



**Transtank**<sup>®</sup>  
INTERNATIONAL

Operator's Product HandBook

# TopCrop<sup>™</sup>

## Slip On Field Sprayer



“HELPING TO DEVELOP AND PROTECT THE LAND”

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## Disclaimer

All information, illustrations, and specifications contained in this manual are based on the latest product information available at the time of this publication's printing. TransTank International (TTi) reserves the right to alter and substitute specifications and methods at any time, in line with our commitment to continuous improvement.

No patent liability is assumed with respect to the use of information contained within this manual. While every precaution has been taken in the preparation of this manual, TTi assumes no responsibility for errors or omissions.

**Thank you for purchasing a TTi TopCrop<sup>™</sup> Professional UTE Slip-On Field Sprayer (TopCrop), which will provide many years of reliable service when operated and maintained in accordance with this manual.**

TTi manufacture a range of TopCrop sprayer units, from 300 through to 1,000 litre tanks, all supplied with a petrol operated pump and a hose reel. This manual describes the operation, driving stability and maintenance procedures applicable to all units, noting additional requirements to options where necessary.

All TTi TopCrop sprayer tanks are rotationally moulded from quality polyethylene, purpose designed and manufactured to high standards. The TopCrop sprayer is a slip-on unit for the back of a utility or trailer and designed for water, herbicide or pesticide spraying.

The TopCrop sprayer is supplied complete, tested and ready to mount to your vehicle. TTi warrants that the TopCrop sprayer has been designed and built for its intended purpose as a water, pesticide and herbicide spray unit.

The owner is responsible to ensure that the equipment is operated in accordance with this manual, with Australian WorkSafe requirements, applicable road rules and local council regulations. TTi is not liable for any loss, injury or death resulting from the failure to observe all safe working regulations as required by law.

Included with your TopCrop sprayer are the following documents:

- Operator's Handbook (this manual, which includes the Warranty Registration Card)
- Honda petrol engine handbook
- Bertolini pump data sheet (includes link to download pump manual). TTi recommends that you download this manual.
- Tank Quality Check Form. This is your verification that the unit has been quality checked, and verifies the serial number affixed to the unit.

## Safety

This manual is intended for use by personnel experienced in the use of this and similar equipment. Read and understand this manual before attempting to operate or perform routine maintenance on this equipment. Your safety is of prime priority.



**A WARNING highlights an essential operating or maintenance procedure, practice, condition or statement, which, if not strictly observed, could result in injury or death of personnel, or long-term health hazards.**



**A CAUTION highlights an essential operating or maintenance procedure, practice, condition or statement, which, if not observed, could result in damage or destruction of equipment.**



**A NOTE highlights or clarifies an essential systems description, operating or maintenance procedure, condition or statement.**

## General Safety Instructions

1. This unit is designed and manufactured solely for the purpose of carrying and spraying herbicides and pesticides. Under no circumstances should it be used for any other purpose. It must never be used for transporting fuel.
2. Only authorised and trained personnel are to operate this equipment. Operators must have read and fully understood this manual before operating the TopCrop sprayer.
3. Do not operate the TopCrop sprayer anywhere near bystanders, livestock, watercourses or any non-targeted vegetation that may be in danger from spray drift contamination.
4. Wind direction and speed must be taken into account, as windy conditions may endanger the operator or damage to adjacent non-target vegetation. Avoid spraying on hot and sunny days or when wind speed exceeds 6.5km/h.
5. Do not operate this equipment while under the influence of alcohol or any drugs that could impair your capabilities in any way.
6. Personal Protection Equipment (PPE) must be worn when operating the petrol pump on the TopCrop sprayer. Exposure to excessive noise over an extended period can cause impairment or loss of hearing.
7. PPE appropriate to the chemicals being used must be worn at all times when operating the TopCrop sprayer. As a minimum, the PPE should include coveralls, gloves and boots. A face shield and PVC apron are recommended depending on the task. It is recommended that the following documents should be read and understood by the operator:
  - Australian Standard for Chemical protective clothing AS3765
  - Australian Standard for Respiratory protection devices AS1715
8. Ensure the capacity of the vehicle is suitable for the loaded mass of the TopCrop sprayer. Refer to the vehicle's operator manual for safe working loads, correct securing points and relevant safety instructions. Do not exceed the carrying and braking capacity as specified by the vehicle manufacturer. As a guide, one litre of water weights one kilogram (kg), therefore a full 400 litre TopCrop sprayer will weigh in excess of 500kg.
9. The unit must be securely restrained on the vehicle. Ensure all fasteners are tightened and secure before operation.
10. Care should be taken at all times, particularly when operating on rough or steep terrain. Drivers should be aware of fluid surge affecting the vehicle's centre of gravity.
11. The TopCrop sprayer must never be left unattended while being filled with fluids.
12. Do not operate the pump when there is no fluid in the tank.
13. Do not disconnect any hoses, nozzles or filters while the equipment is operating. Disconnecting any components while under pressure may result in uncontrolled fluid discharge which may be hazardous.
14. Ensure any electrical connections are properly configured, to prevent damage such as shorting or reverse polarity.
15. At completion of the operation, switch the pump off and relieve any residual pressure by squeezing the spray gun trigger.
16. At completion of the operation, decontaminate the TopCrop sprayer tank and hose lines. Drain any residue chemicals and store in a sealed container. Dispose of any unwanted chemicals and tank rinse residue in accordance with current environmental and workplace health and safety regulations.
17. The TopCrop sprayer has safety labels affixed to various locations on the unit. These labels should be kept clean and legible, and replaced if damaged.
18. Any unauthorised modifications to this equipment may affect its function and create a serious safety risk. Any unauthorised modifications will void any warranty on the unit.

