



Hodge Clemco Ltd

1040 / 1448 / 2050 WDOSX

Wet & Dry Abrasive Blast Machine

Owner's Manual

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Machinery Directive

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

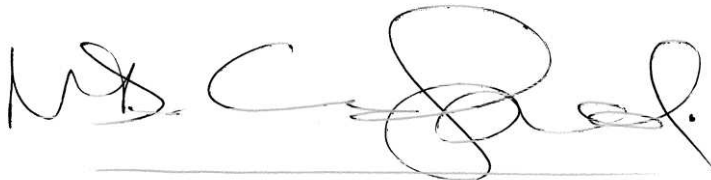
EC DECLARATION OF CONFORMITY

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

Director & General Manager



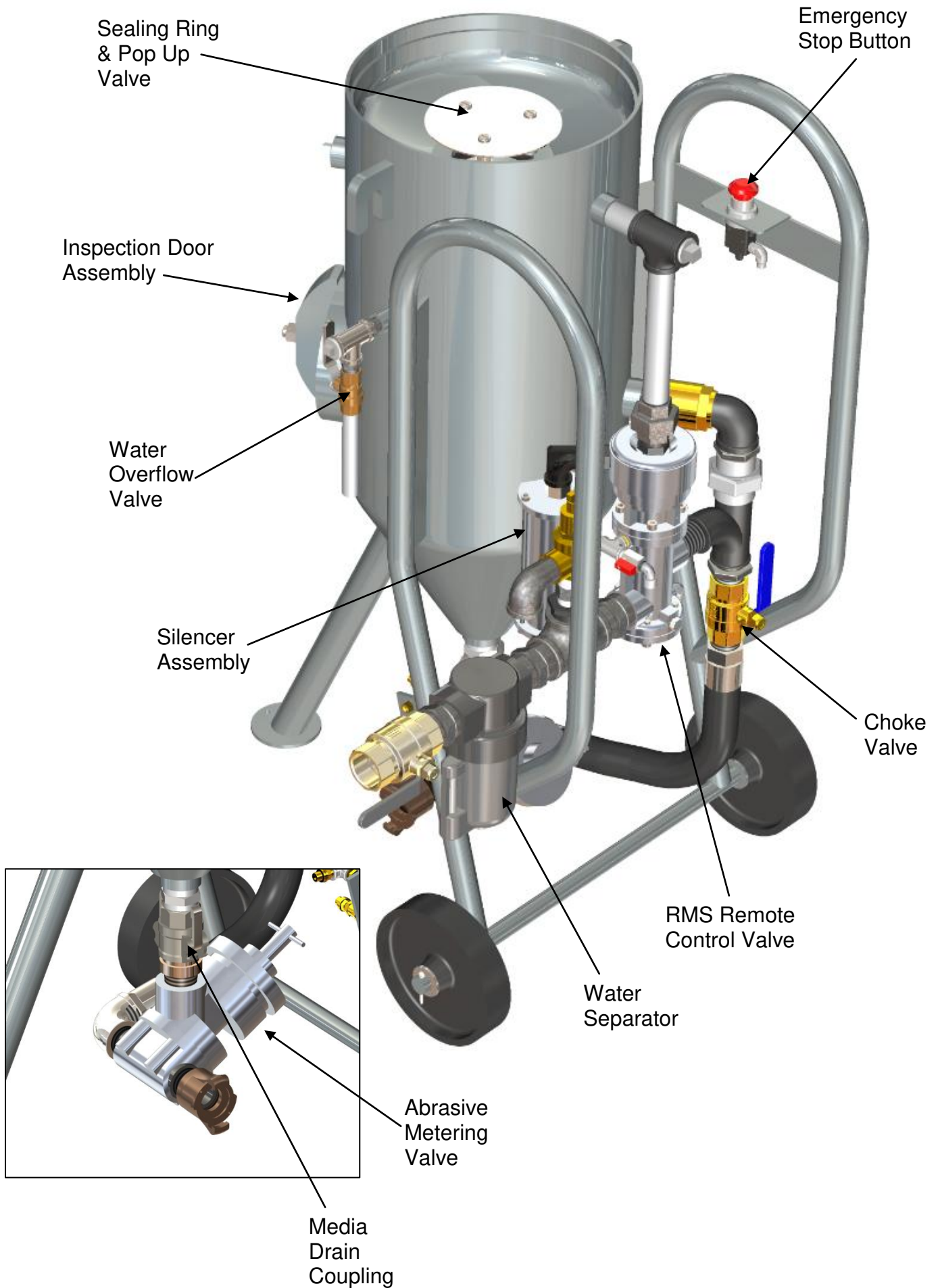
Group Chairman



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 which 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 Service Department on 0114 254 8811



GENERAL DESCRIPTION

This method of surface preparation is generally described as slurry blast cleaning (Ref: ISO 8504-2, BS7079 Part D2). Selected abrasive and water are mixed in the blast-cleaning machine prior to being conveyed by compressed air onto the surface being prepared.

