

OPERATORS MANUAL SUPPLEMENT BROADACRE SPRAYERS

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STOP

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



Part No. GP-POMBA001108 - Rev 4 FSC



CROPLANDS IS CONTRIBUTING TO A SUSTAINABLE FUTURE

INTRODUCTION

GENERAL MANAGER'S WELCOME



Sean Mulvaney
General Manager

Dear Customer

Congratulations on the purchase of your new sprayer and thank you for supporting another true blue Australasian manufacturer. For over 50 years Croplands have been delivering spraying solutions and ongoing support for a variety of applications whilst investing in long term partnerships with our suppliers, distributors, end users and local communities. These partnerships are absolutely key in our commitment to support our products into the future.

At Croplands, we are committed to sourcing the very best technology from around the globe and adapting these products to our specific requirements. When these products don't yet exist, we innovate through continuous investment in our own research and development.

Croplands is a wholly owned subsidiary of Nufarm Ltd, the largest supplier of crop protection products in Australasia. This brings a unique understanding and collaborative approach to new market developments, challenges and opportunities.

Please take the time to thoroughly read this manual before you operate your sprayer. This will provide direction to ensure safe usage and help optimise the performance of your investment. Your feedback is welcome and valued.

We trust you will be happy with your sprayer and the level of support - our goal is to be your preferred spraying solutions partner from this point onwards.

Yours Sincerely

Sean Mulvaney
General Manager

Croplands has taken steps to ensure this operator's manual is as current and as accurate as possible. Due to the ever-changing markets of cropping and farming, Croplands is constantly striving to be at the forefront of innovation and technology. While the information in this manual is considered accurate at the time of writing, Croplands reserves the right to change this information without notice. Croplands will not accept liability for any inaccuracy in this publication, or changes forthwith.



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SECTION 1

IMPORTANT INFORMATION

ABOUT THIS MANUAL

This GENERAL manual is a generic overview for setting up, operating and maintaining your Croplands sprayer for which there is not a specific manual.

In addition to this manual, the sprayer will be delivered with the General Safety Manual (GP-SAFE-A).

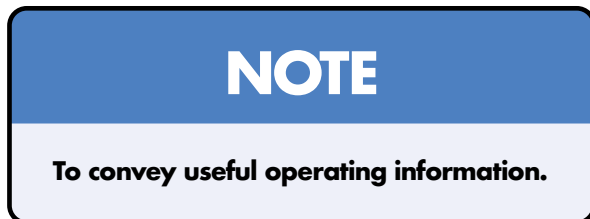
For details not covered by the manuals, please contact Technical Support on 1300 650 724.

Some features and options 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.

This manual, was first published in 2008 as part number, GP-POMBA001108. This April 2021 (Rev 4) issue has updates to Sections 1, 2, 3 and 5. FSC update October 2023.

Check online as there may be more recent revisions of this manual. www.croplands.com.au



TERMINOLOGY

These terms/symbols used throughout this manual:

NOTE	This Note sign is in place to convey useful information and will help you to identify the best possible way to operate the machine.
CAUTION	This Caution sign shows the potential for incident. An incident may include damage to the machine itself, or possible injury to the operator.
WARNING	This warning sign shows the potential for risk or injury and highlights the need for steps to be taken to protect ones safety.
DANGER	This Danger sign will be used in areas where the highest risk is present. Always read the information on these signs and ensure you are taking steps to prevent risk or injury.



BEFORE OPERATING YOUR SPRAYER

Before attempting to use your sprayer, make sure you read all Operator Manuals for this sprayer including but not limited to:

This Operator's Manual, **and all other supplied manuals** for items such as safety, pumps, PTO, controller, boom etc.

And properly understand:

- All Safety Issues.
- Assembly & Installation instructions.
- Calibration of the sprayer.
- Sprayer Operation.
- Sprayer Maintenance.

ABOUT BROADACRE SPRAYERS

Croplands broadacre sprayers come in several tank sizes, with boom widths to suit a host of different applications.

The primary applications are generally broadacre cropping and pasture renovation and preservation. Some of the Croplands broadacre range can also be used for liquid fertiliser operations. Other mainstream uses of Croplands broadacre machinery include Intensive agricultural spraying and row cropping.

Croplands broadacre range has many options, which include boom widths and style, pump volumes, pressure and drive type, mixing systems, nozzle size and type, controllers and tractor connection to name a few.

Depending on the options you have chosen for your Croplands sprayer, some of the information and parts listings covered in this supplement may not apply to you machine.

Again, if you have any questions regarding to how this manual pertains to your machine, please contact your nearest Croplands dealer for assistance.

SECTION 1

IMPORTANT INFORMATION

WARRANTY POLICY

Each sprayer module will be delivered with a Specifications, Safety, Warranty & Delivery Booklet which includes:

- the sprayer's specification sheet including the sprayer's unique serial number,
- a safety induction checklist,
- a delivery checklist and customer induction,
- the Croplands Warranty policy and warranty registration form.

We ask that our customers complete these forms in the presence of a Dealer and/or Croplands representative as a part of the sprayer's delivery process.

Always contact your Croplands Dealer first and foremost for warranty matters.

NOTE

For full conditions of warranty and warranty policy, please see the Specification, Safety, Warranty & Delivery booklet provided with this sprayer.



SECTION 2

SAFETY

SAFETY FIRST

Please read and understand all supplied manuals, guides and safety decals before operating this sprayer. This includes the **Croplands Operators Safety Manual** – as pictured here.

This manual is available on the Croplands Web site, or for printed versions contact Croplands customer support and ask for part number GP-SAFE-A (or later version if available).



SECTION 2

SAFETY

SAFETY SIGNS AND DECALS

All signs and decals for sprayer safety and operation must be maintained in good order and replaced if damaged or missing. Most Croplands labels have a part number printed on the decal to aid identification and replacement.

Some examples are shown below.

WARNING

SAFETY INSTRUCTIONS

1. Read your operators manual thoroughly before operating the sprayer.
2. Inspect hoses, connections and nozzles daily.
3. Clean filters regularly.
4. Always follow correct maintenance schedules outlined in operator's manuals.
5. Always read chemical manufacturers labels before use.
6. Always observe all warnings on chemical products.
7. Regularly check all nuts and bolts are tight.
8. Always wear rubber gloves and wash sprayer down before doing any repair or maintenance work.
9. Do not ride on sprayer when moving.
10. Keep clear of moving parts when sprayer is operating.
11. Always keep guards in place when sprayer is operating.
12. Be sure tank lid is closed before operating basket mixing facility.
13. Stand well clear of sprayer when operating.
14. Do not disconnect hoses, nozzles or filters while sprayer is operating.

FAILURE TO FOLLOW THE ABOVE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.

Part No: XD - 123

WARNING

OPERATION INSTRUCTIONS

FOR SAFETY PROCEDURES READ THE OPERATORS MANUAL.

STOP THE ENGINE AND REMOVE THE IGNITION KEY BEFORE (AND AFTER) WORKING ON THE MACHINE.

DO NOT START THE MACHINE WITHOUT ENSURING ALL PEOPLE ARE WELL CLEAR OF WORKING PARTS. SOUND THE HORN BEFORE START UP.

FAILURE TO OPERATE CORRECTLY MAY RESULT IN SERIOUS INJURY OR DEATH!

Part No: XD - 125V

WARNING

DO NOT FILL THE TANK IN EXCESS OF THE CARRYING CAPACITY OF THE VEHICLE WITH WHICH THE TANK WILL BE USED, AS SPECIFIED BY THE VEHICLE MANUFACTURER.

1 Litre of water = 1 Kg 50 Litres of water = 50 Kg

DO NOT EXCEED THE VEHICLE MANUFACTURERS SPECIFIED SAFE LOAD CARRYING AND TOWING CAPACITIES.

READ THE OPERATORS INSTRUCTION MANUAL AND CHECK UNLADEN WEIGHT BEFORE ATTACHING OR USING THIS PRODUCT.

Part No: XD - 126V

WARNING

Never operate your sprayer with a loose rim, wheel or axle.

ENSURE ALL WHEEL NUTS ARE TIGHT BEFORE USE. Anytime wheel nuts are loosened, retighten to specified torque.

Failure to do so may result in a serious accident.

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Part No: XD - 175

WARNING

BEWARE OF MOVING PARTS.

Failure to operate correctly may result in serious injury or death!

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Part No: XD - 182

WARNING

THIS IS A SPECIAL PURPOSE MACHINE AND IS NOT DESIGNED FOR PROLONGED HIGHWAY USE AT SPEEDS EXCEEDING 25 KPH.

Always drive to the conditions.

In some cases 25 kph will be excessive.

Failure to operate correctly may result in serious injury or death!

CROPLANDS

Part No: XD - 176

CAUTION

WATER ONLY

DO NOT ADD CHEMICAL

Part No: XD - 127V

CAUTION

WATER FOR OPERATOR WASHING ONLY

DO NOT DRINK

Part No: XD - 124V

DANGER

ENTANGLEMENT IN PTO SHAFT CAN SERIOUSLY INJURE OR KILL

- DO NOT EXCEED PTO OPERATING SPEED OF 540 RPM.
- ENSURE ALL SAFETY GUARDS ARE IN PLACE.
- GREASE SLIDING SHAFTS OF PTO DAILY.
- EXCESSIVE VIBRATION MAY OCCUR IF USING PTO SPEEDS LESS THAN 300 RPM WHEN FILLING.

CROPLANDS

Part No: XD - 122V

DANGER

KEEP CLEAR OF POWERLINES WHILE OPERATING SPRAYER.

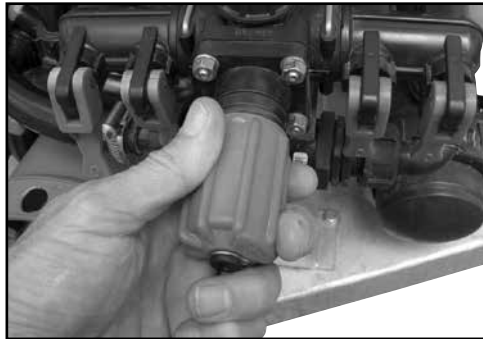
Never use the folding/unfolding functions near areas with overhead power lines.

Part No: XD - 181

SECTION 4

SPRAYER OPERATION

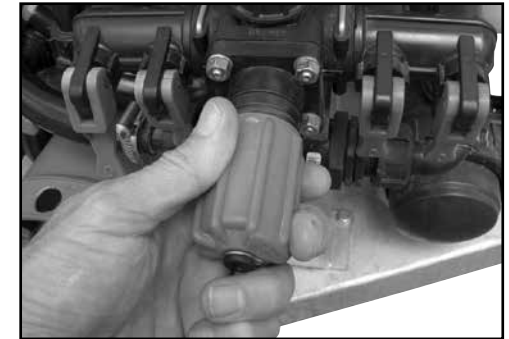
CHECK THE OPERATION OF YOUR SPRAYER	10
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Wind the pressure control knob anticlockwise to ensure the sprayer starts up with limited pressure.



Linkage with UCM manual controls.



Wind the pressure control knob clockwise until the chosen operating pressure is reached.

Check the Operation of your sprayer.

To check the operation of your machine, there are three sections to consider:

1 Manual-tap controls

2 Electric controls

3 Auto spray rate controllers

For all three pre-operation checks, ensure you have sufficient clean water in the sprayer, and the pump suction valve is open for sourcing liquid from the main tank.

1 Manual-Tap Controls

If your sprayer is fitted with standard manual-tap controls, the UCM/ECM manual control unit will come with a remote mount kit to attach the unit to the tractor (linkage sprayers have an adjustable, easy access arm mounted on the unit).

- a) Fit the control unit to the tractor where the operator can best access it.
- b) Fit the pressure and bypass lines to the controller and ensure they are tight (no leaks)
- c) Wind the pressure control knob anticlockwise to ensure the sprayer

starts up with limited pressure.

- d) Start the pump by engaging the PTO or starting the motor and operate at your required revs.
- e) Turn on the appropriate section selector taps to start the nozzles spraying.

Ensure any agitators are engaged and working.

Make sure you have your chosen nozzle selection fitted to the sprayer so that your application will be correct.

- f) Slowly wind the pressure control knob clockwise until your chosen operating pressure is reached.

Maximum recommended pressure is 12 bar.

- g) Check section operation with the appropriate selector taps.

WARNING

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

NOTE

Maximum PTO speed for the pump is 540 RPM. It is recommended that a minimum of 400 RPM is used for best results.

WARNING

Always insure the sprayer are controls are turned off and hydraulic fan drive & PTO disengaged when making any repairs or adjustments.

Making adjustments while the sprayer is operating can lead to serious injury.



Fit the electric control console in the cab and wire the power cable to the battery.

2 Electric Controls (Optional)

If your sprayer is fitted with electric controls, the control panel and wiring loom for the tractor end will be supplied, ready to connect to the sprayer.

Complete the following steps to test the electric controls:

This electric controller provides boom switch and pressure controls.



(3) Check the directional valve is from the spray tank.

To operate the unit:

- 1 Connect your sprayer to the tractor (see hookup information in your operators manual) connecting the hitch, PTO (if required) 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.
- 3 Check that the directional valve is feeding from the spray tank unless fed directly.
- 4 Place sprayer control into start up position by ensuring the master switch is in OFF position.
- 5 Engage the pump. If the pump is PTO driven 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.



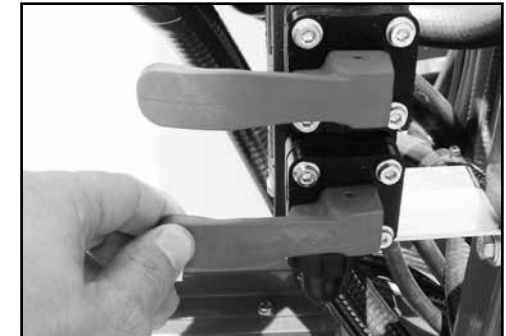
(6) Pressurise the system with the Master Switch in ON position.

- 6 Pressurise the system and operate the tank agitator by placing the master switch into ON position.
- 7 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 relief valve to maximum working pressure.

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

Turn agitator tap on (if fitted).

(7) Adjust the manual relief valve.



Turn the agitator tap ON (if fitted).

- 8 Check that the agitator valve is open.
- 9 Check that the tank agitator is working.

WARNING

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

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 and adjust pressure with boom switches ON.

10 Turn spray booms ON and OFF to check that they are operating.

11 Turn fence-line 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 hose 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 pressure for the nozzles you are using.



MT3405 & Spraymate II Controller.

3 MT3405F & Spraymate II 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.



(3) Check the directional valve is from the spray tank.

To operate the unit:

- 1 Connect your sprayer to the tractor (see operators manual)
- 2 Fill an appropriate quantity of clean water into spray tank (see operators manuals).
- 3 Check that the directional valve is feeding from the spray tank.
- 4 Follow the instructions in the spray controller instruction manual - to calibrate and operate the controller.

When checking the calibration factor, use the croplands number written on the flow-meter as shown in the picture above right, not the one provided on the tab.



Use the Croplands calibration factor when checking your controller.

- 5 Place the master switch of the spray controller in OFF position for start up. Ensure the controller power switch is ON.
- 6 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.
- 7 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.



Adjust the manual pressure relief valve.

- 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 manual pressure relief valve as shown to the maximum working pressure. For Broadacre sprayers, 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.
- e) Use the "-" key to reduce the pressure to your normal spraying pressure - 2-4 BAR (30-60 psi).

⚠ WARNING

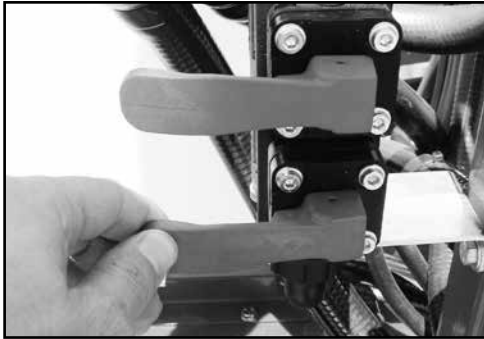
Important! Do not have pesticides in the spray tank when checking the sprayer.

NOTE

Additional copies of the Spray Controller manual can be downloaded in PDF file format from the internet. For the Micro-trak MT3405 or MT9000 controllers, log onto www.micro-trak.com.au & follow the menu.

NOTE

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



Turn agitator tap on (if fitted).



Auto/Man key and +/- keys.



Boom switches On, Master switch On Hold.



Spraymate II controller +/- & auto/man keys.

- 8 Check the tank agitator valve is open (if fitted).
- 9 Visually check that tank agitators are working.
- 10 Turn the controller master switch ON & OFF and check all boom sections switch off together.

- 11 Turn fence-line nozzle ON & OFF to check it is working correctly (if fitted).
- 12 While water is being pumped through the boom, check for any leaks 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, 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.

Spraymate II controller boom switches.



GENERAL

Boom sprayers out of calibration will not deliver the desired amount of chemical onto the paddock. This can result in:

- Increase in chemical costs
- Increase in crop effect
- Decrease in efficiency
- Potential loss in yield

Even a minor 10 % change in flow rate will add up to large sums...

Therefore it is advisable to calibrate the boom sprayer at least every 12 months. This is less complicated than many people think. The following procedure is aimed to provide a practical on-farm guide.

The following equipment is needed:

- A watch, displaying seconds
- A jug, displaying a volume scale
- At least one new nozzle of the type fitted onto the boom
- Nozzle tip reference tables to determine flow rates and spray quality (available from Nufarm/Croplands)

- Calculator
- Nozzle cleaning brush
- Tape measure, or other device to measure a distance of 100m

Before starting the calibration the spray equipment needs to be checked to eliminate basic faults.

- Nozzles – all fitted nozzles should be of the same type and size. Their spray pattern should be even (nozzles and strainers may need to be cleaned and may need to be replaced if necessary).
- Boom – hoses and joins should be checked for leaks. All systems should be in operating order.
- Tank – should be half filled with water.

The boom spray calibration is affected by two main factors:

- A) Travel speed (Step 1) and
- B) The output of nozzles (Step 2 – 5)

In the following procedure these two factors are checked independently, but ultimately, they are inseparably linked together.

STEP 1: SPEED CALIBRATION

To measure travel speed accurately it is important to do so by travelling over an exact distance (commonly 100 m) and to measure the time it takes to travel that distance. To mark the precise distance the use of a measuring tape is essential. Permanent markers will make this measured stretch a handy tool on farm.

It is advisable to undertake the calibration in the gear and RPM's the applications are commonly done with. The tank should be half filled. Sufficient run up assures that the starting line is crossed already travelling at desired speed. It is worthwhile to repeat the procedure at least twice to eliminate

any possible error. The travel speed in km/h can then be calculated from this simple formula:

$$\text{km/h} = \text{Distance (m)} \times 3.6 / \text{time (sec)}$$

EXAMPLE

It took 20 sec (measured twice to be sure) to travel 100m. The speed is $100 \text{ m} \times 3.6 / 20 \text{ sec} = 18 \text{ km/h}$.



STEP 2: CALCULATION OF NOZZLE FLOWRATE

At first it is necessary to work out what the nozzle output should be. The nozzles can then be checked to see if they are delivering the flow rate they are supposed to deliver. For this calculation three things need to be determined:

- 1) What is the preferred application speed (already measured)
- 2) What is the preferred water rate per ha
- 3) What is the nozzle spacing on the rig

Nozzle spacing

The most common spacing between nozzles on boom sprayers is 50 cm. It is important to be sure about the correct nozzle spacing, and if in doubt, measuring is advisable.

