

# **Micronex Mistblower Attachment**

## **Operator's Handbook and Parts Catalogue**

**Micron Sprayers Limited**  
Bromyard Industrial Estate  
Bromyard  
Herefordshire HR7 4HS  
United Kingdom

Tel: (01885) 482397  
+44 1885 482397  
Fax: (01885) 483043  
+44 1885 483043  
E-mail: [micron@micron.co.uk](mailto:micron@micron.co.uk)  
Web site: [www.micron.co.uk](http://www.micron.co.uk)

Iss 2



# TABLE OF CONTENTS

1. INTRODUCTION.....	2
2. SPECIFICATION.....	2
3. ASSEMBLY .....	3
4. OPERATION .....	4
4.1 Operation of Mist Blower.....	3
5. HEALTH AND SAFETY.....	5
6. CALIBRATION .....	6
6.1 Flow Rate.....	6
6.2 Tank Filling.....	7
7. MAINTENANCE .....	8
7.1 Micronex Attachment .....	8
7.2 Motorised Mistblower .....	8
8. PARTS LISTS .....	9
8.1 Micronex Parts list.....	9
8.2 Micronex Assembly.....	10
9. CONVERSION FACTORS .....	11

## 1. INTRODUCTION

The Micronex is an attachment for motorised mist blowers (of at least 35cc engine capacity) to allow CDA insecticide and fungicide spraying. It is a simple compact attachment that can be fitted to a variety of mist blowers. The X1 atomiser disc (driven by the airstream from the mist blower - at between 8,000 rpm and 12,000 rpm dependent on the air velocity) produces small even sized spray droplets (typically 50-100um in size) which are entrained in the airstream and carried to the target. Total spray volumes are normally between 10 and 40 litres per hectare on crops and between 1 to 5 litres per hectare using ULV formulations for migrant pest control and public health spraying.

The Micronex can be supplied in a basic form (no handle) or complete with a handle (Micronex Flo) with flow restrictor and shut-off. Liquid is fed from the main tank of the mist blower and flow rate is altered by changing the orifice restrictor plate (five are supplied with each machine). In-line filtration is also provided.

Attached to a suitable mist blower the Micronex is capable of spraying up to 5-8m in height, or cover swath widths of 10-30m when spraying with the wind in an open crop situation (up to 50m for control of some migrant pests).

The Micronex can be used in most situations where motorised mist blowers are used i.e.:-

- tree crops e.g. mango, citrus, avocado, plantain
- bush crops e.g. coffee, passion fruit, vines, cocoa
- vegetables, flowers and ornamentals
- public health e.g. mosquito and fly control
- migrant pest control e.g. locusts and grasshoppers

The Micronex is suitable for the application of:-

- insecticides in bush and tree crops
- insecticides in public health
- insecticides for control of migrant pests
- fungicides
- foliar fertilisers, growth regulators and trace elements

