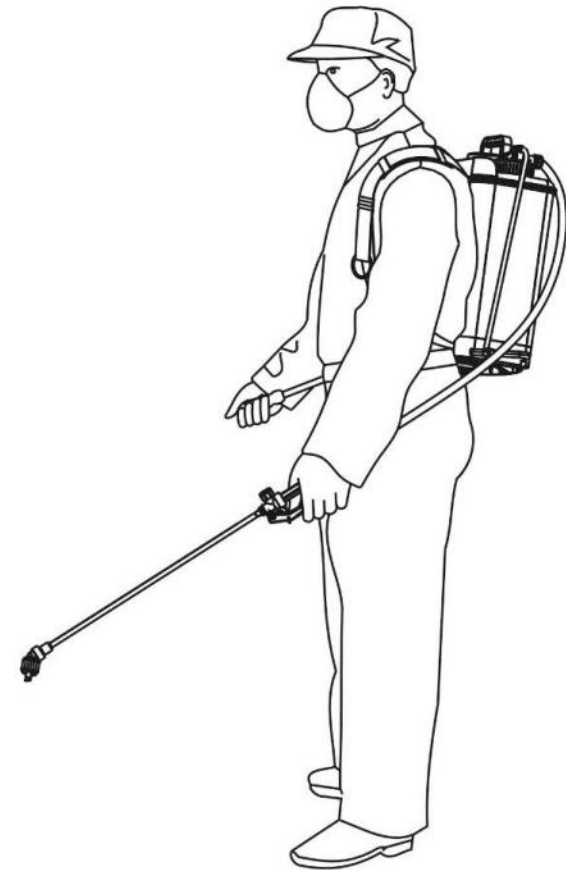


# SA15

**PREMIER  
VLV**

## KNAPSACK SPRAYER



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**YOUR KEY TO SMART TECHNOLOGY**

DRAFT05

**Instruction Manual**

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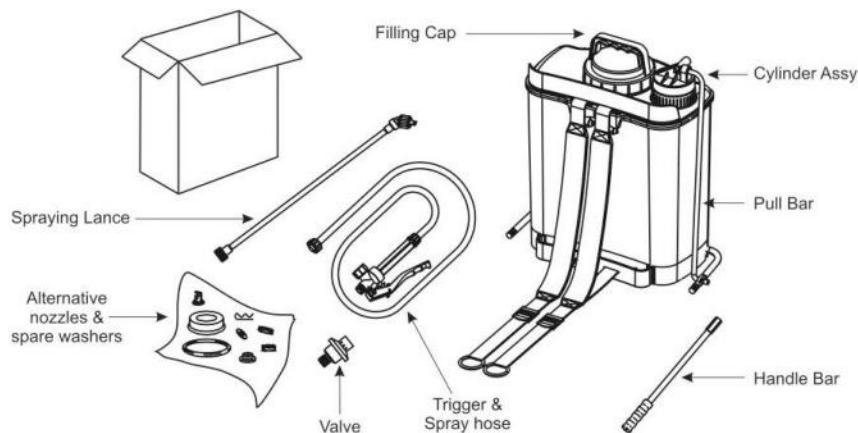
## INTRODUCTION

The **SA15** 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 internal 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 15 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 **SA15** Sprayer and **MUST BE READ** before using the sprayer for the first time

When the **SA15** is new it needs to be unpacked and assembled for use. Check that you have all the components as shown below.



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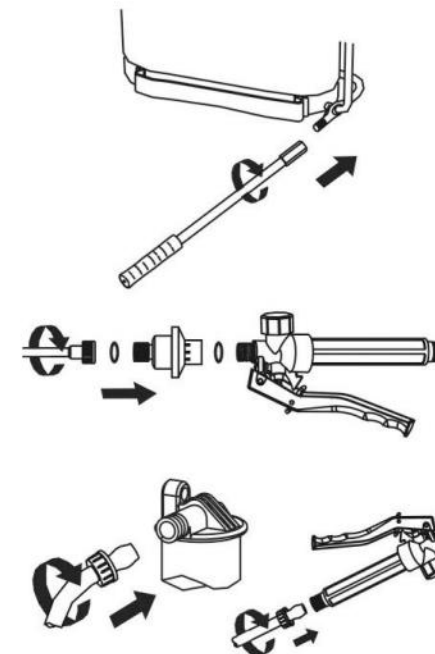
## ASSEMBLY

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

Fit the bottom end of the spray lance to the CF valve and Female thread of the CF valve to the trigger valve, 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. Unscrew the cylinder cap (part no 8376R) and put some lubricant (vegetable oil) on the felt washer.






