



Portable Abrasive Blast Cleaning Machines

Operating and Maintenance Instructions

Owner's Manual

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EUROPEAN DIRECTIVES

European Pressure Vessels Directive (PED) 2014/68/EU
Machinery Directive 2006/42/EC

The PED Directive 2014/68/EU Standards:

EN-288 (Approval of Welding Procedure)

The Machinery Directive 2006/42/EC Standards:

BS EN ISO-11148-10: 2011 (Handheld Non-Electric Power Tools)
EN ISO 14121-1-2007 (Safety of Machinery - Risk Assessment)



CE DECLARATION OF CONFORMITY

We HODGE CLEMCO LTD declare that the supplied equipment when installed and used in accordance with the owner's manual provided, conforms with the essential health and safety requirements of the above machinery directive

UKCA LEGISLATION

Pressure Equipment (Safety) Regulations 2016 (S.I. 2016:1105)
Supply of Machinery (Safety) Regulations 2008 (S.I. 2008:1597)

Pressure Equipment (Safety) Regulations 2016 (S.I 2016:1105) Standards:

BS EN ISO 15614-1 (Specification and Qualification of welding procedures for metallic materials)

Supply of Machinery (Safety) Regulations 2008 (S.I 2008:1597) Standards:

BS EN ISO 11148-10:2011 (Handheld Non-Electric Power Tools)
EN ISO 14121-1-2007 (Safety of Machinery Risk Assessment)



UKCA DECLARATION OF CONFORMITY

We HODGE CLEMCO LTD declare that the supplied equipment when installed and used in accordance with the owner's manual provided, conforms with the essential health and safety requirements of the above UKCA legislation.

STEVEN STAPLES
Engineering Manager

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Managing Director

MAINTENANCE INSPECTION CONTRACT

In response to numerous requests, we are now able to offer a Maintenance Inspection Contract for your Clemco Equipment.

These requests have been made by customers who appreciate the benefits of regular inspection/servicing on a planned basis. The remedial work that follows a breakdown or worse, the need for early equipment replacement due to accelerated wear may easily exceed the cost of a Maintenance Inspection Contract. If you would like further detail please contact our Customer Services Department on **0114 2540600**

A request for more information does not represent any form of commitment on your behalf, so can you afford to say 'NO' at this stage?

We look forward to hearing from you soon.

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1.0 SETTING UP INSTRUCTIONS

WARNING: *The maximum safe working pressure of each machine is marked on its identification plate and must not be exceeded. Periodic examination/pressure testing is a requirement.*

WARNING: *Never attempt to wheel the machine over rough/uneven ground. For hoisting, the lifting lugs provided on the blast machine must be used. Do not connect slings to other parts of the machine always disconnect ancillary hoses etc from the machine and ensure the machine is empty of abrasive prior to it being moved*

WARNING: *It is important that the control hoses are connected correctly and securely.*

WARNING: *If the inspection door assembly is not securely located correctly in position to ensure a good seal it can be dangerous.*

WARNING: *Internal hose couplings or nozzles designed to locate inside the blast hose must not be used as they can be dangerous.*

- 1.1 Locate the blast machine in a stable position on firm level ground
- 1.2 Ensure that the machine is adequately earthed by connecting a suitably earthed earthing strap to the strap locating bolt on the machine leg.
- 1.3 CLOSE the abrasive metering valve.
- 1.4 OPEN the choke valve by positioning the handle in line with the valve body. This valve should remain in the open position for all normal operating conditions.
- 1.5 OPEN the safety petcock on the remote-control valve by positioning the handle in line with the petcock body.
- 1.6 Securely connect the Remote-control air hoses to their respective couplings. Yellow hose connects between the upper 1/4" port (RM23Y) on the remote-control valve and 'Y' or '2' on the deadman handle. The red hose connects between the lower 1/4" port (RM 23R) on the remote-control valve and 'R' or 'I' on the deadman handle. **Note: On blast machines fitted with a pressure regulator connect the red hose prior to the regulator.**
- 1.7 Check that the sealing ring in the abrasive filling orifice of the machine is in good condition and securely and correctly positioned.
- 1.8 Check that the pop-up valve is in position and in good condition.
- 1.9 Check that the inspection door assembly is securely bolted in correct position and that the gasket is in good condition and in place.
- 1.10 Check that the coupling gasket in the CF quick coupling at the base of the blast machine is in good condition and correctly seated in the coupling.
- 1.11 Check the blast hose to be used is in good condition along its entire length/s.