EXAMPLE

The measurement was 50 cm.



Application Volume

The desired application volume in L/ha can be obtained from pesticide labels or other publications from manufacturers (e.g. Nufarm Boom Spray Application Guide).

EXAMPLE

The product used was Roundup PowerMax® for control of summer weeds and the information from Nufarm advised that 40 - 70 L/ha was a sufficient water rate. Because the paddock contained stubble, it was recommendable to use a higher water rate. Therefore the 70 L/ha rate was chosen.



Calculation

A simple formula is transforming all this 'large scale' application information into a single, easy to measure 'output per nozzle, per minute' figure.

$$\text{L/min/nozzle} = \frac{\text{L/ha} \times \text{km/h} \times \text{W (cm)}}{60000}$$

L/min/nozzle = Nozzle flow rate in litre per minute
 L/ha = Water application rate per hectare
 Km/h = Driving speed
 W = Width of nozzle spacing in cm
 60000 = Constant

EXAMPLE

The desired water rate was 70 L/ha, applied with a speed of 18 km/h and the boom had a nozzle spacing of 50 cm:
 $\text{L/min} = \frac{70 \text{ L/ha} \times 18 \text{ km/h} \times 50 \text{ cm}}{60000} = 1.05 \text{ L/min}$
 To achieve this goal every single nozzle needed to deliver 1.05 L/min.



STEP 3: SELECTING PRESSURE AND SPRAY QUALITY

Nozzles deliver different flow rates and droplet sizes (more commonly called spray quality) at varying pressures.

The pressure needed to produce a certain flow rate for a specific nozzle type and size can be found in specific tables (Croplands Optima Catalogue, Nufarm Nozzle Charts, Teejet® Catalogue).

For efficacy and legal reasons it is important to be clear about the spray quality a specific nozzle type is going to produce. If in doubt an advisor should be consulted. For example, it is not desirable to calibrate and set up a nozzle type and size that can only spray FINE to MEDIUM spray quality when the chemical that is going to be put out has to be sprayed with a COARSE to VERY COARSE spray quality. To minimise chemical loss through drift it is advisable to choose a set up that is producing the coarsest spray quality without compromising efficacy.

Desired spray quality information can be obtained from chemical labels or additional information put out by manufacturer (e.g. Nufarm Boom Spray Application Guide, Croplands Optima Catalogue).

EXAMPLE

The chemical to be used was Roundup PowerMAX. To control summer weeds, the coarsest spray quality, the product should be sprayed with is COARSE, according to the Nufarm Boomspray Application Guide. The boom was fitted with AirMix® 025 nozzles. According to the Nufarm Nozzle Chart reference, the pressure set up needed to be around 3.3 bar to get the desired flow rate of 1.05 L/min. The Nufarm Nozzle Chart showed that at 3.3 bar this nozzle type and size is producing a COARSE spray quality. Therefore this nozzle type was suited for the planned application. The boomsprayer needed to be set up to spray at 3.3 bar to deliver the desired flowrate and spray quality.



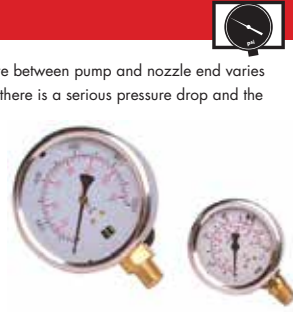
STEP 4: PRESSURE SET-UP

All the theoretical work on nozzle flow rates is now finalised. At least one old nozzle needs to be replaced with a new nozzle of the same type (the old nozzles may be worn). The sprayer can be turned on now and the desired pressure can be selected. If the pressure gauge is measuring the pressure at the nozzle end, measuring can start now.

However, many gauges are measuring the pressure at the pump end. In this case one nozzle needs to be replaced with a nozzle pressure Gauge (obtainable from Croplands) to measure the correct pressure at the nozzle end. As a rule of

thumb, if the pressure between pump and nozzle end varies by more than 20 % there is a serious pressure drop and the system should be checked.

The tank should be filled with water only since all table values are based on water.



STEP 5: MEASURING NOZZLE FLOW RATE

While spraying, a jug must be placed underneath the new nozzle to collect fluid for a duration of 60 seconds. Effectively this is measuring the output per nozzle per minute.

If the output is too much for the scales of the jug, the time may be halved to 30 sec. In this case the measured volume needs to be doubled to refer back to a per minute output. The measured volume can now be compared to the theoretical value calculated above.

Depending on the difference, the pressure may need some fine-tuning to obtain exactly matching flow rate values.

Individual nozzle outputs may vary. Therefore, measurements should be repeated with a minimum of three nozzles per

boom section to check for nozzle wear. All outputs should be within a 10% range. If more than one nozzle is out of range, the whole nozzle set should be replaced.



EXAMPLE

An old Airmix 025 was replaced with a new one. The pressure was set-up to be 3.3 bar at the nozzle end. The measured flow rate of the new nozzle was 1.0 L/min. Therefore the pressure needed to be slightly increased to 3.5 bar and the flow rate was brought up to the desired 1.05 L/min for the new nozzle.

The boom had 5 sections and therefore measurements needed to be repeated for three nozzles in each section. Results were:

1.05	1.00	1.05	1.05	1.15
1.05	1.15	1.05	1.05	1.10
1.10	1.10	1.05	1.15	1.05

Three of the nozzles had a flow rate differing by around 10 % from the desired output. A re-check of those three nozzles gave the same result. Therefore, there was little confidence in the future performance of the whole set. The two-year-old set needed to be replaced.

After replacement, the new nozzles were checked again and flow rates were uniform at 1.05 L/min.

STEP 5B: ALTERNATIVE MEASURING OF NOZZLE FLOW RATE

Rather than using a jug and timer, an instant Tip Tester can be used. This method is not as accurate but handy to do a quick check or compare many nozzles in a short space of time.

The Tip tester has a rubber seal that is placed tightly over the nozzle.

The actual flowrate coming out of the nozzle pushes up a little ball in a tube.

By looking at the position of the ball the flow rate can be read directly from a scale (see picture).



STEP 6: AUTOMATIC RATE CONTROLLER

Many boom sprayers are set up with automatic rate controllers that will allow a constant per ha output with varying speeds by adjusting the flow rate. The two main factors governing the system are again the precise measuring of:

- A) Speed
- B) Flow rate

At the initial set up of the machinery, precise inputs into the rate controller would have assured precise operation. However, over time, machinery will wear, therefore, it is important to check if initial inputs are still in calibration.

Flowmeter

The greater the water volume measured the more precise the outcome will be. It is not practical to obtain overall boom flow rates through nozzles. Therefore the easiest way is to take off a section of boom hose (all other sections need to be closed) and to fill a measuring drum up to the 100 L mark. The 100 L volume can then be compared to the volume measured by the flowmeter. If necessary controller inputs need to be adjusted (refer to individual controller handbooks).

Speed

The actual procedure to reset the rate controller will be different from system to system but in principle it will be the same. An exactly measured 100 m distance (see Step 1) needs to be travelled and compared to the distance calculated by the rate controller. If necessary the controller inputs need to be changed (refer to controller handbook).

CROPLANDS CALIBRATION KIT



For more information,
call Croplands on:
1800 999 162
(Freecall Australia)
sales@croplands.com.au
www.croplands.com.au

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
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
	1.5	0.28	84.0	67.2	56.0	48.0	42.0	33.6	28.0	21.0	18.7	16.8
	2.0	0.32	96.0	76.8	64.0	54.9	48.0	38.4	32.0	24.0	21.3	19.2
	3.0	0.39	117	93.6	78.0	66.9	58.5	46.8	39.0	29.3	26.0	23.4
	4.0	0.45	135	108	90.0	77.1	67.5	54.0	45.0	33.8	30.0	27.0
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
	1.5	0.42	126	101	84.0	72.0	63.0	50.4	42.0	31.5	28.0	25.2
	2.0	0.48	144	115	96.0	82.3	72.0	57.6	48.0	36.0	32.0	28.8
	3.0	0.59	177	142	118	101	88.5	70.8	59.0	44.3	39.3	35.4
	4.0	0.68	204	163	136	117	102	81.6	68.0	51.0	45.3	40.8
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
	1.5	0.56	168	134	112	96.0	84.0	67.2	56.0	42.0	37.3	33.6
	2.0	0.65	195	156	130	111	97.5	78.0	65.0	48.8	43.3	29.0
	3.0	0.79	237	190	158	135	119	94.8	79.0	59.3	52.7	47.4
	4.0	0.91	273	218	182	156	137	109	91.0	68.3	60.7	54.6
XR11003 AI11003 (50 mesh)	1.0	0.68	204	163	136	117	102	81.6	68.0	51.0	45.3	40.8
	1.5	0.83	249	199	166	142	125	100	83.0	62.3	55.3	49.8
	2.0	0.96	288	230	192	165	144	115	96.0	72.0	64.0	57.6
	3.0	1.18	354	283	236	202	177	142	118	88.5	78.7	70.8
	4.0	1.36	408	326	272	233	204	163	136	102	90.7	81.6
XR11004 AI11004 (50 mesh)	1.0	0.91	273	218	182	156	137	109	91.0	68.3	60.7	54.6
	1.5	1.12	336	269	224	192	168	134	112	84.0	74.7	67.2
	2.0	1.29	387	310	258	221	194	155	129	96.8	86.0	77.4
	3.0	1.58	474	379	316	271	237	190	158	119	105	94.8
	4.0	1.82	546	437	364	312	273	218	182	137	121	109
XR11005 AI11005 (50 mesh)	1.0	1.14	342	274	228	195	171	137	114	85.5	76.0	68.4
	1.5	1.39	417	334	278	238	209	167	139	104	92.7	83.4
	2.0	1.61	483	386	322	276	242	193	161	121	107	96.6
	3.0	1.97	591	473	394	338	296	236	197	148	131	118
	4.0	2.27	681	545	454	389	341	272	227	170	151	136

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
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
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	
<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) = Speed (km/hr) x Swath Width (m) x Application Rate (l/ha) ÷ 600 ÷ 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.
Application Rate (l/ha) = Spray Output (l/min) x 600 ÷ Speed (km/hr) x Swath Width (m) [..... x 600] ÷ [..... x] =

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	
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)

=

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

- 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)

=

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

[..... x 600] ÷ [..... x

=

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:

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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)

=

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

- 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)

=

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

[..... x 600] ÷ [..... x]

=

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

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

Nozzle Flow Rate (l/min)

=

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

..... x x ÷ 600 ÷

= l/min for each nozzle

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)

=

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

[..... x 600] ÷ [..... x]

=

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	
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Boom section 1:	
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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) = Speed (km/hr) x Swath Width (m) x Application Rate (l/ha) ÷ 600 ÷ 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.
Application Rate (l/ha) = Spray Output (l/min) x 600 ÷ Speed (km/hr) x Swath Width (m) [..... x 600] ÷ [..... x] =

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	
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	

Salvarani Foam Marker Controller (if fitted)

If your sprayer is fitted with a Salvarani 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.



Adjust foam output with the flow-rate regulating valve.

- 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.



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

- 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.



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

- 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 foam marker, go to pages 5.6 - 5.8 in your General Sprayer Operators manual.

For trouble-shooting tips, go to the trouble-shooting section in the General Sprayer Operators manual.

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

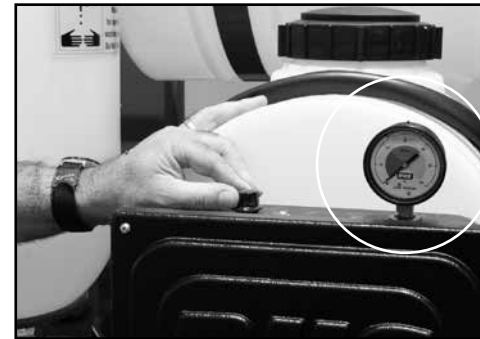
The compressor requires a continuous 12-volt supply at 9 amps.
Do not operate the unit at more than 40 Deg C or less than 0 Deg C.



Foam marker control with switch in OFF position.



Foam marker adjustment knob & pressure gauge.



The foam marker pressure gauge.



Adjusted for low foam output.

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.

- 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.

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.

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.



Adjusted for 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.



Outback 10 model pictured above.



Separate 100 litre foam tank

Optional Outback 6 or Outback 10 Foam Markers

If your sprayer is fitted with a higher output model Outback 6 or Outback 10 Foam Marker, go to the use and adjustment section in the General Sprayer Operators manual.

The only difference is that the adjustment dial for the foam output is on the in-cab control unit for the Outback 6 & Outback 10.

The Outback 6 & Outback 10 models also have a separate 100 litre tank.

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



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.



(b) Unlock the latch with the foot lever.



(c) Lower the hopper to filling position.

Adding Chemical To the Spray Tank

Chemical can be added to the spray 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 spray tank, follow the steps outlined:

- a) Make sure sufficient water is added to the spray tank and the flush tank.
- b) Unlock the Chem-E-Flush dropdown leg lock by placing your foot on the lever and press down to unlock the latch.

- c) Lower the hopper to filling position.
- d) Open the Chem-E-Flush selector valve next to the hopper.

(d) Open Chem-E-Flush selector valve.





(e) Turn directional valve to source from spray tank


e) Turn directional valve to source from the spray tank.

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.



WARNING

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

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 rinse valve when chemical is mixed.

(k) Close hopper lid & open the nozzle rinse valve to mix chemical.



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

m) Open the transfer valve at the base of the hopper to transfer chemical mixture to the spray 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 spray tank.

(n) Open the drum rinse valve to rinse the hopper.



(f) Open the agitator valve.

NOTE

The plumbing circuit of the sprayer 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.





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



(r) Lift the hopper back to transport position.



(b) Turn directional valve to source from spray tank.



(c) Open the agitator valve.

- p) Close the transfer valve at the base of the hopper after mixture is transferred.
- q) Return the selector valve to spray position when completed.

- r) Lift the hopper back to transport position when mixing is completed.
Push the latch lever down and lift the hopper up, then release the lever to lock.

2 Chemical Probe

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

- a) Make sure sufficient water is added to the spray tank and the flush tank.
- b) Turn directional valve to source from the spray tank.

- c) Open the agitator valve.
- d) Start the tractor and operate the pump with PTO & tractor engine at idling speed only.



WARNING

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

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

(q) Return the selector valve to spray position.



NOTE

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

NOTE

The plumbing circuit of the sprayer 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.



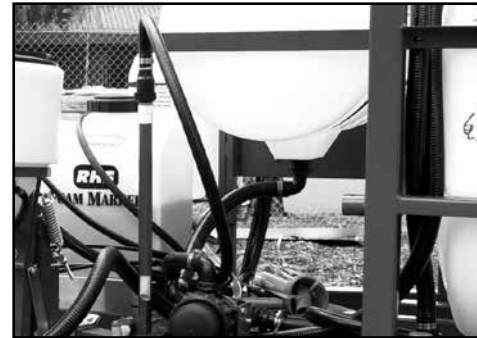
(g) Open transfer valve to transfer mixture to spray tank.

- g) Remove the probe from its holder, place it into the chemical and then, open the probe valve to transfer chemical to the spray tank.



(h) Close the chemical probe valve.

- 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.

- j) Return the probe to its holder when completed.

NOTE

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

EMERGENCY ACTION PLAN

Never operate the sprayer without an action plan in place for when things go wrong ...

“Take 5” to evaluate the risks

Actions for most foreseeable machine issues such as breakages start with ...

“Drop the speed”

“Dump the pressure”

then evaluate further.

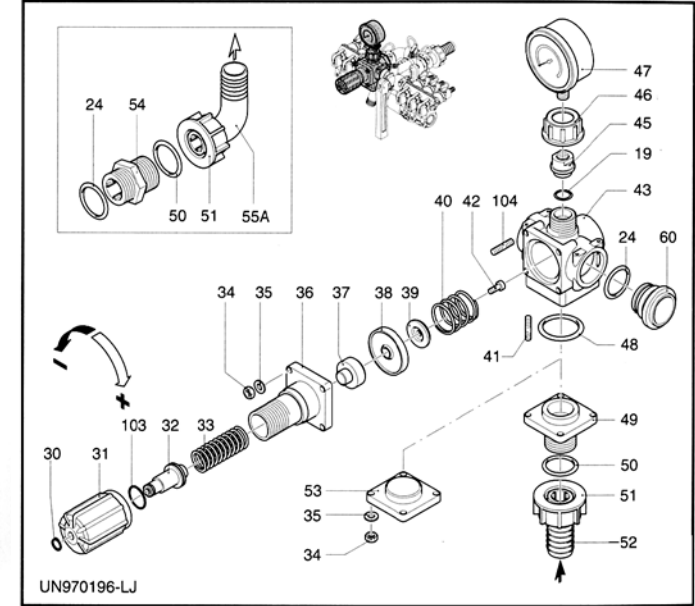
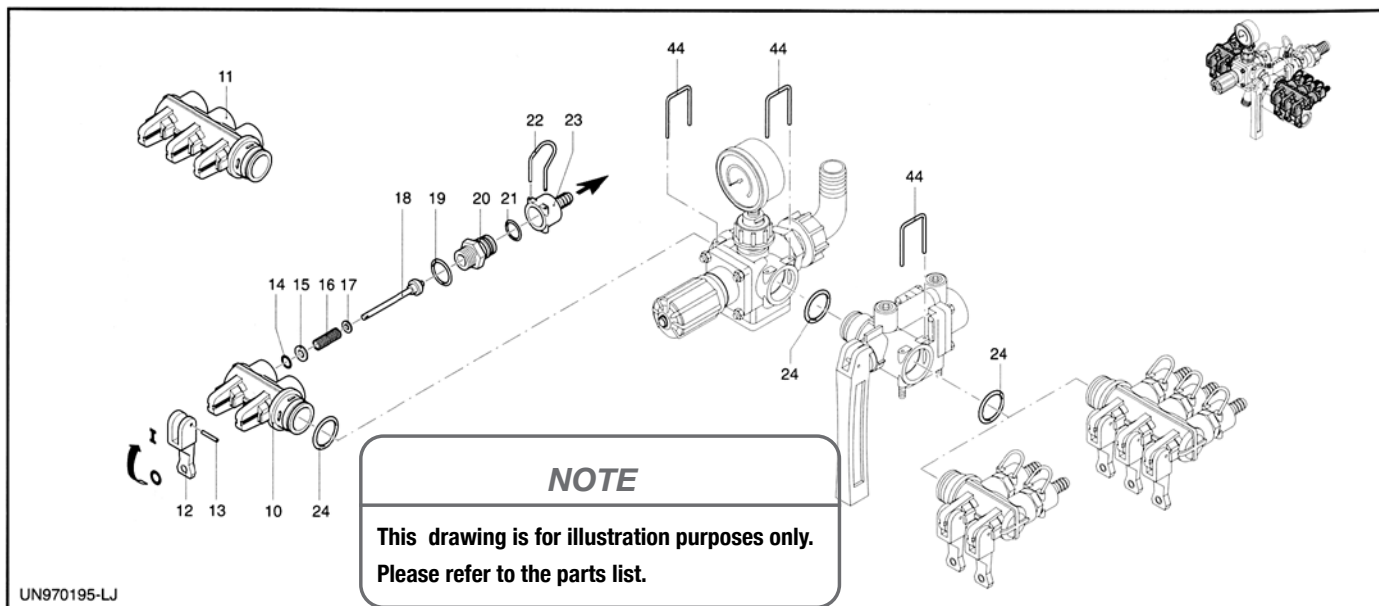
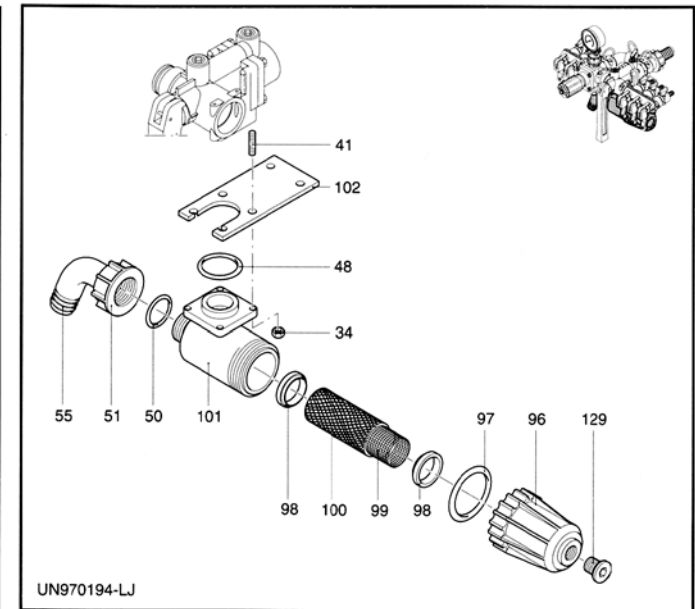
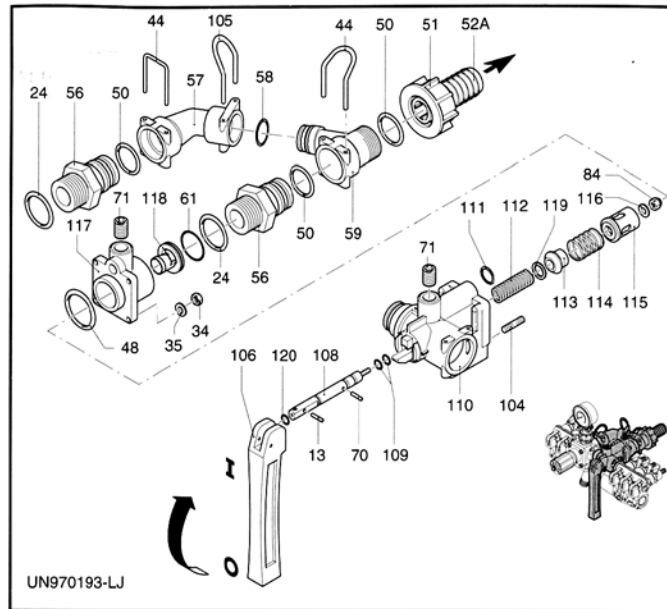
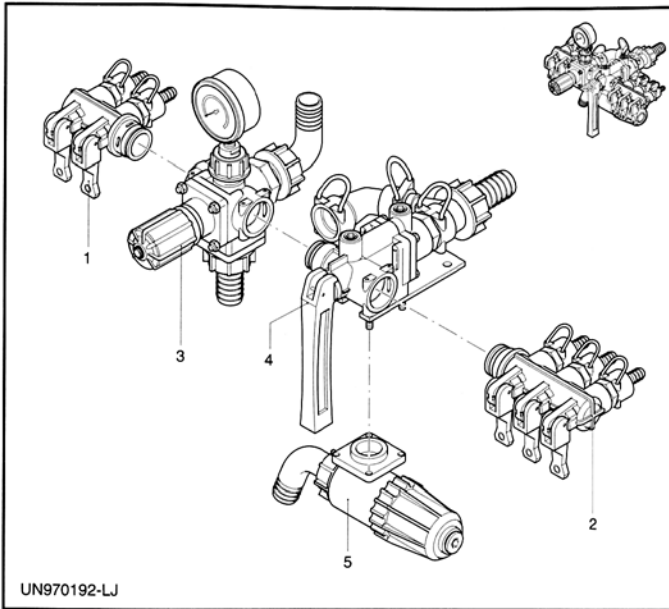
To stop spraying at any stage, flick the switches down. The MASTER OFF is on the left hand side.



