Surface Finishing
Equipment Group

PORTABLE ABRASIVE BLASTING UNIT

Models : AH10, AH14, AH20, AH24

nqa
ISO 9001
Registered
Quality Management

WARNING

CE

READ AND FOLLOW ALL INSTRUCTIONS AND SAFETY PRECAUTIONS BEFORE INSTALLING OR OPERATING THIS EQUIPMENT.
KEEP THIS MANUAL READILY AVAILABLE FOR FUTURE REFERENCE.

It is the responsibility of the employer to place this manual in the hands of the operator. This manual must be kept in a place available to those using and affected by this equipment at all times during the life of this equipment. Failure to comply with these instructions can result in serious injury or death to the operator or those in the vicinity of the equipment.

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SAFETY PRECAUTIONS

FAILURE TO USE THIS MACHINE IN ACCORDANCE WITH THIS MANUAL CAN RESULT IN SERIOUS INJURY OR DEATH. READ THE FOLLOWING CAREFULLY BEFORE YOU ATTEMPT TO OPERATE THE MACHINE.

- This equipment must be only used by competent operators who are properly skilled, duly trained, and have read and understood the operating and safety instructions.
- Never attempt to perform any maintenance or refilling while the Machine is under pressure or capable of being pressurised. This means the air source should be isolated by closing the inlet ball valve and disconnecting the air supply line. The Safety Stop Valve on the deadman valve should be opened to release any residual pressure in the system.
- Keep This Operators Manual Available To Users At All Times.
- This equipment should not be used in a hazardous area or potentially explosive environment. Static electricity can be generated by the friction of abrasive particles passing through hose or nozzles, and the impact of the abrasives on the surfaces being blasted. Static electricity can shock employees and cause fires and explosions by igniting flammable / combustible atmospheres or materials.
- Ground all parts of the Equipment, and the item being blasted.
- This equipment should be used in a well lit area.
- Make sure that the unit is situated on a flat sturdy surface.
- Warning - for hoisting, the lifting lugs providing on the 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 prior to moving.
- Use only original equipment replacement components.
- All airlines and couplings should be fitted with whip-check safety devices.
- Do not use abrasives containing free silica which can result to serious respiratory disease. If in doubt ask for an MSDS (material safety data sheet).
- Furnish all personnel in the area with approved respiratory equipment, eye and ear protection and ensure that these are worn.
- Do not modify or substitute any equipment or controls supplied on or with the equipment without our prior written assessment and consent.
- Never point the blast nozzle at any person. Always keep the nozzle pointed at the work piece.
- Never connect the pot to a compressed air supply in excess of the Safe Working Pressure as stamped on the machine. If in doubt, or this is obscured, check with the manufacturer.
- DANGER When using mobile diesel air compressors, always site the compressor away from the blast area and outside in a well ventilated area, to avoid any exhaust fumes being drawn into the compressor air intake. All standard breathing air filters DO NOT remove carbon monoxide from the air supply.
- 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 adequate safety protection equipment. Should anyone enter the area, the pot tender must immediately close down the blasting operation by depressing the emergency button on the control panel and / or the blaster must release the lever of the deadman handle.
- If the Blast Pot is dismantled / decommissioned, ensure it complies with local environmental laws.
- Communication - it may be 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.

SAFE PRACTICES

- Never attempt to perform any maintenance while the unit is under pressure or is even capable of being pressurised. This means at a minimum the inlet ball valve should be closed and the air source be shut off or disconnected. The emergency stop on the deadman valve should be opened to release any residual pressure.
- Do not use the Machine for extended periods of time.
- Wear suitable eye protection when filling the unit. There is a possibility that some abrasive may be blown back as the pop-up valve seats.
- Always keep fingers well clear of the working area of the pop-up valve.
- Periodically check all hoses to see that they are in good condition. Repair any valves or hoses that show signs of wear or leakage.
- Check daily the blast nozzle. Replace immediately if any cracks however slight have appeared to avoid any possible disintegration of the nozzle.
- All blast hose couplings and some air hose couplings are provided with holes through which a wire or a pin should be inserted to prevent accidental disconnections.
- 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 a firm hold of the nozzle holder / blast hose.
- The interior condition of the vessel should be inspected regularly for corrosion.
- All blast operators should be supplied with and use approved respiratory equipment, protective clothing, helmet, ear protection and gloves.
- Whilst wearing standard blast cleaning helmets always ensure that:

