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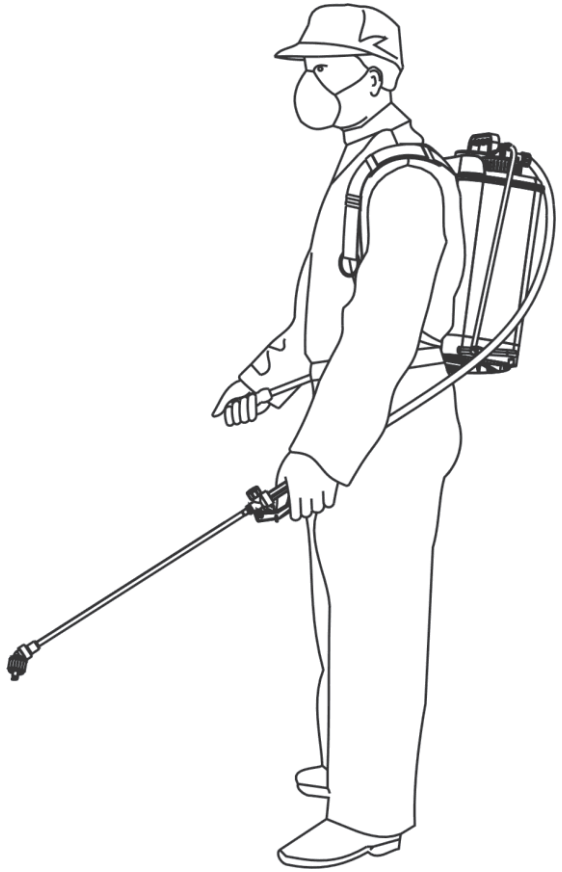
YOUR KEY TO SMART TECHNOLOGY

DRAFT08

Ideal for P&D Spraying

RB12

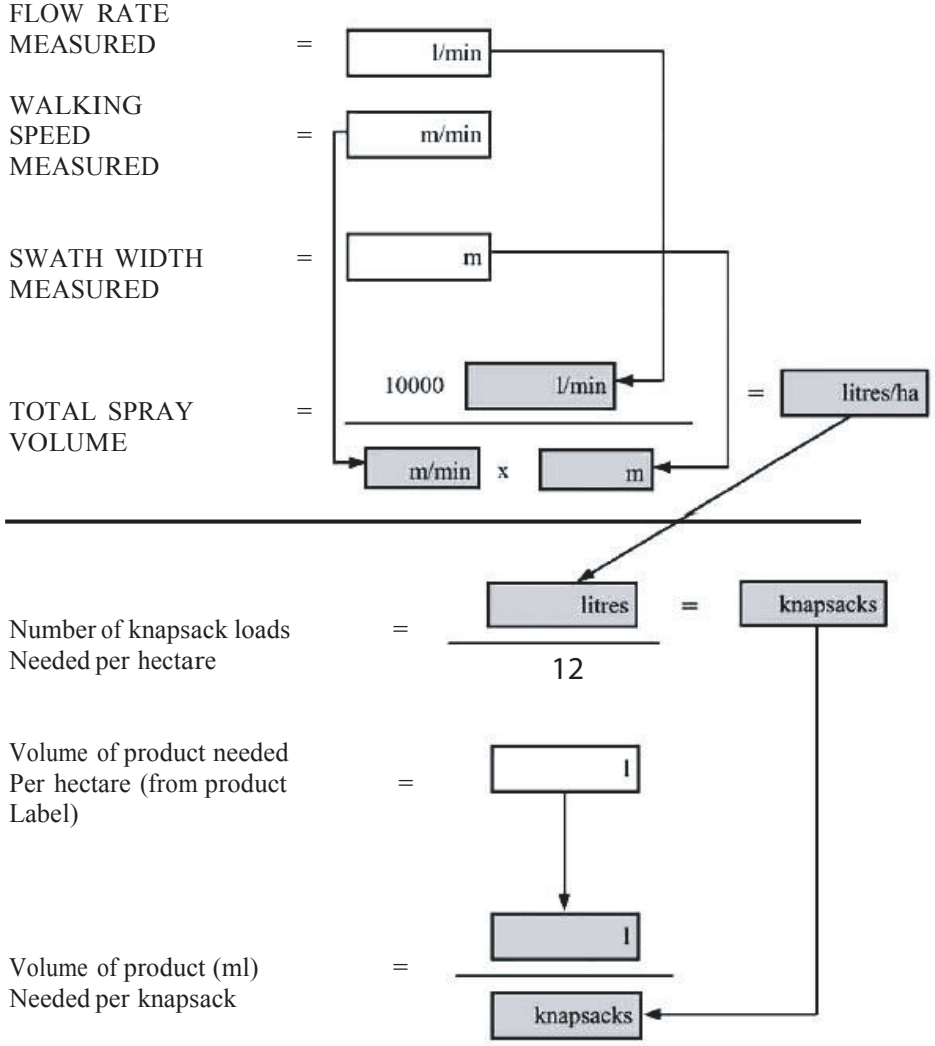
KNAPSACK SPRAYER



Instruction Manual

CALIBRATION WORKING SHEET

Use this sheet to help make the calibration calculations. Fill in the boxes and transfer this information as shown.



