

MICRON HERBI-4 PERIODIC INSPECTION CHECK LIST

ITEM	PARTS NO	DESCRIPTION	4 MONTHS	8 MONTHS	12 MONTHS
1	4134A	ELECTRIC WIRE BLACK THICK / 1.28M			0
2	4368	ELECTRIC WIRE RED THICK - 1.32M			0
3	4457	SPRING 9/32" TERMINAL CONNECTING		0	
4	4993	PVC TUBE 6MM X 9MM - 1.21M			0
5	5021	ATOMISER DISC	0	0	0
6	5022	SLINGGER DUMMY SHAFT	0	0	0
7	5039	FEED NOZZLE YELLOW		0	
8	5107C (800-5107C)	NECK STRAP			0
9	5442	MOTOR HERBI - 4	0	0	0
10	5454	O - RING (BS 611)	0	0	0
11	5455	O - RING (BS 365-30)	0	0	0
12	5776B	INLINE SYPHONE TAP (NEW MODEL)		0	
13	8381B	SHOULDER STRAP			0
14	MPP6021	PVC TUBE		0	
15	8386BC	BATTERY BOTTOM COVER			0
16	8385H	BATTERY COVER BOTTOM SCREW			0
17	5000/01	WIRE HARNESS MOTOR TO SWITCH		0	
18	5000/02	SWITCH C/W EXTENSION WIRE		0	
19	5000/03	SUB HARNESS (FEMALE CONNECTOR)		0	
20	AP 01R	SWITCH RED		0	
21	BAT6V3AH	6V 3AH LEAD SEALED BATTERY	0	0	0
22	MPP6019	WIRE HARNESS FROM BATTERY(MALE CONNECTOR)		0	

0 Complusory change for continuous use at indicated intervals.
The rest change when necessary.

Exclusively distributed by

RB Spray Tech Sdn Bhd (627487-P)

Head Office

No. 44, Lorong Sanggul 1E, Bandar Puteri Klang, 41200 Klang,
Selangor Darul Ehsan, Malaysia.

Tel: 603-5162 5746, 51625745 Fax: 603-51615741

E-mail: rbst@streamyx.com; info@rbfield.com

Manufactured by

Micron

Bromyard Industrial Estate, Bromyard,
Herefordshire, HR7 4HS, UK
Web: www.micron.co.uk

MICRON HERBI-4 CDA



Instruction Manual



www.rbfield.com

YOUR KEY TO SMART TECHNOLOGY

CONTENTS

Page

Description	1
Safety	2
Operator protection	2
Preparing for spraying	3
Mixing, filling and calibration	4 - 7
Before spraying	8
To start spraying	8
To stop spraying	9
After spraying	10
Storage	11
Diagram/Parts List	12 - 13
Troubleshooting	14

DESCRIPTION

The HERBI-4 is a simple robust hand-held spinning disc Controlled Droplet Application (CDA) sprayer powered by 4 torch (D-cell/R20) batteries, with one set of good quality batteries giving over forty hours spraying time. It is designed to apply herbicides in a 1.2m wide band at low volumes (10 to 30 litres/hectare). A governed electric motor spins the atomiser disc at a constant 2,000 rpm to produce uniform spray droplets of around 250 micron; large enough to minimise any risk of spray drift. Liquid is fed by gravity through colour coded feed nozzles. The HERBI-4 can apply herbicides to borders, pathways, ditches and larger areas by making a series of consecutive spray passes. The weight of the machine ready to spray, with the *ST 10 litre backpack*.



TROUBLESHOOTING

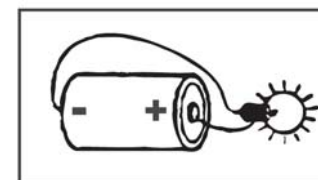
A) Atomiser disc spins but does not spray or sprays irregularly. Check:

- The feed nozzle. If the feed nozzle is blocked remove and soak in soapy water. **Never** blow through the nozzle with your mouth. Check that the feed nozzle gives a flow rate within the operating range.
- The atomiser is clean and undamaged. Clean or replace.
- The flow valve for blockage. Rinse through with soapy water.