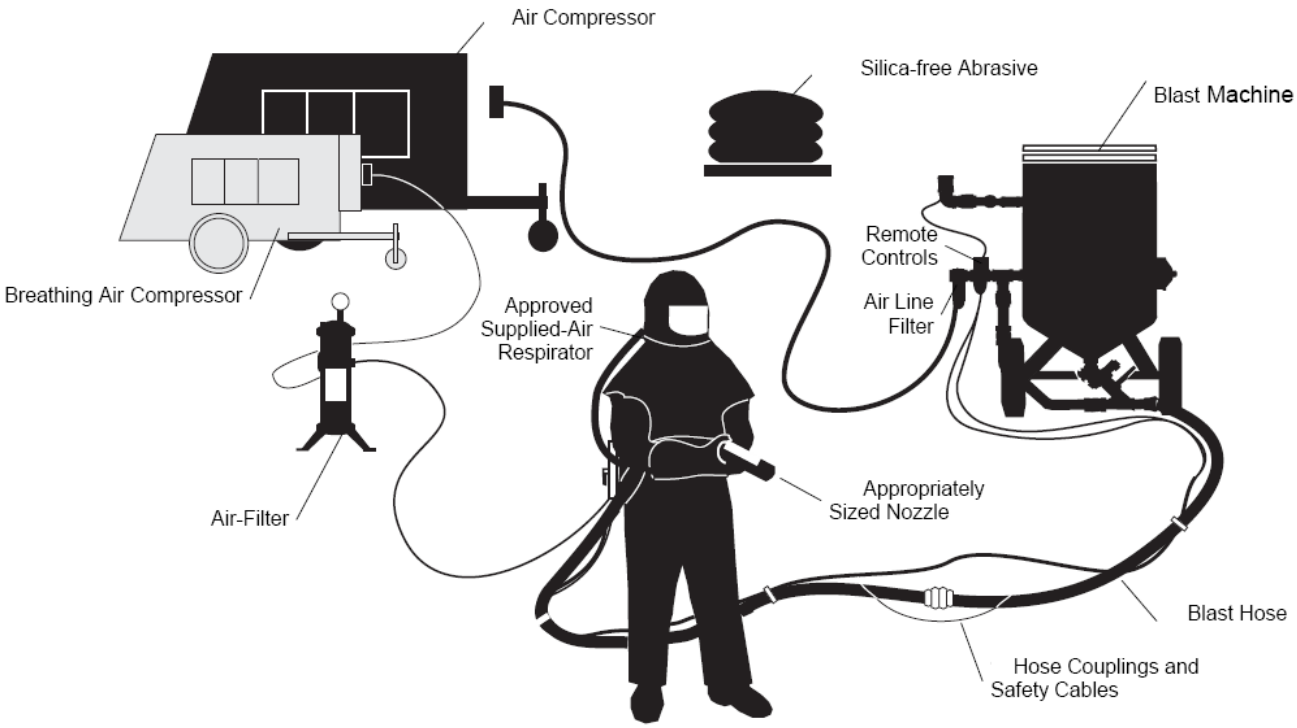
  a. A Filtered Air Supply is used.
  b. A correctly fitted inner shatterproof visor is used to ensure operator eye protection.
  c. A disposable external visor is fitted to protect the inner visor.
  d. Ear plugs or ear defenders are worn for additional ear protection.

- This information relates only to the noise level generated internally as a result of the introduction of breathing air. Additional ear protection may also be necessary if noise levels generated externally are above permitted levels.
- Whip checks must be used on all airlines / airline connections.

INSPECTION REQUIREMENTS

- A blast pot is a pressure vessel and is subject to inspection as required by legislation.
- The owner is obliged to observe regulations governing pressure vessels of this type.
- You should advise your insurers of your purchase and ensure that this equipment is included in a written scheme of examination prepared by a qualified competent person.
- Visual inspections should be carrier out internally and externally by a competent qualified person. We recommend hydraulic pressure testing should be carried out at least once of every 12 months, or in accordance with your local / company / insurance regulations, whichever is sooner. This can be done at our facility. Please see contact details on the last page.
- Your insurers will advise on current legal requirements.
- Should any damage occur to the vessel then it should be taken out of service immediately and the manufacturer contacted for advice.

