

shindaiwa®

Shindaiwa Inc.
11975 S.W. Herman Road
Tualatin, Oregon 97062
Telephone: 503 692-3070
Fax: 503 692-6696
www.shindaiwa.com

© 2002 Shindaiwa, Inc.
Part Number 80702
Revision 4/02

Shindaiwa is a registered trademark
of Shindaiwa, Inc.
Specifications subject to change without notice.
Printed in Brazil



WARNING!

Minimize the risk of injury to yourself and others! Read this manual and familiarize yourself with the contents. Always wear eye protection, gloves and a respirator when operating this unit.



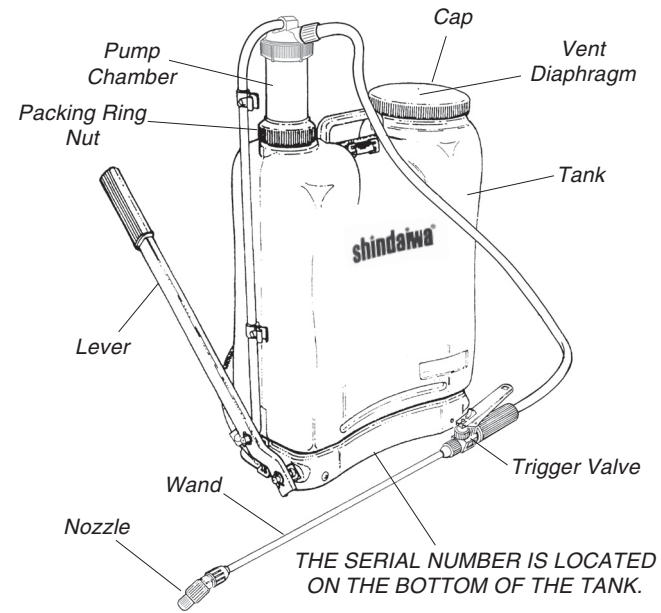
SHINDAIWA OWNER'S/OPERATOR'S MANUAL SP518 BACK PACK SPRAYER

Part Number 80702 Rev. 4/02

shindaiwa®

Introduction

This manual contains information for the proper assembly, operation and care of your SP518 sprayer. Carefully read and follow the instructions contained in this manual before operating your sprayer.



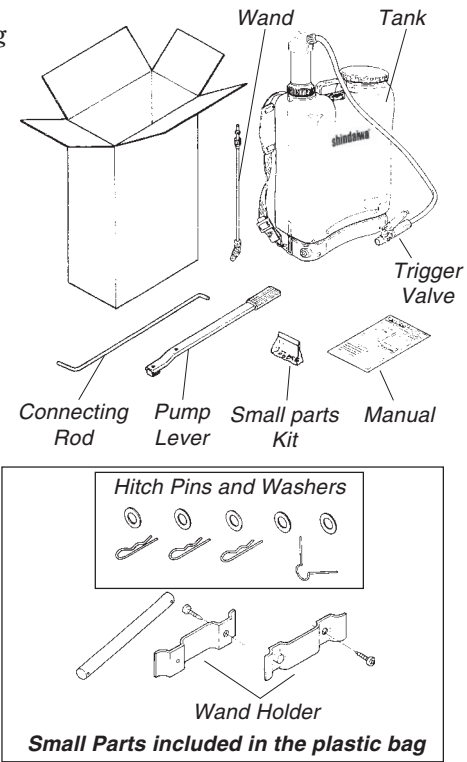
Specifications

Net Weight	11 pounds (5.0 kg)
Tank Capacity	4.75 U.S. gallons (18 liters)
Tank Material	Polyethylene
Fill Opening Diameter	4.5 inches (114 mm)
Pump Type/Material	Piston/Brass
Operating Pressure	15-90 psi (1.05-6.3 kg/sq. cm)
Wand Assembly Length	29.5 inches (749 mm)
Hose Length	69.75 inches (1771 mm)
Nozzle Installed	Red Adjustable Cone
Specifications subject to change without notice.	

Prepare to Assemble

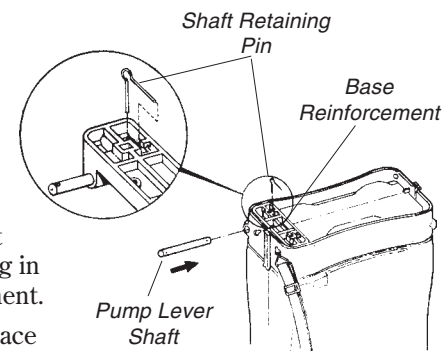
Unpack the following items shipped in your sprayer box:

- Wand
- Pump Lever and Connecting Rod
- Tank Assembly
- Small Parts Kit
- From inside the sprayer tank, remove the plastic bag from the tank strainer.