CONTENTS

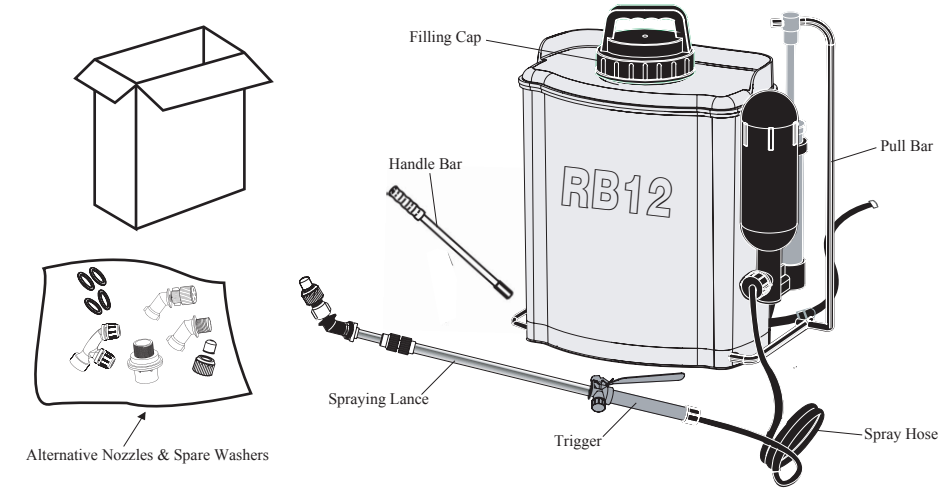
INTRODUCTION

The RB12 is a quality knapsack sprayer suitable for a wide range of agricultural and horticultural uses. The sprayer is designed to be robust and easy to maintain and features an external brass cylinder piston pump and pressure cylinder for maximum protection, comfortable shoulder straps, a waist strap for ease of extended use, a wide neck and filter for safety of filling operations and a 12 litre tank designed so that it is held away from the operator's back for both increased safety and comfort. The sprayer can be used with either right or left hand lever.

Designed for the application of herbicides, insecticides and fungicides the sprayer is supplied with a range of nozzles suitable for most spray operations.

This manual is designed to help you get the most from your RB12 Sprayer and MUST BE READ before using the sprayer for the first time.

When the RB12 is new it needs to be unpacked and assembled for use. Check that you have all the components as shown below.



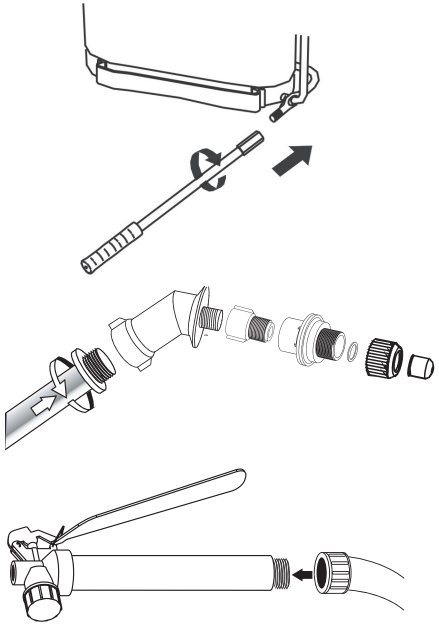
ASSEMBLY

Screw on the pump handle as shown to the left or right hand side to suit the operator.

Fit the top end of the spray lance to the CF valve and Male thread of the CF valve to the nozzle cap, ensuring that the 100 mesh filter is fitted in the trigger valve and the connections are all secure.

Make sure that the hose connections at the top of the piston and trigger valve are tight.

Remove the bag containing the additional nozzles and spare seals and o-rings from the tank filter and keep in a safe place.



NOZZLE SELECTION

It is important for any spraying operation that the correct nozzle is used to ensure that good coverage is obtained with the minimum amount of uncontrolled spray drift.

Different nozzles will give different spray patterns and droplet sizes. Before using the sprayer for the first time it is advisable to fill the tank half full with water and pump the system through with no nozzle fitted to remove any debris which could cause nozzle blockage.

The RB12 is supplied with a range of different nozzles. Using the table below as a guide select and fit the nozzle most appropriate to the spray application from those supplied. (Note that not all those listed are supplied with every sprayer).

Nozzle Type	Fungicides	Insecticides	Herbicides	Foliar
Deflector Yellow	X	X	✓	X
Deflector Red	X	X	✓	X
Hollow Cone Yellow	✓	✓	X	✓
Solid Cone Yellow	✓	✓	✓	✓
'F' Nozzle	✓	✓	X	✓
4-Hole Nozzle	✓	✓	X	✓

*To ensure optimum benefits, check the nozzle for wear. Replace the nozzle if flow exceeds 10% of the Set nozzle flow rate or replace nozzle after every 3 months of usage.

