BLASTLINE

Operations Manual

Single Chamber Blast Machines - ASME

Model No: BL-U-24800, BL-U-24650, BL-U-20300, BL-U-14160

BL-U-24800 BL-U-24650 BL-U-20300 BL-U-14160

Manufacturer: **Jolly Industries**

Certificate No: **2353425**

qualityaustria SYSTEM CERTIFIED ISO 9001:2015 No. 23192/0

Cert No: 23192/0

CE

Cert No: CE-10109

ASME U

Cert No: 52475

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If you need to have your blast machine serviced, contact Blastline

BLASTLINE

Blastline India Private Limited
Blastline Corporate Chambers, Pottakuzhy
Elamakkara PO, Kochi - 682026, Kerala, India
Phone : +91 484 2537375 / 76, +91 9562011088
Email : info@blastlineindia.com
Web : www.blastlineindia.com

If you need to contact the manufacturer directly, contact Jolly Industries

Jolly Industries

Jolly Industries
15/469, Mayiladumkunnu,
Avanur.P.O, Thrissur - 680541,Kerala
Phone : 0487 2217918,+91 9048669986
E-mail : info@jollyindustries.net
Web : www.jollyindustries.net

This manual supports the following models:

BL-U-24800 - 300 Ltr
BL-U-24650 - 200 Ltr
BL-U-20300 - 100 Ltr
BL-U-14160 - 50 Ltr

DISCLAIMER

Our company is not responsible for any death, injury, loss of materials due to any reason of misuse, inadequate skill, mishandling etc. Our responsibility ends when the material leaves our warehouse.

WARNING

Before using this product, read all instructions, literature, labels, specifications and warnings sent with and affixed to the equipment. Do not paint over, alter or deface the equipment instruction tags, stickers, or plates. Immediately replace all stickers, tags, and plates which become illegible. If the equipment user, or any assistants of the user cannot read or thoroughly understand the warnings and information contained in these instructions, it is the responsibility of the user's employer to educate, train, and test them on the proper operation and safety procedures of this equipment.

Periodic inspections at the work site should be made by supervisory personnel to ensure the equipment is being properly used and maintained in a safe working environment. A copy of this safety manual must be kept with the equipment, and must be readily accessible to equipment users, user assistants, and supervisors. Failure to comply with all instructions can result in severe bodily injury or impairment, illness, or death.

Customer Name	
PO No.	
Date of Purchase	
Machine Model	BL-U-14160 ◯ BL-U-20300 ◯ BL-U-24650 ◯ BL-U-24800 ◯
Serial No.	

Introduction

Read and follow all instructions and safety precautions before installing or operating this equipment. This manual contains information needed to operate and maintain your Blastline single chamber blast machine. Keep this manual readily available for future reference.

These instructions include the safety precautions, pre-operation setup, start-up/shut down preparation, maintenance, troubleshooting, and replacement parts for the Blastline blast machine models listed in Table 1.

The information provided, described and illustrated in this material is intended for experienced, knowledgeable users of abrasive blast machines, surface preparation equipment, and related supplies. All operators and personnel involved with the abrasive blast process must read and understand the contents of these instructions. Make sure the operator is trained and qualified to safely operate the blast machine and all other equipment used with the blast machine. It is the responsibility of the user to ensure that proper and comprehensive training of operators have been performed, and all environmental and safety precautions observed.

Blastline India provides a variety of high quality products pertaining to the surface preparation industry.
Consult with Blastline India for training programs and instructional materials.

Warnings and Cautions

This warning alert symbol is used to alert the operator of this equipment of potential harm and injury hazards. Pay special attention to these safety messages that follow this symbol to avoid potential personal injury or death. Following the instructions provided in this manual and taking the necessary accident prevention measures will greatly lower the risk of injury. Below are the two hazard levels that are used in this manual.

CAUTION

Caution indicates a potentially hazardous situation that, if not avoided, may potentially result in minor or moderate injury. It may also be used to alert against unsafe practices that may cause property damage.

WARNING

Warning indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death.

1.0 Safety Precautions

1.1 Operator Safety Equipment

It is the responsibility of the blast operator's employer to provide proper protective equipment to all job personnel prior to entering or working in an abrasive blasting environment. The below illustrations highlight the minimum personal protective equipment required for each abrasive blast operator.