B) Atomiser disc fails to spin or spins unevenly. Check:

- That the batteries are fitted correctly.
- The condition of the batteries. Replace if necessary.
- That electrical terminals and contact points are clean and that electrical wires are not broken or corroded.
- If the atomiser disc is rubbing on the motor base plate or the motor shaft is bent. Replace the disc or motor if necessary.
- The motor for corrosion or obvious signs of wear. Replace if necessary.

N.B. Battery condition can be checked with a torch (or a torch lightbulb and electrical wire).



Specially designed ST backpacks and a shoulder strap are available for use with the HERBI-4.

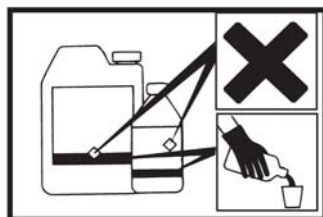
SAFETY

Using agrochemicals is a hazardous process. Operators should comply with all relevant legislation and/or regulations governing the use of agrochemicals and should use appropriate personal protective equipment (see 'OPERATOR PROTECTION'). **Never** use the HERBI-4 in potentially explosive atmospheres or spray flammable liquid through it.

The HERBI-4 can be used with most conventional herbicides, as well as specific CDA formulations (only available in some countries) to provide a closed transfer system to improve operator safety.

Always read the product label carefully to discover:-

- approved applications
- maximum dose rates
- maximum number of treatments
- operator protection required
- necessary environmental protection measures



N.B. 'Dose rate' refers to the amount of chemical applied per hectare.

Never eat, drink, or smoke when working with agrochemicals. After using agrochemicals or handling equipment wash your hands thoroughly. Keep people (especially children) and animals out of areas being sprayed.

Always store agrochemicals safely to protect people and animals, and to safeguard the environment (take special care to avoid water pollution). See 'SPRAYING' sections for guidelines on safe use of the HERBI-4 in operation.

OPERATOR PROTECTION

Always wear the protective clothing items listed on the product label for mixing and filling. The **minimum** protective clothing required for *spraying* with the HERBI-4 is:

- rubber gloves
- boots/shoes and long trousers
- eye protection
- long sleeved shirt

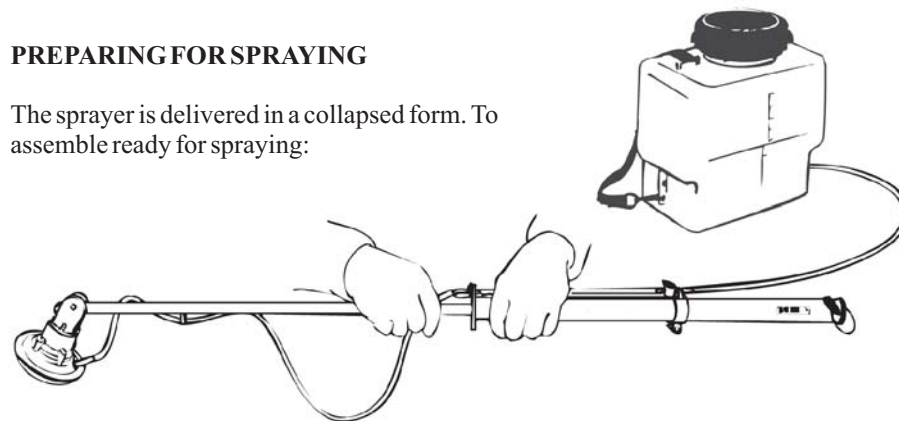


Note:

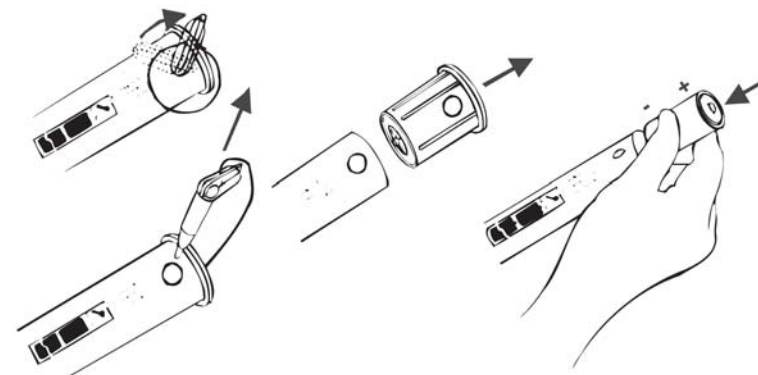
- Acoustic information:** the sound pressure level at the operator's ear should not exceed 70 dB(A).
- Vibration:** the weighted RMS acceleration value at the hands when using this machine should not exceed 2.5 m/sec².