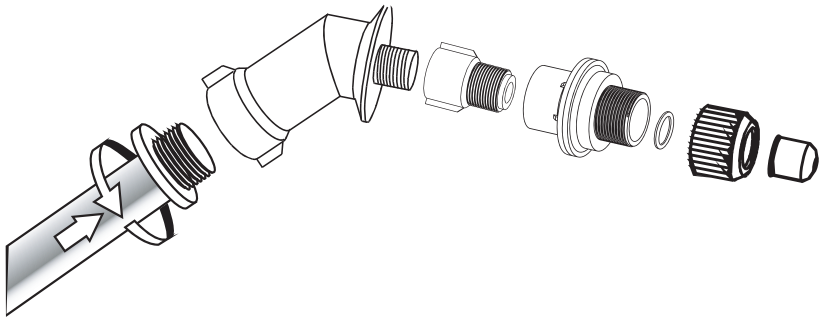
ACCESSORIES

The following accessories are available for use with the RB12.

Constant Flow Valve (CFV)

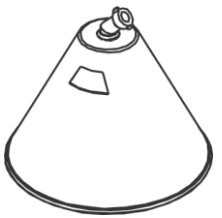
The CFV attachment provides constant pressure regulation by limiting the output pressure if pumping is excessive and shutting off the liquid flow if pressure is too low. This ensures a constant flow of spray solution and a predictable spray pattern and droplet spectrum. This helps prevent under and over doing and prevents the production of over small droplets which lead to off-target spray drift.

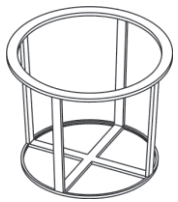
If the CFV is correctly installed (see 'FITTING THE CFV′) pumping will be asier as fewer strokes will be needed to maintain pressure. Pump only two or three strokes before opening the trigger valve to commence spraying. One or two pump strokes every few steps will automatically maintain a constant flow at the correct pressure.



Lance of 90 cm length is provided as the standard spray lance.

Spray shield (Optional accessories)
For use with the flat fan nozzle the spray shield helps minimize spray drift.



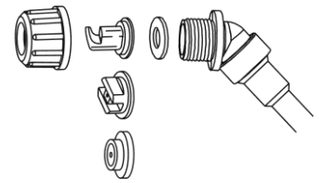


RB-12 (BC) PARTS LISTING

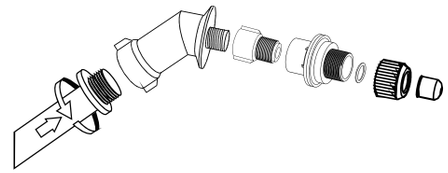
ITEM NO	ALTERNATE NO	DESCRIPTION
1	STTK-016-10000	Brass Cylinder cpt with Piston Rod
2	STTK-012-10011	Piston Rod Assy
3	STTK-012-10026	Handle Bar Comp
4	STTK-016-10001	Brass Cylinder Cpt with Holder
5	STTK-015-10000	Filling Cap (Black Colour)
6	STTK-012-10028	Strainer
7	STTK-011-10006	Bush
8	STTK-011-10013	Pin
9	STTK-016-10002	Milled Nut
10	STTK-012-10039	Pull Bar
11	STTK-016-10008	Brass Piston Rod
12	STTK-012-10015	Piston
13	STTK-012-10038	Piston Rod Plate
14	STTK-012-10037	Plastic Jam Nut
15	STTK-012-10036	Air Cylinder 8"
16	STTK-012-10035	Cylinder Holder
17	STTK-012-10034	Washer
18	STTK-011-10011	Brass Ball
19	STTK-012-10014	Brass Cylinder Valve Body
20	STTK-015-10001	Screw
21	STTK-012-10041	Nut
22	STTK-012-10033	Jam Nutf or Valve Body
23	STTK-012-10029	Washer
24	STTK-012-10013	Suction Valve Comp
25	STTK-012-10031	Washer
26	STTK-012-10012	U-Shalf
27	STTK-012-10017	4-Hole Nozzle
28	STTK-011-10043	Washer
29	STTK-012-10045	Elbow
30	STTK-016-10006	Extention Lance 18"
31	STTK-012-10019	Washer
32	STTK-016-10003	Brass Spindle
33	STTK-011-10015	Washer
34	STTK-013-10012	Filter
35	STTK-016-10010	Chamber
36	STTK-012-10049	PVC Hose
37	STTK-011-10026	Nozzle Cover
38	FC80/1.29/3	solid cone yellow 80''
39	STTK-011-10023	Washer
40	STGV-221-10000	Constant Flow Nozzle
41	STTK-012-10023A	International Nozzle Elbow
42	STTK-014-10004	F-Elbow with 2 Cone Nozzle
43	STTK-012-10020	Brass Autorelease Assy
44	STTK-011-10002	Strap with pad (1pcs)
45	STTK-011-10042	Spindle O-Ring
46	STTK-012-10048	Spring
47	STTK-011-10003	Straps Stopper
48	STTK-011-10039	Stand Guard
49	STTK-012-10060	Washer
50	STTK-012-10061	Trigger Cover
51	STTK-011-10017	Valve
52	STTK-011-10018	Rubber Disk