Do not operate the abrasive blast machine without wearing adequate foot protection. Refer to OSHA 29 1910.136.

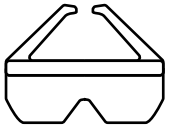
CAUTION

Heavy objects can move or fall while being blasted

SAFETY BOOTS MUST BE WORN

Do not operate the abrasive blast machine without wearing approved safety glasses. Refer to OSHA 29 CFR 1910.133.

CAUTION



Abrasive can be blown in the face and eyes of the operators when filling the blast machine.

SAFETY GOOGLES REQUIRED

Do not operate the abrasive blast machine without wearing abrasive resistant blast suit/coverall. Refer to OSHA 29 CFR 1910.132/.138.

CAUTION

Media ricochet generated from the blast cleaning operation can be dangerous and all personnel within the area must wear adequate protection

SAFETY SUIT REQUIRED

Do not operate the abrasive blast machine without wearing proper hearing protection. Refer to OSHA 29 CFR 1926.101.

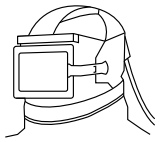
CAUTION

Long-term noise exposure to the blasting process can be damaging to one's hearing.

EAR PROTECTION REQUIRED

Do not operate the abrasive blast machine without wearing NIOSH approved respiratory protection. Refer to OSHA 29 CFR 1910.134.

WARNING

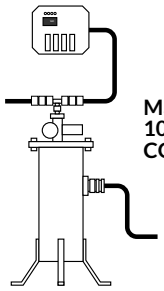


Abrasive blasting produces dust which may containg silica and other toxic substances that can cause serious diseases if inhaled.

WEAR RESPIRATOR HELMET & HEAD SOCKS

Do not use breathing air that is not adequately filtered and monitored to meet OSHA Grade D standards (maximum permissible CO is 10ppm). Verify that all air sources are breathable quality and use a carbon monoxide monitor. Refer to OSHA 29 CFR 1910.134(i).

WARNING



Breathing air provided by oil lubricated air compressor can contain carbon monoxide, which can cause asphyxiation and result in death.

BREATHING AIR FILTER MUST BE USED.

1.2 Rules for Safer Operation

1.2.1 Maintain Vessel Integrity

1.2.1.1Do not exceed the maximum working pressure of the blast machine, which is 150PSI, labeled on the nameplate attached to the machine 1. (Each machine is hydro statically pressure tested to 300PSI.)

WARNING

EXCESSIVE COMPRESSED AIR PRESSURE COULD RUPTURE THE BLAST MACHINE.

1.2.1.2. Do not operate the blast machine if any part of the machine is worn or damaged.

1.2.1.3. Do not hammer, strike, weld, grind, or drill on the blast machine. Any modifications or alterations could weaken the vessel.

1.2.1.4. Inspect the interior condition of the vessel regularly for corrosion.

1.2.2 Transporting the machine

1.2.2.1. Always empty the blast machine before lifting or hoisting.
1.2.2.2. Always use the lifting Jaws on the machine. Do not connect slings to other parts of the machine.
1.2.2.3. Always make sure the blast machine is situated on a flat sturdy surface.

WARNING

THE BLAST MACHINE SHOULD NOT BE OPERATED IN A POTENTIALLY EXPLOSIVE ENVIRONMENT. STATIC ELECTRICITY CAN BE GENERATED BY THE FRICTION OF THE ABRASIVE PARTICLES PASSING THROUGH THE HOSE AND HITTING THE SURFACE BEING BLASTED. STATIC ELECTRICITY CAN SHOCK THE OPERATOR AND CAUSE FIRES/EXPLOSIONS BY IGNITING FLAMMABLE/COMBUSTIBLE MATERIALS.

2.0 Product Introduction

2.1 This manual is provided to assist you in the safe operation and proper maintenance of Blastline single chamber, blast machine. To ensure safe and efficient operation, only use genuine Blastline parts and accessories.

2.2 The basic components of the automatic blast machine models are shown in Figure 1 & 2.

2.3 The basic components of the manual blast machine models are shown in Figure 3.

2.4 Compressed Air Requirements

The size of the compressor required depends on the nozzle size and desired blasting pressure.

Refer to the table in Figure 4 to determine CFM and HP requirements.

Blasting productivity and efficiency levels are determined by the volume and pressure of the air passing through the blast nozzle.