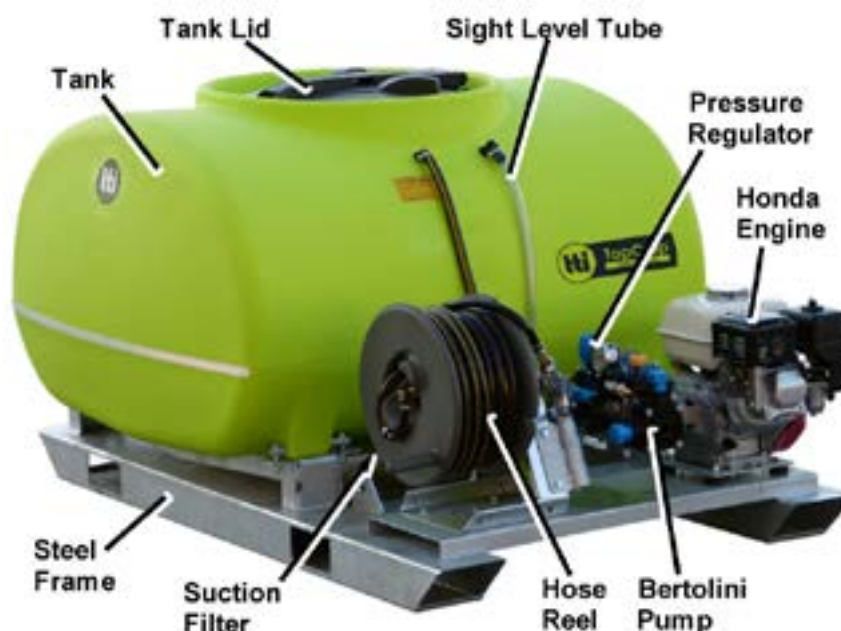
# General Information

## Specifications

Tank	UV stabilised, chemical resistant polyethylene tank, fully drainable – 300 to 1,000 litres
Standard Equipment	Honda GX200 petrol engine
	Bertolini pump – 22L/min
	Fabricated galvanised steel frame with forklift pockets
	Pressure regulator
Options	30m hose reel with 10mm hose and pistol grip spray gun
	Remote control auto rewind SuperReel with 50m FrictionFree™ nylon hose and Turbo spray gun
	Bertolini pump – 75L/min (recommended for optional 8m spray boom)
	Compact Spray Booms – 4m, 6m and 8m spray swath (for 400 to 1,000 litre units), complete with electrically operated solenoid control valve
	Quick Fill Unit, comprising suction hose, floating filter and venturi hydro injector

## Description

The TTI TopCrop sprayer is designed to carry and distribute herbicides, pesticides or water using a self-contained petrol driven pump. The TopCrop sprayer has the following features, refer to Figure 1.



*Figure 1 – Component Identification*

### Tank

All TTI tanks are constructed from UV resistant, virgin material polyethylene. The tank is fully drainable and includes a level sight tube to provide an accurate level indication of fluid within the tank. The tank inlet is fitted with an internal basket strainer under the twist lock filling cap.

Tank size options for the TopCrop sprayers are:

- 300 litres
- 400 litres
- 500 litres
- 600 litres
- 800 litres
- 1,000 litres

### Tank Level Indicator

A level sight tube is fitted to the tank and provides an accurate level indication of fluid within the tank.

### Pump

The TopCrop sprayer is fitted with a Honda GX200 petrol pump coupled to a 22 L/min Bertolini pump as standard. Available as an option is a 75 L/min Bertolini pump, which TTI recommends when the optional Compact Spray Boom is fitted.

If the spray gun (or optional spray boom) is not in operation when the pump is running, the fluid bypasses back into the tank via the hose operation lever at the pressure regulator.



### **30m Hose Reel and Spray Gun**

The TopCrop has a manually operated hose reel containing 30m of 10mm diameter hose connected to a trigger actuated spray gun with adjustable brass nozzle. The hose is pulled out manually from the reel and retracted using the handle on the side. The spray gun is stowed in a fabricated holder at the side of the hose reel.

The nozzle adjusts from jet through to mist sprays by rotating the nozzle head. When the trigger is squeezed, the fluid is discharged; when the trigger is released, the fluid bypasses back into the tank.

### **50m SuperReel and Spray Gun**

An optional electrically operated SuperReel containing 50m of FrictionFree<sup>™</sup> hose connected to a trigger actuated spray gun with adjustable nozzle is available. The hose is pulled out manually from the reel and electrically retracted using the supplied remote control. An Anderson plug is fitted to the rear of the SuperReel, ready for connection to a 12-volt power supply from the tow vehicle.

The spray gun nozzle adjusts from jet through to mist sprays by adjustment of the lever adjacent to the trigger. When the trigger is squeezed, the fluid is discharged; when the trigger is released, the fluid bypasses back into the tank.

### **Pressure Regulator**

A pressure regulator and pressure gauge are fitted to the pump discharge flange to control line pressure and prevent pump cavitation. The regulator is adjustable depending on the operation requirements – for the optional spray boom, the regulator is to be set to approximately 3 bar; with spot spraying via the hose reel the regulator is set to approximately 5 bar.

### **Hose Operation Lever**

A manually operated lever is fitted adjacent to the pressure regulator and has two positions:

- BYPASS – directs the fluid back into the tank
- HOSE – for operation of the hose.

The lever should always be set to the bypass position when starting the pump and switched to the HOSE position when starting spray operations.

### **Suction Filter**

Adjacent to the pump a filter is installed on the suction line. The filter has a removeable filter element for easy cleaning.

### **Compact Spray Boom**

Available as an option, the TopCrop can be fitted with a Compact Spray Boom for 400 to 1,000 litre units. The galvanised boom has steel plate protected non-drip nozzles fitted with TeeJet AIXR Air Induction spray tips. The boom incorporates a break-away feature to prevent damage if the unit hits an obstacle, and easily folds for transportation and storage.

The Compact Spray Booms are available in a 4m, 6m and 8m spray swath, with the 8m boom recommended for the 600 litre and above tank capacities.

The Compact Spray Boom options are supplied complete with an electrically operated solenoid valve with remote ON/OFF switch, powered directly from the vehicle's 12V power supply socket.



## Quick Fill Unit

An optional quick fill unit is available, enabling water to be drawn directly from a dam or river at a maximum height of up to 2m below the top of the TopCrop tank. The unit includes a 6m suction hose with floating filter, venturi hydro injector and connector hose from the pump, to drive the venturi injector. The venturi injector requires a minimum of 30 litres of water in the TopCrop tank in order to draw from water supply.

## Frame

The chassis frame of the TopCrop sprayer is an all steel, fully welded construction and hot dip galvanised for corrosion resistance. The frame incorporates forklift pockets and tiedown points for easy loading, unloading and securing from the vehicle.

## Machine Limitations

The TopCrop Field Sprayer is subject to operating limitations. It is the operator's responsibility to ensure that this equipment is being operated safely and within these limitations.

## Driving Stability

The TopCrop sprayer is heavy when filled with fluid. To maintain stability while operating this unit:

- Ensure the vehicle tyres are inflated to their correct pressure at all times. Underinflated tyres can cause excessive lateral motion of the tyre, which may cause a rollover.
- Allow extra room for braking and turning when the tank is full.
- Ensure any side gradient (slope) is accounted for, especially when the TopCrop sprayer tank is full, as the vehicle may have a higher centre of gravity.