Fitting the nozzle

Fit the nozzle through the nozzle cap and tighten as shown. Make sure that the seals are in good condition. If they are damaged they should be changed otherwise the nozzle may leak. If fitting any nozzle deflector nozzle or flat fan nozzle ensure that it is correctly orientated. The opening on the deflector should be pointing forwards and the flat fan at right angles to the direction of travel.

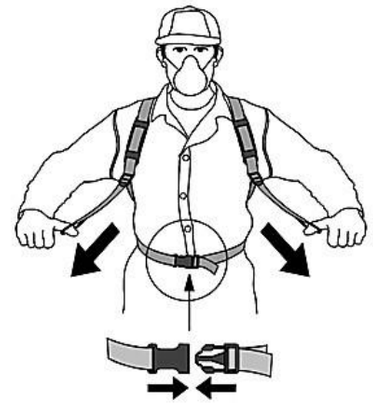


If the sprayer is supplied with a Constant Flow Valve (CFV) then this should be fitted at the trigger/nozzle cap as shown.



STRAP ADJUSTMENT

With the sprayer on your back and filled as if ready to spray adjust the length of the straps for comfort as shown. For maximum comfort use the waist strap as shown If the straps are correctly adjusted the sprayer should fit comfortably on your back with the weight resting on your hips.



CALIBRATION

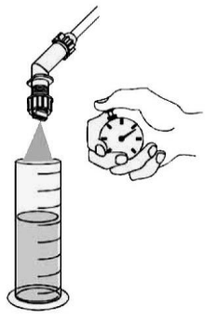
Before using the RB12 the sprayer should be calibrated using water. This is important as accurate calibration ensures that the correct dose of product is applied. Poor calibration can result in either over-dosing or under-dosing both of which are wasteful.

The process of calibration involves measuring the three inter-related factors which determine the volume of spray applied by the sprayer; flow rate, band width and walking speed.

Calibration steps

1. Select nozzle

2. Measure Flow Rate in l per minute (l/min) by measuring sprayer output while pumping over one minute).



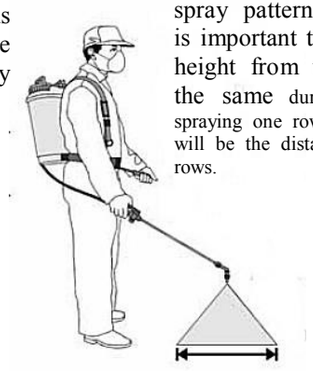
Flow Rate (l/min)

Total Spray Volume (l/ha) = $\frac{10000 \times \text{Flow Rate (l/min)}}{\text{Walking Speed (m/min)} \times \text{Band Width (ms)}}$.

Walking Speed (m/min)