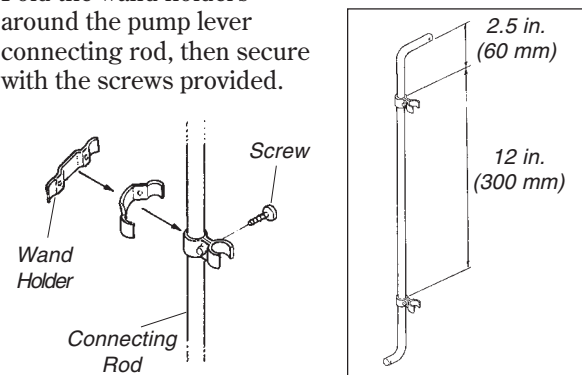
Install the Shaft

1. Fit the pump lever shaft into the hole in the sprayer base as shown. (chamber side).
2. Push the pump lever shaft in until the hole in the shaft matches the opening in the base reinforcement.
3. Lock the shaft in place with the shaft retaining pin.



Install the Wand Holders

Fold the wand holders around the pump lever connecting rod, then secure with the screws provided.



NOTES

Shindaiwa Limited Warranty

Shindaiwa Inc. manufactures its products to superior standards of quality to ensure customers obtain the highest level of satisfaction. In keeping with this goal, Shindaiwa Inc. warrants the SP518 sprayer to the original purchaser as follows:

Warranty Period

One year from the delivery date to the original purchaser for consumer and commercial applications.

90 days for rental applications.

Warranty Administration

Within the covered warranty period, Shindaiwa Inc. will, at their option, repair or replace any defect in material or workmanship, without charge for parts or labor, if this product is presented at an authorized Shindaiwa dealer.

Warranty Exclusions and Limitations

Shindaiwa Inc. assumes no responsibility for damages, loss, or injury resulting from:

- Normal wear and tear
- Misuse or neglect
- Modifications to or removal of original component parts

The warranty is limited to the terms stated herein. Shindaiwa Inc. disclaims all liability for incidental or consequential damages. Some states do not allow the exclusion of incidental or consequential damages, so these limitations may not apply to you.

This warranty give you specific legal rights, and you may also have other rights which may vary from state to state.

Shindaiwa reserves the right to change the design or specifications of this product without obligation to modify previously manufactured products.

Owner's Responsibilities

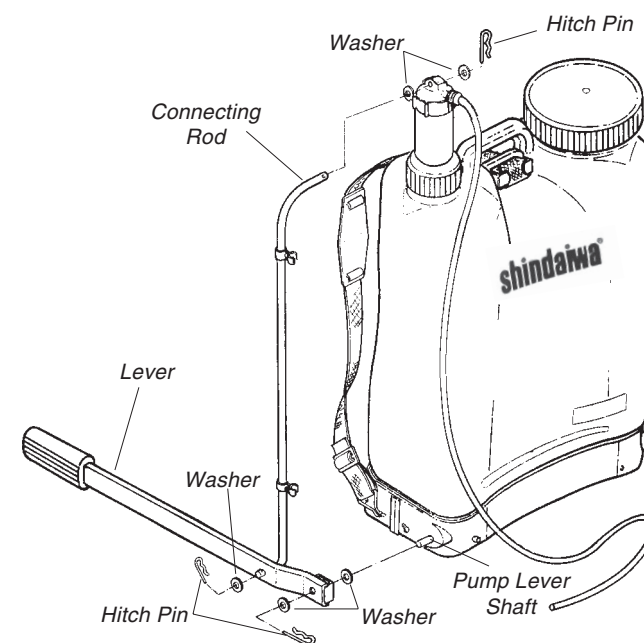
The owner of the sprayer must demonstrate reasonable care in the use, maintenance, and storage of this Shindaiwa product. If a warrantable failure should occur, the owner must deliver the product to an authorized Shindaiwa servicing dealer for correction. All residual chemicals must be flushed from the sprayer prior to delivery.

Unidentified chemicals left in the sprayer tank can pose a serious health threat to anyone servicing the unit and unaware of its presence!

To obtain warranty service, proof of purchase must be presented to the authorized Shindaiwa servicing dealer when the product is presented for repairs.

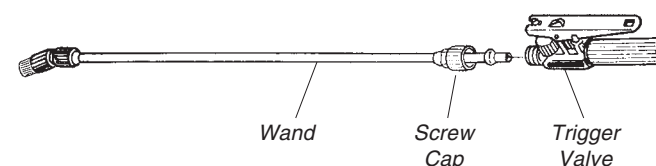
Proof of purchase must include date of purchase and the name and address of the selling dealer.