- 1.12 Ensure that the blast hose ends are cut square and are located fully into the coupling and nozzle holder and up to the retaining shoulders within and that all the required hose retaining screws are in good condition and firmly secured in position for additional fitting instructions see manual TS.OM 82.
- 1.13 Check that the appropriate hose coupling gasket is in good condition and correctly seated in the coupling and securely connect this coupling to the CF coupling at the base of the blast machine. Ensure that the couplings are securely locked and that each latching wire is located through the appropriate hole in the marrying coupling. If no integral means of wire latching is provided, use split pins through the corresponding holes to ensure no accidental parting of the coupling can occur.
- 1.14 Check Lay out the blast hose from the machine to the work surface area ensuring that no tight curves or kinks occur and ensure that the hose is protected from possible damage by passing traffic.
- 1.15 Lay out the Remote-control air hoses along the length of the blast hose and secure the deadman handle to blast hose adjacent to the rear of the nozzle holder ensuring that the rubber insert is in position and that the blade opens freely by the action of the spring and closes freely.
- 1.16 Secure the remote-control air hoses to the blast hose at short, regular intervals using hose ties. Take care not to compress the hoses by over tightening.
- 1.17 Select a suitable nozzle and check that it is in good condition and undamaged and that there is no internal blockage. Insert a new nozzle gasket into the seat of the holder until it is fully hand tight down onto the gasket.
- 1.18 Ensure that the deadman blade is left in the open position by the spring action.
- 1.19 Check that the sieve is securely fastened in position on top of the blast machine.
- 1.20 Refer to the compressor manufacturer's operating instructions and start the compressor.
- 1.21 Ensure that the compressed air outlet valve is CLOSED and connect a suitable length of approved compressed air supply hose to the air outlet valve, first ensuring that the required couplings and gaskets are in good condition and in position.
- 1.22 Ensure that the connection is tightly secured.
- 1.23 Take secure hold of the free end of the air supply hose, direct it into a safe area and CAREFULLY SLIGHTLY OPEN the outlet valve to expel any dirt and/or moisture from the hose.
- 1.24 Turn OFF the compressor outlet
- 1.25 Connect the coupling at the free end of the compressed air supply hose to the blast machine air inlet fitting ensuring that any gaskets required are in good condition, positioned correctly and that the connection is tightly secured. **Note: Use safety hose restraints where possible.**

- 1.26** Refer to the air fed helmet manufacturer's owner's manual and connect the helmet, breathing air supply hose and breathing air filter as instructed in the Manual.
Note: Should the Manual instruct that a 1/4" supply of compressed air be required for the helmet/filter system there is a connection available on the blast machine.
- 1.27** Close the drain cock on the underside of the remote-control valve.
- 1.27.1** Refer to the water separator manual and check that it is correctly assembled and that the bowl is securely located in position.

2.0 OPERATING INSTRUCTIONS

WARNING: *The operation of this equipment can generate noise levels which can be damaging to the ears. It is essential that the operator, pot tender and all other personnel in the vicinity be made aware of this and that suitable ear defenders are worn.*

WARNING: *Abrasive ricochet and dust levels generated from the blast cleaning operation can be dangerous and all personnel within the area must wear adequate protection.*

Signs warning of these dangers must be positioned around the perimeter of the blasting operation and measures must be taken to ensure that no one enters the area of the blasting operation without permission and without adequate safety protection equipment. Should anyone enter the area, the pot tender must immediately close down the blasting operation by opening the safety petcock on the valve and/or the blaster must release the lever of the deadman handle.

WARNING: *It is essential that all connections on the helmet air hoses are secure and under no circumstances must the helmet be used until the air supply has been turned on and found to be entering the helmet in required volume and quality.*

WARNING: *A back thrust is created by the action of the compressed air passing through the nozzle therefore the operator must ensure he has adopted a safe stance and position and must maintain a firm hold of the nozzle holder/blast hose.*

WARNING: *The pot tender must keep clear of the exhaust silencer at all times as the sudden release of pressurisation can be dangerous.*

Note: In the interests of safety and efficiency it is necessary that the blaster and pot tender operate some form of signalling or communication system. Under operating conditions where the blaster is not in constant view of the pot tender it is strongly recommended that a helmet communication system be used.

Note: If the blast machine is not to be used for a period of time (meal break, shut down etc) it is advisable that it is empty of abrasive - this will assist in preventing unnecessary blockages due to condensation.

Note: To purge the blast machine of any residual quantity of abrasive in the vessel, the choke valve can be slightly closed to introduce more rapid feed of abrasive into the airstream. The rate of abrasive discharge can be increased, if necessary by also adjusting the abrasive metering valve to allow more feed.