OPERATING AND MAINTENANCE INSTRUCTIONS

This equipment must only be operated by trained competent persons in accordance with current health and safety requirements.

WARNING: THE MAXIMUM RECOMMENDED WORKING PRESSURE OF THIS MACHINE IS 110 psi. UNDER NO CIRCUMSTANCES MUST IT BE CONNECTED TO AN AIR SUPPLY OF GREATER PRESSURE.

1.0 SETTING UP INSTRUCTIONS

Air and water services are required to operate this machine. Contaminated salt water must not be used due to detrimental effects which may occur to the equipment and surface being prepared.

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 THAT IT IS EMPTY PRIOR TO BEING MOVED.

- 1.1 Locate the blast machine in a stable position on firm level ground.
- 1.2 If static is a potential problem ensure that the machine is adequately earthed.
- 1.3 Open the manual choke valve. This valve should remain in the open position for all normal operating conditions.
- 1.4 Check that the emergency petcock is open i.e. red handle in line with air flow.
- 1.5 Check the emergency stop is not depressed; it should be in the raised position.
- 1.6 Securely connect the remote control air hoses to their respective colour coded couplings on the machine manifold.
- 1.7 Similarly ensure correct connections at the deadman handle. Port marked R or 1 accepts the green hose, port marked Y or 2 the yellow hose. If using the HSE deadman lines, this will be preassembled.

WARNING: IT IS IMPORTANT THAT THE CONTROL HOSES ARE CONNECTED CORRECTLY AND SECURELY.

- 1.8 Check that the sealing ring (P-5) in the abrasive-filling orifice of the machine is in good condition and correctly positioned.
- 1.9 Check that the pop-up valve is in position and in good condition.
- 1.10 Ensure that the compressed air outlet valve is CLOSED and connect a suitable length of approved compressed air supply hose to the outlet valve, first ensuring that the required couplings and gaskets are in good condition and in position.
- 1.11 Check that the inspection door assembly is securely bolted in the correct position and that the gasket is in good condition and in place.

WARNING: IF THE INSPECTION DOOR ASSEMBLY IS NOT SECURELY LOCATED/CORRECTLY IN POSITION TO ENSURE A GOOD SEAL, IT CAN BE DANGEROUS.

- 1.12 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.
- 1.13 Check the blast hose to be used is in good condition along the entire length/s.
- 1.14 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.

WARNING: INTERNAL HOSE COUPLINGS OR NOZZLES DESIGNED TO LOCATE INSIDE THE BLAST HOSE MUST NOT BE USED AS THEY CAN BE DANGEROUS.

- 1.14 Check that the appropriate blast 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 couplings can occur.
- 1.15 Lay out the blast hose from the machine to the work surface area, ensuring that no tight curves or kink occur and ensure that the hose is protected from possible damage by passing traffic.
- 1.16 Lay out the remote control air hoses along the length of the blast hose and secure the deadman handle to the 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. Alternatively, fit a Hodge Clemco bonded hose assembly, which is pre-assembled.

- 1.17 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.
- 1.18 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 nozzle holder assembly and screw in the nozzle until it is fully hand tight down onto the gasket.
- 1.19 Ensure that the deadman blade is left in the open position by the spring action.
- 1.20 Refer to the compressor manufacturer's operating instructions and start the compressor.

WARNING: ESCAPING AIR IS DANGEROUS. IT IS ESSENTIAL THAT ALL AIR HOSE CONNECTIONS ARE SECURE AND THAT ANY SEALING GASKETS REQUIRED ARE IN GOOD CONDITION AND IN POSITION.

NOTICE: THE CLIENTS AIR RESERVOIR/SUPPLY MUST BE FITTED WITH A PRESSURE RELIEF VALVE TO ENSURE THAT THE AIR PRESSURE DOES NOT EXCEED THE SAFE OPERATING PRESSURE OF THE BLAST MACHINE. ADDITIONALLY, A SAFE MEANS OF ISOLATION (NORMALLY A BALL VALVE) SHOULD BE FITTED ON THE AIR SUPPLY TO THE BLAST MACHINE.

- 1.21 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.
- 1.22 Turn OFF the compressor outlet valve.
- 1.23 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.
- 1.24 Refer to the air fed helmet manufacturer's owners manual and connect the helmet, breathing air supply hose and breathing air filter as instructed in the manual.
- 1.25 Position the 'DANGER' warning signs around the area of operation and outside the perimeter of excessive noise levels and media ricochet.
- 1.26 Connect a hose to a clean water supply source, ensuring that any gaskets are in place and in good condition.