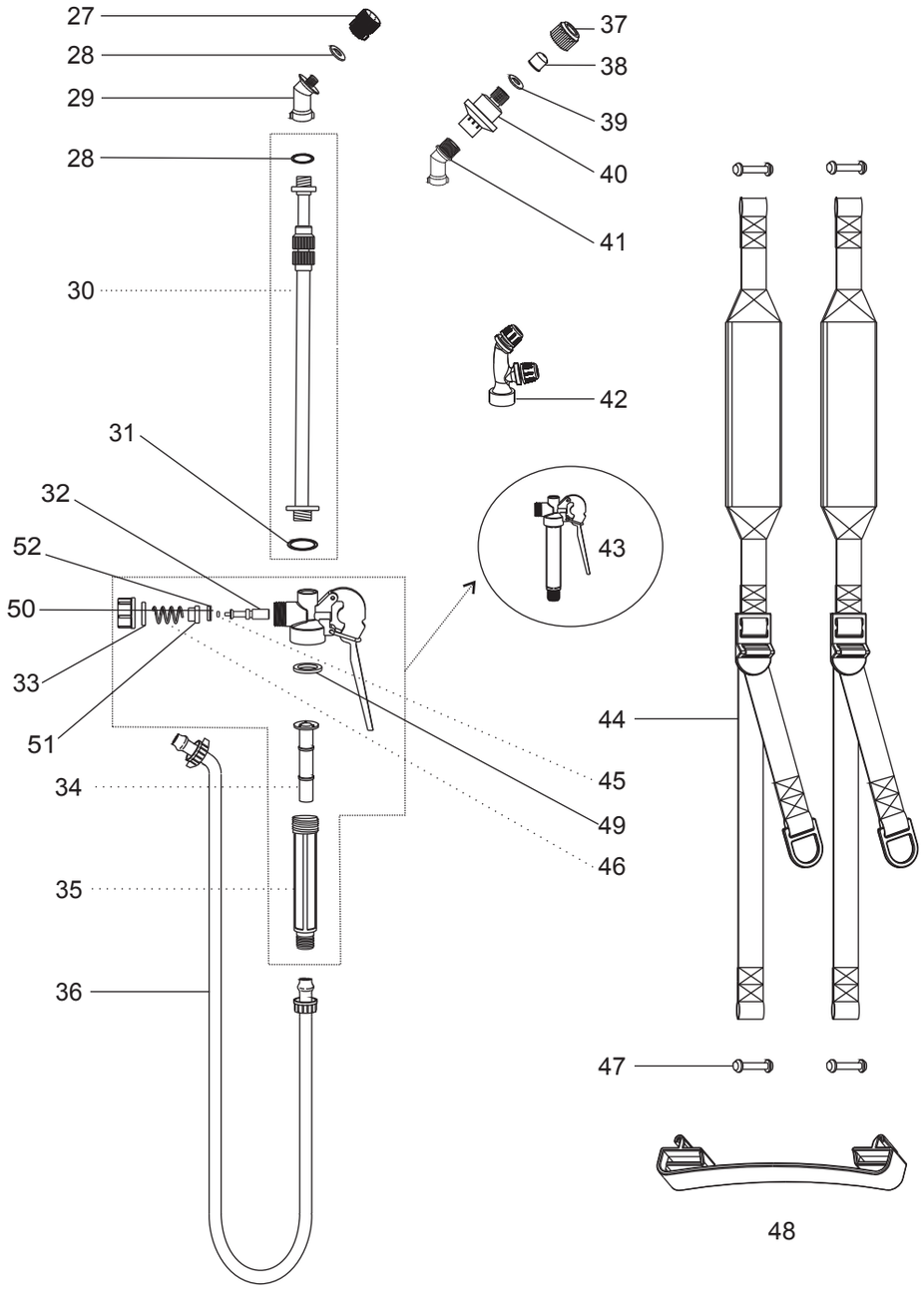
Band Width (m)

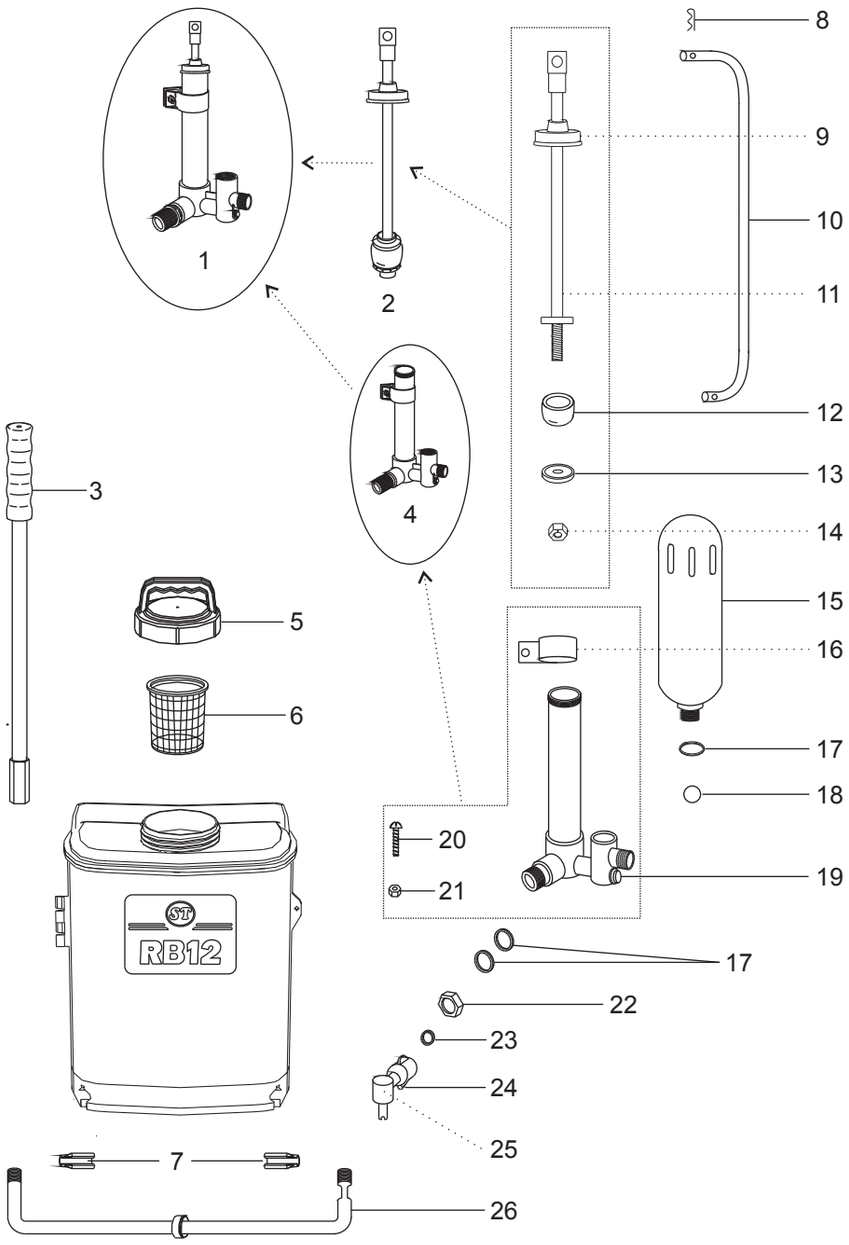
3. Measure your Walking Speed in meters per minutes (m/min) by measuring how many metres you walk in one minute. As a general rule one large pace is approximately one metre.