WARNING: *These adjustments can create a severe pulsing at the nozzle therefore it is essential that the blaster maintains a very secure hold of the nozzle holder during this operation. Never close the choke valve completely or open the abrasive metering valve fully during this discharge operation.*

- 2.1 Turn ON the compressed air supply to the blast machine at the compressed air supply outlet valve.
 - 2.2 Adjust the drain cock on the moisture separator to give a constant slight bleed of air-water vapour.
 - 2.3 Refer to the helmet manufacturer's instructions and turn ON the breathing air supply to the helmet.
 - 2.4 Ensure that the breathing air supply hose is adequately protected to prevent it becoming accidentally trapped, nipped, or broken
 - 2.5 Position danger warning signs around the area of the operation and the outside the perimeter of excessive noise levels and abrasive ricochet/dust fall out.
 - 2.6 The blasting operator must now don protective clothing, sturdy gauntlets, ear defenders and air fed helmet.
 - 2.7 Ensure that all personnel within the vicinity are adequately protected.
 - 2.8 CLOSE the safety petcock by turning the handle at right angles to the petcock valve body.
 - 2.9 The operator must first check that no one has entered the marked area of the operation and then firmly take a secure hold of the nozzle holder and blast hose, at all times directing the nozzle at the work surface.
 - 2.10 CLOSE the deadman handle and compressed air will pass through the nozzle.
 - 2.11 RELEASE the deadman handle and the compressed air will cease to pass through the nozzle.
 - 2.12 Open the safety petcock on the remote-control valve by turning the handle in line with the petcock body.
 - 2.13 Check that the abrasive metering valve is CLOSED.
 - 2.14 Ensure that the safety sieve is securely in position.
 - 2.15 Load the selected abrasive into the machine through the sieve. This will flow into the machine through the filling orifice in the centre of the concave dish.
- Note: DO NOT OVERFILL THE VESSEL BEYOND THE POP-UP VALVE.**
- 2.16 Fit the pot cover to the top of the safety sieve.
 - 2.17 CLOSE the safety petcock by turning the handle at right angles to the petcock valve body. **Note: In an emergency the opening of the safety petcock will depressurise the machine.**
 - 2.18 The operator should then ensure that no one is in the vicinity of the work area (see 2.5 above) and take secure hold of the nozzle holder and blast hose and direct the nozzle at the work surface.

- 2.19 Close the deadman handle and the machine will pressurise, and air will pass through the nozzle.
- 2.20 The pot tender should gradually open the abrasive metering valve to introduce abrasive into the airstream. Adjust the valve to maintain the minimum amount of abrasive into the air stream.
- 2.20.1 **Machines fitted with remote control grit valve:**
Pull back the sleeve valve on the deadman handle. **Note: To avoid unnecessary wear between the adjusting screw and the piston the abrasive adjustment must only be carried out with the valve in the closed position (i.e. sleeve valve forward).**
- 2.20.2 To 'blow down' the work surface with compressed air only, keep the deadman handle closed and move the sleeve valve to the forward position.
- 2.21 **Machines fitted with pressure regulator:**
Adjust pressure to achieve optimum finish.
- 2.22 To stop the blasting operation the blaster should release the lever of the deadman handle, or the pot tender can open the safety petcock on the remote-control valve. **Note: On the machines fitted with remote controlled grit valves either of these operations also automatically closes the abrasive metering valve.**

3.0 SHUT DOWN PROCEDURE

WARNING: Never attempt to wheel the machine over rough/uneven ground. For hoisting, lifting lugs provided on the blast machine must be used. Do not connect slings to other parts of the machine. Always disconnect ancillary hoses etc from the machine and ensure the machine is empty of abrasive prior to it being moved.

- 3.1. Open the safety petcock on the remote-control valve.
- 3.2. Ensure that the operator has first removed their air fed helmet, then turn OFF compressed air at the compressed air supply outlet valve.
- 3.3. Ensure that all airlines are purged of pressure prior to disconnection of hoses.

4.0 MAINTENANCE

All blast cleaning equipment is subject to abrasive wear therefore for safety and efficiency it is ESSENTIAL to operate a preventative maintenance programme. The degree of wear is variable and is dependent upon many factors: type and grade of abrasive, blasting pressure, nozzle size, operator expertise etc and these factors should be taken into consideration when planning regular maintenance schedules. The following checklists are a basic guide to assist in planning maintenance

WARNING: Ensure that the compressed air supply to the machine is turned off and all airlines are purged of pressure and disconnected from the blast machine before any maintenance work is carried out. Precautions should be taken to prevent accidental turning on of the compressor air supply.

