

ENDURASPRAY

A Division of ENDURAMAXX

200, 300 and 400 Litre Pro
Series 12 Volt Skid Mounted
Sprayers without Hose Reel
Operators Handbook

Think Sprayer
Think ENDURASPRAY



Product helpline 01778 562810

www.enduraspray.co.uk



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**READ YOUR OPERATOR'S HANDBOOK CAREFULLY BEFORE MOUNTING AND USING YOUR SPRAYER.
KEEP YOUR HANDBOOK IN A SAFE PLACE.**

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INTRODUCTION

Congratulations on your purchase of a Enduraspray Pro Series 12 Volt Skid Mounted Sprayer which is complete and ready to hitch to your vehicle. You need to read carefully and take note of the following warnings before attempting to operate or install this sprayer.

Failure to comply with these warnings may result in serious injury or death.

Warnings

Handle Assembly

1. When fitting to any vehicle ensure that you have read the Vehicle Owner's Manual and that you comply with all the weight restrictions as specified by the vehicle Manufacturer, as overloading can cause injury or death. Remember that 1 litre of water weighs 1 kilogram.
2. To ensure your own safety and that of your employees if applicable you must comply with all relevant environmental, work place, health & safety legislation and codes of practice.
3. Exercise extreme care when operating in hilly or uneven terrain to ensure proper stability and braking ability. Refer also to the vehicle manufacturer's operating and safety instructions.
4. Select and wear appropriate Personal Protection Equipment in accordance with the label of the product you intend using and your own safe work practices.
5. Care should be taken if using your trailer for spraying in windy conditions as spray drift may contaminate the air and may affect the operator or damage adjacent non target vegetation.
6. Once the spraying operation has been completed, decontaminate the spray tank and spray accessories. Dispose of tank rinsings in compliance with current environmental, work place health and safety regulations.
7. Personal Protection Equipment must still be worn while decontaminating your sprayer as per warning at 4 above.
8. Improper or careless use of this trailer can cause serious injury or death. Minors should never be allowed to use this sprayer.
9. You must be in good mental health to operate this sprayer and not be under the influence of alcohol or any drugs that could impair your vision, physical strength, dexterity, judgment or other mental capacity.
10. Do not point spray gun at any part of the human body. Do not pump flammable liquids or operate the pump in an explosive environment.

Product Information Risk Assessment Sheet

| | TASK | HAZARDS | RISK | CONTROL MEASURES |
|----|--|--|--------|---|
| 1. | Partially fill the tank with water, connect the battery or motor (whichever is applicable) and test the spray unit | Manual handling; slips, trips or falls; fingers jammed; electric shock or electricity | Medium | Concentrate on task; follow safe manual handling techniques: Don't lift on your own if >20kg, bend knees and keep back straight; keep fingers clear; keep unit at least 8m away from overhead power lines; ensure AS 3760: 2001 Testing Electrical Equipment applies; water away from electrical sources |
| 2. | Check weather conditions and select the appropriate PPE to suit the chemicals to be used | Manual handling; slips, trips or falls | Low | Put on PPE as per the chemical requirements in the Material Safety Data Sheet – coveralls, gloves, safety footwear, glasses and respirator; follow safe manual handling techniques: Don't lift on your own if > 20kg, bend knees and keep back straight |
| 3. | Mix chemicals and fill Spray Tank units | As above; spray drift, chemical spillage, emission of vapours or flammability; Weather; untrained visitors | Medium | As above; user trained in the state's chemical mixing and administration course eg. Chem Cert; follow the relevant Environment Protection Authority requirements; fire extinguisher present; keep visitors away from the job unless wearing full PPE |
| 4. | Check that transport vehicle is safe before use, ie. Where applicable: wheel nuts, tyre pressure, bearings, tow hitch, has been serviced, etc. Off road use only | As above; loss of load; heat and cold; noise; exceed load limit of ATV vehicle/trailer; hose entanglement; exhaust fumes; terrain and slopes | High | As above; wear clothes to suit heat and cold; wear hearing protection if noise > 85dBA; check straps; follow the manufacturer's safe operation instructions for the vehicle, trailer and the spray unit; don't overload water weighs 1kg for every 1 litre; secure load; keep hose tidy |
| 5. | Clean up, maintenance and storage | As above | Low | As above; continue to wear PPE for clean up; store unit in dry, well-ventilated area |

Operating Instructions

The Enduraspray Pro Series 12 Volt Skid Mounted Sprayers have been designed for the application of agricultural chemicals to plants and may be used with a handgun or in conjunction with a boom.

