1 Seal all joints securely with tape or sealant. Firm up clamps.
G Pump valves hammering.	1 Suction tap partly turned off. 2 Suction strainer(s) blocked.	1 Turn tap fully on. 2 Clean filters.
H No water flow on suction hose.	1 Obstruction in tank or suction line.	1 Clean foreign material from tank & suction line.
DISCHARGE SIDE OF PUMP		
I Pressure gauge pointer swings violently.	1 Pressure control valve spindle doesn't move easily.	1 Lubricate with light oil or C.R.C.
J Control valve leaking from spindle.	1 Split diaphragm or O-rings.	1 Remove 4 body set screws, replace diaphragm and O-rings.
K Pressure gauge showing correct working pressure no pressure at nozzle.	1 Burst discharge line. 2 Blocked pressure filter where fitted. 3 O-ring(s) jamming flow in discharge line. 4 Ants, wasps build nests in discharge line or nozzles.	1 Replace discharge line. 2 Clean pressure filter. 3 Clean discharge line of foreign materials. 4 Clean nozzles of foreign materials with tooth brush

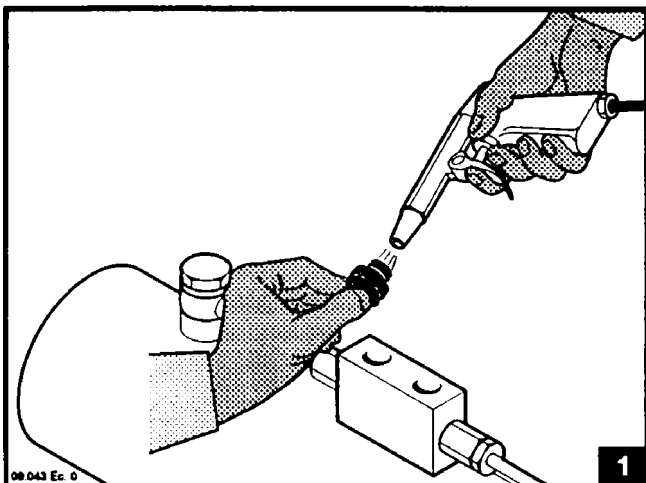
PROBLEM	PROBABLE CAUSE	REMEDY
1 No spray when turned on.	<ol style="list-style-type: none"> 1 Filter on the inlet side of the pump blocked. 2 Faulty pump. 	<ol style="list-style-type: none"> 1 Dismantle, clean & re-assemble. 2 Change pump.
2 Sprays for short time only.	<ol style="list-style-type: none"> 1 Air inlet to tank blocked. 2 Filter on suction side of pump blocking or blocked. 	<ol style="list-style-type: none"> 1 Clean air vent. 2 Dismantle, clean & re-assemble the filter. If filter problem persists, clean out the tank & start again.
3 Spray is uneven around the boom.	<ol style="list-style-type: none"> 1 Some nozzle filters or tips are blocked. 2 Nozzle tips worn. 3 Different pressure along the boom. 	<ol style="list-style-type: none"> 1 Remove, clean & check. Check output & for streaks. 2 Check nozzle output, replace worn nozzles. 3 Remove a nozzle in each boom section & check that flow rate is the same. If different, check for blockages.
4 Pressure going up - output going down.	<ol style="list-style-type: none"> 1 Nozzle filters blocking. 	<ol style="list-style-type: none"> 1 Dismantle, clean & refit. Check pressure returns to normal. Check all filters and spray mixture.
5 Pressure falling.	<ol style="list-style-type: none"> 1 Filter on suction side blocked. 2 Nozzle tips worn. 3 Pressure gauge faulty. 4 Pump worn. 	<ol style="list-style-type: none"> 1 Dismantle & clean the filter. 2 Check nozzle output, replace worn nozzles. 3 Check with new pressure gauge. 4 Repair or replace the pump.
6 Spray pattern narrow.	<ol style="list-style-type: none"> 1 Pressure too low. 2 Pressure too low & spluttering. 	<ol style="list-style-type: none"> 1 Check that the correct nozzles are being used. 2 Check that the tank is not empty. If not, there is an air leak between the pump & tank or in the pump. Check plumbing & repair.
7 Foam in the tank.	<ol style="list-style-type: none"> 1 Too much agitation. 	<ol style="list-style-type: none"> 1 Check that the return line is at the bottom of the tank. Partly close agitation and valve
8 Spray pattern streaky.	<ol style="list-style-type: none"> 1 Nozzle partly blocked. 	<ol style="list-style-type: none"> 1 Remove & clean. If it continues, the nozzle is damaged. Replace with same size tip, check flow rate of replacement nozzle.

PROBLEM	PROBABLE CAUSE	REMEDY
A A Low discharge	<ol style="list-style-type: none"> 1 Pump not primed. 2 Air leaks in suction line. 3 Blocked or clogged line filter. 4 Impeller plugged. 5 Undersized or collapsed suction hose. 6 Improperly sized hydraulic motor. 7 Bypass adjustment screw not properly set. 8 Eye of impeller rubbing on volute. 	<ol style="list-style-type: none"> 1 Remove top most vent plug from face of pump and run pump to expel trapped air. 2 Check and reseal inlet fittings. 3 Inspect filter & clear any debris from screen. 4 Inspect and clear obstruction. 5 Suction line should be the same diameter as inlet port of pump or larger. 6 Refer to pump selection guide to determine proper size. 7 Adjust bypass screw on the side of the hydraulic motor. 8 Remove volute (front cover) and inspect the impeller. If wear is detected, sand the impeller eye O.D. with emery cloth.
B Hydraulic system overheating	<ol style="list-style-type: none"> 1 Improper hydraulic motor size. 2 Bypass adjustment screw set to bypass too much oil. 3 Improper metering orifice installed in pressure port. 4 Insufficient hydraulic hose size. 	<ol style="list-style-type: none"> 1 Refer to pump selection guide to determine proper size for your system. 2 Close adjustment screw on side of hydraulic motor to lessen the amount of bypassing oil. 3 Install proper size orifice. Refer to Hypro Manual. 4 Check hydraulic hose size. Hose should be at least ½". For large open-centre systems ¾".

PROBLEM	PROBABLE CAUSE	REMEDY
A Marker doesn't run at all	<ol style="list-style-type: none"> 1 Harness plug not plugged in or 2 Circuit breaker popped or fuse blown. 	<ol style="list-style-type: none"> 1 Check all wiring plugs and connections. 2 Check breaker/fuse and reset/replace if necessary.
B Air pump runs – nothing coming out – no pressure showing on gauge	<ol style="list-style-type: none"> 1 Liquid pump shut Off or not primed. (Hint: When working on liquid pump, it is helpful to unplug the air pump so you can hear the liquid pump running. Remove the two black wires from the air pump and clamp them together). 2 Electronic speed control failed causing liquid pump not to run. (Hint: When working on liquid pump, it is helpful to unplug the air pump so you can hear the liquid pump running) 3 Liquid pump valves or diaphragm have failed. 4 Liquid pump motor failed. 	<ol style="list-style-type: none"> 1 Turn liquid control knob clockwise as far as it will go. This will run the pump at full speed to aid in priming. Allow a minute or two to prime. If it still won't prime, find the liquid orifice assembly near the discharge of the pump & uncouple briefly to allow air pressure to be relieved. If it still doesn't prime, either the tank strainer/outlet is completely plugged or the pump needs service or replacement. 2 Check this component by feeling and listening to the motor while you turn the knob up & down. If it speeds up & slows down, the control & pump motor are OK. If not, unplug the liquid pump from the speed control. Using jumper wires, apply 12 Volts DC directly to the liquid pump. It should run full speed indicating the pump is OK & the Speed Control is not working. Check polarity of wires to power supply. speed control will not operate in reverse polarity. If you're absolutely sure it is correct, replace the electronic speed control. 3 If the liquid pump appears to run normally as described above, but can't prime or pump the liquid, it may need a new diaphragm, or valve cartridge. We suggest replacing both. 4 If you've determined in the above step the liquid pump did not work when 12 Volts was applied, replace pump motor or whole pump.
C Nothing coming out – high pressure showing	<ol style="list-style-type: none"> 1 Liquid orifice plugged. 	<ol style="list-style-type: none"> 1 Find liquid orifice assembly near outlet of liquid pump. Unplug orifice and clean orifice strainer.

PROBLEM	PROBABLE CAUSE	REMEDY
D Discharges almost all water - Air Flow Restricted	<ol style="list-style-type: none"> 1 Air On/Off solenoid valve doesn't operate. 2 Pressure regulator incorrectly adjusted. 3 Pressure regulator damaged. 4 Air discharge plugged. 	<ol style="list-style-type: none"> 1 Check for 12V to solenoid. If not, check for electrical issues. If so, replace air ON/Off solenoid valve. 2 Set pressure regulator to 28 psi. 3 Replace pressure regulator. 4 Inspect air check valve located near solenoid discharge for proper operation.
E Discharge foamy but very watery	<ol style="list-style-type: none"> 1 Concentrate weak or water too hard. 2 Liquid pressure too high. 3 Air supply not operating or plugged. 	<ol style="list-style-type: none"> 1 Strengthen concentrate mixture or add water conditioner. If this doesn't work, try a different water supply. 2 Reduce liquid pressure to under 40 psi. 3 See air pump remedies above. Service air cleaner.
F Not enough foam	<ol style="list-style-type: none"> 1 Foam quality poor or weak air supply. 	<ol style="list-style-type: none"> 1 Measure the output by catching in a bucket. If output exceeds 20 litres/min, the marker is working at full capacity. If not, make sure foam quality is good as described above. Also, low output can be related to poor air supply performance. See description above.
G Foam goes to wrong side	<ol style="list-style-type: none"> 1 Left-Right hoses hooked up backwards. 	<ol style="list-style-type: none"> 1 Reverse hoses on Directo-Valve.
H Foam won't switch sides	<ol style="list-style-type: none"> 1 No power to valve. 2 Valve failure. 	<ol style="list-style-type: none"> 1 Check electrical connection to the valve 2 Replace valve.
I Foam comes out both sides at the same time	<ol style="list-style-type: none"> 1 Valve Failure 	<ol style="list-style-type: none"> 1 Replace valve.

The electric compressor will not work, the pilot lights fail to come on	<ol style="list-style-type: none"> 1 No current reaches the control unit. 	<ol style="list-style-type: none"> 1 Check the fuse. 2 Check the electrical connections of the control box.
The electric compressor will not work, the pilot lights come on	<ol style="list-style-type: none"> 1 Electrical connection between control unit and electric compressor broken. 	<ol style="list-style-type: none"> 1 Check the connections between the control box and the electric compressor.
No foam comes out of dark the foam nozzles	<ol style="list-style-type: none"> 1 The tank will not pressurize. 2 Break in the pneumo/hydraulic circuit. 	<ol style="list-style-type: none"> 1a Close the tank cap properly. 1b Check the tightness of the pipes connecting the compressor with the cap. 2a Check there are no cracks in the dark the blue pipe inside the tank (from the filter to the plug) and on the outer pipes. 2b Clean the bottom filter of liquid. 2c Check for any constrictions along the pipes.
Foam formation is not good	<ol style="list-style-type: none"> 1 Sponge dirty or hardened . 2 Water-foaming agent mix old. 3 Flow-rate adjustment wrong. 4 Constrictions in pipes. 	<ol style="list-style-type: none"> 1 Clean or replace the sponge inside the foam nozzle. 2 Redo the water-foaming agent mix. 3 Use the flow-rate regulator on the tank cap to obtain a sufficiently dense foam. 4 Check the pipes towards the foam.
Foam continues to be formed in the foam nozzle not selected	<ol style="list-style-type: none"> 1 Solenoid valve jammed. 	<ol style="list-style-type: none"> 1 Disconnect the pipes going from the compressor unit to the foam node, then blow with compressed air into the unions of the solenoid valves towards.
Air bleeds from the safety valve on the cap	<ol style="list-style-type: none"> 1 Constrictions in the pipes. 2 Solenoid valve jammed. 	<ol style="list-style-type: none"> 1 Check the pipes towards the foam nozzles. 2 Clean the relevant solenoid valve of liquid by blowing compressed air through the union leading to the foam nozzle.
Air or liquid leaks from the fittings	<ol style="list-style-type: none"> 1 Incorrect fitting seal. 	<ol style="list-style-type: none"> 1 At the quick connections or threaded fittings, uncouple the pipe and shorten it by approximately 10 rpm to eliminate the defects of deformation at the seal.
For problems not specified, call your Dealer.		



Problem:

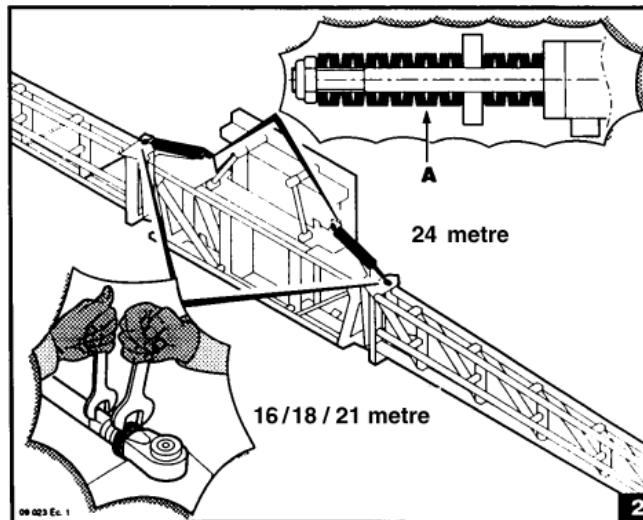
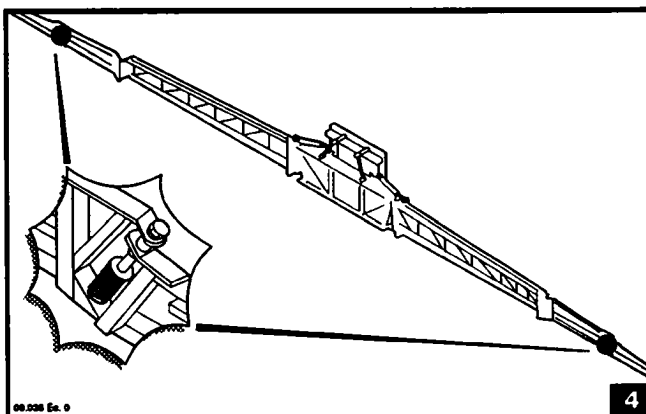
The boom unfolds halfway and then stops.

Probable Cause:

Impurity in calibrated joint during assembled on cylinders.

Remedy:

Disassemble joints and clean, shown in figure 1



Problem:

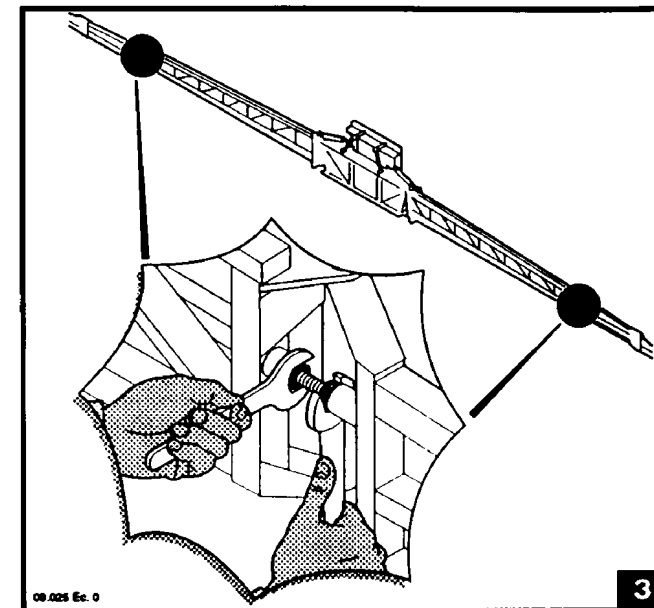
The boom does not align when unfolding.

Probable Cause:

- 1 Ball joint of the unfolding cylinder not adjusted.
- 2 Shock absorber springs (A) not adjusted or damaged.

Remedy:

- 1 Adjust the joint according to the "Wing Alignment" instructions on page 3.12 to 3.16.
- 2 Check the springs; replace them if damaged see figure 2.



Problem:

The wing extensions do not align when folding.

Probable Cause:

Stop bolt not adjusted.

Remedy:

Adjust the screw to obtain alignment, as shown in figure 3.

Problem:

The ball joint of the wing extension moves during the unfolding and folding operation.

Probable Cause:

Loose joint.

Remedy:

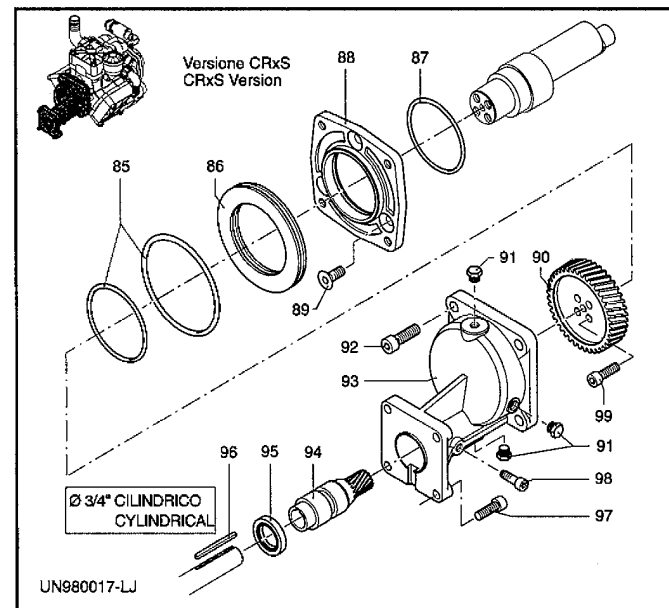
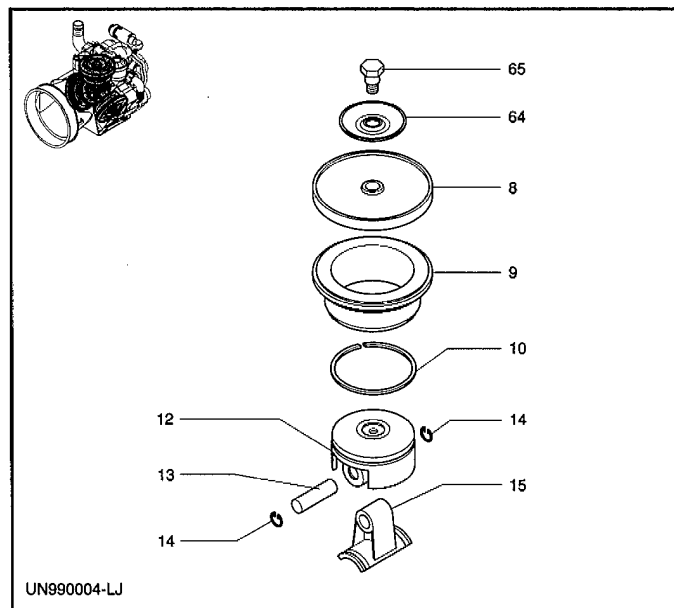
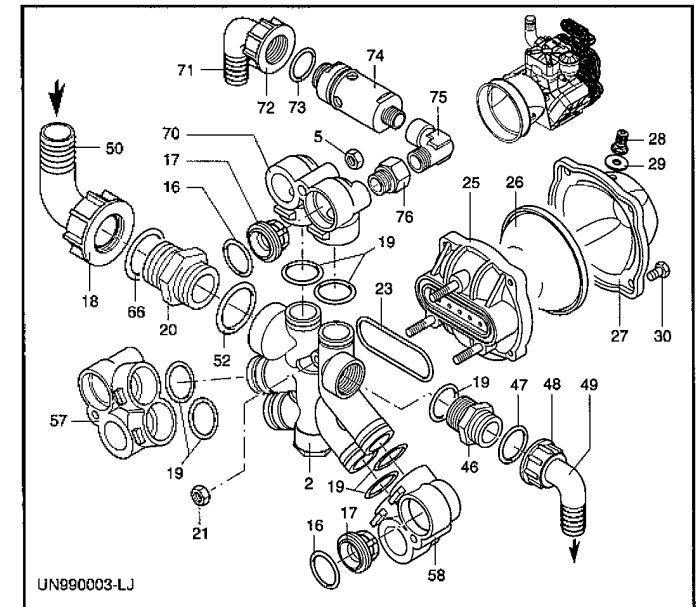
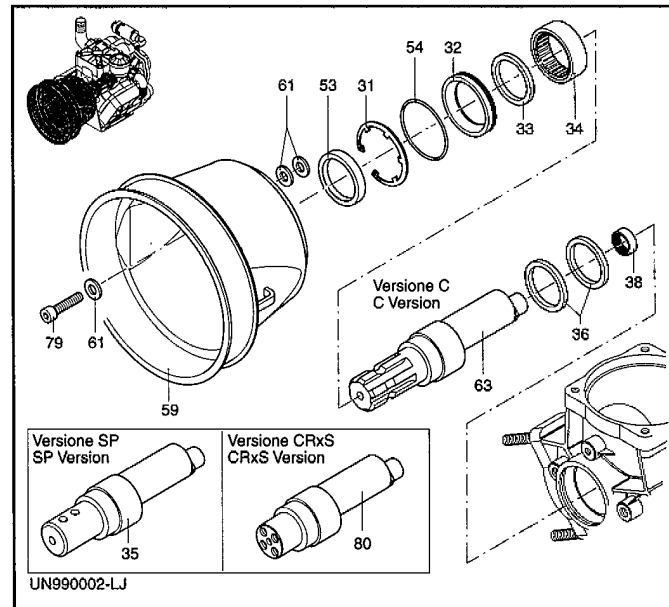
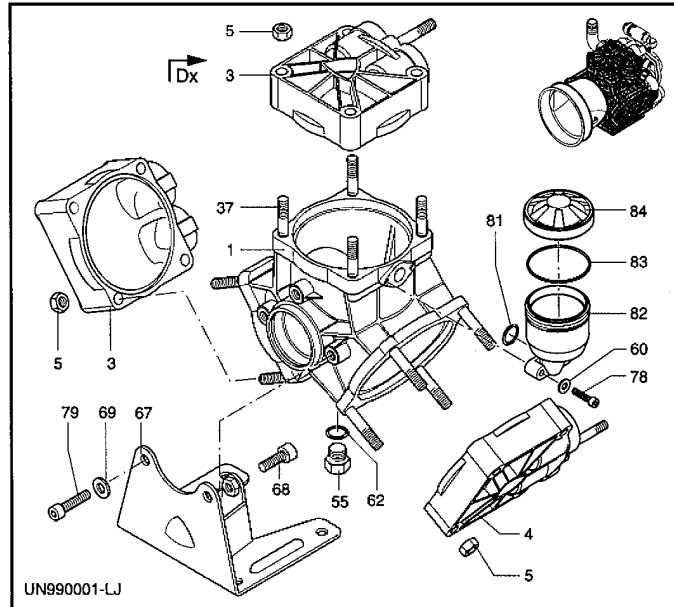
Compress the spring, as shown in figure 4 (left).

PROBLEM	PROBABLE CAUSE	REMEDY
A Boom line valve opens when it should be closed and closes when it should be open.	1 Wiring incorrect.	1 Reverse polarity of valve by changing wires at the valve cap.
B Water leaks past valve when valve is shut.	1 Worn seat.	1 Replace seat/hosetail and/or valve system if necessary.
C Valve won't operate.	1 No power to valve. 2 Motor failure. 3 Valve clogged.	1 Check all connections, supply - loom. 2 Replace motor. 3 Clean internals of valve and/or put a new valve kit in the valve..
D Servo valve not regulating flow.	1 Valve jamming. 2 No power. 3 Valve clogged.	1 Clean our valve or replace. 2 Check all power leads and supply, or replace motor. 3 Clean out valve and/or put a new valve kit in the valve.
E Dump valve not releasing pressure in system on shut-off.	1 No power to valve. 2 Valve motor failed. 3 Dump-line blocked.	1 Check power supply and all connections. 2 Check motor and replace if required. 3 Clean valve and return line.

AR135 Pump	7.2
AR160/185 Pump	7.4
AR250/280 Pump	7.6
Liquid Control System	7.8
Pinto Panel Assembly Autorate	7.9
Servo/Dump/Flowmeter	7.10
Valves & Enviro-Transfer Kit	7.11
Chem E Flush Assembly	7.12
Filters	7.14
Lids, Venturis & Tank Rinse Jet	7.15
Foam Marker 20LPM	7.16
Foam Marker Components	7.17
Boom Fittings	7.18
Nozzles & Nozzle Bodies	7.19
Tank & Chassis	7.20
Wheel Hubs	7.22
Plumbing Diagram AR60/AR135	7.25
Electrical Diagrams	7.26
Hydraulic Plumbing Diagrams	7.30
Booms	7.38

AR135 Pump

Assembly Drawings & Parts



Pos	Part No	Description	Qty
1	AR580011	Pump Body	1
2	AR580150	Manifold Line	1
3	AR550101	Right Head	2
4	AR550102	Left Head	1
5	AR180152	Nut	15
8	AR550080	Diaphragm - Gomma (Use AR550086)	3
	AR550084	Diaphragm - Viton	3
	AR550085	Diaphragm - Desmopan	3
	AR550086	Diaphragm - HPDS	3
9	AR580350	Sleeve	3
10	AR500260	Piston Ring	3
12	AR580120	Piston	3
13	AR380300	Pin	3
14	AR380080	Pin Ring	6
15	AR580140	Connecting Rod	3
16	AR320030	O-Ring	6
17	AR759051	Complete Valve	6
18	AR540541	Ring Nut	1
19	AR390291	O-Ring	7
20	AR540530	Threaded Adapter	1
21	AR390271	Nut	3
23	AR580050	Gasket	1
25	AR580180	Lower Air Chamber	1
26	AR550190	Semi Air Chamber	1
	AR550191	Semi Air Chamber	1
	AR550192	Semi Air Chamber	1
27	AR550233	Upper Air Chamber	1
28	AR550300	Air Valve	1
29	AR650542	Gasket	1
30	AR550680	Bolt	4
31	AR200391	Circlip	1
32	AR550470	Gasket Retainer	1
33	AR550070	Spacer Ring	1
34	AR580440	Roller Bushing	1
35	AR580380	'SP' Shaft	1
36	AR580130	Conrod Ring (Use AR580470)	2
37	AR550200	Stud	4
38	AR550310	Roller Bushing	1
46	AR550340	Threaded Adapter	1
47	AR550350	O-Ring	1
48	AR550242	Ring Nut	1
49	AR550370	Elbow	1
50	AR540550	Elbow	1
52	AR250310	O-Ring	1
53	AR550491	Seal Ring	1
54	AR650920	O-Ring	1
55	AR880530	Plug	1
57	AR580071	Right Hand Manifold Coupling	1

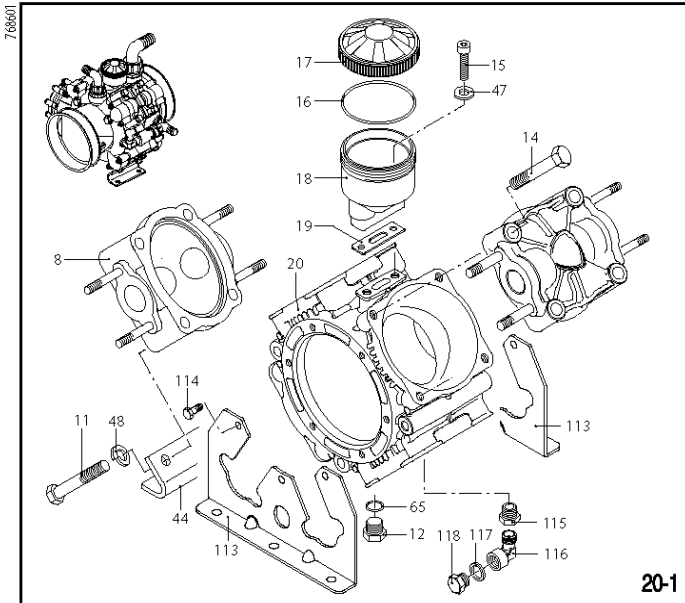
Pos	Part No	Description	Qty
58	AR580072	Left Hand Manifold Coupling	1
59	AR1500350	Cardan Protection	1
60	AR550332	Washer	2
61	AR320621	Washer	5
62	AR740290	O-Ring	1
63	AR580330	C - Shaft	1
64	AR580370	Plate	3
65	AR580360	Diaphragm pin	3
66	AR250310	O-Ring	1
67	AR580080	Base	1
68	AR540301	Bolt	1
69	AR200233	Washer	2
70	AR580400	Right manifold coupling + outlet	1
71	AR550460	Elbow	1
72	AR550450	Ring nut	1
73	AR880831	O-Ring	1
74	AR1609000	Safety Valve	1
75	AR881560	Elbow	1
76	AR580421	Extension	1
78	AR850851	Bolt	2
79	AR620472	Bolt	2
80	AR580430	CR x S Shaft	1
81	AR390180	O-Ring	2
82	AR1040310	Oil Tank	1
83	AR650920	O-Ring	1
84	AR1040320	Red Oil Tank Cap	1
85	AR620561	O-Ring	1
86	AR621440	Spigot	1
87	AR580230	O-Ring	1
88	AR550920	Flange	1
89	AR550950	Bolt	3
90	AR550940	Gear	1
91	AR620301	Plug	3
92	AR160671	Bolt	4
93	AR621810	Bolt	1
94	AR621820	Pinion	1
95	AR480820	Seal	1
96	AR881090	Key	1
97	AR651000	Bolt	3
98	AR800800	Bolt	1
99	AR540290	Bolt	4

NOTE

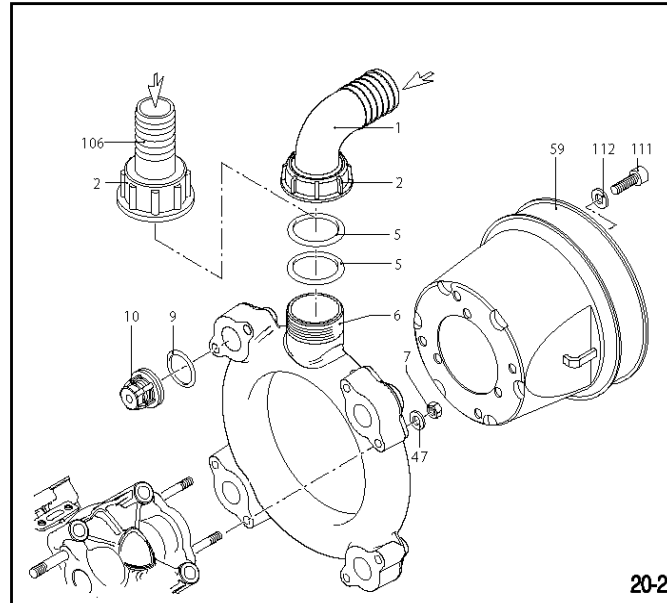
Parts in italics are non-stock items and may need to be ordered.