Install the Pump Lever and Connecting Rod



1. Lightly grease the end of the pump lever connecting rod and insert into the upper hole in the pump lever. Secure with flat washer and hitch pin.
2. Install a flat washer on the opposite end of the connecting rod. Lightly grease the rod end and insert it into the hole on the top of the pump chamber. Secure with flat washer and hitch pin.
3. Install a flat washer on the pump lever shaft.
4. Lightly grease the hole on the end of the pump lever and assemble on to the pump lever shaft. Secure with flat washer and hitch pin.

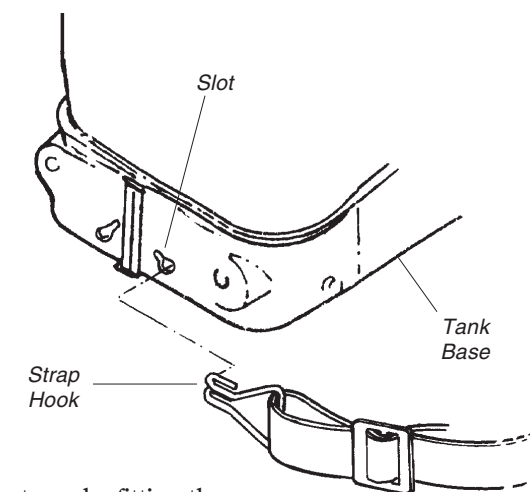
Assembling the Spray Wand



Push the wand into the trigger valve and secure with screw cap. Hand tighten to prevent leakage.

CAUTION!
Do not overtighten!

Install the Shoulder Straps

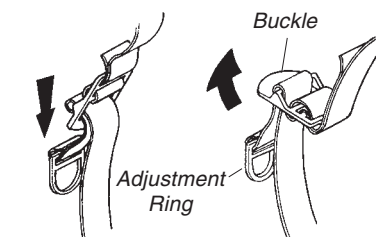


Install the straps by fitting the strap hook into the slot in the tank base and then turning it 90° to lock into place.

Adjusting the Shoulder Straps

Tightening

1. Place the sprayer on your back with the straps loosened.
2. Hold the adjustment ring firmly and pull until backpack is secure in place.



Loosening

Lift up on the buckle to release tension.

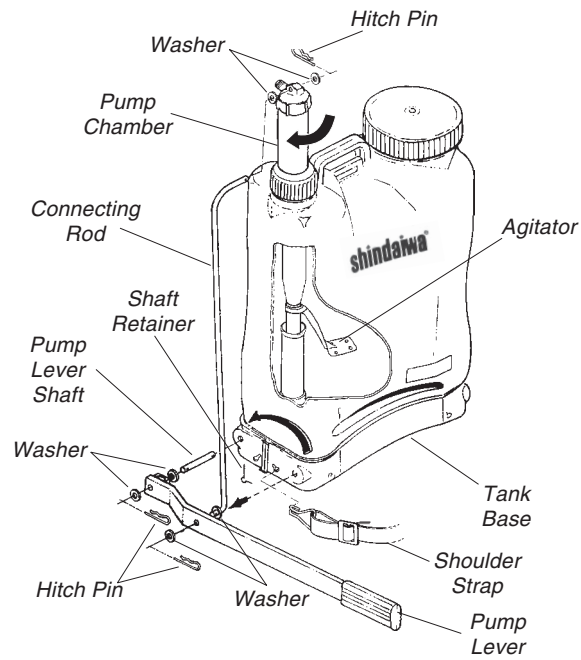
IMPORTANT!

After assembling the sprayer, fill the tank with clear water and lay it on its side. Check for leaks. Return sprayer to its upright position. Pump the lever 10-15 times and check for leaks. Most leaks can be stopped by tightening the appropriate connection or fitting. Any leaks must be stopped prior to filling the sprayer with chemicals.

Changing Lever Operating Side

NOTE:

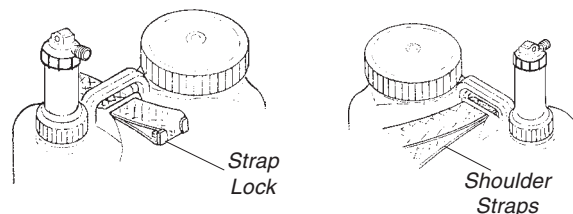
The operating lever may be mounted on the left or right side of the sprayer tank depending on operator preference.



WARNING!

Remove all chemicals and wash the sprayer thoroughly before beginning to change the lever operating side.