PREPARING FOR SPRAYING

The sprayer is delivered in a collapsed form. To assemble ready for spraying:



- 1) Extend the sprayer and securely connect the feed tube to the flow valve. Instructions on assembling *ST backpacks* are contained in the tank. The shoulder strap (if supplied) should be connected to the battery case end cap. Remove the atomiser protective cover and check by hand that the atomiser disc spins freely.



- 2) Remove the switch end piece as shown on the label.

- 3) Insert four batteries (D-cell/R20) negative, i.e. flat, end first.

N.B. Before spraying for the first time with the HERBI-4, the spray pattern produced should be checked using only water (see 'BEFORE SPRAYING').

MIXING, FILLING AND CALIBRATION

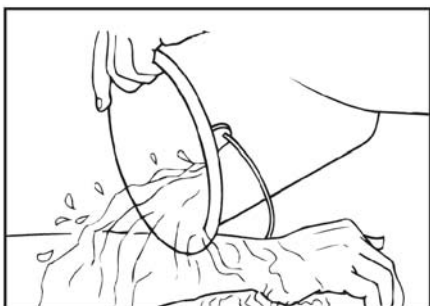
Mixing and filling is generally the most hazardous process in the spraying operation. **Always** follow the label instructions. **Always** use a filter (fitted in the *ST* backpacks) and use a funnel if filling a container with a small neck. **Only** mix enough spray for the area to be treated thereby avoiding the need for disposal of unused spray mix.



Always wear gloves when handling agrochemicals and equipment.



Always use the correct equipment when mixing and measuring.



Always wash off any skin contamination.



Always clean all equipment after use.

With the HERBI-4 herbicides are usually applied in around 20 litres total spray volume per hectare, except for glyphosate which can be applied at volumes as low as 10 litres per hectare. These are lower volumes than recommended for high volume application with knapsack sprayers.

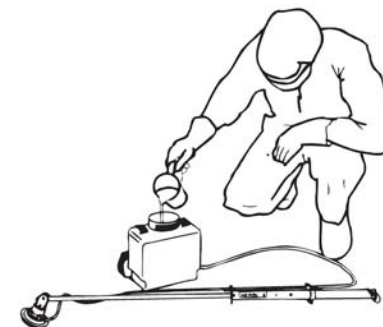
Do not use herbicide concentrations greater than the maximum recommended on the label (unless specific training or recommendations have been given) if the label:

- specifically prohibits use of 'Reduced Volumes' i.e. increased concentrations;
- has a statutory requirement for use of personal protective equipment when using the diluted product at high volumes (N.B. this will appear in the statutory box on the label);
or
- carries one of the following hazard ratings: 'very toxic', 'toxic' or 'corrosive' or carries the warning 'risk of serious damage to the eyes' e.g. paraquat (Gramoxone) which is classified as toxic should not therefore be used through the HERBI-4 at concentrations greater than recommended on the label. Micron do not generally recommend using spray mixes of more than ten times the maximum concentration recommended for high volume application with knapsack sprayers. The safest product and lowest dose rate appropriate for the treatment should be used at all times.

To prepare the spray mix first read the product label to determine the quantity of product to be applied per hectare e.g. 2 litres of glyphosate per hectare. Then determine the total spray volume to be applied per hectare with the Herbi-4 i.e. 10 or 20 litres per hectare. Calculate the ratio of product in water e.g. 2 litres glyphosate + 8 litres water = 10 litre mix = 1: 4. Use this ratio to prepare the correct dose for the spray tank or bottle e.g. with a 5 litre backpack mix 1 litre glyphosate with 4 litre of water.



Measure out the exact amount of product.



Half fill the tank with clean water. Check for leaks. Add the measured product.

Never use leaking equipment. Take care to avoid spillage when filling or lifting the tank.



Fill the tank.