AR160/185 Pump

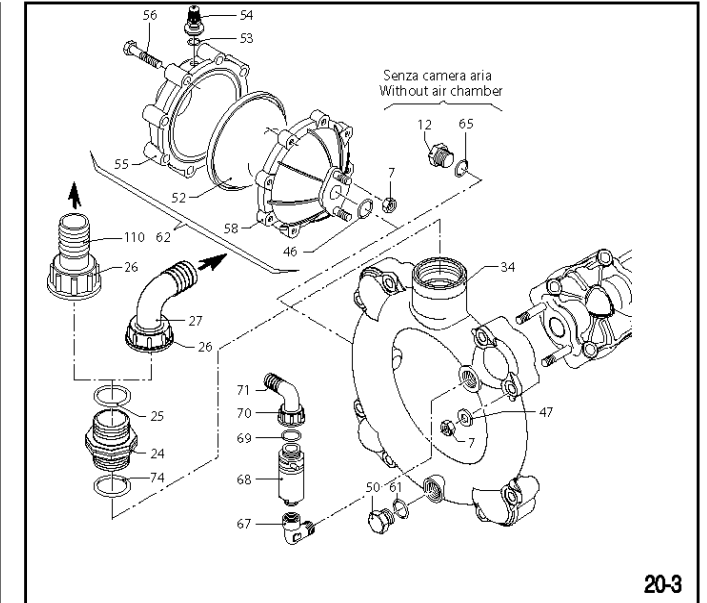
Assembly Drawings & Parts



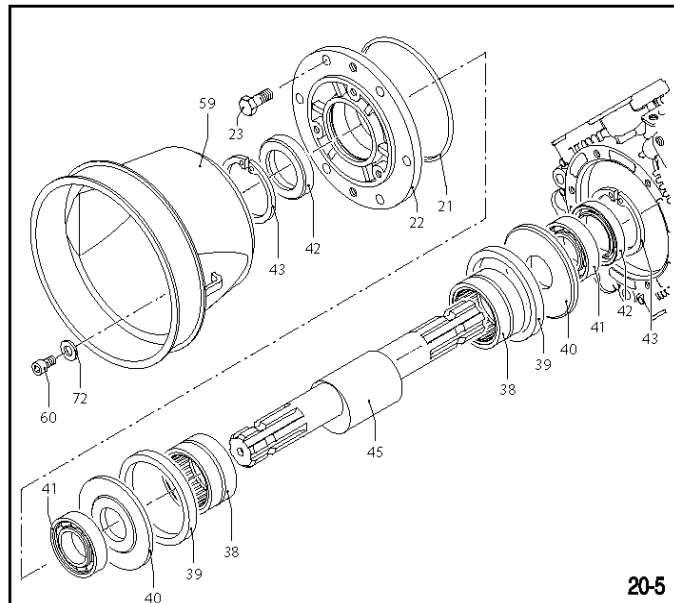
SL000209-AU



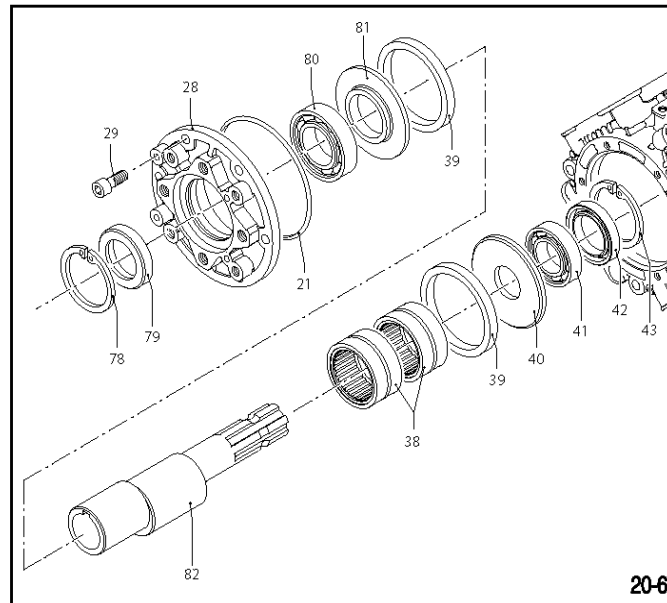
SL000155-DV



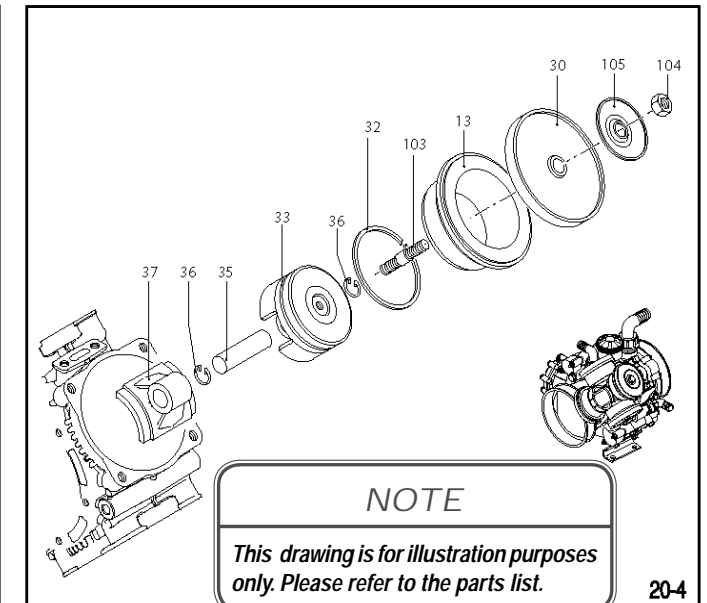
SL000156-DV



UN0000714-ID



UN000715-IB



SL000208-AU

Pos	Part No	Description	Qty
1	AR3040430	Ø 40 Elbow - AR 160 bp	1
	AR3040440	Ø 50 Elbow - AR 185 bp	1
2	AR3040450	2" G Ring nut	1
5	AR3040470	OR Ø 39.3 x 2.6 O-ring	2
6	AR760750	Line	1
7	AR380242	M8 Nut - Geomet C 20	18
	AR380244	M8 Nut - Inox C 20	18
8	AR751350	Head	4
	AR751352	Head	4
9	AR680070	OR Ø 31.5 x 4.25 O-ring	8
10	AR759051	Valve	8
11	AR750071	TE M12 x 70 Screw - Geomet C 50	4
	AR750072	TE M12 x 70 Screw	4
12	AR880530	3/8" G Plug - C 20	2
	AR2340350	3/8" G Plug - Inox C 20	2
13	AR750110	Sleeve - AR 160 bp	4
	AR750115	Sleeve - AR 185 bp	4
14	AR750061	TE M12 x 65 Screw - Geomet C 50	12
	AR750062	TE M12 x 65 Screw - Inox C 50	12
15	AR680350	TCEI M8 x 35 Screw	2
16	AR1040060	Ø 72.69 x 2.62 O-ring	1
17	AR750057	Plug - AR 160 bp	1
	AR750052	Plug - AR 185 bp	1
18	AR750030	Tank	1
19	AR750040	Gasket	1
20	AR761010	Pump body	1
21	AR851360	Ø 120.32 x 2.62 O-ring	1
22	AR680020	Support	1
23	AR160672	TE M10 x 25 Screw - Geomet C 40	6
	AR160673	TE M10 x 25 Screw - Inox C 40	6
24	AR751130	1" 1/2 G M-M Fitting	1
25	AR390290	Ø 29x3 O-ring	1
26	AR750670	1" 1/2 G Ring nut	1
27	AR760930	Ø 25 Elbow - AR 160 bp	1
	AR3040160	Ø 35 Elbow - AR 185 bp	1
28	AR2420181	Support	1
29	AR650640	TCEI M10 x 25 Screw - Geomet C 40	6
	AR650642	TCEI M10 x 25 Screw - Inox C 40	6
30	AR550080	Diaphragm - NBR	4
	AR550084	Diaphragm - Viton	4
	AR550085	Diaphragm - Desmopan	4
	AR550086	Diaphragm - HPDS	4
32	AR500260	Piston ring	4
33	AR750122	Ø 80 Piston	4
34	AR760760	Line	1
35	AR160700	Pin	4
36	AR160691	Øi 18 Ring	8
37	AR760140	Connecting-rod	4
38	AR750090	Bearing	2
39	AR750130	Ring	2
40	AR540040	Plate	2
41	AR230350	Bearing	2
42	AR160740	Ring	2
43	AR200390	Øi 62 Ring	2
44	AR760201	Foot	2
45	AR750170	C/C m-AU Shaft - AR 160 bp	1
	AR750174	C/C m-AV Shaft - AR 185 bp	1

NOTE

Parts in Italics are non-stocked items and may need to be ordered.

Pos	Part No	Description	Qty
46	AR390290	Ø 29x3 O-ring	1
47	AR380243	Washer - Geomet	18
	AR390315	Washer - Inox	18
48	AR250143	Washer - Geomet	4
	AR250144	Washer - Inox	4
50	AR330173	1/2" G Plug - Geomet C 20	1
	AR330174	1/2" G Plug - Inox C 20	1
52	AR550190	Semi air chamber - NBR	1
	AR550191	Semi air chamber - Saturflon	1
	AR550192	Semi air chamber - Viton	1
	AR550193	Semi air chamber - HPDS	1
53	AR650542	Gasket	1
54	AR180020	Air valve	1
55	AR620232	Semi air chamber	1
56	AR621781	TE M8 x 40 Screw	8
62	AR1782	TE M8 x 40 Screw	8
58	AR680180	Halfball	1
59	AR1500470	Cardan protection	2
60	AR850251	M8 x 12 Screw	3
	AR850252	TCEI M8 x 12 Screw	3
61	AR180101	Ø 17.5 x 2 O-ring	1
62	AR1552	Air chamber	1
65	AR740290	Ø 14 x 1.78 O-ring 2	
67	AR881560	1/2" G M-F Fitting 1	
68	AR1609000	Safety valve	1
69	AR880831	Ø 15.54 x 2.62 O-ring - Viton	1
70	AR550450	3/4" G Ring nut	1
71	AR550460	Ø 18 Elbow	1
72	AR390314	Washer - Geomet	3
	AR390315	Washer - Inox	3
74	AR751140	Ø 47.22 x 3.53 O-ring	1
78	AR620330	Øi 65 Ring	1
79	AR1800090	Ring	1
80	AR230310	Bearing	1
81	AR760510	Plate	1
82	AR760450	C/F Ø25 m-BX Shaft - AR 160 bp	1
	AR760520	C/F Ø32 m-BS Shaft - AR 160 bp	1
	AR760460	C/F Ø25 m-BZ Shaft - AR 185 bp	1
	AR760530	C/F Ø32 m-BT Shaft - AR 185 bp	1
103	AR2240100	Hub pin	4
104	AR2240110	M10 Nut	4
105	AR751250	Wobble plate	4
106	AR760950	Ø 40 Hose tail - AR 160 bp	1
	AR760570	Ø 50 Hose tail - AR 1854 bp	1
110	AR760920	Ø 25 Hose tail - AR 160 bp	1
	AR760940	Ø 35 Hose tail - AR 185 bp	1
111	AR820673	TCEI M10 x 16 Screw - Geomet	3
	AR820672	TCEI M10 x 16 Screw - Inox	3
112	AR320621	Washer 3 Geomet	
	AR320622	10.5 x 21x 2 Washer - Inox	3
113	AR761030	Foot	2
114	AR160672	TE M10 x 25 Screw - Geomet C 20	6
	AR160673	TE M10 x 25 Screw - Inox C 20	6
115	AR1040491	3/8" M-F Fitting	1
116	AR900210	3/8" G M-F Fitting	1
117	AR2260200	Washer	1
118	AR2281270	3/8" G Plug	1

Assembly Drawings & Parts



These drawings are for illustration purposes only.
Please refer to the parts list.



Pos	Part No	Description	Qty
1	AR750870	ø 50 Hose tail	1
	AR750730	ø 60 Hose tail	1
3	AR750071	M12 x 70 Bolt	4
4	AR750200	Base plate	1
5	AR750740	74 x 3.53 O-Ring	2
6	AR750860	Suction manifold	1
7	AR380242	Nut	26
8	AR750100	Head	6
9	AR680070	O-Ring	12
10	AR759051	Complete valve	12
11	AR200390	Circlip	2
12	AR750176	Crankshaft AR 215 bp (AZ)	1
	AR750170	Crankshaft AR 250 bp (AU)	1
	AR750174	Crankshaft AR 280 bp (AV)	1
13	AR750117	Sleeve AR 215 bp	6
	AR750110	Sleeve AR 250 bp	6
	AR750115	Sleeve AR 280 bp	6
14	AR750061	M 12x65 Bolt	20
15	AR680350	M8 x 35 Bolt	2
16	AR1040060	O-Ring	1
17	AR750053	Green oil tank cap AR 215 bp	1
	AR750057	Black oil tank cap AR 250 bp	1
	AR750052	Red oil tank cap AR 280 bp	1
18	AR750030	Oil tank	1
19	AR750040	Gasket	1
20	AR750010	Pump body	1
21	AR680250	Gasket	1
22	AR680020	Shaft support	1
23	AR160672	M 10x25 Bolt	6
24	AR540530	1"1/4-1"3/4 G (M) Threaded adapter	1
25	AR250310	O-Ring	2
26	AR540540	1"3/4 G Ring nut	1
27	AR392130	ø 35 Elbow	1
28	AR2420180	Shaft support	1
29	AR621500	M10 x 25 Bolt	6

Pos	Part No	Description	Qty
30	AR550084	Diaphragm - VITON	6
	AR550086	Diaphragm - HPDS (Recommended)	6
31	AR391930	ø 35 Hose tail Optional	1
32	AR500260	Piston ring	6
33	AR750122	Piston 80mm	6
34	AR750420	Manifold	1
35	AR160700	Pin	6
36	AR160691	Pin circlip	12
37	AR750140	Connecting rod	6
38	AR750090	Roller bearing	2
39	AR750130	Con rod ring	2
40	AR540040	Spacer washer	2
41	AR230350	Bearing	2
42	AR160740	Seal Ring 35 x 52 x 12mm	2
43	AR380243	Washer	26
44	AR480440	O-Ring	3
45	AR250143	Washer	4
47	AR850251	M8 x 12 Bolt	6
48	AR1500350	Shaft guard	2
53	AR750850	ø 50 Elbow AR 215 bp	1
	AR750850	ø 50 Elbow AR 250 bp	1
	AR750720	ø 60 Elbow AR 280 bp	1
54	AR750710	2"1/2 G Ring nut	1
57	AR620232	Upper air chamber	1
58	AR550190	Semi air chamber - RUBBER	1
	AR550192	Semi air chamber - VITON	1
	AR550193	Semi air chamber - HPDS	1
59	AR680180	Lower air chamber	1
60	AR621781	M8 x 40 Bolt	8
62	AR1552	Complete air chamber	1
63	AR390290	O-Ring	1
64	AR180101	O-Ring	2
65	AR330173	1/2" G Plug	2
67	AR650542	Gasket	1
68	AR180020	Air valve	1

NOTE

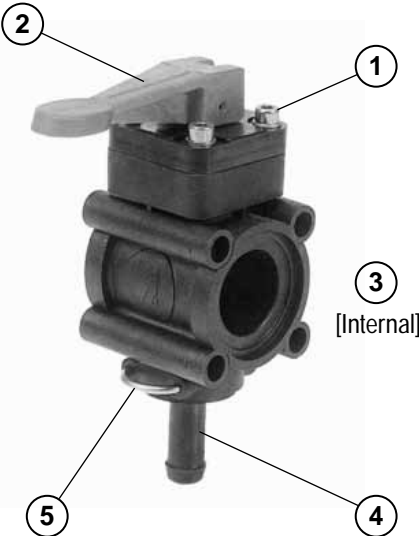
Parts in Italics are non-stocked items and may need to be ordered.

Boom Shut-Off Valve/Dump Valve



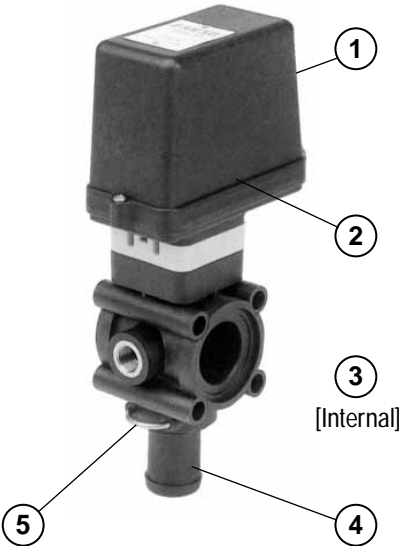
Pos	Part No	Description	Qty
1	A463011ST	Complete Valve	1
2	A4653902S	Motor	1
3	A463001.550	Regulator Stem Kit	1
4	A463001.125	Tail/Seat	1
5	A461511.040	Clip	1

Shut-Off Taps - Tank Rinse, Flushing Tap & Agitators



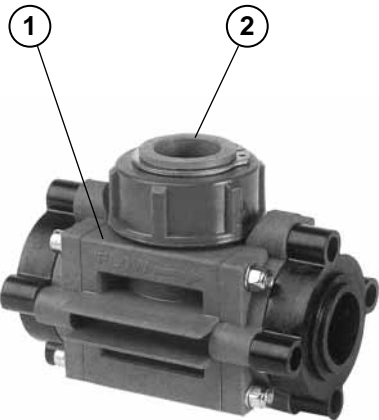
Pos	Part No	Description	Qty
1	A463051	Complete Valve	1
2	A463051.140	Handle	1
4	A463001.113	Tail	1
5	A010002	Clip	1

Electric Regulating Valve

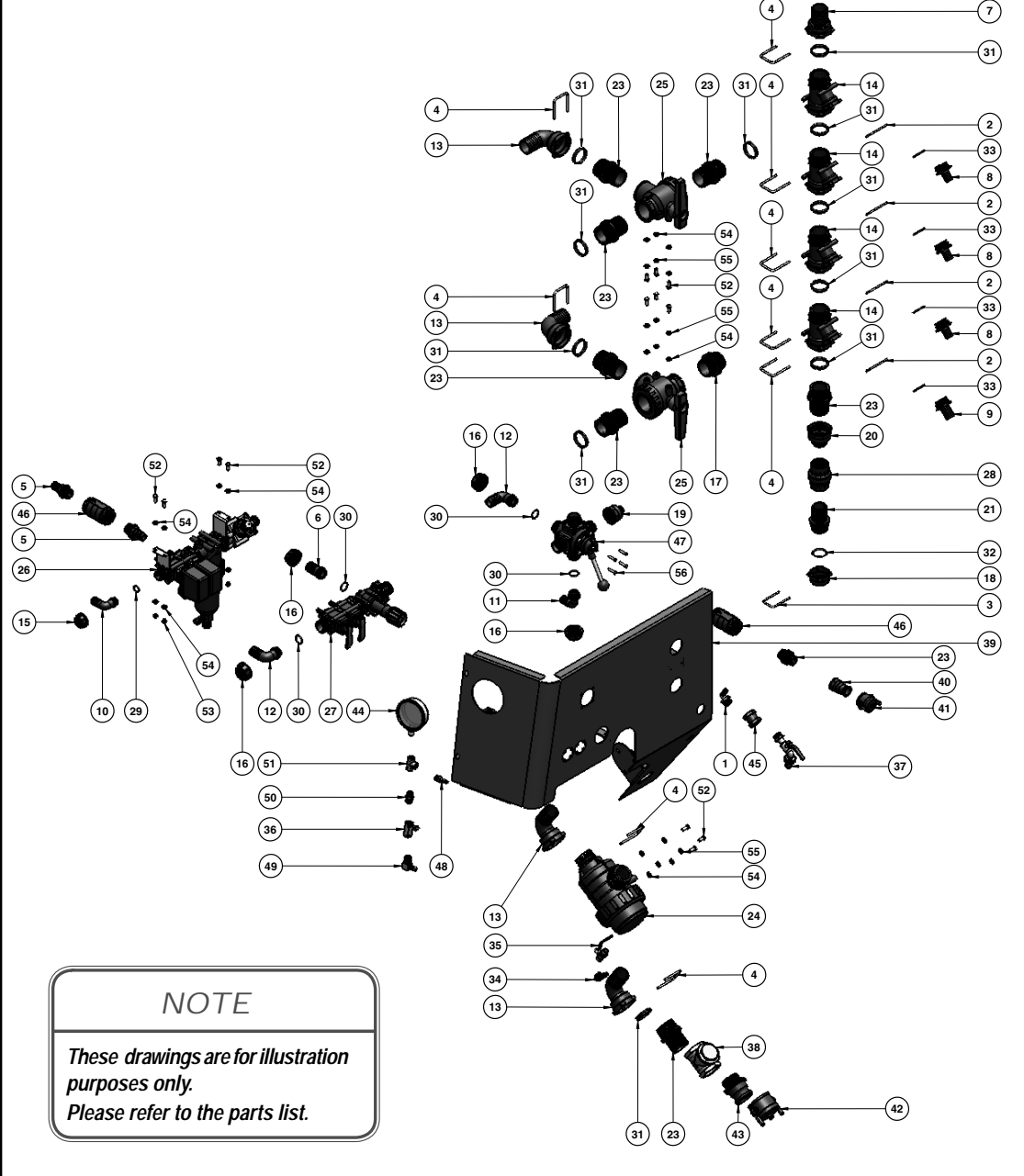


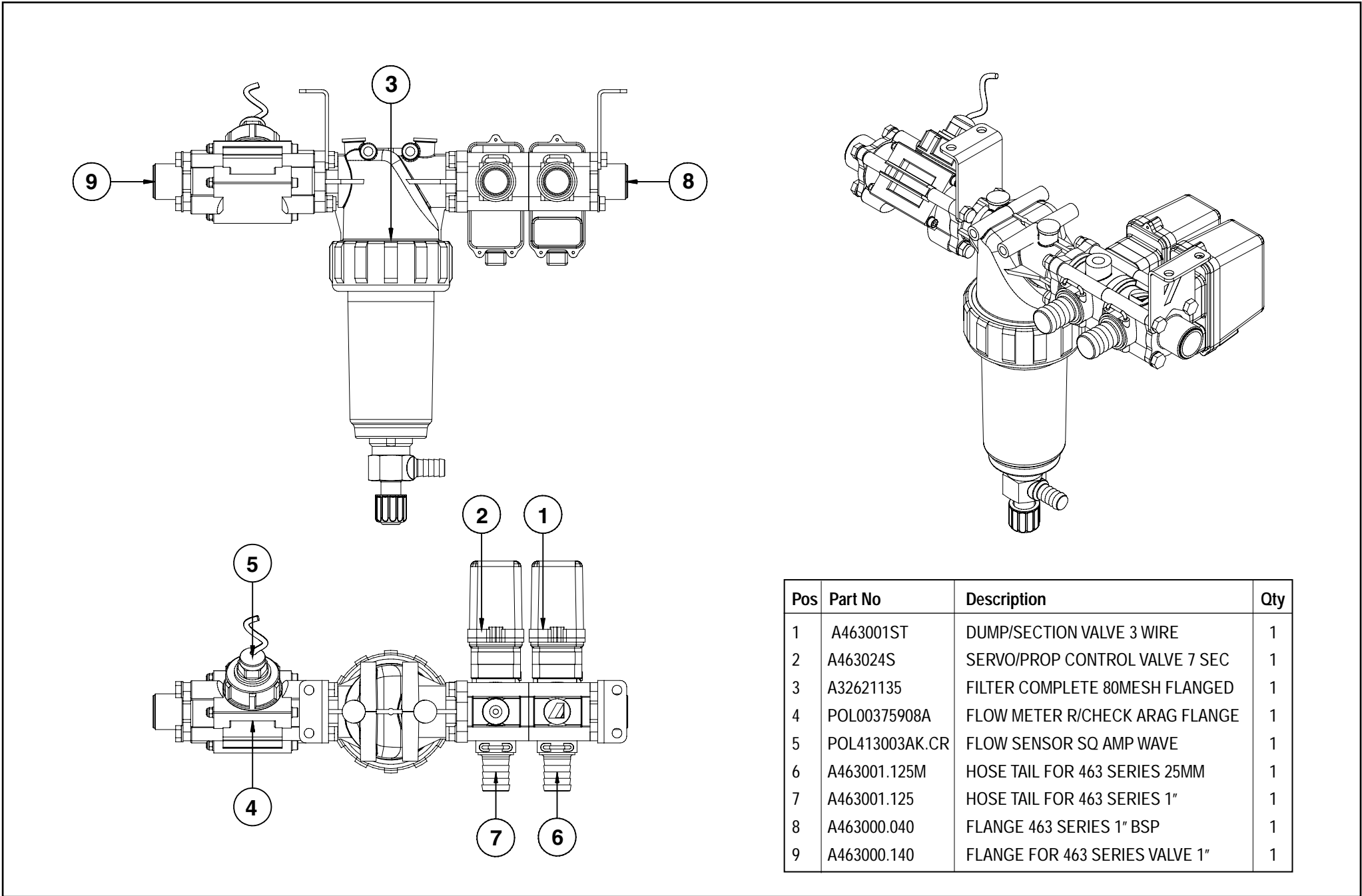
Pos	Part No	Description	Qty
1	A463024S	Complete Valve	1
2	A4653925S	Motor	1
3	A463020.130	Regulator Stem Kit	1
4	A463001.125	Tail/Seat	1
5	A461511.040	Clip	1

Flowmeter Assembly



Pos	Part No	Description	Qty
1	POL00375908A	Complete Valve	1
2	POL41316399	Rapid Check Turbine Assembly	1
3	POL413003AK.CR	Sensor with Plug	1

	Pos	Part No	Description	Qty
 <div data-bbox="181 1283 539 1474"> <p>NOTE</p> <p><i>These drawings are for illustration purposes only. Please refer to the parts list.</i></p> </div>	1	A-EL3412	ELBOW 3/4" BSPM X 1/2" BARB	1
	2	A010005	INLET FORK	4
	3	A010006	FORK 453 SERIES	1
	4	A010007	FORK D.5 INTERN.59	9
	5	A103425	HOSETAIL MALE 1" X 1"	2
	6	A106533	TAIL 1 1/4" TO 32MM	1
	7	A1090750	HOSETAIL T7F D.50	1
	8	A1091525	HOSETAIL T5M D.25	3
	9	A1091530	HOSETAIL T5F D.30	1
	1	0 A116425	ELBOW 0.25 FOR FLY	1
	11	A116525	ELBOW 1 1/4" TO 25MM HOSE	1
	12	A116533	ELBOW 1 1/4" - 32MM HOSE	2
	13	A1190750	ELBOW T7F D.50	4
	14	A179275	MANIFOLD 3 WAY T7	4
	15	A200040	FLY NUT 1"	1
	16	A200050	FLY NUT 1 1/4"	4
	17	A20502070	NIPPLE 2"	1
	18	A219060	END CAP T6F	1
	19	A245035	REDUCER 3/4" MALE - 1 1/4" FEMALE	1
	20	A245067	REDUCER 1 1/2" MALE - 2" FEMALE	1
	21	A2491661	BULKHEAD T6M 1 1/2" M BSP	1
	23	A2491771	BULKHEAD T7M 2" MALE	7
	23	A250040	NIPPLE 1"	1
	24	A3160F3	FILTER SUCTION T7 50MM	1
	25	A454237	BALL VALVE POLY 2" 3 WAY	2
	26	A463CCRO15	SERVO DUMP FLOW METER ASSEMBLY	1
	27	A465CCRO01	MANUAL PRV 2 TAPS	1
	28	A504015	NON RETURN VALVE 1 1/2" FEMALE	1
	29	AG10041	O RING 1"	1
	30	AG10051	O RING 1 1/4"	4
	31	AG11017	O RING	22
	32	AG11023	O RING	1
	33	AG11063	O RING EPDM	4
	34	B163.604.4	ELBOW 10MM 90DEG C/W 1/2" WING NUT 1	
	35	B165.1501.4	BALL VALVE 1/2" X 3/8" RH	1
	36	BALL12F2M	BALL VALVE MINI 1/2" FF 2 WAY	1
	37	BALL34BIB	BALL BIBCOCK 3/4"	1
	38	BP-112A	SWING CHECK VALVE 50MM BRASS	1
	39	BP-650-4	CONTROL PANEL PINTO	1
	40	K-100-A	CAMLOCK 1" FEMALE THREAD "A" POLY	1
	41	K-100-CAP	CAMLOCK 1" CAP "DC" POLY GLASS	1
	42	K-200-CAP	CAMLOCK 2" CAP "DC" POLY GLASS	1
	43	K-200-F	CAMLOCK 2" MALE THREAD "F" POLY	1
	44	L-G1611	GAUGE 100MM 0-1600KPA 3/8" B/E	1
	45	PH4322	SOCKET 3/4"	1
	46	PH5023	NON RETURN VALVE 1"	2
	47	POLVTD31300	POLMAC 1 1/4" 5 WAY VALVE	1
	48	TFA3838	TAIL BRASS 3/8" BSPM X 3/8" TAIL	1
	49	TFEL1212	ELBOW 1/2" BSPM X 1/2" TAIL	1
	50	TFM1238	NIPPLE 1/2" X 3/8" BRASS	1
	51	TFT3838FF	TEE 3/8" BSPF BRASS	1
	52	M8X20	M8 X 20 SET SCREW HT ZP	13
	53	M8NNUT	M8 NYLOC NUT HT ZP	4
	54	M8FWASHER	M8 FLAT WASHER ZP	17
	55	M8SWASHER	M8 SPRING WASHER ZP	9
	56	M6X30BHSCREW	M6 X 30 BUTTON HEAD SCREW S/S	4





Drain Valve 2"



Pos	Part No	Description	Qty
1	A454137	Valve Complete	1
2	A454236.050	Tap Handle	1
3	BJHB200-90	Tail	1



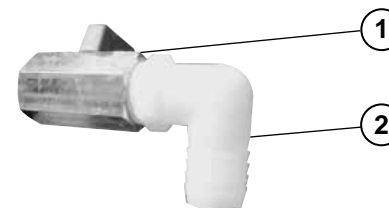
Tank Selector Valve 1½"