## 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.

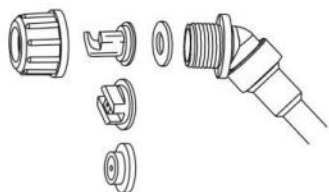
The **SA15** is supplied with a range of different nozzles. Using the table below as a guide select and fit the nozzle most appropriate to the spray application from those supplied. (Note that not all those listed are supplied with every sprayer).

Nozzle Type	Fungicides	Insecticides	Herbicides
Yellow deflector 	X	X	✓
Red Deflector 	X	X	✓
Orange Deflector 	X	X	✓

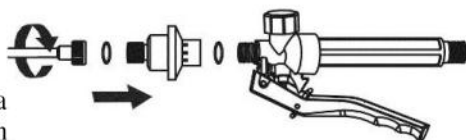
*To ensure optimum benefits, check the nozzle for wear. Replace the nozzle if flow exceeds 10% of the Set nozzle flow rate or replace nozzle after every 3 months of usage.*

## 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 the 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/lance 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 SA15 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 WORKING SHEET

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

<b>FLOW RATE MEASURED</b>	=	<input type="text" value="l/min"/>	
<b>WALKING SPEED MEASURED</b>	=	<input type="text" value="m/min"/>	
<b>SWATH WIDTH MEASURED</b>	=	<input type="text" value="m"/>	
<b>TOTAL SPRAY VOLUME</b>	=	$\frac{10000 \times \text{Flow Rate} \times \text{Swath Width}}{\text{Walking Speed}}$	= <input type="text" value="litres/ha"/>

---

<i>Number of knapsack loads Needed per hectare</i>	=	$\frac{\text{Total Spray Volume}}{15}$	= <input type="text" value="knapsacks"/>
<i>Volume of product needed Per hectare (from product Label)</i>	=	<input type="text" value="l"/>	
<i>Volume of product (ml) Needed per knapsack</i>	=	$\frac{\text{Volume of product needed}}{\text{Number of knapsack loads}}$	

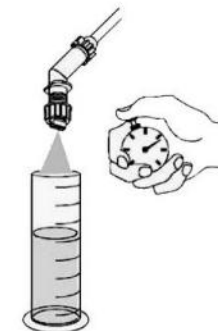
### SA15 VLV SPRAYER PART LISTING

ITEM NO	PART NO	DESCRIPTION
1	STTK-011-10033	Cylinder Assy
2	STTK-011-10034	Agitator
3	STTK-011-10035	Piston Cap
4	STTK-011-10011	Brass Ball
5	STTK-011-10036	Union
6	STTK-011-10037	Piston Cylinder
7	STTK-011-10001	Washer
8	STTK-011-10038	Brass Ball Support
9	STTK-011-10000	Union
10	STTK-011-10032	Cover
11	STTK-011-10013	Pin
12	STTK-011-10027	Felt Washer
13	STTK-011-10005	O-ring Washer
14	STTK-011-10028	Lance Grip
15	STTK-013-10000	Handle Bar
16	STTK-011-10012	Pull Bar
17	STTK-011-10049	U-Shaft
18	STTK-011-10006	Tank Bush
19	STTK-011-10052	Filling Cap (Red Colour)
20	STTK-011-10007	Strainer 135mm
21	STTK-011-10039	Stand Guard
22	STTK-011-10026	Nozzle Cover
23	D/0.46/1	Deflector Nozzle(Yellow)
24	STTK-011-10023	Washer
25	STTK-011-10040	GRP Lance 50cm with Elbow
26	STTK-011-10043	Washer
27	STGV-221-10001	BSP CF Valve
28	STTK-012-10019	Washer
29	STTK-011-10019	Trigger Body
30	STTK-011-10017	Valve
31	STTK-011-10015	Washer
32	STTK-011-10014	Cover
33	STTK-011-10016	Spring
34	STTK-011-10018	Rubber Disk
35	STTK-011-10024	100 Mesh Filter
36	STTK-011-10025	Chamber
37	STTK-013-10005	PVC Hose
38	STTK-011-10003	Straps Stopper
39	STTK-011-10002	Shoulder Straps (1pcs)
40	STTK-011-10053	Trigger Complete With 100mesh Filter
41	STTK-011-10041	Brass Spindle
42	STTK-011-10022	Lever Sssy
43	STTK-011-10042	O-Ring
44	STTK-011-10004	Waist Straps(set)
45	D/0.23/1	Deflector Nozzle (Orange)
46	D/0.91/1	Deflector Nozzle (Red)

