



## IMPORTANT USER GUIDANCE TORNADO P2: MINI BOWSER + PRESSURE WASHER

READ THESE INSTRUCTIONS BEFORE USE

**GENERAL:** The Tornado P2 is a trolley mounted pressure washer equipped with a 150 litre water tank, high-pressure pump, 30 metre reel-mounted high pressure hose and jetwash lance. A recoil-start Honda petrol engine powers the pump - delivering 13 L/min at 2200psi / 150 bar.



The tank can be filled through the lid or by coupling a hose to the refill valve on the side of the tank. The Tornado is narrow enough to pass through a standard door and may be filled in advance before wheeling it to the required location - helpful where there is no water supply. Envirogard's hire units come with a 30m hose - useful where access is tight or space constraints are limiting. A chemical pick-up also allows cleaning / foaming agents to be added in-line.

**PRE-USE CHECKS / FILLING:** Visually inspect the trolley, water tank, engine, pump, hose, reel and jetwash lance before use; if damaged do not use – contact the supplying hire depot.

Check the lubricant level of the gear box, the high pressure pump and the Honda engine; replenish as necessary. Ensure there is petrol in the fuel tank; replenish fuel while the engine is cold.

Ensure there is water in the tank before starting the engine – dry-running will damage the pump. To fill the water tank locate the Mini-Bowser on a level surface capable of supporting the equipments weight - 240kg once filled. Apply the castor brake; use wheel chocks if ground conditions are poor.

Open the water tank and check the gauze water filter inside the tank is not blocked (see image right), then return filter to the tank.

Either connect a hose to the tank coupling marked “Automatic Fill”, or fill through the tank lid. When the tank is full secure the lid closed; the trolley may be wheeled to another location if required.

Unlock the hose reel, deploy the length of hose required and connect the jetwash lance using the quick coupling.

### OPERATING INSTRUCTIONS:

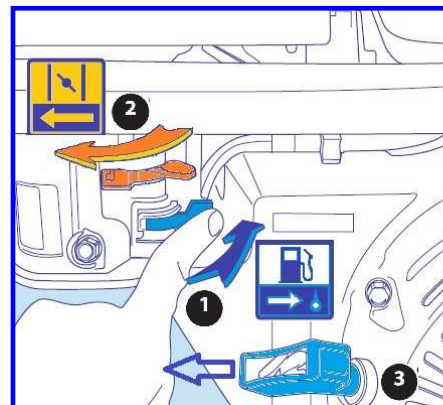
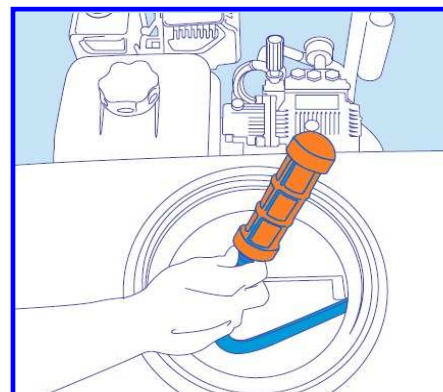
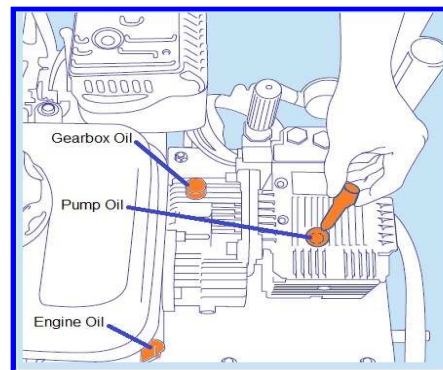
Rotate engine switch to “ON” then:

1. Push the fuel lever to “Open”.
2. If this is the first use of the day slide the choke lever to “ON”.
3. Pull the recoil to start the engine.

Once running gently return the choke lever to the “OFF” position.

4. To flush any air in the system squeeze the jetwash lance's trigger until water flows freely from the nozzle.

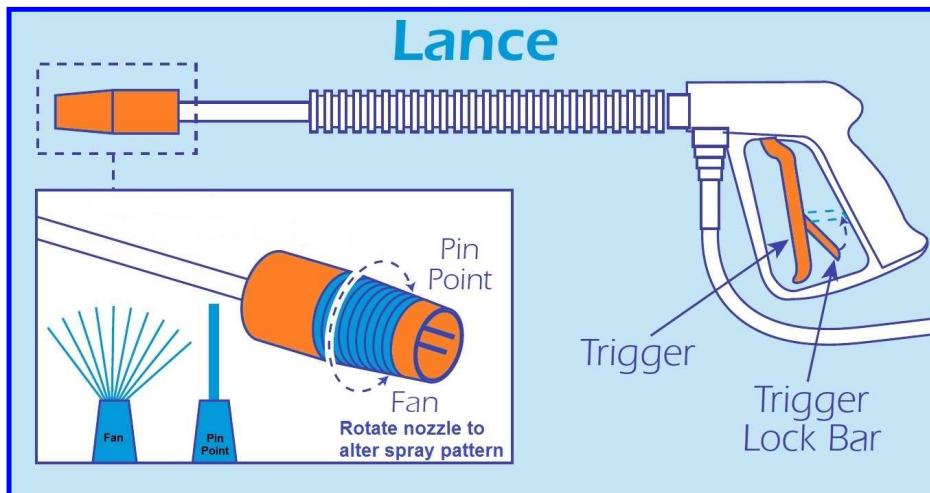
5. Set the engine throttle control to “Fast”. The unit is now ready to begin work.



