

CROPLANDS

OPERATORS MANUAL **MICRO POWER PACK**

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STOP

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



**REGISTERED
DESIGN**

**MICRO
POWER PACK**

XD-165

HT-OMMICRO-B

INTRODUCTION

GENERAL MANAGER'S WELCOME



Sean Mulvaney
General Manager

Dear Customer

Congratulations on the purchase of your new Croplands Sprayer. Croplands have been in the business of building sprayer equipment since 1972. For over 49 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 for 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 the back cover you will find our contact details, and locations where our staff can be reached during business hours. After hours, you can email 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.

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

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

FOREWORD

Croplands Equipment is a subsidiary of Nufarm Australia Ltd and operates as Croplands Equipment Pty Ltd in Australia and Croplands Equipment Ltd in New Zealand. Croplands are a leading manufacturer and supplier of spraying equipment.

This operator's manual covers the Croplands' Micro Power Pack, as supplied with Quantum Mist / Smart Sprayer.

Manufactured to a high standard for use in Agriculture and Horticulture, every effort has been made to include all information needed for the correct use of your Micro Power Pack.

ABOUT THIS MANUAL

This manual provides assembly, setting up, operating and maintenance instructions for the Micro Power Pack. Some model types also have different options available. Some features explained in this manual may not be applicable to your model.

Please pass on this manual with the sprayer or Micro Power Pack at the time of resale for use by the new owner.

This manual, HT-OMMICRO-B, first published in September 2021, is an update (to version A). Changes include the new heavy duty gearbox and new oils. Twin pump versions are now classified as Legacy models). Check on-line as there may be more recent revisions of this manual.

BEFORE OPERATING YOUR SPRAYER

1. Before attempting to use your sprayer, make sure you read the Operator's Manual and Safety Manual.
2. Always wear applicable protective clothing.

TERMINOLOGY

These terms/symbols used throughout this manual:

NOTE

To convey useful operating information.



WARNING

To stress potential dangers and the importance of personal safety.



CAUTION

To highlight potential injury or machinery damage.



DANGER

Probability of death or serious injury if an accident occurs

SECTION 1

IMPORTANT INFORMATION

WARRANTY POLICY

Each sprayer will be delivered with a Warranty & Pre-Delivery Booklet which includes:

- the Sprayer's unique serial number,
- the Sprayer's specification sheet,
- a pre-delivery checklist and
- outlines the Croplands Warranty policy.

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

NOTE

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

CROPLANDS

**SPRAYER SPECIFICATIONS
WARRANTY & PRE-DELIVERY
HORTICULTURE**

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GP-WARH-A | updated Jan 2021

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 3

PRODUCT IDENTIFICATION & SPECIFICATION

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SECTION 3

PRODUCT IDENTIFICATION & SPECIFICATION

CROPLANDS MICRO POWER PACK

The Croplands Micro Power Pack is a compact, PTO driven, hydraulic oil “power pack” / oil reservoir and supply system to drive hydraulic circuit(s) of up to 150 litres per minute (Lpm) of oil supply at pressures up to 2005 bar (3,000 psi). Higher flows and pressure are possible in some circumstances.

Available as an option for all towed Quantum Mist(tm) vineyard & tree crop sprayers. Standard equipment for all 18 fan sprayers and Ultra Tower model sprayers.

FEATURES

- The Micro Power Pack is very compact when compared to “older / traditional” technology power packs.
- An automatic low oil level cut out, reduces the impact of any oil leaks – any oil leaks can be limited to just a few litres.
- It's now viable to use high value hydraulic (or biodegradable) oils.
- Operating temperatures are much cooler than older style models with less need for large fan forced oil coolers.
- Large capacity oil filter and filter head. Oil is generally cleaner than older style systems as the system is less likely to be contaminated by water condensation & rust etc.
- Very quiet when compared to older style power packs.
- Mounted to a heavy-duty 3-point linkage self-steer drawbar, with heavy-duty gearbox and pump. A wide variety of pumps can be used.



VERSIONS

Whilst this manual refers to the “triple chamber” versions of the Micro Power Pack, earlier versions are operationally very similar. Versions 1, 2 and 3 of the Micro Power Pack are described in Section 6 – Legacy Models.

The Micro Power Pack system is supplied as an integral part of a 3-point linkage, self-steer drawbar with PTO driven gearbox driving a hydraulic pump(s) (of varying sizes), filter assembly, and of course the exclusive triple casting oil reservoir and hoses, etc.

When supplied as part of a complete Quantum Mist Sprayer, the Micro Power Pack unit?]

is available in a variety of configurations.

- For use with the “Classic” QM-500 or QM-420 hydraulic systems
- For use with the Smart Sprayer / “Fusion” hydraulic systems
- For use with the QM-420 / “A3 WindComp” hydraulic systems

All Micro Power Packs (from 2021) use a single output heavy duty pump with either

- “Standard” duty gearbox, or
- “Heavy” duty gearbox.

The details of the model and pump used will be recorded in the “Sprayer Specification & Warranty Booklet”.

The oil reservoir and filter assembly remain the same for all versions.

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PRODUCT IDENTIFICATION & SPECIFICATION

OIL RESERVOIR

The Micro Power Pack uses a unique 3 part cast aluminium oil reservoir for optimum cooling properties.

The reservoir has an operating capacity of 10.5 litres (to the middle of the sight gauge), however the oil required to fill the complete system, including the 4 litre oil filter, hydraulic blocks, hoses & fans motors can vary from 19 ~ 24 litres.

The unit is fitted with an oil level switch which will activate when the oil level is too low. Upon activation, oil to the fans is bypassed through the main manifold, hence the fans will stop. The fans will not start without power to the level switch and the correct oil level. The top tank is fitted with a positive pressure breather and the bottom tank is fitted with drain tap and hose.



FILTER ASSEMBLY

A filter head and large capacity oil filter are integral to the oil return circuit. Fitted to the hose & cable holder bracket, adjacent to the oil reservoir. This positioning allows for the pressure and return hoses to be installed in sweeping curves / suitable for turning vehicles.



GEARBOXES

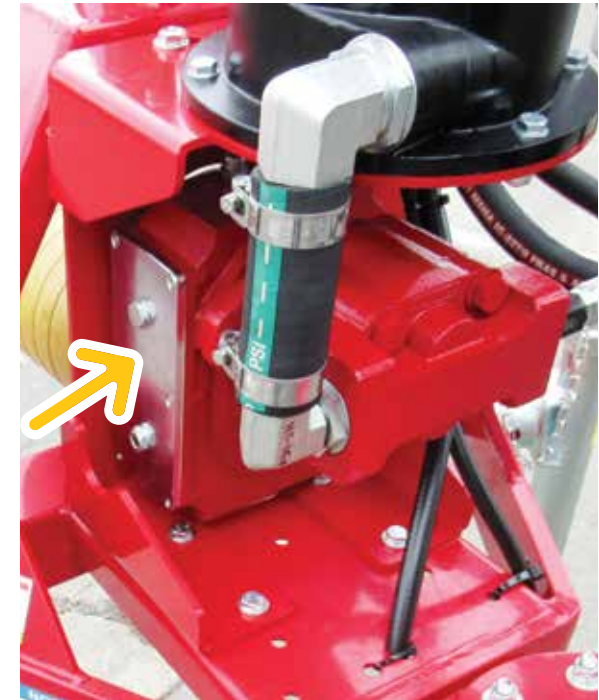
The nominated PTO driven gearbox will vary depending on the sprayer's maximum hydraulic power requirements.

The "Standard" (HP-298-26) gearbox uses a gear ratio of 1: 3.5 and is the gearbox fitted for applications requiring less than around 30 kW (well below the supplier's maximum rating). This gearbox has, for many years been the standard for the majority of applications.

The "Heavy Duty" (HP-298-27) gearbox uses a gear ratio of 1: 3.2 and is now the standard gearbox for applications rated above 35kW and optional for applications in the 25 ~ 35kW range.

The recommended maximum operating PTO speed is 540 rpm.

Many operators choose to use less than (PTO) 540 rpm to reduce tractor operating costs.

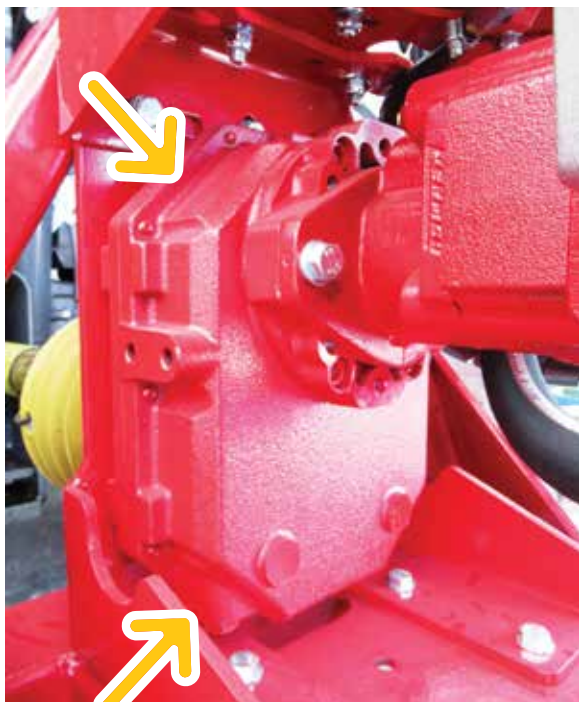


Standard gearbox is easily identified by the steel cover plate on the left-hand side.