## Spray Boom Calibration

When a Compact Spray Boom is optioned, it must be calibrated before first and subsequent use. Accurate calibration is an essential element of any spraying function as it ensures that the chemical is applied at the rate specified on the product label. Application in excess of the recommended rate may be dangerous, can damage crops and is uneconomical.

- Calibration must be carried out:
  - When spraying for the first time with new spray equipment
  - At the beginning of each season
  - After changes of nozzle tips, spraying pressure or vehicle speed
  - After every 100 hectares of spraying

PPE appropriate to the chemicals being used must be worn at all times when calibrating the OnDeck. As a minimum, the PPE should include coveralls, gloves and boots. A face shield and PVC apron are recommended.

## Calibration Procedure

Check the label on the chemical container for the application rate and recommended spray nozzle type, refer to Figure 3, which shows the TeeJet AIXR nozzle application chart. To apply a specific rate of chemical to the target surface, work out the:

- total sprayer output,
- travel speed, and
- the swath width.

Using these parameters, the application rate is calculated as follows.

### Measure Total sprayer output [L/min]

Set the pressure at the correct level for spraying determined by the type of nozzles. All nozzles used for spraying should be left on. For initial trials, set the pressure regulator at approximately 2 bar and adjust as needed.

- Fill the spray tank with clean water, refer to Filling the TopCrop Sprayer Tank procedure below. Run the sprayer at the correct pressure with all nozzles operating.
- Place a measuring jug under first nozzle for one minute, then measure how much water is in the jug.
- Repeat for all nozzles. Nozzle output should not vary by more than 10%. If it does, the nozzle could be worn or damaged and should be replaced.
- Add all the jug measurements to find the total sprayer output in litres per minute.

### Measure the travel speed [km/h]

The normal speed for spraying with small boom sprayers is 4–10 km/h. The slower the travel, the higher the application rate. Adjust travel speed to suit ground conditions.

- Measure how many seconds it takes to travel 100 metres with the sprayer attached and half full.
- Calculate your travel speed by inserting the time in seconds into the following formula: ***Travel speed (km/h) = distance travelled in metres (say 100m) x3.6 / Time taken (in seconds)***

### Calculate spray application rate [L/Ha]

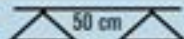









First, measure the swath width in metres. For general broadcast spraying, the swath width is equal to the number of nozzles multiplied by the nozzle spacing. For band spraying the swath width is equal to the total of all the band widths. Calculate the application rate using the following formula:

$$\text{Application rate (L/ha)} = (600 \times \text{total sprayer output (L/min)}) / (\text{swath width (m)} \times \text{travel speed (km/h)})$$

**Example:** If total sprayer output is 5 L/min, speed is 8 km/h, and swath width is 6m, Application rate =  $(600 \times 5 = 62.5 \text{ L/ha}) / (6 \times 8)$

If the application rate is less than specified, increase the pressure and repeat calibration to achieve the correct rate. Once the required rate is achieved, note the following parameters for future reference when using this chemical:

- Nozzle Fitted
- Type (Drop Size)
- Application Rate
- Spray Pressure
- Forward Speed

Nozzle Icon	Pressure (bar)	DROPT SIZE	LERAP RATINGS	CAPACITY ONE NOZZLE IN L/MIN	V/ha 										CAP PART NUMBER	
					5 km/h	6 km/h	7 km/h	8 km/h	10 km/h	12 km/h	16 km/h	18 km/h	20 km/h			
	1.0	XC	-	0.34	81.6	68.0	58.3	51.0	40.8	34.0	25.5	22.7	20.4	11441A-CCLR		
	2.0	C	-	0.48	115	96.0	82.3	72.0	57.6	48.0	36.0	32.0	28.8			
	3.0	C	-	0.59	142	118	101	88.5	70.8	59.0	44.3	39.3	35.4			
	4.0	M	-	0.68	163	136	117	102	81.6	68.0	51.0	45.3	40.8			
	5.0	M	-	0.76	182	152	130	114	91.2	76.0	57.0	50.7	45.6			
	6.0	M	-	0.83	199	166	142	125	99.6	83.0	62.3	55.3	49.8			
	1.0	XC	-	0.46	110	92.0	78.9	69.0	55.2	46.0	34.5	30.7	27.6		11441B-CCLR	
	2.0	VC	-	0.65	156	130	111	97.5	78.0	65.0	48.8	43.3	39.0			
	3.0	C	-	0.79	190	158	135	119	94.8	79.0	59.3	52.7	47.4			
	4.0	M	-	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6			
	5.0	M	-	1.02	245	204	175	153	122	102	76.5	68.0	61.2			
	6.0	M	-	1.12	269	224	192	168	134	112	84.0	74.7	67.2			
	1.0	XC	**	0.57	137	114	97.7	85.5	68.4	57.0	42.8	38.0	34.2			11441C-CCLR
	2.0	VC	**	0.81	194	162	139	122	97.2	81.0	60.8	54.0	48.6			
	3.0	VC	**	0.99	238	198	170	149	119	99.0	74.3	66.0	59.4			
	4.0	C	**	1.14	274	228	195	171	137	114	85.5	76.0	68.4			
	5.0	C	**	1.28	307	256	219	192	154	128	96.0	85.3	76.8			
	6.0	M	-	1.40	336	280	240	210	168	140	105	93.3	84.0			
	1.0	XC	**	0.68	163	136	117	102	81.6	68.0	51.0	45.3	40.8	11441D-CCLR		
	2.0	VC	**	0.96	230	192	165	144	115	96.0	72.0	64.0	57.6			
	3.0	VC	**	1.18	283	236	202	177	142	118	88.5	78.7	70.8			
	4.0	C	**	1.36	326	272	233	204	163	136	102	90.7	81.6			
	5.0	C	**	1.52	365	304	261	228	182	152	114	101	91.2			
	6.0	M	-	1.67	401	334	286	251	200	167	125	111	100			
	1.0	UC	***	0.91	218	182	156	137	109	91.0	68.3	60.7	54.6		11441E-CCLR	
	2.0	XC	**	1.29	310	258	221	194	155	129	96.8	86.0	77.4			
	3.0	VC	**	1.58	379	316	271	237	190	158	119	105	94.8			
	4.0	VC	**	1.82	437	364	312	273	218	182	137	121	109			
	5.0	C	**	2.04	490	408	350	306	245	204	153	136	122			
	6.0	C	-	2.23	535	446	382	335	268	223	167	149	134			
	1.0	UC	***	1.14	274	228	195	171	137	114	85.5	76.0	68.4			11441F-CCLR
	2.0	XC	***	1.61	386	322	276	242	193	161	121	107	96.6			
	3.0	VC	**	1.97	473	394	338	296	236	197	148	131	118			
	4.0	VC	**	2.27	545	454	389	341	272	227	170	151	136			
	5.0	C	**	2.54	610	508	435	381	305	254	191	169	152			
	6.0	C	-	2.79	670	558	478	419	335	279	209	186	167			
	1.0	UC	***	1.37	329	274	235	206	164	137	103	91.3	82.2	11441G-CCLR		
	2.0	XC	***	1.94	466	388	333	291	233	194	146	129	116			
	3.0	VC	***	2.37	569	474	406	356	284	237	178	158	142			
	4.0	VC	**	2.74	658	548	470	411	329	274	206	183	164			
	5.0	C	**	3.06	734	612	525	459	367	306	230	204	184			
	6.0	C	-	3.35	804	670	574	503	402	335	251	223	201			
	1.0	UC	-	1.82	437	364	312	273	218	182	137	121	109		11441H-CCLR	
	2.0	XC	-	2.58	619	516	442	387	310	258	194	172	155			
	3.0	VC	-	3.16	758	632	542	474	379	316	237	211	190			
	4.0	VC	-	3.65	876	730	626	548	438	365	274	243	219			
	5.0	VC	-	4.08	979	816	699	612	490	408	306	272	245			
	6.0	C	-	4.47	1073	894	766	671	536	447	335	298	268			
	1.0	UC	-	2.28	547	456	391	342	274	228	171	152	137			11441I-CCLR
	2.0	UC	-	3.23	775	646	554	485	388	323	242	215	194			
	3.0	XC	-	3.95	948	790	677	593	474	395	296	263	237			
	4.0	VC	-	4.56	1094	912	782	684	547	456	342	304	274			
	5.0	VC	-	5.10	1224	1020	874	765	612	510	383	340	306			
	6.0	VC	-	5.59	1342	1118	958	839	671	559	419	373	335			