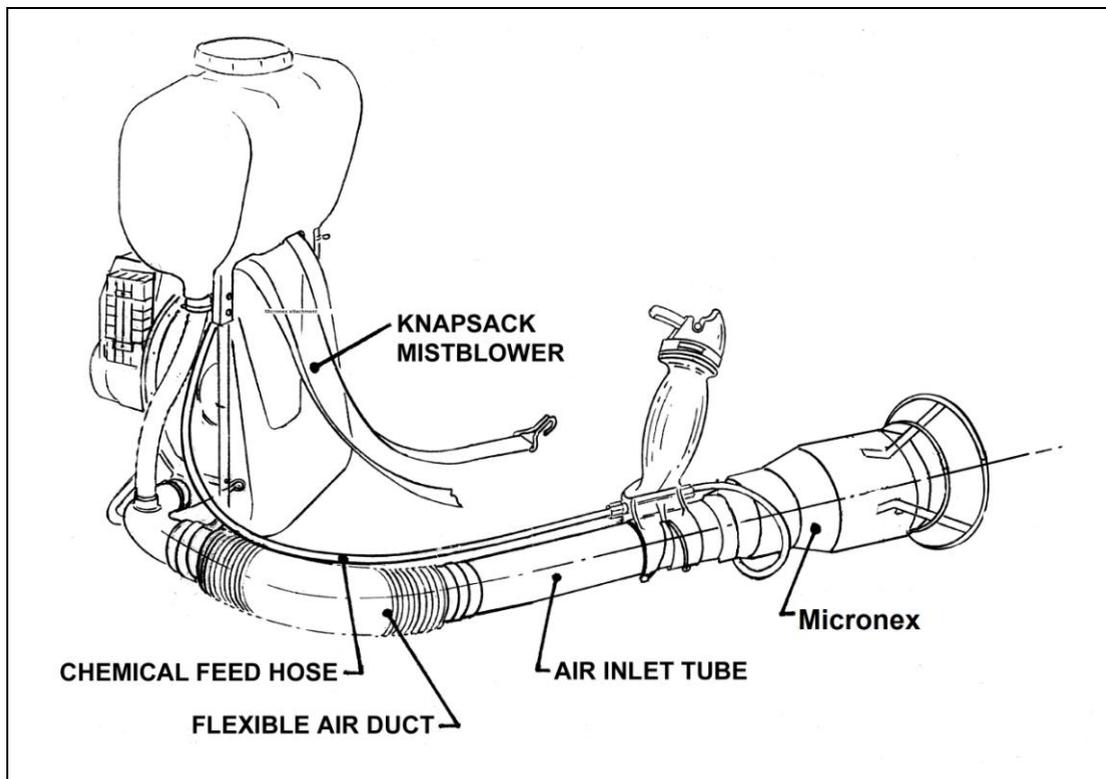
## 2. SPECIFICATION

### Micronex Spray head

Length:	35 cm
Diameter:	14 cm (with Guard)
Weight:	0.35 Kg (Micronex Basic) or 0.74 kg (Micronex Flo)
Air inlet tube dia:	60 – 68 mm
Chemical flow rate:	0.05 – 0.3 litres/min
Spray droplet size:	50 – 100 microns VMD depending on air velocity from blower

### 3. ASSEMBLY

1. Ensure that the mistblower is empty, clean and in good running order.
2. Disconnect the chemical feed hose from any existing on/off valve or flow regulator.
3. Remove the original spray nozzle and outlet, leaving only the flexible air duct attached to the blower.
4. Insert one end of the rigid air tube into the inlet of the Micronex spray head so that 40 mm of tube is inside the casing.
5. Secure the Micronex to the air outlet tube from the blower using a clamp or the handle (when using the Flo variant). If using the Flo handle, position the handle pointing away from the operator. Push the feed hose from the chemical tank on to the inlet fitting of the control valve or feed line assembly
6. Select the appropriate flow restrictor and fit. Connect the atomiser feed hose to the outlet of the flow restrictor and secure with a pipe clip
7. Fill the spray tank with a non-toxic liquid (e.g. water for conventional application or kerosene for ULV) and run the sprayer for several minutes (see Operation section 4) to test for leaks.
8. Place the mist blower on the operators back and hold the spray head at the correct angle for the crop or pest to be sprayed. If necessary cut the air tube as required to give a comfortable position for the spray head when held by its handle. The spray head should also be rotated to the most convenient position and secured.



*Fig. 1 – Attachment of Micronex Sprayhead to Mistblower*

## 4. OPERATION

This section describes the operation of the Miconex sprayer with a motorised mist blower. Operating procedures may differ between different mist blowers so refer to manufacturer's instructions.