RECOMMENDED SET-UP



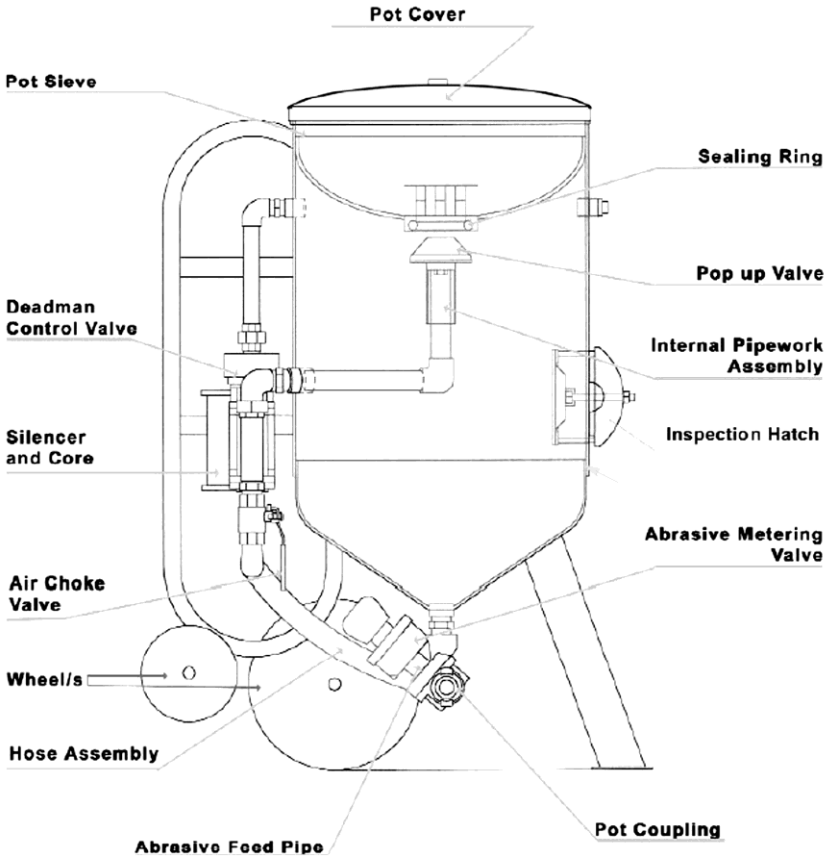
GENERAL DESCRIPTION OF BLASTING

This method of surface preparation is generally described as blast cleaning. Selected abrasive is poured into the blast-cleaning machine prior to being conveyed by compressed air onto the surface being prepared.

INTENDED FUNCTION OF EQUIPMENT

The equipment is designed for pressure blast cleaning with dry abrasive media in environment which is not potentially explosive / combustible.

TYPICAL LAYOUT



- Pressure Vessel with Inspection Hatch
- Safety Pressure Relief Valve
- Abrasive Metering Valve
- Deadman Control Valve with Safety Stop Valve
- Deadman Control Valve Handle
- Airline Filter
- Breathing Filter - optional
- Choke Valve
- Pop-up Valve and O Ring
- Pipework – Metal or Flexible
- Couplings
- Shotblast Hose
- Airline Hoses – Twin hose for Remote Control Valve + Helmet Hose
- Wheels

PRODUCT VARIANTS

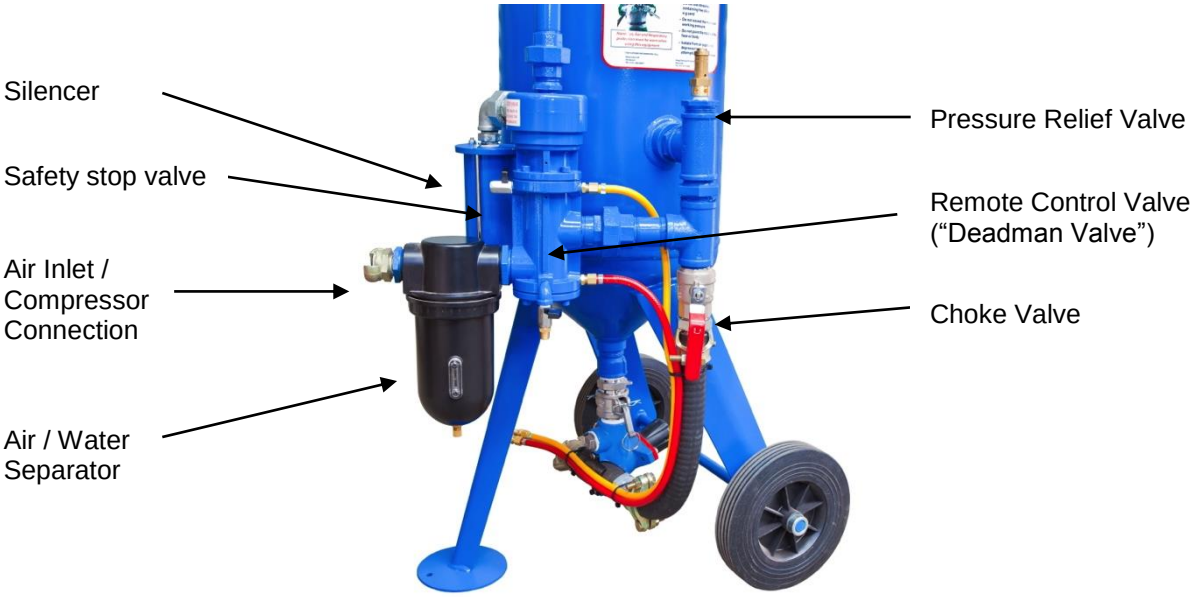
Each variation of the Portable Abrasive Blast pot consists of combinations of the same basic components assembled into the same basic design.

The variations of components can include different abrasive metering valves, remote control valves and the addition of a pressure regulator.

Parts list for the components are held in individual manuals and are available on request.