1. Remove (2) hitch pins, washers and the pump lever from the base of the sprayer.
2. Remove the pump lever shaft and detach both shoulder straps at the base.
3. Install the pump lever shaft into the opposite hole in the sprayer base and insert the shaft retaining pin.
4. Remove the hitch pin, (2) washers and connecting rod from the pump chamber.
5. Remove the tank fill cap and strainer, reach inside and slide the agitator down the pump chamber.
6. Rotate the pump chamber 180°.
7. Reinstall the connecting rod and washers to the pump chamber and secure with the hitch pin.
8. Slide the agitator back up the pump chamber firmly to lock into place.
9. Reinstall the pump lever, washers and hitch pins to the pump lever shaft and connecting rod.

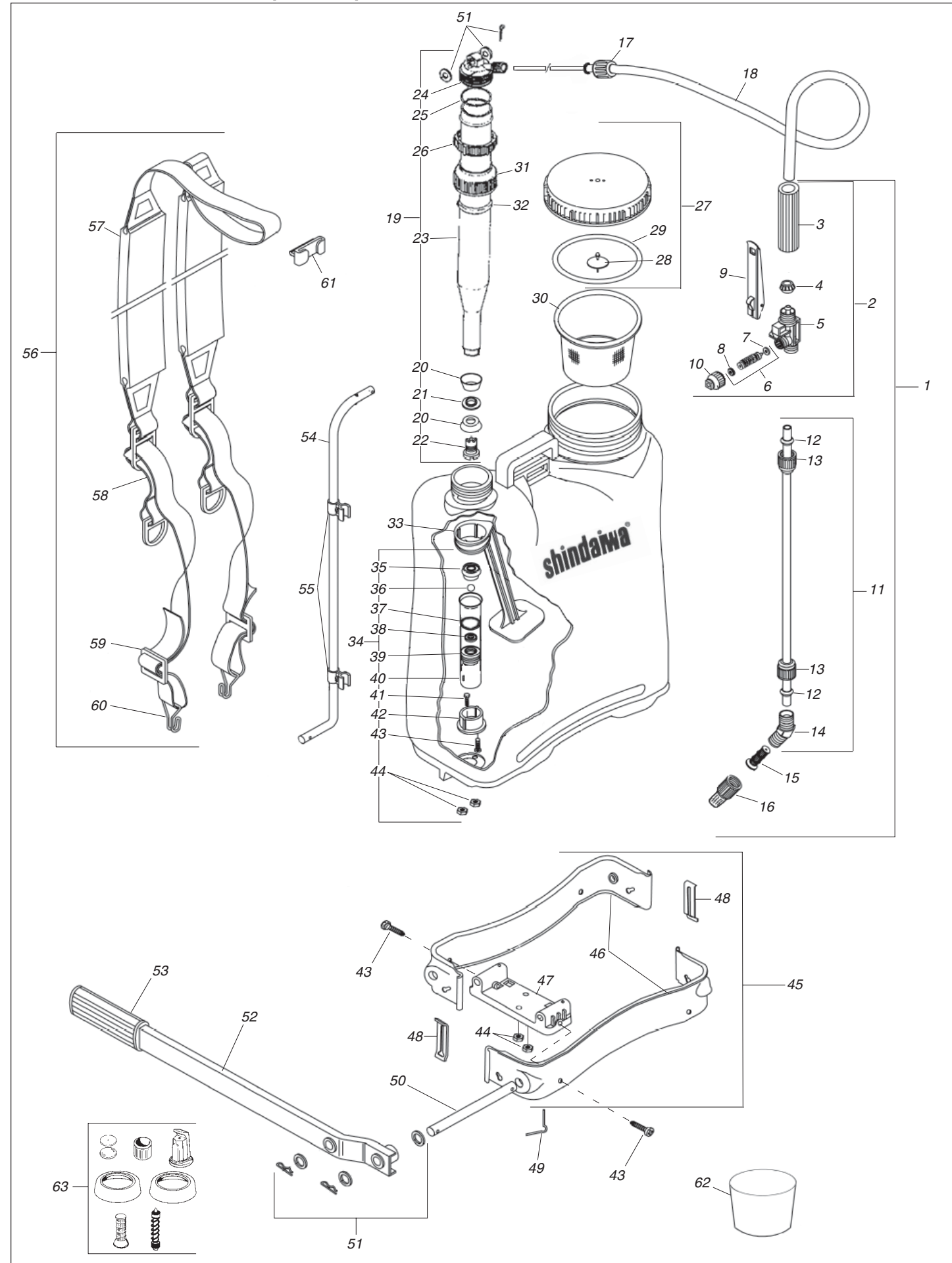


10. Push shoulder straps through the slot in the top of the sprayer tank and remove the strap lock.
11. Feed shoulder straps back into the slot from the opposite side of the tank and reinstall the strap lock.
12. Reattach both shoulder strap hooks to the tank base.