SECTION 3

PRODUCT IDENTIFICATION & SPECIFICATION



Heavy duty gearbox is identified by the cut-away corners (and lack of a steel cover plate on the left-hand side).

PUMPS

Running off the gearbox is a heavy duty cast iron pump. Where possible Croplands use the Permco brand of pumps, renowned for being robust and reliable.

Pump size (output) has been matched at the factory to sprayer specification. The most common pumps are 40, 48, 56, or 74cc.

- If the pump is too small, full fan performance may not be achieved and / or the tractor PTO speed will always need to be at maximum, (volume limited).
- If the pump is too big, full fan performance will be easily achieved - however there is a risk (especially on cold starts) of exceeding the fan hydraulic system pressure (max 3000 psi) or overheating the system due to excessive oil bypassing the manifolds, (pressure limited).

*Refer page 11 for gearbox and pump selection.

Occasionally there will be variations in the pumps chosen or supplied.



Standard pump. Note this pump's appearance varies from the (same capacity) pump shown on page 9.

MICRO POWER PACK - PUMP OUTPUTS

Pump part number	Pump size (cc)	Max PTO speed	Gearbox ratio	Max oil flow (zero losses) Lpm
HP-082-6	32cc	540	3.5	60
HP-082-7	40cc	540	3.5	75
HP-082-5	48cc	540	3.5	90
HP-082-10	56cc	540	3.5	105
HP-082-11	64cc	540	3.5	121
HP-082-9	74cc	540	3.5	140
HP-082-10	56cc	540	3.2 (HD)	97
HP-082-11	64cc	540	3.2 (HD)	110
HP-082-9	74cc	540	3.2 (HD)	130

SECTION 3

PRODUCT IDENTIFICATION, SHIPPING & SPECIFICATION

SPRAYER CONFIGURATIONS VS OIL REQUIRED VS MICRO POWER PACK PUMP & GEARBOX CONFIGURATIONS								
Sprayer Configurations	Fan motor size (cc)	No. of Fan Circuits	Max Fan Speed rpm	@ Max Pressure psi	Oil Requirement (inc added 10%) Lpm	Power at max fan speed kW	Micro PP STD Gearbox - PUMP Size	Micro PP HD Gearbox - PUMP Size
Single Row - with 6 x QM-420 fans	6.5	2 (x 3 fans)	2900	2400	42	12	32cc	n/a
Orchard - with 8 x QM-420 fans	9.8	2 (x 4 fans)	2800	2750	60	19	40cc	n/a
Tower - with 6 x QM-500 fans	9.8	2 (x 3 fans)	> 2700	2750	58	19	40cc	n/a
Ultra Tower - with 8 x QM-500 fans	6.5	4 (x 2 fans)	2750	2750	79	25	48cc	56cc optional
Ultra Tower - with 10 x QM-500 fans	6.5	5 (x 2 fans)	2950	3000	107	37	n/a	74cc
2-Row - with 8 x QM-500 fans	9.8	2 (x 4 fans)	2250	2750	49	16	32cc	n/a
3-Row - with 12 x QM-500 fans	9.8	3 (x 4 fans)	< 2250	2750	73	23	48cc	56cc optional
2-Row - with 8 x QM-420 fans	9.8	2 (x 4 fans)	2650	2750	57	18	40cc	n/a
2-Row - with 12 x QM-420 fans	6.5	4 (x 3 fans)	2800	2750	80	26	48cc	56cc optional
3-Row - with 12 x QM-420, no WC	9.8	3 (x 4 fans)	2750	2750	89	28	56cc optional	56cc
3-Row - with 18 x QM-420 fans	6.5	6 (x 3 fans)	2750	2750	118	38	n/a	74cc

NOTE

The (product) spray pump is driven via independent hydraulics connected to tractor remotes. Refer Section 6, Legacy Models for dual pump systems.

SECTION 3

PRODUCT IDENTIFICATION & SPECIFICATION

QM-500 & QM-420 "CLASSIC" SYSTEM

The "classic" system refers to the traditional hydraulic system used on Croplands Quantum Mist Sprayers for many years, and remains the most common and cost effective system.

The "classic" system is identified by the use of the hydraulic soft start block (pictured) at the front of the sprayer. Note from 2020 there has been a design upgrade to the soft start block.

Oil is then supplied to the fans via a separate distribution block at the rear of the sprayer. Oil then returns to the oil reservoir via the oil cooler, soft start block, and filter.

The low oil level switch is connected to the "un-load" valve (HP-082-2-03) (circled) which is installed to the soft start block (HP-070-004C)..

The Smart Sprayer / Fusion and A3 WindComp systems do not use the pictured soft start block.

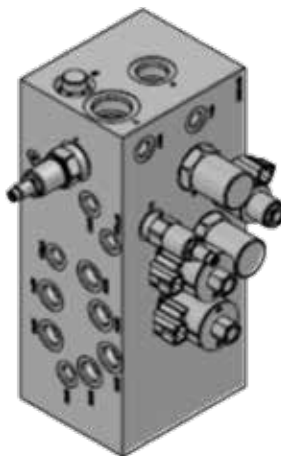


SMART SPRAYER "FUSION" SYSTEM

Exclusive to the Quantum Mist **Smart Sprayers** is the "Fusion" hydraulic system.

This system is identified by the large hydraulic manifold block mounted at the rear of the sprayer through which all fan and boom functions are controlled. Oil then returns to the oil reservoir via the oil cooler and filter.

The soft start and low oil functions are activated electronically via the Fusion system.



QM-420 "A3 WINDCOMP" SYSTEM

Quantum Mist QM-420 and Orchard models fitted with the A3 WindComp function use a variation of the Fusion hydraulic system.

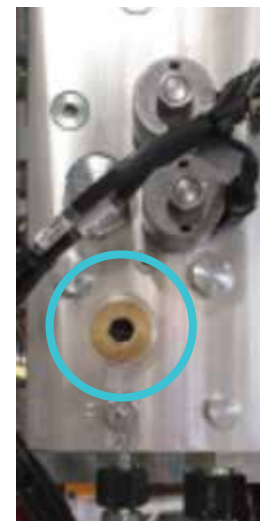
The A3 system uses a very similar looking manifold block mounted at the rear of the sprayer through which all fan functions are controlled. Oil then returns to the oil reservoir via the cooler and filter.

The soft start and low oil functions are activated electronically via the Fusion system.

Identification

The Fusion manifold block (part no. HP-103) and A3 WindComp manifold block (part no. HP-104) are visually very similar to each other. The easiest way to identify the

difference is the large brass plug (circled in BLUE) as used on the HP-104.



HP-104



HP-103

In photos HP-104 and HP-103, the manifolds are used with the main pressure and return feeds at the bottom of the block – in some cases the block is used with these ports at the top of the block - as shown in the cad image above.




SECTION 3

PRODUCT IDENTIFICATION & SPECIFICATION

OILS

The Micro Power Pack reservoir has an operating capacity of 10.5 litres (to the middle of the sight gauge), however the oil required to fill the complete system, including the 4 litre oil filter, hydraulic blocks, hoses & fans motors can vary from 19 ~ 24 litres.

When factory fitted to a sprayer, the unit is supplied standard with Castrol AWS68 mineral/hydraulic oil.

NOTE	 CROPLANDS <small>10-114</small>
<p>This hydraulic power pack uses Castrol AWS 68 oil.</p> <p><small>Croplands part HP-298-7</small></p>	

A biodegradable oil, supplied in lieu of the standard hydraulic oil is available as an option.

CAUTION	 CROPLANDS <small>10-208</small>
<p>This hydraulic power pack uses environmentally responsible oil</p> <p><small>Castrol Biotec 68/Croplands part HP-298-7D</small></p> <p><small>To maintain bio status, do not mix with other oils.</small></p>	

DO NOT MIX OILS!

For information on changing oils, filters, correct oil levels etc. Refer to the Maintenance section.



OIL COOLER

All Quantum Mist Sprayers (from mid 2019) supplied with Micro Power Packs feature a thermostatically (50 degrees C) controlled electric fan attached to the oil cooler.