6. Hold the lance firmly in **both** hands when squeezing the trigger -it will “kick back”.

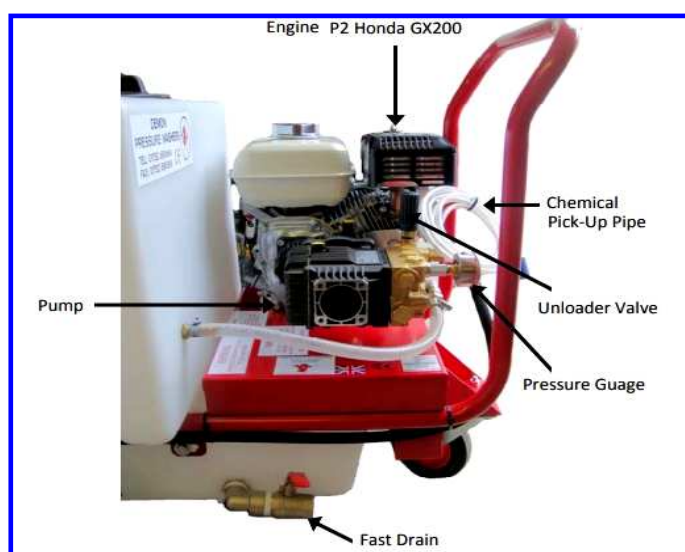
Use only the hose, lance and nozzle supplied with the machine; never attempt to connect / disconnect these while they are pressurised.

If you are not using the lance for 5 minutes or more – **STOP the machine.** The pump will overheat if it is left to run with no water passing through it !!!



Spray Pattern is adjustable from Pinpoint to Fan spray by rotating the lance nozzle (see above).

Spray Pressure can be adjusted by rotating the Unloader Valve at the high pressure pump; a gauge on the pump displays the delivered pressure. Pressure can also be adjusted on the lance by rotating the nozzle between Pinpoint jet (high pressure) and Fan spray (low pressure).



If you wish to **Spray Detergent** place the chemical pick up pipe in a detergent container and rotate the lance nozzle to **low** pressure; when you trigger the lance detergent will now automatically be drawn into the system.

You adjust the ratio of detergent-to-water by rotating the lance nozzle - towards Fan spray will increase the amount of detergent, towards Pinpoint jet will decrease the amount of detergent.

To jetwash **without** detergent simply increase the pressure at the spray nozzle, or remove the pick-up pipe from the detergent container; no more detergent will be drawn in and residue in the line will soon clear.

7. **TO STOP:** reduce engine speed to idle then turn the engine switch to “OFF”; when the engine has stopped move the fuel lever to “Closed”. Dissipate any residual pressure in the machine by activating the trigger of the jetwash lance.

Ensure this equipment is protected from frost at all times – empty the tank and hoses of residual water. Store in a frost free environment under cover.

When you have finished with the equipment empty the tank of ALL water – there is a low level drain in the tank to facilitate this. Wind the H.P. hose onto the reel, ensure the hose-reel lock is engaged, the jetwash gun is secure, and the lance is in its holder. Clean the equipment thoroughly prior to returning it to the supplying hire depot.



Noise



High Pressure Water



Wear Hearing & Eye Protection

#### **TECHNICAL:**

**DIMENSIONS:** Trolley Length 1170mm Width 660mm Height 870mm Mass: Empty 78 kg, Full 228 kg.

**ENGINE:** Honda GX200 4.1kW Petrol, recoil start; fuel tank 3.1 litres; engine oil SAE10W30.

**PUMP:** Max Flow 13 litres/min @ 150 bar / 2200 psi, pump oil SAE10W30, gearbox oil EP90.  
Output : to 30m Jetwash hose on reel.

## **CAUTIONS / WARNINGS**

**IN CASE OF EMERGENCY: TURN THE ENGINE SWITCH TO “OFF” TO STOP MACHINE  
PRESS JETWASH TRIGGER TO DISSIPATE RESIDUAL PRESSURE.**

**IF NOT USING THE TORNADO - STOP THE ENGINE WHEN LEAVING IT UNATTENDED.**

This equipment is mobile and can be used and located in many different environments. Users are therefore reminded of the need to ensure that all tasks and locations are risk assessed before activity commences to ensure that all significant hazards are identified with appropriate precautions put in place.