NOTE: Always double check your application rates. Tabulations are based on spraying water at 21°C.

### DROPLET SIZE CATEGORIES

 <b>XF</b> EXTREMELY FINE	 <b>VF</b> VERY FINE	 <b>F</b> FINE	 <b>M</b> MEDIUM	 <b>C</b> COARSE	 <b>VC</b> VERY COARSE	 <b>XC</b> EXTREMELY COARSE	 <b>UC</b> ULTRA COARSE
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Droplet size may vary with nozzle capacity, spray angle and spray pressure.

Figure 2 – AIXR Application Chart

# TopCrop Operating Instructions

## Before first use

Your TopCrop Field Sprayer is delivered fully assembled and ready to be fitted onto your vehicle. If a Compact Spray Boom has been optioned, this will be supplied separately, ready for mounting to the TopCrop's frame once the unit is mounted onto the vehicle. Before use, the TopCrop needs to be set up using the following instructions:

- Complete the warranty registration online at [www.tti.com.au/warranty-registration](http://www.tti.com.au/warranty-registration), or use the Warranty Registration Card at the back of this handbook.
- Store this handbook, along with the Tank Quality Check Form and pump unit's manual in a safe and easily accessible place for future reference.



**WARNING: The operator must fully understand all aspects of this handbook. Do not operate the TopCrop if you are unfamiliar with its operation until you have read this handbook.**

- Read and thoroughly understand this handbook, paying particular attention to all safety requirements, before using the TopCrop for the first time.
- Check that all fittings, valves, hoses and electrical leads are secure following transit, and are not damaged in any way.
- Inspect the tank for any damage or abrasions that may have occurred during transit.



**CAUTION: The unit must be securely mounted to the vehicle. Failure to do so may result in the unit moving or falling off the moving vehicle. Warranty is conditional on the unit being correctly mounted.**

- Position your TopCrop sprayer onto the vehicle and mount securely to the tray. If using tie-down straps, they must be rated to at least the total mass of the unit when filled with fluid. Alternatively, the integrated tank frame may be bolted to the vehicle.
- If a Compact Boom has been optioned, fit the mounting brackets to the TopCrop frame. The brackets have multiple mounting points for the boom, to enable optimum boom height, depending on the vehicle tray height.
- Refer to the supplied pump unit's manual and prepare the engine for use, such as filling its tank with fuel.



**CAUTION: Ensure any electrical connections are configured correctly to prevent shorting or reverse polarity. Warranty is conditional on the electrical systems being correctly connected.**

- When optioned with the SuperReel, connect the supplied electrical cable to the Anderson plug at the base of the SuperReel and connect the other end to the vehicle's battery (via alligator clips).



- When optioned with a Compact Spray Boom, connect the feed hose to the electrically operated solenoid valve fitted to the outlet of the pump. Carefully route the supplied electrical control cable from the solenoid valve into the vehicle's cab and plug it onto the 12V power supply socket or cigarette lighter socket.

## Filling the TopCrop Sprayer Tank

Your SuperTrail Spray Trailer is delivered assembled and ready to be connected to your tow vehicle or tractor. Before use, it needs to be set up using the following instructions:



**CAUTION: Ensure the filling area is in an open, well ventilated space if filling with chemicals. Follow the instructions provided with the chemicals or the applicable Safety Data Sheet.**

Mixing and filling the TopCrop sprayer should be undertaken at a carefully chosen site, away from any risk of spillages draining into water courses or into environmentally sensitive areas. Children and animals must always be kept away from mixing and filling operations.

The unit's tank is filled as follows:

- Open the tank filler by twisting the handle and lifting the cap.
- Withdraw the internal basket strainer and inspect it for any debris. Clean it if required and reinstall it into the top of the tank.
- Follow the chemical manufacturer's instructions and safety precautions carefully, taking note of the order in which the products are added to the tank.
- Measure the correct quantities of chemicals using clean measuring containers specifically for this purpose only, then add the chemicals to the tank. Rinse out the measuring containers and any empty containers and pour all rinsing liquid into the TopCrop sprayer's tank.



**WARNING: Do not overfill the tank. This may result in chemical spillage.**



**CAUTION: The TopCrop sprayer must never be left unattended while being filled with fluid.**

- Top up the tank with water to the required level, ensuring it is not overfilled. A sight tube is located on the tank, providing a visual indication of the fluid level in the tank.
- Thoroughly mix the contents by stirring with a suitable paddle or starting the pump with the hose operation lever set to the BYPASS position.
- Upon completion of filling the TopCrop sprayer tank, replace the filler cap and twist the handle to tighten.
- Wash off any spillage from outside the tank.