Pos	Part No	Description	Qty
1	A454236	Valve Complete	1
2	A454236.050	Tap Handle	1



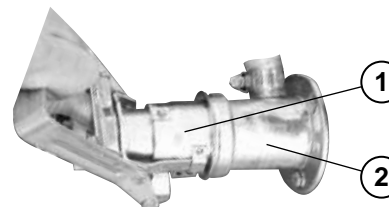
Boom Flushing Tap



Pos	Part No	Description	Qty
1	BALL12F2M	Valve Complete	1
2	BJHB050/075-90	Elbow	1



Enviro-Transfer Taps (if fitted)

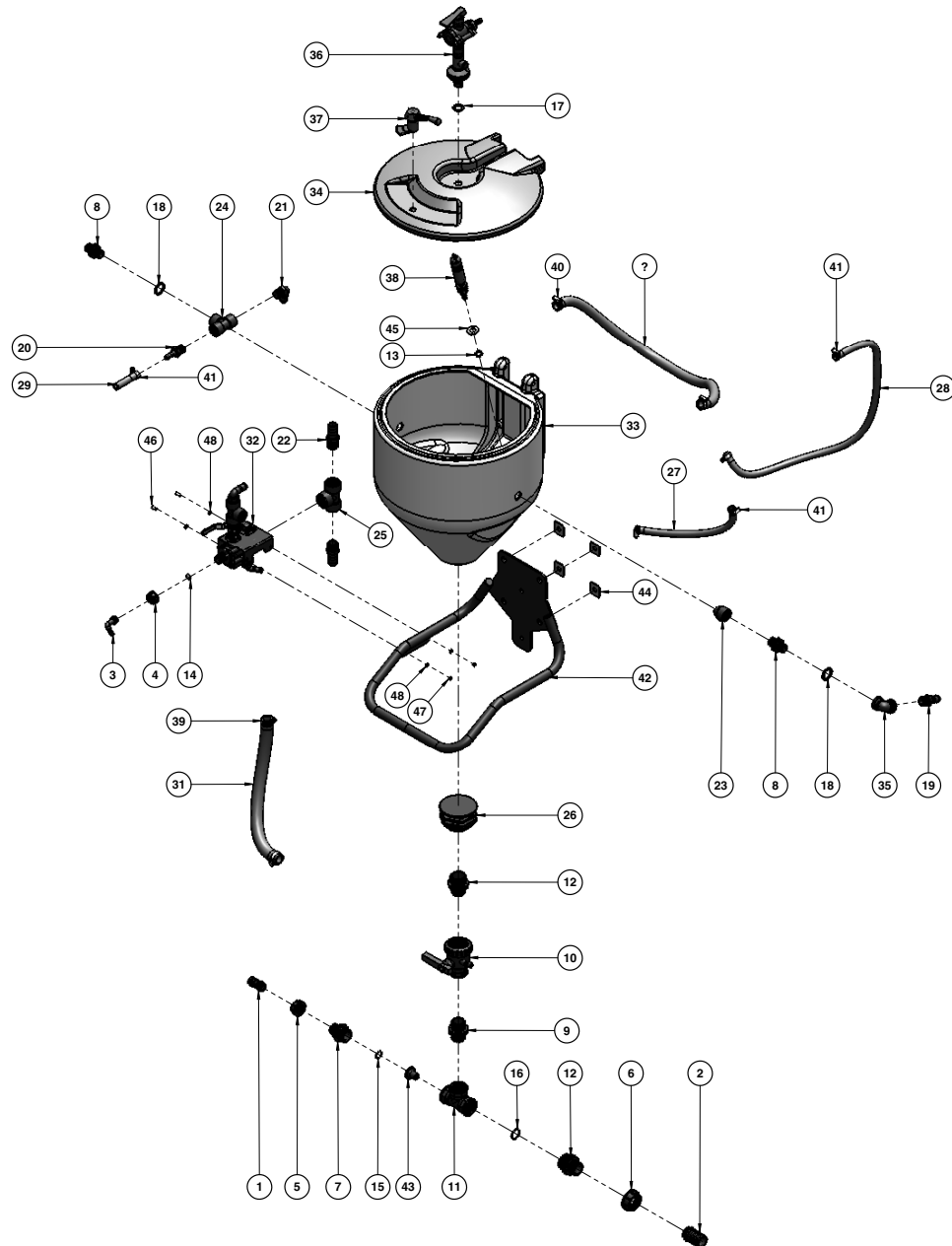


Pos	Part No	Description	Qty
1	L-H9562	Male Coupler	1
2	L-H9556	Female Rinsing Socket	1

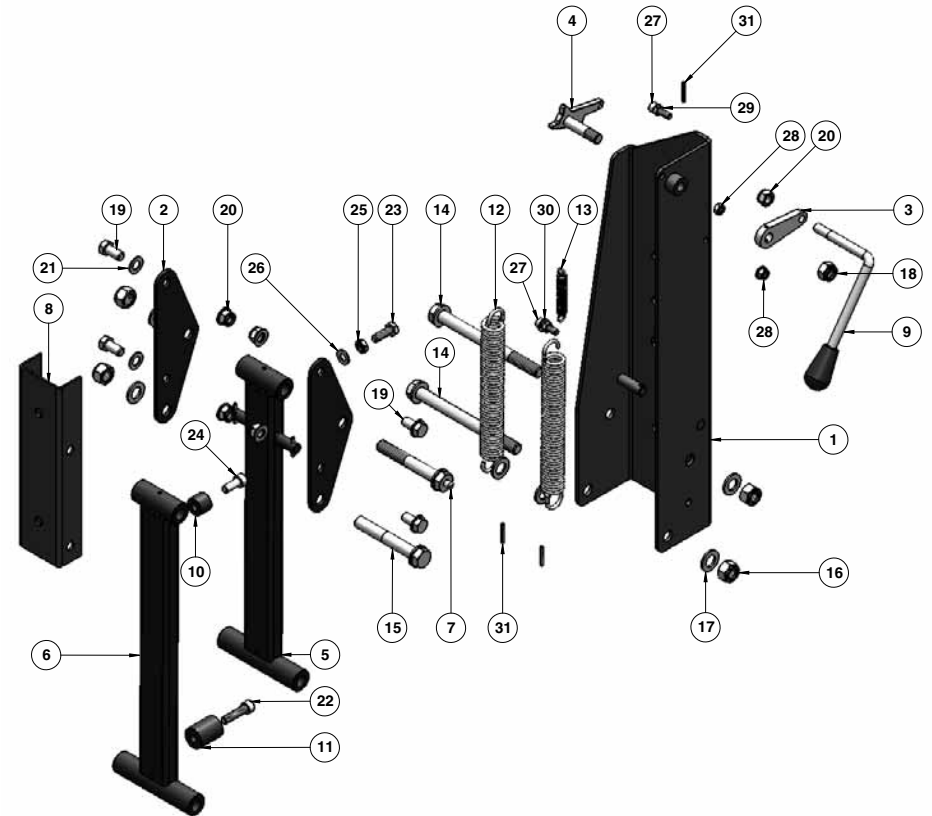
Chem E Flush Assembly

Assembly Drawings & Parts

60 litre ChemeFlush Part No: L-H9351A



Drop Down Assembly Part No: L-H9355A



Section 7

Chem E Flush Assembly

Pos	Part No	Description	Qty
	<u>L-H9351A</u>	<u>60 litre ChemeFlush</u>	
1	A106425	TAIL 1" TO 25MM	1
2	A106640	TAIL 1 1/2" TO 40MM	1
3	A116313	ELBOW D13 FOR FLY NUT 3/4"	1
4	A200030	FLY NUT 3/4"	1
5	A200040	FLY NUT 1"	1
6	A200060	FLY NUT 1 1/2"	1
7	A240045	NIPPLE 1"-1 1/4" REDUCING	1
8	A250030	NIPPLE 3/4"	2
9	A250050	NIPPLE 1 1/4"	1
10	A454135	BALL VALVE POLY 1 1/4" 2 WAY	1
11	A1302050	TEE 1 1/4"	1
12	A2402065	REDUCER NIPPLE 1 1/2"-1 1/4"	2
13	AG4000B	FLAT SEAL 5/8" EPDM	1
14	AG10031	O RING 3/4"	1
15	AG10041	O RING 1"	1
16	AG10061	O RING 1 1/2"	1
17	AG40002	FLAT SEAL 1/2" EPDM	1
18	AG40003	FLAT SEAL 3/4" EPDM	2
19	BJHB075	HOSEBARB 3/4" NPT X 3/4" BARB	1
20	BJHB075-050	HOSEBARB 3/4" NPT X 1/2" BARB	1
21	BJHB075-90	ELBOW 3/4" NPT X 3/4" BARB	1
22	BJHB100	HOSEBARB 1"NPT X 1" BARB	2
23	BJSLO75-90	ELBOW 3/4" MALE FEMALE	1
24	BJTEE075	TEE 3/4" FEMALE	1
25	BJTEE100	TEE FEMALE THREADED 1" NPT	1
26	BJTF150AV	ANTI VORTEX FITTING 1 1/2"	1
27	HPW12 12MM	HOSE	1
28	HPW12 12MM	HOSE	1
29	HPW12 12MM	HOSE	1
30	HPW20 20MM	HOSE	1
31	HPW25 25MM	HOSE	1
32	KB-1003A-1 60LT	CHEM-E-FLUSH MANIFOLD	1
33	P60C-1 60LT	CHEMIFLUSH TANK	1
34	P60C-2	LID	1
35	PH4622	ELBOW 3/4" FEMALE	1
36	POL6340839P.CRO	RINSING NOZZLE WITH 1/2" TAIL	1
37	POL63402999	LEVER HANDLE CHEM-E--FLUSH	1
38	POL63408499	RINSING NOZZLE	1
39	TR1HC	HOSE CLAMP 25MM 1" WORM DRIVE	2
40	TR34HC	HOSE CLAMP 20MM 3/4" WORM DRIVE	2

Pos	Part No	Description	Qty
41	TR12HC	HOSE CLAMP 20MM 1/2" WORM DRIVE	5
42	UP-105AB	CHEM-E-FLUSH MOUNTING BRKT SERIES 2	1
43	UP-116	NOZZLE 8.5 VENTURI CHEM E PLUS	1
44	40SQWASHER	40MM SQUARE WASHER	4
45	.75SSWASHER	3/4" STAINLESS STEEL WASHER	1
46	M6X16 M6 X 16	BOLT HT ZP	2
47	M6NNUT	M6 NYLOC NUT	2
48	M6FWASHER	M6 FLAT WASHER ZP	4
	<u>L-H9355A</u>	<u>Drop Down Assembly</u>	
1	L-H9355A-1	MAIN FRAME	1
2	L-H9355A-2	HINGE PLATE	2
3	L-H9355A-3	LEVER	1
4	L-H9355A-4	LOCK PLATE	1
5	L-H9355A-5	ARM, INNER	1
6	L-H9355A-6	ARM, OUTER	1
7	L-H9355A-7	LOCK PIN	1
8	L-H9355A-8	BOLTING CHANNEL	1
9	L-H9355A-9	LOCK HANDLE	1
10	L-H9355A-10	STOPPER, TOP	1
11	L-H9355A-11	STOPPER, BOTTOM	1
12	L-H9355A-12	SPRING 4.5 X 210 45 COILS	2
13	L-H9355A-13	SPRING 1.4 X 60 38 COILS	1
14	M16X180	M16 X 180 BOLT HT ZP	2
15	M16X110	M16 X 110 BOLT HT ZP	1
16	M16NNUT	M16 NYLOC NUT HT ZP	4
17	M16FWASHER	M16 FLAT WASHER ZP	10
18	M14NNUT	M14 NYLOC NUT HT ZP	1
19	M12X25	M12 X 25 SET SCREW HT ZP	4
20	M12NNUT	M12 NYLOC NUT HT ZP	5
21	M12FWASHER	M12 FLAT WASHER ZP	8
22	M10X40HEADSCREW	M10 X 40 ALLEN HEAD SCREW HT ZP	1
23	M10X30	M10 X 30 HEX HEAD BOLT HT ZP	1
24	M10X25HEADSCREW	M10 X 25 ALLEN HEAD SCREW HT ZP	1
25	M10HHNUT	M10 HEX HALF NUT HT ZP	1
26	M10FWASHER	M10 FLAT WASHER ZP	1
27	M8X25HEADSCREW	M8 X 25 ALLEN HEAD SCREW HT ZP	2
28	M8NNUT	M8 NYLOC NUT HT ZP	2
29	M8HHNUT	M8 HEX HALF NUT HT ZP	2
30	M8FWASHER	M8 FLAT WASHER ZP	2
31	ROLLPIN4	ROLL PIN DIAMETER 4	5

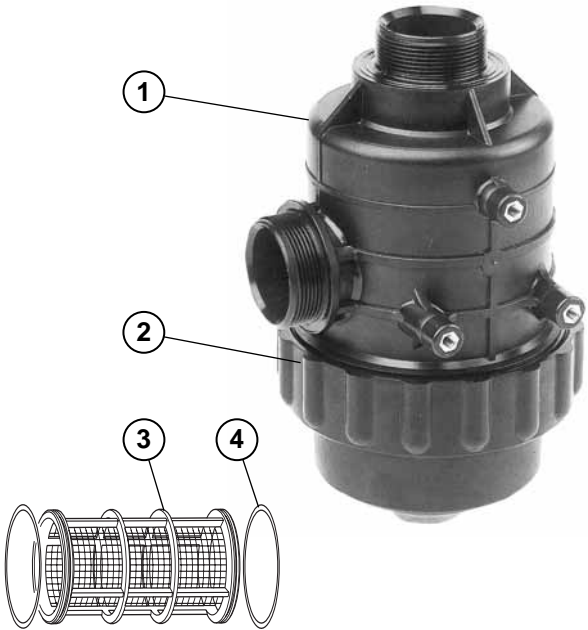


Suction Filter
(shown above
on 3000 litre Pinto)



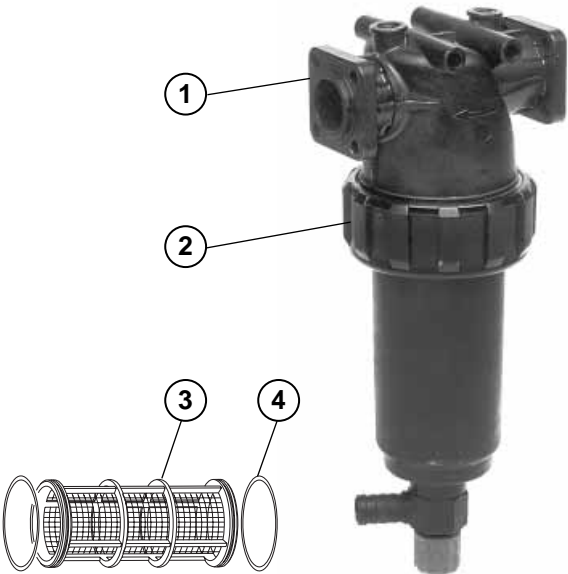
Pressure Filter
(shown left
on 3000 litre Pinto)

Suction Filter

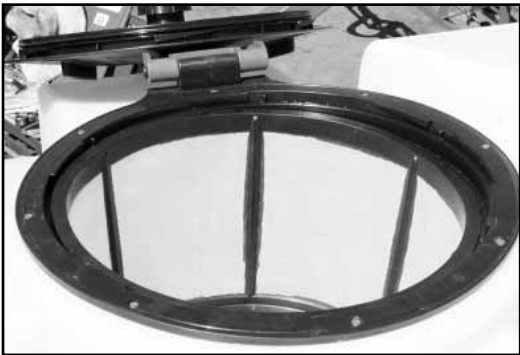


Pos	Part No	Description	Qty
1	A316 173	Filter Complete	1
2	A316000.050	Main Seal	1
3	A316003.030	Screen - internal	1
4	A316300.60	Screen O-Rings	2

Pressure Filter



Pos	Part No	Description	Qty
1	A32621135	Filter Complete	1
2	AG10090	Main Seal	1
3	A3260035.030	Screen - internal	1
4	AG10052	Screen O-Rings	2



Tank Lid & Basket

Lid



Pos	Part No	Description	Qty
1	A356060	Lid Complete	1
2	A356660.020	O-Ring/Seal	1

Basket

Part No: A300.0134



Foam & Rinse Tank Lids



Lid

Pos	Part No	Description	Qty
1	A354010	Foam Tank Lid (if fitted)	1
2	A3510040	Water Tank Lid	1
3	A504203	Breather	1

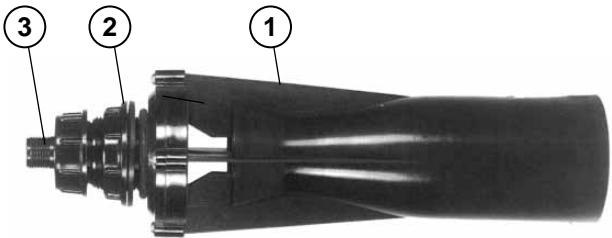


Tank Rinsing Jet & Agitator

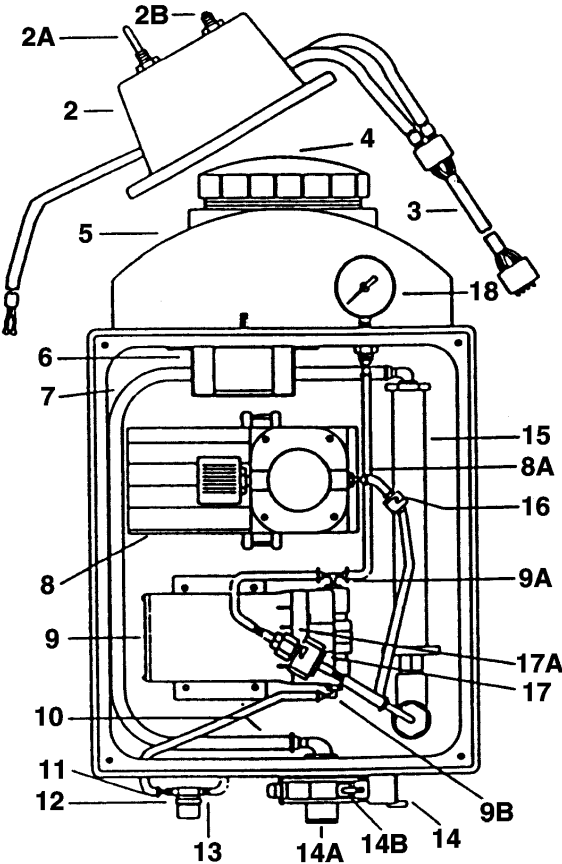
Tank Rinse Jet

Pos	Part No	Description	Qty
1	POL63408399	Tank Rinsing Jet	1

Agitator



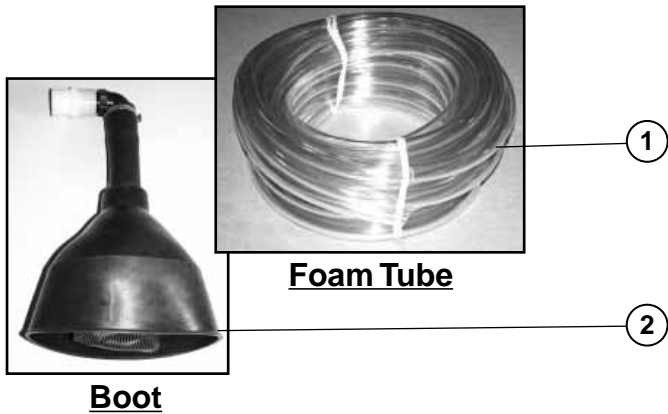
Pos	Part No	Description	Qty
1	A502 163	Agitator Complete	1
2	A200050	Fly nut	1
3	A502163.900	Agitator Jet	1



Pos	Part No	Description
2	RHAA116	Cab control
2A	RHCB-DPDT	Toggle switch
2B	RHCB-BKR25	Breaker, 25 amp
4	RHTLS-6SL	Tank lid, 6'
4	RH4-TLA-5T-LID	Tank lid, 6' (Willmar)
5	RH10437-A	Tank, 14 Gallon
5	RHACE001	Tank, 19 Gallon (Willmar)
6	RHAA485\	Speed control
7	RHVR34	Tubing, 3/4"
8	RHAA427	Air pump assembly
Note: Includes the complete air pump assembly with hose barbs and electrical plug-in installed. Common parts for the air pump are as follows.		
	RHMKR-RK415	Air pump repair kit
	RH60001	Air filter
	RH654831	Intake reed valve
	RH621102	Exhaust reed valve
	RH627076	Brush set
8A	RHEL-14	¼ mpt x ¼" elbow barb
9	RHAA122	Liquid pump assy FL2100-647
Note: Complete assembly with hose barbs and electrical plug in. Common parts for the liquid pump are as follows.		
	RHSHU9439506	Diaphragm kit, Santoprene
9A	RHSHU9439107	Bypass valve kit, 60 psi, Viton
9B	RHEL-3814	Elbow barb
	RHA-14	Elbow barb
11	RH3350-0082A	Elbow barb
12		Straight barb
		Strainer, 80 mesh

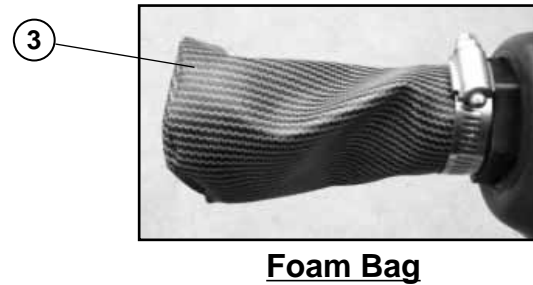
Pos	Part No	Description
12	RH3800-0047	80 Mesh screen
	RH3351-0020	Strainer bowl
	RH1700-0090	Strainer gasket
13	RHSE-12PP	Street El
14	RHAA429	Directo-Valve assembly
Note: This valve includes the fittings that are attached directly to it. For a valve only, order a 144-1-3.		
	RHAB144-1-3	Valve Repair Kit, 144-1-3
14A	RHF-34PP	Plug
14B	RHEL-1234PP	Elbow barb
16	RHMKR-CHK14	Check valve, air
17	RHAA358	Check valve assembly
17A	RH4916-34	Orifice plate, #34
	RH4193A-PP2-100SS	Check strainer, 100 mesh
18	RH18999R	Seat gasket
	RHGF60	Pressure gauge
PARTS NOT SHOWN		
	RHF0005	Cabinet lid (RHS)
	RHAA366SS	Stainless steel tank skid

Foam Boot & Foam Tubing



Foam Boot, Foam Tubing & Salamander Boost

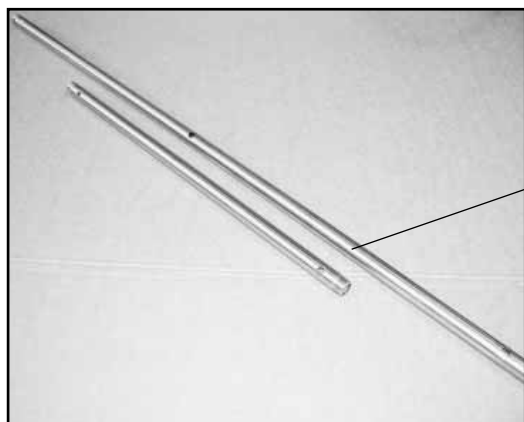
Pos	Part No	Description	Qty
1	HCVT20	Foam Tube	20m
2	RHAA120	Foam Boot Complete	2
3	RHSJ000	Foam Bag	2



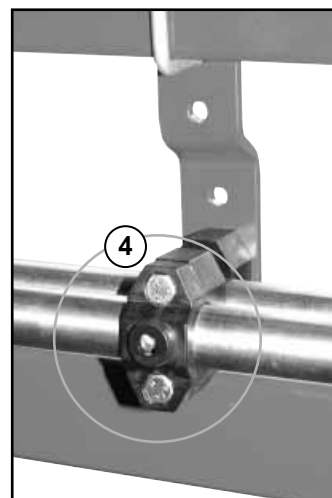
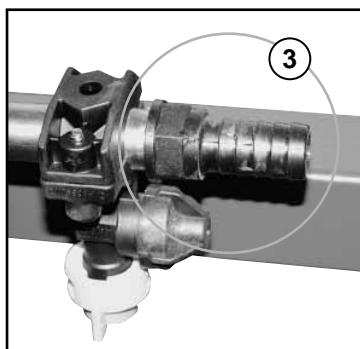
Foam Tube Kits

Note: Standard length 20m coil,
see Part # 1 (at left)

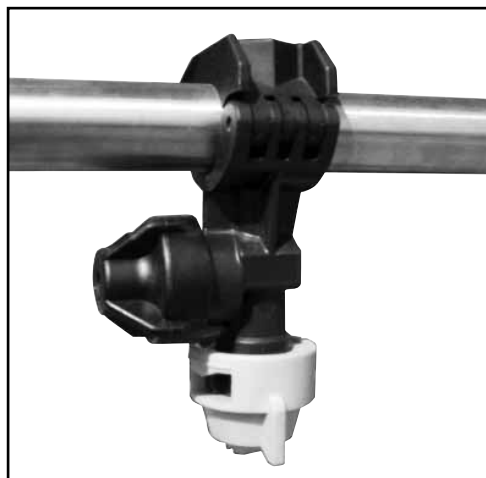
Boom Fittings



Boom Tube



- | | |
|-----------------|-------------------------------|
| 1 Boom Tube: | |
| a) 2-hole | Part No: GB550200500 |
| b) 3-hole | Part No: GB550300500 |
| c) 4-hole | Part No: GB550400500 |
| d) 5-hole | Part No: GB550500500 |
| e) 6-hole | Part No: GB550600500 |
| 2 See page 7.11 | Boom flush tap
(not shown) |
| 3 Hosetail | Part No: A100219 |
| 4 Clamp | Part No: A425130 |



Single Non-Drip Nozzle Body

Single Nozzle Body



Part No: QJ17560A-½-NYB
(For Cap & Seal see next page)

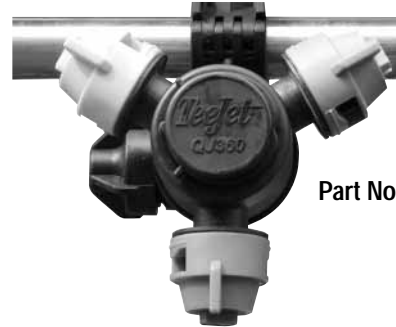


Triplex Nozzle Body



Cap & Seal

Triplex Nozzle Complete



Part No: QJ363B-¼-NYB (does not include caps & seals)

Cap & Seal

1 Cap & Seal for XR Teejets

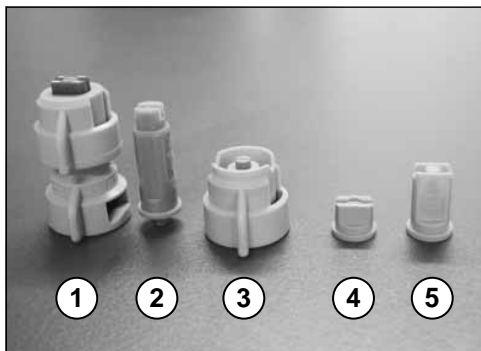
Part No: 25612-*3-NYR

2 Cap & Seal for AI Teejets

Part No: 25298-*3-NYR

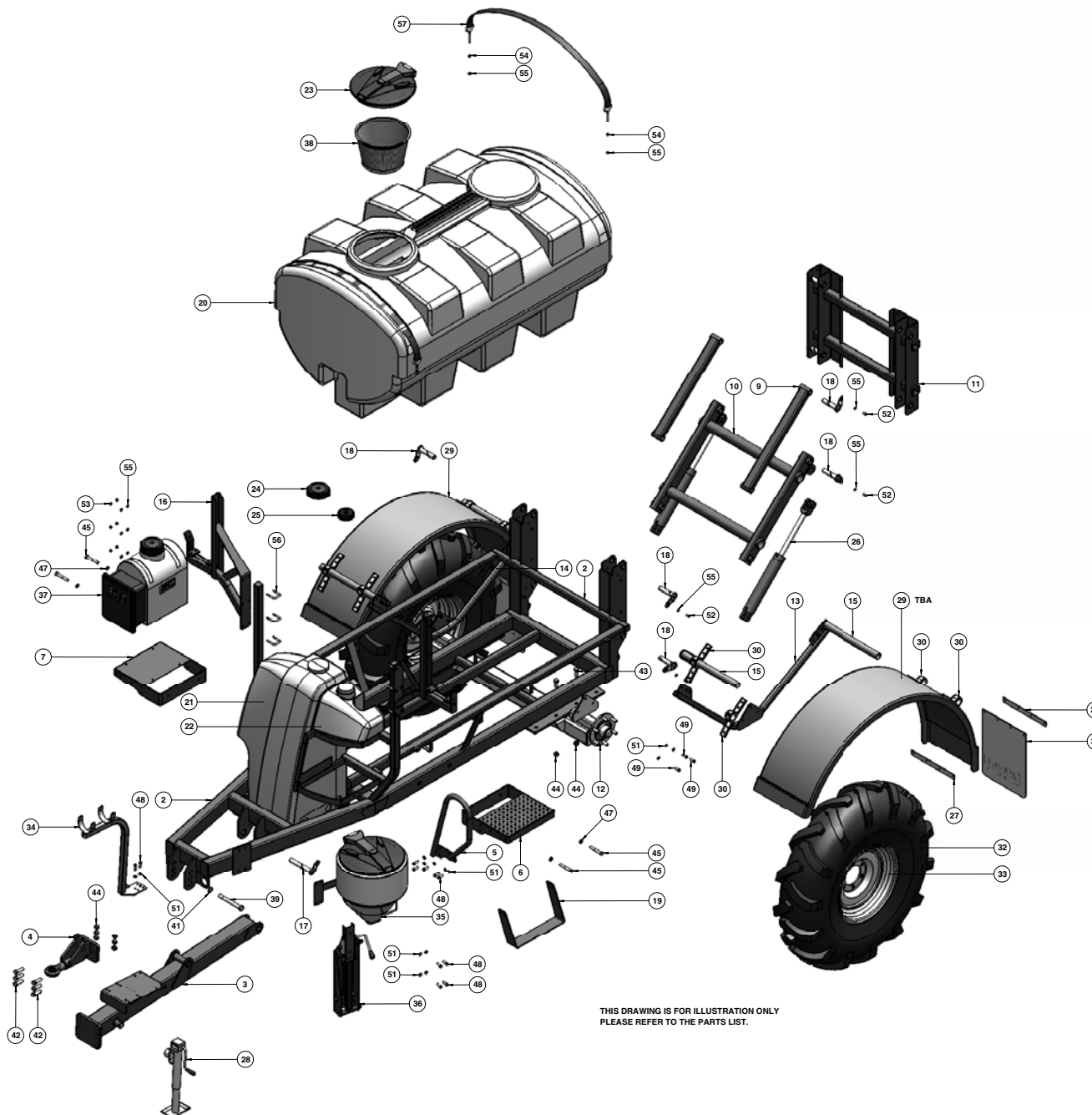
* Colors of Quick TeeJet Caps	Color Code
Black	1
White	2
Red	3
Blue	4
Green	5
Yellow	6
Brown	7
Orange	8