Note: Maintenance should only be carried out by trained competent persons

4.1. Maintenance Check List - Setting up and after 4 hours use:

- 4.1.1 Check condition of all air hoses, connections, and gaskets for signs of wear and replace as necessary.
- 4.1.2 Check condition of sealing ring in top of blast machine. Replace if there is sign of wear.
- 4.1.3 Check condition of the safety sieve and replace if worn or damaged.
- 4.1.4 Check condition of the pop-up valve and replace if there is any sign of wear.
- 4.1.5 Check condition of the exhaust manifold and silencer and exhaust pipework and replace if necessary.
- 4.1.6 Check condition of silencer core and replace if worn or blocked.
- 4.1.7 Check condition of water separator. See separate owner's manual.
- 4.1.8 Check blast hose for signs of wear or damage and replace with new if required
- 4.1.9 Check the blast hose couplings and gaskets for signs of wear and replace if necessary. Ensure that all retaining screws are in good condition and securely in place.
- 4.1.10 Check that all blast hose connections are securely fastened and that the latching wires are located correctly into the holes of the marrying coupling or that split pins are in position through the marrying holes.
- 4.1.11 Check the condition of the nozzle holder for wear and replace with new one if necessary.
- 4.1.12 Check that the nozzle holder gasket is in good condition and ensure that it is in the correct position. Replace with new one if it is showing sign of wear.

- 4.1.13 Check the nozzle for blockages, wear, or damage. Replace if the internal diameter is 1.5mm(1/16") larger than its original size.
- 4.1.14 Ensure nozzle is securely located into the nozzle holder onto the gasket (see 1.17).
- 4.1.15 Check the deadman handle to ensure free spring lever action on handle and check that the rubber insert is in place.
- 4.1.16 Check abrasive metering valve and fittings for sign of wear/leaks and replace as necessary.
- 4.1.17 Check that the inspection door assembly is correctly and securely fitted, the gasket is in position and that no leaks occur.

4.2. Maintenance Check List - After every 40 hours maximum use:
4.1.1 to 4.1.17 plus:

- 4.2.1 Remove inspection door assembly and check condition of component parts for wear. Replace worn items.
- 4.2.2 Clean out the machine, remove any foreign objects and oversized particles, check the interior for deterioration.
- 4.2.3 Remove the pop-up valve and the vertical section of the interior pipework and check for signs of wear. Replace with new parts if necessary and reassemble.
- 4.2.4 Remove the sealing ring from its seat and check the seat for wear and/or build-up of contamination. Clean out if contaminated. If corrosive wear to the seat is evident contact the manufacturer immediately.
- 4.2.5 Check the condition of the sealing ring for wear, replace with new one if necessary and refit into the sealing ring seat.
- 4.2.6 Refit the inspection door assembly correctly and securely to ensure a good seal, first ensuring that the gasket is in good condition.
- 4.2.7 Check the abrasive metering valve and adjacent fittings for wear and replace with new parts if worn.
- 4.2.8 Check the CF coupling and adjacent fittings for wear and replace with new if required.

4.3. Maintenance Check List - After every 160 hours use:
4.1.1 to 4.2.8 plus:

- 4.3.1 Check all fitting and thread for wear or damage and replace where necessary with new parts.
- 4.3.2 Thoroughly check the vessel internally and externally for corrosion, damage and abrasive wear. Should there be any such evidence the vessel must be repaired/re-pressure tested as necessary by an authorised pressure vessel repairer/test house or the manufacturer.

