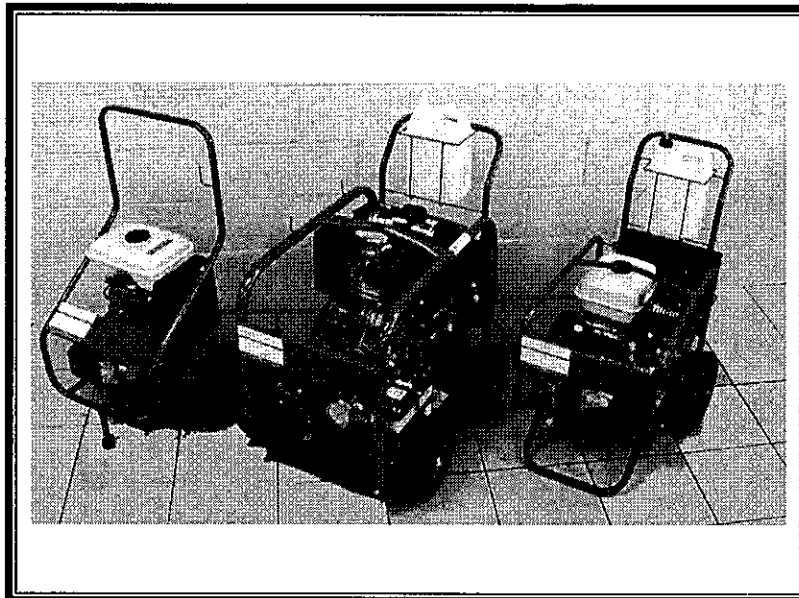


OPERATING AND MAINTENANCE MANUAL

DIESEL COLD WATER MODELS



HP 201DEH – HP2215DEL



Made By:

SPITWATER
AUSTRALIA

Spitwater Australia Pty Ltd
953 Metry St
North Albury, NSW, Australia

WARNING: **FAILURE TO FOLLOW OPERATING, SAFETY AND MAINTENANCE INSTRUCTIONS LISTED IN THIS MANUAL RELEASES THE MANUFACTURER FROM ANY RESPONSIBILITY FOR ACCIDENTS OR DAMAGES TO BOTH HUMANS AND OBJECTS AND MAY RENDER ANY WARRANTY VOID**

TECHNICAL DATA

Model			HP201DEH	HP221SDEL
Flow Rate		L/M/L/H	15-900	15-900
Pressure	Working	Bar-Psi	200-3000	220-3300
	EWE Rotjet	Bar-Psi	255-3825	275-4125
Max Inlet	Pressure	Bar-Psi	10-150	10-150
	Temperature	°C	50	50
Pump Motor	Power	KVA-P	6.6-9	8.1-11
	Make		HONDA	LOMBARDINI
	Tank Capacity	L	4.6	5
	Fuel Type		Diesel	Diesel
	Starting System		Electric Start	Electric Start
	Protection		Oil Guard	Oil Guard
Pump	Model		WS201	WS251
	Rpm		1450	1450
	Oil Capacity	l	1.2	1.2
	Oil Type	SAE	20-30	20-30
Hose Length	$\frac{3}{8}$ " N	M	10	10
Dimension	L x W x H	mm	920x630x860	920x630x860
Weight		kg	121	121

The Manufacturer reserves the right to modify design features and technical data without notice

INTRODUCTION

The SPITWATER range of high pressure cleaners has been designed to give safe, efficient and reliable service. Like any other piece of equipment; however, the unit will only operate at maximum efficiency if the correct operating sequences are followed and proper attention is given to the maintenance procedures.

The purpose of this manual is to provide up to date information necessary to the user for operating, maintaining and servicing the unit, together with fault finding techniques and general specification details and diagrams. The information given, however, may be subject to revision in compliance with the policy of continual improvements.

HEALTH AND SAFETY AT WORK

Manufacturers and suppliers of products for use in the workplace have a duty to ensure, so far as is reasonably practicable, that such products are safe and without risk to health when properly used and to make available to users of such products adequate information about their safe and proper operation.

The SPITWATER range of high pressure cleaners should only be used in the manner and purpose for which they were intended and in accordance with the recommendation detailed in this Manual and in any other Government Standard applicable in your country. Our units have been designed, produced and inspected with safety in mind; however, there are certain basic precautions which should be taken by the user and in particular, attention is drawn to the safety precautions in this Manual and in the Operating Instruction stickers on the unit itself.