SECTION 5

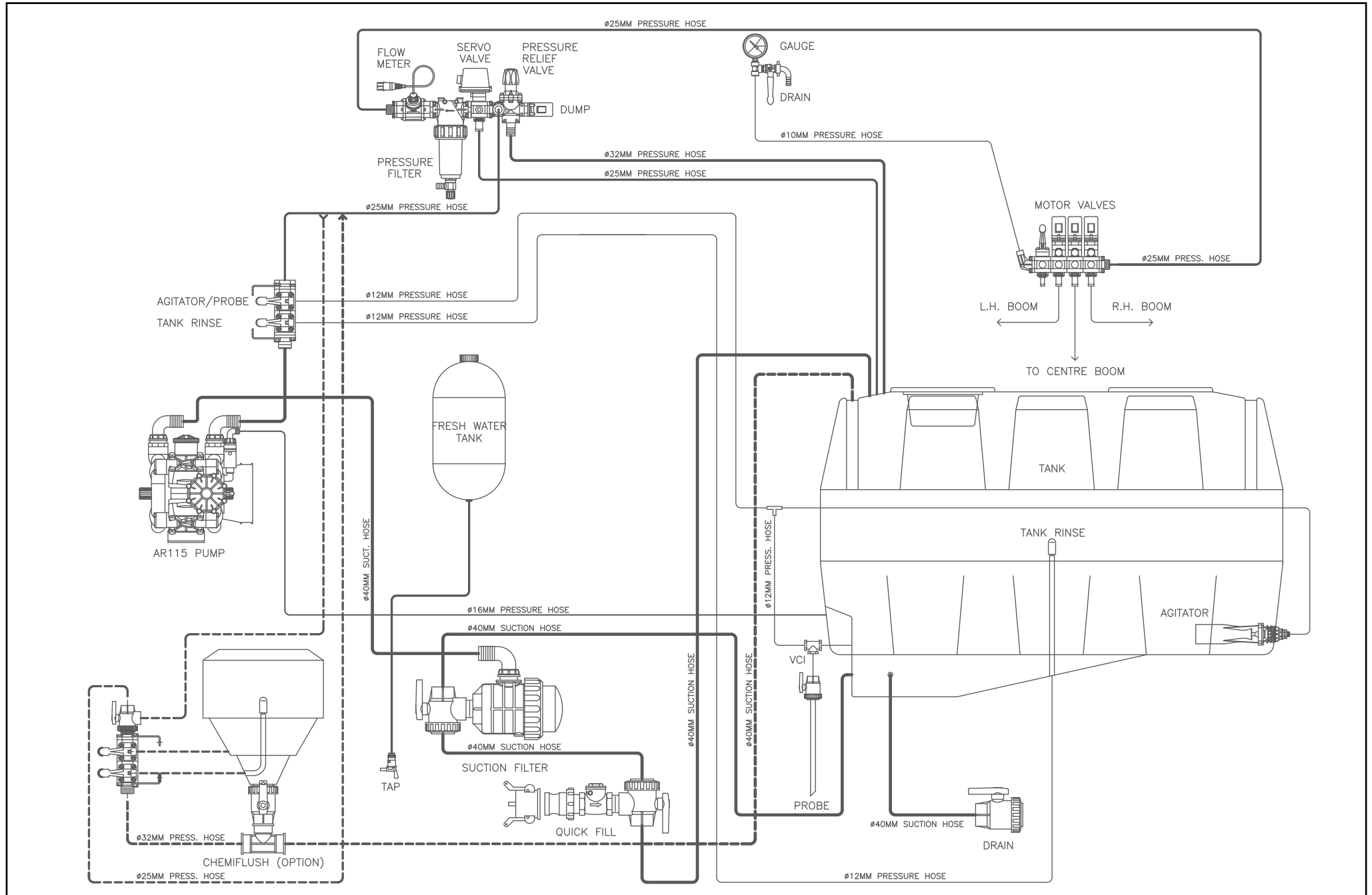
ASSEMBLY DRAWINGS & PARTS LISTINGS

UCM/ECM CONTROLLERS	34		
PONY PLUMBING DIAGRAM	36	AIRBAGS	51
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LIQUID CONTROL SYSTEM	38	BOOM CENTRE SECTION - STANDARD & G-VAR	57
LIQUID SYSTEM	39	BOOM SELF LEVELLER - STANDARD & G-VAR	58
VALVES & ENVIRO-TRANSFER KIT	40	BOOM - 16.5 METRE STANDARD	59
FILTERS	41	BOOM - 16.5 METRE G-VAR	60
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FOAM MARKER SALVARANI	45	BOOM - 12 METRE HYDRALINK	63
GEX BOOMS	46	BOOM - 15 METRE HYDRALINK	64

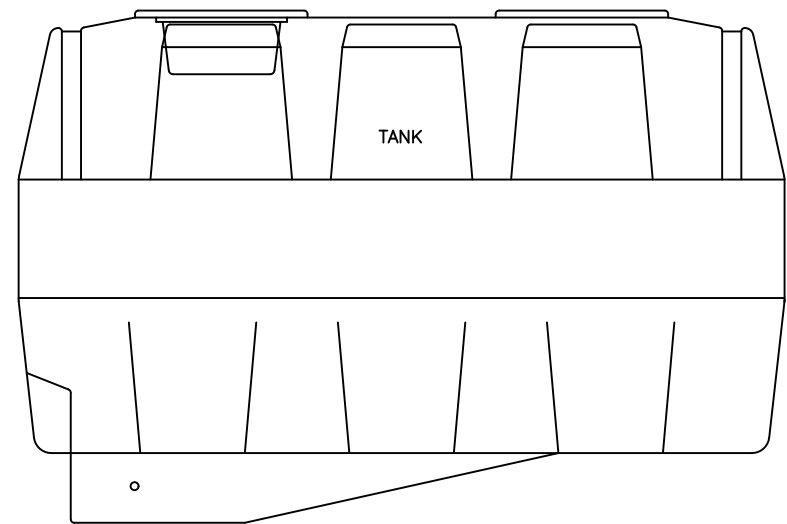
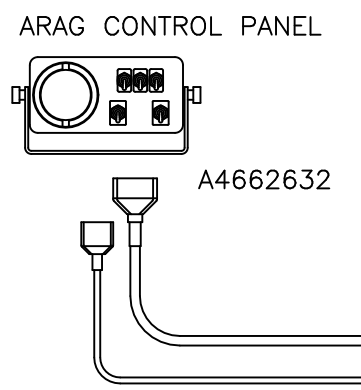
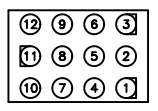
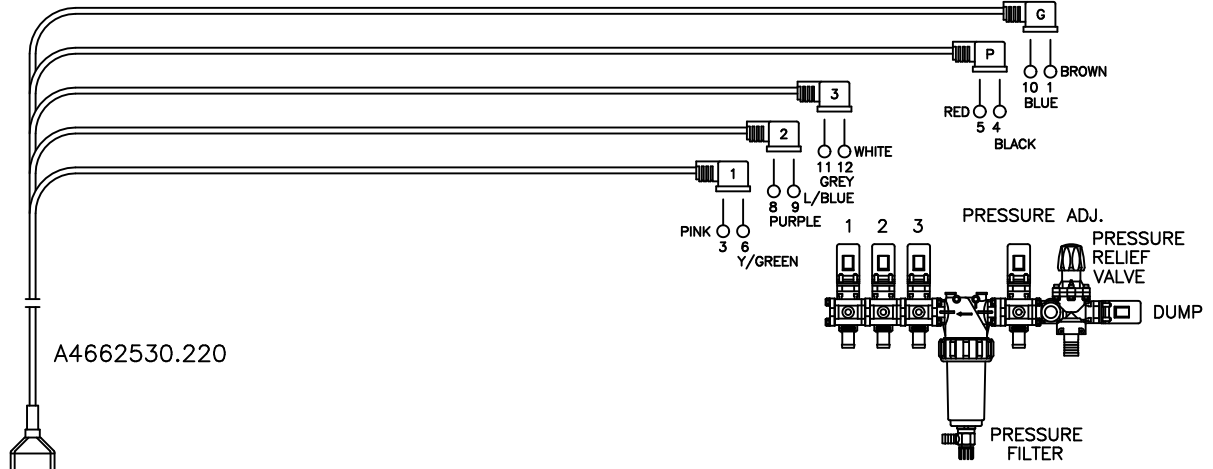


Pos	Part No	Description	Qty
1	1547	Left 2-way valve	1
1	1548	Left 3-way valve	1
2	1571	Right 2-way valve	1
2	1572	Right 3-way valve	1
3	1348	ECM compl.reg.valve	1
3	1349	UCM compl.reg.valve	1
4	1351	Distributor body+R	1
5	1553	Complete filter	1
10	394850	2-way valve body	1
11	394860	3-way valve body	1
12	394690	Red valve lever	4
13	390330	Pin	5
14	390341	O-Ring	4
15	390312	Washer	4
16	390300	Spring	4
17	390313	Washer	4
18	390323	Complete valve rod	4
19	180101	O-Ring	5
20	392600	Threaded adapter	4
20	392604	Plug - optional	
21	640070	O-Ring	4
22	392580	Fork	4
23	392870	Hose tail	4
23	392590	Hose tail	4
23	392620	Hose tail	4
24	390291	O-Ring	5
30	480550	Circlip	1
31	394790	Adjustment knob	1
32	394770	Spring pin	1
33	1040830	Spring	1
34	390440	Nut	16
35	550331	Washer	12
36	394780	Upper body	1
37	394751	Piston	1
38	394741	Diaphragm - Gomma	1
38	394740	Diaphragm - Desmopan	1
38	394742	Diaphragm - Viton	1
39	394720	Valve	1
40	394730	Spring	1
41	394830	Stud	8
42	680700	Bolt	1
43	394700	Regulating valve body	1
44	395530	Fork	5
45	394800	Pressure gauge attach	1
46	550450	Ring nut	1

Pos	Part No	Description	Qty
47	391240	Pressure gauge, 0-20 bar	1
48	660170	O-Ring	3
49	394810	Flange	1
50	550350	O-Ring	4
51	550242	Ring nut	2
52	550210	Hose tail	2
53	394840	Flange	1
54	550340	Threaded adapter	1
55	550370	Elbow	1
56	395000	Manifold nipples	2
57	395520	Body manifold	1
58	390060	O-Ring	1
59	395020	Body manifold	1
60	394870	Plug	1
61	770260	O-Ring	1
70	392120	Pin	1
71	880581	Plug	2
84	395390	Nut	1
96	396100	Filter cover	1
97	395081	O-Ring - Viton	1
98	395071	Filter gasket	2
99	396110	Internal filter	1
100	396130	External grid	1
101	395030	Filter box	1
102	394820	Bracket	1
103	770130	O-Ring	1
104	392330	Stud	8
105	850730	Fork	1
106	1660560	Control lever	1
108	1660020	Complete valve rod	1
109	480561	O-Ring - Viton	2
110	1660010	Main valve	1
111	1660230	O-Ring	1
112	1660541	Spring	1
113	1660050	Feed rod valve	1
114	1660090	Spring	1
115	1660080	Guide	1
116	393790	Washer	1
117	1660060	Flange	1
118	1660100	Red seat	1
118	1660110	Orange seat	1
118	1660120	Blue seat	1
119	1660140	Washer	1
120	1660551	O-Ring - Viton	1
129	396590	Plug & gasket	1



Arag wiring diagram key			
Pin pos.	Colour	Function	(+/-)
1			
2			
3	Pink	Boom 1	(-)
4	Black	Pressure	(-)
5	Red	Pressure	(+)
6	Y/Green	Boom 1	(+)
7	Brown	Dump	(-)
8	Purple	Boom 2	(-)
9	Light Blue	Boom 2	(+)
10	Blue	Dump	(+)
11	Grey	Boom3	(-)
12	White	Boom 3	(+)



+ RED CABLE
 POWER SUPPLY
 - BLACK CABLE

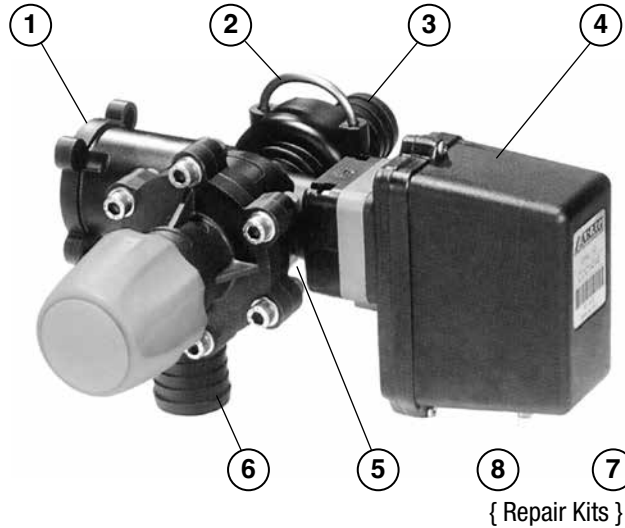
BROADACRE WIRING DIAGRAM
 ARAG ELECTRIC I-E2032

Electric Pressure Dump Valve, Manual Pressure Relief Valve, Electric Regulating Valve (Servo) and Flowmeter



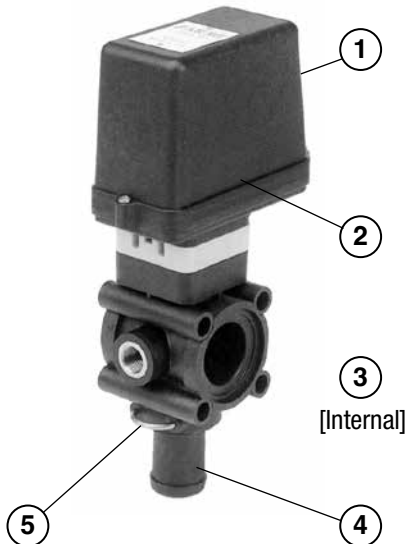
Liquid Control System - Complete Valve Assembly

Manual Regulator-Dump Valve Assembly



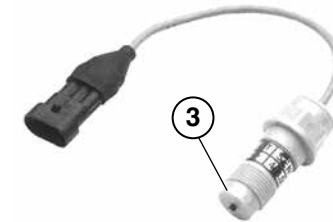
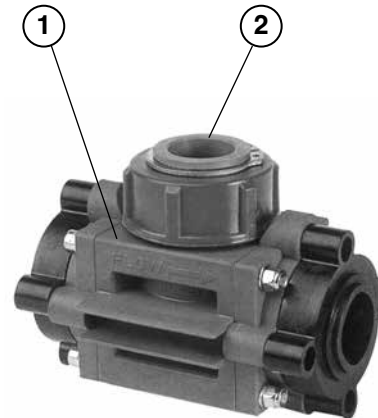
Pos	Part No	Description	Qty
1	A471502	Complete Regulator	1
2	A460000.230	Clip	1
3	A471202.332	Bypass Tail	1
4	A4653920S	Valve Motor	1
5	A461511.040	Clip	1
6	A473001.132	Inlet Tail	1
7	A471202.550	Dump Valve kit	1
8	A471502.180	Regulator kit	1

Electric Regulating Valve



Pos	Part No	Description	Qty
1	A463020S	Complete Valve	1
2	A4653925S	Motor	1
3	A473020.130	Regulator Stem Kit	1
4	A473001.125	Tail/Seat	1
5	A461511.040	Clip	1

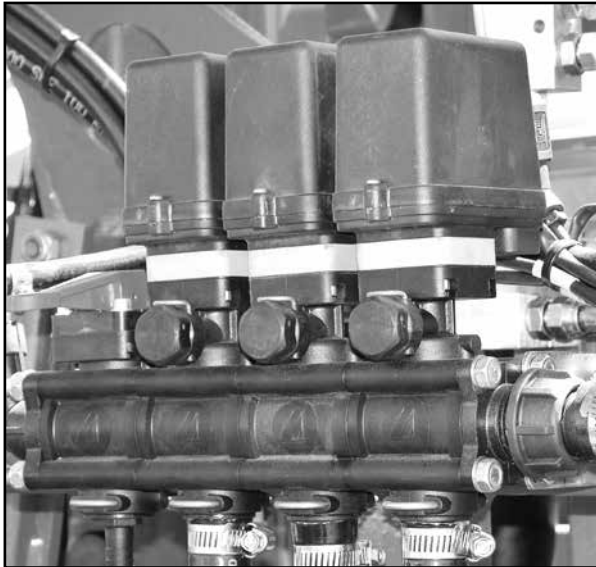
Flowmeter Assembly



Pos	Part No	Description	Qty
1	A4623862 *	Complete Valve	1
2	POL41316399	Rapid Check Turbine Assembly	1
3	POL413003AK.CR	Sensor with Plug	1

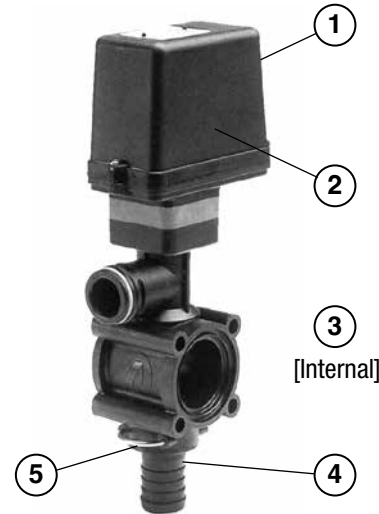
* PART NUMBERS IN ITALICS ARE NON-STOCK ITEMS & WILL NEED TO BE ORDERED.