Rule of Thumb: Every psi below 100 psi pressure at the nozzle equates to a 1.5% loss of blasting efficiency. Maximize compressed air volume and pressure at the nozzle to maintain high levels of productivity.

Note: 100, 200 & 300ltr blast machines require 300CFM @100psi pressure.

3.0 Blasting Abrasives

3.1 Abrasive Type

Abrasives play a crucial role in defining overall blasting efficiency, productivity and cleanliness. Make sure the selected abrasive is compatible with the surface being blasted. Select the abrasive size that will provide the desired surface profile and surface finish.

There are various types of abrasives in ranging sizes –

- Slags - Coal Slag, Copper Slag etc.
- Steel - Steel Shots, Steel Grits etc.
- Garnet, Olivine etc.
- Aluminum Oxide
- Crushed Glass Grit
- Glass beads
- Plastic media
- Agricultural media - walnut shells, corn cob grit etc.

There are coarse, medium, small and fine sizes of abrasives. Choose the correct size depending upon the profile and cleaning standard requirements.

CAUTION

DO NOT BLAST WITH SILICA SAND OR ANY ABRASIVE WITH MORE THAN ONE PERCENT FREE SILICA. CRYSTALLINE (FREE) SILICA IS RECOGNIZED WORLD-WIDE AS A CLASS 1 CARCINOGEN AND CAN LEAD TO SERIOUS INJURY OR FATAL RESPIRATORY DISEASE

OBTAIN A MATERIAL SAFETY DATA SHEET (MSDS) FOR THE ABRASIVE PRIOR TO BLASTING TO ENSURE NO HARDOUS SUBSTANCES ARE PRESENT.

Below are the most common abrasive blast cleaning standards:

Table 3

	Brush Off	Industrial	Commercial	Near White	White Metal
ISO 8501	SA 1		SA 2	SA 2.5	SA 3
SSPC	SP 7	SP 14	SP 6	SP 10	SP 5
NACE	No. 4	No. 8	No. 3	No. 2	No. 1

Typical Profiles of Various Abrasives

Table 1 & 2

Abrasive	Size Distribution Range	Profile Range Micron	Profile Range	Surface Finish	NACE Standard	SSPC Standard
Copper Slag	8/40	50 - 100	2-4	SA - 2.5	No. 2	SP - 10
Copper Slag	12/40	25 - 75	1 - 3	SA - 2.5	No. 2	SP - 10
Coal Slag	12/40	25 - 75	1 - 3	SA - 3	No. 1	SP - 5
Garnet	30/60	25 - 75	1 - 3	SA - 3	No. 1	SP - 5
Staurolite	Course 40/40	13 - 50	0.5 - 2	SA - 2.5	No. 2	SP - 10
Steel Grit	G -40	50 - 100	2 - 4	SA - 2.5	No. 2	SP - 10
Steel Shot	S - 280	50 - 100	2 - 4	SA - 2.5	No. 2	SP - 10

Abrasive	Shape	Hardness	Specific Gravity (g/cc)	Bulk Density Tons/ M^3	Comprative Recyclability
Steel Grit - GP	Angular	46-50 HRC	7.6	3.7	High
Steel Grit - GL		56-60 HRC			
Steel Grit - GH		Min 60 HRC			
Steel Shot - Normal	Spherical	44-50 HRC	7.4	4.45	High
Aluminium Oxide	Angular	9.0 MOH	3.9-3.94	2.4	Medium
Glass Beads	Spherical	5.5 MOH	2.45 - 2.5	1.5	Medium
Garnet	Sub-Angular	7.5-8.0 MOH	4.1	2.4	Medium - Low
Coal Slag	Angular	6.0-7.0 MOH	2.63	1.35	Low
Copper Slag	Angular	6.0-7.0 MOH	3.4	1.9	Low
Crushed Glass	Angular	6.0 MOH	2.5	1.5	Low
Silica Sand	Spherical	5.0-6.0 MOH	2.65	1.5	Low
Sodium Bicarbonate	Angular	3.0 MOH	2.25	0.8	Low
Corn Cobs/ Walnut Shells	Angular	2.0-2.5 MOH	1.15	0.6	Medium-Low
Olivine	Sub-Angular	7-8 MOH	3.3	1.7	Low

Basic Components of Blasting Machine (Automatic)