WEIGHT

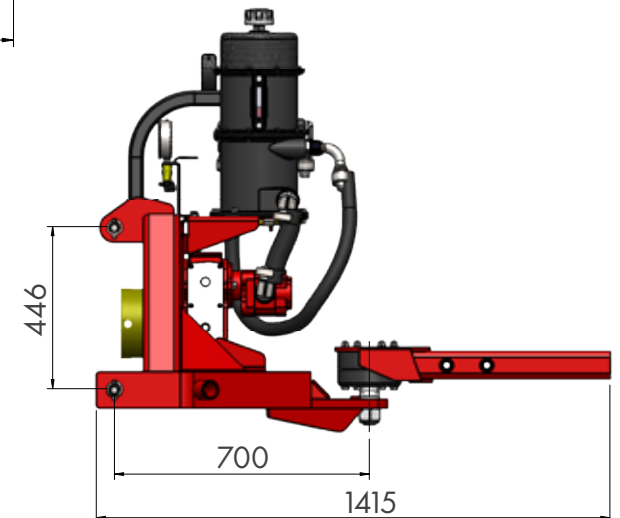
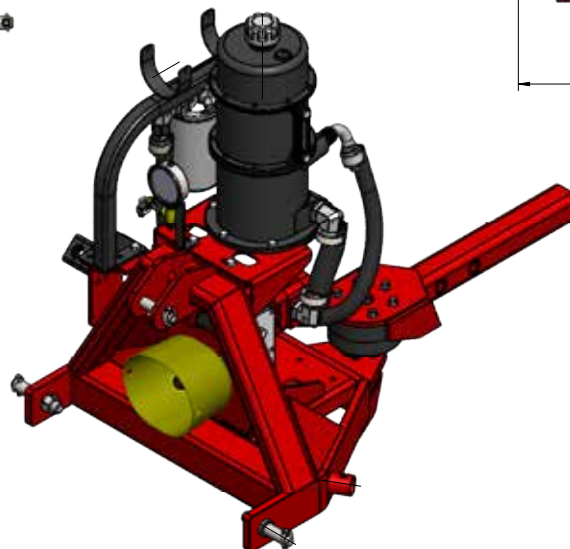
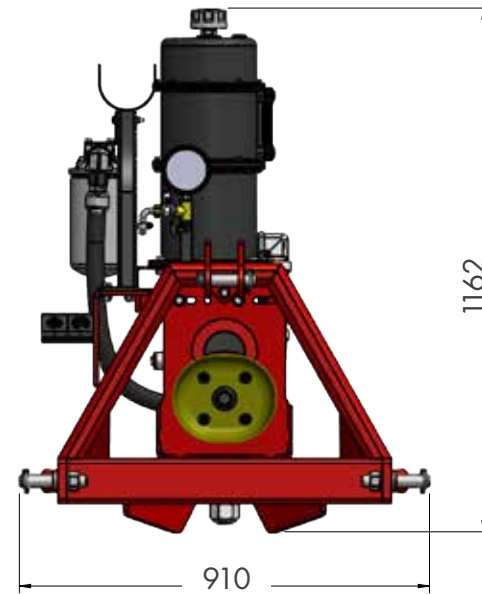
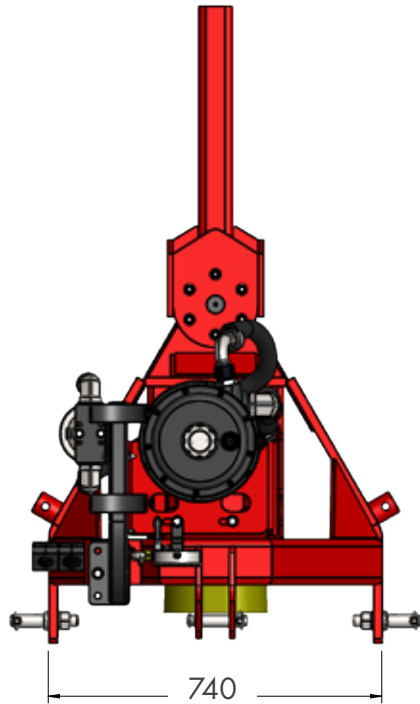
Dry weight = 190 kg, +/- 10 kg
depending on pump & gear selection

Specifications subject to change without notice.

NOTE
<p>Contact Croplands Technical Support for further information: 1800 999 162</p>

SECTION 3

PRODUCT IDENTIFICATION & SPECIFICATION



SECTION 4

SETUP & OPERATION

GENERAL SET UP INFORMATION

The Micro Power Pack is normally supplied and tested as an integral part of a Quantum Mist sprayer.

Refer the Quantum Mist Sprayer's manual for setup and connection of the power pack to tractor and sprayer.



IMPORTANT!

Make sure the PTO shaft is the correct length.

Adjust the Linkage arms to ensure the Micro Power Pack is sitting level – failure to do so will affect oil level switching.

NOTE

The (product) spray pump is driven via independent hydraulics connected to tractor remotes. Refer Section 6, Legacy Models for dual pump systems.

HOOK-UP, OIL LEVEL SWITCH & FAN CONTROL

The oil level switch is designed to activate at approximately 38mm (bottom of the red float) above the centre of the



Ideal oil level

bottom attachment bolt. This trigger point can be changed by sliding the wired magnet up and down the sight glass, ... handy for checking switch operation, but must otherwise be used at the lowest position. CAUTION using the switch in a raised position can lead to a false restart as the float sensor drops past the magnetic pickup.

The oil level switch connection (fitted and supplied from the factory) is similar for all models (same switch – different controller loom), refer photo below. However the functionality is slightly different depending on the controller / hydraulic system.



QM-500 & QM-420 "CLASSIC" oil level switching.

The "classic" system is available with a range of different controllers, each of which uses a different (loom) hook-up for low oil level switching.

When operating a HV4000 controller system - low oil level in the oil reservoir (or power is lost) will trigger the fans to stop (oil will continue to circulate between soft start manifold, filter and oil reservoir – but not go to the fans or cooler) and an oil level alert will show on the controller screen. The hydraulic lines can only be charged with oil if the system is powered up.

When operating a Bravo 180 controller system - low oil level in the oil reservoir (or power is lost) will trigger the fans to stop (oil will continue to circulate between soft start manifold, filter and oil reservoir – but not go to the fans or cooler) and low fan speed alarm will show on the controller screen.

SECTION 4

SETUP & OPERATION

When operating the sprayer without either the HV4000 or the Bravo 180 – a standalone ON/OFF/ALERT loom and control box (part no. CHLOOM-MICROCAB) is used.

Low oil level in the oil reservoir will trigger the low oil light to be displayed – requiring the operator to turn off the fans (fans will not stop automatically).

Refer the QM-420 (sprayer's) Operator manual, or QM-Orchard manual for more information.



SMART SPRAYER "FUSION" oil level switching.

The reservoir oil level switch plugs into the suitable connection of the main controller loom, CHLOOM/FUSION.

When a low oil level is detected (or power is lost) the fans will stop (oil will circulate between the main manifold, cooler, filter, and oil reservoir – but not go to the fans) and an alarm will display on the controller.

The hydraulic system (except for boom functions) can mostly be charged with oil without the controller – but to run the fans or fully charge all hydraulic lines will require the controller to be turned on, and the fans activated from the joystick (refer Fusion Controller Manual). NOTE; the fans will slowly freewheel with the system connected, but fans are not turned to run.

Refer the Smart Sprayer Operator's Manual for more information.

QM-420 A3 WINDCOMP oil level switching.

The reservoir oil level switch plugs into the appropriate connection of the main controller loom WCLOOM/1.

When low oil level is detected (or power is lost) the fans will stop (oil will circulate between the main manifold, cooler, filter, and oil reservoir – but not go to the fans) and an alarm will display on the controller.

Refer the QM-420 Operator's Manual for more information.

FIRST START-UP PREPARATION

With the tractor connected, PTO connected, guards correctly installed and controller / power systems also connected (as above), it's time to check and charge the system with oil.

Check Gearbox Oil

Note; normally this will have been done in factory and at pre-delivery.

Standard Gearbox

- Check for oil in the lower sight glass on the left hand side of the gearbox.

Heavy Duty Gearbox

- Check for oil via the dipstick.

Refer Section 5 - Maintenance for further details.

Charge the system with oil.

Note; normally this will have been done in factory and at pre-delivery.

- Fill the pot to the (near) top, via the spare port in the top of the unit.
- Power up the system (if required /refer previous chapter).
- Engage the PTO, SLOWLY, at tick-over speed and allow the pump to charge the complete system with oil. All fans should be running.

If for any reason one or more fans are not running - STOP. This can occur if there is an airlock in the hydraulic lines. Turn over the problem fan(s) a few times and try again. NEVER force the issue by attempting to increase fan speed.

SECTION 4

SETUP & OPERATION

- Depending on the sprayer, and the volume of all the hoses, manifolds and motors, it might be necessary to top up the oil level.
- If a Smart Sprayer, also open and close the boom functions to charge with oil. The boom arms should be closed if performing this operation for the first time.
- Once the oil level is stable, shut down and check for any leaks etc.

NOTE; upon shut down the oil level will rise as oil can gravity flow back to the pot. This is especially so with the Smart Sprayer and will normally refill above the sight gauge.

A similar change to oil levels can occur if the system is running hot – oil levels will rise as the oil expands, and contract again as the oil cools.

Final checks.

- Check the functioning of the oil level switch. This is best done by draining some oil (tap on the bottom) – catch the oil in a clean jug and refill once the test is complete.



