MichaelStewart

PRESSURE WASHERS LTD

OPERATING INSTRUCTIONS

FOR PRESSURE WASHERS

Petrol and Diesel Washers

Supplied By:

Michael Stewart Pressure Washers Ltd
Lissue Industrial Estate East
14 Lissue Walk Lisburn
Co. Antrim
BT28 2RB

Tel: 028 92622303 Fax: 028 92622304

SPECIFICATION

**********IMPORTANT**********

IT IS ESSENTIAL THAT THIS INSTRUCTION MANUAL AND ENGINE MANUAL IS READ FROM COVER TO COVER AND THAT THE CONTENTS ARE FULLY UNDERSTOOD BEFORE ANY ATTEMPT IS MADE TO OPERATE THE MACHINE.

ONLY FULLY TRAINED AND SUITABLY QUALIFIED PERSONS MAY USE THE MACHINE AND IT MUST NOT BE USED WITHOUT PROPER AUTHORIZATION.

THE MACHINE PRODUCES WATER UNDER HIGH PRESSURE AND AS SUCH IS POTENTIALLY DANGEROUS IN OPERATION. THE HIGH PRESSURE JET MUST NOT BE DIRECTED AT ANY PERSON, ANIMAL OR ANY ELECTRICAL EQUIPMENT UNDER ANY CIRCUMSTANCES.

WARNING – WHEN USING THIS MACHINE

EYE AND EAR PROTECTION SHOULD BE WORN WHEN USING THIS EQUIPMENT.

TO REDUCE THE RISK OF INJURY, CLOSE SUPERVISION IS NECESSARY WHEN THE MACHINE IS USED NEAR CHILDREN OR ANIMALS.

KEEP THE WORKING AREA CLEAR OF PEOPLE AND ANIMALS.

KNOW HOW TO STOP THE MACHINE AND BLEED THE PRESSURE QUICKLY. BE FAMILIAR WITH ALL THE CONTROLS.

STAY ALERT, AND WATCH WHAT YOU ARE DOING.

DO NOT OPERATE THE MACHINE WHEN YOU ARE TIRED OR UNDER THE INFLUENCE OF ALCOHOL OR DRUGS (MANY FORMS OF MEDICATION CAN CAUSE DROWSINESS, CHECK WITH YOUR DOCTOR IF IN DOUBT).

DO NOT OVER REACH OR STAND ON UNSTABLE SUPPORTS, KEEP YOUR FOOTING AND BALANCE AT ALL TIMES. TRY NOT TO OPERATE THE MACHINE FROM LADDERS OR STEP LADDERS, IF THIS IS UNAVOIDABLE TIE THE LADDERS TO SOMETHING STABLE.

FOLLOW THE MAINTENANCE INSTRUCTIONS SPECIFIED IN THIS AND ANY OTHER MANUAL SUPPLIED.

DO NOT DIRECT THE STREAM OF WATER AT ANY PERSONS – THIS COULD RESULT IN SERIOUS INJURY.

ALL OPERATORS SHOULD BE AWARE OF THE LANCE REACTION FORCE.







PROCEDURES WHICH IF NOT STRICTLY OBSERVED MAY RESULT IN THE DAMAGE OR DESTRUCTION OF EQUIPMENT AS WELL AS THE POSSIBILITY OF PERSONAL INJURY OR THE LOSS OF LIFE.

UNPACKING [IF NECESSARY]

Please make sure that all the components from the following checklist are present and that they are undamaged.

1. The Machine.
2. The High Pressure Hose.
3. The Safety On/Off Trigger and Lance Assembly.
4. The Suction Hose Assembly. [IF APPLICABLE]

************IMPORTANT********** IF ANY OF THE ABOVE COMPONENTS ARE MISSING OR APPEAR TO BE DAMAGED PLEASE REPORT BACK TO YOUR SUPPLIER IMMEDIATELY AND DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO USE THE MACHINE.**

INSTALLATION

As a Mobile Unit the Machine may not be permanently sited. However, it must NOT be used in an enclosed space where there is a risk of Fire/Explosion or there are likely to be any other potential hazards.