Nozzle Jet Selection

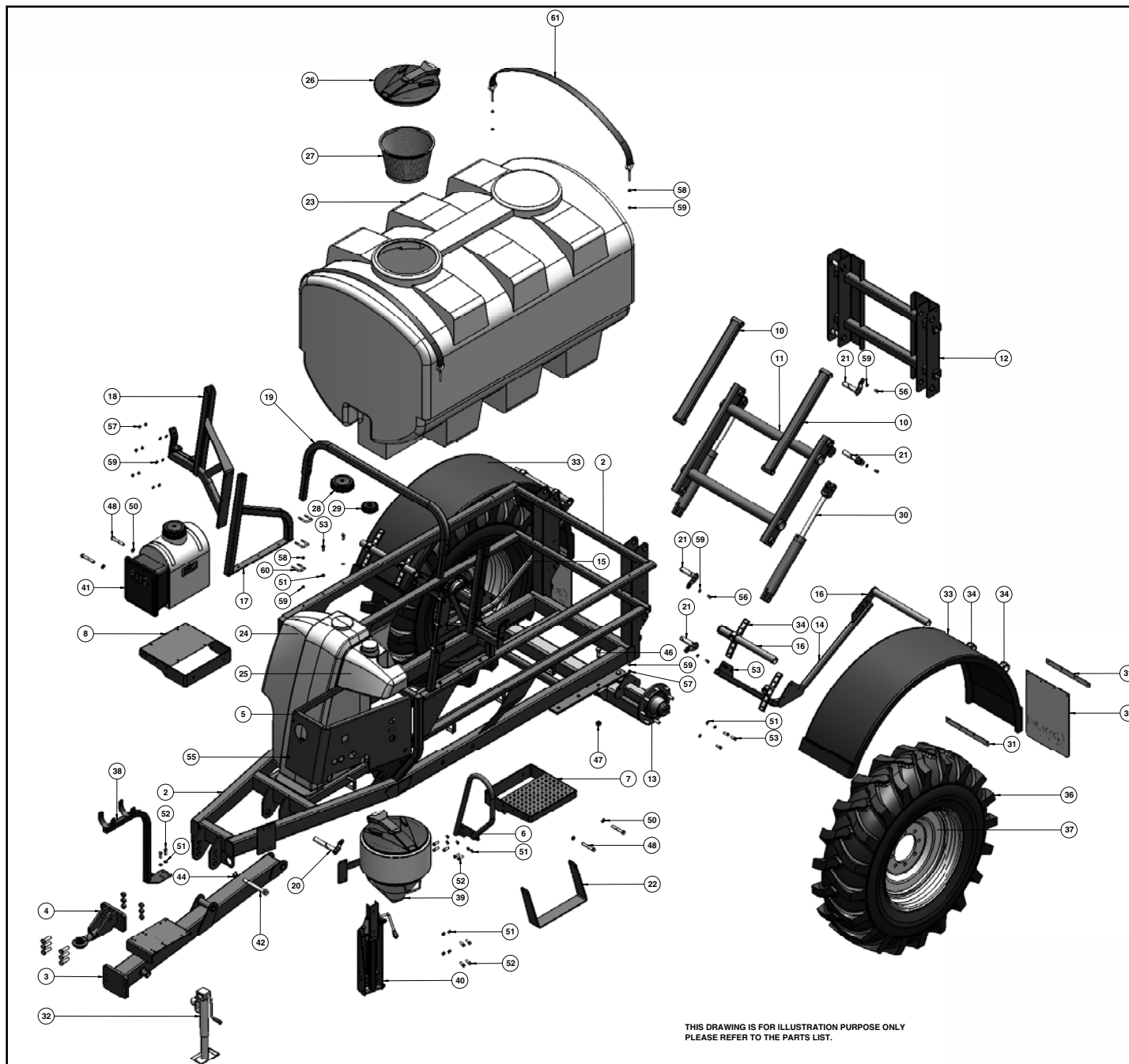


Pos	Part No	Description
1	TDCFFC1100* (*1.5, 2, 3, 4, 5)	Turbodrop Nozzle
2	AI1100* - VS (*1.5, 2, 3, 4, 5)	Teejet AI Nozzle
3	TCC1100* (*1.5, 2, 3, 4, 5)	Tip Cap (Ceramic)
4	XR1100*-VK (*1.5, 2, 3, 4, 5)	Standard Ceramic Teejet
5	TDAM - 1100* (*1.5, 2, 3, 4, 5)	Air Mix Nozzle

**(numbers in brackets denote code for size)*



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	BP-651	PINTO 2000 CHASSIS XP	1
3	BP-650-2	DRAWBAR PINTO	1
4	BP-650-3	BOLT ON TOW HITCH	1
5	BP-650-5	HANDLE BAR PINTO	1
6	BP-650-6	STEP PINTO	1
7	BP-650-7	BRACE FOAM MARKER PINTO	1
8	BP-650-8	PARALLEL HINGE PINTO	2
9	BP-650-9	PARALLELOGRAM ARM	2
10	BP-650-10	PARALLELOGRAM H FRAME	1
11	BP-650-11	CENTRE FRAME PARALLELOGRAM	1
12	BP-650-12-1	AXLE PONY 1800 TRACK	1
13	BP-650-13L	MUDGUARD L.H.	1
14	BP-650-13R	MUDGUARD R.H.	1
15	BP-650-14	MUDGUARD ARM	4
16	BP-650-16	BOOM PARK BRACKET	2
17	BP-650-18	PIN, 30MM X 220MM	1
18	BP-700-9AA	PIN, 30MM X 155MM	8
19	BP-601-4A	BOLT ON STEP EXTENSION	1
20	P2000-RAW	2000LT POLYTHELENE TANK	1
21	P275-RAW	275LT PINTO FLUSH TANK	1
22	P15-RAW	15LT HAND WASH TANK	1
23	A356060	LID HINGED 180 DEGREE 455MM	1
24	A354010	LID 6" C/W SPRING BREATHER & OUTLET	1
25	A354030	LID 4" C/W BREATHER & SEAL	1
26	HP-018A	2.5 X 12 DISPLACEMENT CYLINDER	2
27	BP-180	MUDFLAP PLATE	4
28	BP-184 or BP-184A	JOCKEY STAND LONG	1
29	BP-526B	MUDGUARD POLY R1000	2
30	BP-531A	MUDGUARD MOUNTING BRACKET	8
31	BP-542	MUDFLAP WHITE SHORT	2
32	BP-524DT14.9x28	14.9 X 28 SUREGRIP	2
33	BP-524DW	WHEEL 6 X 205 PCD	2
34	HP-024-7	CABLE HOLDER BRACKET	1
35	L-H9351A	60 LITRE CHEMICAL MIXING UNIT MK2	1
36	L-H9355A	DROPDOWN BRACKET VERSION 2	1
37	R-M2012	RHS FOAM MARKER 55LT	1
38	A300130	FILTER BASKET LARGE 254MM DEEP	1
39	M24X210	M24 X 210 BOLT HT ZP	1
40	M24NNUT	M24 NYLOC NUT ZP	1
41	M24FWASHER	M24 FLAT WASHER ZP	2
42	M20X65	M20 X 65 SET SCREW HT ZP	6
43	M20X55	M20 X 55 SET SCREW HT ZP	4
44	M20NNUT	M20 NYLOC NUT HT ZP	10
45	M16X110	M16 X 110 BOLT HT ZP	4
46	M16NNUT	M16 NYLOC NUT HT ZP	4
47	M16FWASHER	M16 FLAT WASHER ZP	8
48	M12X40	M12 X 30 SET SCREW HT ZP	13
49	M12X35	M12 X 35 SET SCREW HT ZP	14
50	M12NNUT	M12 NYLOC NUT HT ZP	27
51	M12FWASHER	M12 FLAT WASHER ZP	54
52	M10X20	M10 X 20 SET SCREW HT ZP	9
53	M10NNUT	M10 NYLOC NUT HT ZP	16
54	M10HNUT	M10 HEX NUT HT ZP	4
55	M10FWASHER	M10 FLAT WASHER ZP	29
56	XBMBB50	U-BOLT 50MM X 10	6
57	XSTRAP2000	TANK STRAP 2000MM	2



THIS DRAWING IS FOR ILLUSTRATION PURPOSE ONLY
PLEASE REFER TO THE PARTS LIST.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	BP-650	PINTO 3000 CHASSIS XP	1
3	BP-650-2	DRAWBAR PINTO	1
4	BP-650-3	BOLT ON TOW HITCH	1
5	BP-650-4	CONTROL PANEL PINTO	1
6	BP-650-5	HANDLE BAR PINTO	1
7	BP-650-6	STEP PINTO	1
8	BP-650-7	BRACE FOAM MARKER PINTO	1
9	BP-650-8	PARALLEL HINGE PINTO	2
10	BP-650-9	PARALLELOGRAM ARM	2
11	BP-650-10	PARALLELOGRAM H FRAME	1
12	BP-650-11	CENTRE FRAME PARALLELOGRAM	1
13	BP-650-12-0	AXLE PINTO 2000 TRACK	1
14	BP-650-13L	MUDGUARD L.H.	1
15	BP-650-13R	MUDGUARD R.H.	1
16	BP-650-14	MUDGUARD ARM	4
17	BP-650-15	PARKING BRACE PINTO	2
18	BP-650-16	BOOM PARK BRACKET	2
19	BP-650-17	BOOM PARK SUPPORT	1
20	BP-650-18	PIN, 30MM X 220MM	1
21	BP-700-9AA	PIN, 30MM X 155MM	8
22	BP-601-4A	BOLT ON STEP EXTENSION	1
23	P3000-RAW	3000LT POLYTHELENE TANK	1
24	P275-RAW	275LT PINTO FLUSH TANK	1
25	P15-RAW	15LT HAND WASH TANK	1
26	A356060	LID HINGED 180 DEGREE 455MM	1
27	A300130	FILTER BASKET LARGE 254MM DEEP	1
28	A354010	LID 6" C/W SPRING BREATHER & OUTLET	1
29	A354030	LID 4" C/W BREATHER & SEAL	1
30	HP-018A	2.5 X 12 DISPLACEMENT CYLINDER	2
31	BP-180	MUDFLAP PLATE	4
32	BP-184 or BP-184A	JOCKEY STAND LONG	1
33	BP-526B	MUDGUARD POLY R1000	2
34	BP-531A	MUDGUARD MOUNTING BRACKET	8
35	BP-542	MUDFLAP WHITE SHORT	2
36	BP-507DTA	18.4 X 30 14 PLY SUREGRIP	2
37	BP-507DWW	WHEEL 15 X 30 12MM 8 X 275 PCD	2
38	HP-024-7	CABLE HOLDER BRACKET	1
39	L-H9351A	60 LITRE CHEMICAL MIXING UNIT MK2	1
40	L-H9355A	DROPDOWN BRACKET VERSION 2	1
41	R-M2012	RHS FOAM MARKER 55LT	1
42	M24X210	M24 X 210 BOLT HT ZP	1
43	M24NNUT	M24 NYLOC NUT ZP	1
44	M24FWASHER	M24 FLAT WASHER ZP	2
45	M20X65	M20 X 65 SET SCREW HT ZP	6
46	M20X55	M20 X 55 SET SCREW HT ZP	4
47	M20NNUT	M20 NYLOC NUT HT ZP	10
48	M16X110	M16 X 110 BOLT HT ZP	4
49	M16NNUT	M16 NYLOC NUT HT ZP	4
50	M16FWASHER	M16 FLAT WASHER ZP	8
51	M12FWASHER	M12 FLAT WASHER ZP	62
52	M12X40	M12 X 30 SET SCREW HT ZP	13
53	M12X35	M12 X 35 SET SCREW HT ZP	18
54	M12NNUT	M12 NYLOC NUT HT ZP	31
55	M10X25HEADSCREW	M10 X 25 ALLEN HEAD SCREW HT ZP	5
56	M10X20	M10 X 20 SET SCREW HT ZP	8
57	M10NNUT	M10 NYLOC NUT HT ZP	21
58	M10HNUT	M10 HEX NUT HT ZP	4
59	M10FWASHER	M10 FLAT WASHER ZP	39
60	XBMBB50	U-BOLT 50MM X 10	6
61	XSTRAP1770	TANK STRAP 1770MM	2

PART NO: BP-650-12-1 2000L SOLID AXLE



Pos	Part No	Description	Qty
1	BP-545B	STUB AXLE 80MM 8/275 PCD	2
2	MT10013	SPEED SENSOR MOUNTING BRACKET	1
3	BP-809-4	FLEXIBLE BUSH AIRRIDE SUSPENSION	2
4	HP-236CL-1A	RUBBER SPRING A560-65	2
5	HP-236CL-1A-1	BUSH 32x13.5x22.5 (<i>FOR RUBBER SPRING</i>)	2
6	MP-564	SHACKLE	2
7	BP-617A	ROPE	2
8	BP-607	SHOCK ABSORBER	2

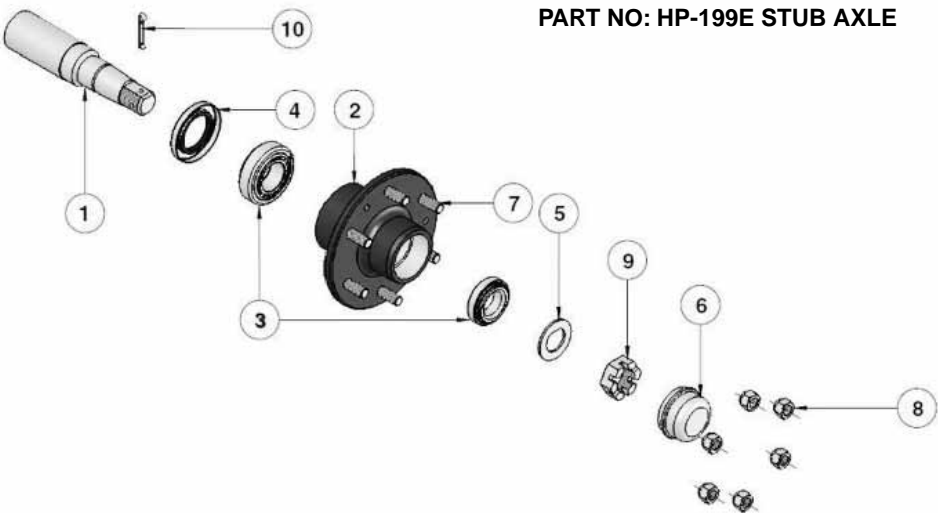
NOTE

*Drawing are for illustration purposes only.
Please refer to the parts list.*

NOTE

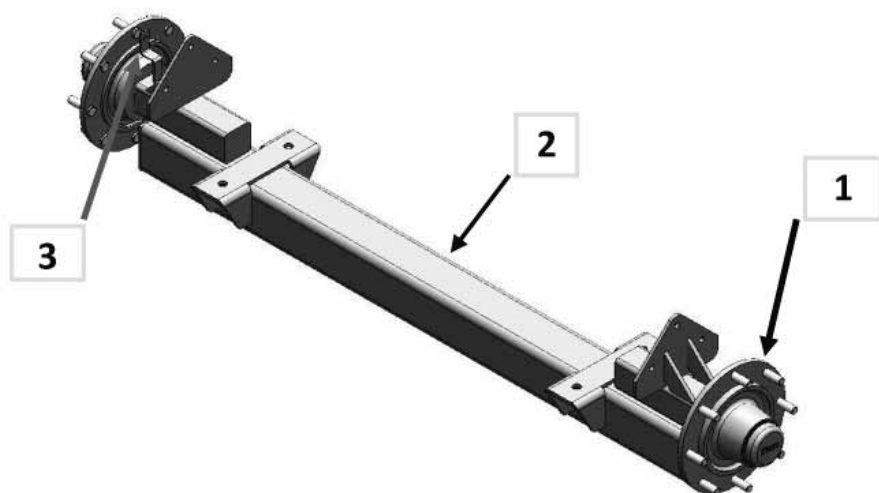
*Parts in Italics are non-
stocked items and may need
to be ordered.*

PART NO: HP-199E STUB AXLE



Pos	Part No	Description	Qty
1	HP-199E-1	STUB 75SQ x 395LG	
2	HP-199E-2	WHEELHUB 6/205 PCD	
3	HP-199E-3	BEARING KIT 32213/32210	
4	HP-199E-4	TRIPLE LIP SEAL 125 x 90 x 12mm	
4	HP-199E-4A	SEAL RING 70.5 x 90 x 16.5mm (<i>not shown</i>)	
4	HP-199E-4B	WEAR RING (<i>to suit T.L.S not shown</i>)	
5	N/A	N/A	
6	HP-199E-6	DUST CAP (<i>3 screws items 11 & 12</i>)	
7	HP-199F-7	WHEEL STUD M18 x 1.5 x 65	
8	HP-199F -8	WHEEL NUT M18 x 1.5	
9	HP-199E-9	SLOTTED/CASTLE NUT M39 x 2	
10	HP-199E-10	SPLIT PIN 60 x 6mm	
11	HP-199E-11	SOCKET HEAD CAP SCREW M8 x 30 (<i>not shown</i>)	
12	HP-199E-12	M8 RIB LOCK WASHERS (<i>not shown</i>)	

PART NO: BP-650-12-0 3000L SOLID AXLE



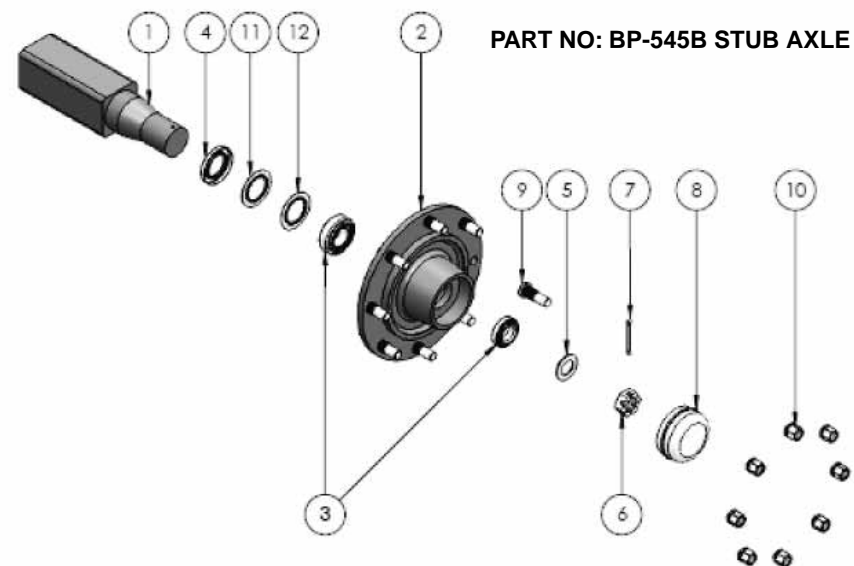
Pos	Part No	Description	Qty
1	BP-545B	STUB AXLE 80MM 8/275 PCD	2
2	BP-650-12	AXLE BEAM	1
3	MT10013	SPEED SENSOR MOUNTING BRACKET	1

NOTE

*Drawing are for illustration purposes only.
Please refer to the parts list.*

NOTE

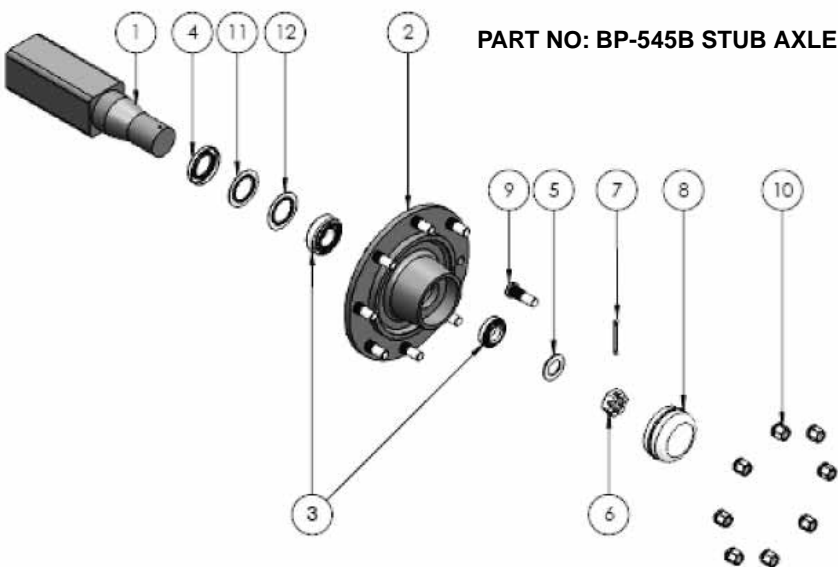
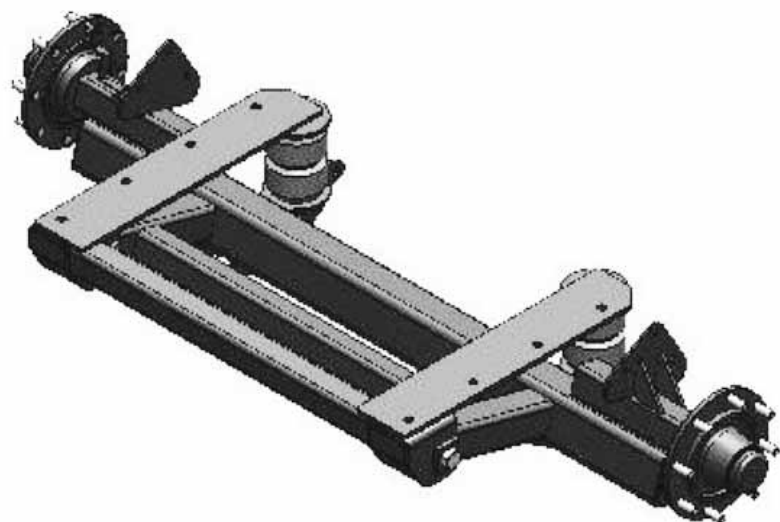
Parts in Italics are non-stocked items and may need to be ordered.



PART NO: BP-545B STUB AXLE

Pos	Part No	Description	Qty
1	<i>BP-545B-1</i>	<i>STUB 80SQ x 505LG</i>	
2	<i>BP-545B-2</i>	<i>WHEELHUB 8/275PCD</i>	
3	<i>BP-545B-3</i>	<i>BEARING KIT 302 10/302 14</i>	
4	HP-199E-4	TRIPLE LIP SEAL 125 x 90 x 12mm	
5	N/A	N/A	
6	HP-199E-9	SLOTTED/CASTLE NUT M39 x 2	
7	BP-532-7	SPLIT PIN 80 x 8MM	
8	HP-199E-6	DUST CAP 120mm (3 screws item 13 & 14)	
9	HP-199F-7	WHEEL STUD M18 x 1.5 x 65	
10	HP-199F -8	WHEEL NUT M18 x 1.5	
11	<i>BP-545B-11</i>	<i>SEAL RING 70.5 x 90 x 16.5mm</i>	
12	HP-199E-4B	WEAR RING (to suit triple lip seal)	
13	HP-199E-11	SOCKET HEAD CAP SCREW M8 x 30 (not shown)	
14	HP-199E-12	M8 RIB LOCK WASHER (not shown)	

PART NO: BP-650-12-0B PINTO 3000L AXLE RUBBER SUSPENSION



Pos	Part No	Description	Qty
1	BP-545B	STUB AXLE 80MM 8/275 PCD	2
2	MT10013	SPEED SENSOR MOUNTING BRACKET	1
3	BP-809-4	FLEXIBLE BUSH AIRRIDE SUSPENSION	2
4	HP-236CL-1A	RUBBER SPRING A560-65	2
5	HP-236CL-1A-1	BUSH 32x13.5x22.5 (for rubber spring)	2`
6	MP-564	SHACKLE	2
7	BP-617A	ROPE	2
8	BP-607	SHOCK ABSORBER	2

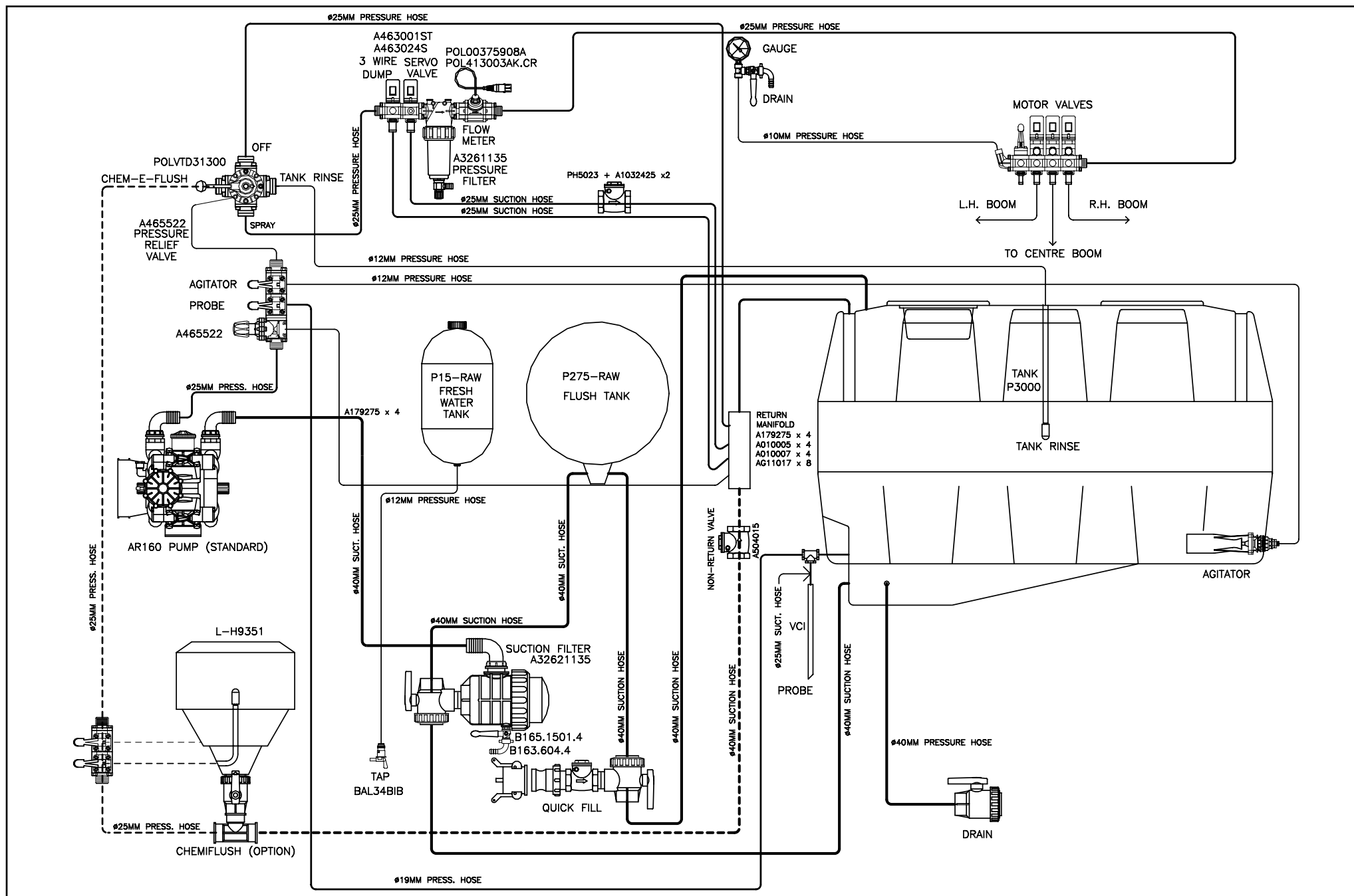
NOTE

Drawing are for illustration purposes only.
Please refer to the parts list.

NOTE

Parts in Italics are non-
stocked items and may need
to be ordered.