- Perform one final test at full operational speeds to check all is OK

Never run the Micro Power Pack with the oil level (at operating speeds and temperatures) above the sight gauge – to do so diminishes the value of the oil level switch.

OPERATING

Never engage the PTO at maximum rpm or damage to the gearbox can occur.

Maximum PTO speed = 540 rpm.

Ideal PTO speed = 450 ~ 500 rpm.

Normally fan speed is set by the controller or perhaps (in some “classic” systems) a manual speed control valve on the sprayer.

Usually PTO speed is determined by other operational factors, but where possible, run the PTO at a speed whereby the Micro Power Pack is delivering just enough oil (plus a small margin more) to do the job rather than running the PTO at maximum speed and relying on the controller to dial back the fan speed.

We recommend a “normal” 68 grade oil operating temperature of around 60 ~ 65°C and no more than 80°C. For bio / vegetable based oils the maximum recommended operating temperature is 65°C.

Most QM sprayers come with an oil cooler fitted with a cooling fan which is controlled by a (50°C) thermostat. In most cases, oil will be around 50 ~ 65°C.

The most reliable and cost effective way to check operating temperatures is via an infrared temperature gauge (readily available from instrument / hardware / machinery / electrical suppliers).



NOTE

After extended running at full power, best practice is to shut down slowly to enable temperatures (and hence oil levels) to normalise. Coming back to a fan speed of 1,500 rpm for 2 minutes is ideal.

NOTE, with the Fusion system, if the oil level drops to the point where it triggers the fans to stop, it's possible for the fans to restart a short time thereafter (say 30 ~ 60 seconds). The cause of this is that on shut down, some oil will gravity flow back to the pot and trigger the restart – and the restart will be further delayed by the electronic soft start function built into the system.

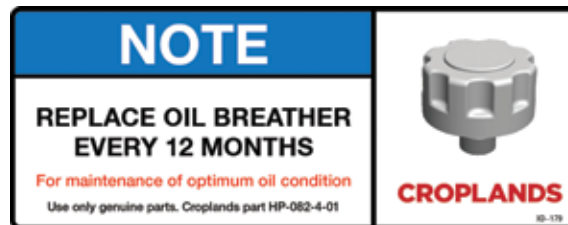
SECTION 5

MAINTENANCE

Daily operation requires a check for oil leaks or worn hoses, and PTO.



- **The PTO Shaft MUST be regularly checked and maintained.** Refer Quantum Mist and PTO Manuals for PTO guards, maintenance and greasing etc
- Standard Hydraulic / Mineral oil should be changed yearly or every 400 hours of operation, whichever occurs first.
- BIO / Vegetable based oil should be changed yearly or every 200 hours of operation, whichever occurs first.
- The oil filter and breather should be changed along with every oil change – or whenever the gauge (if fitted) suggests an increase in back pressure (very rare if using clean oil).
- Keep the area around the tank breather clean to reduce the chances of dust being injected into the oil as it “breathes” with temperature variations.
- Tank breather should be changed more frequently if the filter is becoming clogged with dust. It’s not just any breather – please use the genuine Croplands part.



- Oil filling is via removing the breather and / or the vent plug on the top of the pot.



- Oil drain is via the fitting at the base of the pot. It’s recommended to add a hose to a catchment before draining.

- Best practice is to change breather and oil filter at the same time as the oil.
- Best practice, and an absolute must if changing brand or type of oil is a FULL FLUSH. First drain all the oil from the pot, then top up with fresh oil, run for at least 10 seconds (to purge the lines and filter) and drain again. Change the filter and fill again.

Refer FIRST START-UP on page 16 re charging the system with oil and see page 15 re OIL LEVEL SWITCH operation.

GEARBOX

The gearbox oil must be changed for the first time after 60/80 hours, and every 1,500 hours thereafter. Recommended oils are MOBILUBE-HD 85W-140 or Castrol EPX85W-140.

The standard gearbox requires 800 ml, which will fill to the middle of the lower sight gauge (**circled in blue**).



SECTION 5

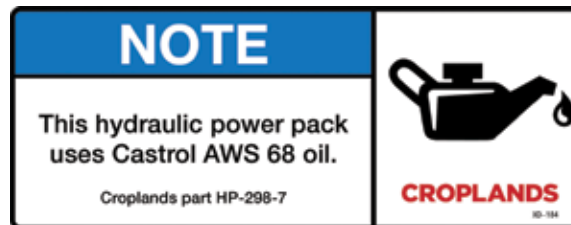
MAINTENANCE

The Heavy Duty gearbox requires 1300 ml of oil, which will fill to the middle of the lines at the bottom of the breather / sight tube.

This tube is found on the top right of the gearbox, and is accessed via a hole in the oil reservoir mounting plates. See **yellow arrow** below.



Both gearboxes have a drain plug at the bottom of the unit. This is accessed via a hole in the bottom of the linkage frame.



TROUBLESHOOTING

The Micro Power Pack is a very simple system. Other than wear and tear to the moving parts, any issue is likely to be electronic. If the unit fails to run ...

- Check PTO function
- Check oil level, if low, identify the leak.
- Check position and function of the oil level switch
- Check power to the system / controller.

Refer the TROUBLESHOOTING section of the sprayer's Operators Manual

SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

Discontinued Dual Pumps

MICRO POWER PACK - DUAL PUMP SELECTION						
Part Number	Pump size (cc)	Total pump capacity cc	PTO Speed	Gearbox ratio	Theoretical Output (Lpm)	True Performance (allow 10% losses) Litres / min
HP-082-6A	32/24cc	56	540	3.5	106	95
HP-082-7A	40/24cc	64	540	3.5	121	109
HP-082-5A	48/24cc	72	540	3.5	136	122
HP-082-5B	48/32cc	80	540	3.5	151	136
HP-298-2D	56/24cc	80	540	3.5	151	136
HP-082-9A	56/32cc	88	540	3.5	166	150
HP-082-8A	64/32cc	96	540	3.5	181	163
TBA	74/24cc	98	540	3.5	185	167
Note	Outputs above 150 Lpm will be subject to slightly increased inefficiencies. Reduced PTO rpm is advised.					

Dual Hydraulic Pump

The dual pump supplies oil for the fans (and boom functions if using the Fusion system) plus the hydraulically driven AR / product / spray pump via 2 separate pump pressure ports. Refer photo below.

Available in a variety of pump sizes to suit the sprayer requirements. In some rare cases, the total pump capacities at full rpm will (slightly) exceed the nominal maximum performance of the Micro Power Pack system - this will limit maximum fan performance.

The larger pump drives the fans and the smaller pump drives the Spray pump.

Product Pump



Whilst not a part of the Micro Power Pack assembly, any Micro Power Pack using a dual pump will be supplying the oil from the secondary pump to a hydraulic motor fitted to drive the AR Product / Spray pump. There are 2 common AR pump drives;

- The 24cc pump supply from the Micro Power Pack is used to drive the OMP50 (50cc) pump that is coupled to the AR140 ~ 185 diaphragm pump.
- OMP80 (80cc) pump driving the AR250 diaphragm pump requires a 32cc pump supply from the Micro Power Pack.

Refer the sprayer operators' manual for more information.

Refer to Croplands Technical support for further details if required.

Oil

The optional Castrol HTG32 bio oil has been superseded by the better specified Castrol BioTec 68 oil.

Note the HTH32 bio oil is not recommended for use above 65 degrees C, or at pressures above 2,600 psi. Operating bio oil above these parameters will reduce performance and increase wear.



SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

Version 1

Original (2014 ~ 2018), finned oil reservoir. Float style oil level switch is in the middle of the top oil reservoir, breather to the side (of the top chamber). The filter manifold included a low oil level "dump".



Version 1 "pot" with dual pump, "classic" version manifold and filter

Version 2

Looks very similar to version 1. Slightly taller (400mm) top oil reservoir to suit a 5-inch sight gauge with integral oil level switch. The breather was originally to the side (of the top), then moved to the middle of the top oil reservoir. Same filter manifold.

Filter Manifold - as used on Versions 1, 2 and early version 3.

A pressure gauge is fitted to the filter manifold assembly. Normally the needle will read low to middle green, or perhaps low yellow at very high oil flows. If the needle starts to increase from what was normal when new, it's



time to change the filter. Note; Earlier twin pump gauges had an issue with the needle bouncing making the needle was difficult to read. There is a fix – contact Croplands technical support for further details.



Version 3, single pump, Smart Sprayer

Version 3

All new, plain (no fins) triple piece cast aluminium oil reservoir which included extra ports for oil fill and secondary oil returns. Revised port fittings for easier assembly/alignment to the pump.

A revised (compared to version 2), 5-inch sight gauge which now has a lower level trigger point.

Only the breather is interchangeable with versions 1 and 2.

NOTE; the Version 3 oil reservoir is very similar / interchangeable with the latest model.

Version 4 (from late 2020)

The biggest changes come with improvements to the mounting and self-steer drawbar structure, hydraulic fittings, pressure gauge position, and wiring looms.

Refer to the Sprayer Specifications page in the Warranty & Specification Booklet for the supplied version.