Illustrated Parts List (SP518)

No.	Part Number	ItemDescription	Qty.
1	280016	Spray wand assembly	1
2	279992	Trigger Valve Assembly	1
3	909192	Trigger Valve Handle	1
4	920470	Hose Ferrule	1
5	909283	Trigger Valve Body	1
6	105239	Trigger Valve Needle Assembly	1
7	300731	Lower Seal	1
8	300764	Upper Seal	1
9	263228	Trigger, Chromed	1
10	996058	Valve Cap	1
11	285213	Wand Tube/Elbow Assembly	1
12	909309	Cone Packing	2
13	915744	Cone Nut	2
14	635276	Elbow	1
15	730366	Nozzle Filter (40 mesh)	1
16	015024	Adjustable Cone Nozzle Assembly	1
17	942193	Screw Cap S-20	1
18	048116	Hose/Dip Tube	1
19	285205	Chamber Assembly	1
20a	743880	Piston Cup, Viton®	2
20b	942755	Piston Cup, Santoprene® (optional)	2
21	942763	Piston Cup Spacer	1
22	402297	Chamber Valve	1
23	285197	Chamber Body	1
24	942680	Chamber Cap	1
25	573154	O-Ring (Ori-136)	1
26	040964	Chamber Nut	1
27	878132	Lid Assembly	1
28a	964270	Diaphragm Valve, Viton®	1
28b	560573	Diaphragm Valve, Nitrilic (optional)	1
29	837922	Lid Seal	1
30	942920	Strainer	1
31	878074	Packing Ring Nut	1
32	831230	Packing Ring	1
33	300582	Agitator	1
34	433334	Cylinder Assembly	1
35	570788	Ball Lock	1
36	715474	Ball	1
37	011668	O-Ring ORI-122	1
38	565960	Ball Seat 17x12x3	1
39	433359	Valve Seat	1
40	433342	Cylinder	1
41	351486	Bolt M6x20x1.0	2
42	433367	Cylinder Base	1
43	211227	Screw 14x3/4 (Qty. of 2 in 433334 Cyl.Assy.)	4
44	636126	Flanged Nut	2
45	878140	Split Base Assembly	1
46	878066	Half Base	2
47	433870	Base Reinforcement	1
48	942896	Base Clamp	2
49	433888	Pump Shaft Lock Pin	1
50	433896	Pump Lever Shaft	1
51	942102	Washers & Hitch Pin Set	1
52	964387	Pump Lever Assy.	1
53	002683	Hand Grip	1
54	661397	Pump Lever Connecting Rod	1
55	838003	Spray Wand Holder Clip Assembly (pkg. of 2)	1
56	263392	Strap Assembly Complete	1
57	568725	Upper Strap w/pad	1
58	229971	Lower Strap Assembly	2
59	502757	Lower Strap Buckle	2
60	433474	Lower Strap Hook	2
61	214817	Sholder Strap Lock	1
62	963959	Calibrated Measuring Cup	1
63	285221	Standard Repair and Nozzle Kit	1

Illustrated Parts List (SP518)



Safety Precautions



Carefully read the labels on chemical containers prior to use. Chemicals are classified in four categories of toxicity:

- Category I, High Toxicity, Red label
- Category II, Moderate Toxicity, Yellow label
- Category III, Low Toxicity, Blue label
- Category IV, Light Toxicity, Green label

There are unique handling recommendations for each category, and you should familiarize yourself with them.



Always wear clothing and safety equipment that will provide appropriate protection against the materials you are handling. Equipment may include, but not be limited to:

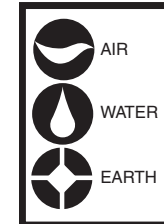
- Long sleeve shirt
- Impermeable apron or coverall
- Impermeable gloves and boots
- Wide-brim hat
- Protective mask equipped with appropriate filters



Do not eat, drink, or smoke while handling chemicals or while you are spraying. Always handle chemicals in a well ventilated area while wearing appropriate protective clothing and safety equipment. **DO NOT STORE OR TRANSPORT CHEMICALS WITH FOOD OR MEDICINES, AND NEVER REUSE A CHEMICAL CONTAINER FOR ANY OTHER PURPOSE.**



Keep chemicals out of the reach of children, animals, or other unauthorized people. When not in use, store chemicals in a safe place. Never blow through nozzles, valve, pipes or any other component by mouth!



