



**Hodge Clemco Ltd**

# **Blast Room and Abrasive Recovery System**

## **Owner's Manual**

**Date of Issue 06/03/06 TSOM 252F pt.1**

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# Machinery Directive

**(89/392/EEC amended by 91/368/EEC, 93/44/EEC and 93/68/EEC)**

## EC Declaration of Conformity

We HODGE CLEMCO LTD declare that the supplied equipment when installed and used in accordance with the owners manual provided, conforms with the essential health and safety requirements of the above Directive(s)



Engineering Manager

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 details please contact our Customer Services Department on 0114 2548811

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 GENERAL DESCRIPTION

This abrasive recovery system is designed to be used in conjunction with the appropriate dust collector(s) and blast cleaning machine(s).

Abrasive is swept from the blast room floor and into the floor hopper. The bucket elevator collects the abrasive for subsequent transfer to the abrasive cleaning unit. The automatic air wash cleaning system removes contaminants of debris, dust and fines from re-useable abrasive which is then deposited into the storage hopper and blast cleaning machine.

## **2.0 OPERATING INSTRUCTIONS**

***Warning:1 The maximum recommended working pressure of the blast machine is 110 psi (7bar) under no circumstances must it be connected to an air supply of higher pressure. The equipment has been installed and commissioned by the manufacturer's engineers, all subsequent operation and maintenance of the equipment must be carried out by suitably trained and competent persons.***

***Warning:2 The operation of this equipment can generate noise levels within the Blastroom which can be damaging to the ears. It is essential that the operator and all other personnel in the vicinity be made aware of this and that suitable ear protection is worn.***

***Warning: 3 Abrasive ricochet and dust levels generated from the blast cleaning operation can be dangerous and all personnel within the Blastroom must wear adequate protection.***

***Signs warning of these dangers must be prominently positioned to ensure that no one enters the area of operation without permission and adequate safety equipment.***

### **2.1 Switching on - prior to blasting.**

- 2.1.1. Switch on the power supply to the main control panel and to the dust Collector(s).
- 2.1.2. Switch on the power supply to the controls at the isolator switch on the main control panel.
- 2.1.3. Switch on the lighting for the installation.
- 2.1.4. Ensure any maintenance access doors and the dust collection container on the dust collector(s) is/are securely closed and switch on the dust collector. N.B.Essential for abrasive separation when recovering abrasive via the bucket elevator.
- 2.1.5. Check that the petcock (RM-9) on the remote control valve is in the open position (i.e. with the handle in line with the petcock body).
- 2.1.6. Ensure that the compressed air supply hoses/pipe work to the blast machine and dust collector is correctly fitted and turn on the compressed air supply.
- 2.1.7. Ensure that the water separator drain cock is adjusted to give a slight bleed off of air to expel any collected moisture.
- 2.1.8. Check that the blast hose is correctly fitted to the blast machine outlet coupling on the base of the machine, that the coupling gaskets are in good condition and in place and that the couplings are secured with a split pin and

/or the integral wire retaining mechanism. Similarly, ensure that the blast machine exhaust hose or silencer is correctly fitted.

***Warning: It is essential that all air hose and blast hose couplings are secure and that any sealing gaskets required are in good condition and in position. Escaping air will reduce efficiency and can be dangerous.***

- 2.1.9. Within the room ensure that the nozzle gasket is in position and the nozzle is securely seated down on the gasket within the nozzle holder.
- 2.1.10. Check that the deadman handle operates freely and ensure that it is left in the deactivated position.
- 2.1.11. Check along the full length of the blast hose to ensure that it is not kinked and that there are no tight bends.
- 2.1.12. Ensure that all floor gratings are in position.
- 2.1.13. Check that the dust collector is operating. At the main control panel, check that the key is in 'normal running' position then:-
- 2.1.14. Observe that the 'Power on' light is illuminated and Press the green 'System Start' button.