2.0 OPERATING INSTRUCTIONS (FOR WET OPERATION ONLY)

THIS MANUAL IS WRITTEN FOR WET BLAST OPERATION. THE MACHINE ALSO FUNCTIONS AS A CONVENTIONAL DRY BLAST MACHINE WHEN NO WATER IS ADDED. PLEASE REFER TO HODGE CLEMCO MANUAL FOR A 1028/1440/2040 MACHINE FOR OPERATING INSTRUCTIONS. THE WATER OVERFLOW PIPE MUST BE KEPT FULLY CLOSED WHEN OPERATING DRY.

WARNINGS

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.

MEDIA RICOCHET 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 EMERGENCY PETCOCK ON THE REMOTE CONTROL VALVE AND/OR THE BLASTER MUST RELEASE THE LEVER OF THE DEADMAN HANDLE.

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 WIRED/RADIO COMMUNICATION SYSTEM BE USED.

START UP PROCEDURE

- 2.1 Check that the emergency petcock on the remote control valve is open i.e. handle in line with air flow, then 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 base of the water separator to give a constant slight bleed of air/water vapour.
- 2.3 Turn on the air supply tap for the breathing air filter if the blasting helmet is to be used.

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.

- 2.4 When used, ensure that the breathing air supply hose is adequately protected, to prevent it becoming accidentally trapped, nipped or broken.
- 2.5 Open the machine water overflow valve.
- 2.6 Ensure that the safety sieve (if fitted) is securely in position.
- 2.7 Prime the machine with a small amount of water and then load the abrasive through the sieve. This will flow into the machine through the filling orifice in the centre of the concave dish. **ENSURE THAT THE ABRASIVE VOLUME DOES NOT EXCEED 50% OF THE VESSEL CAPACITY.** This machine operates efficiently at media/water ratios no more than 1:1

WARNING: NEVER PLACE THE HANDS/FINGERS NEAR THE POP-UP VALVE FILLING ORIFICE WHILST COMPRESSED AIR IS CONNECTED TO THE MACHINE.

- 2.8 Use your water supply hose or bucket to 'wash the media' through the top until water flows from the machine overflow valve.
- 2.9 Turn off the water hose tap and machine overflow valve.
- 2.10 CLOSE the emergency petcock on the remote control valve i.e. handle at 90° to air flow.
- 2.11 Adjust the abrasive metering valve to provide minimum but adequate flow e.g. 'Supa' abrasive approximately 5 turns from closed, 'Supafine' or 'garnet' abrasive approximately 3½ turns from closed.
- 2.12 Select the desired operating pressure by adjusting the pressure regulator, optional (if fitted).
- 2.13 The operator should then ensure that no one is in the vicinity of the work area and take secure hold of the nozzle holder and blast hose and direct the nozzle at the work surface.
- 2.14 CLOSE the deadman handle, the machine will pressurise and air and grit will pass through the nozzle.

WARNING: A BACK THRUST IS CREATED BY THE ACTION OF COMPRESSED AIR PASSING THROUGH THE NOZZLE, THEREFORE THE OPERATOR MUST ENSURE HE HAS ADOPTED A SAFE STANCE AND POSITION AND MUST MAINTAIN FIRM HOLD OF THE NOZZLE HOLDER/BLAST HOSE.

OPTIONS - these operating options may be used when additional accessories are available and minor modifications are made to the pneumatic control circuitry

- 2.16.1 To Wash Down a Surface (Air/Water Only)
Keep the deadman handle closed, pull the slide valve back and open the water tap behind the nozzle..
- 2.16.2 To Dry a Surface (Air Only)
Keep the deadman handle closed and the slide valve forward, and close the tap on the red water hose.
- 2.17 To Remove a Blockage from the Blast Machine
Keep the deadman handle closed then turn the choke valve through 45 degrees several times and then return to the original position.

SHUT DOWN PROCEDURE

- 2.20 Ensure the machine is empty and the blast hose purged of abrasive and water.
- 2.21 To stop blasting, release the deadman handle or open the emergency petcock on the remote control valve. (NB: either of these operations closes the abrasive metering valve). In the event of an emergency, the emergency stop button can also be activated.
- 2.22 If used ensure that the operator has first removed his air fed helmet, then turn OFF the compressed air at the compressed air supply outlet valve.
- 2.23 Ensure that all air lines are purged of pressure prior to disconnection of hoses.

3.0 MAINTENANCE

All blast cleaning equipment is subject to wear, therefore for safety and efficiency, it is ESSENTIAL to operate a preventative maintenance programme. The degree of wear is variable and is dependant upon many factors: - type and grade of media, 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 programmes.