### 4.1 Operation of Mist Blower

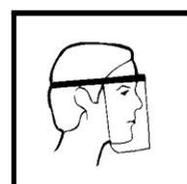
1. Make up a mixture of 25 - 50 parts (see manufacturer's manual) regular petrol (gasoline) and 1 part (4%) two-stroke oil. If two-stroke oil is not available, SAE 40/50 oil may be used for short periods.
2. Close the fuel valve and pour fuel (as mixed in step 1) into tank. DO NOT OVERFILL.
3. Remove the cap of the spray tank and mix in the required amount of product with water if required. Ensure flow valve is closed. Replace the cap firmly.
4. Open the fuel valve. Set the choke to open if starting from cold when using a manual choke. Set the throttle lever to mid-position and turn on ignition switch if fitted.
5. Start the engine by pulling on the starter cord. DO NOT pull the cord hard against its end-stop. Should the engine fail to start, do not allow the carburettor to become flooded with fuel. When running close the choke. Set the throttle lever so that the engine idles smoothly.
6. Lift the mist blower onto the operator's back. Note that the operator must hold the sprayhead and NOT let it drag on the ground. When in the spraying area, set the throttle lever to its maximum position. DO NOT run the engine for a prolonged time at half-throttle or idling.
7. Only open the liquid flow valve when the mistblower is running at its normal operating speed to avoid creating large droplets and spray escaping the airflow
8. The sprayer must always be used to spray DOWNWIND of the operator and each pass must be UPWIND of previous pass. This ensures that the operator is always walking through an unsprayed area.
9. The sprayer should be held at a distance of at least 1m (3 ft) from the target whenever possible. This ensures an even distribution of spray droplets and minimises the risk of damage to crops by high velocity air from the sprayhead.
10. The rotating atomiser should not come into contact with foliage or the operator.
11. When using a ULV drift spraying technique to give a wide swath in open terrain (e.g. locust or armyworm control), the sprayhead should be held at an angle of about 30 degrees above the horizontal. This allows the wind to carry the spray from the maximum height to achieve the widest swath.
12. After closing the flow valve, set the throttle lever to the idle position if the sprayer is not in use momentarily. Do not allow the engine to idle for a prolonged periods
13. To stop the engine, move the throttle lever to the fully closed position, and turn off
14. The mist blower including the Micronex spray head, must be thoroughly cleaned after use. If ULV oil formulations are used clean with kerosene or suitable diluents. For water miscible products clean with water and liquid soap. Flush through for a few minutes before cleaning the outside of the sprayer with a damp cloth.

## 5. HEALTH AND SAFETY

The Micronex sprayer must only be used by a qualified operator according to the instructions on the product label and in accordance with local legislation and statutory requirements.

The following recommendations are for guidance only and do not exclude any statutory requirements:

1. Always wear adequate protective clothing, eye protection and respiratory protection when mixing, transferring or spraying pesticides. The minimum level of protection will be stated on the product label or in the Code of Practice in most countries.
2. Protective clothing, respirators etc must be removed as soon as exposure to pesticides has ceased. All items must be washed or disposed of safely according to the manufacturers' recommendations.
3. Ensure that the sprayer is correctly calibrated for the pesticide application technique and crop or pest being sprayed.
4. Take note of the speed and direction of the wind. Ensure that spray droplets do not drift on to adjacent crops or land. Always spray downwind to avoid operator contamination. Never walk through a recently sprayed area.
5. All traces of pesticide must be washed from the operator's skin immediately after spraying and before eating, drinking or smoking.
6. Remove all traces of pesticide from the tank, pipework and sprayhead as well as from external surfaces of the sprayer.
7. All residues of pesticide from the sprayer, containers or mixing vessels etc must be disposed of safely by an approved means. Do not contaminate an off-target area or allow pesticides to reach streams, wells or groundwater.
8. Dispose of empty chemical containers safely by an approved means. Do not keep containers for re-use for other purposes.