*********ADEQUATE VENTILATION MUST BE PROVIDED*********

If adequate ventilation is not provided there is a risk of **Permanent Damage** to the machine as well as the possibility of **Serious Personal Injury.**

WATER CONNECTION

If the Machine is fitted with a High Speed Pump it can be used on Tap Pressure [Positive Pressure] or Suction [Negative Pressure]. However, if the machine is to be used on Suction [Negative Pressure] for prolonged periods it must be noted that premature seal wear is likely to result. To run on either of the above options please follow the instructions below:

TO USE THE MACHINE ON TAP PRESSURE [POSITIVE FEED]

A clean water supply with a minimum of 15.0 Lpm [3.3 Gpm] at a minimum pressure of at least 2 Bar [29 Psi] is required to run the machine. The Inlet Hose should ideally have an Internal Bore of 19mm [3/4"] at Minimum the Bore should be 13mm [1/2"].

TO USE THE MACHINE ON SUCTION [NEGATIVE PRESSURE]

To use the machine on Negative Pressure the Suction Hose Assembly supplied must be used. The Suction Pipe has a Bore of 19mm [3/4"]. The suction 'Head' must be kept to a minimum and **MUST NOT EXCEED** 610mm [2'0"]. And an **ADEQUATE AND CLEAN** Water Supply must be available.

YOUR DEALER MUST BE CONSULTED BEFORE ANY ALTERATIONS, MODIFICATIONS OR ADDITIONS ARE MADE TO THE MACHINE AND/OR ITS COMPONENTS. IT IS ALSO IMPORTANT THAT LOCAL WATER BYE LAWS ARE OBSERVED AT ALL TIMES.

PREPARING FOR COMMISSIONING

Having established that the Operator is fully aware of the contents of this Manual and the separate Engine Manual supplied with the Machine and that the position and function of the various controls are understood the following checks should be made.

1a. Is the Engine filled with oil of the correct specification SAE 20-50 and to the correct level? Check with Dip-Stick.

2a. Is the Engine Oil Bath Air Filter filled with Oil of the correct specification SAE 20-50 and to the correct level? (IF APPLICABLE)

3a. Is the Engine Fuel Tank filled with clean un-contaminated Fuel?

4a. Is the Gearbox filled with oil of the correct specification SAE 90 GEAR OIL and to the correct level as indicated by the Sight-Glass? [The oil level should appear exactly through the centre of the glass] this may be verified by Double-Checking with the Dip-Stick. (IF APPLICABLE)

5a. Is the High Pressure Pump filled with oil to the correct specification SAE 20-50 and level as indicated by the Sight-Glass? [The Oil Level should appear exactly through the centre of the glass] this may be verified by Double-Checking with the Dip Stick. (IF APPLICABLE)

6a. If Pneumatic Wheels are used are they correctly inflated? [See 'DAILY MAINTENANCE' Section].

7a. Are all the Nuts and Bolts Tight and Secure?

8a. Is there any evidence of damage to the machine or its equipment?

IF ANY OF THE ABOVE CHECKS REVEAL A POTENTIAL PROBLEM DO NOT USE THE MACHINE UNDER ANY CIRCUMSTANCES UNTIL THE FAULT(S) HAVE BEEN RECTIFIED AND THE MACHINE HAS BEEN VERIFIED AS BEING SAFE TO USE BY A SUITABLY

QUALIFIED PERSON. IF THESE CHECKS ARE NOT ADHERED TO THERE IS A RISK OF PERMANENT DAMAGE TO THE MACHINE AND A RISK OF PERSONAL INJURY TO THE OPERATOR.

If the above checks [1a – 8a] have been carried out and are deemed to be correct, proceed as follows:

1b. Site the machine **ON LEVEL** GROUND at the chosen position making sure that it is in a **NON HAZARDOUS** location with **ADEQUATE VENTILATION.**

2b. Connect the Water Delivery Hose from the Mains Water Supply [or Suction Hose] to the Lower Port of the machine with the Quick Release Fitting provided.

3b. Connect the High Pressure Hose Assembly complete with Safety On/Off Trigger and Lance to the machine with the Coupling provided.

4b. Connect the Chemical Pick-Up Pipe with Filter to the machine with the Nipple provided.

5b. Make sure that the Lance Assembly and all Fittings are securely tightened.

PUTTING THE MACHINE INTO OPERATION

Make sure that this Manual and the Engine Manual has been read from cover to cover and that the contents are FULLY UNDERSTOOD and that all the Controls and their positions are familiar to the Operator.
*********IF IN ANY DOUBT DO NOT ATTEMPT TO USE THE MACHINE*********

Proceed as follows if all the previous instructions have been followed:

1c. In the case of Tap Pressure turn the Water Supply ON. Or if the Suction option is to be used make sure that the Filter is **Completely Immersed in Clean and Un-contaminated Water.**

2c. Make sure that the Chemical Applicator on the end of the Lance is closed by turning it in a Clockwise Direction when viewed from the Trigger Gun. [THIS FACILITY IS SUPPLIED AS AN OPTION].