**N.B. If any of the amber lights illuminate, refer to system control details in section 6 and 7.**

- 2.1.15. Close the petcock RM-9 on the remote control valve (i.e. handle at right angles to the petcock valve body).
- 2.1.16. Check the breathable air supply to the blasting helmet for correct quality/ quantity.
- 2.1.17. Move workpiece into blast room area ensuring that the pedestrian gratings are not over loaded.
- 2.1.18. The operative must now don protective clothing, gauntlets, and helmet. (Follow instructions in Helmet Manufacturer's Owner's Manual).
- 2.1.19. Securely close all blast room access doors.
- 2.1.20. Take secure hold of the nozzle holder assembly and point the nozzle outlet towards the workpiece at approximately a distance of around 12 inches (300mm) from the surface.
- 2.1.21. Close the deadman handle and air will pass through the nozzle.
  - 2.1.21.1 Blast machines fitted with remote controlled abrasive metering valve. First close deadman handle then pull back the slide valve.
- 2.1.22. Once the ideal blast effect is reached, signal to the assistant to cease adjustment of the abrasive metering valve on the blast machine.

- 2.1.23. Some variation in angle and distance from the surface may be required to arrive at the most efficient combination.
- 2.1.24. Release the deadman handle for approximately 10-15 seconds and the machine will automatically refill with abrasive.
- 2.1.25. Place the nozzle and hose carefully so that the deadman handle lever is in the de-activated position.

### 3.0 SHUTDOWN SEQUENCE

- 3.1. Open petcock (RM-9) on the remote control valve by positioning the handle in line with the petcock body.
- 3.2. Allow sufficient time for expended abrasive to be completely recovered through the system to the storage hopper, then press the 'System Stop' button.
- 3.3. Turn off the isolator switch on the main control panel.
- 3.4. Turn off the mains supply to the control panel.
- 3.5. Ensure that the breathing air system is not being used by any personnel and turn off the compressed air supply to the blast cleaning equipment and the breathing air system.
- 3.6. Clean and store away personal protective equipment.

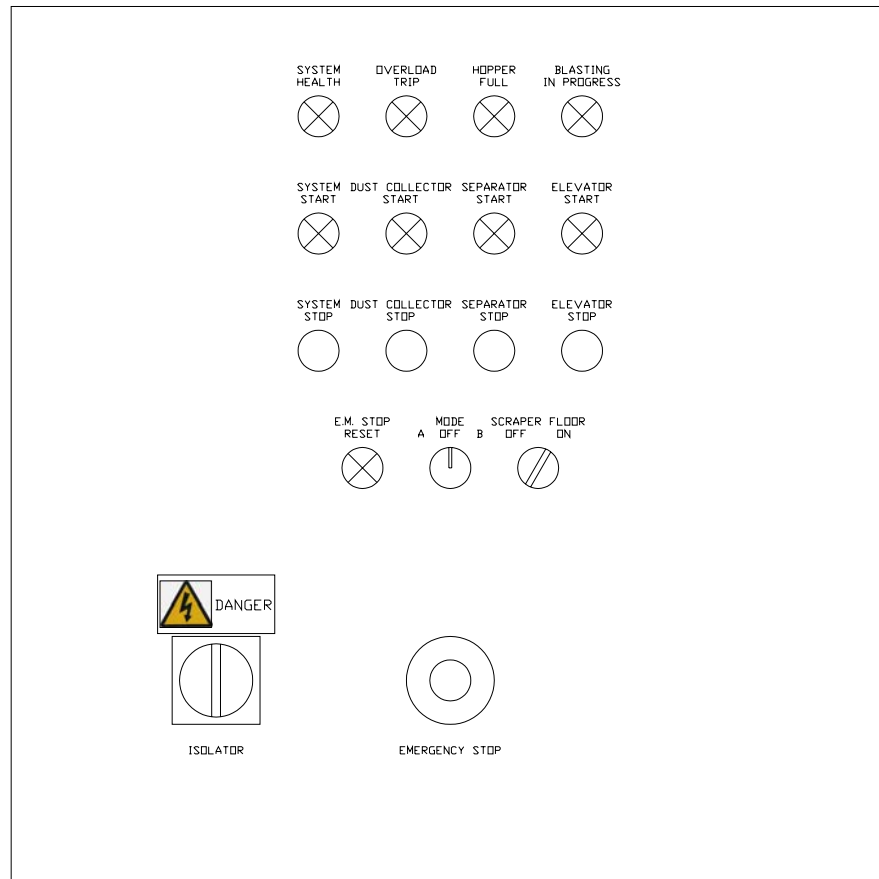
**NB: Maintenance and storage instructions for personal protective equipment are contained in the appropriate enclosed Owner's Manual. Never leave personal protective equipment in the blasting area.**

- 3.7. Stop the dust collector and allow time for the collector to go through the shaker cycle. When complete, ensure that the dust collector is isolated and the air is turned off at source. Remove, empty and securely replace dust receptacle. (Refer to dust collector instruction manual).
- 3.8. Turn air off at source.