It is imperative therefore, that all persons who may make use of this unit, have all the information and instructions they require to ensure that they are fully aware of the hazards and they know both the purpose and correct manner of operation of our pressure cleaners.

IMPORTANT SAFETY INSTRUCTIONS AND PRECAUTIONS

This booklet contains important information for the use and safe operation of this high pressure cleaner. Read and understand all warnings before you start using the unit.

WARNING: When using this high pressure cleaner:

1. Read all instructions before using this high pressure cleaner (including the engine instructions booklet).
2. Know how to start and stop the unit and bleed pressure quickly. Be quite familiar with the controls.
3. Follow the maintenance and faultfinding procedures outlined in this manual.
4. Keep operating area clear of all persons.
5. To prevent fire hazards, do not use near inflammables such as: gasoline, grain dust, solvents, thinners etc.
6. Stay alert and hold the lance strongly as high pressure cleaner jets produce a strong reaction force
7. This unit is not to be operated by children, teenagers or impaired persons (ie. people under the influence of drugs, alcohol etc).
8. Do not overreach or stand on unstable supports.
9. To reduce the risk of electric shock/damage do not aim the water jet onto the unit or any other electrical part and always wear rubber-soled footwear when operating the unit.
10. Keep the unit in a dry building where there is no danger of freezing.
11. Do not exceed the maximum temperature and pressure indicated in the technical data.
12. Never aim the jet in the direction of human beings, because the water jet comes out of the nozzle at high speed with high pressure.
13. Do not pull on high-pressure hose in order to move the unit.
14. Use only high-pressure hoses supplied by Spitwater Australia. In the case of defects, never try to bind up defective hoses, replace them.
15. Do not work in the rain or during thunderstorms.
16. When the unit is working, do not cover and do not place in a closed space where ventilation is insufficient.
17. Do not operate this unit in enclosed spaces.
18. Do not leave the unit running unattended. If unit is not required please switch it off.
19. When finishing work, always secure the handpiece with the lock catch.
20. To prevent injuries always turn the machine off before disassembling any part of the unit or effecting any servicing and before leaving the machine.
21. All serious servicing and maintenance procedures should be carried out by an authorised service person using spare parts supplied by Spitwater Australia.
22. Local regulations and standards as to the installation and operation of high-pressure cleaners must be observed.

WARNING: RISK OF INJECTION OR INJURY - DO NOT DIRECT HIGH PRESSURE JET STREAM AT PERSONS

SAVE THESE INSTRUCTIONS

READ WITH ATTENTION THE WARRANTY CARD AND MAIL COPY ON THE DATE OF SALE

INSTALLATION AND OPERATING INSTRUCTIONS

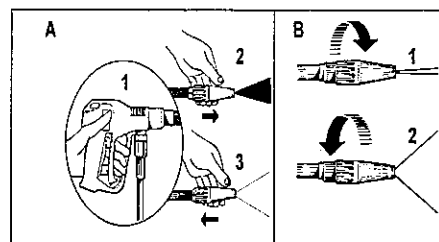
INSTALLATION

1. Identify your unit from the model description on the serial no. / data plate label affixed on the High pressure cleaner and the exploded views contained in this manual. (ALL NUMBERED REFERENCES APPLY TO EXPLODED VIEW OF UNIT)
2. (If necessary) Fit handle (3) to frame using bolts supplied in accessories bag.
3. (If necessary) Fit hoses (63) (28) (61) to break tank tailpieces (48) using hose clamps provided in accessories bag.
4. Position unit on a level surface near a suitable water supply (see serial no./ data plate)
5. (If Necessary) Connect front part of lance (33) to back part of lance (26).
6. Connect high-pressure hose end (30) to Back part of lance (26) and unit high-pressure outlet (21) or (A) or (62).
7. Connect water supply hose to inlet connector (18) supplied. Make sure that water pressure does not exceed values listed in this manual and that water flow rate after inlet / cistern cock valve exceeds the one required by the pump as stated on serial no. / data plate.
8. Open water supply. Where a water tank is fitted, water will fill water tank (20) and cistern cock valve (45) will automatically stop water flow when water tank is full.
9. Replace the pump oil travel plug (Red plug) with the pump oil dipstick (Yellow plug) provided in accessories bag.
10. Check oil level in pump either using dipstick or through oil sight glass. Minimum oil level is at lower edge of red circle on sight glass or lower notch on dipstick while maximum oil level is at upper edge of red circle on sight glass or upper notch on dipstick. If oil reservoir needs replenishing only use oil of a type as listed in the data sheet in this instruction manual.
11. Follow all pre operation instructions listed in the diesel engine manual supplied with this unit.
12. Where fitted fill detergent bottle (11) with cleaning solution. Only use a cleaning detergent approved by the manufacturer and do not use under any circumstance acid or corrosive products (Contact an authorised service agent or the manufacturer if in doubt).
13. Set lance assembly (26 ,33) in the low pressure position. See pt 5 instructions on Operating/To start & use instructions.