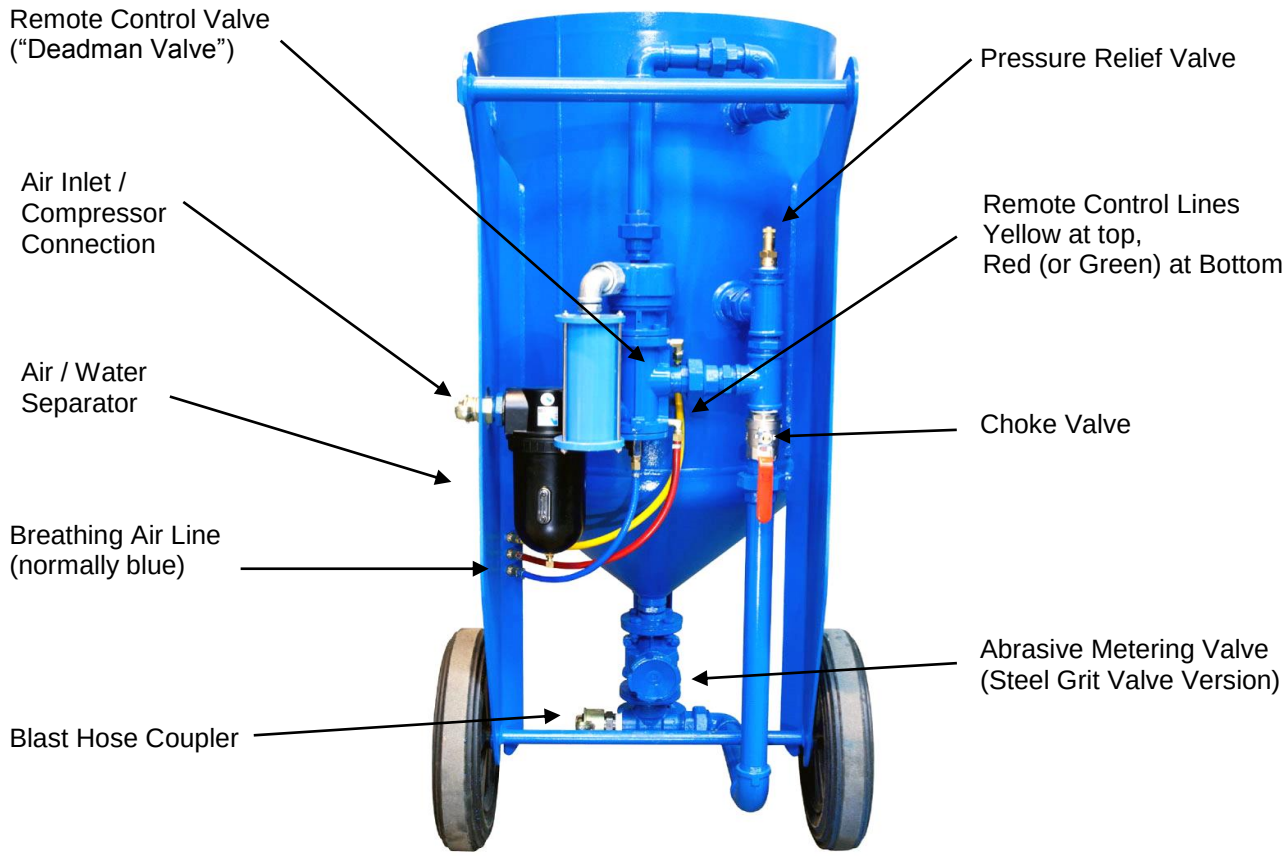
KEY PARTS AND CONTROLS

Main Components of 50 Litre Machine With Flexible Pipework



KEY PARTS AND CONTROLS

Main Components of 100 / 200 Litre Machine with Fixed Pipework



HOW THE SYSTEM WORKS

Air pressure passes from the supply hose (from the compressor) to the deadman handle and when activated the air travels back down the return hose. The return hose is connected to the operating chamber of the remote control valve. When air enters the remote control valve through the return hose, this activates the valve allowing air to enter the pot and blast hose and also the exhaust section of the valve preventing air escaping from the blast pot.

The abrasive valve allows abrasive to fall into the air stream.

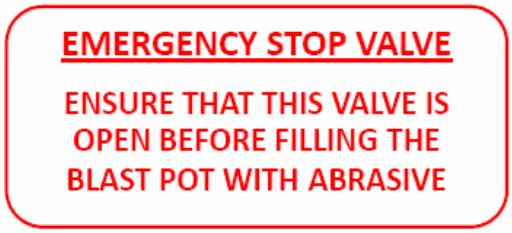
When the deadman valve is released it vents the control pressure to the remote control valve allowing the air valve to return to its "normally closed" position. This stops the air supply to the blast hose and pot, at the same time opens the exhaust and vents the air in the pot to the atmosphere.

OPERATING AND MAINTENANCE INSTRUCTIONS

SETTING UP INSTRUCTIONS

- Locate the blast machine in a stable position on firm level ground.
- If static is potential problem ensure the machine is adequately earthed and use anti-static blast hose and metal couplings.
- Refer to the air fed helmet manufacturer's owner's manual.
- Read the INITIAL SET-UP AND ROUTINE CHECKS shown later in the manual.