Croplands Technical support for further details if required.

From 2021, the twin pump version was discontinued in favour of a simpler single pump system.

Version 4B (Current)

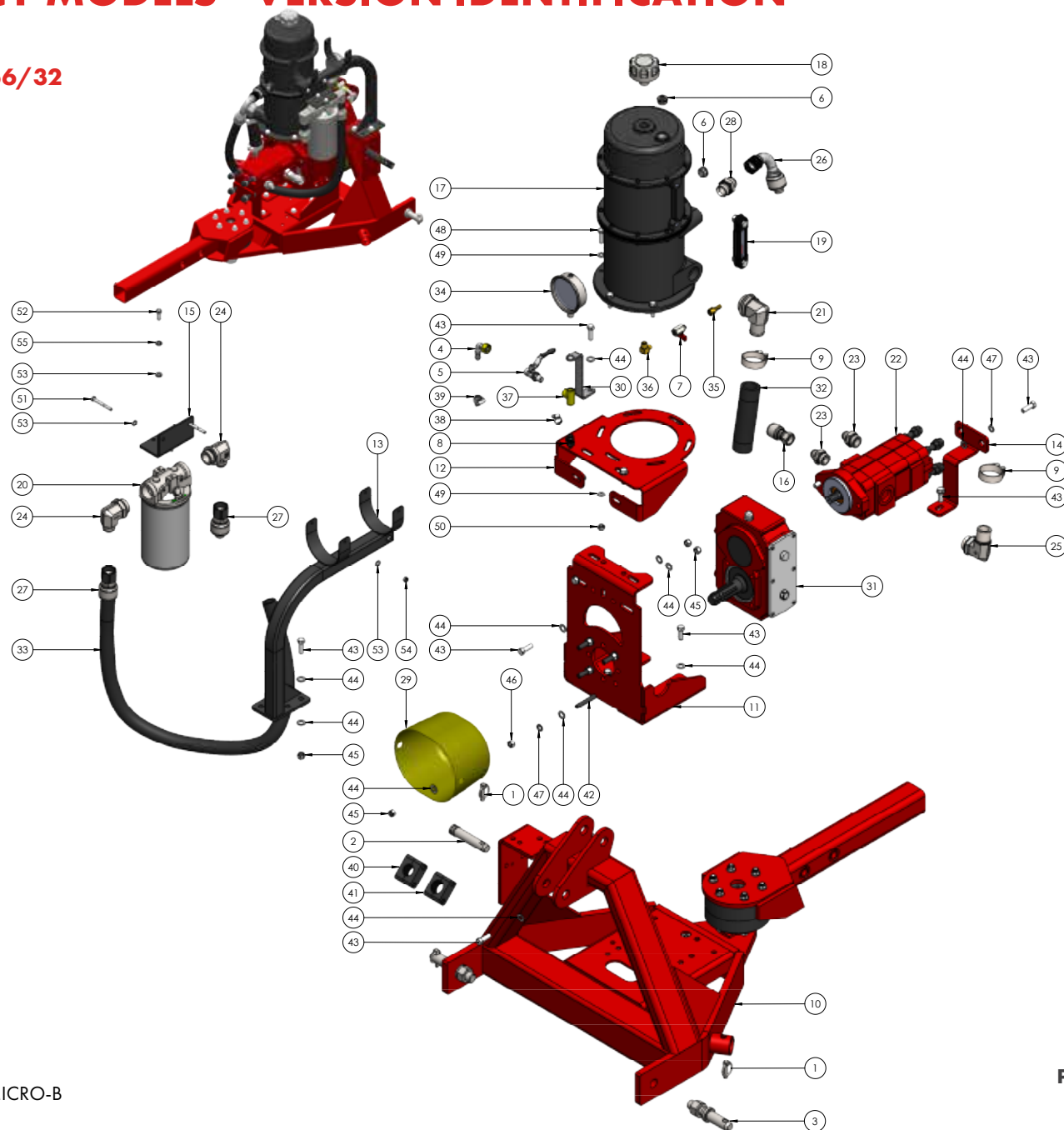
The introduction of the heavy duty gearbox has necessitated some changes to the frame (new code; HP-024D) and gearbox / oil reservoir mounting plates.

The revised version is backwards compatible for the standard gearbox etc.

SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

KH-6000-56/32



NOTE

This parts list is indicative of this model sprayer. For further parts information refer to: www.croplands.com.au

Please contact Technical support for further details

SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0006	BARE LINC PIN 7/16" DIA	3
2	B0076	TOP LINK PIN 3" X 7/16" S1040	1
3	B0102	IMPLEMENT PIN CAT 2	2
4	B163.604.13	ELBOW 1/2" C/W HEX NUT 1/2"	1
5	B165.1501.4	BALL VALVE 1/2" X 3/8" RH	1
6	B180.1702.32	PLUG 3/4"	2
7	BALL14MF2M	BALL VALVE 1/4" M/F	1
8	BJHB038-90	ELBOW 3/8" NPT X 3/8" BARB	1
9	GBSN55_20W4	T BOLT CLAMP 52-55MM W4 FULL SS	2
10	HP-024C	SELF STEER DRAWBAR 3PTL 3000/4000LT	1
11	HP-024C-7A	MICRO GEARBOX AND TANK BRACKET	1
12	HP-024C-7-1A	MICRO GEARBOX AND TANK BRACKET	1
13	HP-024-7A	CABLE HOLDER BRACKET SHORT	1
14	HP-024C-9A	DUAL PUMP SUPPORT BRACKET	1
15	HP-024C-10	FUSION MPP FILTER BRACKET	1
16	HP-067	STRAIGHT 3/4" X 1 1/16 JIC	1
17	HP-082-1B	TANK ASSEMBLY MICRO POWER PACK V3	1
18	HP-082-4-01	BREATHER MICRO TANK	1
19	HP-082-4-02C	OIL LEVEL GAUGE 127MM LOW SWITCH	1
20	HP-082-2-05	FILTER HEAD ASSEMBLY MICRO PP FUSION	1
21	HP-082-5A-01	ELBOW 1 1/2" TAIL X 1 7/8" UNO	1
22	HP-082-9A	PUMP MICRO PP 56/32CC	1
23	HP-152	1 1/16" JICM X 1 5/16" UNOM NIPPLE	2
24	HP-153	1 5/16" JICM X 1 5/8" UNOM ELBOW	2
25	HP-154	1 1/2" BARB X 1 5/8" UNOM ELBOW	1
26	HP-156	1" BARB X 1 5/16" JICM ELBOW	1
27	HP-157	1" BARB X 1 5/16" JICFM STRAIGHT	2
28	HP-158	MICRO TANK INLET FITTING	1
29	HP-280	PTO COVER (8204)	1

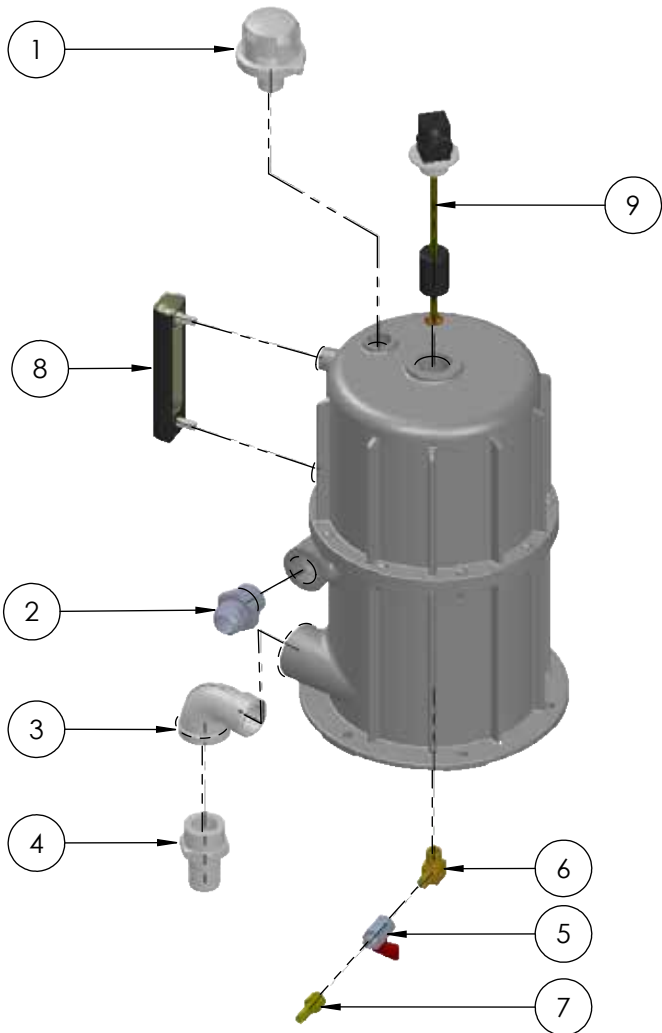
NO.	PART NUMBER	DESCRIPTION	QTY.
30	HP-286A-1A	GAUGE BRACKET MICRO POWERPACK	1
31	HP-298-26	GEARBOX CAST 97601-6/13	1
32	HYD24-SRF	HYD SUCTION HOSE 1 1/2" RYCO 10BAR	1
33	HYD25-SB	HYDRAULIC HOSE 1" T116D-16	1
34	L-G1602	GAUGE 100MM 0-25 BAR 1/4" B/E	1
35	TFA1438F	TAIL BRASS 1/4" BSPF X 3/8" TAIL	1
36	TFEL1438MM	ELBOW 1/4" BSPM X 3/8" BSPM	1
37	TFT3838FF	TEE 3/8" BSPF BRASS	1
38	TR38HC	HOSE CLAMP 10MM 3/8" WORM DRIVE	1
39	TR12HC	HOSE CLAMP 20MM 1/2" WORM DRIVE	1
40	UP-439	STAUFF CLAMP 32 OD X 52MM	1
41	UP-440	STAUFF CLAMP 38 OD X 52MM	1
42	M12X70SSGS	M12 X 70 SOCKET SET GRUB SCREW	4
43	M12X35	M12 X 35 SET SCREW HT ZP	14
44	M12FWASHER	M12 FLAT WASHER ZP	34
45	M12NNUT	M12 NYLOC NUT HT ZP	16
46	M12HNUT	M12 HEX NUT HT ZP	4
47	M12SWASHER	M12 SPRING WASHER ZP	6
48	M10X35	M10 X 35 SET SCREW HT ZP	5
49	M10FWASHER	M10 FLAT WASHER ZP	10
50	M10NNUT	M10 NYLOC NUT HT ZP	5
51	M8X65BOLT	M8 X 65 HEX HEAD BOLT HT ZP	2
52	M8X25	M8 X 25 SET SCREW HT ZP	2
53	M8FWASHER	M8 FLAT WASHER ZP	6
54	M8NNUT	M8 NYLOC NUT HT ZP	2
55	M8SWASHER	M8 SPRING WASHER ZP	2