- Close the chemical supply containers and store appropriately. Any empty containers must be thoroughly rinsed and set aside for collection and disposal in compliance with environmental and work safety requirements.

## Operating Instructions

The TopCrop sprayer is started and operated as follows:



**NOTE: Suitable PPE must be worn by the operator when conducting hose spraying operations.**



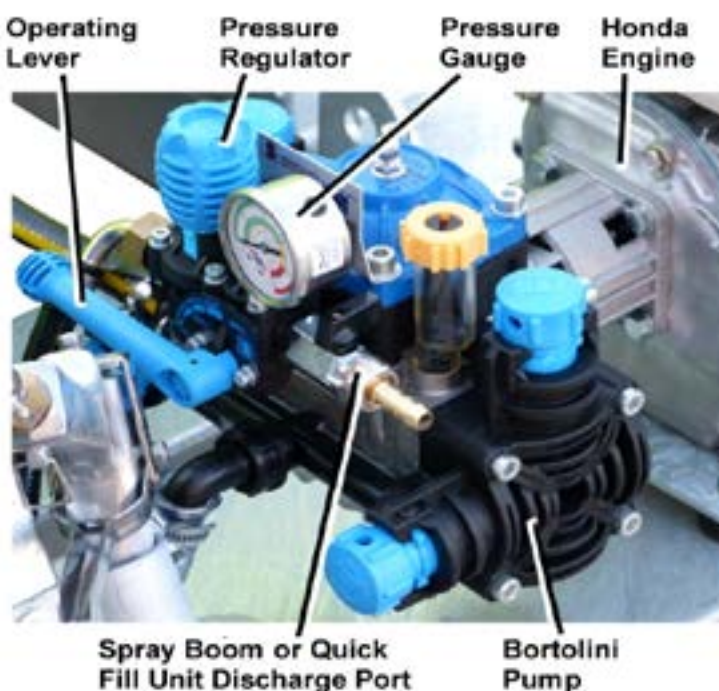
**WARNING: Do not spray in windy conditions, where spray drift contamination may occur.**

- Position the vehicle at a suitable point of the operations area.
- Confirm the tank contains the required water or chemical quantity by observing the fluid level at the level sight tube.



**NOTE: Ensure the pressure regulator is set to the minimum position.**

- At the pump, check that the pressure regulator is set to the minimum position by turning the knob anti-clockwise, refer to Figure 3.



**Figure 3 – Pump Arrangement**

- Check that the operating lever is in the BYPASS position.
- If fitted with the optional Compact Spray Boom, check that the electrically operated solenoid valve is closed.
- Start the pump, refer to Petrol Pump Operation procedure below. The fluid will now be circulating through the system and returning to the tank via the bypass circuit.
- For spraying operations, refer to:
  - Hose Spray Operation
  - Compact Spray Boom Operation.

## Petrol Pump Operation

The TopCrop's petrol pump engine is started as follows, refer to Figure 4:

- Turn the ignition switch to ON.
- Turn the fuel tap to ON.
- Set the choke lever to the closed position.



**NOTE: Ensure the engine's throttle is set to idle if the engine is cold. Do not adjust the throttle to maximum speed until the engine has warmed up.**

- Check that the throttle is set to the idle position. If restarting a warm engine, the throttle can be left at normal engine operating speed.
- Grasping the pull-start handle, firmly pull to start the engine. This may need to be repeated 2-3 times. If the engine fails to start, refer to the supplied Honda engine manual.



**Figure 4 – Petrol Pump Details**



- When the engine starts, slowly move the choke lever to the open position.
- Once the engine is warmed up, slowly increase the engine speed to a medium setting, which should result in the required performance while minimising the fuel consumption and excessive engine noise.
- When the engine needs to be stopped, turn the ignition switch to the OFF position.

If the TopCrop sprayer is not going to be used within the next few hours, shut the system down as follows:

- Set the engine throttle lever to the idle position.
- Turn the fuel tap to OFF.

### Hose Spray Operation

The TopCrop unit hose spray operation is conducted as follows:



**CAUTION: Ensure not to over-run the hose when pulling it out from the reel, as this may damage the hose or the fittings.**

- Pull the hose to unwind it from the hose reel.
- With the pump running, turn the operating lever from BYPASS to the PRESSURE position.
- Turn the pressure regulator knob clockwise to the required pressure – approximately 5 bar for hose spraying operation is recommended, which can be fine-tuned as required.
- Aim the hose's spray gun in the required direction and squeeze the trigger. Adjust the spray pattern by operating the lever on the spray gun handle, refer to Figure 5.
- Use a constant speed when spraying and release the trigger at the end of each swath or change of direction, to prevent overdosing. Work in parallel lines when spraying large areas, rather than swinging from side to side.
- At the end of the task, release the spray gun trigger and turn the hose operation lever to the BYPASS position. The fluid will automatically recirculate through the system and return to the tank via the bypass circuit until the pump is switched OFF.
- Referring to Petrol Pump Operation section, switch the pump OFF.
- Aiming the spray gun/s in the required direction, squeeze the trigger to release the residual pressure in the hose, which will result in a small amount of fluid discharging.



**Figure 5 – Spray Gun (typical)**

- With the hose pressure released, the hose is ready to stow back onto the TopCrop's hose reel. If fitted with the standard 30m hose reel, proceed as follows, refer to Figure 6:
  - Turn the handle at the side of the hose reel to wind it onto the spool, guiding the hose as necessary to ensure even distribution across the width of the reel.
  - Allow enough slack in the hose to stow the spray gun in its holder beside the reel.
  - Lock the reel into one of the four locking positions to prevent the hose unwinding during transit.
- If fitted with the optional 50m SuperReel, proceed as follows, refer to Figure 7:
  - Apply a little tension to the hose, to ensure the hose does not flip off the spool upon starting.
  - Press the button on the remote control supplied with the TopCrop's SuperReel to start retracting the hose. The hose will wind on to the reel's spool, guided by the integrated fairlead.
  - Release the button when the hose is retracted, allowing enough slack in the hose to stow the spray gun in its holder beside the SuperReel.