Wipe the tank with a dry cloth



Mix well by gently shaking the tank.



Place the tank on the operator's back.

Examples of mixing spray – for 1 hectare

a) glyphosate (360 g/l) 2 litres
add water: +8 litres

Total volume: 10 litres
i.e. 1 part glyphosate : 4 parts water

b) 2,4-D (500 g/l) 3 litres
add water: +17 litres

Total volume: 20 litres
i.e. 3 parts 2,4-D : 17 parts water

The table below indicates the relationship between total spray volume, flow rate and walking speed for the HERBI-4 as per the following formula:

$$\text{Flow rate (ml/min)} = 6 \times \text{total spray volume (l/ha)} \times \text{walking speed (m/s)} \times \text{band width (m)}$$

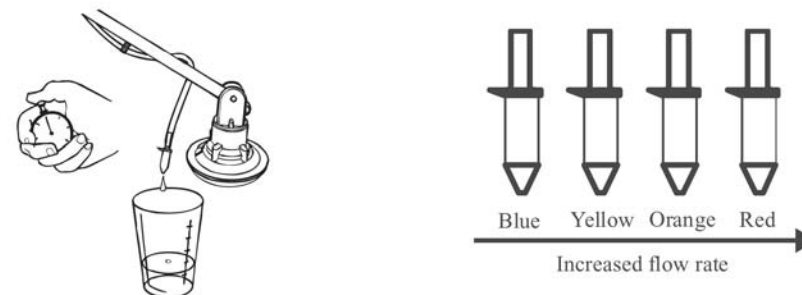
Total spray volume (l/ha)	Band width (m)	Feed nozzle	Flow rate (ml/min)	Walking speed (m/s)
10 (i.e. glyphosate)	1.2	Blue	72	1
20 (i.e. other herbicides)	1.2	Blue Yellow	72 144	0.5 1

Note: The flow rates in this table were measured with the spray head 65cm below the level of the liquid in the tank, using water only. The flow rate will vary with differences in this height and the viscosity of the spray mix (for very viscous spray mixes it may be necessary to use a larger feed nozzle).

CALIBRATION

Choose and fit the feed nozzle that is likely to be required. The actual flow rate should be checked holding the HERBI-4 in the spraying position. Remove the feed nozzle from the spray head by twisting and pulling out, then, once liquid has reached the feed nozzle, allow the liquid to flow into a suitable container for one minute and measure the volume dispensed. If the flow rate is **not** in the recommended flow rate range of 60 to 150 ml/min change the feed nozzle and repeat the above procedure.

N.B. It is preferable to walk more slowly to achieve the required spray volume than to use higher flow rates.



Example: Required spray volume rate = 20 l/ha; Flow rate measured = 100 ml/min

$$\text{Walking speed (m/s)} = \frac{\text{Flow rate (ml/min)}}{6 \times 1.2 \times \text{total spray volume (l/ha)}} = \frac{100}{7.2 \times 20} = 0.7$$

i.e. 0.7 m/s or 42 metres in one minute (0.7m x 60s)
Mark out a distance of 42 metres and practice walking it in one minute.

BEFORE SPRAYING

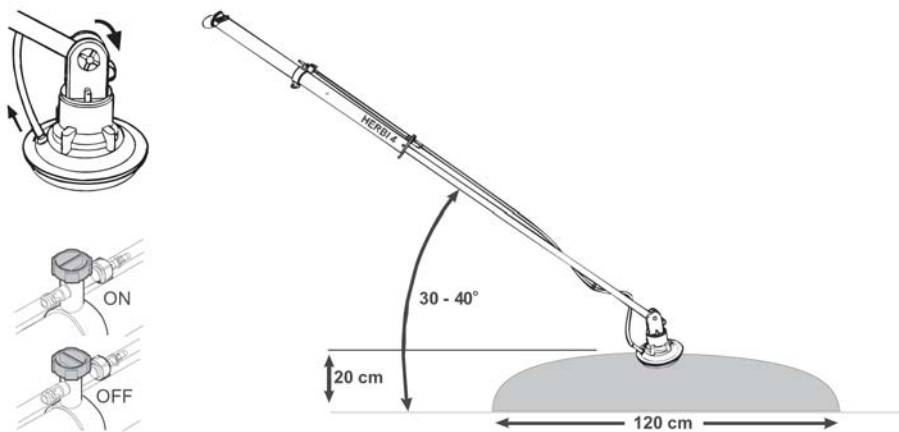
Check the wind speed and direction (below 5 kph) is safest. Take special care to avoid drift by keeping the spray head as low as possible. **Never** spray into the wind and avoid walking into the spray. **Always** keep the spray head at least 60cm from any part of the body to avoid direct contamination by the spray.