3c. Starting of engine – **SEE ENGINE MANUAL.**

4c. Grasp the Safety on/off Trigger and Lance **Firmly using Both Hands** and be ready for the "Recoil" when the Trigger is gently squeezed.

The Machine should now be operating at Full Pressure.

LOW PRESSURE CHEMICAL APPLICATION [OPTIONAL]

The Chemical Application Facility on the Machine is supplied as an Optional Extra and Not as Standard. If the Option is available please proceed as follows.

1d. Make sure that the Chemical Filter is totally immersed in the Chemical Container.

2d. Turn the Chemical Applicator on end of the Lance Anti-Clockwise when viewed from the Trigger Gun.

3d. The Small Control Knob situated on the Front Panel of the Machine will Meter the Volume of Chemical Anti-Clockwise for More and Clockwise for Less.

When the instructions [1d-3d] are observed Chemical will after a short delay be Automatically dispensed. To stop the Chemical simply turn the Chemical Applicator at the end of the Lance Clockwise. A short delay before the Chemical turns Off completely will be experienced – This is quite normal.

*******ONLY APPROVED CHEMICALS MAY BE USED IN THIS MACHINE*******
*******PLEASE CONSULT YOUR DEALER OTHERWISE SEVERE DAMAGE MAY RESULT*******

TAKING THE MACHINE OUT OF OPERATION

WHEN YOU HAVE FINISHED WITH THE MACHINE.

1e. If Chemicals have been used through the machine it is essential that it is flushed through with Clean Water until the residue has completely gone.

2e. Turn the Engine OFF - REFER TO ENGINE MANUAL.

3e. Turn the Water OFF at the Mains.

4e. Squeeze the Safety On/Off Trigger to release the Pressure in the High Pressure Hose. This will enable the High Pressure Hose and the Inlet Hose to be removed from the machine without difficulty.

*******THE MACHINE MUST NOT BE LEFT WITH PRESSURE IN IT*******
*****PERMANENT DAMAGE TO THE MACHINE AND/OR PERSONAL INJURY MAY RESULT*****

5e. Put the machine away in a Neat and Tidy Condition.

FROST PROTECTION

The best form of Frost Protection is to Store the Machine and Ancillary Equipment in a Warm and Dry Place. Where this is not practicable the following steps must be taken:

To perform this function it will be necessary to set the Machine up as described on Page 04 under the heading 'WATER CONNECTION' – 'TO USE THE MACHINE ON SUCTION [NEGATIVE PRESSURE]'.

Having observed the above and prepared the Machine as per Page 05 [1a-8a] and [1b-5b] substitute 1c [Page 06] for the following:

Prepare an Anti-Freeze solution Strictly to the Manufacturers Directions and Completely Immerse the Filter of the Suction Hose in it. Then run the machine as directed on Page 06 until the Anti-Freeze Solution can be seen at the High Pressure Jet. Then shut the Machine Down as described on this Page [1e-5e].

The Machine can be left in this condition and will be protected from Frost Damage.

The Anti-Freeze Solution may be reclaimed at the next usage but it must be remembered that the Solution will become more dilute and will require 'strengthening'.

******IF THE ABOVE RULES ARE NOT OBSERVED THERE IS A RISK OF PERMANENT**** ****DAMAGE TO THE MACHINE AND/OR THE ANCILLARY EQUIPMENT**** ****THERE IS ALSO A RISK OF PERSONAL INJURY******

GENERAL MAINTENANCE

To obtain the best results from your Machine it is essential that it is Maintained in Perfect Order. This will ensure a Prolonged Life and Improve Reliability.

The Engine must be maintained in Strict Accordance with the separate Engine Manual supplied with the Machine.

After the First 50 Hours of Use the Pump and Gearbox Oil must be changed. Both the Pump Oil and Gearbox Oil must be replaced every 500 hours thereafter through the Drain-Plug[s] provided. (IF APPLICABLE).

DAILY MAINTENANCE CHECKS

1f. Check the Engine and Air Cleaner Oil Level as shown in the separate Engine Manual.

2f. Check the Gearbox Oil Level referring to the Sight-Glass. (IF APPLICABLE)

3f. Check the Pump Oil Level referring to the Sight-Glass. (IF APPLICABLE)

4f. Check that all Nuts, Bolts, and Fittings are Secure and Tight.