Pos	Part No	Description	Qty
1	<i>BP-545B-1</i>	<i>STUB 80SQ x 505LG</i>	
2	<i>BP-545B-2</i>	<i>WHEELHUB 8/275PCD</i>	
3	<i>BP-545B-3</i>	<i>BEARING KIT 30210/30214</i>	
4	HP-199E-4	TRIPLE LIP SEAL 125 x 90 x 12mm	
5	N/A	N/A	
6	HP-199E-9	SLOTTED/CASTLE NUT M39 x 2	
7	HP-199E-10	SPLIT PIN 60 x 6MM	
8	HP-199E-6	DUST CAP 120mm (3 screws item 13 & 14)	
9	HP-199F-7	WHEEL STUD M18 x 1.5 x 65	
10	HP-199F-8	WHEEL NUT M18 x 1.5	
11	HP-199E-4A	SEAL RING 70.5 x 90 x 16.5mm	
12	HP-199E-4B	WEAR RING (to suit triple lip seal)	
13	HP-199E-11	SOCKET HEAD CAP SCREW M8 x 30 (not shown)	
14	HP-199E-12	M8 RIB LOCK WASHER (not shown)	



MT9000 / 3 PIN BALL VALVES

WIRING CONFIGURATION FOR 24 PIN MT9000 BULKHEAD LOOM

4/12/2003
ALL WIRE 3mm
USO

CONSOLE CONNECTION	CONSOLE PIN ID	MT90LOOM/2 WIRE COLOUR	24 PIN CONNECTOR	24 PIN WIRE COLOUR	APPLIANCE	M.T. WIRE COLOUR	MT90LOOM/1 WIRE COLOUR	MT90LOOM/1 REAR CONNECTOR	ID COLOUR	CONNECTOR ID	MT90LOOM/3 REAR CONNECTOR	ID COLOUR
3 PIN	A	YELLOW 2.5mm	21	YELLOW 2.5mm	SPEED	RED	YELLOW 2.5mm	3 PIN	YELLOW	A	pulse	
3 PIN	B	GREEN 2.5mm	2	GREEN 2.5mm	SPEED	WHITE	GREEN 2.5mm	3 PIN	YELLOW	B	12v+	
3 PIN	C	BLUE 2.5mm	11	BLUE 2.5mm	SPEED	BLACK	BLUE 2.5mm	3 PIN	YELLOW	C	12v-	
10 PIN	A	GREEN/PURPLE	18	GREEN/PURPLE	FLOW	BROWN	GREEN/PURPLE	3 PIN	GREEN	A	pulse	
10 PIN	B	RED 2.5mm	16	RED 2.5mm	FLOW	RED	(RED)BLUE/BLACK	3 PIN	GREEN	B	12v+	RED NOT CONTD
10 PIN	C	ORANGE	9	ORANGE	FLOW	ORANGE	ORANGE	3 PIN	GREEN	C	12v-	
10 PIN	D	GREY	1	GREY	SERVO	YELLOW	GREY	mPm PLUG	GREY	1		
10 PIN	E	VIOLET	3	VIOLET	SERVO	GREEN	VIOLET	mPm PLUG	GREY	2		
10 PIN	F	BLUE/WHITE	5	BLUE/WHITE	BOOM 6	BLUE	BLUE/WHITE	10 PIN		H	mPm PLUG	BLUE #6
10 PIN	G	BROWN/YELLOW	19	BROWN/YELLOW	RELIEF	VIOLET	BROWN/YELLOW	4 PIN M	NOT CONNECTED	A	FILL FLOW	BROWN +
10 PIN	H	BLACK 2.5mm	4	BLACK 2.5mm	HOLD	GREY	BLACK	4 PIN M	NOT CONNECTED	B	FILL FLOW	BLUE -
10 PIN	J	BLUE/BLACK	13	BLUE/BLACK	PSI	WHITE	BLUE/BLACK	4 PIN M	NOT CONNECTED	C	FENCELINE	R H
10 PIN	K	BLACK/RED	8	BLACK/RED	PSI	BLACK	BLACK/RED	4 PIN M	NOT CONNECTED	D	FENCELINE	L H
7 PIN	A	WHITE 2.5mm	20	WHITE 2.5mm	BOOM 1	YELLOW	WHITE 2.5mm	10 PIN		A	mPm PLUG	YELLOW #1
7 PIN	B	ORANGE/BLUE	7	ORANGE/BLUE	BOOM 2	BROWN	ORANGE/BLUE	10 PIN		B	mPm PLUG	BROWN #2
7 PIN	C	BLUE/YELLOW	17	BLUE/YELLOW	BOOM 3	GREY	BLUE/YELLOW	10 PIN		C	mPm PLUG	GREY #3
7 PIN	D	PINK	14	PINK	BOOM 4	BLACK	PINK	10 PIN		D	mPm PLUG	BLACK #4
7 PIN	E	RED 6mm	12	ORANGE 4mm (10a FUSE)	POWER +ve	ORANGE	RED 4mm	10 PIN		F	mPm PLUG #1	
7 PIN	F	BROWN 2.5mm	10	BROWN 2.5mm	BOOM 5	RED	BROWN 2.5mm	10 PIN		E	mPm PLUG	RED #5
7 PIN	G	BLACK 6mm	24	GREEN 4mm	POWER -ve	BLUE	BLACK 4mm	10 PIN		G	mPm PLUG #2	
				To MT90LOOM/6 Relay		25	BLUE/BLACK	10 PIN		J		
				To MT90LOOM/6 Relay		26	BLACK/RED	10 PIN		K		
				From MT90LOOM/6 Relay		25	BLUE/BLACK	mPm PLUG	BLUE	2		
				From MT90LOOM/6 Relay		26	BLACK/RED	mPm PLUG	BLUE	1		
4 PIN	A	RED 4mm	22	RED 4mm	FOAM MARKER	WHITE	RED 4mm	4 PIN FM		A		
4 PIN	B	BLACK 4mm	15	BLACK 4mm	FOAM MARKER	RED	BLACK 4mm	4 PIN FM		B		
4 PIN	C	BLUE 4mm	6	BLUE 4mm	FOAM MARKER	GREEN	BLUE 4mm	4 PIN FM		C		
4 PIN	D	WHITE 4mm	23	WHITE 4mm	FOAM MARKER	BLACK	WHITE 4mm	4 PIN FM		D		



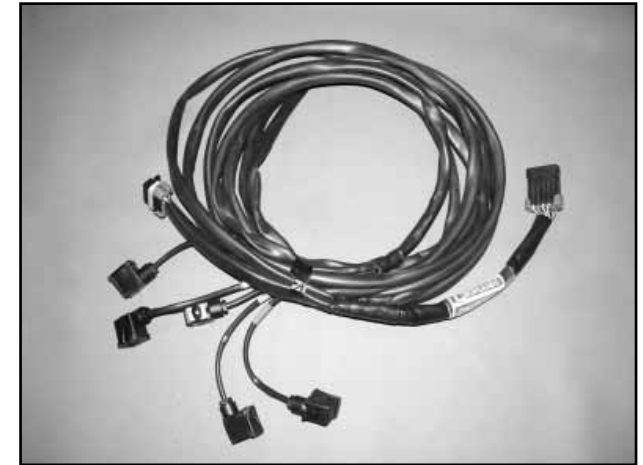
MT90LOOM/1

Main loom from rear of tractor to the sprayer, connects to control valves, foam marker etc & connects to MT90LOOM/2, MT90LOOM/3 & MT90LOOM/6.



MT90LOOM/2

Main loom from Spray controller to the rear of the cab. Carries plugs to connect controller & foam marker. Connects to MT90LOOM/1.



MT90LOOM/3

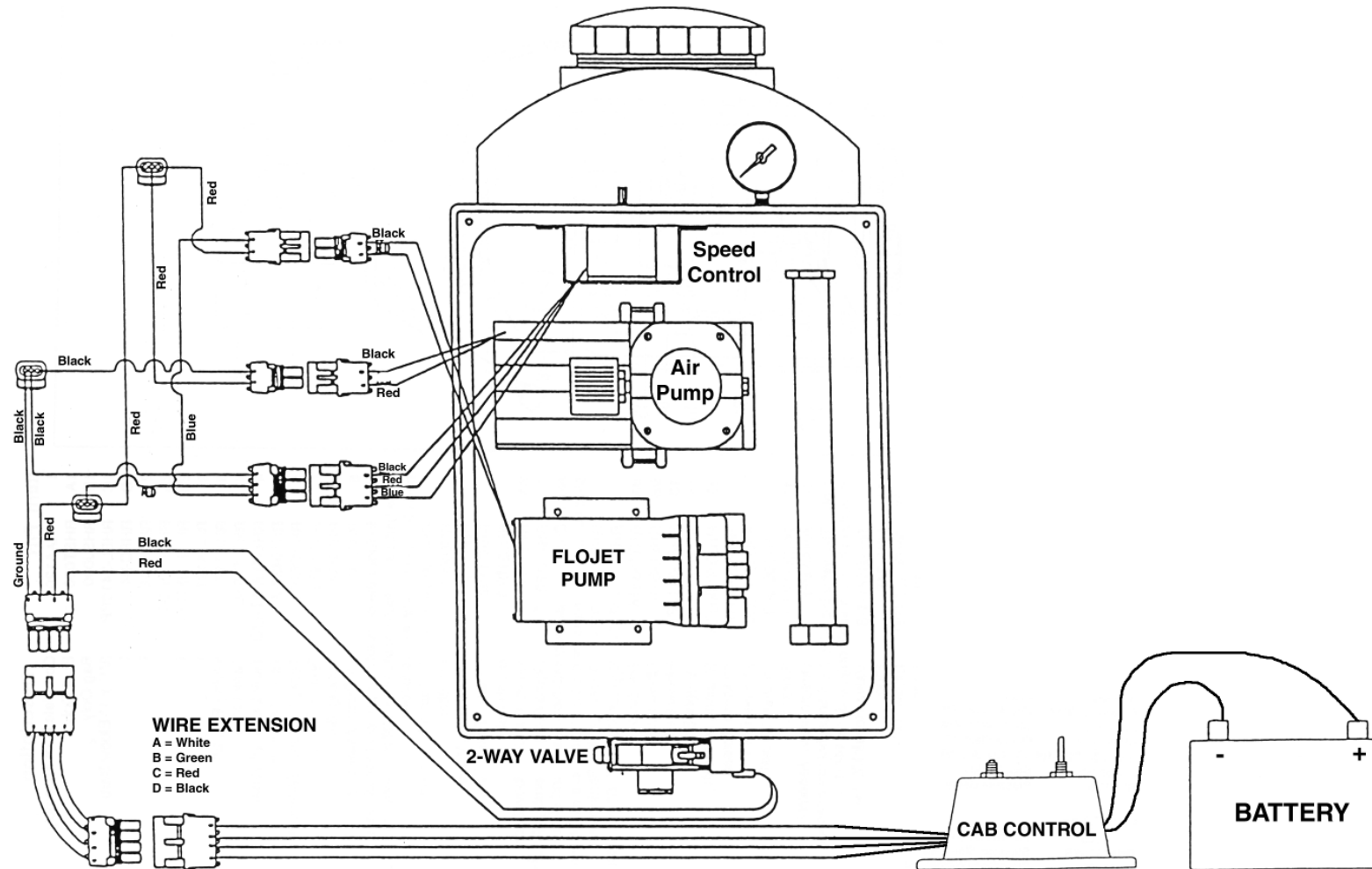
Extension loom that runs from front of sprayer, connected to MT90LOOM/1 to boom section control valves at rear of sprayer.

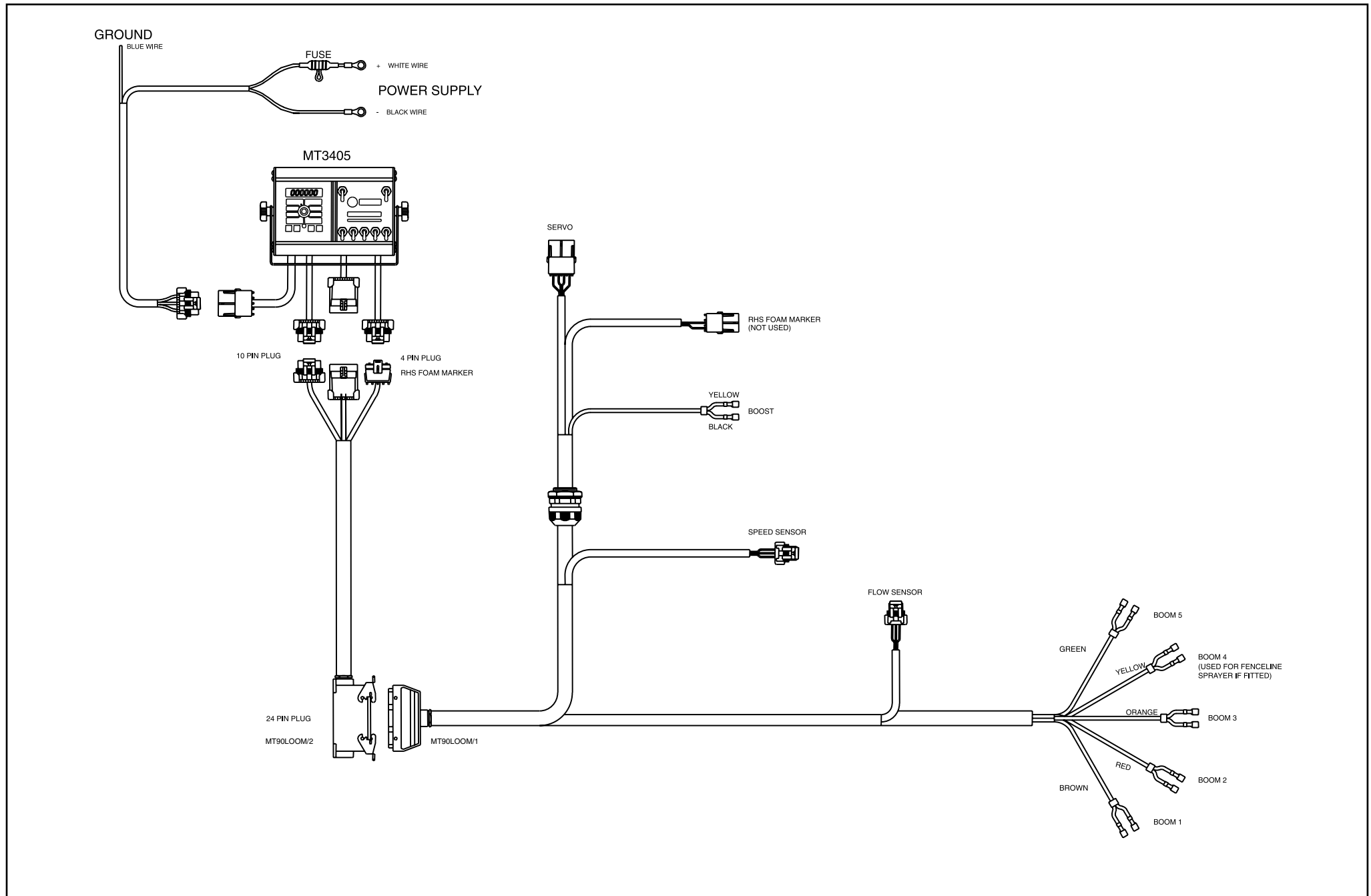


MT90LOOM/6

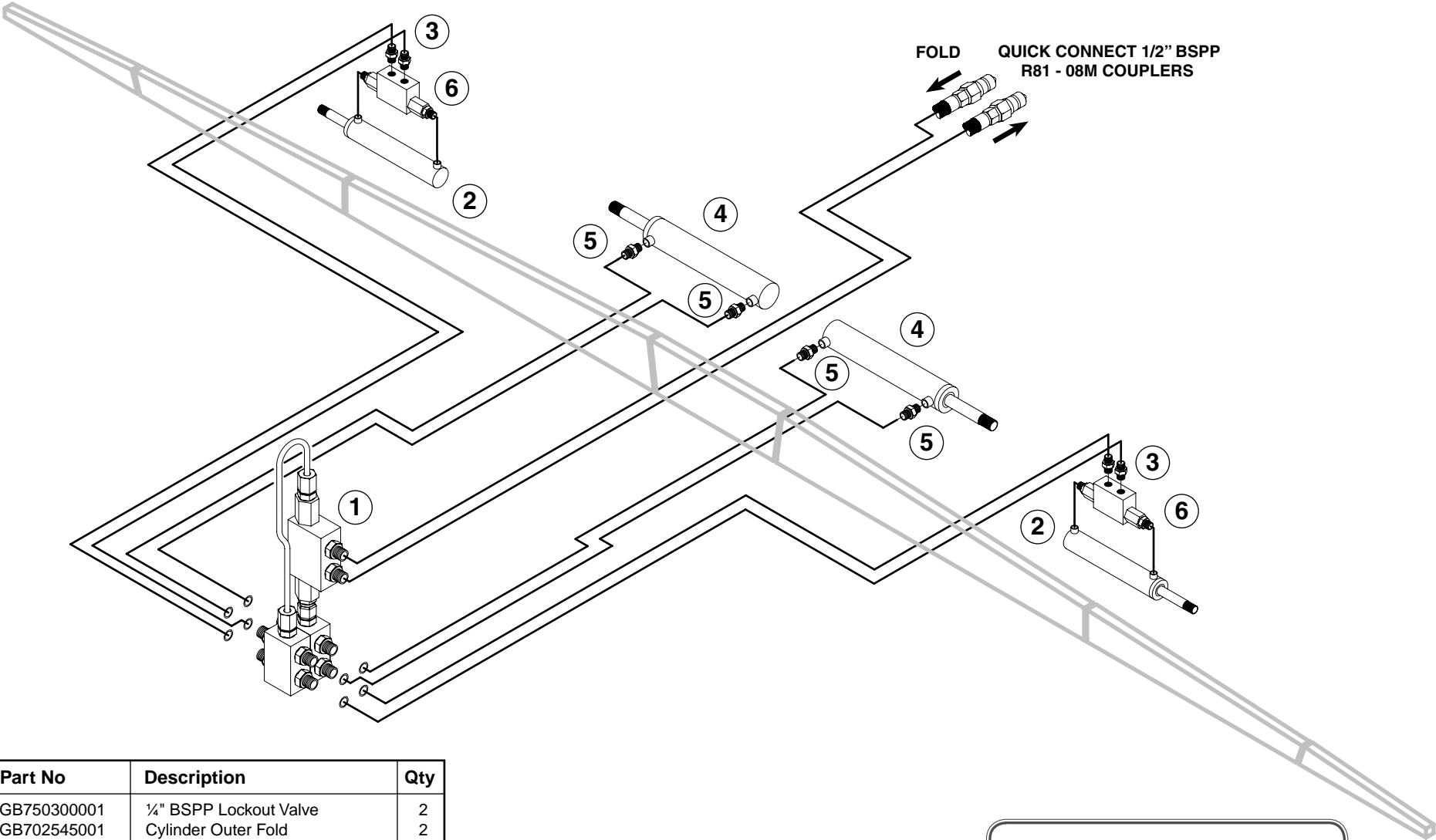
Relay box fitted on front of chassis under the working platform. Operates Dump valve from Controller.

Electrical Diagram - Optional Foam Marker Assembly Drawings & Parts





Standard Fold - 16/18/21m Boom Fold Option, Hydraulic Fold without Wing Lift Option

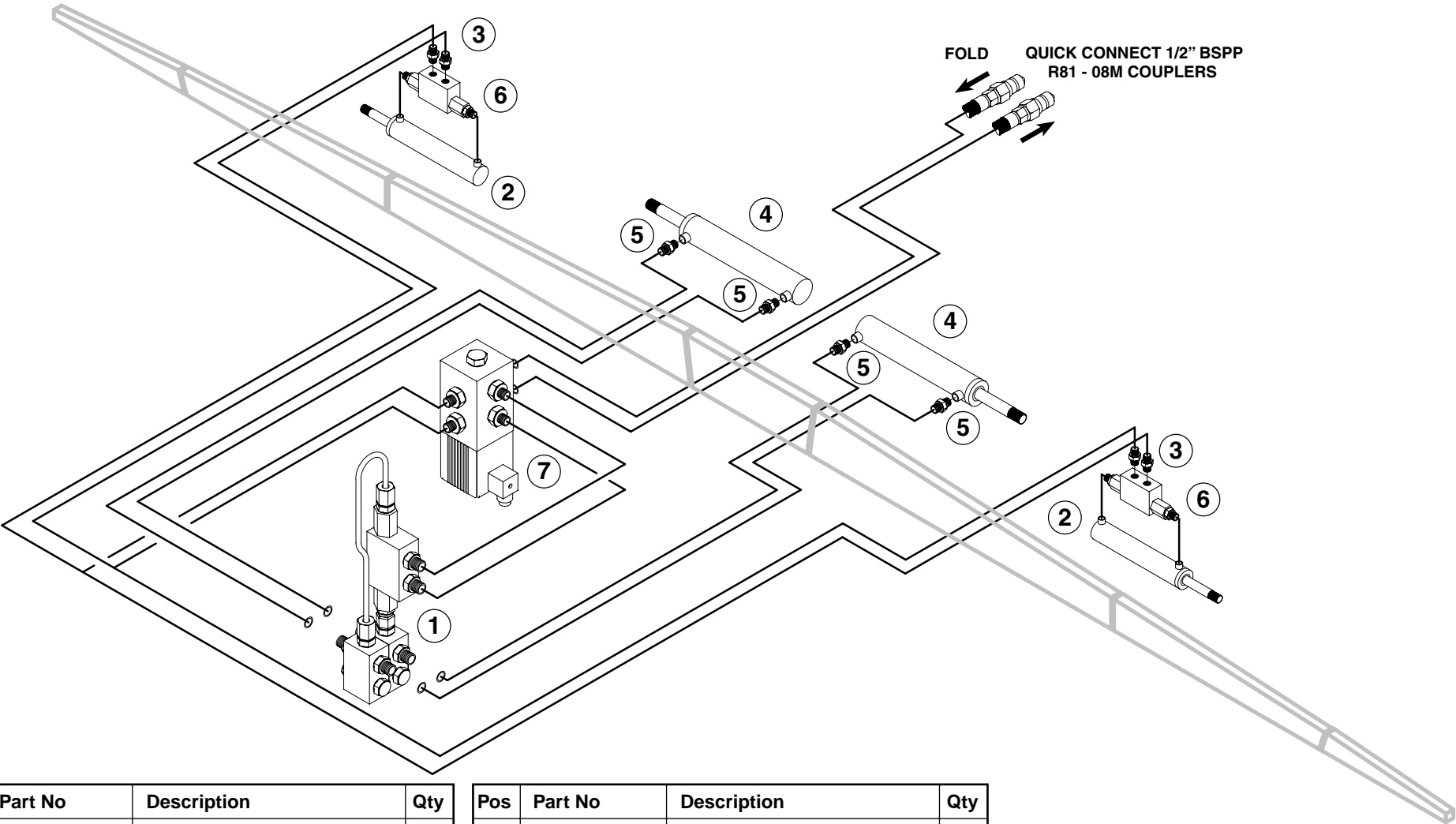


Pos	Part No	Description	Qty
1	GB750300001	1/4" BSPP Lockout Valve	2
2	GB702545001	Cylinder Outer Fold	2
2	GB996000176	Seal Kit Outer Fold Cylinder	2
3	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
4	GBBG024889	Cylinder Inner Fold	2
4	GBBG024892	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GB750300009	1/4" BSPP Lockout Valve (ST)	2

NOTE

*Drawing are for illustration purposes only.
Please refer to the parts list.*

Independent Outer Wing Fold - 16/18/21m Boom OWF Option, Hydraulic OWF without Winglift Option



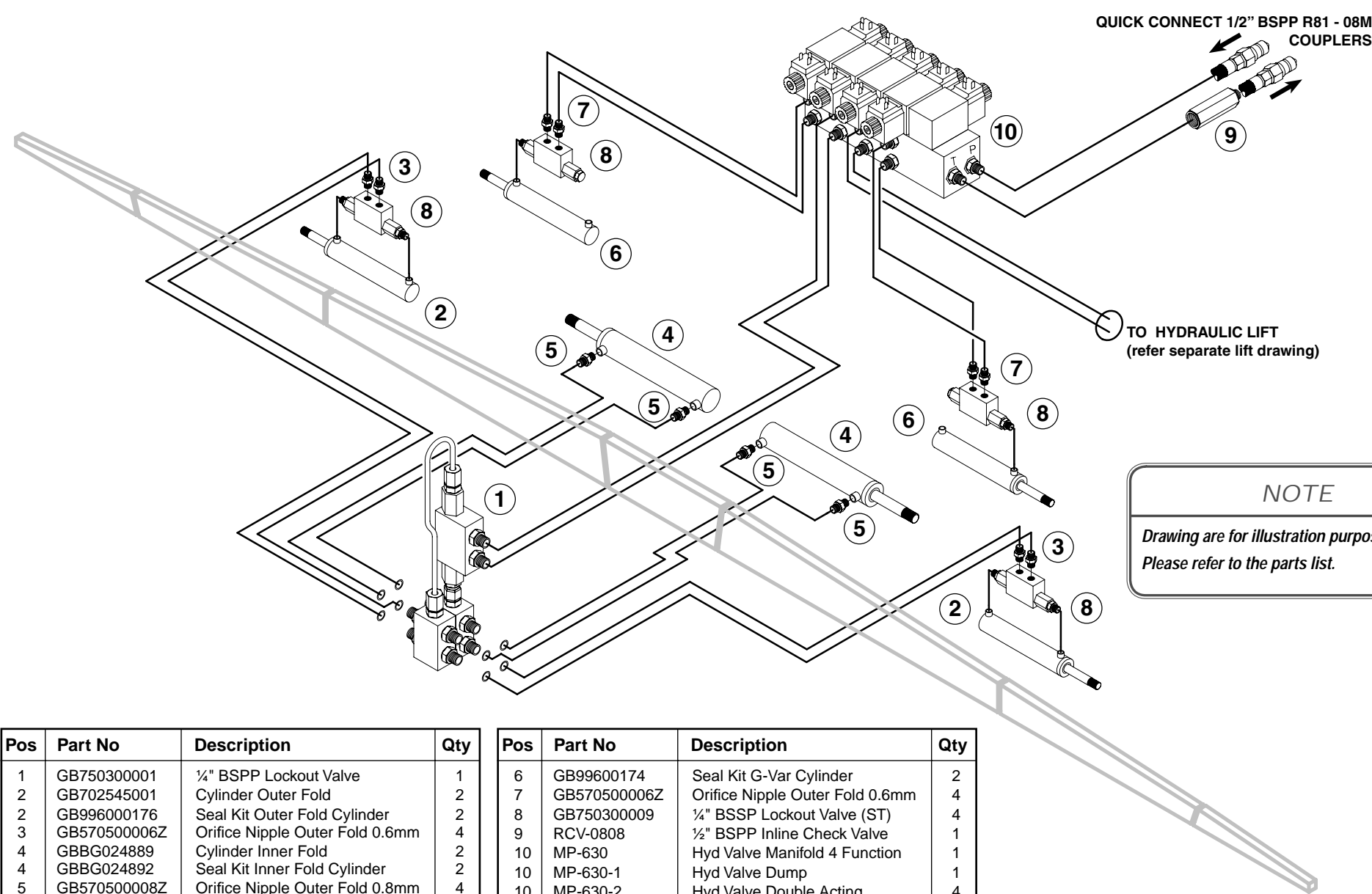
Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GB702545001	Cylinder Outer Fold	2
2	GB996000176	Seal Kit Outer Fold Cylinder	2
3	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
4	GBBG024889	Cylinder Inner Fold	2
4	GBBG024892	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GB750300009	¼" BSPP Lockout Valve (ST)	2

Pos	Part No	Description	Qty
7	MP-608B	Two Function Diverter Valve	1

NOTE

*Drawing are for illustration purposes only.
Please refer to the parts list.*

Wing Lift - 16/18/21m Boom G-Var Option, Hydraulic Fold with Winglift Option



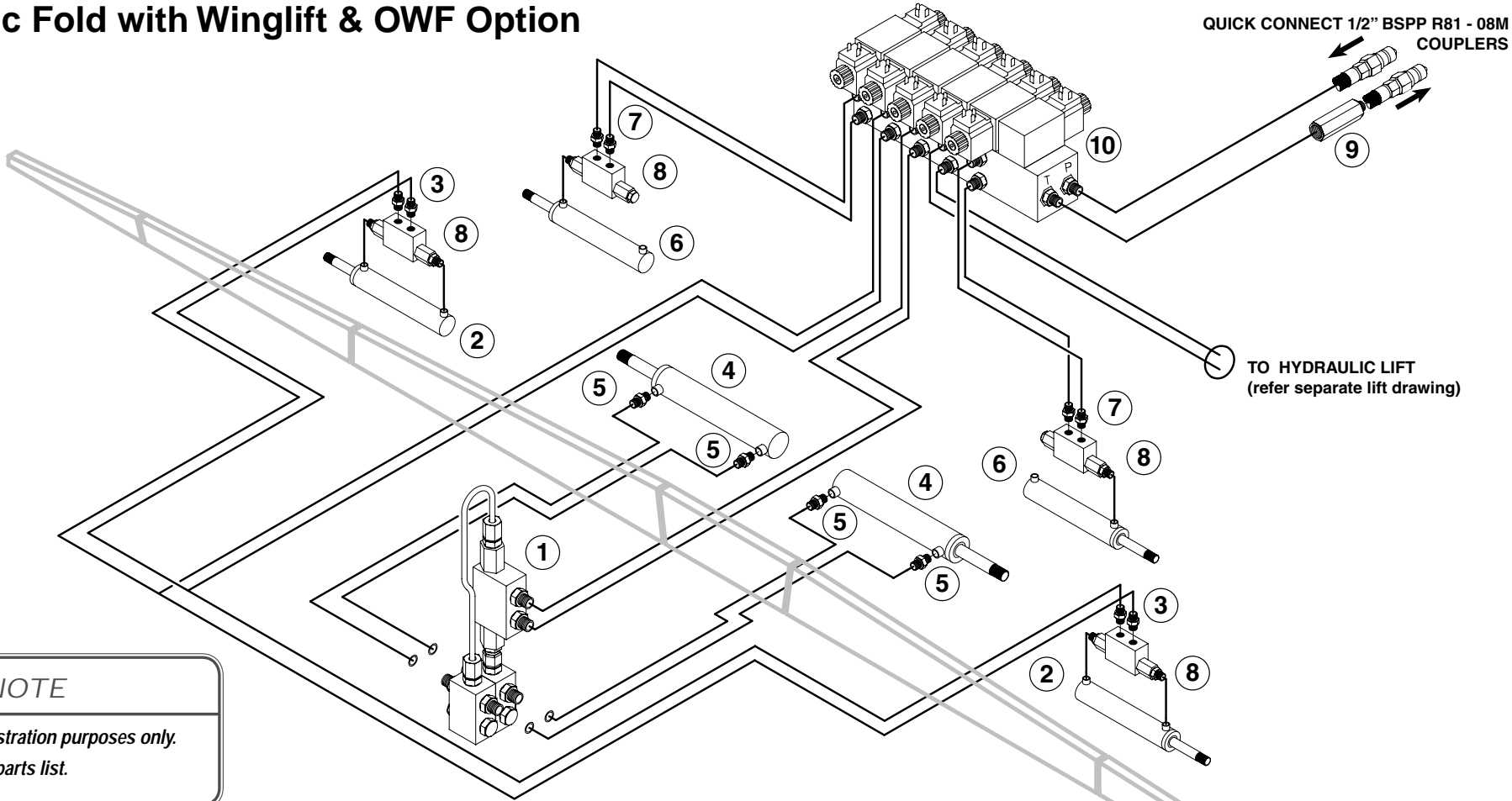
NOTE

Drawing are for illustration purposes only.
Please refer to the parts list.

Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GB702545001	Cylinder Outer Fold	2
2	GB996000176	Seal Kit Outer Fold Cylinder	2
3	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
4	GBBG024889	Cylinder Inner Fold	2
4	GBBG024892	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GBBG007491	Cylinder G-Var	2

Pos	Part No	Description	Qty
6	GB99600174	Seal Kit G-Var Cylinder	2
7	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
8	GB750300009	¼" BSPP Lockout Valve (ST)	4
9	RCV-0808	½" BSPP Inline Check Valve	1
10	MP-630	Hyd Valve Manifold 4 Function	1
10	MP-630-1	Hyd Valve Dump	1
10	MP-630-2	Hyd Valve Double Acting	4
10	MP-630-3	Valve Coil 12v	9

Wing Lift with Independent Outer Wing Fold - 16/18/21m Boom G-Var with OWF Option,
Hydraulic Fold with Winglift & OWF Option



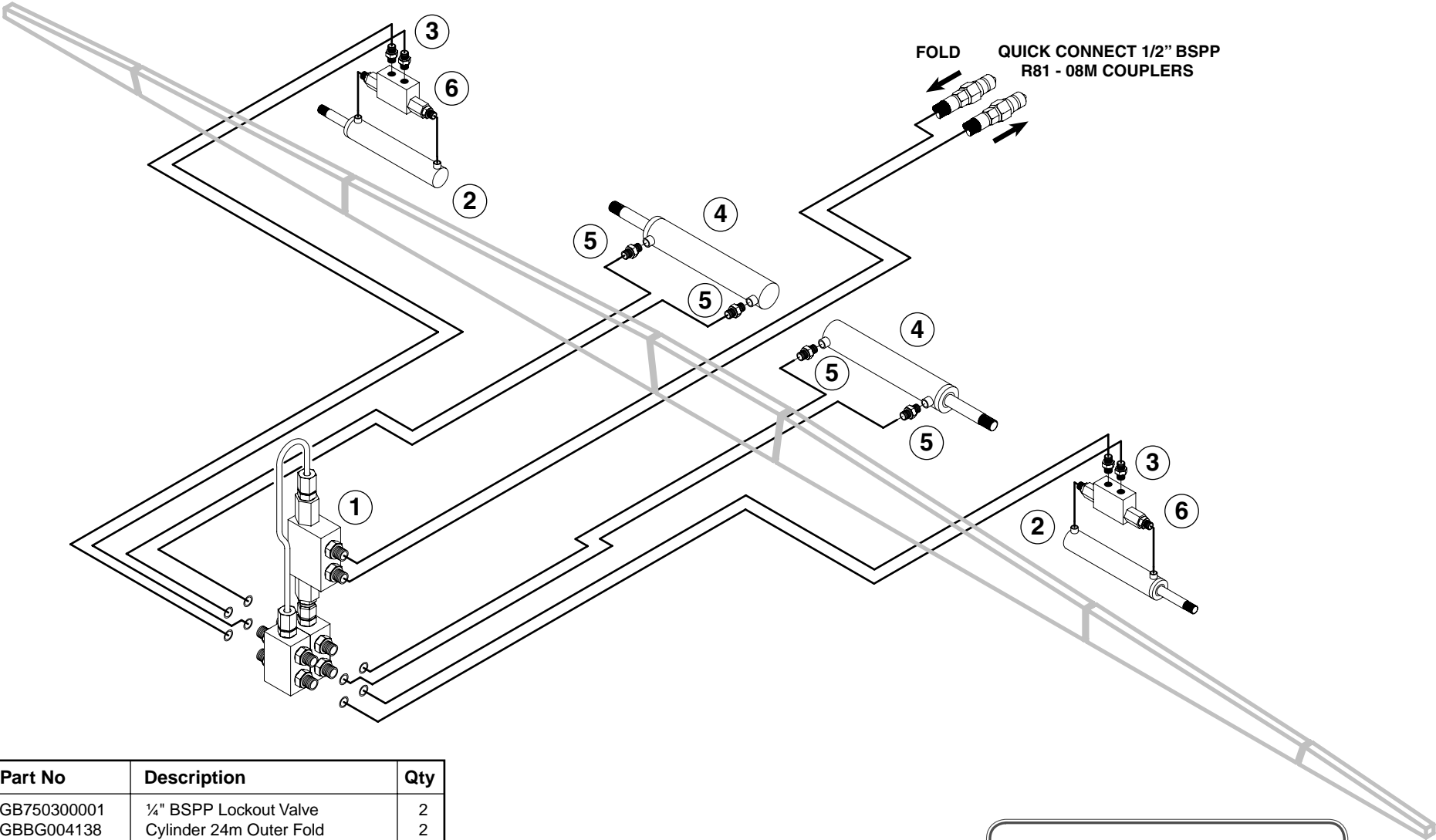
NOTE

Drawing are for illustration purposes only.
Please refer to the parts list.

Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GB702545001	Cylinder Outer Fold	2
2	GB996000176	Seal Kit Outer Fold Cylinder	2
3	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
4	GBBG024889	Cylinder Inner Fold	2
4	GBBG024892	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GBBG007491	Cylinder G-Var	2

Pos	Part No	Description	Qty
6	GB99600174	Seal Kit G-Var Cylinder	2
7	GB570500006Z	Orifice Nipple Outer Fold 0.6mm	4
8	GB750300009	¼" BSPP Lockout Valve (ST)	4
9	RCV-0808	½" BSPP Inline Check Valve	1
10	MP-631	Hyd Valve Manifold 5 Function	1
10	MP-630-1	Hyd Valve Dump	1
10	MP-630-2	Hyd Valve Double Acting	5
10	MP-630-3	Valve Coil 12v	11

Standard Fold - 24m Boom Fold Option, Hydraulic Fold without Wing Lift Option

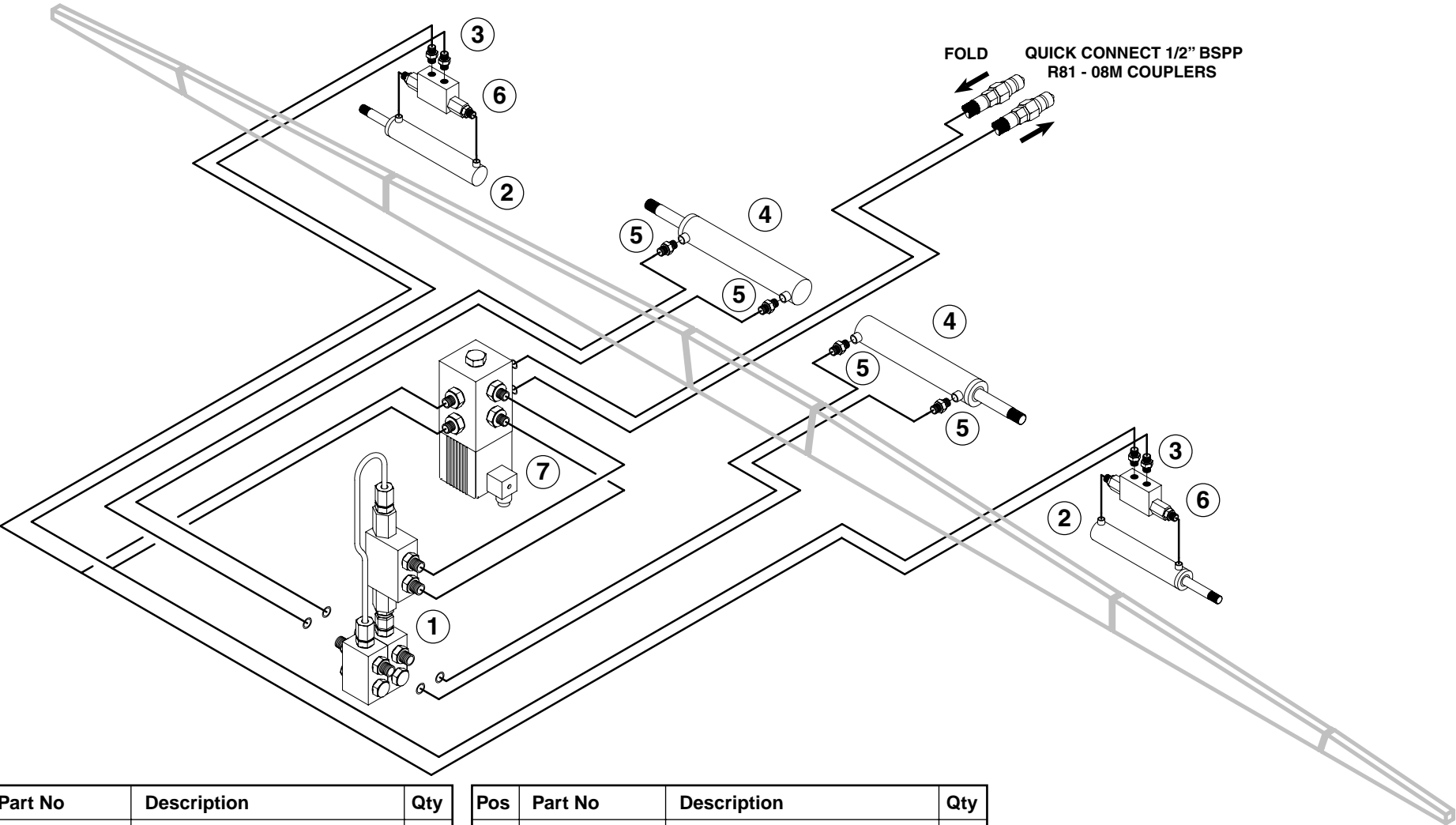


Pos	Part No	Description	Qty
1	GB750300001	1/4" BSPP Lockout Valve	2
2	GBBG004138	Cylinder 24m Outer Fold	2
2	GB996000177	Seal Kit Outer Fold Cylinder	2
3	GB570500007Z	Orifice Nipple Outer Fold 0.7mm	4
4	GBBG016908	Cylinder 24m Inner Fold	2
4	GBBG016913	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GB750300009	1/4" BSPP Lockout Valve (ST)	2

NOTE

Drawing are for illustration purposes only.
Please refer to the parts list.

Independent Outer Wing Fold - 24m Boom OWF Option, Hydraulic OWF without Winglift Option



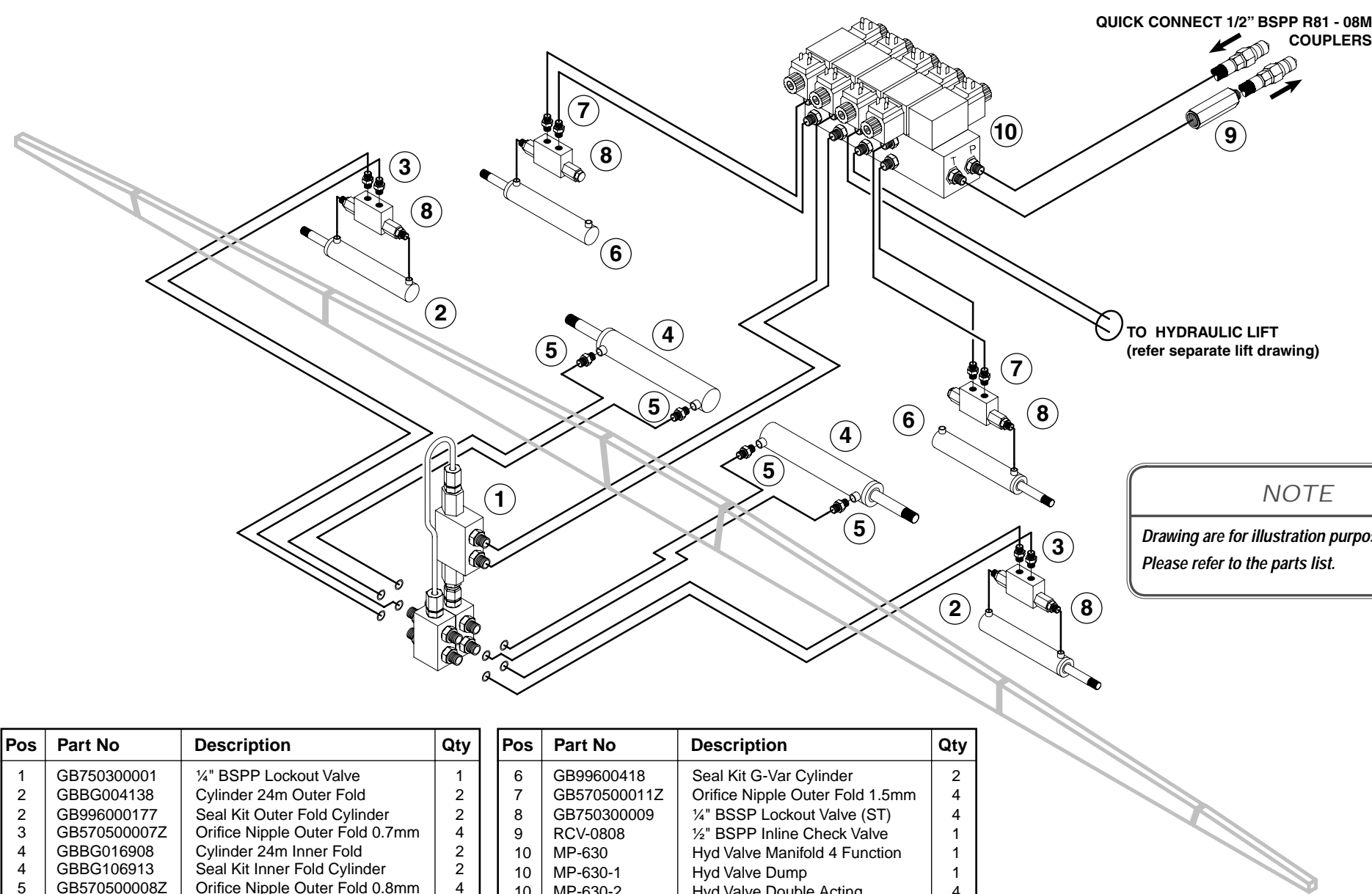
Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GBBG004138	Cylinder 24m Outer Fold	2
2	GB996000177	Seal Kit Outer Fold Cylinder	2
3	GB570500007Z	Orifice Nipple Outer Fold 0.7mm	4
4	GBBG016908	Cylinder 24m Inner Fold	2
4	GBBG016913	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GB750300009	¼" BSPP Lockout Valve (ST)	2

Pos	Part No	Description	Qty
7	MP-608B	Two Function Diverter Valve	1

NOTE

*Drawing are for illustration purposes only.
Please refer to the parts list.*

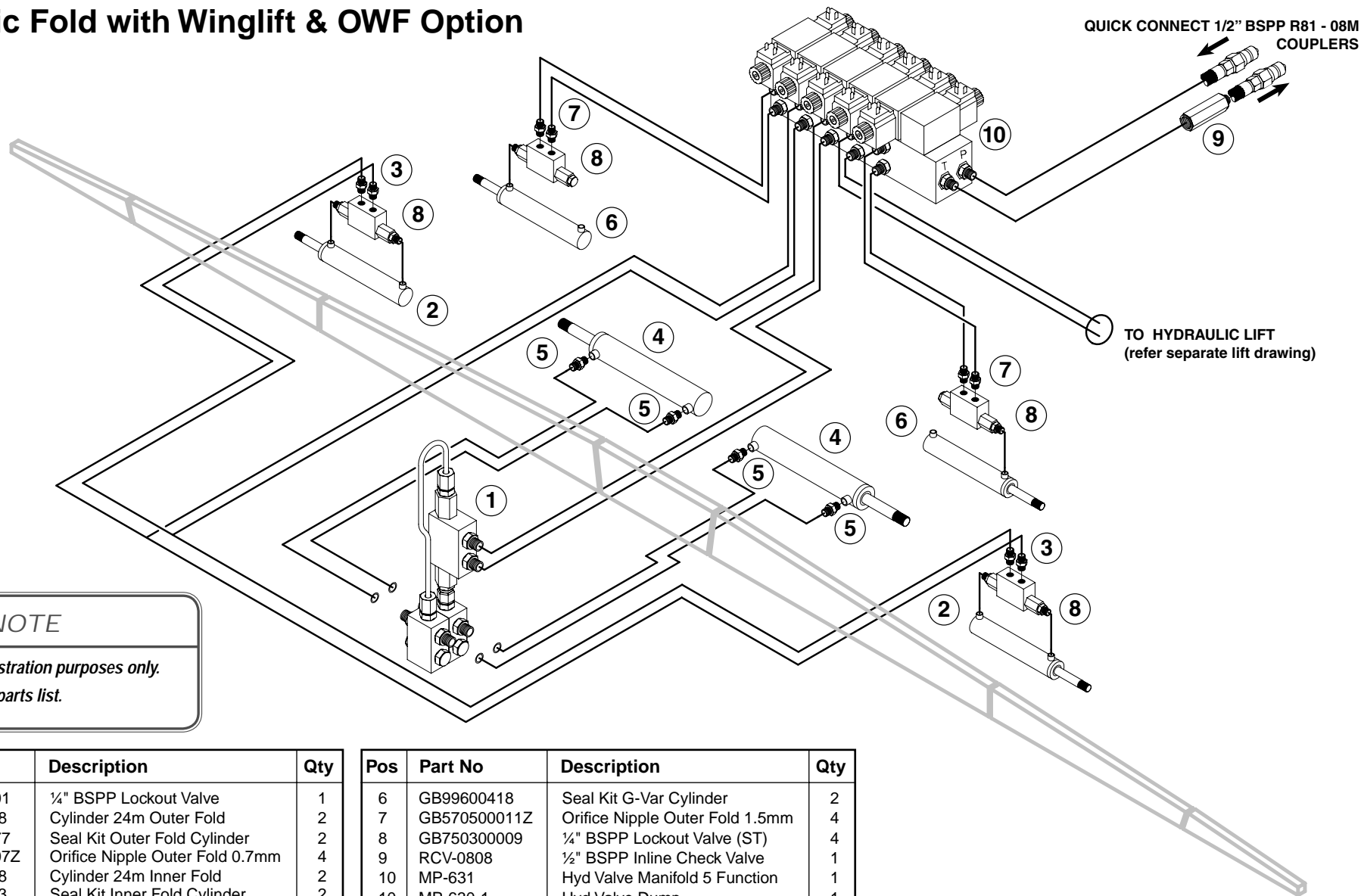
Wing Lift - 24m Boom G-Var Option, Hydraulic Fold with Winglift Option



Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GBBG004138	Cylinder 24m Outer Fold	2
2	GB996000177	Seal Kit Outer Fold Cylinder	2
3	GB570500007Z	Orifice Nipple Outer Fold 0.7mm	4
4	GBBG016908	Cylinder 24m Inner Fold	2
4	GBBG106913	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GBBG703070012V	Cylinder 24m G-Var	2

Pos	Part No	Description	Qty
6	GB99600418	Seal Kit G-Var Cylinder	2
7	GB570500011Z	Orifice Nipple Outer Fold 1.5mm	4
8	GB750300009	¼" BSPP Lockout Valve (ST)	4
9	RCV-0808	½" BSPP Inline Check Valve	1
10	MP-630	Hyd Valve Manifold 4 Function	1
10	MP-630-1	Hyd Valve Dump	1
10	MP-630-2	Hyd Valve Double Acting	4
10	MP-630-3	Valve Coil 12v	9

Wing Lift with Independent Outer Wing Fold - 24m Boom G-Var with OWF Option,
Hydraulic Fold with Winglift & OWF Option



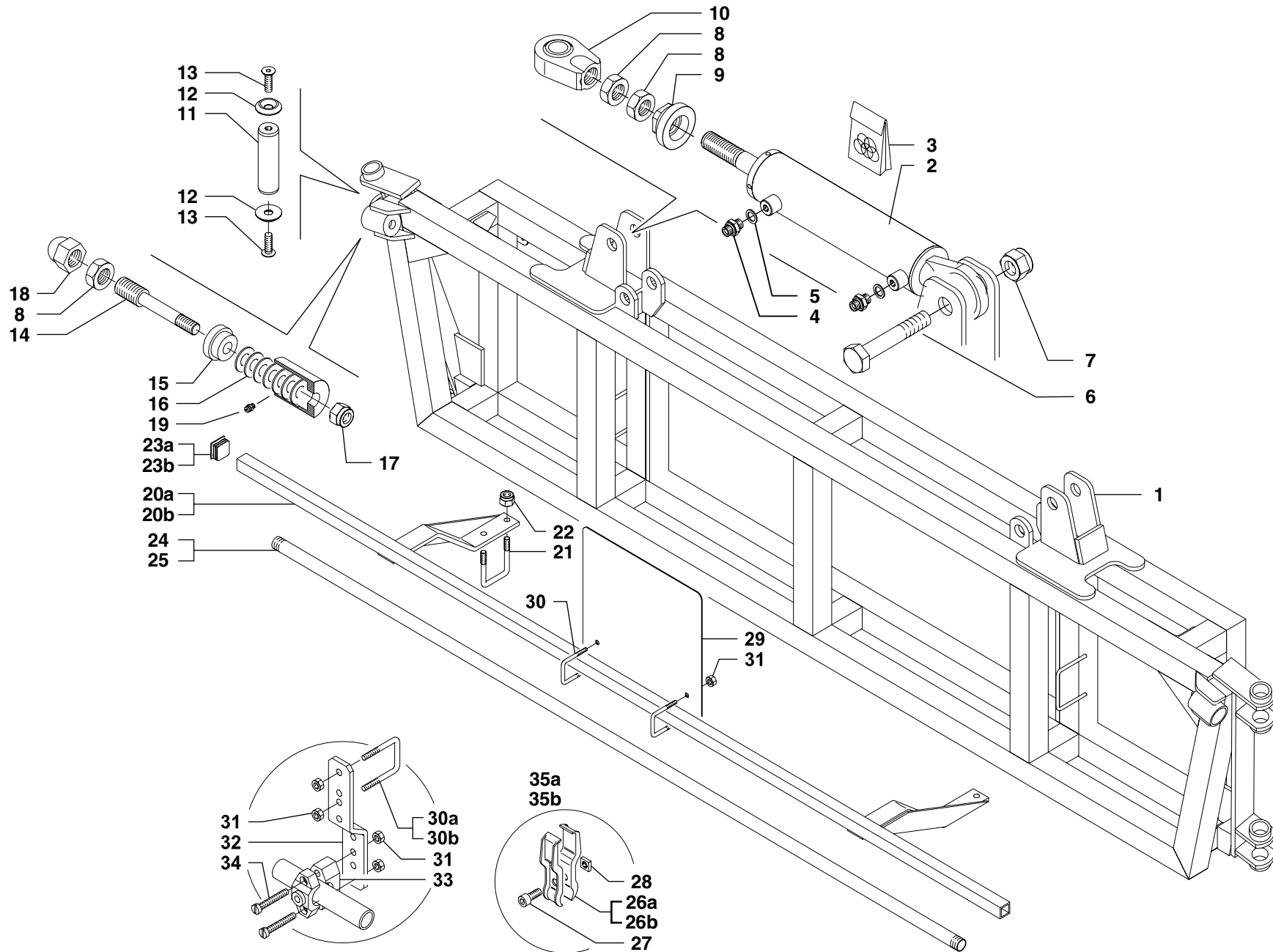
NOTE

Drawing are for illustration purposes only.
Please refer to the parts list.

Pos	Part No	Description	Qty
1	GB750300001	¼" BSPP Lockout Valve	1
2	GBBG004138	Cylinder 24m Outer Fold	2
2	GB996000177	Seal Kit Outer Fold Cylinder	2
3	GB570500007Z	Orifice Nipple Outer Fold 0.7mm	4
4	GBBG016908	Cylinder 24m Inner Fold	2
4	GBBG010613	Seal Kit Inner Fold Cylinder	2
5	GB570500008Z	Orifice Nipple Outer Fold 0.8mm	4
6	GBBG703070012V	Cylinder 23m G-Var	2

Pos	Part No	Description	Qty
6	GB99600418	Seal Kit G-Var Cylinder	2
7	GB570500011Z	Orifice Nipple Outer Fold 1.5mm	4
8	GB750300009	¼" BSPP Lockout Valve (ST)	4
9	RCV-0808	½" BSPP Inline Check Valve	1
10	MP-631	Hyd Valve Manifold 5 Function	1
10	MP-630-1	Hyd Valve Dump	1
10	MP-630-2	Hyd Valve Double Acting	5
10	MP-630-3	Valve Coil 12v	11

GBNEWE-18/21C - Centre Section 16-21m Assembly Drawings & Parts

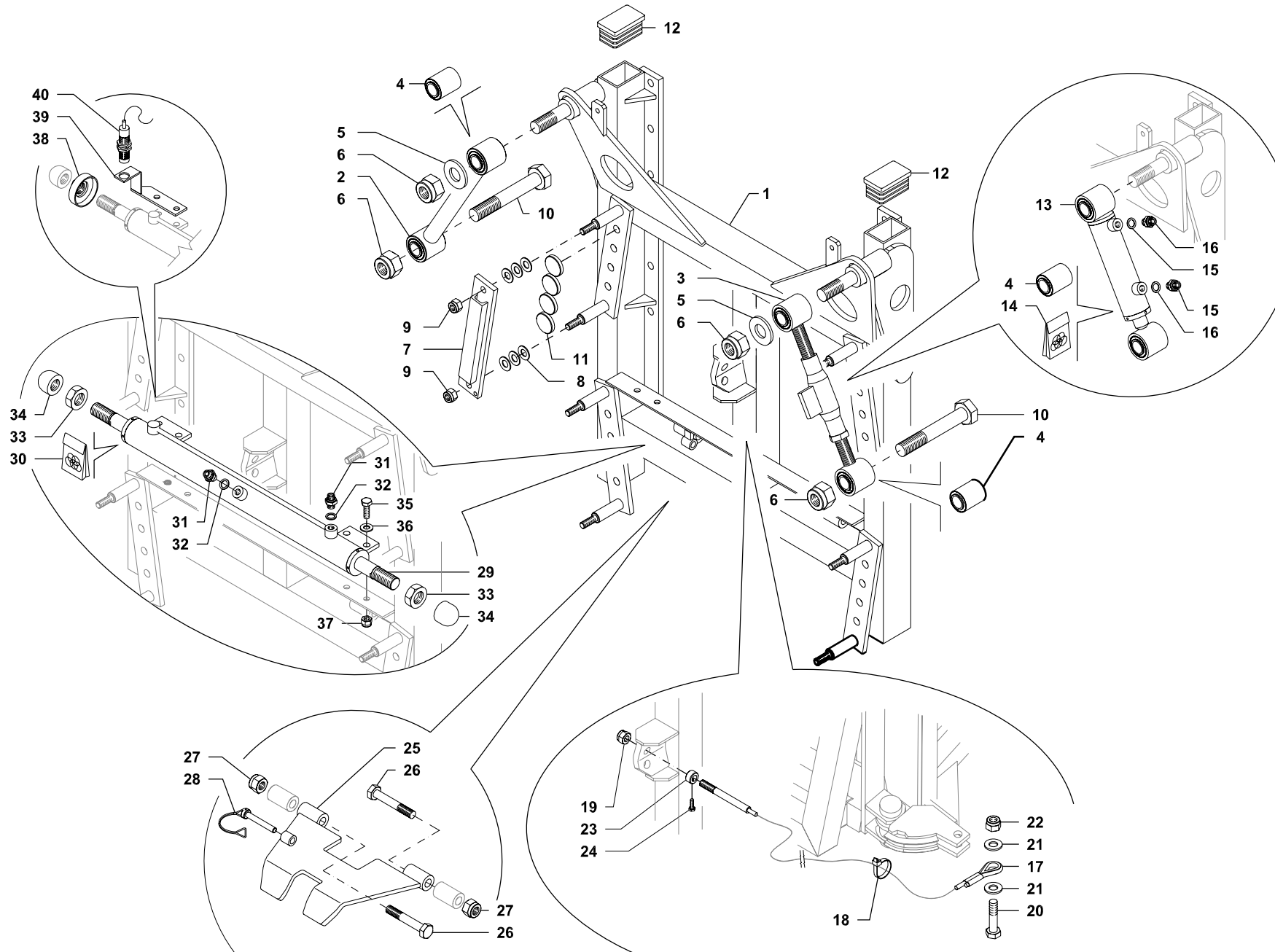


Section 7

GBNEWE-18/21C - Centre Section 16-21m

Pos	Part No	Description	Qty
1	GBBG020409	CENTRAL FRAME	1
2	GBBG024889	CYLINDER 70MM	2
3	GBBG024892	SEAL KIT	2
4	GB570500008Z	NIPPLE 1/4" 0.8MM	4
5	GB600500001	COPPER WASHER	4
6	GB900324090Z	CYLINDER BOLT	2
7	GB905400024	NYLOC NUT M24	2
8	GB905200024Z	LOCK NUT M24	2
9	GB500300025V	EXT STROKE LIMITER	2
10	GB920100034Z	BALL JOINT M24	2
11	GB500100005	PIN	4
12	GB500400004Z	WASHER	8
13	GB900710025Z	SCREW M10x25	8
14	GB500100068Z	DAMPENER SHAFT	2
15	GB500400016Z	DAMPENER RETAINER	2
16	GB911634920	BELLEVILLE WASHER M16	32
17	GB905400016	NYLOC NUT M16	2
18	GB905500054	DOME NUT M24	2
19	GB919800020	GREASE NIPPLE	2
20	GB201800415V	CENTRE RAIL SUPPORT	1
21	GB500500002Z	U-BOLT	2
22	GB905300010	NUT	4
23	GB950130030	BOOM END CAP	2
24	N/A		
25	GB9550500500	5 HOLE TUBE	1

Pos	Part No	Description	Qty
26	N/A		
27	N/A		
28	N/A		
29	GB201800065V	SAFETY STICKER PLATE	1
30A	GB500500004V	U-BOLT M6	3
30B	GB999900100	SPRAY TUBE MOUNTING KIT	3
31	GB905300006	NUT M6	6
32	GB201800418V	BOOM TUBE BRACKET	3
33	A425130	BOOM TUBE 2 PIECE CLAMP	3
34	GB904506040X	SET SCREW M6x45	6
<div>NOTE</div> <div>Parts in italics are non-stock items and may need to be ordered.</div>			