4. Measure Band Width in meters (m)by spraying on dry ground or concrete, and measuring the width of the spray pattern produced. It is important that the nozzle height from the ground is the same during spraying. If spraying one row at a time, this will be the distance between the rows.

You may find it helpful to use the working sheet on page 16 to help you make your calibration calculations.



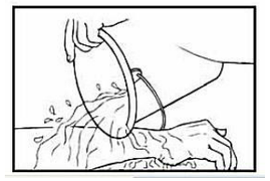


MIXING AND FILLING

Mixing and filling is generally the most hazardous process in the spraying operation. Always read the label to ensure that you know the correct dose of pesticide to use and follow the instructions regarding usage. Make sure that you are wearing the correct protective clothing for the particular product.

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

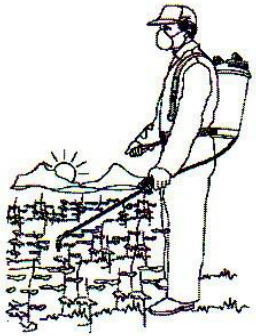
When filling the tank always make sure that the filter is fitted. This is important to prevent nozzle blockage. Half fill the tank with water, then measure and add the chemical as directed on the product label. Then add more water as necessary. Take care not to splash when filling the sprayers.

If using powders (e.g. many fungicides) then it may be easier to mix these first in a bucket or other suitable container before transferring this mixture to the sprayer tank.

Only mix enough spray for the area to be treated thereby avoiding the need for disposal of unused spray mix.

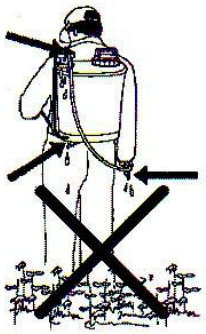
SPRAYING

When spraying make sure that you always wear the best protective equipment available to you. Consult the label to find out what is advised for the product you are using. In general it is advised that long trousers, a long sleeved shirt, boots, gloves and eye protection are worn.



The best time to spray is early in the morning or late in the afternoon. The temperature and humidity are lower at these times of the day. Avoid spraying at mid-day as the weather is usually hot and dry at this time. Do not spray if rain is expected soon.

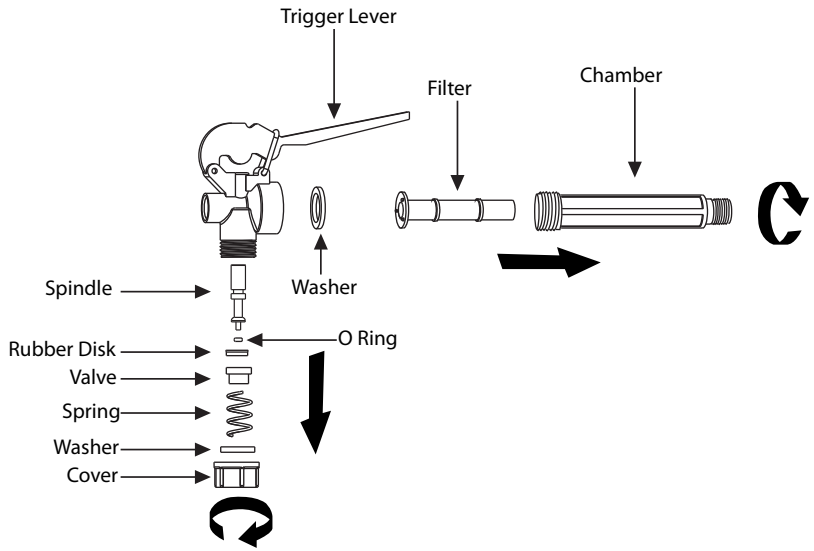
Ensure that there are no people or animals present when you are spraying. Warn people not to enter the field during spraying or after you have sprayed.



Do not use leaking equipment – fix if necessary before using.

Start spraying at the downwind edge of the field and try to avoid walking in the area that you have just sprayed.