The Tornado Jetwash is not designed nor intended for use in explosive or flammable atmospheres. The petrol engine will generate exhaust fumes; the machine should be located in well-ventilated areas where exhaust fumes are able to safely disperse.

This equipment is designed for high pressure cleaning (150 bar). This equipment ejects water at high velocity and water jets are dangerous if misused. The jet/spray must not be directed at people, animals, the machine itself, non-waterproof, fragile or electrical equipment, nor power cables. Do not attempt to couple or un-couple tools, hoses or nozzles while the equipment is pressurised.

The equipment should be operated by an able bodied adult competent in the use of pressure washers up to 150 bar / 2200psi. This equipment must not be used by minors or anybody under the influence of drugs or alcohol. The work area should be demarcated and exclude other people from the jetwash spray zone.

Personal protective clothing must be worn. When operating the Tornado use an impact resistant visor or goggles and ear defenders as a minimum. Water jets can generate high noise levels and produce a high impact force, so when using the jetwash protective (waterproof) clothing, gloves and boots should be worn in addition. Some jetwash applications may generate an aerosol containing pathogens e.g. guano removal, the cleaning of animal by products etc; the user must assess whether RPE needs to be used in this situation.

The engine and pump generate noise and the level varies according to engine speed; the equipment has a Guaranteed Sound Power of LWAd 84dB. The jetwash lance is supplied with a 30 metre hose so where possible locate the machine away from the cleaning activity and persons who might be affected by the noise. Personnel obliged to work in close proximity to the machine must use hearing protection. If the machine is operating in a wholly or partially enclosed space from which noise cannot readily dissipate Users should consider conducting a noise survey to identify if extended mandatory hearing protection zones are required.

This equipment contains water - do not allow it to freeze !!! If the pump has frozen DO NOT attempt to start the engine; allow to thaw and inspect for damage before use. If possible store indoors during frost; if this is not possible you must introduce anti-freeze (25% solution) via the tank; operate the engine at low speed to draw it through the pump, hoses, lance and spray nozzles: this will protect down to approx – 5°C. Before next use flush with clean water and collect the antifreeze solution for re-use (do not dispose of antifreeze to the environment).

Legionella bacteria can grow at temperatures between 20°C and 45°C, particularly in dirty or contaminated water. For this reason always fill the bowser with cold, clean, potable (drinking quality) water only. If you will not be using the equipment for a few days drain the equipment of water. Before use always purge the equipment using clean water, operating the engine at low speed to minimise production of spray.

If ambient conditions are such that water temperature is sustained above 20°C consider treating the tank and flushing the equipment periodically with a sanitising agent such as Milton. The user's attention is drawn to HSE's guidance on Legionella ACoP L8; depending on your work environment and prevailing temperature it may be necessary for you to include the equipment within your Legionella management programme.

Fuel & Lubricant: petrol is flammable – take care not to cause a fire - top up fuel and check lubricant levels with the machine shut down and in a cold state. Lubricant levels should be checked DAILY.

**Ensure this equipment is protected from frost at all times – empty the tank and hoses of residual water. Store in a frost free environment under cover.**

**Clean the equipment thoroughly prior to returning it to the supplying hire depot.  
Equipment returned in a dirty or contaminated condition may be refused and will be charged.**



# **TROUBLE SHOOTING GUIDE:**

FAULT	CAUSE	ACTION
1. Knocking noise from pump.	Water starvation. Pump sucking in air.	Ensure that there is sufficient water in the tank. Check the hose couplings between the tank and the H.P. pump for leaks which might allow air to be drawn in.
2. Loss of pressure.	Water starvation.	Ensure that there is sufficient water in the tank.
	Pump sucking in air.	Check that the strainer is not blocked Check detergent inlet valve is closed Check the suction hose for leaks, which might allow air to be drawn in.
	Lance nozzle too large or missing or worn.	Check that the correct nozzle is fitted and is in good condition.
	High pressure water leak.	Examine the high pressure hose and fittings for leakage.
	Unloader not correctly set up.	Have unloader checked by a suitably equipped and trained engineer.
3. Pressure too high.	Pump speed too high.	<b>Stop engine immediately.</b> Restart at idle and reset engine speed.
	Lance nozzle too small or blocked.	Check that the correct nozzle is fitted and is in good condition.
4. Safety valve passing water.	Unloader not correctly set up.	Have unloader checked by a suitably equipped and trained engineer.
5. Engine shuts down suddenly or will not start.	Lack of fuel	Allow to cool and refill fuel tank
	Engine protection activated.	Check oil level.



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FOR MORE INFORMATION ABOUT OUR RANGE OF HIRE EQUIPMENT PLEASE SEE OUR WEBSITE [www.envirogard.co.uk](http://www.envirogard.co.uk)

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