Shown with Remote Controls

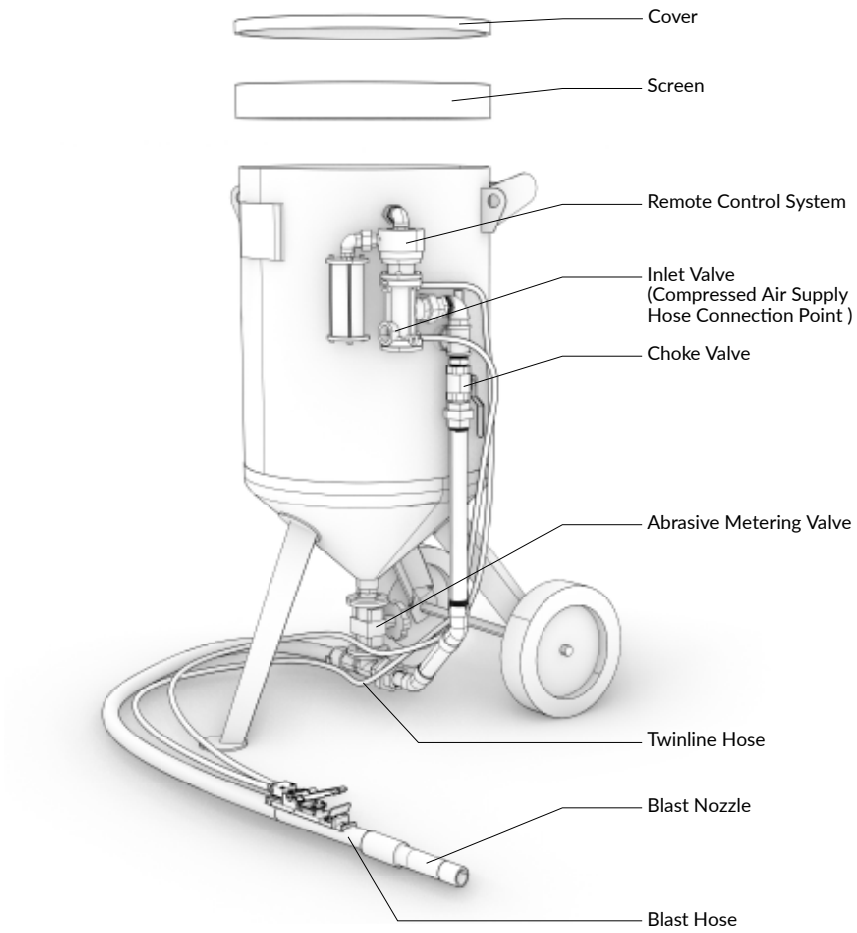


Figure 1

Blasting Machine (Automatic)

Internal Components

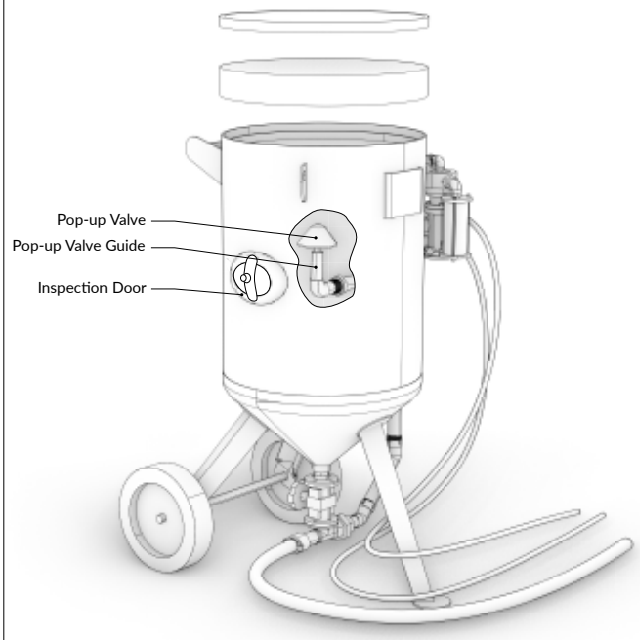


Figure 2

Blasting Machine (Manual)