### 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)

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

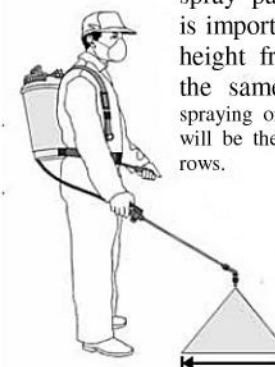
Walking Speed (m/min)

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

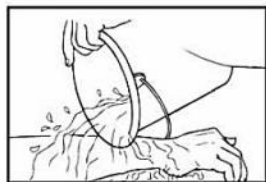
Mixing and filling is generally the most hazardous process in the spraying operation. **Always** read the label to ensure that you know the correct dose of pesticide to use and follow the instructions regarding usage. Make sure that you are wearing the correct protective clothing for the particular product.



**Always** wear gloves when handling agrochemicals and equipment.



**Always** use the correct equipment when mixing and measuring



**Always** wash off any skin contamination.



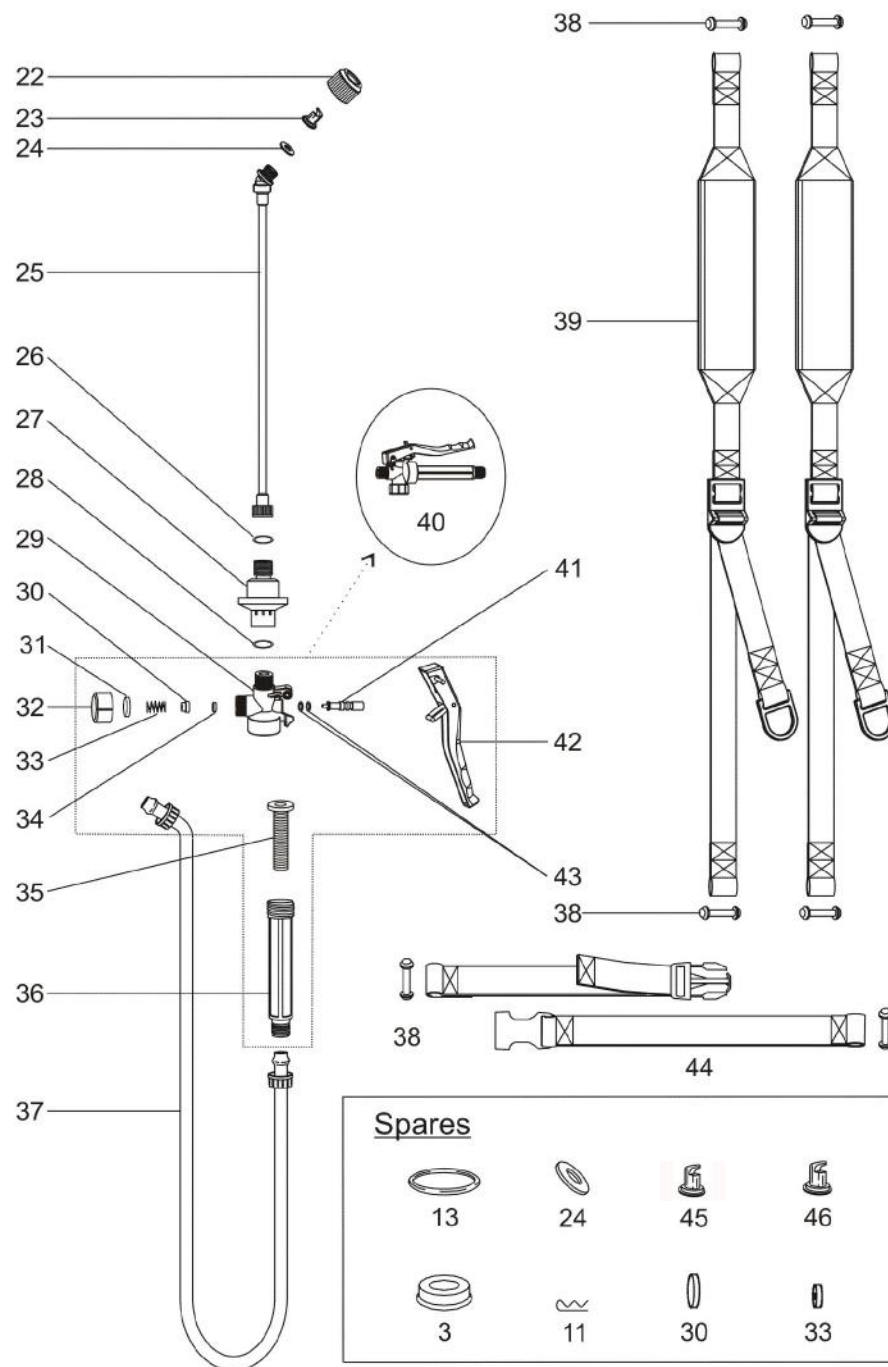
**Always** clean all equipment after use