Before spraying for the first time use water **only** to check the spray pattern produced. Put some clean water in the tank and add a small amount of detergent. Check for leaks. Switch on the sprayer and then open the flow valve. Spray on one spot, preferably on clean dry concrete, for around 30 seconds with the spray head held about 20cm above the ground; a wet ring 1.2m wide should appear on the ground. Practice using the sprayer by walking along a few metres and then stopping spraying (see 'TO STOP SPRAYING').

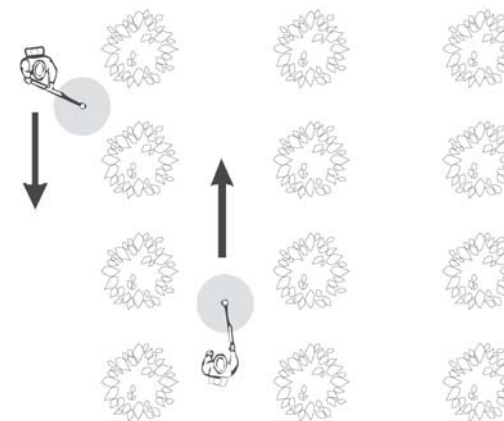
TO START SPRAYING

Hold the spray head about 20cm above the ground or weed foliage. Switch on the sprayer, check the atomiser disc starts spinning (**never** touch the atomiser disc when spinning or hold the spray head too close to the operator) and then open the flow valve. Start walking immediately the spray liquid reaches the feed nozzle. N.B. with the HERBI-4 Extra both flow valves must be opened.

The HERBI-4 is normally held at an angle of around 35° to 40° to the ground with the head inclined slightly away from the operator. **Do not** spray with the HERBI-4 held on the shoulder, since spray may contaminate the operator. N.B. the machine will not spray with the spray head above the level of liquid in the tank.

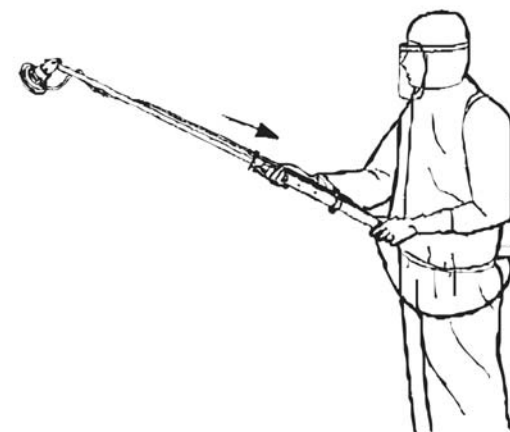


It is best to hold the HERBI-4 to the side or the rear so that the operator does not have to walk over the treated area.



TO STOP SPRAYING

Close the flow valve and then switch off the sprayer. When the atomiser disc has stopped spinning raise the sprayer to an angle of 45° (see below). **Never** raise the spray head until the atomiser disc has stopped spinning. Then open the flow valve and drain any remaining liquid in the feed tube back into the tank (by raising the feed tube above the level of liquid in the tank). Then close the flow valve.