***Warning: Never remove dust receptacle whilst smoking or allow any naked flames in proximity. Protection against inhalation of dust must be worn. Dust concentrations can be combustible, explosive and damaging to health.***

### 4.0 MAIN CONTROL PANEL

- 4.1.** In maintenance mode:- The ventilation dust collector, bucket elevator and Separator can all be started independently using their respective push buttons. Care must be exercised whilst operating in this mode as no level sensors are in circuit and the hopper could over fill.



**Main control panel arrangement (typical).**

**4.2. In Automatic mode: -**

- 4.2.1.** Switch control panel on.
- 4.2.2.** Ensure power on lamp is illuminated.
- 4.2.3.** Twist the **emergency stop** to reset button.
- 4.2.4.** Reset the **compressor** on compressor control panel.
- 4.2.5.** Start compressor.

- 4.2.6. Press **System Start** push button.
- 4.2.7. **Dust collector running** lamp illuminates.
- 4.2.8. After a delay **separator running** lamp illuminates.
- 4.2.9. After a further delay **bucket elevator running** lamp illuminates.
- 4.2.10 **Scraper floor/screw recovery** starts if '**on position**' is selected.
- 4.2.11 If level sensor is reached the scraper floor/screw and bucket elevator stop. After a time delay they will restart.
- 4.2.12 When **system stop** is pressed the bucket elevator and scraper floor/screw stop, followed by the separator followed by the dust collector.
- 4.2.13 Press **stop button on air compressor**. The compressor will run unloaded for 30 seconds then stop.
- 4.2.14 **In an emergency press the emergency stop**. See compressor manual to reset.

## 5.0 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 following checklist is a basic guide to assist in planning maintenance schedules.

***Warning: Ensure that the compressed air supply is turned off and all air lines purged of pressure and that the electrical power supply is isolated and the fuses removed before any maintenance work is carried out.***

**N.B. Maintenance work should only be carried out by trained competent persons.**

### 5.1. Daily Programme

- 5.1.1. Check all hoses, couplings and gaskets for evidence of deterioration and replace if necessary.
- 5.1.2. Check that all couplings are re-coupled correctly and secured.
- 5.1.3. Check that the blast hose is in loose curves and not kinked.
- 5.1.4. Check the condition of the nozzle, nozzle holder and gasket and replace worn or damaged parts if necessary.
- 5.1.5. Ensure nozzle and nozzle gasket are correctly and securely located in the



nozzle holder.

**5.1.6.** Check condition of operator's helmet, protective clothing and breathing air supply – see helmet manufacturer's Owner's Manual.

**5.1.7.** Empty dust from dust collector's dust collection receptacle.

***Warning: Never inspect dust or compartment whilst smoking or allow any naked lights in proximity. Dust concentrations can be combustible, explosive and hazardous to health.***

**5.1.8.** Securely replace dust receptacle (refer to dust collector instruction manual).

**5.1.9.** Check that all the door limit switches function.

**5.1.10.** Check condition of viewing windows and seals, clean or replace if necessary.

**5.1.11.** Ensure that the water separator is adjusted to give a slight bleed off of air sufficient to prevent build up of moisture within the bowl.

**5.1.12.** Empty oversize particle collection bin.

**5.1.13.** Empty abrasive separator fines collection bin.

**5.2. Weekly programme**

5.1.1 to 5.1.13 plus:-

**5.2.1.** Check the condition of the water separator. Remove and clean the element and blow dry with air – see separate instruction manual.