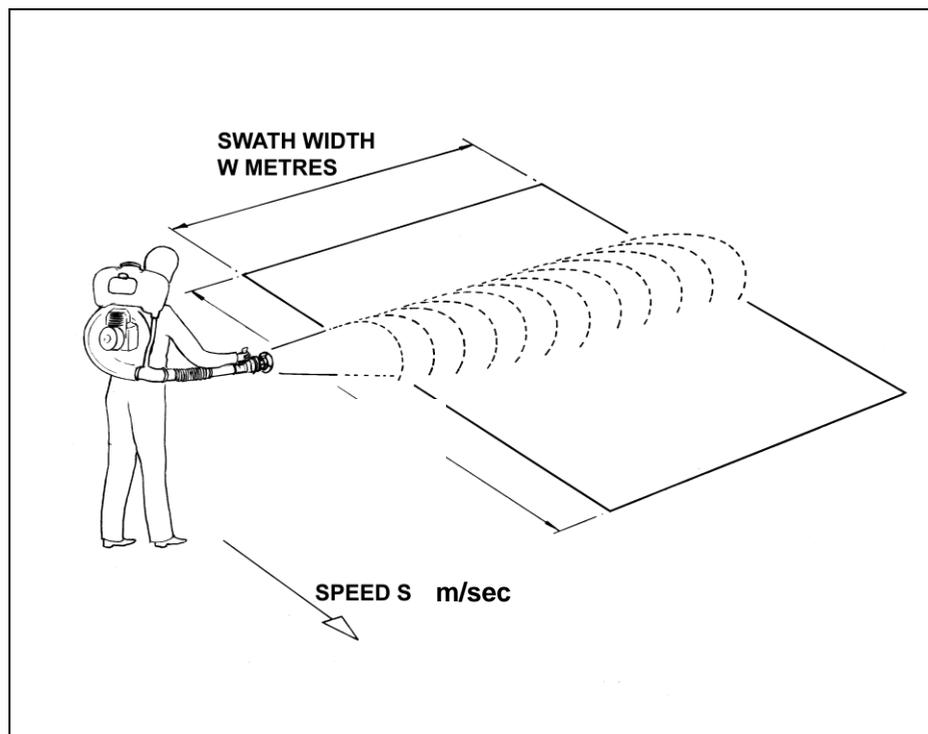


## 6. CALIBRATION

### 6.1 Flow Rate

The flow rate from the sprayer will be determined by the required application rate (l/ha), the walking speed (m/sec) and the distance between successive spray passes (m).

1. Establish the average walking speed of the operator (m/sec) under field condition.
2. Establish the distance between successive spray passes. In tree and bush crops this will usually be the distance between rows assuming spraying one row at a time. On open ground this will be the distance between each spray pass. e.g for ULV spraying of migrant pests this is typically 30m but for higher volume spraying in vegetables for example this will be more typically 3 – 5m.



*Fig. 3 – Coverage of Sprayer*

3. To apply the correct volume of spray mix per hectare it is necessary to calculate the required flow rate so use the following:-

#### **FORMULA – FLOW RATE**

Required flow rate (ml/min) =

6 x walking speed S (m/sec) x row width W (m) x application volume AV (l/ha)

e.g. To apply to tree crops with a row width of 2m spraying only one side at a walking speed of 0.5m/sec and a target application volume of 50 l/ha we have

$$\text{Flow rate required (ml/min)} = 6 \times 0.5 \times 2 \times 50 = \underline{300 \text{ ml/min}}$$

e.g. To spray locusts on open ground with a 30m swath width and walking speed of 0.5 m/sec and application volume of 1 l/ha we have

$$\text{Flow rate required} = 6 \times 0.5 \times 30 \times 1 = \underline{90 \text{ ml/min}}$$

- Select the correct restrictor to give the required flow rate. Table 2 gives the typical flow rate for each restrictor as measured with water and a ULV oil based formulation on a typical mist blower. Actual flow rates will depend upon the viscosity of the spray mix and the characteristics of the individual mist blower (tank pressure, hose length).

*Table 2 – Example Flow Rates for Restrictor's*

<b>Restrictor number</b>	<b>Water</b>	<b>Oil</b>
39	90	45
49	140	70
59	200	100
68	275	135
80	360	180

- To measure the actual flow to the atomiser head it will be necessary to fit a short hose (15 cm (6") length x 6 mm (¼") inside diameter) over the outlet from the restrictor assembly and measure the output with the engine running normally. Measure the discharge over 1 minute into a measuring cylinder. Compare the measured output rate with the calculated rate from step (3).