Boom Shut-Off Valves, Pressure Gauge & Control Valve/Taps



Boom Shut-Off Valves

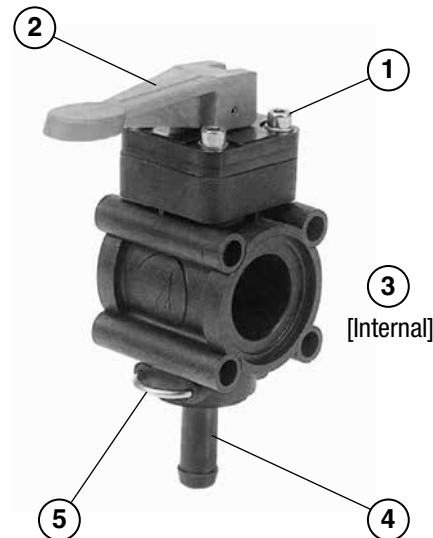
Boom Shut-Off Valve (each)



Pos	Part No	Description	Qty
1	A473001	Complete Valve	1
2	A4653902S	Motor	1
3	A473001.550	Regulator Stem Kit	1
4	A473001.125	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
3	A463051.550	Kit	1
4	A463001.113	Tail	1
5	A46300.040	Clip	1

Pressure Gauge: L-G 1611





Drain Valve 2"



Pos	Part No	Description	Qty
1	A4542137	Valve Complete	1
2	A454237.050	Tap Handle	1
3	A-EL200	Tail	1



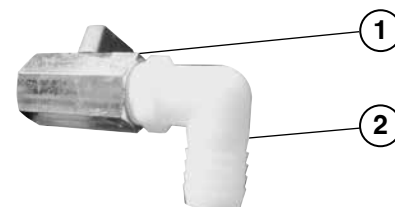
Tank Selector Valve 1½"



Pos	Part No	Description	Qty
1	A4542236	Valve Complete	1
2	A454237.050	Tap Handle	1



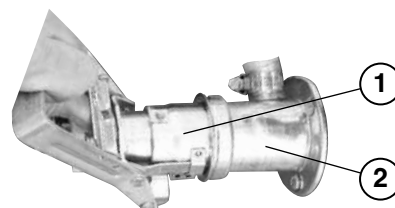
Boom Flushing Tap



Pos	Part No	Description	Qty
1	BALL12F2M	Valve Complete	1
2	A-EL1212	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

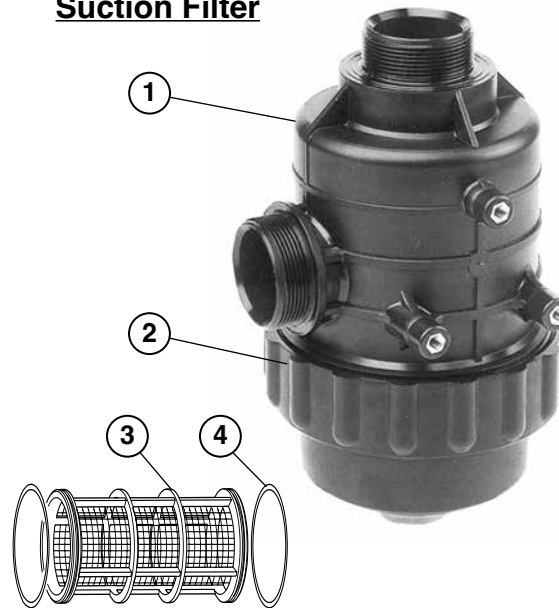


Suction Filter
(shown above on sprayer)

Pressure Filter
(shown below on sprayer)



Suction Filter

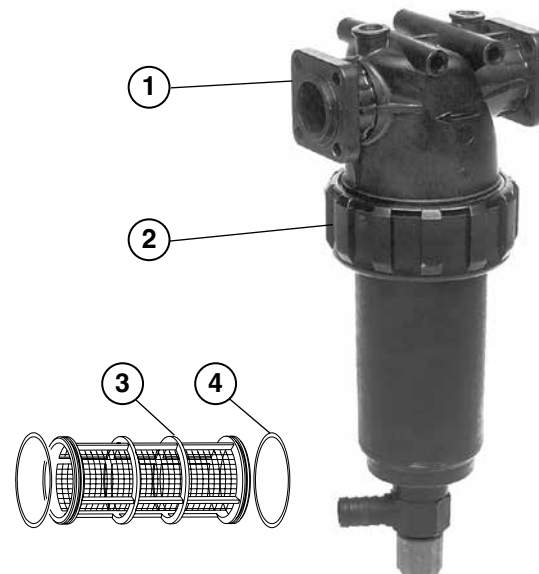


Pos	Part No	Description	Qty
1	A316 173	Filter Complete	1
2	A316000.050	Main Seal	1
3	A316003.030	Screen - internal	1
4	A316300.60	Screen O-Rings	2



Smaller suction filters may be on some units: Part # A314463

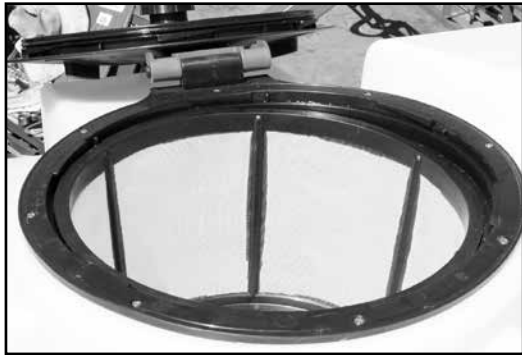
Pressure Filter



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

Pos	Part No	Description	Qty
	L-H9351A	60 litre ChemeFlush	
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
	L-H9355A	Drop Down Assembly	
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



Tank Lid & Basket

Lid



Pos	Part No	Description	Qty
1	A365060	Large lid	1
2		O-Ring/Seal	1

Basket

Part No: A300134



Foam & Rinse Tank Lids



1

2

Lid

Pos	Part No	Description	Qty
1	A354010	Foam Tank Lid (if fitted)	1
2	A3522221	Small Tank Lid	1

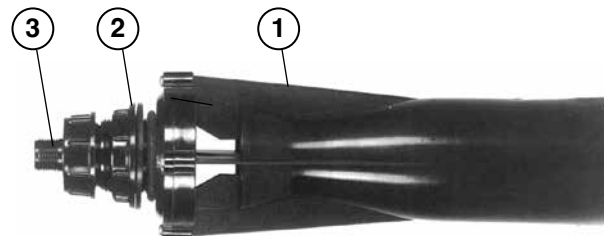


Tank Rinsing Jet & Agitator (if fitted)

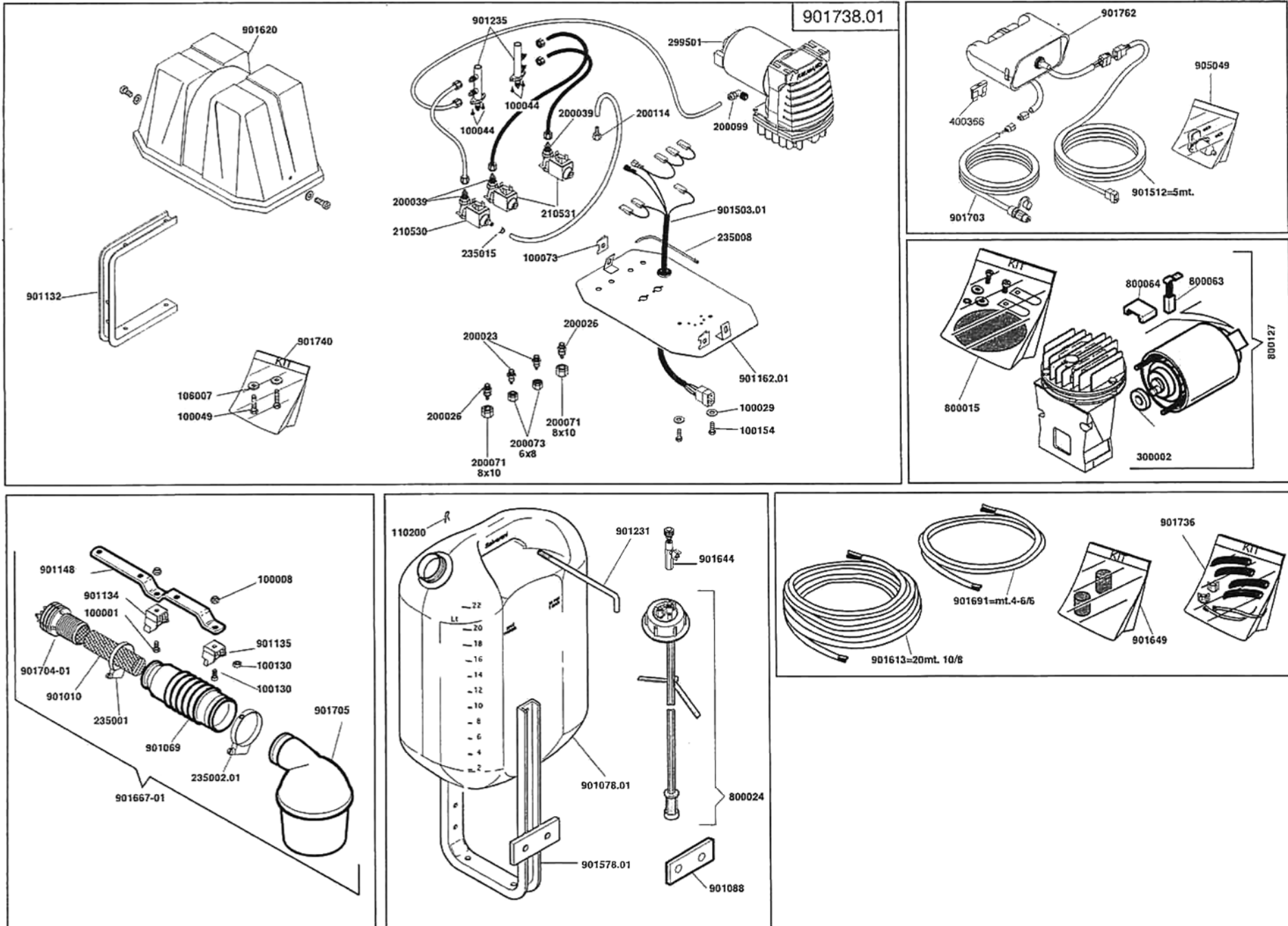
Tank Rinse Jet

Pos	Part No	Description	Qty
1	27500E-12-8-TEF	Tank Rinsing Jet	1

Agitator (if fitted)

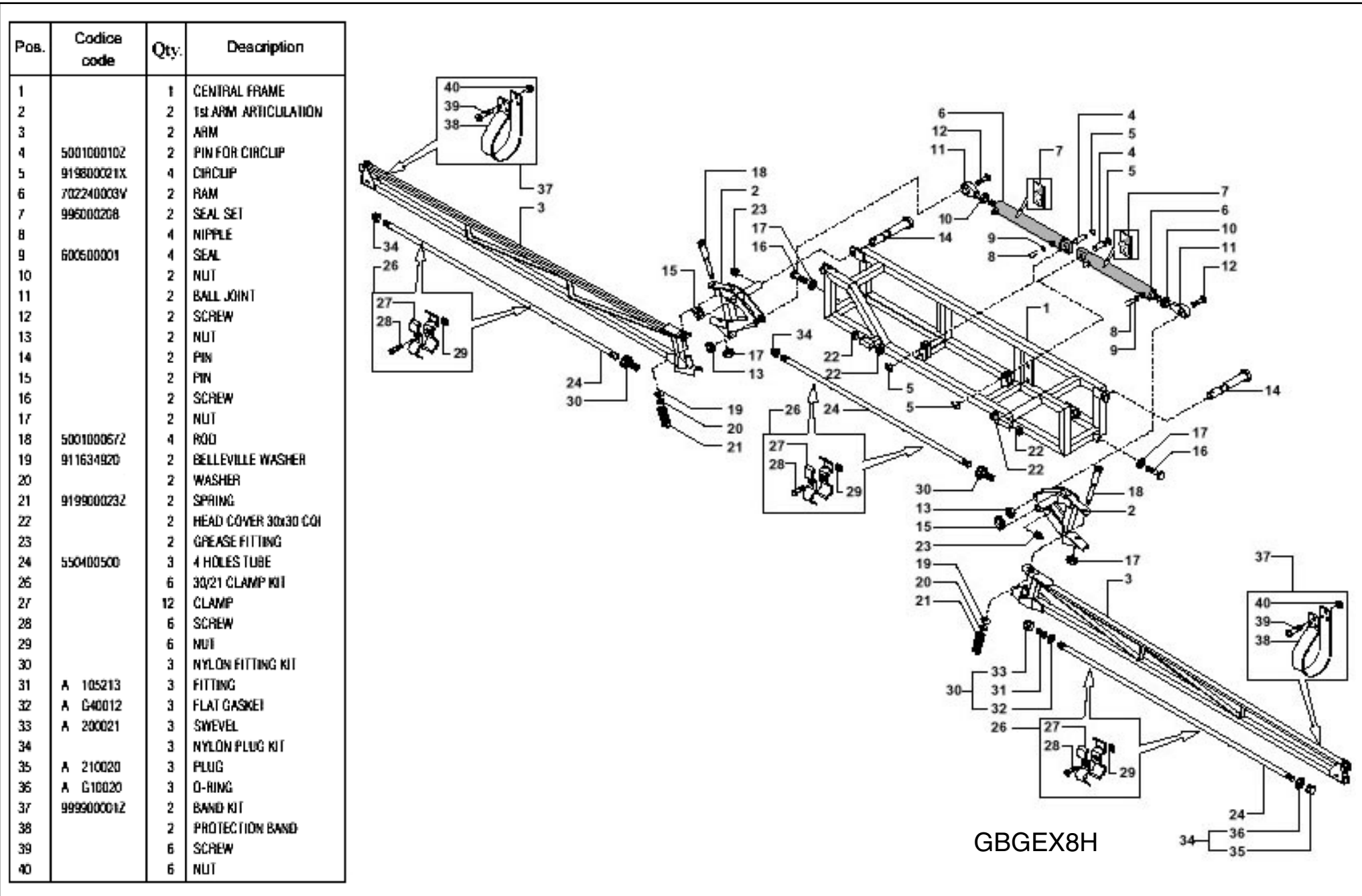


Pos	Part No	Description	Qty
1	A502 163	Agitator Complete	1
2	A200050	Fly nut	1
3	A5021163.900	Agitator Jet	1

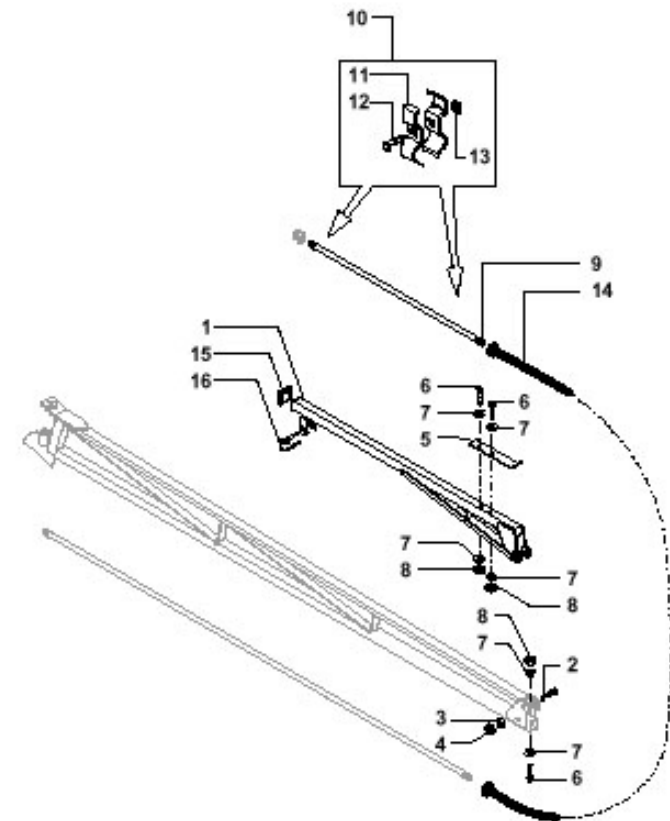
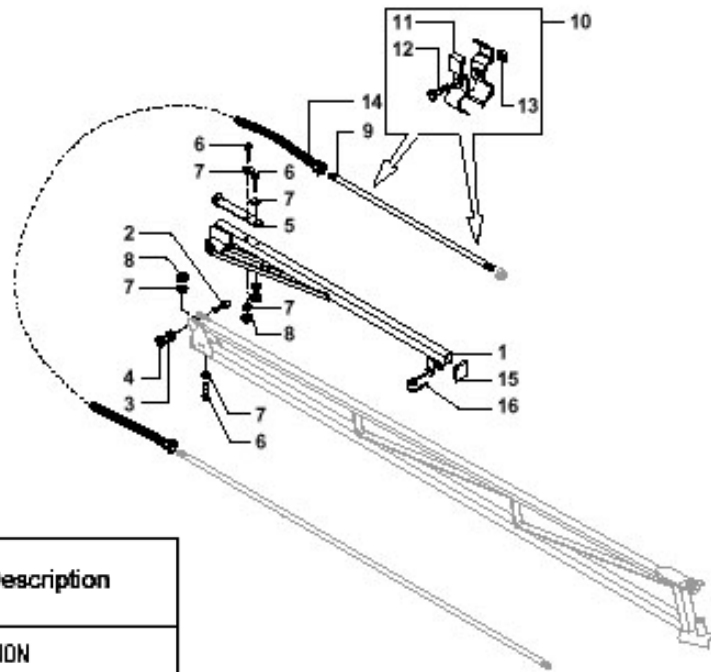