Before Use

Check all hoses, connections and hose clamps to ensure that the unit has been delivered to you without transportation loss or damage.

Before attempting any spraying with your new unit, partially fill with water and operate it to familiarize yourself with its features and capabilities and to ensure that your unit has arrived in a safe working condition.

Please contact your dealer immediately should anything appear to have been damaged.

Connecting to 12 Volt DC Supply

The Sprayer requires a 12 volt DC power source. A 2 metre loom is provided with the sprayer to allow the sprayer to be connected to the 12 volt DC source available. The red wire is positive and the black is negative. If you extend the wire, use wire of the same gauge or larger. An on/off switch is fitted to the sprayer control box to allow the sprayer to be switched off from the 12 volt DC source to prevent accidental drain of power. The switch also allows the pump to be shut down when the tank is empty preventing overheating and damage to pump. An in-line fuse is fitted to prevent any potential damage to the electrical system of the vehicle. Consult your vehicle instruction manual for correct electrical connection.

Fitting Instructions

It is recommended that the sprayer be securely attached to any ATV or other vehicle. Refer to manufacturer's instructions for appropriate load limits and fitting positions.

Note: 1 litre of water = 1kg.

Never fill spray tank to a capacity beyond the specified overall weight limits set by your vehicle manufacturer. When fitted these should be firmly secured to approved attachment points on the ATV or other vehicle.

Mixing, Filling and Spraying

Mixing and Filling

The following steps are given as a guide for mixing and filling the sprayer.

1. Read the product label and follow the instructions carefully, taking special note with regard to the order in which the products are added to the tank.
2. Half-fill the spray tank with water only and commence agitation by following these steps:
 - Turn regulator valve knob in anti-clock wise direction to reduce pressure to "0" bar
 - Commence pumping and fluid circulation
 - Measure the correct quantity of pesticides, using clean measuring jugs used only for this purpose and add to the spray tank while still agitating
 - Rinse out the measuring jugs and empty containers and pour all rinsings into the spray tank
 - Top up the spray tank with clean water to the required level
3. Your spray tank has now been correctly filled and the product thoroughly mixed, spraying can now commence.
4. To commence spraying close the spray gun or boom and turn the adjustment knob in a clockwise direction to the desired pressure and operate sprayer.

Spraying

For effective spraying ensure you have taken the following factors into account

1. Work Rates

- Speed of operation
- Water points or nurse tanks
- Rate of travel
- Swath width
- Spray volume applied

2. Wind and Drift

- Wind Speed
- Wind Direction
- Airspeed at boom height (Avoid spraying on still warm days as convection currents may cause drift in unpredictable directions. Optimum wind speeds are between 3km/h to 7km/h)
- Wind direction and drift is controlled by:
 - Reducing nozzle height
 - Reducing pressure and using larger nozzles
 - Fit low-drift nozzles producing larger droplets

3. Field Diagram

Swath marking and spraying

- Mark out to ensure proper pass matching – use flags, foam markers or tramlines
- Where large obstructions exist in the middle of an area to be sprayed, mark out and spray the area like a separate headland
- The perimeter of the field should be sprayed first. The width of two swaths will give adequate turning space at the ends of spray runs
- Never spray while turning

4. Speed

Maintain a constant speed when spraying. Should you need to increase your spraying speed, larger delivery nozzles must be fitted. Re-calibrate as required.