Please contact Technical support for further details

SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

LEGACY MODEL – EARLY VERSION 2



NOTE

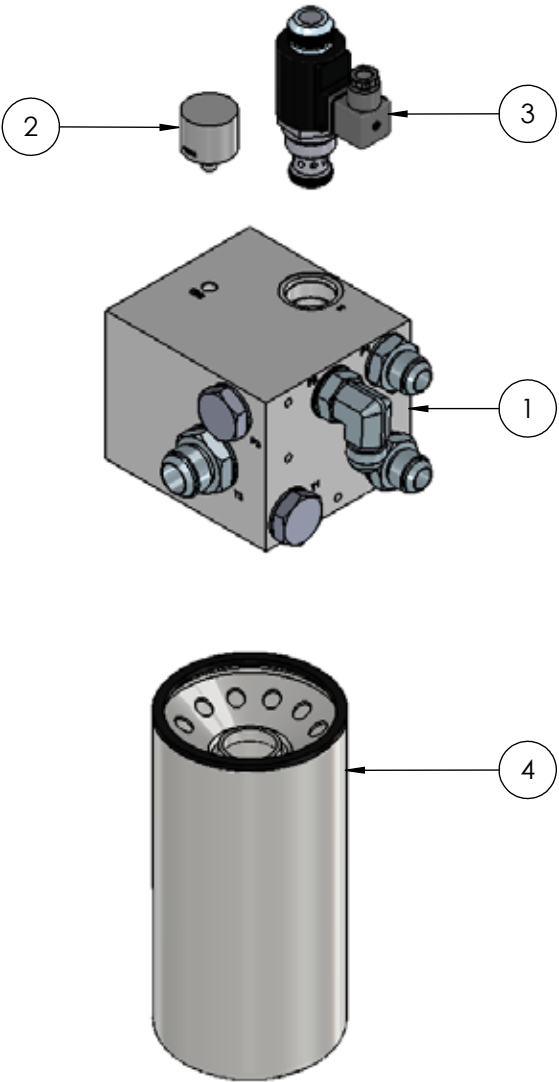
This parts list is indicative of this model sprayer. For further parts information refer to: www.croplands.com.au

ITEM NO.	PART NUMBER	Description	QTY.
1	HP-082-4-01	MICRO TANK BREATHER	1
2	HP-082-4-04	MICRO TANK INLET FITTING	1
3	HP-082-4-05	MICRO TANK OUTLET ELBOW	1
4	HP-082-4-06	MICRO TANK OUTLET TAIL	1
5	BALL14MF2M	BALL VALVE MINI 1/2" FF 2 WAY	1
6	TFEL1438MM	ELBOW 1/4" BSPM X 3/8" BSPM	1
7	TFA1438F	TAIL BRASS 1/4" BSPF X 3/8" TAIL	1
8	HP-082-4-02A	MICRO TANK OIL LEVEL GAUGE	1
9	HP-082-4-03A	SWITCH OIL LEVEL MICRO TANK 200MM	1

SECTION 6

LEGACY MODELS - VERSION IDENTIFICATION

LEGACY MODEL – ORIGINAL RESERVOIR, DUAL 48-24 PUMP & FILTER MANIFOLD



ITEM NO.	PART NUMBER	Description	QTY.
1	HP-082-2-01	MICRO MANIFOLD BLOCK	1
2	HP-082-2-04	MICRO MANIFOLD GAUGE	1
3	HP-082-2-03	MICRO MANIFOLD SOLENOID	1
4	HP-082-2-02	MICRO MANIFOLD FILTER	1

SECTION 7

ASSEMBLY DRAWINGS & PARTS

ALL PARTS INFORMATION is now listed on the Croplands website:

- Go to croplands.com.au
- Search in the Parts Information section linked to the home page.

NOTE

Drawings are for illustration purpose only - refer to sprayer for actual plumbing. Parts listed are indicative of the sprayer type.

Items in italics or without a part number are non stocked items and may need to be specially ordered.

For further parts information refer to: www.croplands.com.au

NOTE

Contact Croplands Technical Support
for further information:

1300 650 724

VERSION 4 OIL RESERVOIR

KH-6000-48B

KH-6000-74B

27

28

30

SECTION 7

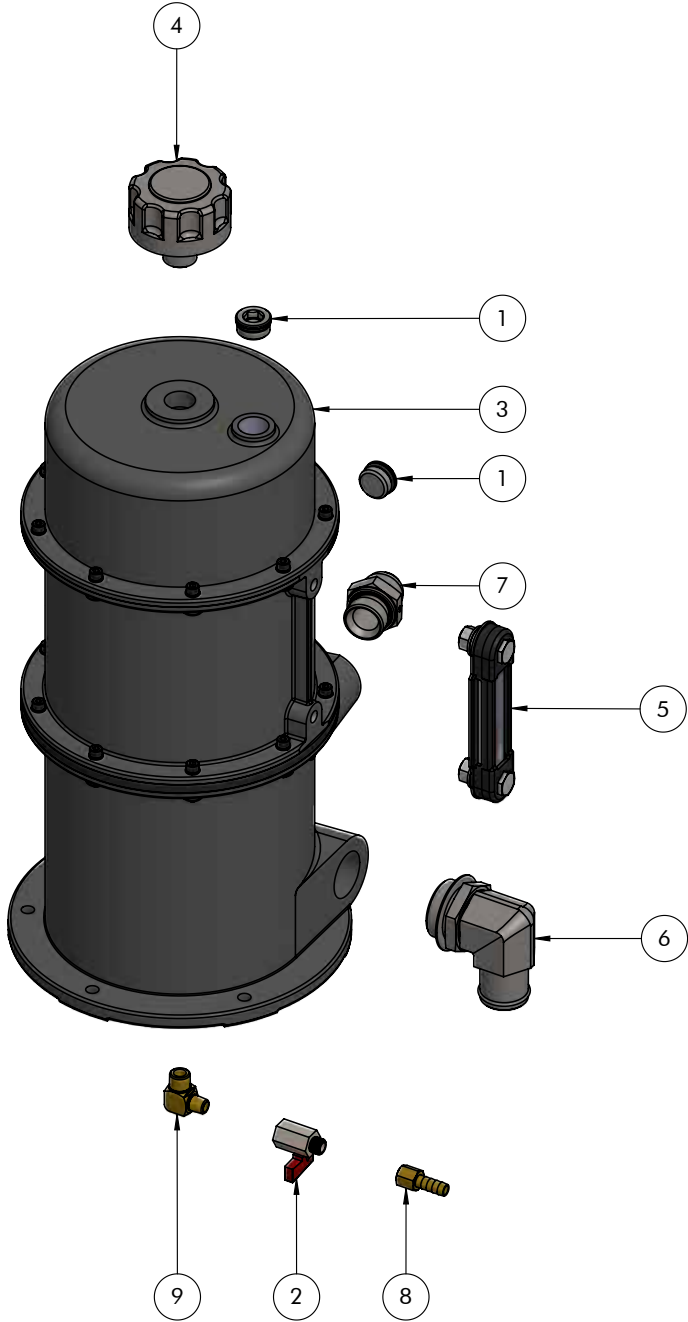
ASSEMBLY DRAWINGS & PARTS

VERSION 4 OIL RESERVOIR & FITTINGS

NOTE

This parts list is indicative of this model sprayer. For further parts information refer to: www.croplands.com.au