TRIGGER VALVE MAINTENANCE



The filter in the trigger valve can be removed as shown and cleaned.

The seals in the trigger valve should be inspected and replaced if the valve is leaking or fails to shut off completely. Spare seals are provided with each sprayer. There are two seals which may need replacing.

To replace the o-ring seal on the plunger, first remove the trigger handle by removing the locking pin. Using a pair of piers to grasp the top of the plunger remove it as shown and replace the o-ring.

To replace the shut off seal, remove the spring retention cover and withdraw the spring and seal. The seal can be easily replaced if necessary.

With time the spring tension on the trigger valve may become weakened. If this happens fit the additional spacer provided with each sprayer.

TO REPLACE THE PISTON

Periodically the piston seal will need replacing. To do this first ensure that the sprayer has been thoroughly cleaned through with water and emptied. Hold the trigger valve open to release any pressure.

Remove the split pin from the pull bar, (refer diagram ❶).

Unscrew the milled nut from the brass cylinder (refer diagram ❷).

Withdraw the brass piston rod out from the brass cylinder from the top of the piston (refer diagram ❸) .

Unscrew the plastic rod plate (refer diagram ❹) and plastic jam nut (refer diagram ❺) in order to unscrew the piston (refer diagram ❻).

Withdraw the piston (refer diagram ❹) and examine the seal for sign of wear and damage. If the seal needs replacing use a thin screwdriver or similar to unscrew the slotted nut which retains the seal as shown.

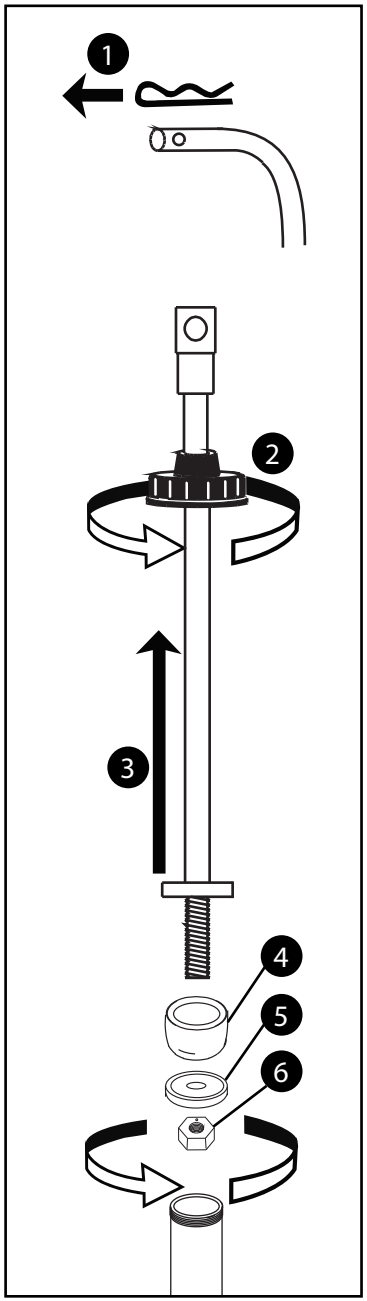
The old piston can be easily be removed and replaced. Smear a small amout of grease of oil around the piston seal to aid reassembly.

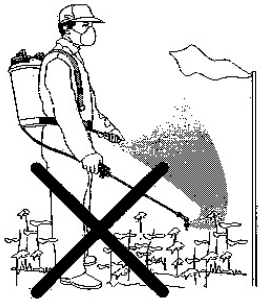
Replace the piston and tighten the slotted nut connection, ensuring the brass ball is correctly sealed as shown.

Replace the piston in the tank ensuring that it correctly locates and slides into the piston chamber.

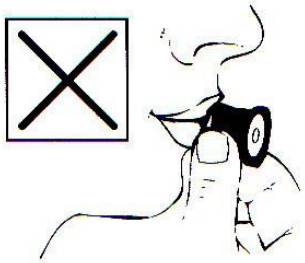
Reattach the pump connection rod and split pin.

Before using test the sprayer with water.





Always hold the spray lance on the downwind side of you - do not spray into the wind.

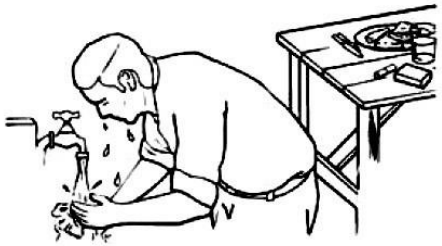


If the nozzle becomes blocked clear it with a piece of grass – DO NOT blow through it.

AFTER SPRAYING

After spraying ensure that you clean out the sprayer. Half fill with clean water and pump out, spraying for several minutes onto crop area. Empty the sprayer and repeat with more clean water. Never leave the sprayer with chemical in it as this will damage seals and washers.

Store the sprayer in a safe place out of direct sunlight and away from children and animals.