When handling chemicals and when spraying, make sure you are operating in accordance with local, state, and federal environmental protection rules and guidelines. Do not spray in very hot or windy conditions. **DO NOT POLLUTE THE ENVIRONMENT!**

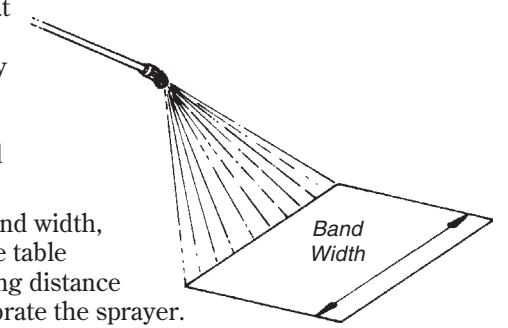


After spray application, take a thoroughly cleansing shower using plenty of water and soap, then change into clean clothes. Protective clothing and safety gear should also be cleaned after each use. **IN CASE OF EXPOSURE TO DANGEROUS CHEMICALS, seek a physician immediately and be prepared to provide the label from the chemical container.**

Calibrating the Sprayer

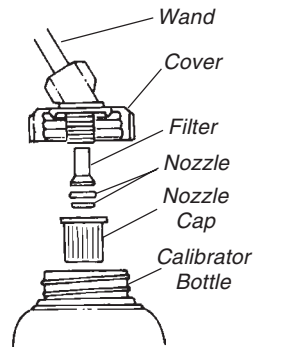
(Requires optional flow calibrator bottle, P/N 646901)

1. Hold the wand at the working height and spray a test pattern to measure the application band width.
2. Based on the band width, identify from the table below the walking distance required to calibrate the sprayer.



Band width	1.6 ft 0.5m	2.3 ft 0.7m	3.3 ft 1.0m	4.0 ft 1.2m	5.0 ft 1.5m
Distance to walk	165 ft 50.0m	120 ft 35.7m	80 ft 25.0m	70 ft 20.8m	55 ft 16.7m

3. Attach the flow calibrator bottle to the wand:
 - a. Remove the nozzle, cap and filter from the spray wand.
 - b. Mount the flow calibrator cover to the spray wand.
 - c. Reinstall the nozzle, filter and nozzle cap.
 - d. Screw the flow calibrator bottle into the cover.

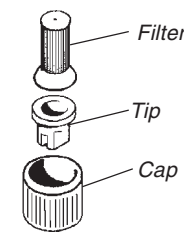


4. Using the flow calibrator bottle:
 - a. Operate the pump lever to maintain spray system pressure when using the flow calibrator bottle.
 - b. Hold the wand at your normal working position and spray into the bottle while walking the distance identified in step 2 above.
 - c. Place the bottle on a level surface and observe the liquid level visible through the side of the bottle. Match the liquid level to the 1/acre (liter per acre) scale on the calibration bottle.
 - d. Multiply the 1/acre (liter per acre) reading identified in step 4-c by .264 to determine your application coverage rate in gallons per acre.
 - e. Empty the bottle contents back into the sprayer tank.

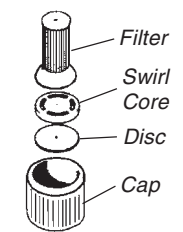
NOTE:

For improved accuracy in calibrating your application coverage, repeat steps 4-a through 4-e and average the results.

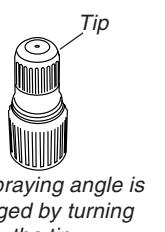
Typical Nozzle Assemblies



Flat Fan Nozzle



Cone Nozzle

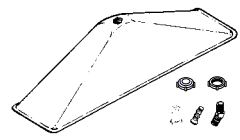


The spraying angle is changed by turning the tip

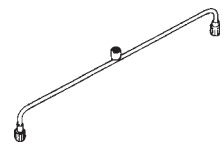
Adjustable Cone Nozzle

Optional Accessories

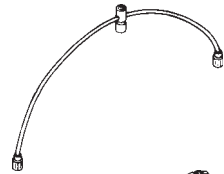
Part Number Description



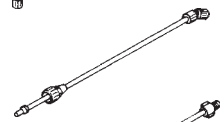
761882 Spray hood is used for nonselective herbicides when spraying under windy conditions. Comes with Kematal 110-DEF-06 deflector fan nozzle and parts to assemble spray hood to your existing Shindaiwa spray wand.



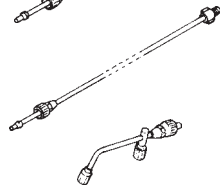
902296 Brass spray boom (27.5") for use with agrochemicals and foliar fertilizers applied to row crops. Provides 40" coverage. JD-12P cone nozzles and 40 mesh stainless steel filter included.