SAFETY ON / OFF VALVE



- The Safety Stop Valve on the deadman valve should be opened to release any residual pressure in the system before perform any maintenance or refilling the machine.
- The air source should also be isolated by closing the inlet ball valve and disconnecting the air supply line.

CONNECTIONS

- Compressed air services are required to operate this machine. The volume and pressure of air required is shown in the section "Air Consumption Guide for Blasting Nozzles". Contaminated air must not be used due to detrimental effects, which may occur to the equipment and surface being prepared.
- Connect air supply to the air/water separator. Fit whip checks on all airlines/ airline connections.
- Connect blast hose onto blast hose connection on the grit valve and check all hose and couplings are secure. Fit safety pins into the holes in the couplings.
- Connect the two deadman handle remote lines (normally yellow and green) onto the manifold mounted pot connections.
- Connect the twin remote lines to the connections on the remote control valve. The lower connection is the supply air and the upper connection is the return air from the deadman handle (situated next to the blast nozzle).
- NOTE : With some fold over type deadman handles the remote lines may be connected to either fitting, but for certain makes of safety deadman handles. It is important that the feed and return lines are connected the correct way around.
- Ensure the quick release clean out coupling is locked firmly in position.
- Connect the helmet air line to the breathing air filter on the pot (or free standing unit if applicable) and to the blast helmet. Wear protective clothing, gloves and ear protection.
- Always ensure that the helmet is securely closed before the operator enters the blasting area. Always fit thick inner visor as well as expendable outer visor.

FILLING

- As a safety precaution it is recommended that the safety stop valve fitted to the return side of the deadman control valve should be opened prior to filling. This will prevent the operator from turning the unit on while the unit is being filled. This safety stop valve is situated on the side of the remote control valve, opposite the twin remote line return connections. The safety stop position is when the stop cock is open to allow air to escape from the remote control valve, or the return deadman line.
- Empty abrasive into the top head dish, being careful not to get pieces of the bag etc. into the pot. An excessive amount of material piled on top of the pop-up valve after the unit is full may prevent the pop-up valve from closing properly. KEEP FINGERS CLEAR of the pop-up valve.

STARTING TO BLAST

- Refer to the compressor manufacturer's operating instructions and start the compressor.
- Be sure that the lever on the deadman handle is NOT depressed. Always check before connecting remote lines. DANGER - some deadman handles must be connected the correct way round - check for the type of handle which you are using.
- Ensure that the choke valve is fully open.
- Open the inlet ball valve, if fitted.
- Close the safety stop cock.
- Depress the deadman handle. Air and abrasive flow will travel down the blast hose to the nozzle.
- Direct nozzle towards work pieces. NEVER TOWARDS PERSONNEL.
- The abrasive flow can be adjusted with the control knob on the abrasive metering valve. Turn clockwise for less abrasive and counter clockwise for more abrasive. Due to the length of the blast hose there will be a slight delay in control of the abrasive at the nozzle so allow a few seconds before adjusting further. Adjust gradually, and only to ensure minimum amount of abrasive is introduced to suit work requirement. Adjust the abrasive metering valve to provide minimum but adequate flow. As a guide "Supa" abrasive approximately 5 turns from closed, "Supafine" abrasive approximately 3½ turns from closed.
- The bleed off on the bottom of the moisture separator should be kept slightly open to permit moisture to drain off. Once each day open it completely to blow out any dirt that might have accumulated.
- At any time that the unit is connected to the compressed air supply but is not being used it is recommended that the safety stop petcock on the remote control valve is opened to prevent accidental activation of the control system.

SHUT DOWN PROCEDURE

- Ensure the machine is empty and the blast hose purged of abrasive.
- To stop blasting release the deadman handle button
- 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. Disconnect the compressed air. Open the safety stop valve to release any residual pressure in the pot.
- Ensure that all air lines are purged of pressure prior to disconnection of hoses.

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

ABRASIVE

Our blast pots are designed to use a wide range of dry abrasives including the commonly used ones outlined below.

Expendable Abrasives

'J' BLAST SUPA	Medium Grit for steel
'J' BLAST STANDARD	Coarse Grit for very rusty steel
STONEGRIT / ABRABLAST®-M/25	Medium Grit for Concrete
JBLAST SC / ABRABLAST®-F/25	Fine Grit for Stone & Brick

Re-Usable Abrasives

Chilled Iron	Various grades for steel
Steel Shot	Various grades for steel
Aluminium Oxide	Aluminium or steel
Glass bead	Various grades for stainless steel and aluminium

ROUTINE INSPECTION AND MAINTENANCE

ENSURE THAT THE COMPRESSED AIR SUPPLY IS TURNED OFF AND DISCONNECTED. ALL AIR LINES PURGED OF PRESSURE AND SAFETY STOP IS OPENED BEFORE ANY MAINTENANCE WORK.