OPERATING INSTRUCTIONS

TO START AND USE

- 1) Start machine by following Starting & Operating instructions listed in engine manual supplied with this unit. Pull the trigger on the handpiece and allow water to run through the Pump (14), High-Pressure Hose (30), and Lance for 2-3 minutes in order to expel air from the Hydraulic system. If some air is still in the system after that period of time, open and close the Handpiece 2-3 times to expel remaining air. **Note: if this is the first time the unit is being run or it has been left idle for a long period of time it is advisable to run the above operation with the front part of lance (33) or nozzle (56) disconnected from the lance to avoid any debris / scale getting lodged in the nozzle and/or gun assembly.**
- 2) Set the front part of lance (33) in high pressure position. See pt 5 instructions on the Operating/To start & use instructions.
- 3) Check if pressure on Pressure Gauge (29) is correct. (See data plate on pump).
- 4) Multireg nozzle can be adjusted anywhere to provide a jet between 0° and 45° and high/low pressure so as to suit any cleaning application. By turning nozzle clockwise/anticlockwise you can decrease/increase size of fan as shown in picture beside (B). By pushing nozzle **backward/forward with gun in closed position** you can go into low pressure/high pressure as shown in picture beside (A). Double lance can be adjusted between high/ low pressure by turning the handle clockwise/anticlockwise.
- 7) To allow detergent through injection system, turn Chemical injector (21 or red knob on pump) anticlockwise and put Multireg or double lance in low pressure position. Pull trigger of Handpiece and low pressure will allow detergent through injection system. **NOTE: DETERGENT INJECTION CAN BE MADE IN LOW PRESSURE ONLY.**
- 8) **BEWARE :** Units not fitted with a break tank or optional Thermal Protection valve must not be run for longer than 3 minutes with Handpiece in closed position (in Bypass) because pump will be damaged. If unit is not required please switch it off.



TO STOP

1. Clean Detergent Line (25-23) after removing from detergent bottle in order to prevent blockages in chemical injection device by dropping detergent line in clean water and running clean water through it. (For instructions on how to run clear water through detergent line see point no. 7 above on how to use detergent.)
2. Stop detergent flow, turning Chemical injector (21 or Red Knob on pump) clockwise.
3. Stop machine by following Stopping instructions listed in engine manual supplied with this unit.
4. Pull trigger of Handpiece to release pressure.

OPTIONAL EXTRAS (WHERE FITTED)

ELECTRIC START

1. General operation of unit is the same as above but it will be possible to start the engine using a key switch. Follow instructions on how to connect battery and use electric start listed in engine manual provided with this unit

MAINTENANCE INSTRUCTIONS

To maintain your unit in peak working condition during its operable life it is necessary to carry out regular maintenance operations and replace worn or broken down parts immediately upon their failure. We suggest that a qualified service person carries out all maintenance and that original spare parts are used in effecting repairs to guarantee quality, reliability and longevity. **Failure to follow the above instructions releases the manufacturer from any responsibility in reference to injuries and damages to both persons and goods and may render any warranty given with the units void.**

Please find below a summary table of maintenance operation with a general description on how they should be carried out:

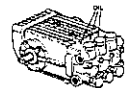
CHECKS TO BE CARRIED OUT BY USER

GENERAL

- 1) Water connections/connectors/lines(Each use)
 - a) Check high-pressure hose, connectors and other connections for leaks.
 - b) Check inlet hose connections for leaks.
- 2) Performance (each use)
 - a) Check machine functionality (ie. operation, pressure etc.) and performance and make sure that everything operates as described in the operating instruction. **Should any malfunction occur, stop operating the unit immediately and contact an authorised service person/agent.**
- 3) Nozzle (every 50 hours)
 - a) Check and clean high-pressure nozzle (56). It is necessary in situations where dirty or contaminated water is used that nozzle be cleaned more regularly.
- 4) Filters (Every 100 hours)
 - a) Check and clean water filter (47) Replace every 1000 hours
 - b) Check and clean detergent filter (25).
- 5) Water and Detergent Lines
 - a) Unit should never be stored in areas where freezing conditions can occur unless all water has been expelled from all hydraulic lines (ie. inlet, pump, coil hp hose etc) and detergent lines or an appropriate anti freeze solution has been circulated in the above lines; contact your service agent for appropriate instructions. **Failure to follow above guidelines will result in great damage occurring to unit.**
 - b) Keep detergent line clean (23,25) and make sure it is regularly flushed especially if machine is not used regularly.