Shown with Manual Valves

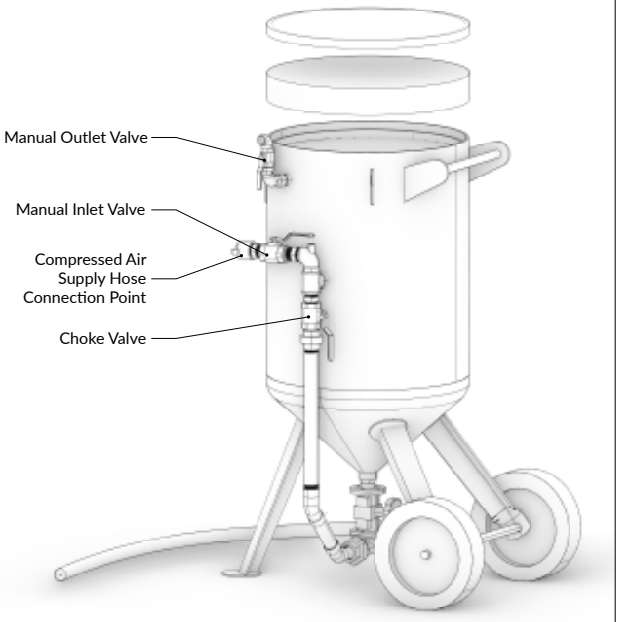


Figure 3

Compressed Air Requirements for Various Nozzles

Table 4

Nozzle Orifice	Pressure (psi) (bar)	50 3.5	60 4.2	70 4.9	80 5.6	90 6.3 ▼	100 7 ▼	125 8.5
No: 3 3/16" 5mm	**Air Volume**							
	CFM	26	30	33	38	41	45	55
	m3/min	0.73	0.84	0.92	1.06	1.15	1.26	1.54
	Abrasive kg/hr	85	97	111	123	136	136	180
No: 4 1/4" 6mm	**Air Volume**							
	CFM	47	54	61	68	74	81	98
	m3/min	1.31	1.51	1.71	1.9	2.08	2.27	2.75
	Abrasive kg/hr	152	178	200	231	254	280	336
No: 5 5/16" 8mm	**Air Volume**							
	CFM	80	90	100	115	125	140	170
	m3/min	2.16	2.5	2.83	3.16	3.53	3.84	4.71
	Abrasive kg/hr	255	302	342	380	420	460	552
No: 6 3/8" 9.5mm	**Air Volume**							
	CFM	110	125	145	160	175	200	235
	m3/min	3.02	3.53	4	4.5	4.85	5.5	6.64
	Abrasive kg/hr	378	433	490	544	596	653	784
No: 7 7/16" 11mm	**Air Volume**							
	CFM	150	170	200	215	240	255	315
	m3/min	4.12	4.76	5.44	6.09	6.73	7.11	8.8
	Abrasive kg/hr	507	585	655	744	820	896	1075
No: 8 1/2" 13mm	**Air Volume**							
	CFM	200	225	250	275	300	340	410
	m3/min	5.46	6.28	7.06	7.85	8.85	9.46	11.46
	Abrasive kg/hr	657	756	856	951	1050	1148	1378

* Abrasive consumption is based on material with a density of 1.5kg per liter
1 Bar = 14 Psi 1 m^3/m = 35 CFM

▼ Ideal Pressure Values

Air and Blast Hose Selection

Maximum Recommended Air Flow (CFM) ANSI Standard

Table 5

SIZE / PSI	¼"	⅜"	½"	¾"	1"	1-¼"	1-½"	2"	2-½"
60	8.0	18	34	50	93	195	290	560	900
80	10.5	23	44	65	120	255	380	720	1200
100	13	29	54	80	150	315	470	900	1450
150	20	41	80	115	220	460	680	1350	2200

For Conversion to Cubic Meter divided by 35.3

Note: Never use blast hose that appears to have worn out areas on the internal rubber tube. Inspect hose daily for soft spots which indicate the need for replacement. The life of the blast hose is no more than 200 hours. The life depends on type of abrasives, air pressure, air temperature, ambient air temperature.