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.

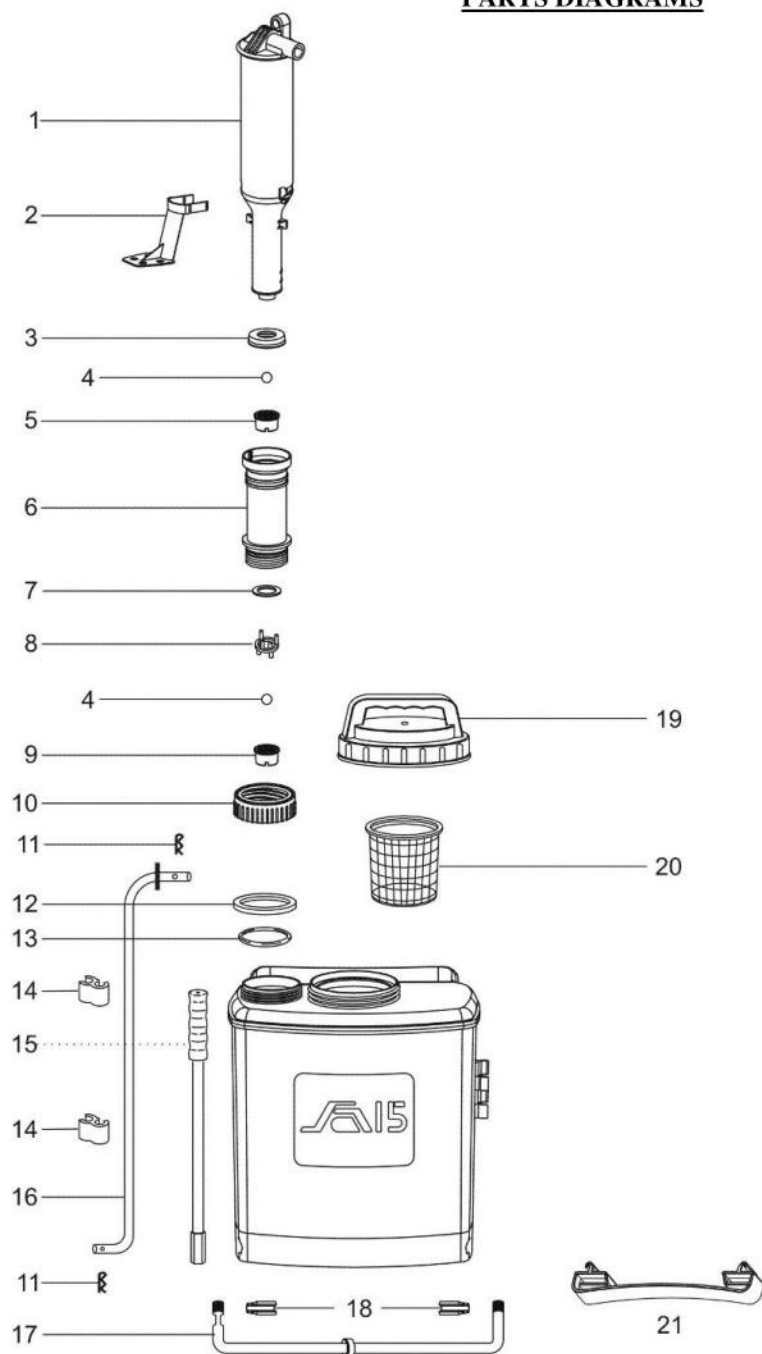
If using powders (e.g. many fungicides) then it may be easier to mix these first in a bucket or other suitable container before transferring this mixture to the sprayer tank.