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 dependent 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 schedules.

Note:

Maintenance should only be carried out by trained competent persons. This maintenance can be done on site or at our facility. Please see contact details on the last page if this service is required.

INITIAL SET-UP AND ROUTINE CHECKS

1. Always empty pot completely when not in use. Abrasive left in the pot can become damp and may cause blockages.
2. Make regular checks to the condition of all Lines and Connections. Look for wear, splits, or leaks and replace if necessary.
3. Blast Hose – Check the blast hose to be used is in good condition along the entire length. Squeeze by hand to check for wear. 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. 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.
4. Couplings and Gaskets - check that the coupling gaskets on the claw couplings are in good condition and correctly seated in the coupling. 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 wiring latching is provided, use split pins through the corresponding holes to ensure no accidental parting of the couplings can occur.
5. Deadman (Remote Control) Hoses and Handle – ensure the remote control air hoses have no splits or leaks. Ensuring that the rubber insert is in position and that the blade opens freely by the action of the spring and closes freely. The hoses should be secured 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.
6. Check the condition of the nozzle holder for wear and replace with new one if necessary.
7. Check that the nozzle holder gasket is in good condition and ensure that it is in position. Renew if showing sign of wear.
8. Ensure nozzle is securely located in to nozzle holder onto the gasket.
9. Check that the inspection door assembly is correctly and securely fitted, the gasket is in position and that no leaks occur.
10. Check that the sealing ring (P-5) and pop up valve mushroom in the abrasive-filling orifice of the machine are in good condition and correctly positioned. This will involve unscrewing the 3 screws securing the safety cover. Remember to re-fix the safety cover after the inspection.
11. Remove exhaust air muffler (if fitted) and clean out.
12. Check and replace if necessary breathing air filter elements. (Where Used)
13. Check internals of the abrasive metering valve for wear or leaks. Replace liner or diaphragm or wear plate if they show signs of wear.
14. Check drain on the water separator is clear; adjust until it is blowing slightly to remove moisture for the supply to the switches.