Sprayer Decontamination and Maintenance

Sprayer Decontamination and Maintenance

1. After use, the sprayer must be thoroughly decontaminated, inside and outside – including pump, hoses, boom and hand lance, to avoid damage to crops from harmful spray residues. Decontamination prevents sprayer corrosion and abrasion. As a guide follow the decontamination procedure below.
 - After spraying, rinse out the tank with several changes of water plus a recommended cleaning fluid, brushing the inside of the tank
 - The suction filter mounted on the sprayer frame must be cleared regularly. Unscrew the filter cover and remove the filter screen and gasket. Soak in clean water, brushing with a nozzle brush. Ensure gasket is in position when re-assembling
 - The filter basket strainer is removed by lifting it out of the filter ring. Clean the basket strainer the same way as the suction filler. Replace the basket strainer by exerting a quick downward push ensuring the strainer has seated correctly
 - Nozzles, nozzle filters, nozzle caps and gaskets should be cleaned by soaking in water, brushing with a nozzle brush and allowed to dry. Never blow through the nozzles with your mouth nor use wipe or pins to clear any blockages. When re-assembling, ensure that the nozzle cap gasket is correctly positioned when reassembled.
2. When storing the sprayer, ensure that it is clean and dry and kept in a ventilated place.
3. If heavy frosts are experienced, run the pump to make sure pump and spray lines are dry. This will prevent water freezing in the pump or spray lines and damaging sprayer.

Calibration and Procedures

Calibration

Accurate calibration is an essential element of any spraying function as it ensures that the pesticide is applied at the rate on the product label. Application in excess of the recommended rate is prohibited, can damage crops and is uneconomical.

Calibration must always 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 speed
- After every 100 hectares of spraying

When calibrating a sprayer, a minimum of coverall, gloves and boots must be worn. A face shield and PVC apron may be included depending on the task and the cleanliness of the sprayer.

Calibration Procedures

The following table gives a step by step guidance on the standard method of sprayer calibration.

Boom Sprayers Hydraulic Nozzles Example

| | | |
|-----------------------------|---|---|
| Read the LABEL | Spray VOLUME Product Dose Spray QUALITY | 200 litres / hectare 50 litres / hectare Medium |
| Measure TIME per 100 Metres | Measure time in seconds over land similar to that to be sprayed | 41.9 seconds |
| Calculate SPEED | $SPEED = 360 \text{ divided by } \frac{TIME}{\text{seconds}}$ Km/h | $360/41.9 = 8.6\text{km/h}$ |
| Measure nozzle SPACING | Normally 0.5 metres (50cm) | 0.5 metre |
| Measure TIME per 100 Metres | $OUTPUT = \frac{VOLUME \times SPEED \times SPACE}{600}$ litres/min litres/hectare km/h metre | As above; continue to wear PPE for clean up; store unit in dry, well ventilated area. |
| Select NOZZLE | Refer to nozzle manufacturers data charts or other sources and select the size and type of nozzle that will produce the calculated OUPUT and required spray QUALITY | As above; continue to wear PPE for clean up; store unit in dry, well ventilated area. |

WARRANTY PARTS SERVICE

Your Enduraspray Pro Series 12 Volt Skid Mounted Sprayer is guaranteed free from defect in materials, workmanship or manufacture for 12 months from the date of purchase. Any parts which appear to us to be defective either in material or workmanship will be replaced or repaired at no cost to the purchaser, subject to the following conditions:

1. The guidelines in this handbook have been adhered to in every respect.
2. In the unlikely event of sprayer failure, this should be reported to your dealer who will act on your behalf to resolve the issue to your satisfaction.
3. Any defective parts will be returned by your dealer within 7 days of failure, together with a report describing the failure and conditions in which the failure occurred.

The following are specifically excluded from the terms of warranty:

- Fair wear and tear to pump moving parts and diaphragms
- Fair wear and tear to nozzles and nozzle bodies
- Damage caused by neglect or lack of lubrication
- Damage caused by misuse or abuse
- Damage caused while the sprayer is in transit

If you have any questions regarding the operation or warranty of this product, please contact us direct:

Telephone: **01778 562810** | Email: **enduraspray@enduramaxx.co.uk** | **www.enduraspray.co.uk**
Enduramaxx Limited | Outgang Road | The Fen | Baston | PE6 9PT