**N.B. The filter bowl must only be cleaned with soapy water.**

**5.2.2.** Check the blast machine remote control valve exhaust for blockages. Clean out and replace if necessary – see separate instruction manual.

**5.2.3.** Check condition of lights, protective glass and seals. Replace if necessary.

**5.2.4.** Top up system with abrasive if necessary. **Do not bulk load in local areas.**

**5.2.5.** Check that perforated gratings within the blast room are clear of debris and blockages.

**5.2.6.** Remove clean and replace the magnets (if fitted).

**Note: For self clean magnets insert collection tray before operating mechanism.**

**5.3. Monthly Programme**

5.1.1 to 5.1.13 and 5.2.1 to 5.2.6 plus

**5.3.1.** With the recovery system switched off and the ventilation dust collector switched on, purge the blast machine and storage hopper of abrasive into the blast room.

- 5.3.2. After all abrasive has been purged from the blast machine and storage hopper, turn off the compressed air supply and check that the hoses and equipment are purged of pressure.
- 5.3.3. Disconnect the air supply hose to prevent accidental turning on of the air.
- 5.3.4. Remove the handhold inspection plate from the blast machine shell and inspect the internal pipe work, pop-up valve and sealing ring.
- 5.3.5. Check the inside of the shell and remove any adhering debris.
- 5.3.6. Check the condition of the inspection plate gasket.
- 5.3.7. Securely replace the inspection plate and gasket ensuring a good seal and that the clamp is correctly located and tightened.
- 5.3.8. Check elevator for any belt adjustment requirement (see page 13 for maintenance procedure).
- 5.3.9. Check separation efficiency of cleaner/separator and adjust as required (see page 12 for maintenance procedure).
- 5.3.10. With all electric power off and isolated, check the condition of the filter material in the dust collector. Replace if worn or leaking – see separate instruction manual.

**Warning: Never inspect dust collector whilst smoking or allow naked lights in proximity. Dust concentrations can be combustible, explosive, and hazardous to health.**

- 5.3.11. Generally check round the structure of the room for evidence of abrasive or dust egress. Re-seal where necessary.

## 6.0. PROBLEM SOLVING

**Warning: Ensure that the compressed air supply is turned off and all air lines purged of pressure and that the electrical power supply is isolated and the fuses removed before any maintenance work is carried out.**

6.1. Ventilation dust collector does not start up.	No power to control box.	Switch on mains to dust collector control box and switch on isolator at control box.
6.2. Elevator/recovery system do not start when 'system start' pressed.	No power to system control box.  Storage hopper full (hopper full amber light illuminated).	Switch on power to control box and switch on isolator at control box.  Wait until sufficient blasting has been done to allow abrasive level in hopper to drop.

<p><b>6.3.</b> Dust fines returned through nozzle with abrasive stream.</p>	<p>Wrong setting on cleaner/separator.</p> <p>Separator fines receptacle full.</p> <p>Air flow restricted by blinded filter material in dust collector.</p> <p>Dust collector receptacle full.</p>	<p>Adjust settings to achieve optimum separation.</p> <p>Empty and replace.</p> <p>Check de-blinder action.</p> <p>Empty and replace.</p>
<p><b>6.4.</b> No abrasive in blast stream at nozzle.</p>	<p>Storage hopper empty due to bucket elevator belt slipping.</p> <p>Abrasive metering valve blocked.</p>	<p>Check elevator tracking and re-adjust belt tension.</p> <p>Slightly adjust open the valve and operate choke valve with deadman handle closed.</p>
<p><b>6.5.</b> No air or abrasive passes through nozzle when deadman closed.</p>	<p>Compressed air not turned on.</p> <p>Petcock RM-9 on remote control valve in open position.</p> <p>Remote control hoses disconnected or leaking.</p> <p>Rubber button in deadman handle missing.</p> <p>Water separator blockage.</p> <p>Nozzle blockage.</p> <p>Door interlock circuit interrupted.</p>	<p>Check compressed air supply.</p> <p>Close petcock RM-9 on remote control valve.</p> <p>Check for leaks.</p> <p>Fit new rubber button.</p> <p>Check and clean water separator.</p> <p>Remove blockage.</p> <p>Check electrical door interlocks.</p>