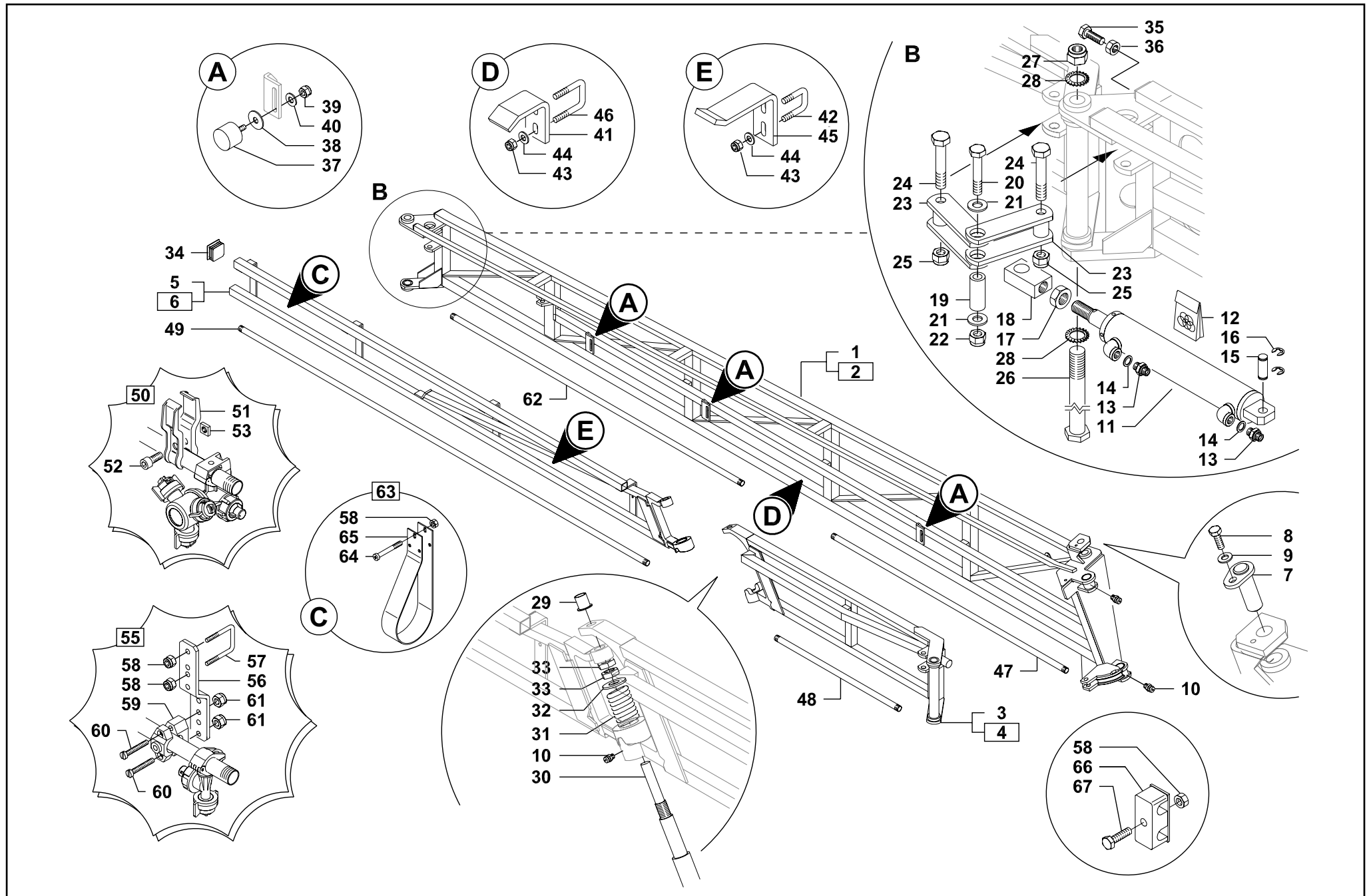
Section 7

GBNEWE-18/21C - Centre Section 16-21m

Pos	Part No	Description	Qty
1	GB382000700V	SELF LEVELING FRAME	1
2	GB993802001V	TIE ROD FIXED	1
3	GB993802002Z	TIE ROD ADJUSTABLE	1
4	GB950300002	Silent Block	4
5	GB500400019Z	WASHER	2
6	GB905400024	NYLOC NUT M24	4
7	GB993806003V	WEAR PAD PLATE	2
8	<i>GB911225915</i>	<i>WASHER</i>	<i>6</i>
9	<i>GB905400012</i>	<i>NUT</i>	<i>4</i>
10	<i>GB900324110Z</i>	<i>TIE ROD BOLT</i>	<i>2</i>
11	GB950200020	WEAR DISK NYLON	32
12	<i>GB950170050</i>	<i>END CAP</i>	<i>2</i>
13	GB702540001V	TILT CYLINDER	1
14	GB996000196	SEAL KIT	1
15	GB570500006Z	NIPPLE 1/4"BSP 0.6mm	2
16	GB600500001	COPPER WASHER	2
17	GB500700073	SELF LEVEL WIRE CABLE	2
18	<i>GB919700120</i>	<i>CABLE TIE</i>	<i>2</i>
19	<i>GB905300012</i>	<i>NUT</i>	<i>2</i>
20	<i>GB900314060Z</i>	<i>BOLT</i>	<i>2</i>
21	GB907014028Z	BUSH	4
22	<i>GB905300014</i>	<i>NUT</i>	<i>2</i>
23	<i>GB919800060Z</i>	<i>LOCKING COLLAR</i>	<i>2</i>
24	<i>GB919800060Z</i>	<i>COLLAR SCREW</i>	<i>2</i>
25	N/A		

Pos	Part No	Description	Qty
26	N/A		
27	N/A		
28	N/A		
29	GB702540010V	LOCKING CYLINDER	1
30	GB996000178	SEAL KIT	1
31	GB570500011Z	NIPPLE 1/4"BSP 1.5mm	2
32	GB600500001	COPPER WASHER	2
33	GB905200022Z	NUT M22	2
34	GB501100007	END PIECE	2
35	<i>GB900110035Z</i>	<i>BOLT</i>	<i>4</i>
36	<i>GB907010021Z</i>	<i>WASHER</i>	<i>4</i>
37	<i>GB905300010</i>	<i>NUT</i>	<i>4</i>
38	N/A		
39	N/A		
40	N/A		
<div>NOTE</div> <div>Parts in italics are non-stock items and may need to be ordered.</div>			

GBNEWE-165-RH or LH- 16m Boom Standard Assembly Drawings & Parts



Section 7

GBNEWE-165-RH or LH 16m Boom Std

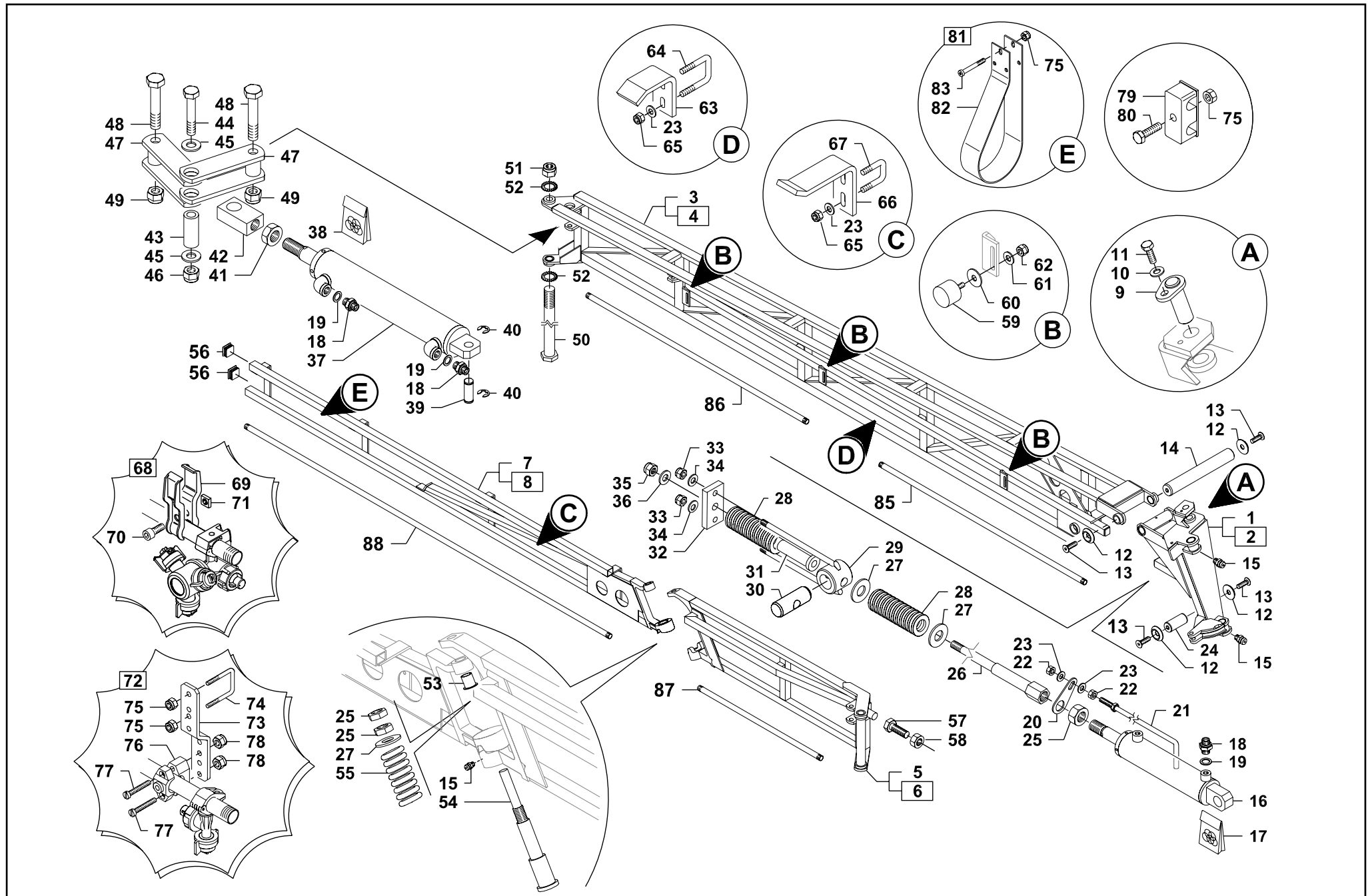
Pos	Part No	Description	Qty
1	<i>GB201600420V</i>	<i>FIRST ARM RH</i>	1
2	<i>GB201600421V</i>	<i>FIRST ARM LH</i>	1
3	<i>GB201600450V</i>	<i>SECOND ARM RH</i>	1
4	<i>GB201600451V</i>	<i>SECOND ARM LH</i>	1
5	GB201600470V	BREAKAWAY ARM RH	1
6	GB201600471V	BREAKAWAY ARM LH	1
7	GB500100055V	PIN	2
8	GB900110025Z	SCREW	2
9	GB907200010Z	WASHER	2
10	<i>GB919800020</i>	<i>GREASE NIPPLE</i>	4
11	GB702545001V	CYLINDER	2
12	GB996000176	SEAL KIT	2
13	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	4
14	GB600500001	COPPER WASHER	4
15	GB500100010Z	PIN	2
16	<i>GB919800021X</i>	<i>CIRCLIP</i>	4
17	GB905200020Z	LOCKING NUT	2
18	GB201200060Z	CYLINDER ROD BLOCK	2
19	GB500100062	SPACER	2
20	GB900314080Z	BOLT	2
21	GB907014028Z	BUSH	4
22	GB905400014	NUT NYLOCK	2
23	GB201800050V	LINK ROD	2
24	GB500500014Z	BOLT	4
25	GB905400016	LOCKING NUT 16MM	4
26	GB500100065Z	SHAFT BOLT	2
27	GB905400024	NYLOC NUT 24MM	2
28	GB907302025Z	WASHER	4
29	GB500200049	BUSH	2
30	GB500100111Z	BREAKAWAY SHAFT	2
31	GB919900023Z	BREAKAWAY SPRING	2
32	GB500400019Z	WASHER	2
33	GB905200024Z	NUT 24MM	4
34	GB950130030	BOOM END CAP	2
35	GB900116050Z	BOLT	2
36	GB905100016Z	NUT	2
37	GB950200001	BOOM STOP 30MM	2
37	GB950200004	BOOM STOP 20MM	4

Pos	Part No	Description	Qty
38	<i>GB907110040Z</i>	<i>WASHER</i>	6
39	<i>GB905400008</i>	<i>NUT</i>	6
40	GB907108024Z	WASHER	6
41	<i>GB202100101V</i>	<i>BOOM GUIDE BOTTOM</i>	2
42	<i>GB500500003Z</i>	<i>U-BOLT SMALL</i>	2
43	<i>GB905400010</i>	<i>NUT</i>	4
44	<i>GB907010021Z</i>	<i>WASHER</i>	4
45	<i>GB202100102V</i>	<i>BOOM GUIDE TOP</i>	2
46	<i>GB500500001Z</i>	<i>U-BOLT LARGE</i>	2
47	GB550300500	SPRAY RAIL 3 HOLES	2
48	GB550200500	SPRAY RAIL 2 HOLES	2
49	GB550500500	SPRAY RAIL 5 HOLES	2
50	N/A		
51	N/A		
52	N/A		
53	N/A		
55	GB999900100	BOOM TUBE KIT	18
56	<i>GB201800418V</i>	<i>BOOM TUBE BRACKET</i>	18
57	<i>GB500500004Z</i>	<i>U-BOLT</i>	18
58	<i>GB905300006</i>	<i>NUT M6</i>	16
59	A425130	BOOM CLAMP	18
60	<i>GB904506040X</i>	<i>SCREW M45x6</i>	36
61	<i>GB905400006X</i>	<i>NUT M6</i>	36
62	GB550401500	SPRAY RAIL 4 HOLES	2
63	N/A		
64	N/A		
65	N/A		
66	UP-420	HYD HOSE CLAMP	10
67	<i>GB900106030Z</i>	<i>BOLT M6x45</i>	10

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-165GV-RH or LH - 16m Boom Gvar Assembly Drawings & Parts



Section 7

GBNEWE-165GV-RH or LH 16m Boom Gvar

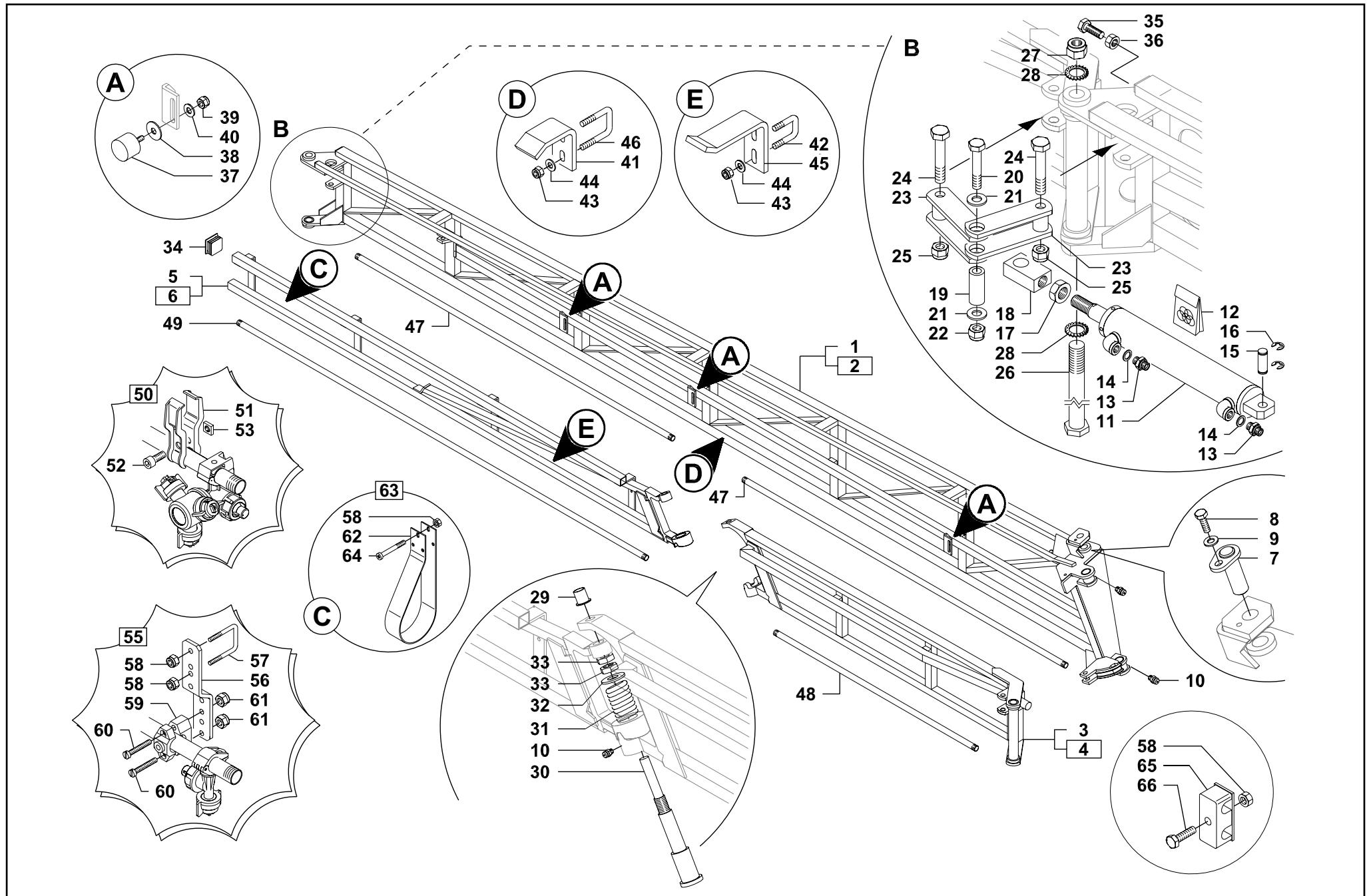
Pos	Part No	Description	Qty
1	GB201800552V	G-VAR PIVOT ARM RH	1
2	GB201800553V	G-VAR PIVOT ARM LH	1
3	GB201600520V	G-VAR INNER ARM RH	1
4	GB201600521V	G-VAR INNER ARM LH	1
5	GB201600450V	SECOND ARM RH	1
6	GB201600451V	SECOND ARM LH	1
7	GB201600470V	BREAKAWAY ARM RH	1
8	GB201600471V	BREAKAWAY ARM LH	1
9	GB500100055V	PIN	2
10	GB907200010Z	WASHER	2
11	GB900110025Z	SCREW	2
12	GB500400004Z	WASHER	8
13	GB900710025Z	SCREW M10X25	8
14	GB500100031	ROD FIRST ARM-PIVOT	2
15	GB919800020	GREASE NIPPLE	4
16	GBBG007491	GVAR CYLINDER	2
17	GB996000174	SEAL KIT	2
18	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	8
19	GB600500001	COPPER WASHER	8
20	GB271600046V	LEVEL INDICATOR BRKT	2
21	GB271600045V	LEVEL INDICATOR ROD	2
22	GB905100010Z	LOCKING NUT	4
23	GB907010021Z	WASHER	4
24	GB500100023Z	GVAR CYLINDER PIN	2
25	GB905200024Z	NUT M24	2
26	GB201800540Z	CYLINDER EXT M24	2
27	GB500400019Z	WASHER	4
28	GB919900040V	GVAR CYL SPRING	4
29	GB201800547Z	BUSHING EXTENSION	2
30	GB500100043Z	GVAR EXTENSION PIN	2
31	GB201800548Z	CYLINDER SPACER	2
32	GB201800545Z	SPRING PLATE	2
33	GB905300012	NUT	4
34	GB907012025Z	WASHER	4
35	GB905300016	NUT	2
36	GB907017030Z	WASHER	2
37	GB702545001V	CYLINDER	2
38	GB996000176	SEAL KIT	2
39	GB500100010Z	PIN	2
40	GB919800021X	CIRCLIP	4
41	GB905200020Z	LOCKING NUT	2
42	GB201200060Z	CYLINDER ROD BLOCK	2
43	GB500100062	SPACER	2
44	GB900314080Z	BOLT	2
45	GB907014028Z	BUSH	4
46	GB905400014	NUT NYLOCK	2
47	GB201800050V	LINK ROD	2
48	GB500500014Z	BOLT	4
49	GB905400016	LOCKING NUT 16MM	4

Pos	Part No	Description	Qty
50	GB500100065Z	SHAFT BOLT	2
51	GB905400024	NYLOC NUT 24MM	2
52	GB907302025Z	WASHER	4
53	GB500200049	BUSH	2
54	GB500100111Z	BREAKAWAY SHAFT	2
55	GB919900023Z	BREAKAWAY SPRING	2
56	GB950130030	BOOM END CAP	2
57	GB900116050Z	BOLT	2
58	GB905100016Z	NUT	2
59	GB950200001	BOOM STOP 30MM	2
59	GB950200004	BOOM STOP 20MM	4
60	GB907110040Z	WASHER	6
61	GB907108024Z	WASHER	6
62	GB905400008	NUT	6
63	GB202100101V	BOOM GUIDE BOTTOM	2
64	GB500500001Z	U-BOLT LARGE	2
65	GB905400010	NUT	4
66	GB202100102V	BOOM GUIDE TOP	2
67	GB500500003Z	U-BOLT SMALL	2
68	N/A		
69	N/A		
70	N/A		
71	N/A		
72	GB999900100	BOOM TUBE KIT	18
73	GB201800418V	BOOM TUBE BRACKET	18
74	GB500500004Z	U-BOLT	18
75	GB905300006	NUT M6	16
76	A425130	BOOM CLAMP	18
77	GB904506040X	SCREW M45x6	36
78	GB905400006X	NUT M6	36
79	UP-420	HYD HOSE CLAMP	10
80	GB900106030Z	BOLT M6x45	10
81	N/A		
82	N/A		
83	N/A		
85	GB550300500	SPRAY RAIL 3 HOLES	2
86	GB550400500	SPRAY RAIL 4 HOLES	2
87	GB550200500	SPRAY RAIL 2 HOLES	2
88	GB550500500	SPRAY RAIL 5 HOLES	2

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-185-RH or LH-18m Boom Standard Assembly Drawings & Parts



Section 7

GBNEWE-185-RH or LH 18m Boom Standard

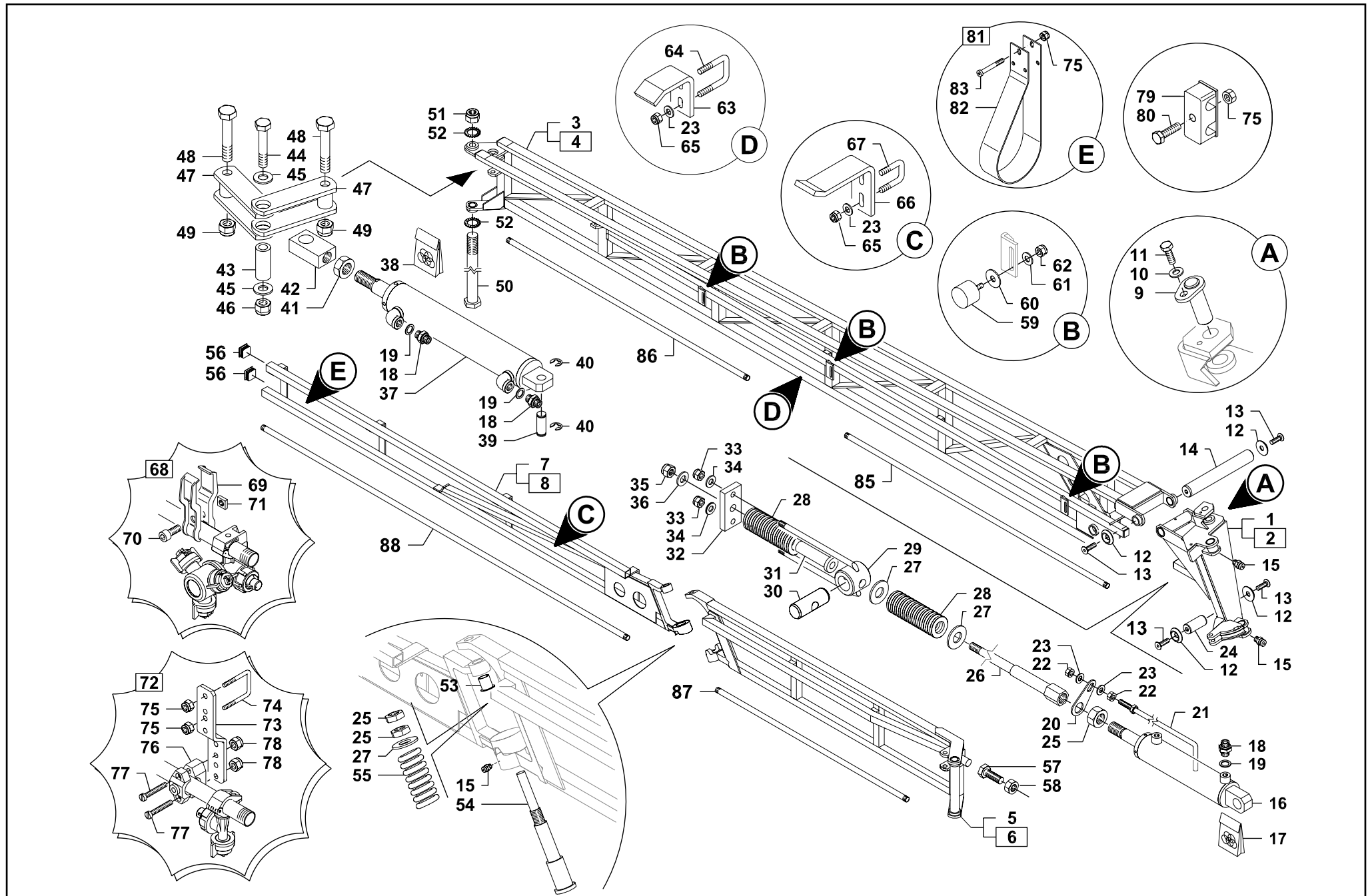
Pos	Part No	Description	Qty
1	GB201800420V	FIRST ARM RH	1
2	GB201800421V	FIRST ARM LH	1
3	<i>GB201800450V</i>	<i>SECOND ARM RH</i>	<i>1</i>
4	<i>GB201800451V</i>	<i>SECOND ARM LH</i>	<i>1</i>
5	GB201600470V	BREAKAWAY ARM RH	1
6	GB201600471V	BREAKAWAY ARM LH	1
7	GB500100055V	PIN	2
8	GB900110025Z	SCREW	2
9	GB907200010Z	WASHER	2
10	<i>GB919800020</i>	<i>GREASE NIPPLE</i>	<i>4</i>
11	GB702545001V	CYLINDER	2
12	GB996000176	SEAL KIT	2
13	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	4
14	GB600500001	COPPER WASHER	4
15	GB500100010Z	PIN	2
16	<i>GB919800021X</i>	<i>CIRCLIP</i>	<i>4</i>
17	GB905200020Z	LOCKING NUT	2
18	GB201200060Z	CYLINDER ROD BLOCK	2
19	GB500100062	SPACER	2
20	GB900314080Z	BOLT	2
21	GB907014028Z	BUSH	4
22	GB905400014	NUT NYLOCK	2
23	GB201800050V	LINK ROD	2
24	GB500500014Z	BOLT	4
25	GB905400016	LOCKING NUT 16MM	4
26	GB500100065Z	SHAFT BOLT	2
27	GB905400024	NYLOC NUT 24MM	2
28	GB907302025Z	WASHER	4
29	GB500200049	BUSH	2
30	GB500100111Z	BREAKAWAY SHAFT	2
31	GB919900023Z	BREAKAWAY SPRING	2
32	GB500400019Z	WASHER	2
33	GB905200024Z	NUT 24MM	4
34	GB950130030	BOOM END CAP	2
35	GB900116050Z	BOLT	2
36	<i>GB905100016Z</i>	<i>NUT</i>	<i>2</i>
37	GB950200001	BOOM STOP 30MM	2

Pos	Part No	Description	Qty
37	GB950200004	BOOM STOP 20MM	4
38	<i>GB907110040Z</i>	<i>WASHER</i>	<i>6</i>
39	<i>GB905400008</i>	<i>NUT</i>	<i>6</i>
40	GB907108024Z	WASHER	6
41	<i>GB202100101V</i>	<i>BOOM GUIDE BOTTOM</i>	<i>2</i>
42	<i>GB500500003Z</i>	<i>U-BOLT SMALL</i>	<i>2</i>
43	<i>GB905400010</i>	<i>NUT</i>	<i>4</i>
44	<i>GB907010021Z</i>	<i>WASHER</i>	<i>4</i>
45	<i>GB202100102V</i>	<i>BOOM GUIDE TOP</i>	<i>2</i>
46	<i>GB500500001Z</i>	<i>U-BOLT LARGE</i>	<i>2</i>
47	GB550400500	SPRAY RAIL 4 HOLES	4
48	GB550300500	SPRAY RAIL 3 HOLES	2
49	GB550500500	SPRAY RAIL 5 HOLES	2
50	N/A		
51	N/A		
52	N/A		
53	N/A		
55	GB999900100	BOOM TUBE KIT	18
56	<i>GB201800418V</i>	<i>BOOM TUBE BRACKET</i>	<i>18</i>
57	<i>GB500500004Z</i>	<i>U-BOLT</i>	<i>18</i>
58	<i>GB905300006</i>	<i>NUT M6</i>	<i>16</i>
59	A425130	BOOM CLAMP	18
60	<i>GB904506040X</i>	<i>SCREW M45x6</i>	<i>36</i>
61	<i>GB905400006X</i>	<i>NUT M6</i>	<i>36</i>
62	N/A		
63	N/A		
64	N/A		
65	UP-420	HYD HOSE CLAMP	10
66	<i>GB900106030Z</i>	<i>BOLT M6x45</i>	<i>10</i>

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-185GV-RH or LH-18m Boom Gvar Assembly Drawings & Parts