WEEKLY

1. Remove inspection door and clean out machine.
2. Check and if necessary replace door gasket.

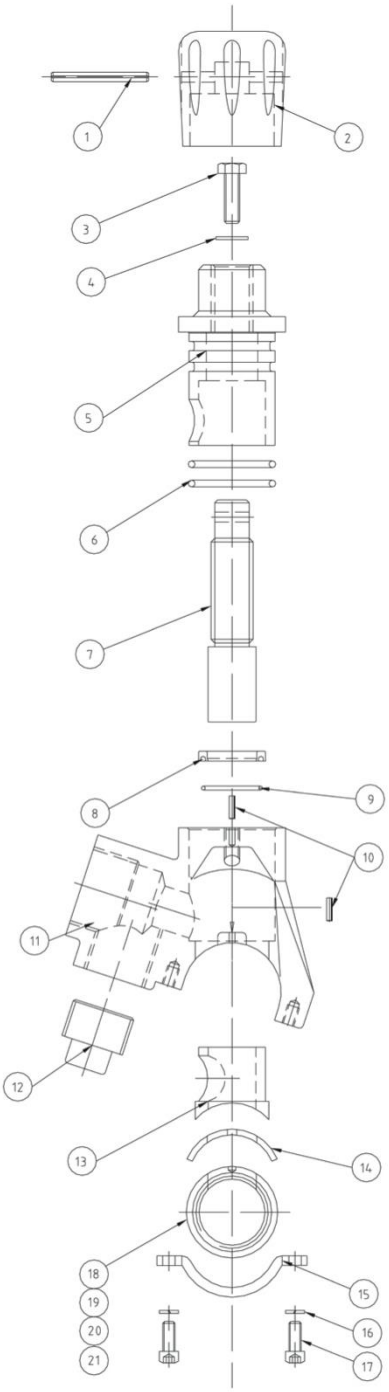
EVERY 3 MONTHS MAXIMUM

1. Replace breathing air filter elements.

EVERY 6 MONTHS MAXIMUM

1. Strip, clean and lubricate all operating valves.

Fina II “Microvalve” Abrasive Valve

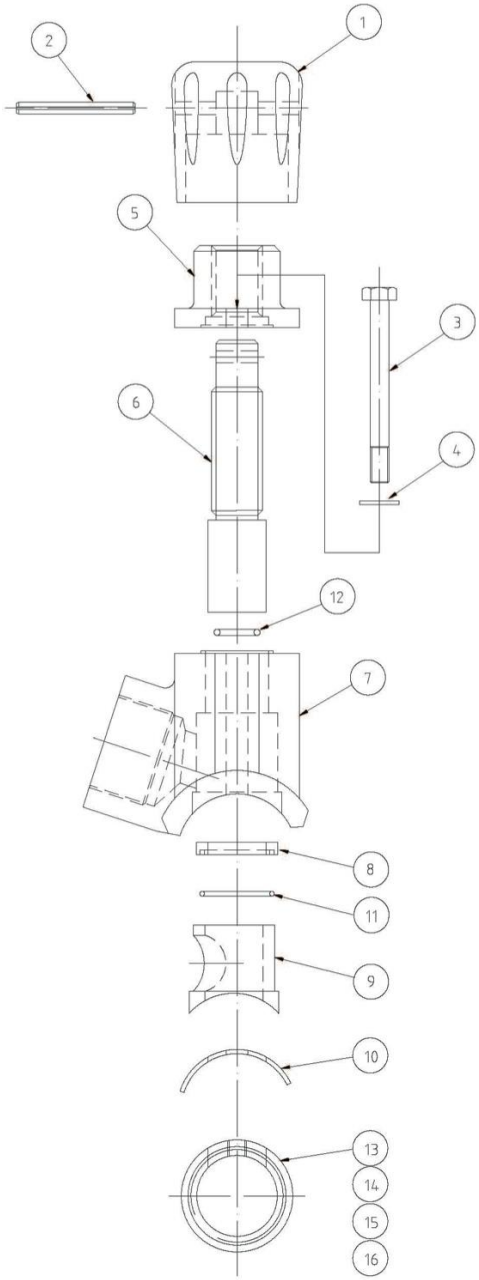


Item	Description	Qty
1	Spring Pin	1
2	Control Knob	1
3	Machine screw 5/16” UNC	2
4	M8 Flat Washer	2
5	Top Body	1
6	O Ring	2
7	Plunger	1
8	Plunger Seal	1
9	O Ring	1
10	Split Pin	3
11	Valve Body	1
12	Plug 1” BSP	1
13	Urethane Sleeve	1
14	Polyurethane Gasket	1
15	Half Ring Clamp	1
16	Spring washer ¼”	2
17	Socket head machine screw	2
18	Pipe Nipple 1 ¼” – 1 ¼”	1

Fina II Valve Service Kit -

Part No.	Description	Parts Included
	Seal Kit	5, 11, 12, 13, & 14

Fina 1 “Microvalve” Abrasive Valve



Item	Description	Qty
1	Control Knob	1
2	Spring Pin	1
3	Bolt 5/16” UNC	2
4	M8 Flat Washer	2
5	Top Body	1
6	Plunger	1
7	Valve Body	1
8	Plunger Seal	1
9	Urethane Sleeve	1
10	Gasket	1
11	O Ring	1
12	O Ring	2
13	Pipe Nipple 1 ¼” – 1 ¼”	1