Air and Blast Hose Selection

Volume (CFM) X Pressure (Psi)

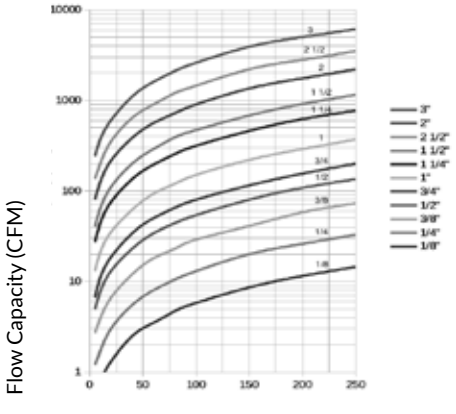


Figure 4

4.0 Pre-Operation Inspection

4.1 Upon receiving the abrasive blast machine inspect the blast machine and remote control system for apparent and hidden damage. Check the pop-up valve, pop-up valve gasket, inspection door components, remote control components, piping, and coupling fittings. Prior to operating the blast machine, replace excessively worn or damaged parts, and tighten all fitting connections. *DO NOT OPERATE THE BLAST MACHINE IF FITTINGS OR CONNECTIONS ARE LOOSE.*

Note: *Always ground the blast machine.*

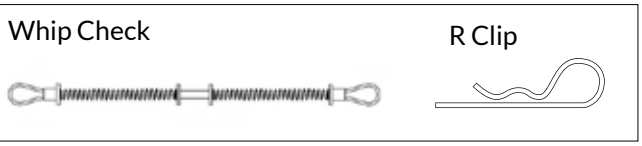
4.2 Prior to placing abrasives in the blast machine, inspect and test the remote control system.

Check the remote control system for missing components. Manually depress the deadman handle switch to check for proper operation. Immediately report any shortages, or obvious damage to your supervisor. If you believe components are missing, *DO NOT ATTEMPT TO USE THE REMOTE CONTROL SWITCH TO OPERATE THE BLAST MACHINE.*

Note: *ALWAYS KEEP THE MINI BALL VALVE "OPEN" WHEN THE BLAST MACHINE IS NOT IN USE. THIS CAUSES THE AIR INLET VALVE TO BLEED OFF AND WILL PREVENT THE MACHINE FROM BEING ACCIDENTALLY STARTED. IN ADDITION, THE BLAST MACHINE ABRASIVE METERING VALVE SHOULD BE IN THE "CLOSED" POSITION DURING THE TEST OPERATION.*

4.3 Check the blast hose, nozzle holder and couplings for wear and damage. Replace any components or parts that are excessively worn or damaged. Check the blast hose couplings and nozzle holder for coupling gasket(s) and nozzle holder washer. Replace components if they are worn, soft, damaged or missing.

Blastline strongly suggests that all blast hose couplings be secured together with safety clips/R clips and all blast hose and air hose connections to be secured with safety cables/whip checks.



5.0 Start-up Preparation

5.1 Place the air compressor as close to the blast machine as possible, to avoid pressure loss. Position the compressor so that existing winds keeps dust, engine exhaust and contaminated air from entering the compressor air intake.

5.2 Make sure that the deadman handle's switch/button is raised in its upright (no blast) position.
5.3 Attach the deadman handle to the blast hose. Use nylon ties to firmly secure the deadman handle to the blast hose. Attach the twinline hose to the dead man handle. Blastline recommends that the twinline hose be tied to the blast hose, using nylon ties, every 1.5meters. Allow some slack at the connection to prevent excessive strain when the blast hose is pulled.

5.4 Close the adjustable abrasive control valve.

5.5 Connect the coupled blast hose to the blast machine's outlet quick coupling. Make sure the coupling gaskets are tightly in place and in good condition.

Rule of Thumb: The I.D. of the blast hose should be 3 to 4 times the nozzle orifice size.

5.6 Connect the air supply line to the blast machine inlet valve. The air hose I.D. should be no less than 1-1/4", as the blast machines fittings have 1-1/4" plumbing. Any smaller size air hose will result in an insufficient volume of air supplied to the blast machine, negatively affecting operation efficiency.

Rule of Thumb: It is recommended to have the air supply hose I.D. be larger than the blast hose I.D.

5.7 Make sure all hose connections are secure. Use R clips (safety clips) on all quick couplings. Use whip checks (safety cables) at all hose connections.

CAUTION

DO NOT PLACE HANDS, ARMS OR TOOLS BETWEEN THE POP-UP VALVE AND O-RING SEAT.

SERIOUS DAMAGE OR INJURY WILL RESULT.