After spraying wash your hands, face and cloths especially prior to eating, drinking or smoking.

Store chemicals safely and out of the reach of children.

6.plastic jam nut
5.piston rod plate

MAINTENANCE

Daily
Ensure that the sprayer is cleaned daily after use. Check all hose connections for leakage and tighten if necessary. Check that the nozzle is not blocked and clean if necessary.

Weekly
Remove and clean the filter fitted into the handle of the trigger valve (see 'TRIGGER VALVE MAINTENANCE'). This should be done more frequently (e.g. daily) if powder formulations are being used. Lubricate the flet washer with vegetable oil.

At the end of every session
Check the straps and strap connections for signs of wear. Check the seals and O-rings in the trigger valve to ensure that they are in good condition and replace if necessary (see 'TRIGGER VALVE MAINTENANCE'). Check the seal in the filling cap and piston cover.

If the sprayer appears to be losing pressure (if it seems that you need more pump strokes to maintain a constant output) check the piston for signs of wear and replace if necessary (see 'TO REPLACE THE PISTON').

TROUBLESHOOTING

PROBLEM	CAUSE	REMEDY
No pressure or reduced or intermittent pressure	Piston worn or damaged	Replace piston (see **"TO REPLACE THE PISTON"**)
Little or not spray from nozzle	Nozzle blocked	Remove and clean nozzle
	Filter in trigger valve blocked	Remove and clean filter (see **"TRIGGER VALVE MAINTENANCE"**)
Spray continues after trigger valve is closed	Dirt or particles in trigger valve	Disassemble and clean trigger valve (see **"TRIGGER VALVE MAINTENANCE"**)
	Spring in trigger valve weakened	Insert spring spacer (see **"TRGGER VALVE MAINTENANCE"**)
	Seal in trigger valve damaged or worn	Replace seal (see **"TRIGGER VALVE MAINTENANCE"**)

RB12 VLV SPRAYER PERIODIC INSPECTION CHECK LIST

ITEM NO	ALTERNATE NO	DESCRIPTION	MONTH		
			4	8	12
1	STTK-016-10000	Brass Cylinder cpt with Piston Rod			
2	STTK-012-10011	Piston Rod Assy			
3	STTK-012-10026	Handle Bar Comp			
4	STTK-016-10001	Brass Cylinder Cpt with Holder			
5	STTK-015-10000	Filling Cap (Black Colour)			
6	STTK-012-10028	Strainer			
7	STTK-011-10006	Bush			
8	STTK-011-10013	Pin		●	
9	STTK-016-10002	Milled Nut			
10	STTK-012-10039	Pull Bar			
11	STTK-016-10008	Brass Piston Rod			
12	STTK-012-10015	Piston		●	●
13	STTK-012-10038	Piston Rod Plate			
14	STTK-012-10037	Plastic Jam Nut			
15	STTK-012-10036	Air Cylinder 8"			
16	STTK-012-10035	Cylinder Holder			
17	STTK-012-10034	Washer		●	●
18	STTK-011-10011	Brass Ball			
19	STTK-012-10014	Brass Cylinder Valve Body			
20	STTK-015-10001	Screw			
21	STTK-012-10041	Nut			
22	STTK-012-10033	Jam Nutf or Valve Body			
23	STTK-012-10029	Washer		●	●
24	STTK-012-10013	Suction Valve Comp			
25	STTK-012-10031	Washer			
26	STTK-012-10012	U-Shalf			
27	STTK-012-10017	4-Hole Nozzle	●	●	●
28	STTK-011-10043	Washer	●	●	●
29	STTK-012-10045	Elbow			
30	STTK-016-10006	Extention Lance 18"			●
31	STTK-012-10019	Washer	●	●	●
32	STTK-016-10003	Brass Spindle			●
33	STTK-011-10015	Washer			●
34	STTK-013-10012	Filter			
35	STTK-016-10010	Chamber			
36	STTK-012-10049	PVC Hose		●	●
37	STTK-011-10026	Nozzle Cover		●	●
38	FC80/1.29/3	solid cone yellow 80''	●	●	●
39	STTK-011-10023	Washer	●	●	●
40	STGV-221-10000	Constant Flow Nozzle			●
41	STTK-012-10023A	International Nozzle Elbow			
42	STTK-014-10004	F-Elbow with 2 Cone Nozzle			
43	STTK-012-10020	Brass Autorelease Assy			
44	STTK-011-10002	Strap with pad (1pcs)			
45	STTK-011-10042	Spindle O-Ring			●
46	STTK-012-10048	Spring			●
47	STTK-011-10003	Straps Stopper			
48	STTK-011-10039	Stand Guard			
49	STTK-012-10060	Washer	●	●	●
50	STTK-012-10061	Trigger Cover			
51	STTK-011-10017	Valve			●
52	STTK-011-10018	Rubber Disk			●

O Compulsory change for continuous use at indicated intervals
(the rest change when necessary)