Pos.	Codice code	Qty.	Description
1		1	CENTRAL FRAME
2		2	1st ARM ARTICULATION
3		2	ARM
4	500100010Z	2	PIN FOR CIRCLIP
5	919800021X	4	CIRCLIP
6	702240003V	2	RAM
7	996000208	2	SEAL SET
8		4	NIPPLE
9	600600001	4	SEAL
10		2	NUT
11		2	BALL JOINT
12		2	SCREW
13		2	NUT
14		2	PIN
15		2	PIN
16		2	SCREW
17		2	NUT
18	500100067Z	4	ROD
19	911634920	2	BELLEVILLE WASHER
20		2	WASHER
21	919900023Z	2	SPRING
22		2	HEAD COVER 30x30 CQI
23		2	GREASE FITTING
24	550400500	3	4 HOLES TUBE
26		6	30/21 CLAMP KIT
27		12	CLAMP
28		6	SCREW
29		6	NUT
30		3	NYLON FITTING KIT
31	A 105213	3	FITTING
32	A G40012	3	FLAT GASKET
33	A 200021	3	SWIVEL
34		3	NYLON PLUG KIT
35	A 210020	3	PLUG
36	A G10020	3	O-RING
37	999900001Z	2	BAND KIT
38		2	PROTECTION BAND
39		6	SCREW
40		6	NUT

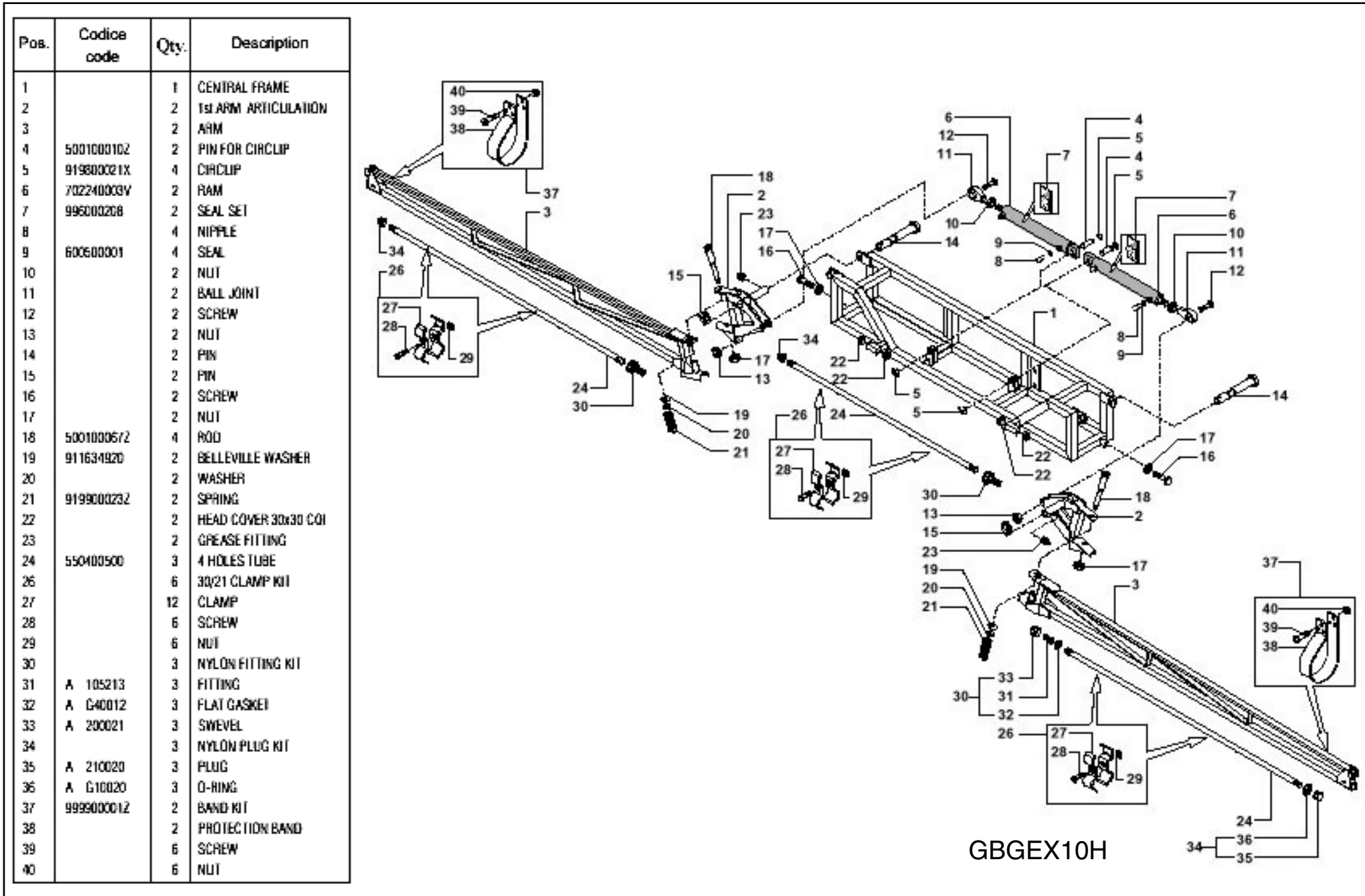
GBGEX6H



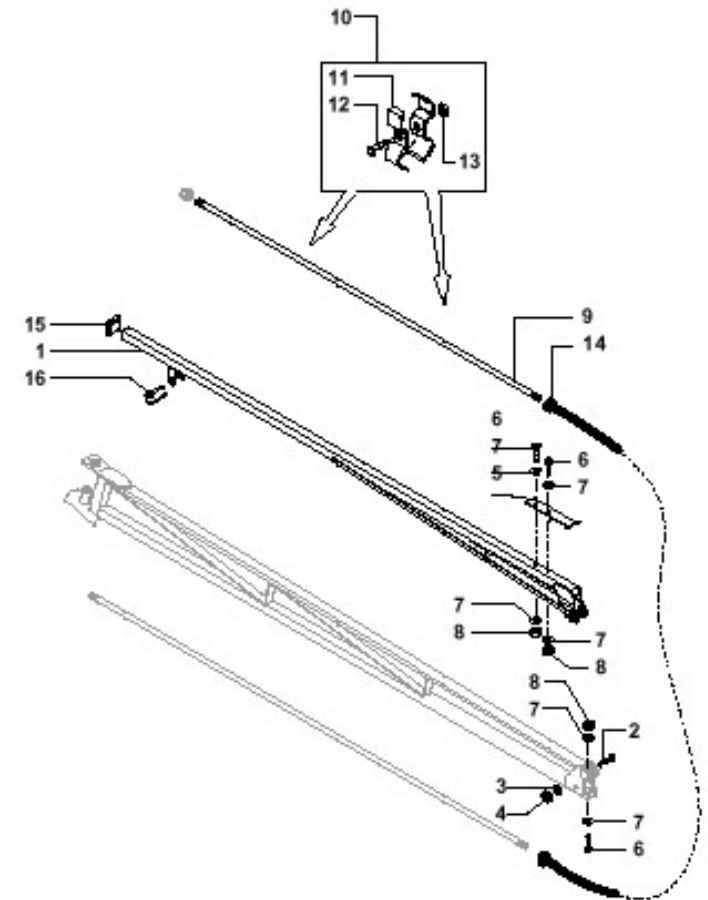
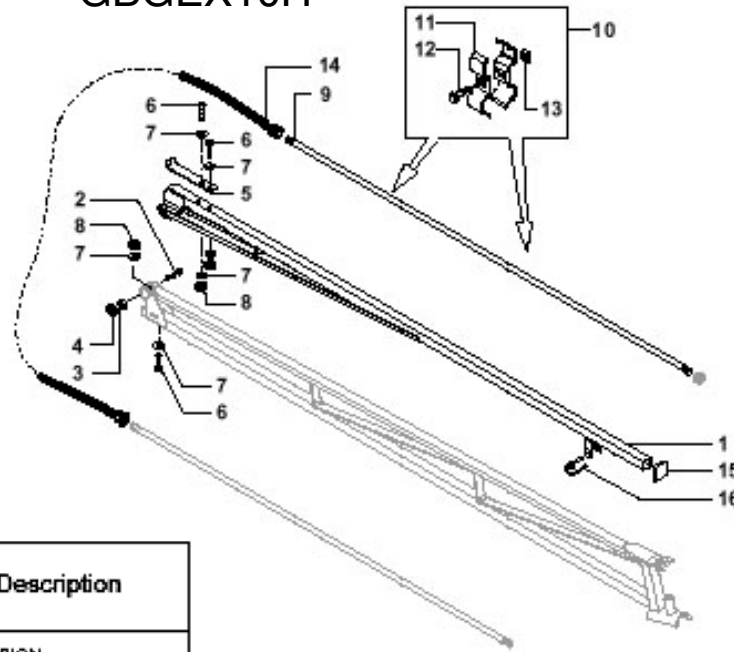
GBGEX8H



Pos.	Codice code	Qty.	Description
1		2	EXTENSION
2		2	SCREW
3		2	BELLEVILLE WASHER
4		2	NUT
5		2	BLOCKING SPRING
6		6	SCREW
7		12	WASHER
8		6	SELF-LOCKING NUT
9	550200600	2	2 HOLES TUBE
10	999900004Z	4	30/21 CLAMP KIT
11		8	CLAMP
12		4	SCREW
13		4	NUT
14		2	HOSE
15		2	HEAD COVER 30x30 COM
16		2	PIN



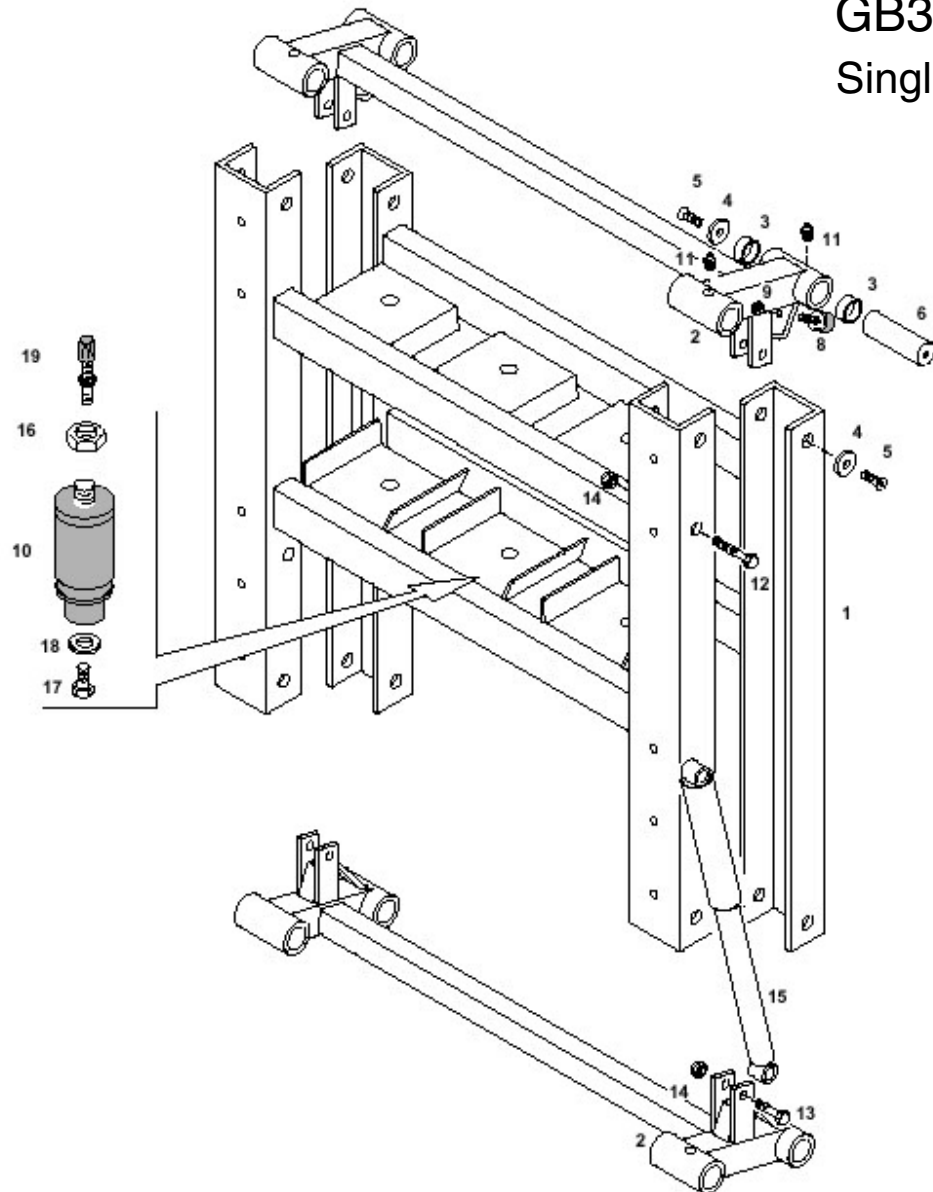
GBGEX10H



Pos.	Codice code	Qty.	Description
1		2	EXTENSION
2		2	SCREW
3		2	BELLEVILLE WASHER
4		2	NUT
5		2	BLOCKING SPRING
6		6	SCREW
7		12	WASHER
8		6	SELF-LOCKING NUT
9	550400500	2	4 HOLES TUBE
10	999900004Z	4	30/21 CLAMP KIT
11		8	CLAMP
12		4	SCREW
13		4	NUT
14		2	HOSE
15		2	HEAD COVER 30x30 CQI
16		2	PIN

GB383899000V

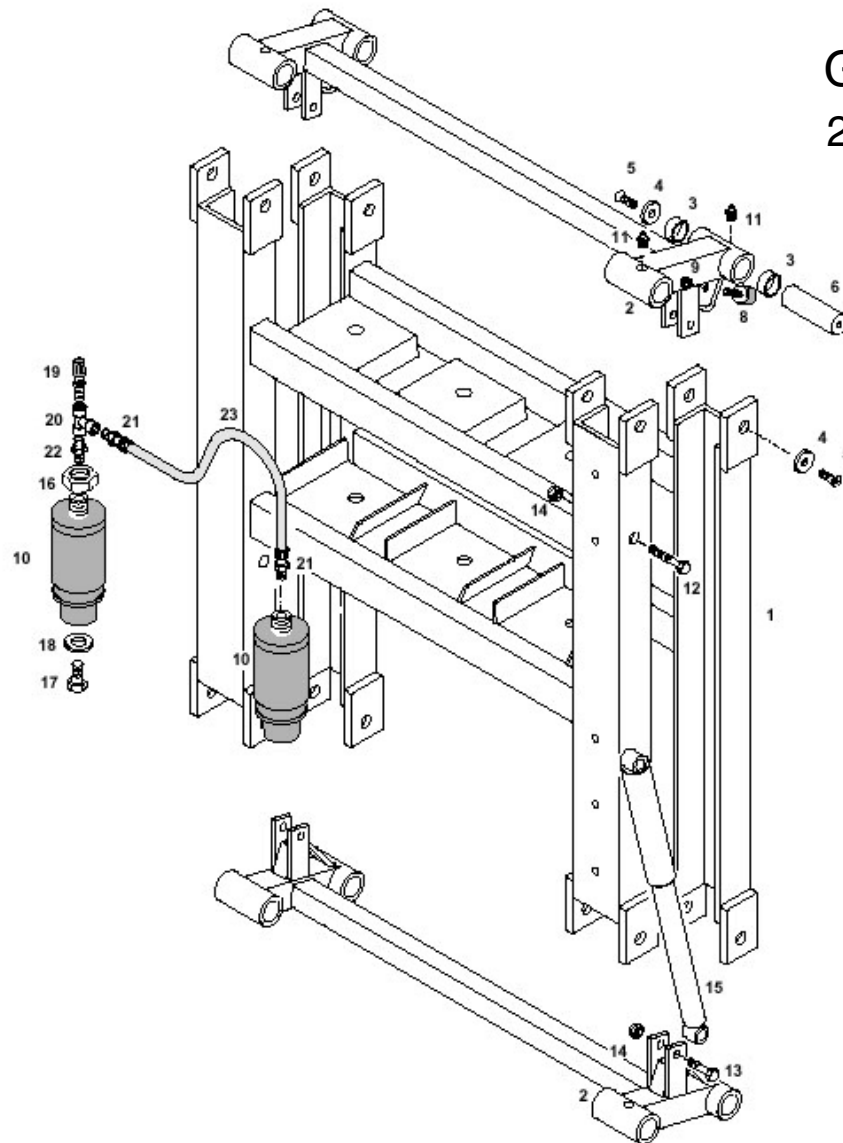
Single Air Bag Suspension (For booms up to 250 Kg)



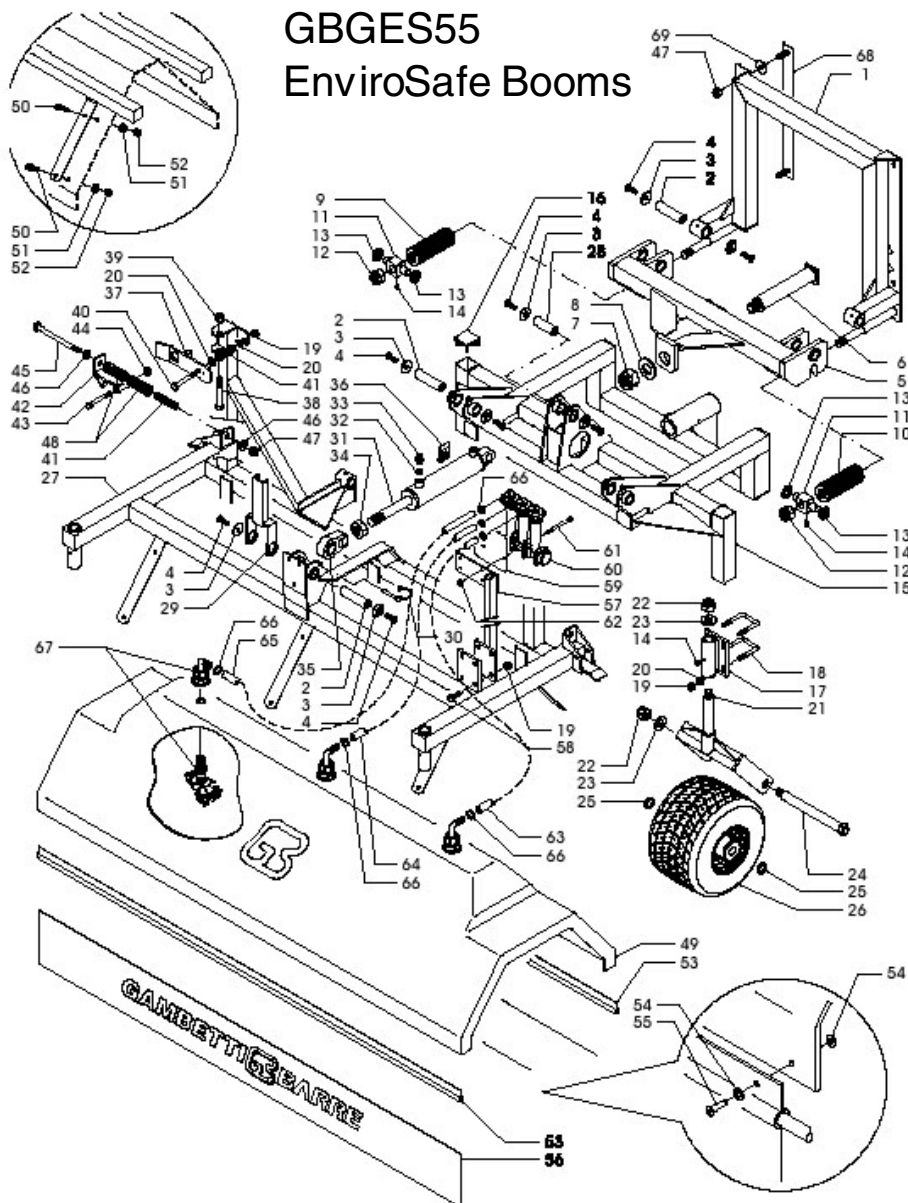
Pos.	Codice code	Qty.	Description
1		2	FRAME
2		2	FORK
3	500200050	16	BUSHING
4	50040004Z	16	RETAINING WASHER
5	900710025Z	16	SCREW
6		8	PIN
8		4	RUBBER PAD
9		4	SELF-LOCKING NUT
10	820200080	1	DAMPER
11		8	GREASE FITTING
12		1	SCREW
13		1	SCREW
14		2	SELF-LOCKING NUT
15		1	DAMPER
16		1	NUT
17		1	SCREW
18		1	WASHER
19	AR800650	1	VALVE