Section 7

GBNEWE-185GV-RH or LH 18m Boom Gvar

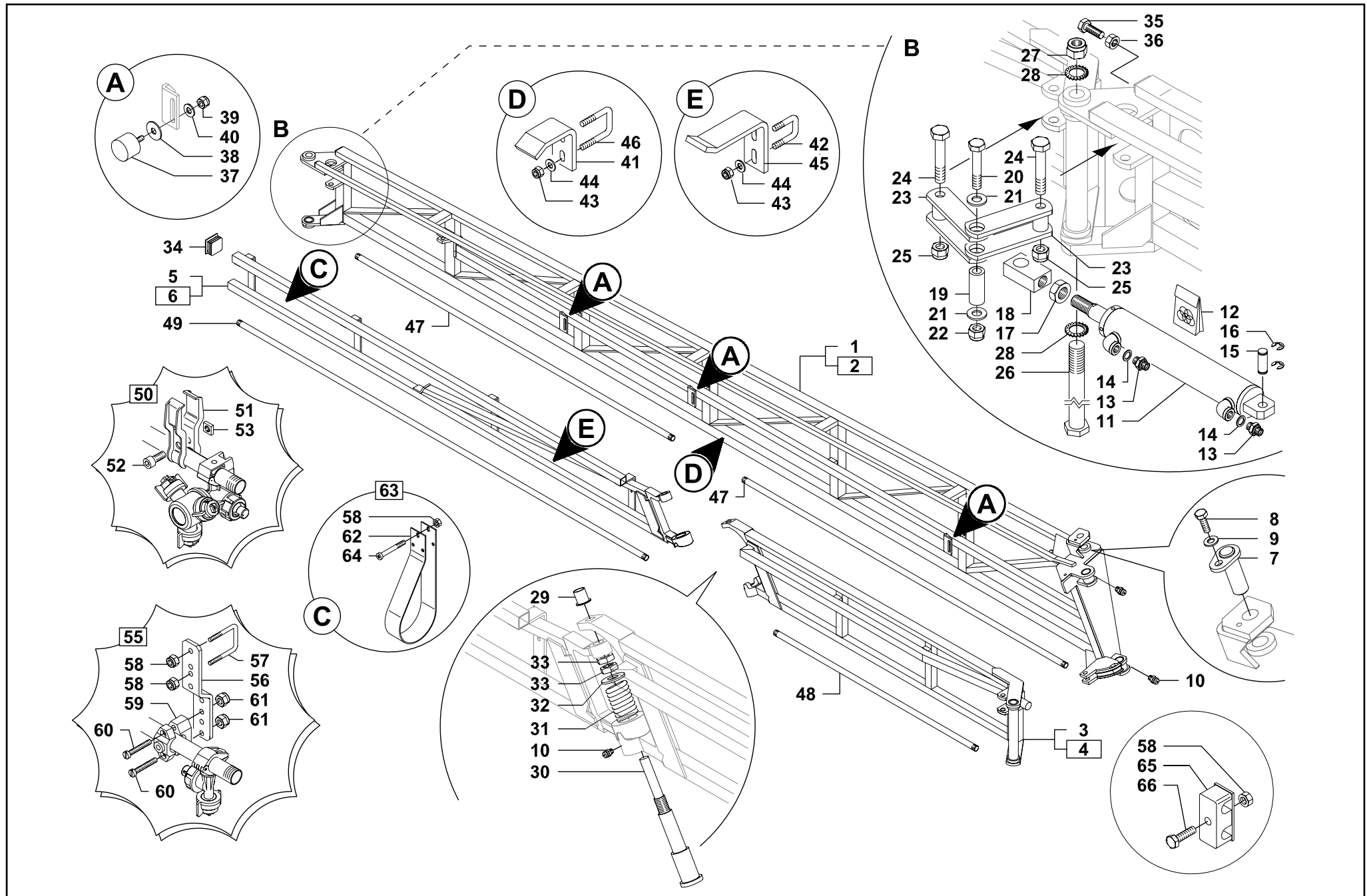
Pos	Part No	Description	Qty
1	GB201800552V	G-VAR PIVOT ARM RH	1
2	GB201800553V	G-VAR PIVOT ARM LH	1
3	GB201800520V	G-VAR INNER ARM RH	1
4	GB201800521V	G-VAR INNER ARM LH	1
5	GB201800450V	SECOND ARM RH	1
6	GB201800451V	SECOND ARM LH	1
7	GB201600470V	BREAKAWAY ARM RH	1
8	GB201600471V	BREAKAWAY ARM LH	1
9	GB500100055V	PIN	2
10	GB907200010Z	WASHER	2
11	GB900110025Z	SCREW	2
12	GB500400004Z	WASHER	8
13	GB900710025Z	SCREW M10X25	8
14	GB500100031	ROD FIRST ARM-PIVOT	2
15	GB919800020	GREASE NIPPLE	4
16	GBBG007491	GVAR CYLINDER	2
17	GB996000174	SEAL KIT	2
18	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	8
19	GB600500001	COPPER WASHER	8
20	GB271600046V	LEVEL INDICATOR BRKT	2
21	GB271600045V	LEVEL INDICATOR ROD	2
22	GB905100010Z	LOCKING NUT	4
23	GB907010021Z	WASHER	4
24	GB500100023Z	GVAR CYLINDER PIN	2
25	GB905200024Z	NUT M24	2
26	GB201800540Z	CYLINDER EXT M24	2
27	GB500400019Z	WASHER	4
28	GB919900040V	GVAR CYL SPRING	4
29	GB201800547Z	BUSHING EXTENSION	2
30	GB500100043Z	GVAR EXTENSION PIN	2
31	GB201800548Z	CYLINDER SPACER	2
32	GB201800545Z	SPRING PLATE	2
33	GB905300012	NUT	4
34	GB907012025Z	WASHER	4
35	GB905300016	NUT	2
36	GB907017030Z	WASHER	2
37	GB702545001V	CYLINDER	2
38	GB996000176	SEAL KIT	2
39	GB500100010Z	PIN	2
40	GB919800021X	CIRCLIP	4
41	GB905200020Z	LOCKING NUT	2
42	GB201200060Z	CYLINDER ROD BLOCK	2
43	GB500100062	SPACER	2
44	GB900314080Z	BOLT	2
45	GB907014028Z	BUSH	4
46	GB905400014	NUT NYLOCK	2
47	GB201800050V	LINK ROD	2
48	GB500500014Z	BOLT	4

Pos	Part No	Description	Qty
49	GB905400016	LOCKING NUT 16MM	4
50	GB500100065Z	SHAFT BOLT	2
51	GB905400024	NYLOC NUT 24MM	2
52	GB907302025Z	WASHER	4
53	GB500200049	BUSH	2
54	GB500100111Z	BREAKAWAY SHAFT	2
55	GB919900023Z	BREAKAWAY SPRING	2
56	GB950130030	BOOM END CAP	2
57	GB900116050Z	BOLT	2
58	GB905100016Z	NUT	2
59	GB950200001	BOOM STOP 30MM	2
59	GB950200004	BOOM STOP 20MM	4
60	GB907110040Z	WASHER	6
61	GB907108024Z	WASHER	6
62	GB905400008	NUT	6
63	GB202100101V	BOOM GUIDE BOTTOM	2
64	GB500500001Z	U-BOLT LARGE	2
65	GB905400010	NUT	4
66	GB202100102V	BOOM GUIDE TOP	2
67	GB500500003Z	U-BOLT SMALL	2
68	N/A		
69	N/A		
70	N/A		
71	N/A		
72	GB999900100	BOOM TUBE KIT	18
73	GB201800418V	BOOM TUBE BRACKET	18
74	GB500500004Z	U-BOLT	18
75	GB905300006	NUT M6	16
76	A425130	BOOM CLAMP	18
77	GB904506040X	SCREW M45x6	36
78	GB905400006X	NUT M6	36
79	UP-420	HYD HOSE CLAMP	10
80	GB900106030Z	BOLT M6x45	10
81	N/A		
82	N/A		
83	N/A		
85	GB550400500	SPRAY RAIL 4 HOLES	2
86	GB550400500	SPRAY RAIL 4 HOLES	2
87	GB550300500	SPRAY RAIL 3 HOLES	2
88	GB550500500	SPRAY RAIL 5 HOLES	2

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-215-RH or LH-21m Boom Standard Assembly Drawings & Parts



Section 7

GBNEWE-215-RH or LH 21m Boom Standard

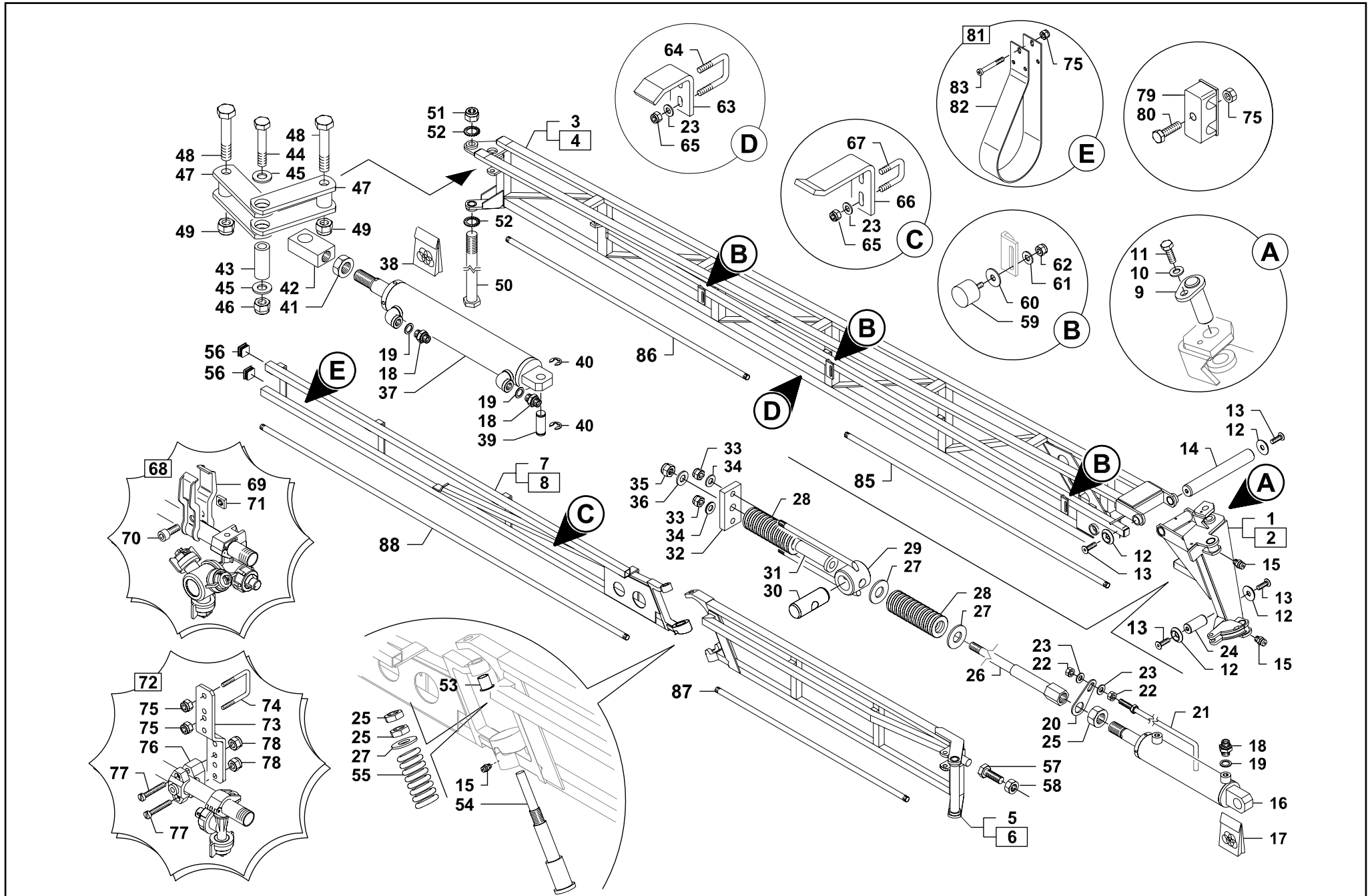
Pos	Part No	Description	Qty
1	GB202000420V	FIRST ARM RH	1
2	GB202000421V	FIRST ARM LH	1
3	GB202000450V	SECOND ARM RH	1
4	GB202000451V	SECOND ARM LH	1
5	GB201600470V	BREAKAWAY ARM RH	1
6	GB201600471V	BREAKAWAY ARM LH	1
7	GB500100055V	PIN	2
8	GB900110025Z	SCREW	2
9	GB907200010Z	WASHER	2
10	<i>GB919800020</i>	<i>GREASE NIPPLE</i>	4
11	GB702545001V	CYLINDER	2
12	GB996000176	SEAL KIT	2
13	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	4
14	GB600500001	COPPER WASHER	4
15	GB500100010Z	PIN	2
16	<i>GB919800021X</i>	<i>CIRCLIP</i>	4
17	GB905200020Z	LOCKING NUT	2
18	GB201200060Z	CYLINDER ROD BLOCK	2
19	GB500100062	SPACER	2
20	GB900314080Z	BOLT	2
21	GB907014028Z	BUSH	4
22	GB905400014	NUT NYLOCK	2
23	GB201800050V	LINK ROD	2
24	GB500500014Z	BOLT	4
25	GB905400016	LOCKING NUT 16MM	4
26	GB500100065Z	SHAFT BOLT	2
27	GB905400024	NYLOC NUT 24MM	2
28	GB907302025Z	WASHER	4
29	GB500200049	BUSH	2
30	GB500100111Z	BREAKAWAY SHAFT	2
31	GB919900023Z	BREAKAWAY SPRING	2
32	GB500400019Z	WASHER	2
33	GB905200024Z	NUT 24MM	4
34	GB950130030	BOOM END CAP	2
35	GB900116050Z	BOLT	2
36	<i>GB905100016Z</i>	<i>NUT</i>	2
37	GB950200001	BOOM STOP 30MM	2
37	GB950200004	BOOM STOP 20MM	4

Pos	Part No	Description	Qty
38	<i>GB907110040Z</i>	<i>WASHER</i>	6
39	<i>GB905400008</i>	<i>NUT</i>	6
40	GB907108024Z	WASHER	6
41	<i>GB202100101V</i>	<i>BOOM GUIDE BOTTOM</i>	2
42	<i>GB500500003Z</i>	<i>U-BOLT SMALL</i>	2
43	<i>GB905400010</i>	<i>NUT</i>	4
44	<i>GB907010021Z</i>	<i>WASHER</i>	4
45	<i>GB202100102V</i>	<i>BOOM GUIDE TOP</i>	2
46	<i>GB500500001Z</i>	<i>U-BOLT LARGE</i>	2
47	GB550500500	SPRAY RAIL 5 HOLES	4
48	GB550400500	SPRAY RAIL 3 HOLES	2
49	GB550500500	SPRAY RAIL 5 HOLES	2
50	N/A		
51	N/A		
52	N/A		
53	N/A		
55	GB999900100	BOOM TUBE KIT	18
56	<i>GB201800418V</i>	<i>BOOM TUBE BRACKET</i>	18
57	<i>GB500500004Z</i>	<i>U-BOLT</i>	18
58	<i>GB905300006</i>	<i>NUT M6</i>	16
59	A425130	BOOM CLAMP	18
60	<i>GB904506040X</i>	<i>SCREW M45x6</i>	36
61	<i>GB905400006X</i>	<i>NUT M6</i>	36
62	N/A		
63	N/A		
64	N/A		
65	UP-420	HYD HOSE CLAMP	10
66	<i>GB900106030Z</i>	<i>BOLT M6x45</i>	10

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-215GV-RH or LH-21m Boom Gvar Assembly Drawings & Parts



Section 7

GBNEWE-215GV-RH or LH 21m Boom Gvar

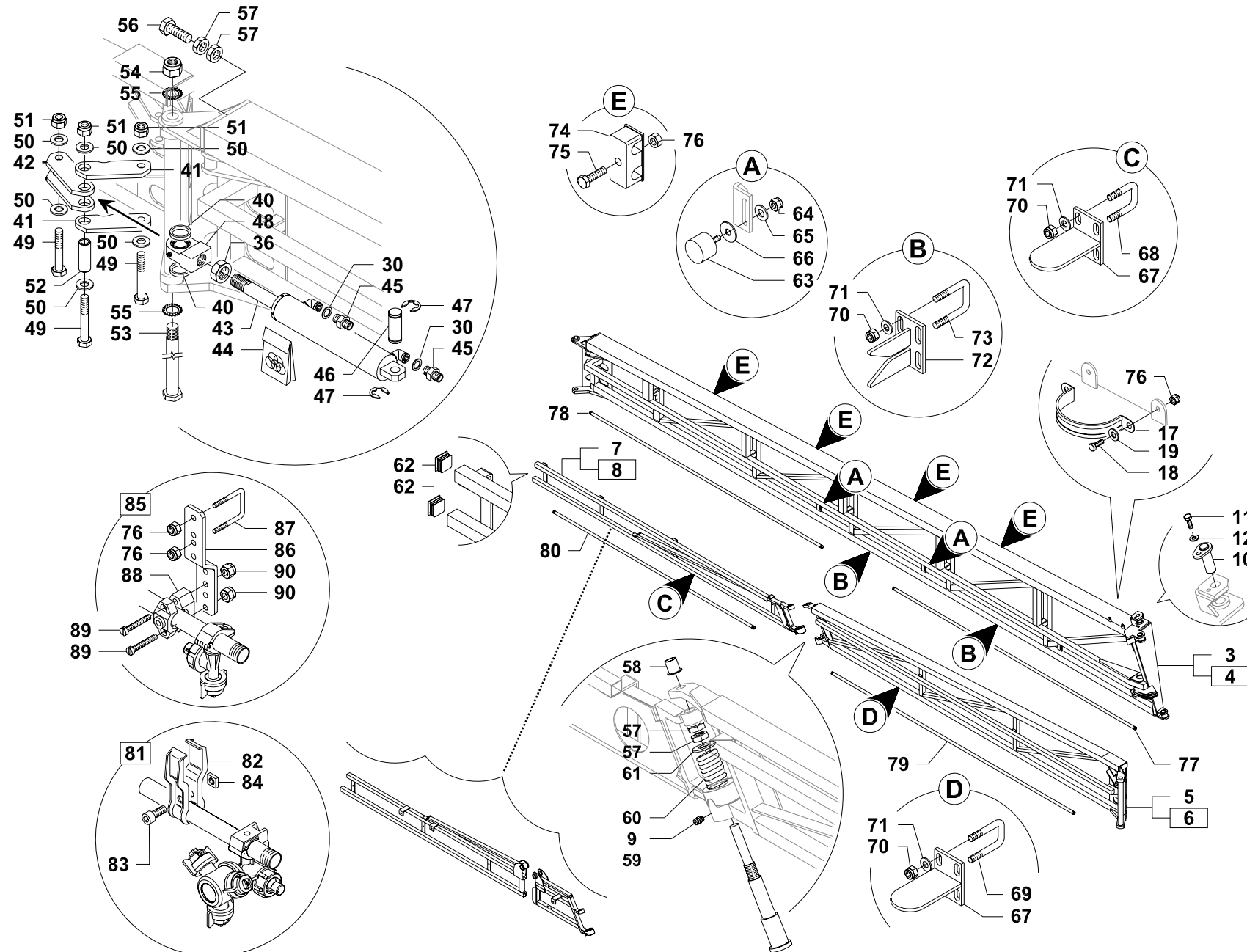
Pos	Part No	Description	Qty
1	GB201800552V	G-VAR PIVOT ARM RH	1
2	GB201800553V	G-VAR PIVOT ARM LH	1
3	GB202000520V	G-VAR INNER ARM RH	1
4	GB202000521V	G-VAR INNER ARM LH	1
5	GB202000450V	SECOND ARM RH	1
6	GB202000451V	SECOND ARM LH	1
7	GB201600470V	BREAKAWAY ARM RH	1
8	GB201600471V	BREAKAWAY ARM LH	1
9	GB500100055V	PIN	2
10	GB907200010Z	WASHER	2
11	GB900110025Z	SCREW	2
12	GB500400004Z	WASHER	8
13	GB900710025Z	SCREW M10X25	8
14	GB500100031	ROD FIRST ARM-PIVOT	2
15	GB919800020	GREASE NIPPLE	4
16	GBBG007491	GVAR CYLINDER	2
17	GB996000174	SEAL KIT	2
18	GB570500006Z	NIPPLE 1/4"BSP 0.6MM	8
19	GB600500001	COPPER WASHER	8
20	GB271600046V	LEVEL INDICATOR BRKT	2
21	GB271600045V	LEVEL INDICATOR ROD	2
22	GB905100010Z	LOCKING NUT	4
23	GB907010021Z	WASHER	4
24	GB500100023Z	GVAR CYLINDER PIN	2
25	GB905200024Z	NUT M24	2
26	GB201800540Z	CYLINDER EXT M24	2
27	GB500400019Z	WASHER	4
28	GB919900040V	GVAR CYL SPRING	4
29	GB201800547Z	BUSHING EXTENSION	2
30	GB500100043Z	GVAR EXTENSION PIN	2
31	GB201800548Z	CYLINDER SPACER	2
32	GB201800545Z	SPRING PLATE	2
33	GB905300012	NUT	4
34	GB907012025Z	WASHER	4
35	GB905300016	NUT	2
36	GB907017030Z	WASHER	2
37	GB702545001V	CYLINDER	2
38	GB996000176	SEAL KIT	2
39	GB500100010Z	PIN	2
40	GB919800021X	CIRCLIP	4
41	GB905200020Z	LOCKING NUT	2
42	GB201200060Z	CYLINDER ROD BLOCK	2
43	GB500100062	SPACER	2
44	GB900314080Z	BOLT	2
45	GB907014028Z	BUSH	4
46	GB905400014	NUT NYLOCK	2
47	GB201800050V	LINK ROD	2
48	GB500500014Z	BOLT	4

Pos	Part No	Description	Qty
49	GB905400016	LOCKING NUT 16MM	4
50	GB500100065Z	SHAFT BOLT	2
51	GB905400024	NYLOC NUT 24MM	2
52	GB907302025Z	WASHER	4
53	GB500200049	BUSH	2
54	GB500100111Z	BREAKAWAY SHAFT	2
55	GB919900023Z	BREAKAWAY SPRING	2
56	GB950130030	BOOM END CAP	2
57	GB900116050Z	BOLT	2
58	GB905100016Z	NUT	2
59	GB950200001	BOOM STOP 30MM	2
59	GB950200004	BOOM STOP 20MM	4
60	GB907110040Z	WASHER	6
61	GB907108024Z	WASHER	6
62	GB905400008	NUT	6
63	GB202100101V	BOOM GUIDE BOTTOM	2
64	GB500500001Z	U-BOLT LARGE	2
65	GB905400010	NUT	4
66	GB202100102V	BOOM GUIDE TOP	2
67	GB500500003Z	U-BOLT SMALL	2
68	N/A		
69	N/A		
70	N/A		
71	N/A		
72	GB999900100	BOOM TUBE KIT	20
73	GB201800418V	BOOM TUBE BRACKET	20
74	GB500500004Z	U-BOLT	20
75	GB905300006	NUT M6	16
76	A425130	BOOM CLAMP	20
77	GB904506040X	SCREW M45x6	38
78	GB905400006X	NUT M6	38
79	UP-420	HYD HOSE CLAMP	10
80	GB900106030Z	BOLT M6x45	10
81	N/A		
82	N/A		
83	N/A		
85	GB550400500	SPRAY RAIL 4 HOLES	2
86	GB550500500	SPRAY RAIL 5 HOLES	2
87	GB550400500	SPRAY RAIL 4 HOLES	2
88	GB550500500	SPRAY RAIL 5 HOLES	2

NOTE

Parts in italics are non-stock items and may need to be ordered.

GBNEWE-245-RH or LH-24m Boom Standard Assembly Drawings & Parts



Section 7

GBNEWE-245-RH or LH 24m Boom Standard

Pos	Part No	Description	Qty
3	GB022400030V	INNER BOOM ARM R/H	1
4	GB022400031V	INNER BOOM ARM L/H	1
5	GB022400050V	OUTER BOOM ARM R/H	1
6	GB022400051V	OUTER BOOM ARM L/H	1
7	GB201600470V	BREAKAWAY ARM R/H	1
8	GB201600471V	BREAKAWAY ARM L/H	1
9	<i>GB919800020</i>	<i>GREASE NIPPLE</i>	2
10	GB500100055V	PIN	2
12	GB900110025Z	M10 x 20MM BOLT (ZINC) 8.8	2
13	GB907200010Z	10MM SPRING WASHER	2
17	<i>GB950200059</i>	<i>N.A</i>	
18	<i>GB900106016Z</i>	<i>N.A</i>	
19	<i>GB907106018Z</i>	<i>N.A</i>	
30	GB600500001	COPPER WASHER	4
40	GB500200029Z	SPACER	4
41	GB022800037V	LINK ARM ROD	4
42	GB022800036V	LINK ROD	2
43	GBBG004138	CYLINDER OUTER FOLD	2
44	GB996000177	SEAL KIT CYLINDER	2
45	GB570500007Z	NIPPLE 1/4" 0.7MM ORIFICE	4
46	GB500100014Z	PIN FOR CYLINDER	2
47	GB919800030	CIRCLIP	4
48	GB920100053Z	BALL JOINT M27	2
49	<i>GB500516095Z</i>	<i>BOLT</i>	4
50	GB907017030Z	WASHER	12
51	GB905400016	LOCK NUT 16MM	6
52	GB500100081	BUSHING	2
53	GB500100080Z	SHAFT ROD	2
54	GB905400024	SELF-LOCKING NUT M24	6
55	GB907302025Z	WASHER	4
56	GB900124050Z	SCREW	2
57	GB905200024Z	NUT M24	8
58	GB500200049	BUSH	2
59	GB500100111Z	SHAFT BREAKAWAY	2
60	GB919900023Z	SPRING BREAKAWAY	2
61	GB500400019Z	WASHER	2
62	GB950130030	BOOM END CAP	18
63	GB950200004	BOOM STOPPER 20MM	4

Pos	Part No	Description	Qty
63	GB950200001	BOOM STOPPER 30MM	2
64	GB905400008	SELF-LOCKING NUT	6
65	GB907108024Z	WASHER	6
66	<i>GB907110040Z</i>	<i>WASHER</i>	6
67	<i>GB022400053V</i>	<i>BOOM GUIDE TONGUE</i>	2
68	<i>GB500500003Z</i>	<i>U BOLT</i>	2
69	<i>GB500500001Z</i>	<i>UBOLT (LONG)</i>	2
70	<i>GB905400010</i>	<i>NUT</i>	4
71	<i>GB907010021Z</i>	<i>WASHER</i>	4
72	<i>GB022400054V</i>	<i>BOOM GUIDE</i>	2
73	GB500500002Z	UBOLT	2
74	UP-420	HYD HOSE CLAMP	16
75	<i>GB900306035Z</i>	<i>BOLT</i>	16
76	<i>GB905300006</i>	<i>NUT</i>	16
77	GB550501500	5 HOLE SPRAY TUBE	1
78	GB550601500	6 HOLE SPRAY TUBE	1
79	GB550601500	6 HOLE SPRAY TUBE	1
80	GB550501500	5 HOLE SPRAY TUBE	1
81	<i>GB999900004Z</i>	<i>N.A</i>	
82	<i>GB500600002Z</i>	<i>N.A</i>	
83	<i>GB900508022Z</i>	<i>N.A</i>	
84	<i>GB906000008Z</i>	<i>N.A</i>	
85	GB999900100	BOOM TUBE SUPPORT KIT	24
86	<i>GB201800418V</i>	<i>SUPPORT BRACKET</i>	24
87	<i>GB500500004Z</i>	<i>U BOLT</i>	24
88	A425130	TUBE CLAMP	24
89	<i>GB904506040X</i>	<i>SCREW</i>	24
90	<i>GB905400006X</i>	<i>NUT</i>	24

NOTE

Parts in italics are non-stock items and may need to be ordered.

Section 7

GBNEWE-245GV-RH or LH 24m Boom Gvar

Pos	Part No	Description	Qty
1	GBBG026447	G-VAR PIVOT ARM R/H V2	1
2	GBBG026449	G-VAR PIVOT ARM L/H V2	1
3	GBBG026378	G-VAR INNER ARM R/H V2	1
4	GBBG026379	G-VAR INNER ARM L/H V2	1
5	GB022400050V	OUTER BOOM ARM R/H	1
6	GB022400051V	OUTER BOOM ARM L/H	1
7	GBBG020414	BREAKAWAY ARM R/H	1
8	GBBG020415	BREAKAWAY ARM L/H	1
9	GB919800020	GREASE NIPPLE	2
10	GB500100055V	PIN	2
12	GB900110025Z	M10 x 20MM BOLT (ZINC)	2
13	GB907200010Z	10MM SPRING WASHER	2
14	GBBG025153	G-VAR BOTTOM PIN V2	2
15	GB500400008Z	COUNTERSUNK WASHER	4
16	GB900710025Z	SCREW M10X25	10
17	GB950200059	CABLE RETAINER	4
18	GB900106016Z	M6 x 16MM BOLT (ZINC) 8.8	8
19	GB907106018Z	M6 x 18MM WASHER (ZINC)	8
21	GB919900043V	G-VAR RAM SPRING (LARGE)	4
22	GB905400020	M24 (FINE) NYLOC NUT (ZINC)	2
23	GB022400209V	SPRING RETAINER	2
24	GB500100125	PIN 300X 95L	2
26	GB022400210	RUBBER PAD	2
27	GB022400208Z	CLUTCH	2
28	GBBG000022	HYDRAULIC RAM	2
29	GB996000418	SEAL KIT	2
30	GB600500001	COPPER WASHER	4
31	GB570500011Z	NIPPLE 1/4 BSP 1.2 ORIFICE	2
32	GB271600045V	BOOM LEVEL INDICATOR	2
33	GB905100010Z	LOCKING NUT	4
34	GB907010021Z	M10 WASHER (ZINC)	4
35	GB271600046V	INDICATOR LOCKING PLATE	2
36	GB905220024Z	M24 NUT (ZINC)	2
37	GB920100034Z	M24 BALL JOINT	2
38	GB500400004Z	COUNTERSUNK WASHER	4
39	GB500100086	PIN	2
40	GB500200029Z	SPACER	4
41	GB022800037V	LINK ARM ROD	4
42	GB022800036V	LINK ROD	2
43	GBBG004138	CYLINDER OUTER FOLD	2

Pos	Part No	Description	Qty
44	GB996000177	SEAL KIT CYLINDER	2
45	GB570500007Z	NIPPLE 1/4" 0.7MM ORIFICE	4
46	GB500100014Z	PIN FOR CYLINDER	2
47	GB919800030	CIRCLIP	4
48	GB920100053Z	BALL JOINT M27	2
49	GB500516095Z	BOLT	4
50	GB907017030Z	WASHER	12
51	GB905400016	LOCK NUT 16MM	6
52	GB500100081	BUSHING	2
53	GB500100080Z	SHAFT ROD	2
54	GB905400024	SELF-LOCKING NUT M24	6
55	GB907302025Z	WASHER	4
56	GB900124050Z	SCREW	2
57	GB905200024Z	NUT M24	8
58	GB500200049	BUSH	2
59	GB500100111Z	SHAFT BREAKAWAY	2
60	GB919900023Z	SPRING BREAKAWAY	2
61	GB500400019Z	WASHER	2
62	GB950130030	BOOM END CAP	18
63	GB950200004	BOOM STOPPER 20MM	4
63	GB950200001	BOOM STOPPER 30MM	2
64	GB905400008	SELF-LOCKING NUT	6
65	GB907108024Z	WASHER	6
66	GB907110040Z	WASHER	6
67	GB022400053V	BOOM GUIDE TONGUE	2
68	GB500500003Z	U BOLT	2
69	GB500500001Z	U BOLT (LONG)	2
70	GB905400010	NUT	4

NOTE

Parts in italics are non-stock items and may need to be ordered.