If the actual output is too high or too low, choose another restrictor. If flow rate is still slightly too high or low it may be necessary to adjust the walking speed or application volume accordingly. Maximum flow rate is around 300 ml/min.

## **6.2 Tank Filling**

To prepare the spray mix for products requiring dilution in water, select the appropriate quantity of product to be mixed in the spray tank of the mist blower and the minimum application volume required.

### **FORMULA – TANK MIX**

Required quantity of product per tank fill =

(Tank Volume in litres / Application Volume l/ha) x Quantity of product / ha

## **7. MAINTENANCE**

### **7.1 Micronex Attachment**

1. Always clean sprayer and Micronex attachment after use with water and liquid detergent or a little kerosene if using oil formulations.
2. Always check the atomiser rotates freely by hand and the impellor blades are undamaged. If the atomiser rotation is stiff try lubricating with a light machine oil through the oil cap. From time to time bearings will seize and need replacing.
3. Ensure the protective guard is undamaged and not deformed. Repair or replace as necessary
4. Check the condition of the atomiser disc that it is undamaged and the tooth projections on the periphery are intact. Replace entire atomiser id disc is damaged.
5. Make sure there is no build up of spray deposits on the disc or under the conical cap that could block the flow of liquid. Clean as necessary.
6. If using the Micronex Flo with handle, check operation of on/off flow valve. Periodically lubricate O rings within flow valve with grease or silicon.
7. Periodically check in-line filters remain clean and unblocked and orifice plates are free from any blockages.
8. Periodically check for leaks, damaged connections, seals or hose lines.

### **7.2 Motorised Mist Blower**

For maintenance of the motorised mist blower please refer to manufacturer's instructions.

1. Pesticide must NEVER be left in the tank or pipework. Always flush out the sprayer with water or a diluent. Drain cleaning liquid from the sprayer before storage.
2. Do not leave fuel in the tank or carburettor whilst the sprayer is in storage. After use, close the fuel valve whilst the engine is running. When the engine stops, drain all remaining fuel from the tank.
3. Check and clean the engine air filter every 50 hours (or less in dusty conditions).
4. Check and clean fuel filters.
5. Check the spark plug every 50 hours. If necessary, clean the spark plug and adjust the gap setting as per manufacturer's recommendations. If the spark plug is damaged, replace with a new plug of the correct type (see mist blower parts list).

## 8. PARTS LISTS

When ordering spare parts, please specify the following information:

- Approximate date of purchase
- Description of part
- Part number as shown in this section
- Number of parts required

### Micronex Spray head

<b>Stock Code</b>	<b>Name</b>	<b>Quantity</b>
3374/1.2	Tube, 3/16" od - 0.012M, nylon	1
4792	Label, OIL	1
4825	Oil hole cover	1
4938/3.5	Tube, 1/4" od - 0.035M, nylon	1
5130	Label, MICROFIT	1
5218	Clip, hose, mini, No 14	1
5235	Cap nut, 3/8" BSP	3
5286/22	Tube, 6mm id x 9mm od - 0.22M EVA 416, UV stabilised	1
5287	Clip, hose, mini, No 10	2
5328	Valve/handle assembly	1
5332	Hose tail, 3/8", flanged	1
5336/90	Tube, 8mm id x 13mm od - 0.90M EVA 516, UV stabilised	1
5337	Orifice plate, No. 39 (1.0mm)	1
5338	Orifice plate, No. 49 (1.25mm)	1
5339	Orifice plate, No. 59 (1.5mm)	1
5340	Orifice plate, No. 68 (1.75mm)	1
5341	Orifice plate, No. 80 (2.0mm)	1
5512	Hosetail, brass	1
5651	Rivet, cherry pop, 1/8" x 3/8", aluminium	6
6397	Rivet, 3/16" x 5/8", aluminium	3
7631	Tube, blow moulded	1
7752	Ring, wire, stainless steel	1
8244	Nozzle filter, standard, black	1
MNX/101	Micronex atomiser c/w brackets	1