907873 Flexible annealed copper boom fitted with three JD-12P cone nozzles. For use with agrochemicals and foliar fertilizers on row crops. Can be easily shaped as appropriate to provide proper coverage. 40 mesh stainless steel filter included.



831107 Brass extension (11.8") complete with plastic fittings for extra reach. Attachable to original wand.



728139 Brass extension (23.6") complete with plastic fittings for extra reach. Attachable to original wand.



100016 Brass extension (6.3") complete with two JD-12P cone nozzles for doubling output of agrochemicals and foliar fertilizers on perennials. 40 mesh stainless steel filter included.



646901 Flow calibrator bottle. For accurate calibration of backpack sprayers to prevent waste and damage to the environment.



336115 Brass Y nozzle for use on plants requiring heavy applications of fungicides. Complete with two JD-12P cone nozzles, 40 mesh stainless steel filter and plastic fittings.

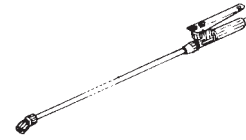
Part Number Description



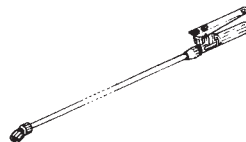
838052 Constant pressure valve reduces pumping action, reduces drift and delivers uniform spraying. Improves productivity and saves chemicals.



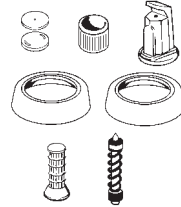
565648 Plastic anti-drip valve for agrochemicals and foliar fertilizer application. Attaches to wand and is compatible with any type of cone or flat fan nozzle.



568774 Spray wand assembly (21.6") Plastic handle, trigger valve and spray tube. 40 mesh stainless steel nozzle and trigger valve filters included. Fitted with adjustable cone nozzle.



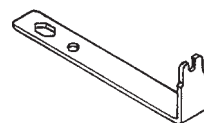
725267 All brass spray wand assembly (21.6") for extra duty applications. Trigger valve and spray tube are brass. 40 mesh stainless steel nozzle and trigger valve filters included. Fitted with JD-12P cone nozzle.



285221 Standard Repair Kit and Nozzle for SP518. Includes (2) Piston cups, trigger valve needle, nozzle filter, JD-12P cone nozzle, nozzle cap, and deflector nozzle.



229724* Nozzle cap for attaching flat fan and cone type nozzles.



452284 All Purpose Wrench for periodic maintenance and repair.

AVAILABLE SPRAY NOZZLES

Nozzle Type	Part Number	Application	Pressure psi (kg/cm ²)	Flow Rate gal (ml)/min
Flat Fan	437756	110-SF-015 Kematal green, 0.16 gpm @ 45 psi	45 (3.2)	0.16 (610)
	437764	110-SF-02 Kematal yellow, 0.21 gpm @ 45 psi	45 (3.2)	0.21 (810)
	437772	110-SF-03 Kematal blue, 0.33 gpm @ 45 psi	45 (3.2)	0.33 (1250)
Cone	717942	JD-10A Stainless steel	45 (3.2)	0.08 (300)
	217174*	JD-12P Stainless steel	45 (3.2)	0.16 (615)
Flat Fan Low Drift	437855	110-LD-03 Kematal blue, 0.33 gpm @ 45 psi	45 (3.2)	0.16 (615)
	457317	HC-02 Kematal yellow	45 (3.2)	0.22 (830)
	457325	HC-04 Kematal red	45 (3.2)	0.44 (1680)
Cone	457333	HC-05 Kematal brown	15 (1.0)	0.54 (2060)
	457390	DEF-04 Kematal red	15 (1.0)	0.25 (950)
	457408	DEF-05 Kematal brown	15 (1.0)	0.32 (1200)
Flat fan Deflector	457416*	DEF-06 Kematal gray	45 (3.2)	0.41 (1540)
	323725	Yellow 0.08 gpm @ 45 psi.	45 (3.2)	0.08 (315)
	015024	Red 0.17 gpm @ 45 psi.	45 (3.2)	0.17 (640)
Adjustable Cone	325787	Blue 0.18 gpm @ 45 psi.		

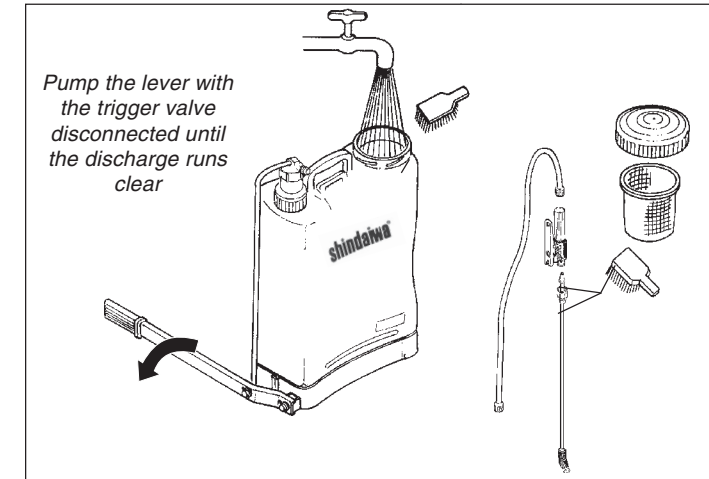
* Denotes nozzles included in the SP518 standard repair kit.