**Figure 6 – 30m Manual Hose Reel Operation**



Figure 7 – SuperReel Operation

### Compact Spray Boom Operation



**WARNING: Before commencing spraying, plan the work effectively to minimise potential contamination of adjacent areas.**

The optional Compact Spray Boom, once calibrated for the task, does not require any adjustments prior to operation. The spray boom is operated as follows:



**WARNING: Do not spray in windy conditions, where spray drift contamination may occur. Spray drift can be reduced by lower nozzle height, lower pressures or by fitting larger nozzles.**

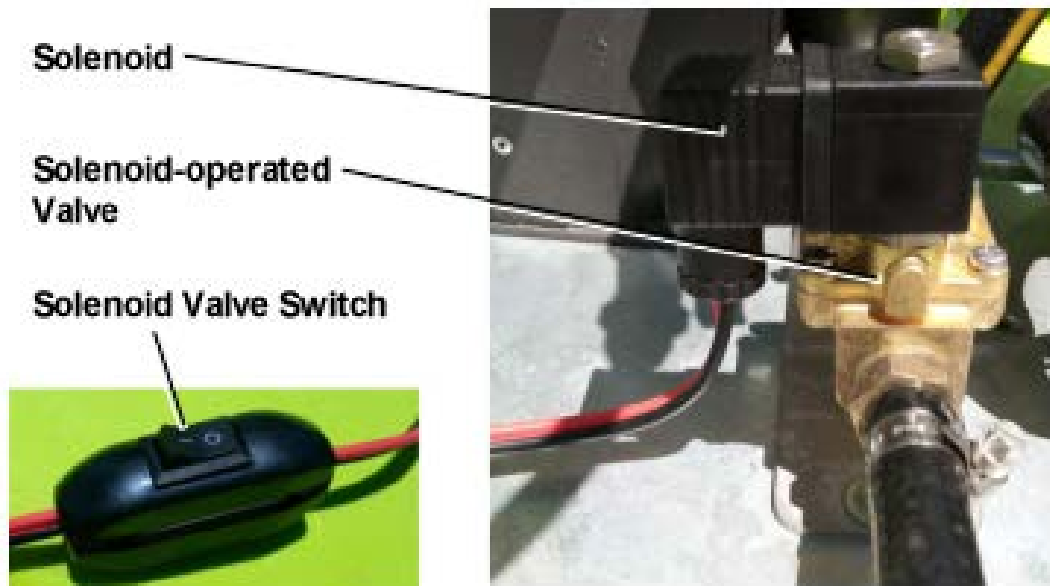
- Position the vehicle at the starting point of the operations area.



**NOTE: Ensure the solenoid operated isolating valve for the boom is CLOSED.**

- Ensure the cable-mounted switch to the solenoid actuated spray boom valve is set to OFF.
- Start the pump and set the engine speed and the pressure regulator to the correct setting as determined during calibration. The fluid will now be circulating through the system and returning to the tank via the bypass circuit.

- From the vehicle's driver's seat, open the valve to the spray boom by turning the solenoid valve remote switch to ON (refer to Figure 8). The fluid will now start to discharge from the boom spray nozzles.
- Commence driving the vehicle at the speed determined during calibration to achieve the required spray outcome.
- At the end of each swath or before turning around, turn the spray boom's solenoid actuated valve remote switch to OFF. When commencing the next swath, turn the switch back to ON.



**Figure 8 – Solenoid Operated Spray Boom Valve and Remote Switch**

## Quick Fill Kit

Where required, the TopCrop can be filled with water directly from a dam or river using the optional Quick Fill Unit as follows, refer to Figure 9:



**NOTE: The Quick Fill Unit requires some water in the tank to operate the venturi hydro injector.**

- Ensure there is at least 30 litres of water already in the tank, as this is required to create the venturi effect.
- Open the lid on the tank, to allow venting when the venturi hydro injector is operating.
- Position the TopCrop unit close to the water supply, such that the water is less than 2m lower than the top of the TopCrop tank's venturi hydro injector.
- Connect the 6m suction hose to the venturi hydro injector, placing the floating filter end into the water.
- Start the pump as described above.
- At the pump discharge manifold, open the valve to the hose connecting the pump to the venturi hydro injector. Water will start pumping to the injector, which will create the venturi effect to draw water from the supply into the tank.



**CAUTION: The TopCrop sprayer must never be left unattended while being filled with fluid.**

- Observing the level sight tube, stop the pump when the tank is filled.
- Close the venturi supply hose valve at the pump discharge manifold.
- Disconnect the suction hose, drain and clean the filter, then stow the hose.



*Figure 9 – Quick Fill Unit*

## Clean-up and Decontamination

After use, the TopCrop sprayer unit must be thoroughly decontaminated inside and outside – including the pump, hoses and spray gun – to avoid damage to crops from any harmful spray residues. Decontamination also prevents sprayer corrosion and abrasion.

Cleaning the TopCrop sprayer should be undertaken at a carefully chosen site, away from any risk of spillages draining into watercourses or into environmentally sensitive areas.

The recommended decontamination procedure is as follows:



**NOTE! Suitable PPE must be worn by the operator when cleaning and decontaminating the TopCrop sprayer. Follow the instructions provided with the chemicals or the applicable Safety Data Sheet.**



**WARNING! Ensure the cleaning area is in an open, well ventilated space, and any flushing water is captured to prevent runoff into watercourses or into environmentally sensitive areas.**

- After spraying operations are complete, drain any residual fluid via the bung located at the bottom of the tank. Capture and dispose or store any fluid in accordance with environmental and work safety requirements.
- Rinse out the tank with several changes of water, plus a recommended cleaning fluid. Where it can be reached internally, use a brush to scrub the inside of the tank.
- Operate the TopCrop sprayer with clean water, using the TopCrop hose or hoses (as applicable), to ensure no chemical residue remains.
- Unscrew the suction filter cover and remove the filter screen and gasket. Soak the filter screen in clean water, brushing carefully with a nozzle brush. When re-assembling, ensure the gasket is in position.
- Ensure that the tank's basket strainer is free from chemical residue or debris.

If the TopCrop sprayer is to be stored for an extended period, thoroughly clean and decontaminate the unit as described above. Ensure it is allowed to dry, the tank and all lines are empty and not pressurised, then store it in a well ventilated area.

## Maintenance

Your TopCrop Field Sprayer requires minimal maintenance but regular cleaning and checks will ensure safe and reliable service over its lifetime. Periodic checks and inspections will identify any potential issues, enabling timely rectification and minimising downtime.

### Periodic Checks

- The following checks and cleaning operations should be undertaken on a regular basis (at least annually). The frequency of these activities will depend on the nature of the operating environment and the operational hours of the TopCrop sprayer.
- Clean the unit and inspect it for any signs of damage or wear. Replace any safety labels if they are damaged or illegible.
- Check all fittings are firmly secured, tighten if necessary.
- Unwind the hose from the reel fully to check that hose is in good order. Pressurise the line and check operation of spray gun nozzle. Rewind the hose onto the reel, ensuring it retracts all the way.
- Check the pump's engine oil level weekly. Top up if required.
- Check for any signs of fuel or oil leaks around the engine. If detected, investigate and rectify.
- Check the engine fuel line filter, clean or replace as necessary.
- Clean the engine's air filter regularly, especially if working in a dusty environment.
- Check all electrical cables and fittings for any sign of damage.
- If the TopCrop sprayer is to be stored for an extended period, thoroughly clean and decontaminate the unit as described above. Ensure it is allowed to dry, the tank and all lines are empty and not pressurised, then store it in a well ventilated area.