5f. Check that the High Pressure Hose is Free from Cuts, Abrasions and Kinking.

6f. Check that there are No visible signs of Leaks of any description.

7f. If Pneumatic Tyres are fitted check that they are inflated Correctly to the specification written on the Side-Wall of the Tyre. The Tyres fitted as Original Equipment must not be Inflated to More than 24 Psi [1.6 Bar].

IT IS HIGHLY RECOMMENDED THAT THE MACHINE IS SERVICED REGULARLY WHICH WILL ENSURE A PROLONGED LIFE AND IMPROVE RELIABILITY – YOUR DEALER MUST BE CONSULTED IN THIS MATTER TO ARRANGE A REGULAR SERVICE SCHEDULE.

OTHER THAN VISUAL CHECKS AND SIMPLE 'TOP-UP' PROCEEDURES ONLY SKILLED AND FULLY TRAINED ENGINEERS MAY MAKE ADJUSTMENTS, ALTERATIONS OR REPAIRS TO THE MACHINE.

IF THERE IS ANY DOUBT WHATSOEVER ABOUT THE CONDITION OF THE MACHINE IT MUST NOT BE USED UNTIL VERIFIED AS BEING SAFE TO DO SO BY A SUITABLY QUALIFIED ENGINEER.

WARNING

The machine **Must Not** be allowed to **Run Dry** of water or **Permanent Damage** to the Pump and Unloading System will result.

Similarly the Machine **Must Not** be allowed to **Run** in the **'By-Pass'** Mode or similar **Damage will result.**

THE MACHINE MUST NOT UNDER ANY CIRCUMSTANCES BE LEFT RUNNING WHILST UNATTENDED AT ANY TIME. DAMAGE TO THE MACHINE AND THE POSSIBILITY OF PERSONAL INJURY MAY RESULT

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
Engine Will Not Start	No Fuel	Replenish Tank
The Engine Runs Erratically	Fuel Starvation	Replenish
	Fuel Contaminated	Replace Fuel Filter and Empty, Clean & Replenish Tank
Fluctuating/Low Pressure	Pump Sucking Air	Check Water Supply & Joints
	Valves Worn or Blocked	Replace or Clean
	Worn Seals	Replace
	Jet Partially Blocked	Clean/Replace
	Unloader Incorrectly Set	Re-Set
	Engine Speed Incorrect	Re-Set
Low Pressure after Prolonged Use	Jet Worn Out	Replace
	Seals/Valves Worn	Replace
Pump Noisy	Air in Pump	Check Joints
	Worn Bearings	Replace
Water in Oil	Oil Seals Worn	Replace
	Water Seals Worn	Replace
	High Air Humidity	Replace Oil More Often
Water Dripping from Pump	Water Seals Worn	Replace
	Ceramic Piston[s] Cracked	Replace
Oil Dripping From Pump	Oil Seals Worn	Replace

THIS TROUBLESHOOTING CHART IS ONLY A SIMPLIFIED GUIDE TO THE POSSIBLE CAUSES OF MACHINE DEFECTS AND IS NOT INTENDED AS A COMPREHENSIVE REPAIR GUIDE.

ONLY QUALIFIED SERVICE ENGINEERS SHOULD MAKE ADJUSTMENTS, ALTERATIONS OR REPAIRS TO THIS MACHINE OR SERIOUS DAMAGE AND/OR PERSONAL INJURY MAY RESULT FROM THE USE OF SUB-STANDARD MATERIALS OR POOR WORKMANSHIP.

WARRANTY

Michael Stewart Pressure Washers LTD warrants that its products are free from defects in materials and workmanship. If such a fault can be found within 12 months from the date of purchase from Michael Stewart Pressure Washer Ltd or an approved Dealer, the Company will replace free of charge all failed components.

This warranty does not include consumable item eg Hose or lance.
Any failed unit must, however, be returned to the premises of Michael Stewart Pressure Washers Ltd for inspection, **carriage not paid**. Michael Stewart Pressure Washers Ltd will despatch replacement parts free of charge.

Components of the machine which are not of our manufacture, ie engines, alternators, pumps, electric motors etc are subject to the warranty of the maker of those components and, therefore, not covered by this guarantee.

The warranty does not cover failure attributable to normal wear and tear, accidental damage, site or Operator misuse or abuse or lack of maintenance.