Fig. 5 – Micronex Flo

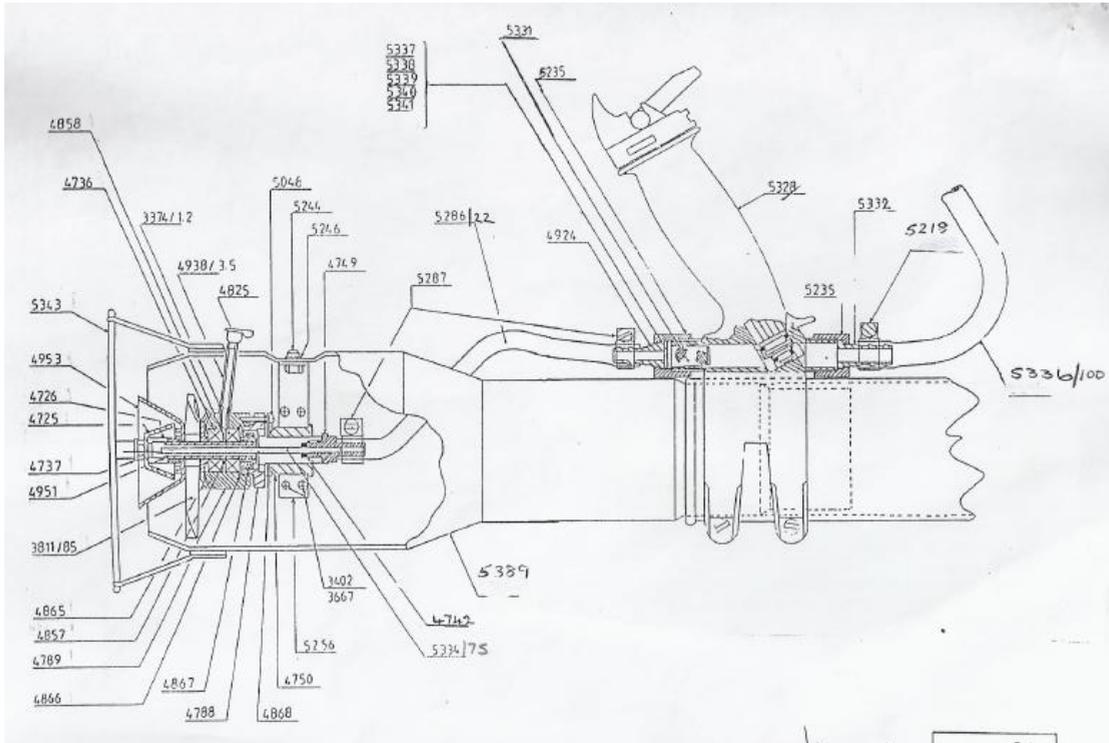
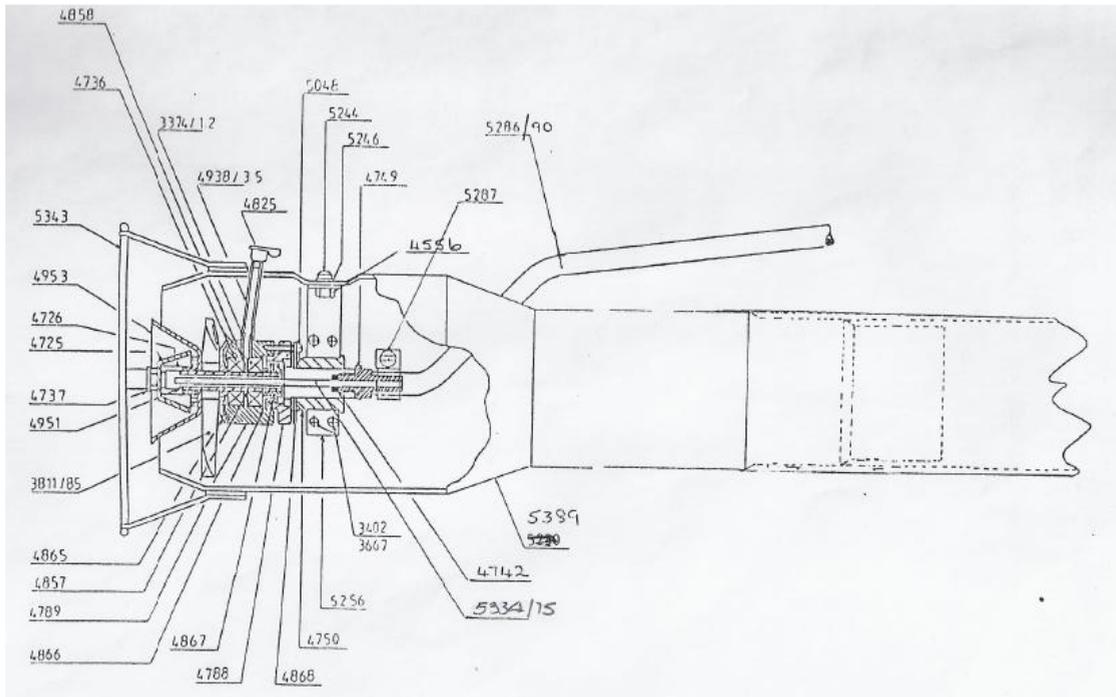