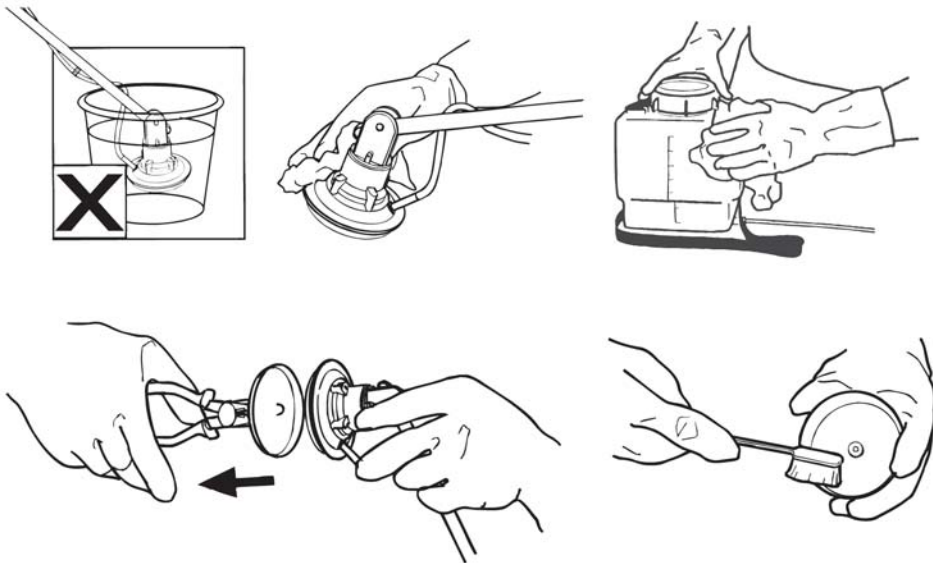
For ease of transport the tank can be disconnected (use the flow valve to isolate any liquid left in a backpack) and the sprayer collapsed (by removing the batteries).

AFTER SPRAYING

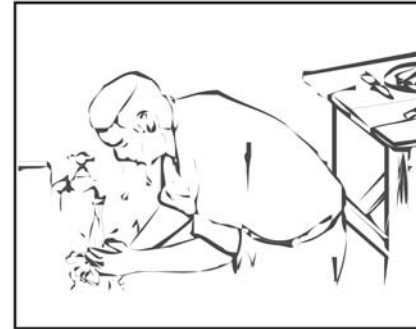
1. Dispose of any surplus spray mix according to the product approval. Store products safely, locked up and out of the reach of children.



2. It is **essential** to clean the sprayer and tank thoroughly using water and detergent after use. **Never** immerse the spray head in water or under a tap, since this will destroy the electric motor. A water and detergent mix should be put in the tank, swilled around, and then sprayed out onto the treated area of waste ground. The sprayer and tank should be wiped down externally using a cloth. Periodically remove the atomiser disc with a pair of pliers and clean with a soft brush.

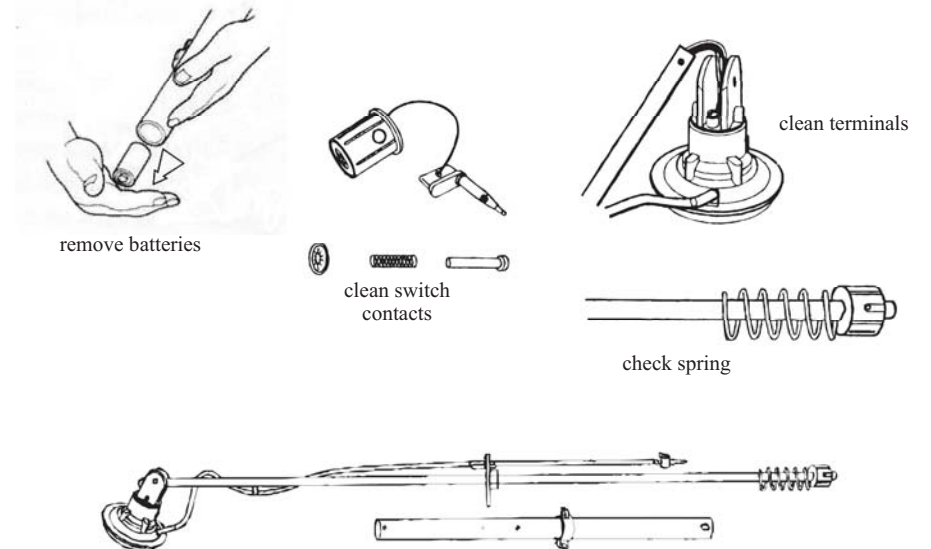


3. After working with agrochemicals, or handling spraying equipment, **always** thoroughly wash hands and exposed skin. All protective clothing should be washed separately from other clothing and stored. Contaminated gloves should be washed inside and out.