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	B180.1702.32	PLUG 3/4"	2
2	BALL14MF2M	BALL VALVE 1/4" M/F	1
3	HP-082-1B	TANK ASSEMBLY MICRO POWERPACK V3	1
4	HP-082-4-01	BREATHER MICRO TANK	1
5	HP-082-4-02C	OIL LEVEL GAUGE 127MM LOW SWITCH	1
6	HP-082-5A-01	ELBOW 1 1/2" TAIL X 1 7/8" UNO	1
7	HP-158	MICRO TANK INLET FITTING	1
8	TFA1438F	TAIL BRASS 1/4" BSPF X 3/8" TAIL	1
9	TFEL1438MM	ELBOW 1/4" BSPM X 3/8" TAIL	1

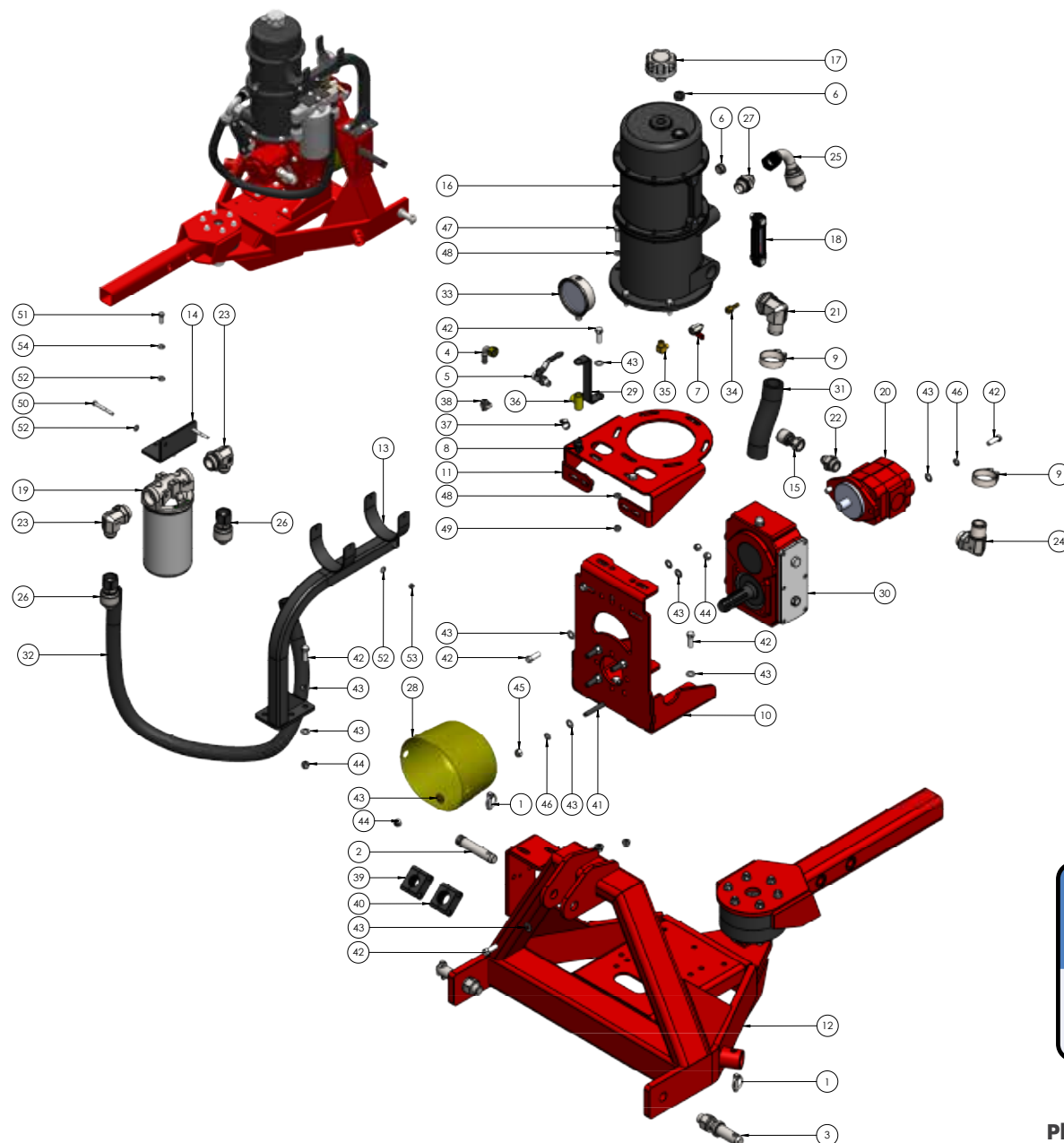


Please contact Technical support for further details

SECTION 7

ASSEMBLY DRAWINGS & PARTS

KH-6000-48B



NOTE

This parts list is indicative of this model sprayer. For further parts information refer to: www.croplands.com.au

SECTION 7

ASSEMBLY DRAWINGS & PARTS

NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0006	BARE LINCH PIN 7/16" DIA	3
2	B0076	TOP LINK PIN 3" X 7/16" S1040	1
3	B0102	IMPLEMENT PIN CAT 2	2
4	B163.604.13	ELBOW 1/2" C/W HEX NUT 1/2"	1
5	B165.1501.4	BALL VALVE 1/2" X 3/8" RH	1
6	B180.1702.32	PLUG 3/4"	2
7	BALL14MF2M	BALL VALVE 1/4" M/F	1
8	BJHB038-90	ELBOW 3/8" NPT X 3/8" BARB	1
9	GBSN55_20W4	T BOLT CLAMP 52-55MM W4 FULL SS	2
10	HP-024C-7B	MICRO GEARBOX AND TANK BRACKET STD	1
11	HP-024C-7-1A	MICRO TANK SUPPORT PLATE VER2	1
12	HP-024D	SELF STEER DRAWBAR 3PTL 3000/4000LT	1
13	HP-024-7A	CABLE HOLDER BRACKET SHORT	1
14	HP-024C-10	FUSION MPP FILTER BRACKET	1
15	HP-067	STRAIGHT 3/4" X 1 1/16 JIC	1
16	HP-082-1B	TANK ASSEMBLY MICRO POWER PACK V3	1
17	HP-082-4-01	BREATHER MICRO TANK	1
18	HP-082-4-02C	OIL LEVEL GAUGE 127MM LOW SWITCH	1
19	HP-082-2-05	FILTER HEAD ASSEMBLY MICRO PP FUSION	1
20	HP-082-5	PUMP 48CC MICRO POWER PACK	1
21	HP-082-5A-01	ELBOW 1 1/2" TAIL X 1 7/8" UNO	1
22	HP-152	1 1/16" JICM X 1 5/16" UNOM NIPPLE	1
23	HP-153	1 5/16" JICM X 1 5/8" UNOM ELBOW	2
24	HP-154	1 1/2" BARB X 1 5/8" UNOM ELBOW	1
25	HP-156	1" BARB X 1 5/16" JICM ELBOW	1
26	HP-157	1" BARB X 1 5/16" JICFM STRAIGHT	2
27	HP-158	MICRO TANK INLET FITTING	1
28	HP-280	PTO COVER (8204)	1
29	HP-286A-1A	GAUGE BRACKET MICRO POWERPACK	1