Fig. 6 – Micronex Basic



## CONVERSION FACTORS

1 yard	= 3 feet	= 0.91 metre
1 metre	= 39.37 inches	= 1.09 yards
1 statute mile	= 0.87 nautical mile	= 1.61 kilometres
1 nautical mile	= 1.15 statute mile	= 1.85 kilometres
1 kilometre	= 0.62 statute mile	= 0.54 nautical mile
1 statute mile	= 1760 yards	= 5280 feet
1 nautical mile	= 2027 yards	= 6081 feet
1 kilometre	= 1094 yards	= 3282 feet
1 metre/sec	= 2.237 miles per hr	= 196.9 ft/min
1 acre	= 43560 sq feet	= 4840 sq yards
1 acre	= 4047 sq metres	= 0.40 hectare
1 hectare	= 107600 sq feet	= 11955 sq yards
1 hectare	= 10000 sq metres	= 2.47 acres
1 sq mile	= 640 acres	= 259 hectares
1 sq kilometre	= 247 acres	= 100 hectares
1 US gal	= 0.83 Imp gal	= 3.78 litres
1 Imp gal	= 1.20 US gals	= 4.54 litres
1 litre	= 0.26 US gal	= 0.22 Imp gal
1 US pint	= 16 US fl ounces	= 0.47 litres
1 Imp pint	= 20 Imp fl ounces	= 0.57 litre
1 US gal/acre	= 8 US pint/acre	= 9.45 litres/hectare
1 Imp gal/acre	= 8 Imp pints/acre	= 11.35 litres/hectare
1 litre/hectare	= 0.11 US gal/acre	= 0.081 Imp gal/acre
1 pound	= 16 ounces	= 0.45 kilogram
1 kilogram	= 2.20 pounds	= 35.3 ounces
1 ounce	= 28.35 grams	
1 pound/sq inch	= 0.068 atmosphere	= 0.067 bar
1 atmosphere	= 14.70 pounds/sq in	= 1.01 bar
1 bar	= 14.50 pounds/sq in	= 0.98 atmosphere

---

Every care has been taken in the design of this equipment and the preparation of this Handbook. However, Micron Sprayers Limited cannot accept responsibility for errors or the consequences thereof. The user must satisfy themselves that the equipment is suited to their needs and is performing according to their requirements.