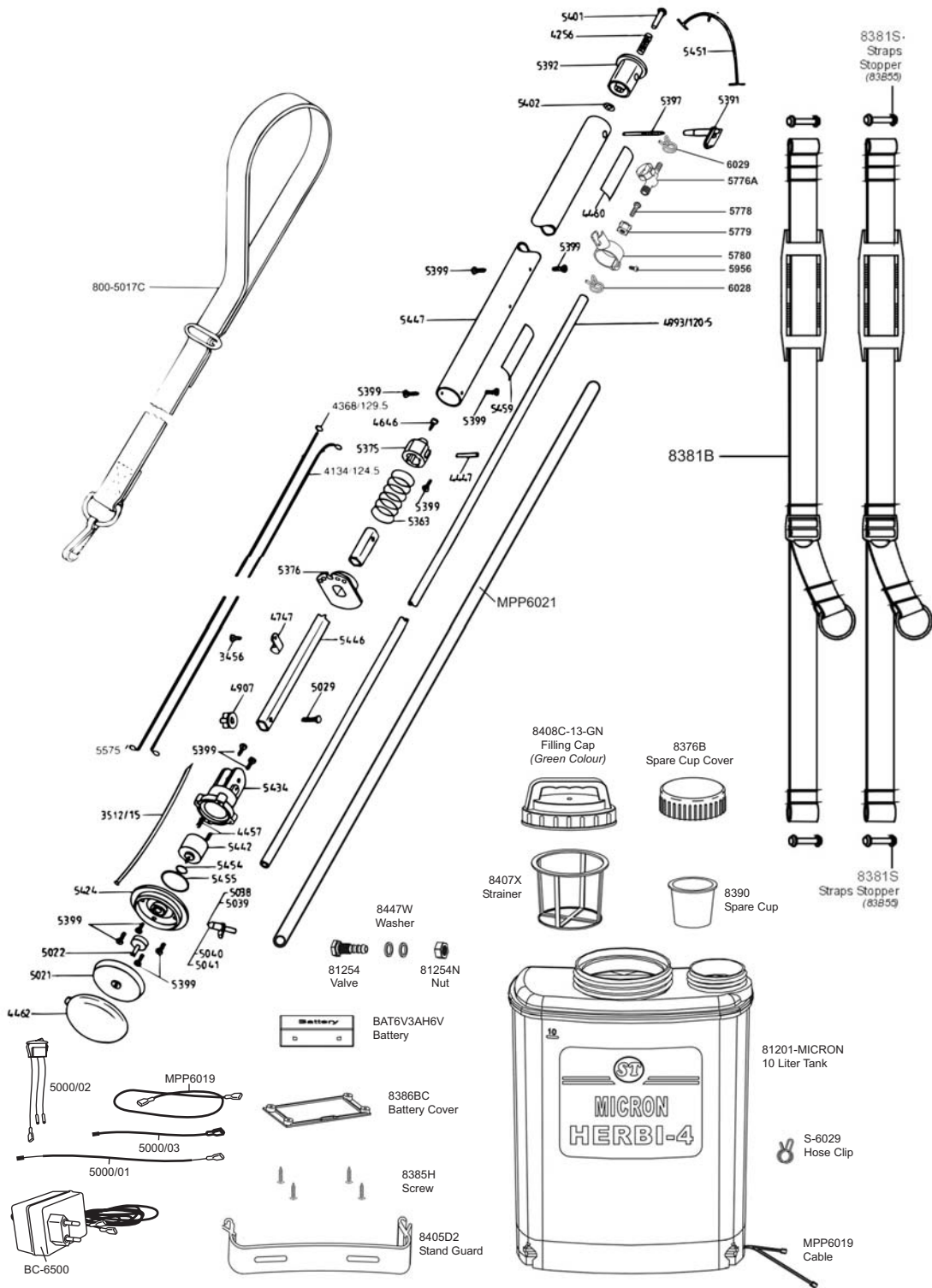


STORAGE

Before storing the HERBI-4 for long periods disassemble the sprayer by removing the four screws in the battery case and clean all electrical contacts with a wire brush or similar. Reassemble and with the sprayer in the collapsed position i.e. batteries removed, store in a dry place away from direct sunlight. Batteries should be stored in a dry cool place.