GB383897000V

2 Air Bag Suspension (For booms up to 400 Kg)



Pos.	Codice code	Qty.	Description
1		2	FRAME
2		2	FORK
3	500200050	16	BUSHING
4	50040004Z	16	RETAINING WASHER
5	900710025Z	16	SCREW
6		8	PIN
8		4	RUBBER PAD
9		4	SELF-LOCKING NUT
10	820200080	2	DAMPER
11		8	GREASE FITTING
12		1	SCREW
13		1	SCREW
14		2	SELF-LOCKING NUT
15		1	DAMPER
16		2	NUT
17		2	SCREW
18		2	WASHER
19	AR800650	1	VALVE
20	820110002	1	FITTING
21	820110004	2	FITTING
22		1	NIPPLE
23		-	TUBE

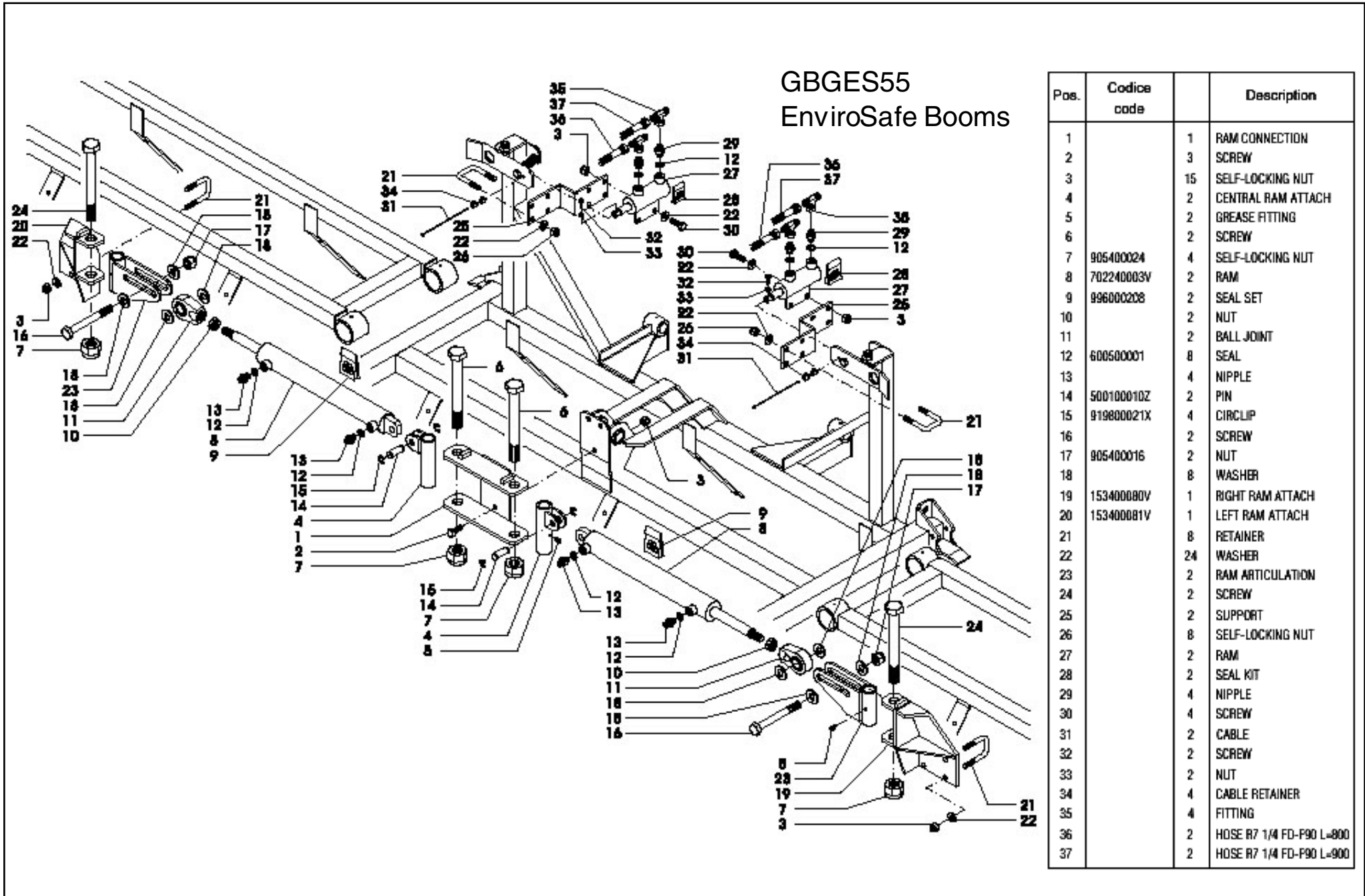


GBGES55
EnviroSafe Booms

Pos.	Codice code	Qty.	Description
1		1	BOOM COUPLING
2		5	PIN
3	50040004Z	12	WASHER
4	900710025Z	12	SCREW
5		1	ARTICULATED FRAME
6		1	PIN
7		1	SELF-LOCKING NUT
8		1	WASHER
9		1	SPRING (BROWN)
10	919900040V	1	SPRING (YELLOW)
11		2	CLUTCH
12		2	SELF LOCKING NUT
13		4	SPACING
14		7	GREASE FITTING
15		1	MAIN FRAME
16		2	HEAD COVER 50x50
17		2	PIVOTTING WHEEL SUPPORT
18	500500002Z	4	RETAINER
19		14	SELF-LOCKING NUT
20		12	WASHER
21	153400043V	2	FORK
22	905400018	4	SELF-LOCKING NUT
23	907019034Z	4	WASHER
24	500100126Z	2	PIN
25	500200029Z	4	SPACER
26	950511710	2	WHEEL
27		1	CENTRAL FRAME
28		1	PIN
29		1	TILT RAM END STROKE
30		1	PIN
31	702550024V	1	RAM
32	600500001	2	SEAL
33		2	NIPPLE
34	905200024Z	1	NUT
35	920100034Z	1	BALL JOINT
36	996000174	1	SEAL SET
37		2	ARM LOCKING REST
38		2	SCREW
39		2	SELF-LOCKING NUT
40		2	SCREW
41		4	SPRING
42		2	ARTICULATED CAM
43		2	SCREW
44		2	SELF-LOCKING NUT
45		2	SCREW
46		4	WASHER
47		6	NUT
48		4	SPRING
49		1	CENTRAL BONNET
50		12	SCREW
51		12	WASHER
52		12	NUT
53		4	SKIRT SUPPORT
54		60	WASHER
55		30	RIVET
56		2	PVC SKIRT
57		1	SUPPORT
58		4	SCREW
59		1	ALUMINIUM PLATE
60		1	CENTRAL LEVEL
61		2	SCREW
62		2	SELF-LOCKING NUT
63		1	HOSE
64		1	HOSE
65		1	HOSE
66		6	CLAMP
67		3	TRUSP 401
68		2	SLIDER
69		4	SHIM

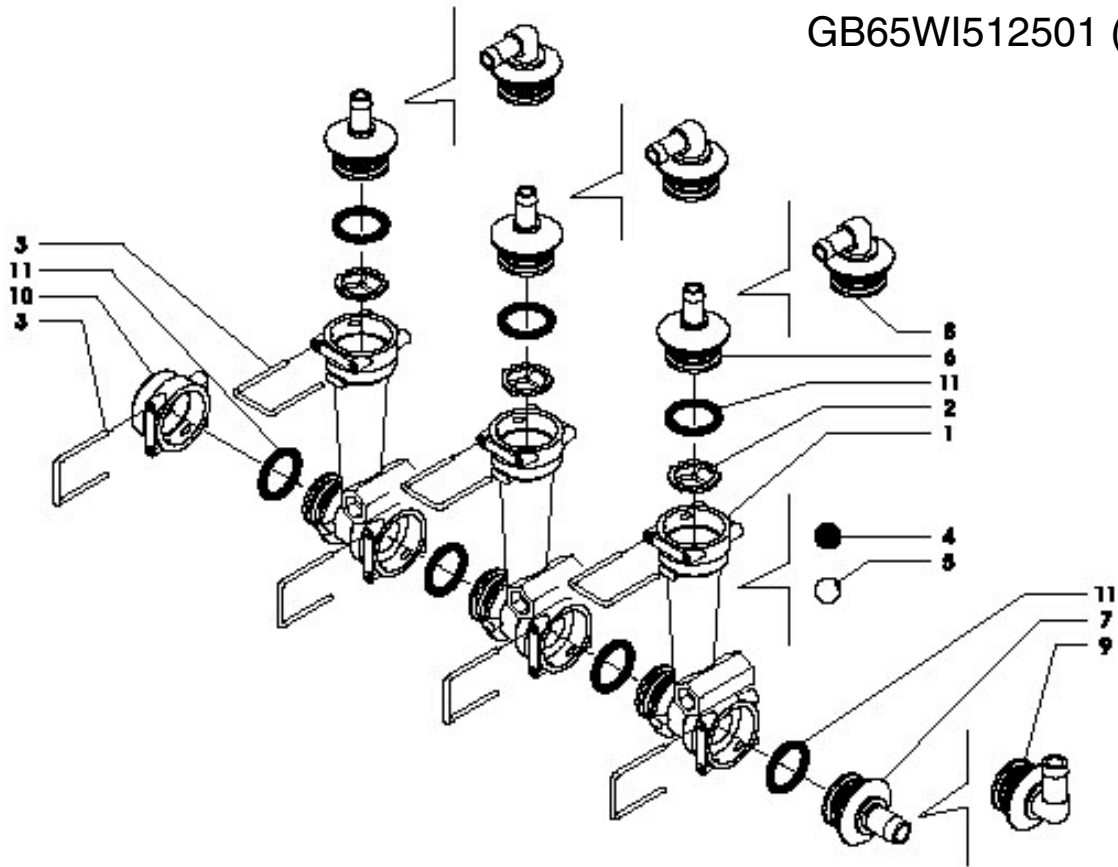
GBGES55 EnviroSafe Booms

Pos.	Codice code	Qty.	Description
1		1	RIGHT SAFETY JOINT
2		1	LEFT SAFETY JOINT
3		2	PIN
4	500400004Z	4	WASHER
5	900710025Z	4	SCREW
6		4	LOCKING RING
7		4	SCREW
8		4	NUT
9		4	BUSHING
10		4	SCREW
11		2	ARM
12		2	SUPPORT
13		8	RETAINER
14		20	SELF-LOCKING NUT
15		20	WASHER
16		2	RUBBER PAD
17		2	SELF-LOCKING NUT
18		2	SUPPORT
19		2	HEAD COVER 50x50
20		2	PIVOTTING WHEEL SUPPORT
21	500500002Z	4	RETAINER
22		2	FORK
23	905400018	4	SELF-LOCKING NUT
24	907019034Z	4	WASHER
25		2	PIN
26		4	SPACING
27		2	WHEEL
28		2	SIDE BONNET
29		32	SCREW
30		36	WASHER
31		36	NUT
32		2	SIDE BONNET PROTECTION
33		4	SCREW
34		10	SKIRT SUPPORT
35		188	WASHER
36		94	RIVET
37		2	SKIRT PROTECTION
38	65W1512501	2	LEVEL GAUGE
39		4	SCREW
40		4	WASHER
41		4	SELF-LOCKING NUT
42		2	HOSE
43		2	HOSE
44		2	HOSE
45		2	HOSE
46		14	CLAMP
47		8	TRIJSF 401
48		2	LEVEL INDICATOR BODY
49		2	FITTING
50		2	FORK
51		2	BALL STOPPER
52		2	STEEL BALL
53		2	RED BALL
54		2	O-RING

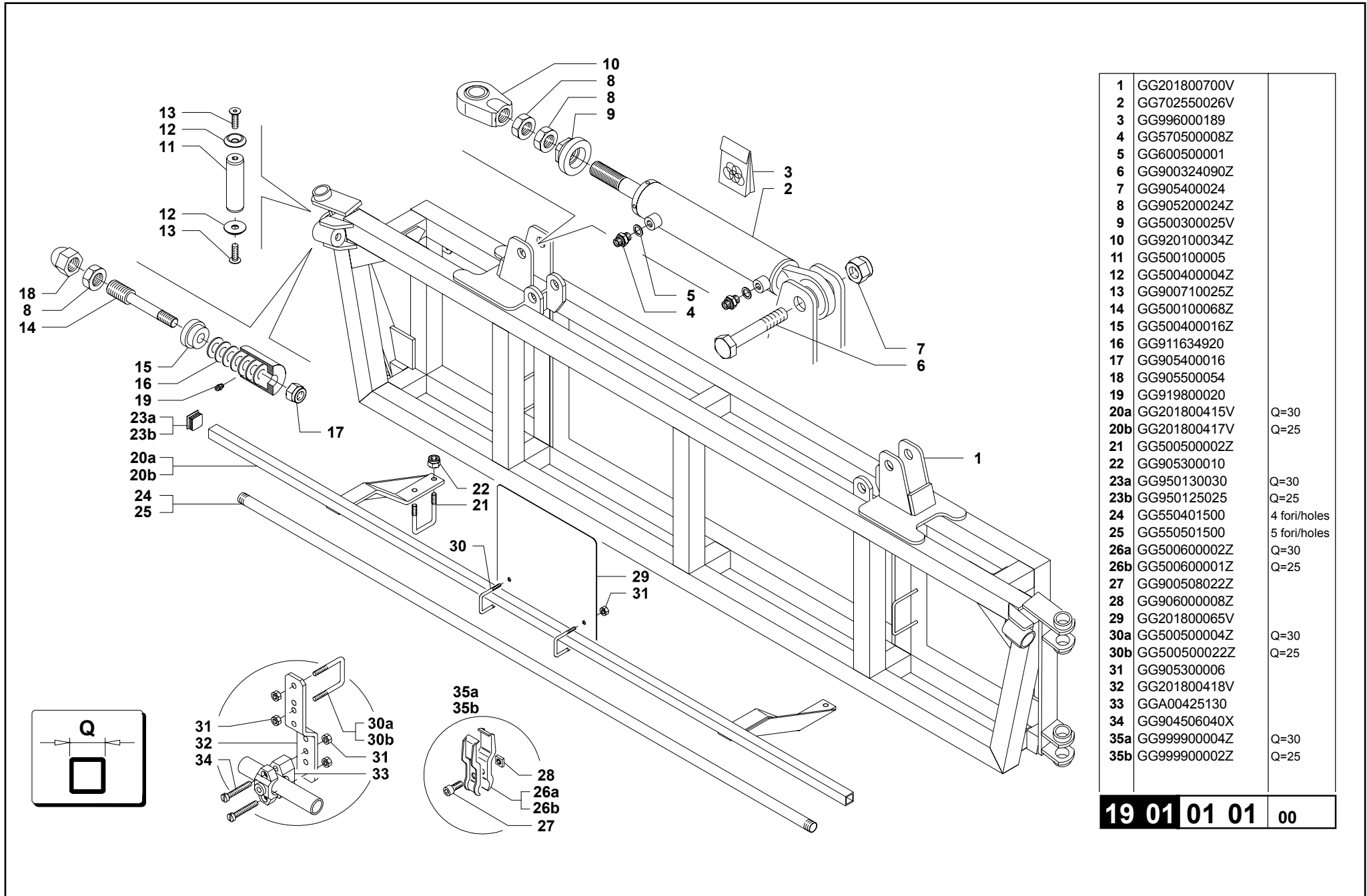


Pos.	Codice code	Description
1		RAM CONNECTION
2		SCREW
3		15 SELF-LOCKING NUT
4		2 CENTRAL RAM ATTACH
5		2 GREASE FITTING
6		2 SCREW
7	905400024	4 SELF-LOCKING NUT
8	702240003V	2 RAM
9	996000208	2 SEAL SET
10		2 NUT
11		2 BALL JOINT
12	600500001	8 SEAL
13		4 NIPPLE
14	500100010Z	2 PIN
15	919800021X	4 CIRCLIP
16		2 SCREW
17	905400016	2 NUT
18		8 WASHER
19	153400080V	1 RIGHT RAM ATTACH
20	153400081V	1 LEFT RAM ATTACH
21		8 RETAINER
22		24 WASHER
23		2 RAM ARTICULATION
24		2 SCREW
25		2 SUPPORT
26		8 SELF-LOCKING NUT
27		2 RAM
28		2 SEAL KIT
29		4 NIPPLE
30		4 SCREW
31		2 CABLE
32		2 SCREW
33		2 NUT
34		4 CABLE RETAINER
35		4 FITTING
36		2 HOSE R7 1/4 FD-F90 L=900
37		2 HOSE R7 1/4 FD-F90 L=900

GB65WI512501 (Complete 3 Bank Red Ball Indicator)