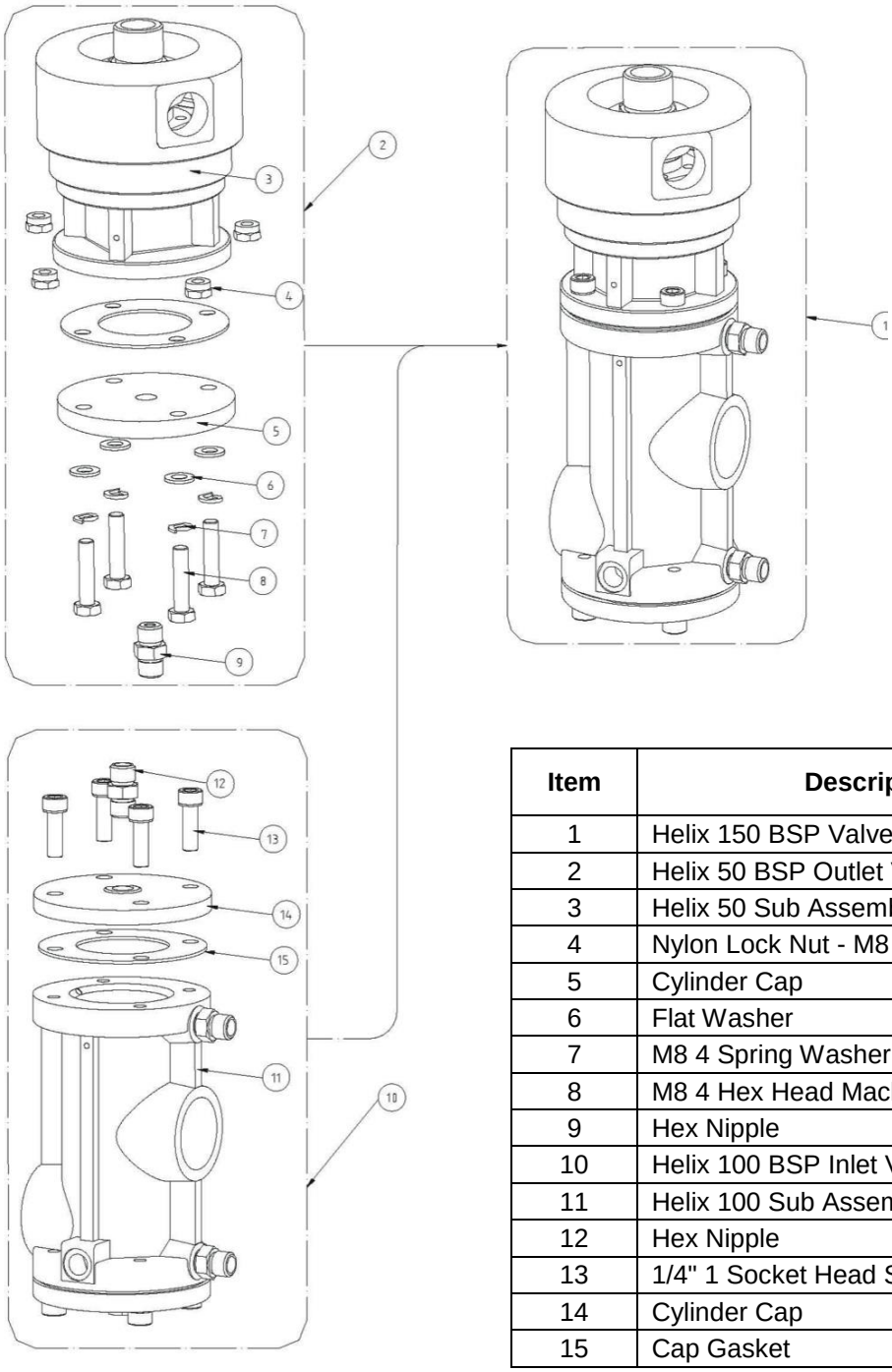
Fina 1 Valve Service Kit –

Part No.	Description	Parts Included
	Service Kit	5, 11, 12, 13, & 14

Steel Grit Valve / Abrasive Metering Valve

Code	Description	Qty
GV2 / P17C	Full Sized Grit Valve – complete	1
GV2A/ JH10202	Standard Rubber Liner for above (black)	1

Remote Control Valve and Silencer



Item	Description
1	Helix 150 BSP Valve Assembly
2	Helix 50 BSP Outlet Valve
3	Helix 50 Sub Assembly
4	Nylon Lock Nut - M8
5	Cylinder Cap
6	Flat Washer
7	M8 4 Spring Washer
8	M8 4 Hex Head Machine Screw
9	Hex Nipple
10	Helix 100 BSP Inlet Valve
11	Helix 100 Sub Assembly
12	Hex Nipple
13	1/4" 1 Socket Head Screw
14	Cylinder Cap
15	Cap Gasket

Helix Remote Control Valve Service Kit

Part No.	Description
RCV-1RK	Repair Kit – Seals and Diaphragms
RCV-2RK/F	Repair Kit – Seals, Diaphragms, and Silencer Core

TROUBLE SHOOTING / FAULT ANALYSIS

ENSURE THAT THE COMPRESSED AIR SUPPLY IS TURNED OFF AND DISCONNECTED. ALL AIR LINES PURGED OF PRESSURE AND SAFETY STOP IS OPENED BEFORE ANY MAINTENANCE WORK.

FAULT	POSSIBLE CAUSE	REMEDY
Air Blast BUT No or Intermittent Abrasive flow	Pot is empty	Re-fill Pot
	Abrasive Metering Valve is blocked with foreign body or damp abrasive	Close Choke Valve for 1-2 seconds and open Abrasive Metering Valve momentarily only to see if obstruction is blown out. If this fails depressurise pot and remove obstruction by hand.
	Abrasive Metering Valve is closed or not correctly adjusted	Adjust Valve
	Exhaust not sealing	
	Pop-up valve is not seating.	Check for obstructions on valve / O Ring wear.
No air and no abrasive	Compressor not turned on	Turn on compressor
Reduced Pressure at nozzle	Insufficient Air Supply	Use larger compressor Use larger diameter air supply hose
	Abrasive Metering Valve is opened too far.	Adjust Valve
	Pop-up valve not seating	Check for obstructions on Valve Check for sufficient volume of air
	Exhaust not sealing	
Unit will not turn on or slow to turn on	Insufficient Main Air Supply	Use larger compressor Use larger diameter air supply hose
	Insufficient Air Supply to Remote Control Valve	Remote Hoses (Twin hoses) to deadman handle to RC Valve are leaking / split. Remote Hoses (Twin hoses) to deadman handle to RC Valve are blocked. Disconnect the return hose from the pot to check there is air pressure whenever the deadman handle is depressed.
	Remote Control Valve not functioning	May require service of valve for sticking or worn seals. Valve may be blocked.
Machine will not depressurise		
Unit turns on accidentally.	Lever on Deadman Handle worn	Replace Handle
	Deadman handle lines wrong way wrong	Swap lines (only occurs on certain types of handle)
Pop-up valve will not drop after depressurisation	Worn pop-up valve and / or sealing ring	Remove inspection door assembly and pop-up valve then clean out.

NAME AND ADDRESS OF MANUFACTURER

Manufactured by **The Surface Finishing Equipment Group** comprising :=

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