Note: All Shindaiwa sprayers come with the red adjustable cone nozzle P/N 015024 installed as standard equipment.

Maintenance

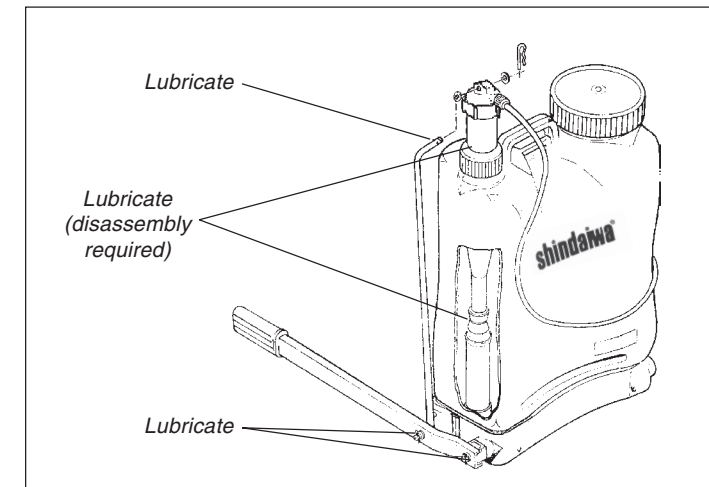
Cleaning the Sprayer

After finishing the spray application, empty the sprayer and wash all equipment in an approved decontamination area.



WARNING!

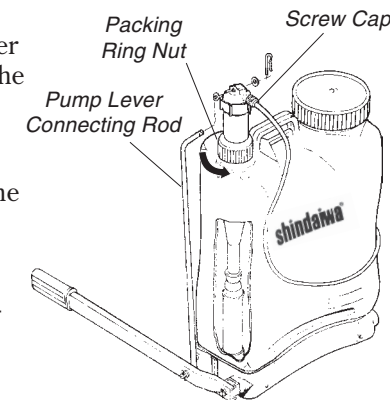
Remove all chemicals and wash before storing the sprayer. Chemical products have different reactions and can cause damage to the sprayer components and the environment. Unidentified chemicals left in the sprayer tank can pose a serious health threat to anyone servicing the unit and unaware of its presence!



Periodically clean and lubricate the pump chamber and actuating linkage with a high quality lithium grease.

Pump Disassembly

1. Remove the pump lever connecting rod from the chamber. Loosen the packing ring nut that secures the chamber to the tank. Remove the tank lid and strainer, reach inside the tank and slide the agitator down the pump chamber, then remove the chamber from the cylinder.



Pump Disassembly (cont.)

2. Using the 452284 all-purpose wrench, remove the chamber valve and cups. Replace as necessary.
3. Remove the two flanged nuts from the outside of the tank below the pump cylinder with a 10 mm socket and remove the cylinder.
4. Remove the two Phillips head screws located at the bottom of the cylinder and remove the cylinder base.
5. From the bottom of the cylinder, push the ball seat assembly towards the top and out of the cylinder.
6. Unscrew the ball lock from the valve seat and remove the ball and seat.
7. Clean all parts and carefully inspect for worn or damaged parts and replace as necessary.
8. Reassemble in the reverse order.

NOTE:

Lubricating all moving parts with a high quality lithium grease will ease assembly and prolong the life of the unit.

Troubleshooting: Lack of Pressure

SYMPTOM	CAUSE	REMEDY
Leakage through the upper cylinder.	Worn or dried out piston cups.	Lubricate or replace the piston cups.
After pumping and pressurizing the chamber, the pump lever drops rapidly when released.	Cylinder ball or seat not sealing properly due to wear or impurities.	Clean or replace the cylinder ball or seat.
After pumping and pressurizing the chamber, the pump lever rises slowly when released.	Chamber valve not sealing properly due to wear or impurities.	Clean or replace the chamber valve.
Low pressure and pump lever hard to operate.	Pump chamber filled with liquid.	Tighten screw cap at top of chamber. With an empty tank, pump lever with trigger valve open until all liquid is purged from pump.