MICRON HERBI-4 SPRAYER PARTS listing



ITEM	PARTS NO.	DESCRIPTION
1.	3456	SCREW NO. 6 X 1/4" S/T (B)
2.	3512/15	AIR VENT TUBE - 0.15M
3.	4134A	ELECTRIC WIRE BLACK THICK / 1.28M
4.	4256	SPRING 5/16" O.D
5.	4368	ELECTRIC WIRE RED THICK - 1.32M
6.	4447	SPRING HOLDER PIN
7.	4457	SPRING 9/32" TERMINAL CONNECTING
8.	4462	ATOMISER PROTECTIVE COVER (GREEN)
9.	4646	SCREW NO 6 X 3/8" S/STEEL
10.	4747	TUBE CLIP
11.	4907	WING NUT
12.	4993	PVC TUBE 6MM X 9MM - 1.21M
13.	5021	ATOMISER DISC
14.	5022	SLINGER DUMMY SHAFT
15.	5029	SCREW M5 X 25MM
16.	5038	FEED NOZZLE BLUE
17.	5039	FEED NOZZLE YELLOW
18.	5107C (800-5107C)	NECK STRAP
19.	5363	SPRING BATTERY CASE
20.	5375	CENTRE CONNECTOR
21.	5391	SWITCH C/W BRASS SWITCH SCREW-5397
22.	5392	SWITCH END PIECE ASS'Y
23.	5397	BRASS SWITCH SCREW
24.	5399	SCREW NO 6 X 3/8" S/T POZI PANHEAD (B)
25.	5401	RIVET 1/4" X 1" LONG BRASS
26.	5402	WASHER STARLOCK 1/4" STAINLESS STEEL
27.	5424	FRONT PLATE
28.	5434	MOTOR HOUSING C/W AIR BLEED TUBE
29.	5442	MOTOR HERBI - 4
30.	5446	EXTENSION TUBE 1.15M
31.	5447	BATTERY CASE
32.	5451	RETAINING STRAP
33.	5454	O - RING (BS 611)
34.	5455	O - RING (BS 365-30)
35.	5776B	INLINE SYPHONE TAP (NEW MODEL)
36.	5778	INLINE SYPHONE TAP CONNECTOR
37.	5779	JOINT NUT
38.	5780	SYPHONE TAP HOLDER
39.	5956	SCREW
40.	6028	HOSE CLIP
41.	S-6029	HOSE CLIP
42.	TANK (OLD MODEL)	
43.	8407 - X	FILLING STRAINER
44.	8408 - BK	FILLING CAP COMPLETE
45.	8381S	STRAP STOPPER
46.	8381B	SHOULDER STRAP
47.	800-5017C	NECK STRAP
48.	MPP6006	10LIT TANK BACKPACK ASS'Y
49.	MPP6017	WING SCREW
50.	MPP6018	PLAIN HEAD SCREW M6 X 16
51.	MPP6020	FIBRE GLASS FLAT PLATE
52.	MPP6021	PVC TUBE
53.	TANK (NEW MODEL)	
54.	8407X	NYLON 80 MESH FILLING STRAINER
55.	8408C-13-GN	FILLING CAP COMPLETE
56.	8376B	SPARE CUP COVER
57.	8390	SPARE CUP
58.	81201-MICRON	10 LITER TANK
59.	8386BC	BATTERY BOTTOM COVER
60.	8385H	BATTERY COVER BOTTOM SCREW
61.	8405D2	STAND GUARD
62.	8447W	OUTLET WASHER
63.	81254	OUTLET VALVE
64.	81254N	OUTLET VALVE NUT
65.	BATTERY CONVERSION KIT	
66.	5000/01	WIRE HARNESS MOTOR TO SWITCH
67.	5000/02	SWITCH C/W EXTENSION WIRE
68.	5000/03	SUB HARNESS (FEMALE CONNECTOR)
69.	AP 01R	SWITCH RED
70.	BAT6V3AH	6V 3AH LEAD SEALED BATTERY
71.	BC-6500	6V BATTERY CHARGER
72.	MPP6019	WIRE HARNESS FROM BATTERY(MALE CONNECTOR)
73.	MPP6021	PVC TUBE