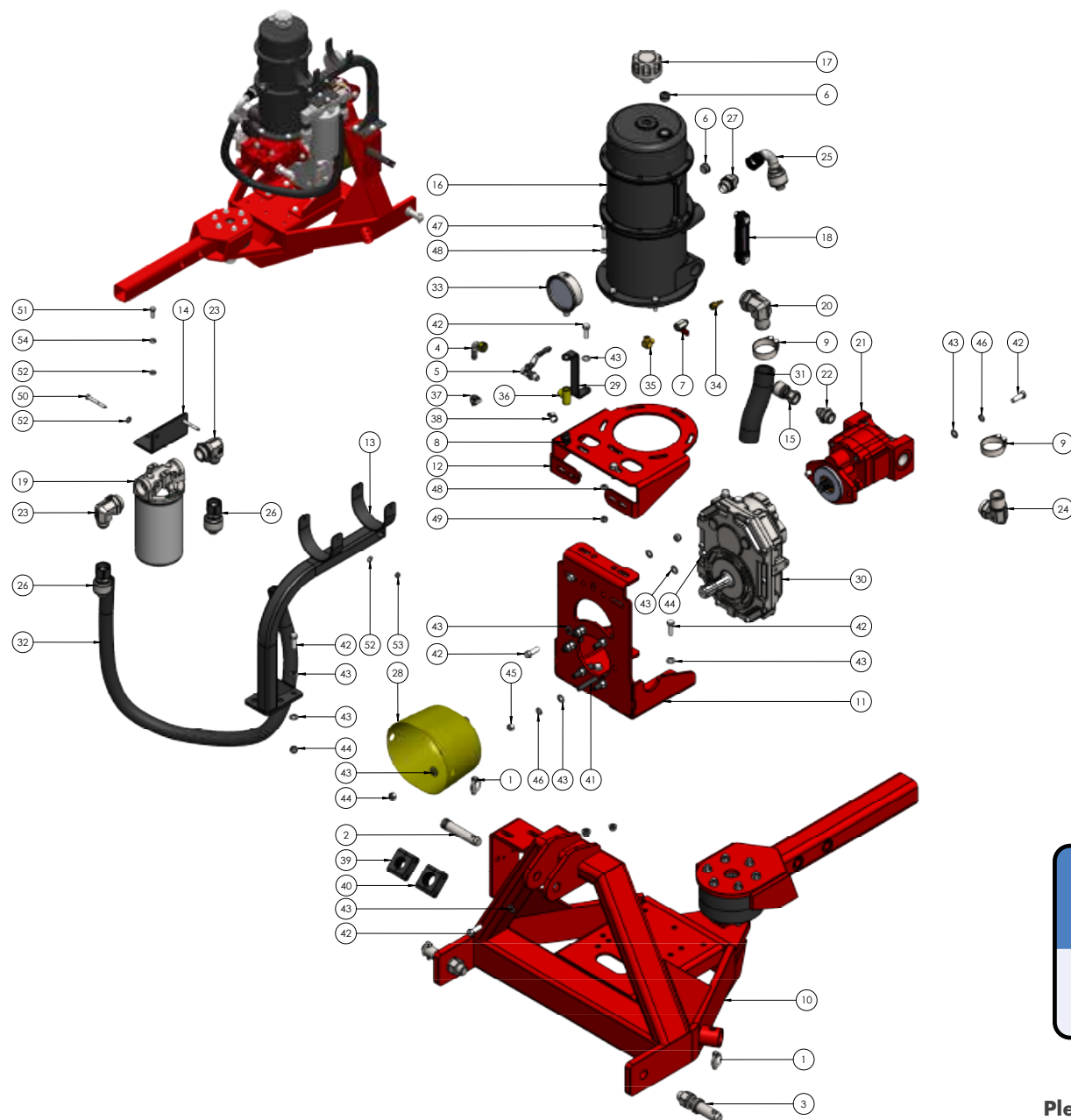
NO.	PART NUMBER	DESCRIPTION	QTY.
30	HP-298-26	GEARBOX CAST 97601-6/13	1
31	HYD24-SRF	HYD SUCTION HOSE 1 1/2" RYCO 10BAR	1
32	HYD25-SB	HYDRAULIC HOSE 1" T116D-16	1
33	L-G1602	GAUGE 100MM 0-25 BAR 1/4" B/E	1
34	TFA1438F	TAIL BRASS 1/4" BSPF X 3/8" TAIL	1
35	TFEL1438MM	ELBOW 1/4" BSPM X 3/8" TAIL	1
36	TFT3838FF	TEE 3/8" BSPF BRASS	1
37	TR38HC	HOSE CLAMP 10MM 3/8" WORM DRIVE	1
38	TR12HC	HOSE CLAMP 20MM 1/2" WORM DRIVE	1
39	UP-439	STAUFF CLAMP 32 OD X 52MM	1
40	UP-440	STAUFF CLAMP 38 OD X 52MM	1
41	M12X70SSGS	M 12 X 70 SOCKET SET GRUB SCREW	4
42	M12X35	M 12 X 35 SET SCREW HT ZP	13
43	M12FWASHER	M 12 FLAT WASHER ZP	32
44	M12NNUT	M 12 NYLOC NUT HT ZP	15
45	M12HNUT	M 12 HEX NUT HT ZP	4
46	M12SWASHER	M 12 SPRING WASHER ZP	6
47	M10X35	M 10 X 35 SET SCREW HT ZP	5
48	M10FWASHER	M 10 FLAT WASHER ZP	10
49	M10NNUT	M 10 NYLOC NUT HT ZP	5
50	M8X65BOLT	M 8 X 65 HEX HEAD BOLT HT ZP	2
51	M8X25	M 8 X 25 SET SCREW HT ZP	2
52	M8FWASHER	M 8 FLAT WASHER ZP	6
53	M8NNUT	M 8 NYLOC NUT HT ZP	2
54	M8SWASHER	M 8 SPRING WASHER ZP	2

Please contact Technical support for further details

SECTION 7

ASSEMBLY DRAWINGS & PARTS

KH-6000-74B



NOTE

This parts list is indicative of this model sprayer. For further parts information refer to: www.croplands.com.au

SECTION 7

ASSEMBLY DRAWINGS & PARTS

NO.	PART NUMBER	DESCRIPTION	QTY.
1	B0006	BARE LINC PIN 7/16" DIA	3
2	B0076	TOP LINK PIN 3" X 7/16" S1040	1
3	B0102	IMPLEMENT PIN CAT 2	2
4	B163.604.13	ELBOW 1/2" C/W HEX NUT 1/2"	1
5	B165.1501.4	BALL VALVE 1/2" X 3/8" RH	1
6	B180.1702.32	PLUG 3/4"	2
7	BALL14MF2M	BALL VALVE 1/4" M/F	1
8	BJHB038-90	ELBOW 3/8" NPT X 3/8" BARB	1
9	GBSN55_20W4	T BOLT CLAMP 52-55MM W4 FULL SS	2
10	HP-024D	SELF STEER DRAWBAR 3PTL 3000/4000LT	1
11	HP-024C-7A	MICRO GEARBOX & TANK BRACKET HD	1
12	HP-024C-7-1A	MICRO TANK SUPPORT PLATE VER2	1
13	HP-024-7A	CABLE HOLDER BRACKET SHORT	1
14	HP-024C-10	FUSION MPP FILTER BRACKET	1
15	HP-067	STRAIGHT 3/4" X 1 1/16 JIC	1
16	HP-082-1B	TANK ASSEMBLY MICRO POWER PACK V3	1
17	HP-082-4-01	BREATHER MICRO TANK	1
18	HP-082-4-02C	OIL LEVEL GAUGE 127MM LOW SWITCH	1
19	HP-082-2-05	FILTER HEAD ASSEMBLY MICRO PP FUSION	1
20	HP-082-5A-01	ELBOW 1 1/2" TAIL X 1 7/8" UNO	1
21	HP-082-9	PUMP MICRO PP 74CC	1
22	HP-152	1 1/16" JICM X 1 5/16" UNOM NIPPLE	1
23	HP-153	1 5/16" JICM X 1 5/8" UNOM ELBOW	2
24	HP-154	1 1/2" BARB X 1 5/8" UNOM ELBOW	1
25	HP-156	1" BARB X 1 5/16" JICM ELBOW	1
26	HP-157	1" BARB X 1 5/16" JICFM STRAIGHT	2
27	HP-158	MICRO TANK INLET FITTING	1
28	HP-280	PTO COVER (8204)	1
29	HP-286A-1A	GAUGE BRACKET MICRO POWERPACK	1

NO.	PART NUMBER	DESCRIPTION	QTY.
30	HP-298-27	GEARBOX CAST 93001-3	1
31	HYD24-SRF	HYD SUCTION HOSE 1 1/2" RYCO 10BAR	1
32	HYD25-SB	HYDRAULIC HOSE 1" T116D-16	1
33	L-G1602	GAUGE 100MM 0-25 BAR 1/4" B/E	1
34	TFA1438F	TAIL BRASS 1/4" BSPF X 3/8" TAIL	1
35	TFEL1438MM	ELBOW 1/4" BSPM X 3/8" TAIL	1
36	TFT3838FF	TEE 3/8" BSPF BRASS	1
37	TR12HC	HOSE CLAMP 20MM 1/2" WORM DRIVE	1
38	TR38HC	HOSE CLAMP 10MM 3/8" WORM DRIVE	1
39	UP-439	STAUFF CLAMP 32 OD X 52MM	1
40	UP-440	STAUFF CLAMP 38 OD X 52MM	1
41	M12X70SSGS	M 12 X 70 SOCKET SET GRUB SCREW	6
42	M12X35	M 12 X 35 SET SCREW HT ZP	13
43	M12FWASHER	M 12 FLAT WASHER ZP	36
44	M12NNUT	M 12 NYLOC NUT HT ZP	17
45	M12HNUT	M 12 HEX NUT HT ZP	6
46	M12SWASHER	M 12 SPRING WASHER ZP	8
47	M10X35	M 10 X 35 SET SCREW HT ZP	5
48	M10FWASHER	M 10 FLAT WASHER ZP	10
49	M10NNUT	M 10 NYLOC NUT HT ZP	5
50	M8X65BOLT	M 8 X 65 HEX HEAD BOLT HT ZP	2
51	M8X25	M 8 X 25 SET SCREW HT ZP	2
52	M8FWASHER	M 8 FLAT WASHER ZP	6
53	M8NNUT	M 8 NYLOC NUT HT ZP	2
54	M8SWASHER	M 8 SPRING WASHER ZP	2

Please contact Technical support for further details

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