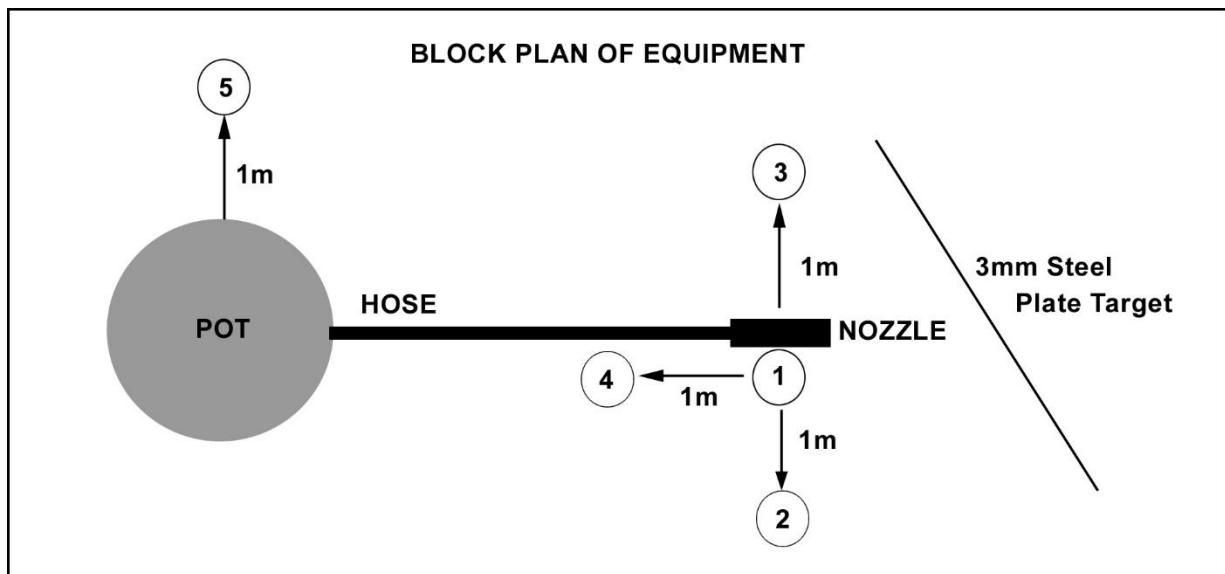
5.0 PROBLEM SOLVING

PROBLEM SOLVING TABLE		
ISSUE	CAUSE(S)	REQUIRED ACTION
5.1. No air or abrasive passes through the nozzle	Compressor not turned on	Turn on compressor
	Rubber Insert on deadman handle	Check insert & replace if necessary
	Pressure Regulator (when fitted)	Check setting
	Water Separator blocked	Check and clean (See Owner's Manual)
	Remote Control Valve not working	With safety petcock and deadman handle closed, check remote control valve and along remote-control hoses for air leaks and loose connections
5.2 No abrasive passes through the nozzle	Abrasive metering valve closed	Open valve (See 2.20)
	Damp abrasive or large object restricting flow at base of cone	Quickly close and open the choke valve. Remove inspection door assembly and clean out (See 4.2.2)
	Sleeve valve (when fitted)	Open Valve (See 2.20.1)
5.3 Intermittent flow of abrasive	Abrasive metering valve not adjusted correctly	Check setting (See 2.20)
	Blockage (Same as 5.2)	Operate choke valve and clean out (Same as 5.2)
5.4 Abrasive surges from the nozzle	Abrasive metering valve opened too fully.	Check setting (See 2.20)
	Choke valve not fully open	Check and open (See 1.4)
5.5 Pop-up valve will not remain seated against sealing ring.	Insufficient volume or pressure of air	Check air supply from compressor with hypodermic needle gauge.
		Close choke valve, if pop-up valve then seals insufficient air supply is available
		Check condition of water separator(See Owner's Manual)
		Check action of Remote-Control Valve (See 5.1)
5.6 Pop-up valve will not drop after depressurisation	Worn pop-up valve and/or sealing ring	Remove and replace both valve and sealing ring
	Abrasive trapped in vertical pipe work	Remove inspection door assembly and pop-up valve then clean out
5.7 Machine will not depressurise	Blockage in deadman handle and/or Remote-control hoses	Remove and clean out
	Faulty Remote-Control Valve	Remove and repair

TYPICAL AIRBORNE NOISE EMISSIONS EXPECTED

The following are readings taken from identical equipment operated under the conditions detailed below. The readings recorded should be used to determine the level of ear protection required by the operator(s) and personnel at risk.

- Equipment Description : **2040 Portable Blast Machines**
- Location and Test Conditions : **Hodge Clemco Ltd External Test Area**
- Power and Load Conditions : **80 psi ½ " Nozzle**



Position 1.6m high	Continuous		Test Duration	High Surge Reading		Back-ground Noise	Notes
	Max dBA	Min dBA		Max dBA	Period		
1. Operators Position	125	124	5 mins			65	
2. 1.6m(H) x 1m (Dist)	119	118	5 mins			65	
3. 1.6m(H) x 1m (Dist)	119	118	5 mins			65	
4. 1.6m(H) x 1m (Dist)	119	118	5 mins			65	
5. Position of any high surge				106	2 secs	65	Machine Exhaust

MAINTENANCE / SERVICE RECORD

[illegible]