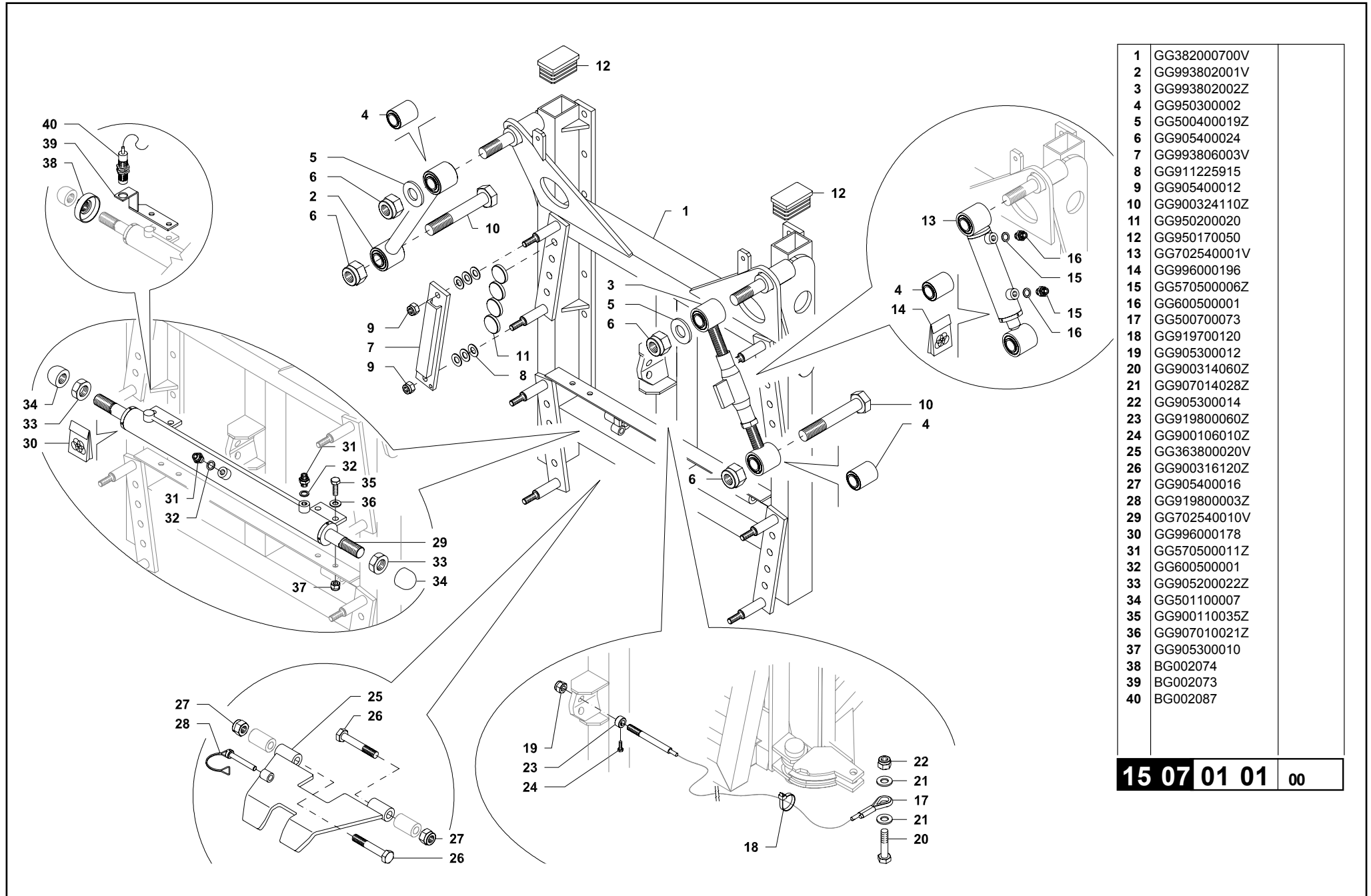
Pos.	Codice code	Qty.	Description
1		3	LEVEL INDICATOR BODY
2		3	BALL STOPPER
3		7	FORK
4		3	STEEL BALL
5		3	RED BALL
6		3	FITTING
7		1	FITTING
8		3	FITTING
9		1	FITTING
10		1	PLUG
11		7	D-RING



1	GG201800700V	
2	GG702550026V	
3	GG996000189	
4	GG570500008Z	
5	GG600500001	
6	GG900324090Z	
7	GG905400024	
8	GG905200024Z	
9	GG500300025V	
10	GG920100034Z	
11	GG500100005	
12	GG500400004Z	
13	GG900710025Z	
14	GG5001000068Z	
15	GG500400016Z	
16	GG911634920	
17	GG905400016	
18	GG905500054	
19	GG919800020	
20a	GG201800415V	Q=30
20b	GG201800417V	Q=25
21	GG500500002Z	
22	GG905300010	
23a	GG950130030	Q=30
23b	GG950125025	Q=25
24	GG550401500	4 fori/holes
25	GG550501500	5 fori/holes
26a	GG500600002Z	Q=30
26b	GG500600001Z	Q=25
27	GG900508022Z	
28	GG906000008Z	
29	GG201800065V	
30a	GG500500004Z	Q=30
30b	GG500500022Z	Q=25
31	GG905300006	
32	GG201800418V	
33	GA00425130	
34	GG904506040X	
35a	GG999900004Z	Q=30
35b	GG999900002Z	Q=25

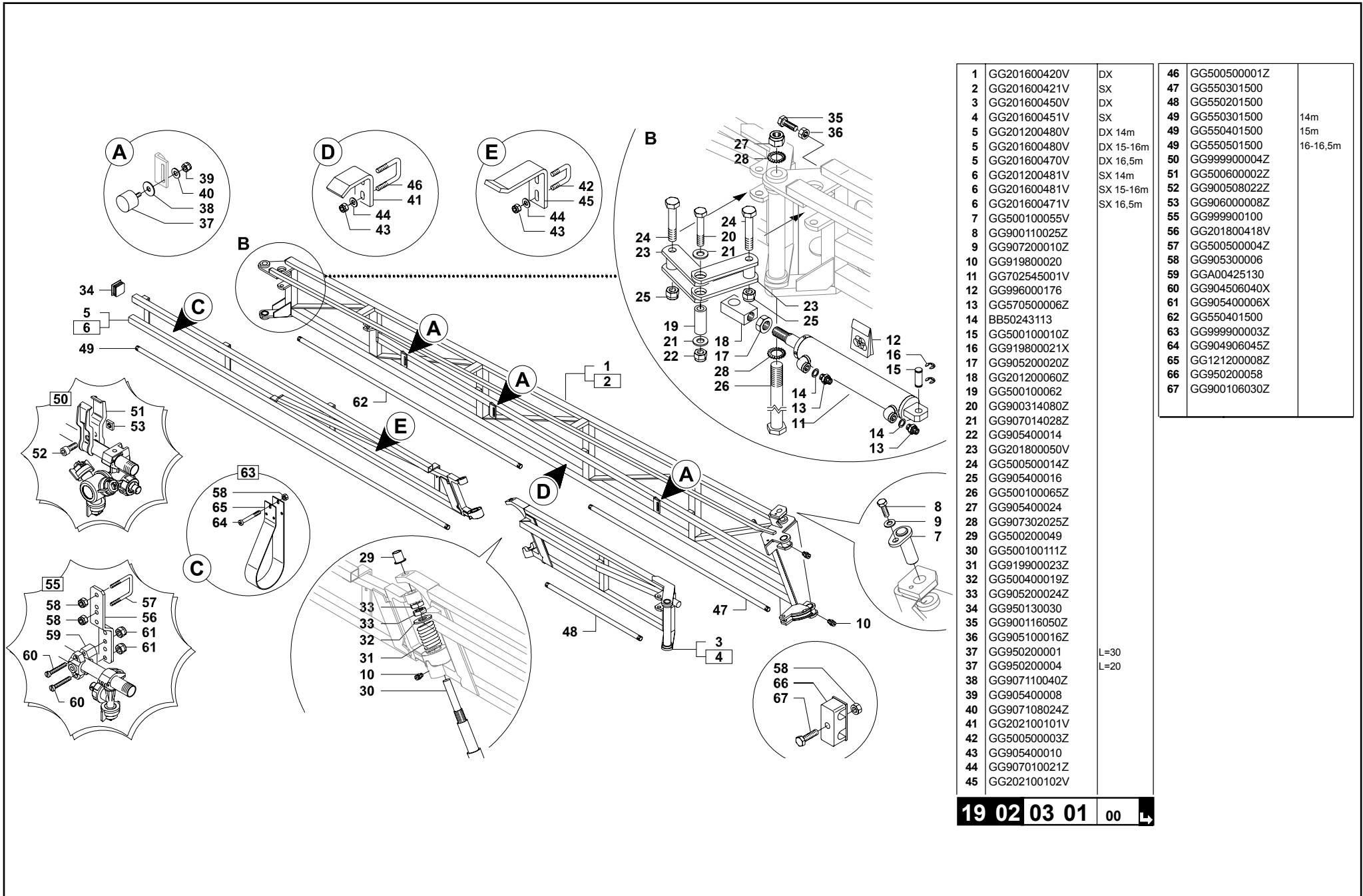
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Boom Self Leveller - Standard & G-Var Assembly Drawings & Parts



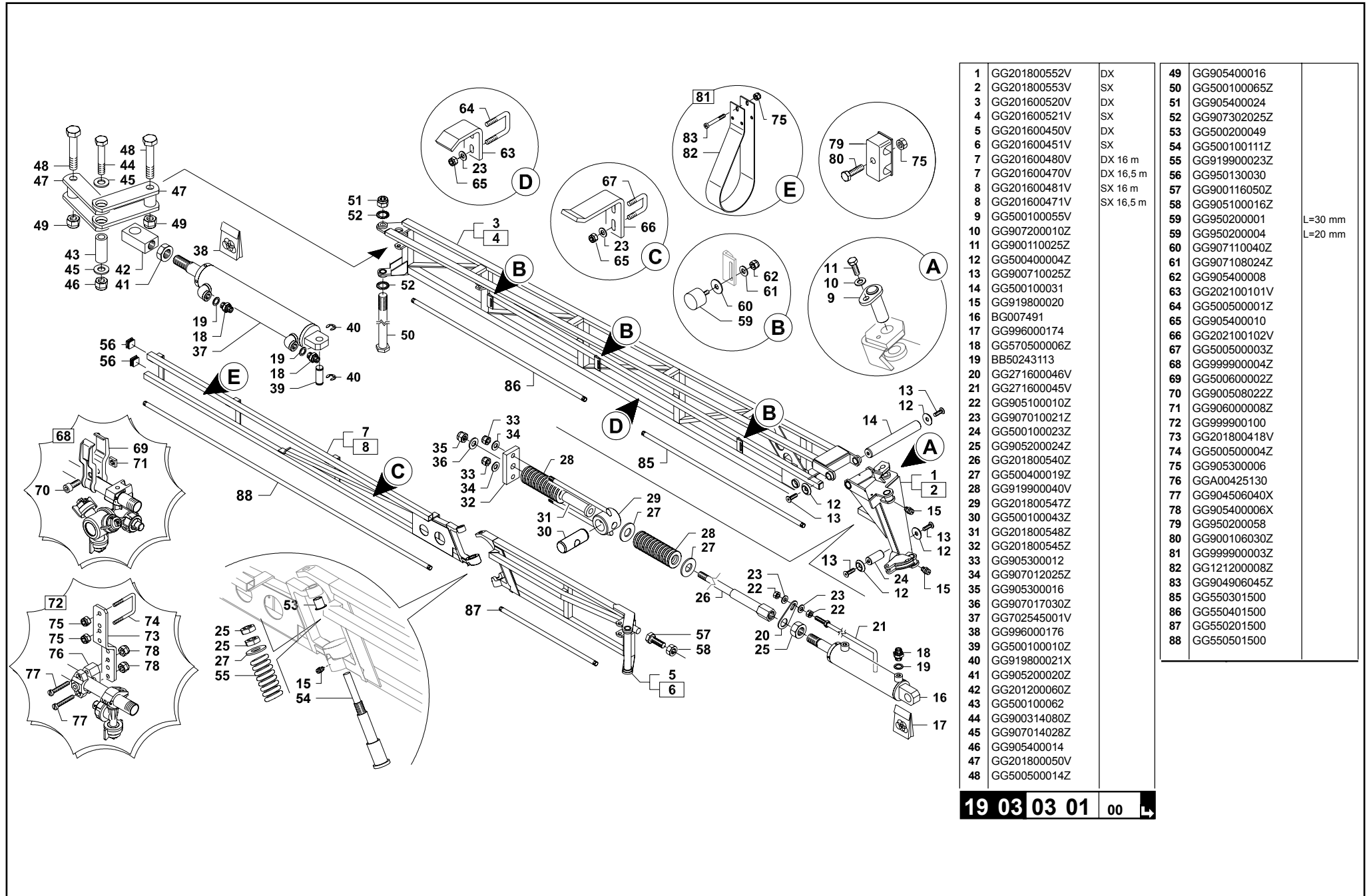
1	GG382000700V
2	GG993802001V
3	GG993802002Z
4	GG950300002
5	GG500400019Z
6	GG905400024
7	GG993806003V
8	GG911225915
9	GG905400012
10	GG900324110Z
11	GG950200020
12	GG950170050
13	GG702540001V
14	GG996000196
15	GG570500006Z
16	GG600500001
17	GG500700073
18	GG919700120
19	GG905300012
20	GG900314060Z
21	GG907014028Z
22	GG905300014
23	GG919800060Z
24	GG900106010Z
25	GG363800020V
26	GG900316120Z
27	GG905400016
28	GG919800003Z
29	GG702540010V
30	GG996000178
31	GG570500011Z
32	GG600500001
33	GG905200022Z
34	GG501100007
35	GG900110035Z
36	GG907010021Z
37	GG905300010
38	BG002074
39	BG002073
40	BG002087

15 07 01 01 00



1	GG201600420V	DX	46	GG500500001Z	
2	GG201600421V	SX	47	GG550301500	
3	GG201600450V	DX	48	GG550201500	
4	GG201600451V	SX	49	GG550301500	14m
5	GG201200480V	DX 14m	49	GG550401500	15m
5	GG201600480V	DX 15-16m	49	GG550501500	16-16.5m
5	GG201600470V	DX 16,5m	50	GG999900004Z	
6	GG201200481V	SX 14m	51	GG500600002Z	
6	GG201600481V	SX 15-16m	52	GG900508022Z	
6	GG201600471V	SX 16,5m	53	GG906000008Z	
7	GG500100055V		55	GG999900100	
8	GG900110025Z		56	GG201800418V	
9	GG907200010Z		57	GG500500004Z	
10	GG919800020		58	GG905300006	
11	GG702545001V		59	GGAA00425130	
12	GG996000176		60	GG904506040X	
13	GG570500006Z		61	GG905400006X	
14	BB50243113		62	GG550401500	
15	GG500100010Z		63	GG999900003Z	
16	GG919800021X		64	GG904906045Z	
17	GG905200020Z		65	GG121200008Z	
18	GG201200060Z		66	GG950200058	
19	GG500100062		67	GG900106030Z	
20	GG900314080Z				
21	GG907014028Z				
22	GG905400014				
23	GG201800050V				
24	GG500500014Z				
25	GG905400016				
26	GG500100065Z				
27	GG905400024				
28	GG907302025Z				
29	GG500200049				
30	GG500100111Z				
31	GG919900023Z				
32	GG500400019Z				
33	GG905200024Z				
34	GG950130030				
35	GG900116050Z				
36	GG905100016Z				
37	GG950200001	L=30			
37	GG950200004	L=20			
38	GG907110040Z				
39	GG905400008				
40	GG907108024Z				
41	GG202100101V				
42	GG500500003Z				
43	GG905400010				
44	GG907010021Z				
45	GG202100102V				

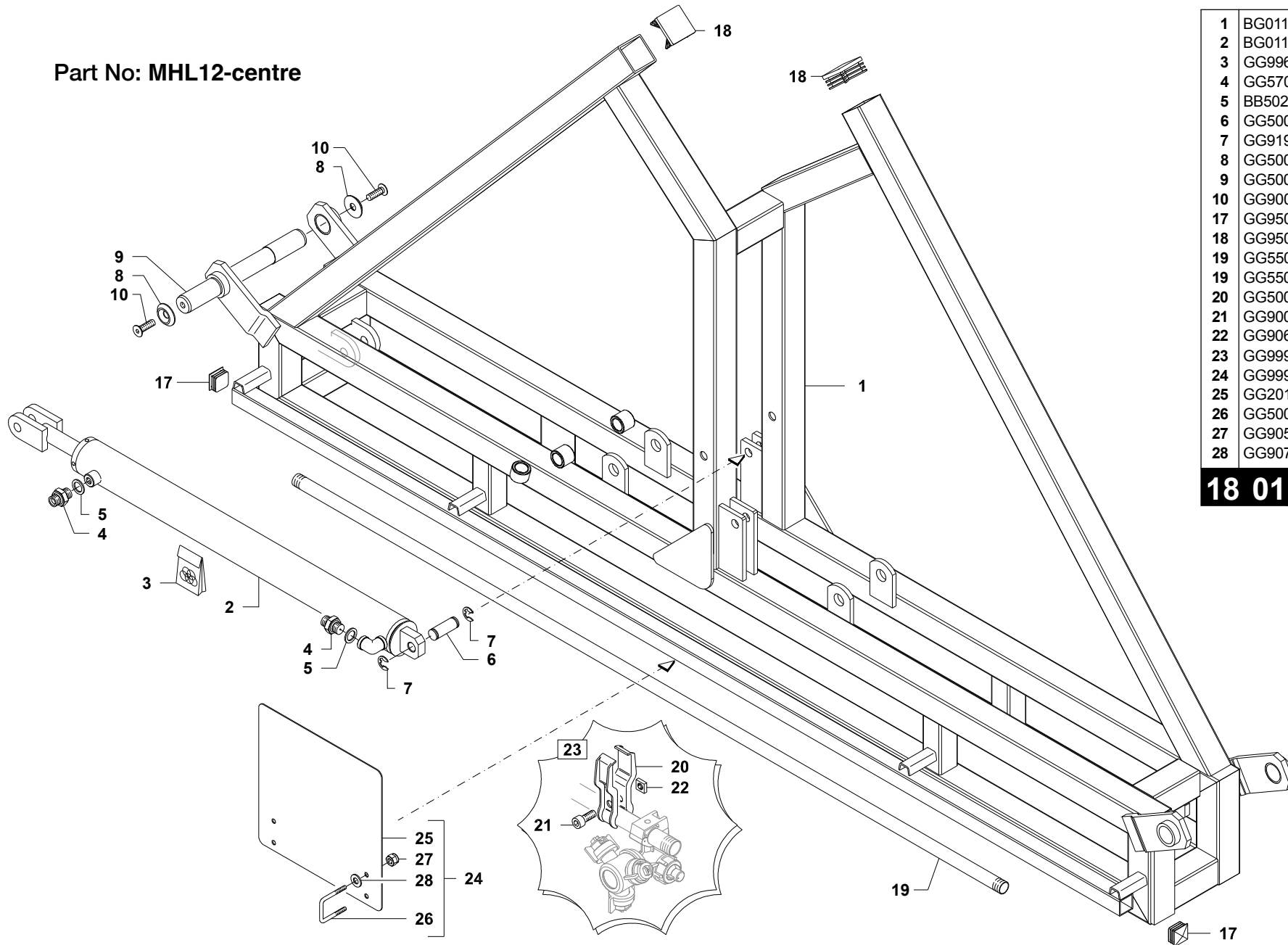
19 02 03 01 00 L



1	GG201800552V	DX	49	GG905400016	
2	GG201800553V	SX	50	GG500100065Z	
3	GG201600520V	DX	51	GG905400024	
4	GG201600521V	SX	52	GG907302025Z	
5	GG201600450V	DX	53	GG500200049	
6	GG201600451V	SX	54	GG500100111Z	
7	GG201600480V	DX 16 m	55	GG919900023Z	
7	GG201600470V	DX 16,5 m	56	GG950130030	
8	GG201600481V	SX 16 m	57	GG900116050Z	
8	GG201600471V	SX 16,5 m	58	GG905100016Z	
9	GG500100055V		59	GG950200001	L=30 mm
10	GG907200010Z		59	GG950200004	L=20 mm
11	GG900110025Z		60	GG907110040Z	
12	GG500400004Z		61	GG907108024Z	
13	GG900710025Z		62	GG905400008	
14	GG500100031		63	GG202100101V	
15	GG919800020		64	GG500500001Z	
16	BG007491		65	GG905400010	
17	GG996000174		66	GG202100102V	
18	GG570500006Z		67	GG500500003Z	
19	BB50243113		68	GG999900004Z	
20	GG271600046V		69	GG500600002Z	
21	GG271600045V		70	GG900508022Z	
22	GG905100010Z		71	GG906000008Z	
23	GG907010021Z		72	GG999900100	
24	GG500100023Z		73	GG201800418V	
25	GG905200024Z		74	GG500500004Z	
26	GG201800540Z		75	GG905300006	
27	GG500400019Z		76	GA00425130	
28	GG919900040V		77	GG904506040X	
29	GG201800547Z		78	GG905400006X	
30	GG500100043Z		79	GG950200058	
31	GG201800548Z		80	GG900106030Z	
32	GG201800545Z		81	GG999900003Z	
33	GG905300012		82	GG121200008Z	
34	GG907012025Z		83	GG904906045Z	
35	GG905300016		85	GG550301500	
36	GG907017030Z		86	GG550401500	
37	GG702545001V		87	GG550201500	
38	GG996000176		88	GG550501500	
39	GG500100010Z				
40	GG919800021X				
41	GG905200020Z				
42	GG201200060Z				
43	GG500100062				
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45	GG907014028Z				
46	GG905400014				
47	GG201800050V				
48	GG500500014Z				

