

1.1 Dangers arising from non observance of safety instructions

Using the most modern manufacturing techniques **HAMMELMANN** produce high pressure equipment which is subject to stringent Quality, Function and Safety tests. Even so, improper or unsuitable use of high pressure equipment, or operation by untrained personal can result in accidents leading to:

- Danger of death or injury.
- Costly damages claims.

All personnel who are responsible for the operation and maintenance of high pressure equipment must, before they attempt operation be fully conversant with and completely understand the contents of this manual. Particular attention must be paid to this section "safety" and these instructions must always be readily available to all personnel concerned. No claims for personal injuries or damages arising from ignorance or non observance of safety procedures can be accepted.

1.2 Safety conscious working

Always observe accident prevention rules (e.g. in Great Britain - "Health and Safety at Work Act")! Refer to local statutory or recommended codes of practice for the use of water jetting equipment. If no codes of practice are in place in your country you are advised to obtain and adopt those of another country.

1.3 Personnel qualification and training

Only trained personnel should be entrusted with operation, maintenance, inspection and repair of high pressure water equipment. The owners of the equipment are responsible for ensuring that all personnel concerned are fully trained and conversant with the contents of this manual. If necessary, training courses should be arranged.

1.4 Precise safety instructions for the operator

- The operation of water jetting equipment should only be entrusted to personnel who are,
 - ➔ fully conversant with the operation procedure.
 - ➔ fully aware of the inherent dangers.
- Dangers are for instance,
 - ➔ reaction force.
 - ➔ cutting power of the jet.
 - ➔ hose shortening when pressurised.
 - ➔ working close to electrical sources or machinery.
- In the case of bare shaft pumps never connect a driver that can exceed the pump max. power rating as given on the name plate.
- A pump unit must always be fitted with a mains cut-off / ignition switch system.
- An emergency switch is an essential component of any pump unit.

- Before each operation the employer should ensure that a competent or trained person has checked,
 - ➔ that units and / or equipment are in good condition and
 - ➔ that the important elements, i.e.: safety devices, hoses, hose connections etc. are in good order.
- Any fault should be remedied before using the equipment.
- Follow precisely all start up/shut down procedures given in the operating instructions



During operation regularly check the hoses, fittings and jetting accessories (i.e.: nozzles, spray bar) for signs of leakage. In the case of leakage stop the pump unit immediately.

Do not attempt a close visual inspection of leakage while the pump is running.

- Use only the correct tools, i.e.: ensure that you have the correct spanner size to fit connection nuts etc.



Do not vary the pump pressure unless you have informed the accessory / machine operator that you are about to do so.

- Upon shut down ensure that all elements of the equipment are depressurised (atmospheric pressure).
- When using two or more consumers (i.e.: spray guns) from a single pump unit,
 - ➔ care shall be taken to ensure that the pressure regulating valve or unloader is correctly set so that the operation of any consumer (i.e.: spray gun) will not cause a sudden pressure change and / or excessive reaction forces.
- Never use accessories, i.e.: hoses, spray pistols etc. above the maximum specified operating pressure. The maximum pressure of any system is only equal to the maximum pressure rating of the lowest rated component therein.
- Position hoses,
 - ➔ so that they are not clamped or kinked and cannot chafe against sharp edges.
- Interfering with safety elements is strictly forbidden! Damaging, e.g. the locking wire or seal coating will invalidate the guarantee and will release us from any liability in the event of accident or injury.
- Use only accessories and spares from **HAMMELMANN** or their approved suppliers. Use of parts that are not marked as tested or that are supplied without a test certificate can be dangerous. Think of your own safety. (Also see guarantee conditions)
- The employer must ensure,
 - ➔ that the workplace is cleared, offers a firm footing and there is no possibility of tripping.
 - ➔ Trailing lines, loose debris and tools do not make a safe workplace.
- The jetting operator must ensure,
 - ➔ that there is no danger to neighbouring workers, and that the workplace is closed off with barriers.
 - ➔ signs are erected to prohibit unauthorised entry i.e.: Danger! High pressure water.

Safety

- Causes of danger are,
 - ➔ the jet (cutting power).
 - ➔ spray mist (with dangerous chemical additives).
 - ➔ loose debris or other items picked up and projected by the force of the jet.
- Avoid contact with any spray arrangement:
 - ➔ Do not place your hand or other bodily parts in front of a pressurised nozzle.
 - ➔ Never under any circumstances point an accessory (i.e.: pistol) at other persons even when depressurised.
- Hazards to your health are,
 - ➔ the properties of the liquid (Wet, high temp, caustic etc.)
 - ➔ the high pressure (i.e.: cutting power of the jet, possible impact damage to tissue and bacterial infection).
- To work with liquid jets the employer should ensure that all operatives wear protective clothing, i.e.:
 - ➔ Protective suit,
 - ➔ Safety helmet,
 - ➔ Flexible closed gloves,
 - ➔ Slip proof safety boots with foot and shin protection.,
 - ➔ Ear protectors,
 - ➔ Respiratory protector,
 - ➔ Safety glasses or full face visor.

Operatives ignoring the employers instruction to wear any of the above do so at their own risk!



In the event that a person is struck by a waterjet they must immediately report to or be taken to a doctor. Even seemingly minor injuries can have serious consequences! Liquids can be injected into body tissue leaving no obvious external damage!

1.5 Danger symbol



This symbol, always indicates an important safety instruction. You must read, understand and follow the instruction precisely!

Failure to follow such an instruction can result in extreme danger to persons and damage to property.

1.6 Safety during inspection, maintenance and repair

The owner shall be responsible for ensuring that all inspection, maintenance and repair works are carried out by competent, fully trained personnel. He shall also ensure that said personnel have read and fully understood this manual.

Before commencing such works all safety and shut down instructions herein must be observed. Before starting such works on diesel engine driven units disconnect the battery cables. In case of e-motor driven units cut-off tension / unplug mains plug. Before restarting follow the instructions given in the section "Installation".

1.7 Forbidden practices



Operating , maintenance and repair procedures other than described herein or unauthorised design modifications are forbidden on safety grounds. The manufacturer cannot be held responsible for any consequences arising from the fitting of unauthorised spare parts or accessories.

1.8 Additional warnings

- When this high pressure equipment (i.e.: rotary joint, pistol etc.) is built into a high pressure system you must also refer to the safety and operation instructions of the other high pressure elements before use!
Other elements are for instance:
 - ➔ Drive, Pump, Spray head or Spray bar, Surface cleaners, etc.
- If using a diesel or petrol powered unit in an enclosed area ensure that there is sufficient ventilation and that exhaust gases are vented to atmosphere.
- In the event that other high pressure accessories (i.e.: hoses) are used in conjunction with this unit then the relevant manufacturer's or supplier's operation instructions should be observed and followed in all cases.
- If your pump unit is mounted on a roadworthy trailer you must ensure that the towing vehicle is suitable for the weight! See construction and description section for trailer details.
- Drivers must ensure that towing vehicle and trailer are in a roadworthy condition and that they comply with local traffic regulations.