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



## PARTS DIAGRAMS



## SPRAYING

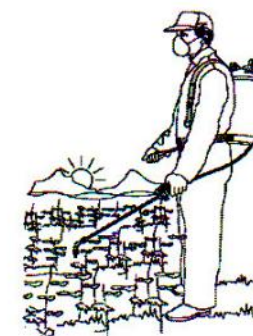


When spraying make sure that you always wear the best protective equipment available to you. Consult the label to find out what is advised for the product you are using. In general it is advised that long trousers, a long sleeved shirt, boots, gloves and eye protection are worn.



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.

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



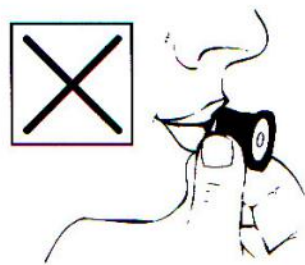
The best time to spray is early in the morning or late in the afternoon. The temperature and humidity are lower at these times of the day. Avoid spraying at mid-day as the weather is usually hot and dry at this time. Do not spray if rain is expected soon.



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



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.



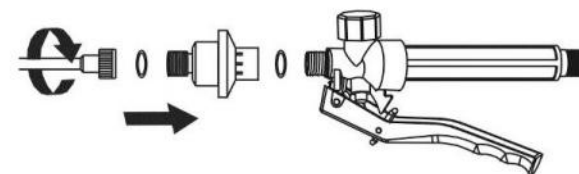
## ACCESSORIES

The following accessories are available for use with the **SA15**.

### *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 easier 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.



### *GRP Lance*

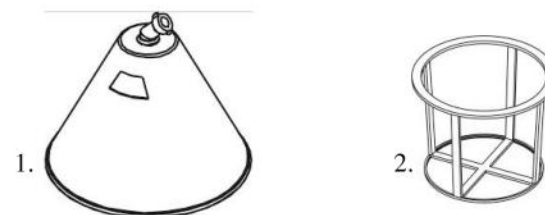
GRP Lance of 50 cm length is provided as the standard spray lance.

#### *1. Spray shield (Optional accessories)*

For use with the flat fan nozzle the spray shield helps minimize spray drift.

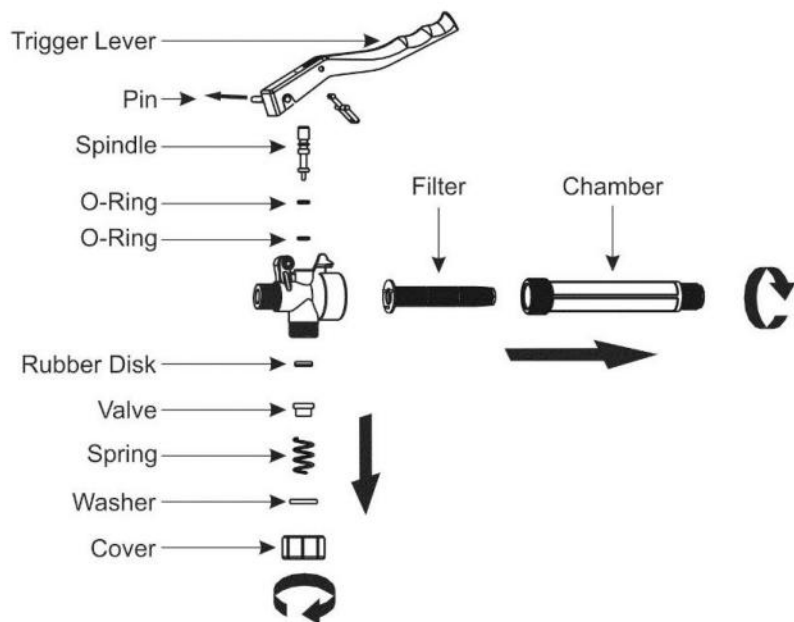
#### *2. 70 Mesh Filter 8407M (Optional accessories)*

For use with the Strainer 135mm (8407L). Finer filtration 70 mesh to filter out fine dirt.





## 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 pliers 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.

## 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 flat washer with vegetable oil.

**At the end of every season** 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 seal for signs of wear and replace if necessary (see 'TO REPLACE THE PISTON SEAL').