## Maintenance Tasks

The following tasks must be undertaken on a periodic basis to ensure your TopCrop sprayer's ongoing reliability.

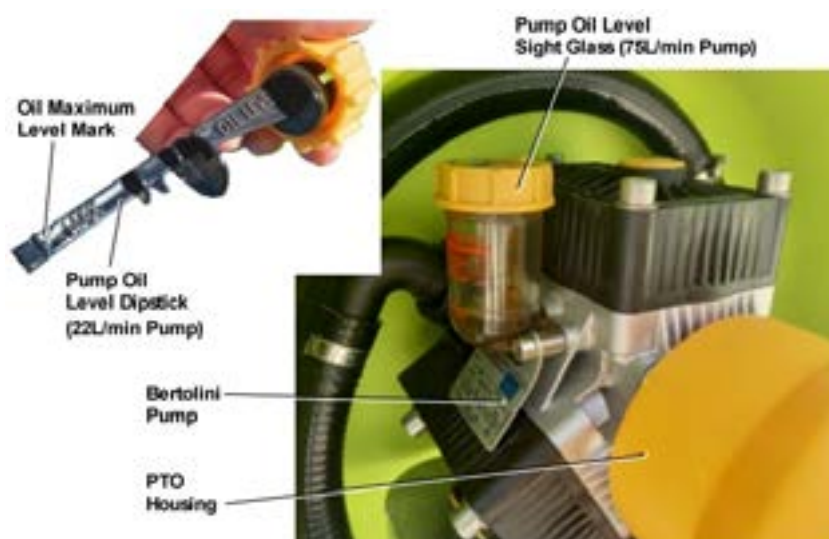


**CAUTION!** In dusty, dirty or smoky environments, cleaning, inspection and servicing of the unit on a regular basis is essential. The cleaning, inspection and servicing must be undertaken more frequently in harsh conditions to avoid damage or destruction of equipment.

The frequency of these activities will depend on the nature of the operating environment and the operational hours of the TopCrop sprayer unit but as a minimum, the following tasks should be undertaken annually.

### Pump System

- Refer to the supplied pump manual, drain and replace the engine oil in accordance with the manufacturer's recommendations.
- Clean engine's air filter regularly, especially if working in a dusty environment.
- At the rear of the pump, adjacent to the tank, unscrew the suction filter cover and remove the filter screen and gasket. Soak the filter screen in clean water, brushing carefully with a nozzle brush. When re-assembling, ensure the gasket is in position.
- Refer to the pump manual (downloaded via link on supplied data sheet), drain and replace the pump oil in accordance with the manufacturer's recommendations (refer to Figure 10).
- Replace the pump's check valves and diaphragms in accordance with the manufacturer's recommendations.



*Figure 10– Bertolini Pump – Checking Oil Level – 22 and 75 L/min versions*

## Maintenance Schedule

The following tasks are to be conducted in accordance with each of the schedules. All scheduled tasks are to be undertaken concurrently. For example, at the three month maintenance interval, all tasks listed are to be undertaken, in addition to the daily, weekly and monthly tasks.





**NOTE! Maintenance is important. Keep a record of all maintenance tasks conducted on the TopCrop sprayer unit.**

TTi recommends photocopying these schedules in order to keep a detailed log of all maintenance tasks. A copy of these schedules will be required to support any warranty claim.

### Daily Tasks

The following tasks are to be undertaken daily, or prior to each use, of the TopCrop sprayer.

No.	Task	Notes
1	Inspect the TopCrop sprayer for any signs of damage or wear	Clean, repair or replace
2	Check the optional SuperReel's Anderson plug connection	Test function
3	Check the optional Compact Spray Boom's solenoid valve's control cable	Test function
4	Check fuel	Top up as required
5	Inspect engine's air filter and housing for dust	Clean, replace as necessary

### Weekly Tasks

The following tasks are to be undertaken each week or 10 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily tasks		
2	Remove and clean the engine's air filter		
3	Check engine oil level, top up as required		

### Monthly Tasks

The following tasks are to be undertaken each month or 20 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily and Weekly tasks		
2	Check hose and hose reel by unwinding fully, replace replacing seals and nozzles as required		
3	Check securing system used to fastener unit to vehicle		
4	Check guards and fairlead rollers on the optional SuperReel		
5	Check the hose reel or optional SuperReel bearings for any noise or friction monthly.		
6	* Change pump engine oil (and filter, if fitted) (first change, thereafter every six months or 100 operating hours)		

### Three Monthly tasks

The following tasks are to be undertaken each month or 20 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily, Weekly and Monthly tasks		
2	Inspect the air filter, replace if clogged or damaged		
3	Check all hoses, fasteners, nozzles and fittings		

### Six Monthly Tasks

The following tasks are to be undertaken every six months or 100 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily, Weekly, Monthly and 3-Monthly tasks		
2	Change engine oil (and filter, if fitted)		
3	Inspect spark plug		

### Twelve Monthly tasks

The following tasks are to be undertaken every twelve months or 200 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily, Weekly, Monthly, 3-Monthly & 6-Monthly tasks		
2	Replace the engine's air filter		
3	Drain and flush the fuel tank		
4	Replace the engine's fuel filter		
5	Replace the spark plug		
6	Replace the optional SuperReel remote control battery annually		
7	Replace the drive belt annually		
8	Inspect the drive motor annually		

### Two Yearly Tasks

The following tasks are to be undertaken every 24 months or 500 operating hours, whichever occurs first.

No.	Task	Date	Signed
1	All Daily, Weekly, Monthly, 3-Monthly, 6-Monthly and 12-Monthly tasks		

## Optional SuperReel Remote Control Pairing

In the event that the remote control unit is lost or damaged, a replacement can be ordered by contacting TTI on 1800 816 277. The replacement unit will be configured for the SuperReel but the operator will need to pair the new remote control unit with the SuperReel. Pairing is the process to obtain a unique assignment between the remote control unit and the SuperReel.