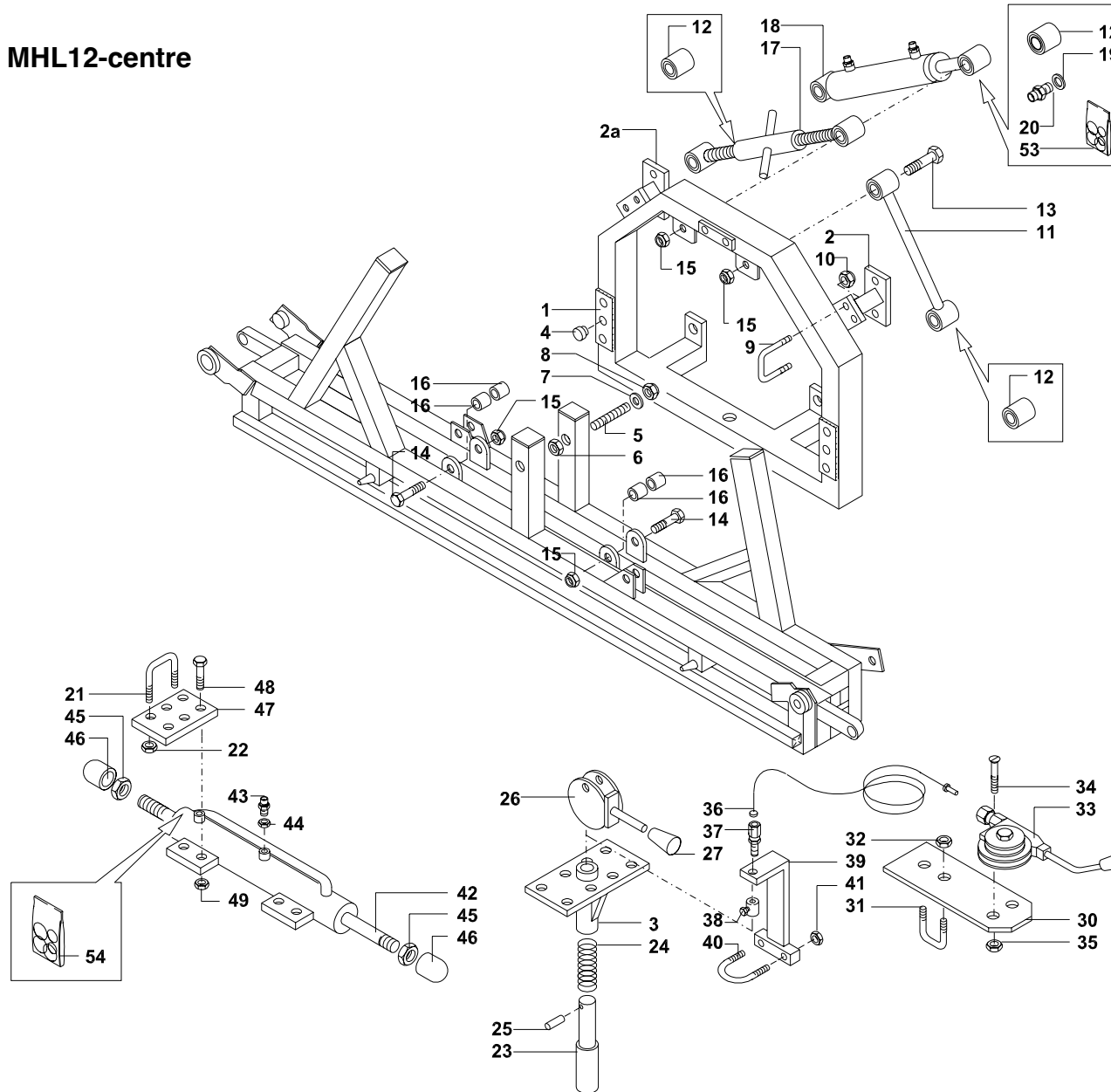
19 03 03 01 00 L

Part No: MHL12-centre



1	BG011082	
2	BG011047	
3	GG996000192	
4	GG570500008Z	
5	BB50243113	
6	GG500100010Z	
7	GG919800021X	
8	GG500400004Z	
9	GG500100032	
10	GG900710025Z	
17	GG950130030	
18	GG950150050	
19	GG550401500	4holes
20	GG500600002Z	5holes
21	GG900508022Z	
22	GG906000008Z	
23	GG999900004Z	
24	GG999900467	
25	GG201800065V	
26	GG500500004Z	
27	GG905300006	
28	GG907106018Z	
18 01 06 01		00

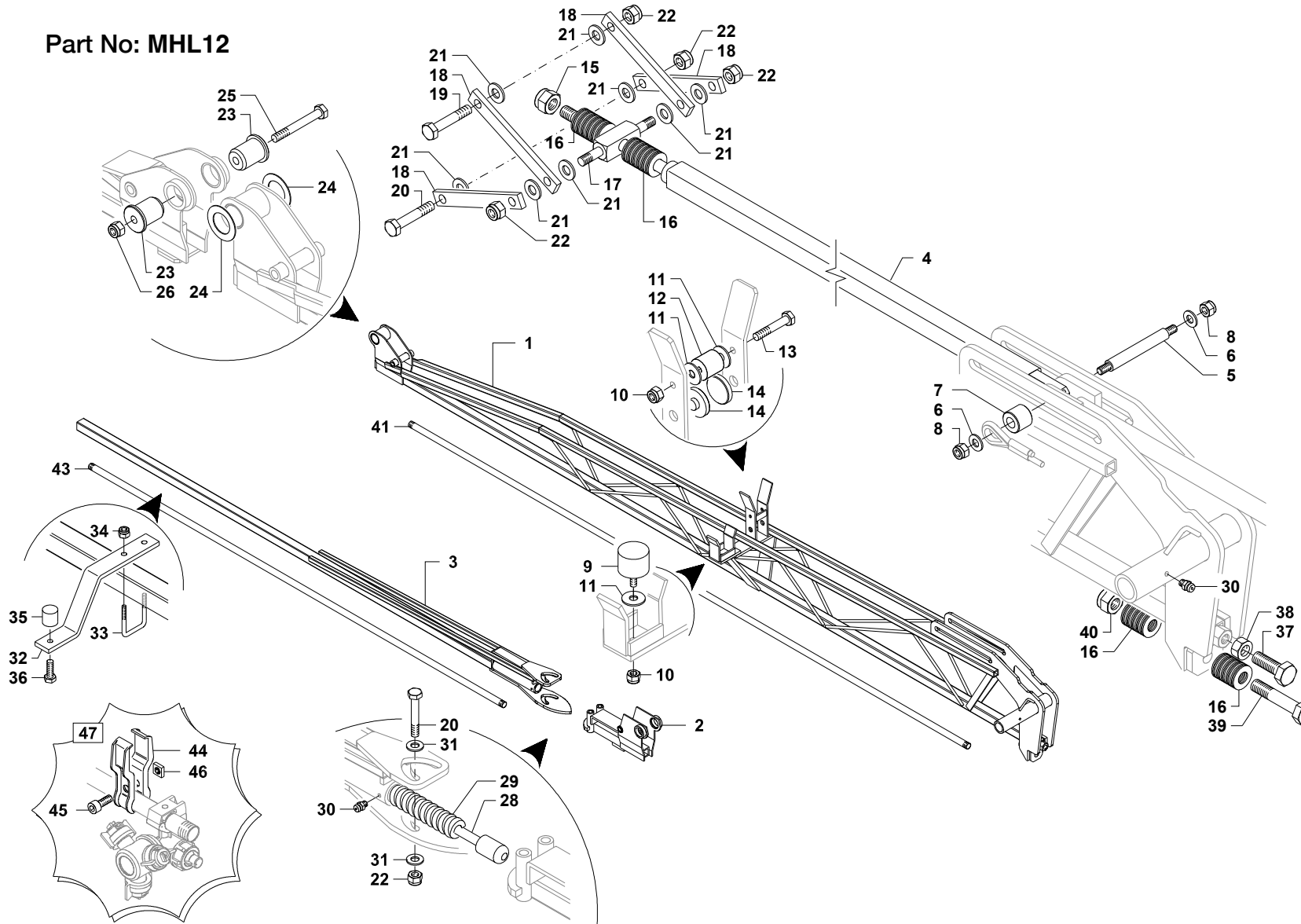
Part No: MHL12-centre



1	GG380900001V
2	GG380900021V
2a	GG380900025V
3	GG380900030V
4	GG950200020
5	GG500100040Z
6	GG905100014Z
7	GG907114042Z
8	GG905400014
9	GG500500005Z
10	GG905400010
11	GG993805002V
12	GG950300003
13	GG900320080Z
14	GG900320120Z
15	GG905400020
16	GG500200016Z
17	GG993805003Z
18	GG997000006
19	GG600500001
20	GG570500006Z
21	GG500500002Z
22	GG905400010
23	GG380500039Z
24	GG919900008Z
25	GG919800015
26	GG380500033V
27	GG950101010
30	GG380500047V
31	GG500500002Z
32	GG905400010
33	GG920100015
34	GG900708020Z
35	GG905400008
36	GG500700116
36a	GG500700126
37	GG919800045
38	GG919800046
39	GG380500048Z
40	GG500500030Z
41	GG905300006
42	GG702540009V
43	GG570500011Z
44	GG600500001
45	GG905200022Z
46	GG501100007
47	GG501100002V
48	GG900110030Z
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53	GG996000203
54	GG996000178

15 06 01 01 00

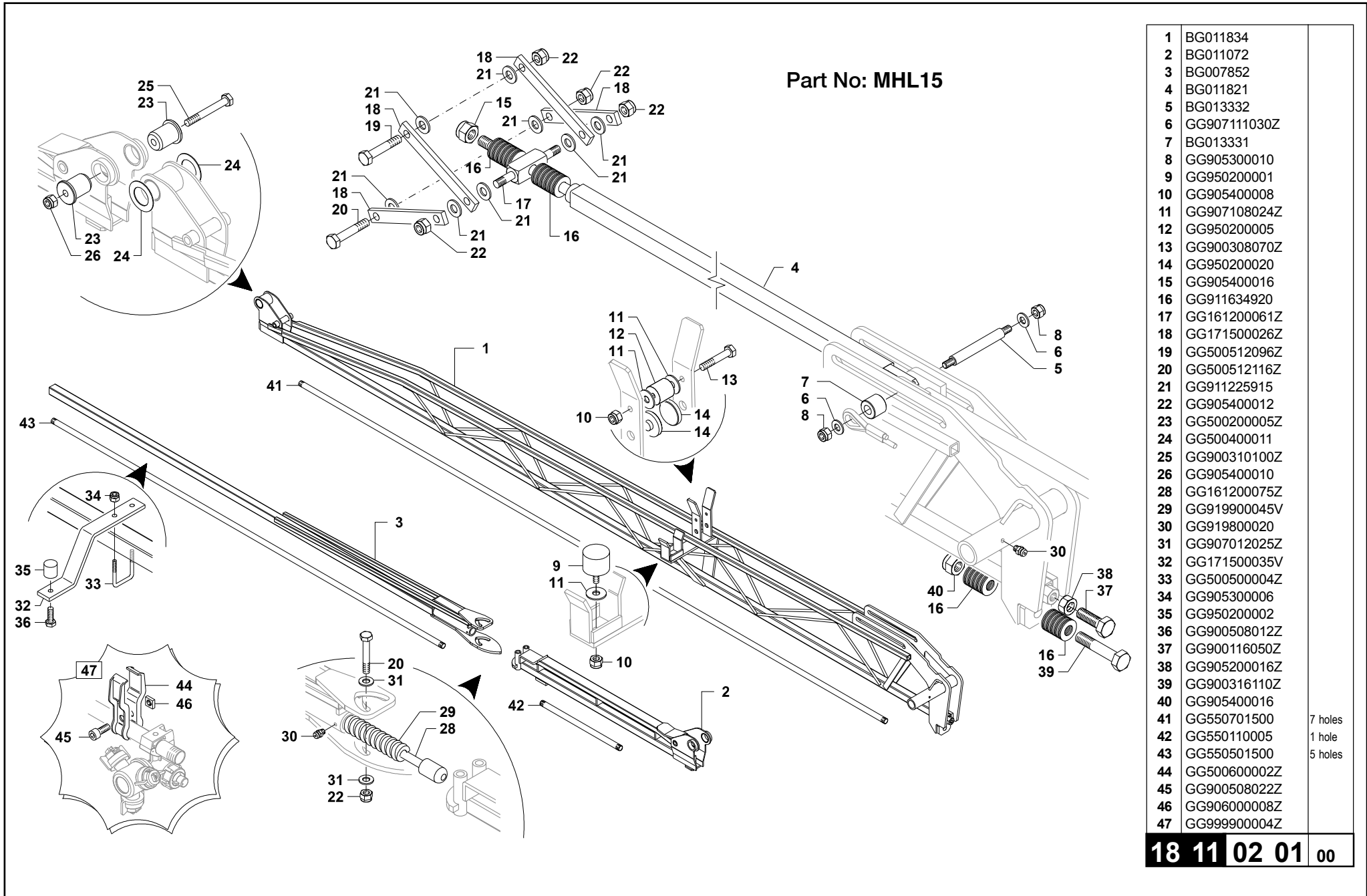
Part No: MHL12



1	BG011071	
2	GG161200070V	
3	GG165200080V	
4	BG011077	
5	BG013332	
6	GG907111030Z	
7	BG013331	
8	GG905300010	
9	GG950200001	
10	GG905400008	
11	GG907108024Z	
12	GG950200005	
13	GG900308070Z	
14	GG950200020	
15	GG905400016	
16	GG911634920	
17	GG161200061Z	
18	GG171500026Z	
19	GG500512096Z	
20	GG500512116Z	
21	GG911225915	
22	GG905400012	
23	GG500200005Z	
24	GG500400011	
25	GG900310100Z	
26	GG905400010	
28	GG161200075Z	
29	GG919900045V	
30	GG919800020	
31	GG907012025Z	
32	GG171500035V	
33	GG500500004Z	
34	GG905300006	
35	GG950200002	
36	GG900508012Z	
37	GG900116050Z	
38	GG905200016Z	
39	GG900316110Z	
40	GG905400016	
41	GG550501500	12,5 m
41	GG550601500	12 m
43	GG550501500	12,5 m
43	GG550401500	12 m
44	GG500600002Z	
45	GG900508022Z	
46	GG906000008Z	
47	GG999900004Z	

18 11 01 01 00

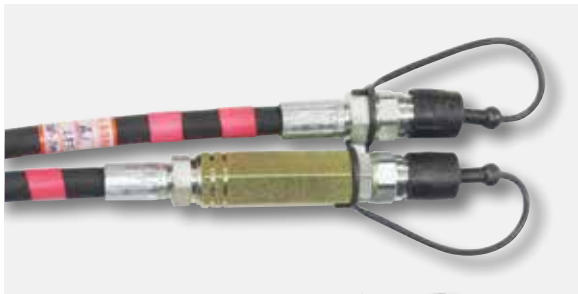
Part No: MHL15



1	BG011834	
2	BG011072	
3	BG007852	
4	BG011821	
5	BG013332	
6	GG907111030Z	
7	BG013331	
8	GG905300010	
9	GG950200001	
10	GG905400008	
11	GG907108024Z	
12	GG950200005	
13	GG900308070Z	
14	GG950200020	
15	GG905400016	
16	GG911634920	
17	GG161200061Z	
18	GG171500026Z	
19	GG500512096Z	
20	GG500512116Z	
21	GG911225915	
22	GG905400012	
23	GG500200005Z	
24	GG500400011	
25	GG900310100Z	
26	GG905400010	
28	GG161200075Z	
29	GG919900045V	
30	GG919800020	
31	GG907012025Z	
32	GG171500035V	
33	GG500500004Z	
34	GG905300006	
35	GG950200002	
36	GG900508012Z	
37	GG900116050Z	
38	GG905200016Z	
39	GG900316110Z	
40	GG905400016	
41	GG550701500	7 holes
42	GG550110005	1 hole
43	GG550501500	5 holes
44	GG500600002Z	
45	GG900508022Z	
46	GG906000008Z	
47	GG999900004Z	
18 11 02 01		00

It's now much easier to identify the correct hydraulic hoses.

We would expect that operators may also colour code their tractors to make it even easier to consistently hook up the correct hoses to the same fittings time and time again. Less chance of expensive accidents.



- (A) **Pressure** hoses to have **two colour bands**.
- (B) **Return** lines to have **one colour band**.

Blue	= FILL PUMP
Red	= FOLD or ELEC/HYD
Yellow	= Product Pump
White	= Lift

INSPECTION INTERVALS

MINIMUM RECOMMENDED TENSION INTERVALS FOR AG WHEELS

Initial fitment

- 4 hours of operation
- 9 hours of operation
- 16 hours of operation
- 24 hours of operation
- 48 hours of operation

RETENTION AT



Alternatively, after the first 50km & subsequently every 100km, the stud bolt nuts are to be tightened by means of a dynamometric key and with the torque values listed below. Male and female treads are to be dry, however small amounts of anti-corrosive oil covering is permitted. Ongoing inspection & re-tensioning should be done in accordance with daily wheel/tyre inspection procedures. These inspection periods may vary depending on vehicle operating conditions.

RECOMMENDED TORQUE VALUES FOR TITAN AUSTRALIA AXLES

Metric Wheel studs	
Stud Size	Torque
M12	73 ft.lbs (100 N.m)
M14	122 ft.lbs (166 N.m)
M16	173 ft.lbs (235 N.m)
M18 (Pinto)	253 ft.lbs (344 N.m)
M20	372 ft.lbs (504 N.m)
M22 Csk Nut	442 ft.lbs (600 N.m)
M22 Cap/w Nut	425 ft.lbs (575 N.m)
M24 Csk/Nut	562 ft.lbs (762 N.m)
M24 Cap/w Nut	540 ft.lbs (732 N.m)

Imperial Wheel studs	
Stud Size	Torque
7/16"	61 ft.lbs (83 N.m)
1/2"	86 ft.lbs (117 N.m)
9/16"	134 ft.lbs (182 N.m)
5/8"	176 ft.lbs (239 N.m)
3/4"	297 ft.lbs (404 N.m)
7/8"	482 ft.lbs (654 N.m)

These recommendations are supplied by Titan Australia – our major supplier for axles, wheels & tyres.

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on the Croplands website