## TROUBLESHOOTING

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

## SA15 VLV SPRAYER PERIODIC INSPECTION CHECK LIST

Item No	PART NO	DESCRIPTION	Change Intervals			
			Month	3	6	12
1	STTK-011-10033	Cylinder Assy				
2	STTK-011-10034	Agitator				
3	STTK-011-10035	Piston Cap		O		
4	STTK-011-10011	Brass Ball				
5	STTK-011-10036	Union				
6	STTK-011-10037	Piston Cylinder				
7	STTK-011-10001	Washer			O	
8	STTK-011-10038	Brass Ball Support				
9	STTK-011-10000	Union				
10	STTK-011-10032	Cover				
11	STTK-011-10013	Pin				
12	STTK-011-10027	Felt Washer		O		
13	STTK-011-10005	O-ring Washer		O		
14	STTK-011-10028	Lance Grip				
15	STTK-013-10000	Handle Bar				
16	STTK-011-10012	Pull Bar				
17	STTK-011-10049	U-Shaft				
18	STTK-011-10006	Tank Bush				
19	STTK-011-10052	Filling Cap (Red Colour)				
20	STTK-011-10007	Strainer 135mm				
21	STTK-011-10039	Stand Guard				
22	STTK-011-10026	Nozzle Cover			O	
23	D/0.46/1	Deflector Nozzle(Yellow)		O		
24	STTK-011-10023	Washer		O		
25	STTK-011-10040	GRP Lance 50cm with Elbow				
26	STTK-011-10043	Washer		O		
27	STGV-221-10001	BSP CF Valve				O
28	STTK-012-10019	Washer		O		
29	STTK-011-10019	Trigger Body				
30	STTK-011-10017	Valve			O	
31	STTK-011-10015	Washer			O	
32	STTK-011-10014	Cover				
33	STTK-011-10016	Spring			O	
34	STTK-011-10018	Rubber Disk			O	
35	STTK-011-10024	100 Mesh Filter			O	
36	STTK-011-10025	Chamber				
37	STTK-013-10005	PVC Hose				
38	STTK-011-10003	Straps Stopper				O
39	STTK-011-10002	Shoulder Straps (1pcs)				
40	STTK-011-10053	Trigger Complete With 100mesh Filter			O	
41	STTK-011-10041	Brass Spindle				
42	STTK-011-10022	Lever Sssy			O	
43	STTK-011-10042	O-Ring		O		
44	STTK-011-10004	Waist Straps(set)		O		
45	D/0.23/1	Deflector Nozzle (Orange)		O		
46	D/0.91/1	Deflector Nozzle (Red)		O		

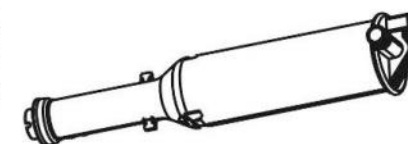
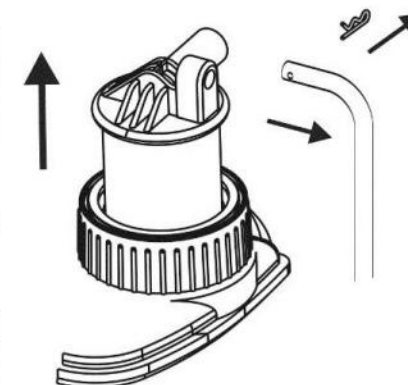
**O Compulsory change for continuous use at indicated intervals**  
(the rest change when necessary)

## TO REPLACE THE PISTON SEAL

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.

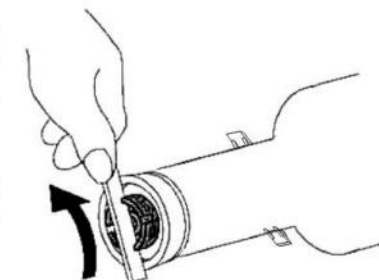
Remove the split pin and detach the pump connection rod from the top of the piston.

Withdraw the piston as shown and examine the seal for signs 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. Take great care that the brass ball does not drop out. Check the brass ball for signs of pitting and replace if necessary.



The old piston seal can be easily removed and replaced. Smear a small amount of grease or oil around the piston seal to aid re-assembly.

Replace the piston seal 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 it slides into the piston chamber.

Reattach the pump connection rod and split pin.

Before using again test the sprayer with water.