The pairing process can be undertaken on site as follows, refer to Figure 11:



**NOTE! Check that the battery in the remote control unit is in good condition.**

- Retract a few metres of hose from the SuperReel, to enable testing once the pairing process is completed.
- Remove the back cover of the SuperReel by removing the six M6 screws.
- Lay the back cover down beside the reel, the power supply will still be connected to the reel's motor.
- Remove the four screws on the electrical box cover, then unscrew the receiver unit and check that all switches on the receiver's 12-way dip switch are set to OFF.
- Press and hold the program button on the receiver.
- Press the remote control unit's button for 2 seconds. The receiver's LED will flash and then turn GREEN.
- Release the buttons on the receiver and the remote control unit.
- Press the remote control unit's button to test the receiver's output. The hose should commence to wind in.
- Reinstall the receiver unit, the electrical box cover and the back cover in reverse order to removal.
- Fully retract the hose onto the SuperReel, allowing enough slack to place the spray gun into its holder.



**Figure 11 – SuperReel Remote Control Pairing**

# Troubleshooting

If a fault develops with your TopCrop sprayer, the following trouble shooting tables provides guidance to identify and rectify the problem.

## TopCrop Sprayer Pump

Problem	Possible Cause	Remedy
Pump will not prime	Insufficient motor speed	Increase motor speed
	Air leak on suction line	Tighten or replace fittings
Pressure drops under load and pump is noisy	Insufficient motor speed to prevent clutch slippage	Increase motor speed
Pressure drops or fluctuates during operation	Suction line restriction	Remove restriction
	Pump sucks air	Tighten or replace fittings
	Residue on valves	Disassemble and clean valves, replace any broken valve springs as necessary
No pressure	Residue on valves	Disassemble and clean valves, replace any broken valve springs as necessary
	Broken regulator spring	Replace regulator spring

## SuperReel (Optional)

Problem	Possible Cause	Remedy
SuperReel does not wind	ON/OFF switch not turned on	Check switch
	ON/OFF switch faulty	Check/replace ON/OFF switch
	Fuse blown	Check/replace fuse
	Loose electrical connections	Check battery and connections
	Manual switch faulty	Check manual switch
	Loose/broken drive belt	Adjust or replace drive belt
	Seized bearings on reel shaft	Replace bearings
Remote does not operate at distance	Damaged aerial or lead	Repair or replace aerial or lead
	Battery flat	Replace battery
Remote does not operate	Remote not paired with the receiver	Pairing required, refer to Pairing Instructions
	Battery flat	Battery replaced in remote
	Faulty transmitter/receiver	Return to TTI for repair or replacement

## Risk Assessment

Task	Hazard	Risk	Control Measure/Mitigation
Check weather conditions	Manual handling; slips, trips or falls	Low	<ul style="list-style-type: none"> <li>Wear PPE as per chemical requirements SDS – coveralls, gloves, safety footwear, glasses &amp; respirator</li> <li>Follow safe manual handling techniques: don't lift on your own if &gt;20kg, bend knees &amp; keep back straight.</li> </ul>
Mix chemicals (if applicable) and fill spray tank	As above, spray drift, chemical spillage, emission of vapours or flammability: weather, untrained visitors	Medium	<p>As above;</p> <ul style="list-style-type: none"> <li>User trained in relevant chemical mixing &amp; administration course, e.g, Chem Cert;</li> <li>Follow relevant Environmental Protection Authority requirements;</li> <li>Fire extinguisher nearby;</li> <li>Keep visitors away from job location unless wearing full PPE.</li> </ul>
Check the Spray Unit and carry vehicle is safe before use, i.e. where applicable: - wheel nuts, tire pressure, bearings, tow hitch, etc. Use spray unit as per instructions in manual	As above; loss of load; heat & cold; noise; exceed load limit of vehicle; hose entanglement; exhaust fumes; terrain & slopes;	High	<p>As above;</p> <ul style="list-style-type: none"> <li>wear clothes to suit heat &amp; cold;</li> <li>Wear hearing protection if noise &gt;85 dBa;</li> <li>Follow the manufacturer's safe operation instruction for the vehicle and the spray unit</li> <li>Don't overload - water weighs 1kg for every 1 litre</li> <li>Secure load to vehicle;</li> <li>Keep hose tidy;</li> <li>Put unit brakes on.</li> </ul>
Clean up, maintenance & storage	As above	Low	<p>As above;</p> <ul style="list-style-type: none"> <li>Continue to wear PPE for clean up;</li> <li>Store unit in a dry, well ventilated area.</li> </ul>

# Warranty

## Warranty Policy

TTI will, at its option, repair or replace without charge any part covered by this warranty which is found to be defective in material and/or workmanship within one (1) year after date of sale to the original retail purchaser. If the product is used for rental purposes, this warranty is limited to ninety (90) days.

Upon request, the customer will make the defective part available for inspection and/or return the defective part to TTI, transportation charges prepaid. All parts and components are covered by this warranty except the following, which are warranted separately by their respective manufacturers:

- engines
- gearboxes
- pumps
- regulators.

TTi does not assume any warranty obligation, liability or modification for these items, which are covered exclusively by the stated warranty of the respective manufacturers.

## What this Warranty Does Not Cover?

### This warranty does not cover:

1. defects caused by depreciation or damage caused by incorrect mounting, normal wear, accidents, improper maintenance, improper use or abuse of the product, alterations or failure to follow the instructions and warnings provided.
2. Any charges for making service calls, clean up time and transport charges.
3. The use of non-genuine parts on equipment supplied by TTI. This will automatically negate any warranty.

## How to Obtain Service Under this Warranty?

Warranty service can be arranged by contacting your dealer, or by contacting TTI directly on 1800 816 277.

Proof of warranty registration and date of purchase may be required to verify warranty coverage. Any defective parts returned to TTI must be accompanied by a Return Goods Note. This form can be obtained by contacting Product Support on 1800 816 277 or emailing [ProductSupport@tti.com.au](mailto:ProductSupport@tti.com.au).

## Warranty Limitations

Warranty limitations are as follows:

1. There is no other express warranty. Any warranty that may be implied from this purchase including merchantability and fitness for purpose is hereby limited to the duration of this warranty and to the extent permitted by law. Any and all implied warranties are excluded.
2. TTI will not be liable for any incidental, consequential or special damages and/or expenses in connection with the purchase or use of this equipment, to the extent permitted by law.
3. Only the warranty expressed in this limited warranty shall apply and no dealer, distributor or individual is authorised to amend, modify, or extend this warranty in any way. Accordingly, additional statements, whether oral or written, do not constitute warranties by TTI, and should not be relied upon.











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**1800 816 277**

**sales@tti.com.au**

PO Box 137, Nathalia, VIC, 3638

Murray Valley Hwy, Nathalia, VIC 3638

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