WARNING: ENSURE THAT THE COMPRESSED AIR SUPPLY IS TURNED OFF AND ALL AIR LINES 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 COMPRESSED AIR SUPPLY.

NOTE:

- A. MAINTENANCE SHOULD ONLY BE CARRIED OUT BY TRAINED COMPETENT PERSONS.**
- B. ACCESS TO THE CONTROL PANEL (WHERE FITTED) IS BY SECURITY KEY ONLY.**

3.1 MAINTENANCE CHECK LIST – SETTING UP AND AFTER 4 HOURS USE

- 3.1.1 Check condition of all air hoses connections and gaskets for sign of wear and replace as necessary.
- 3.1.1 Check blast hose for signs of wear or damage and replace with new if required.
- 3.1.2 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.
- 3.1.3 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.
- 3.1.4 Check the condition of the nozzle holder for wear and replace with new one if necessary.
- 3.1.5 Check that the nozzle holder gasket is in good condition and ensure that it is in position. Renew if showing sign of wear.
- 3.1.6 Check the nozzle for blockages wear or damage and replace with new one if necessary.
- 3.1.7 Ensure nozzle is securely located into nozzle holder onto the gasket.
- 3.1.8 Check the deadman handle to ensure free spring lever action on handle and check that the rubber insert is in place.
- 3.1.9 Check free action of sleeve valve on deadman handle assembly.

3.2 MAINTENANCE CHECK LIST – AFTER 40 HOURS USE

- 3.2.1 Check media metering valve and fittings for sign of wear/leaks.
- 3.2.2 Check that the inspection door assembly is correctly and securely fitted, the gasket is in position and that no leaks occur.
- 3.2.3 Using quick release coupling under cone of blast machine, drop abrasive metering valve off the vessel and rinse thoroughly with clean water to remove any accumulated media from internals of machine.

4.0 FAULT ANALYSIS

WARNING: ENSURE THAT THE AIR SUPPLY AT THE COMPRESSOR IS TURNED OFF AND THE AIR LINE IS PURGED OF PRESSURE BEFORE REPAIR WORK IS CARRIED OUT.

SYMPTOM	PROBABLE FAULT	ACTION REQUIRED
4.1 No air or media passes through nozzle	Emergency petcock open	Turn handle across flow
	Emergency stop activated	Twist to return to on position
	Compressor not turned on	Turn on compressor
	Rubber insert on deadman handle	Check insert and renew if necessary
	Machine blockage	Operate choke valve
	RMS remote valve not working	With emergency petcock and deadman handle closed check RMS valve and along Recova lines for air leaks and loose connections
4.2 Air but no media passes through nozzle	Media metering valve closed	Adjust valve to more open position
	Blockage restricting media at base of machine	Operate the choke valve or add more water
		Release cam coupling to drop grit valve or remove inspection door and clean out
4.3 Intermittent flow of media	Media metering valve not adjusted correctly	Check setting
	Blockage as 4.2	Operate choke valve and clean out as 4.2
4.4 Media surges from the nozzle	Media metering valve too fully open	Check setting

<p>4.5 Pop-up valve will not remain seated against sealing ring</p>	<p>Insufficient volume or pressure of air</p>	<p>Check air supply from compressor with hypodermic needle gauge</p>
		<p>Close choke valve, if pop up valve then seals, insufficient air supply is available</p>
		<p>Check condition of water separator</p>
		<p>Check action of RMS exhaust valve</p>
<p>4.6 Pop-up valve will not drop after depressurisation</p>	<p>Worn pop-up valve and/or sealing ring</p>	<p>Remove and replace both valve and sealing ring</p>
	<p>Media trapped in vertical pipe work</p>	<p>Remove inspection door assembly and pop-up valve then clean out</p>
<p>4.7 Machine will not depressurise</p>	<p>Blockage in deadman handle and/ or remote control valve</p>	<p>Remove and clean out hoses</p>
	<p>Faulty RMS remote control valve</p>	<p>Remove and repair</p>

AIR CONSUMPTION CHART/COMPRESSOR REQUIREMENTS

Air Consumption Guide for Blasting Nozzles

Nozzle Pressure	Nozzle Diameter				
	1/4"	5/16"	3/8"	7/16"	1/2"
	cubic feet per minute				
20 psi	28	41	57	83	110
25 "	31	47	66	94	124
30 "	34	53	74	105	138
35 "	38	59	83	116	152
40 "	41	65	91	127	167
45 "	44	71	100	138	181
50 "	47	77	108	147	195
55 "	51	83	117	159	210
60 "	54	89	126	170	224
70 "	61	101	143	194	252
80 "	68	113	161	217	280