PUMP

- 1) Oil (each use)
 - a) Check oil level in pump either using dipstick or through oil sight glass in back of pump. Minimum oil level is at lower edge of red circle on sight glass or lower notch on dipstick while maximum oil level is at upper edge of red circle on sight glass or upper notch on dipstick. If oil reservoir needs replenishing only use oil of a type as listed in data sheet in this instruction manual.(Only use SAE20 W 30 oil)
 - b) Check that oil colour has not gone milky. If so do not operate unit and contact an authorised service agent immediately.
 - c) Replace oil after first 50 hours of operation and every 200 hours after first change or once per year. To replace oil remove oil plug C and oil dipstick B and let oil fall into container until completely drained. After oil has completely drained replace oil plug C and refill using only SAE 20 W 30 oil until mark on sight glass A or oil dipstick B has been reached. Dispose of waste oil according to local regulations and standards.
- 2) General
 - a) If unit has been left unused for long periods of time, before restarting unit a few drops of oil should be placed on the pump vents to lubricate the seals at start up. (Note that not all pumps are fitted with these vents)



ENGINE

- 1) Carry out all user checks and maintenance as outlined in the engine instruction manual at the suggested intervals.

CHECKS TO BE PERFORMED BY AUTHORIZED SERVICE PERSON/AGENT

Checks and interval times at which checks should be carried out and performed by an authorised service person/agent are summarised below. It is essential that such checks and repairs be carried out by an authorised service person/agent as they have the necessary experience and training required.

SUMMARY OF CHECKS TO BE CARRIED OUT BY THE USER		SUMMARY OF CHECKS TO BE CARRIED OUT BY AN AUTHORIZED SERVICE PERSON/AGENT	
Power cable/water connections/ hp hose/performance	Each use	Engine	See Booklet
Engine	See Booklet	Check and if necessary replace pump seals	Each 750 hours
Nozzle clean and inspect	Each 50 hours	Replace High pressure nozzle	Each 200 hours
Water and Detergent lines	Each 50 hours	Check Settings of all Hydraulic line safety mechanisms	Once per year or every 500 hours whichever comes first
Filters	Each 100 hours		
Pump oil first change	After 50 hours		
Pump oil change first / after first	Each 200 hours		
Others checks	See Above		

NOTE:

- 1) Time indication for checks and replacement listed above are for units subject to normal operating conditions. Should unit be subject to abnormal conditions (i.e. heavy duty use, dirty water or fuel, extreme temperatures or climatic conditions etc.) times should be reduced accordingly
- 2) Should unit be subject to very limited use, all checks and if necessary replacements should be carried out at least once per year.

TROUBLESHOOTING

FAULT	CAUSE	REMEDY
The pump is running normally but pressure does not achieve rated values	Pump Sucking air Nozzle is blocked Water filter dirty	Check that hoses/ fitting on inlet side of pump are airtight. Check and clean nozzle Check and clean water filter
Fluctuating Pressure	Pump Sucking Air Water filter dirty	Check that hoses/ fitting on inlet side of pump are airtight. Check and clean water filter
Pressure drops after a period of normal use		Contact authorised service person/agent
Pump is noisy	Pump Sucking air Water inlet is too hot	Check that hoses/fitting on inlet side of pump are airtight. Reduce water inlet temperature below 50° C
Presence of water in pump oil		Contact authorised service person/agent
Water dripping from under pump		Contact authorised service person/agent
Oil dripping from under pump		Contact authorised service person/agent
Presence of water in gearbox oil		Contact authorised service person/agent
Oil dripping from under gearbox		Contact authorised service person/agent
Engine does not start/operate correctly	Refer to engine instruction book	Contact authorised service person/agent

NOTE: If the fault cannot be identified or corrected using the above list (or in the remedy column the words "contact Authorised service person/agent" appear) stop using the machine immediately and contact an authorised service person /agent to rectify the fault.

HYDRAULIC DIAGRAMS