5.8 Make sure the choke valve on the blast machine is open (valve handle inline with the piping).

5.9 Abrasive Loading
Load the abrasives into the blast machine's concave head.

WARNING

HOSE DISCONNECTION WHILE UNDER PRESSURE COULD LEAD TO SERIOUS INJURY. USE R CLIPS AND WHIP CHECKS TO PREVENT ACCIDENTAL DISCONNECTION WHILE UNDER PRESSURE.

5.9.1 Use the screen that is placed over the blast machine head to prevent large objects from entering the blast machine. This is to avoid foreign objects such as rocks from entering and jamming the blast machine.

Note: *Only use abrasives that have been properly manufactured/processed and sieved.*

Note: *The blast machine must be completely depressurized for the pop-up valve to retract downward. Abrasive loading, through the filler port, can only take place when all the air is exhausted from the blast machine.*

5.10 Close the compressor air valve. Start the compressor and let it to warm up until the required working pressure and operating temperature is attained.

WARNING

WORKING AIR PRESSURE SUPPLIED TO THE BLAST MACHINE MUST NOT EXCEED 150 PSI.

5.11 As a safety measure to prevent accidental start-ups, the mini ball valve on the Remote Control unit should be kept open.

5.12 Make sure the blast operator and personnel in the immediate vicinity is equipped with adequate protective safety equipment, mention in Section 1.1.

5.13 Slowly open the compressor air valve to pressurize the air supply line. Check the blast machine, air supply hose, remote control air lines and components for air leaks.

5.14 Secure control of the blast hose and nozzle. Close the mini ball valve on remote control unit and open the blast machine air inlet valve.

5.15 Air should now escape from the orifice below the deadman handle. If there are any other points of air leaks, it will cause the system to malfunction.

6.0 Start-up Procedure

Note: Prior to activating the blast machine, the blast operator and personnel in the immediate vicinity must be equipped with adequate protective safety equipment. Refer to section 1.1 within this manual for further details.

Note: Refer to Figure 5 for Blastline's recommendation for the most ideal blast system setup.

6.1 The blast operator MUST have complete control of the blast hose and nozzle before pressurizing the blast machine. Make sure the blast nozzle is tightly secured in the nozzle holder. Direct the nozzle towards the object intended to be blasted.

6.2 Press down the spring loaded button on the deadman handle and depress the main handle downward atop of it. This action will complete the pneumatic circuit to the blast machine air inlet valve.

WARNING

DO NOT THE STAND NEAR THE FILLER PORT WHILE PRESSURIZING THE BLAST MACHINE. THE ABRASIVE MAY PROPEL UPWARD BY THE POP-UP VALVE.

6.3 Compressed air entering the blast machine will seal the pop-up valve against the O-ring gasket and will pressurize the blast machine. The air blast flow will commence as soon as the machine pressurizes. Only air will exit the nozzle if the abrasive metering valve is closed.

6.4 An operator assistant should adjust the abrasive control valve toward the open position until the optimal air/abrasive mixture is attained. The optimal air/abrasive mixture will vary depending on the abrasive size and operating blast pressure.

Rule of Thumb: The air/abrasive mixture should be mainly air so use as little abrasive as possible while maintaining the most efficient blasting rate.

7.0 To Stop Procedure

Note: Always maintain complete control of the blast hose, and nozzle until the blast machine and blast hose are completely depressurized.

7.1 To deactivate the blast machine, release the deadman handle. The handle will raise and the safety button will spring upward and act as a safety switch to prevent accidental activation of the blast machine. The blast machine will depressurize, and the blast flow from the nozzle will stop.

NOTE: This is only applicable for automatic machines with remote control systems.

7.2 Open the mini ball valve on the remote control unit to prevent accidental start-up.

WARNING

MAKE SURE THE BLAST MACHINE AND BLAST HOSE ARE COMPLETELY DEPRESSURIZED BEFORE RELEASING THE BLAST HOSE AND NOZZLE. FAILURE TO DO SO CAN RESULT IN PERSONAL INJURY, PROPERTY DAMAGE OR DEATH.

8.0 Shut Down/Storage

8.1 Empty the Machine

To maintain the operating condition of the blast machine, always clean out the remaining abrasives in the blast machine when shutting down for the day. Weather conditions can lead to moisture build up inside the machine so it is recommended to empty out the machine to avoid air flow complications caused by wet, clumped up abrasives inside the machine.

8.1.1 Depressurize the blast machine, blast hose and the air hose attached to the blast machine inlet valve.

8.1.2 Remove the nozzle and the nozzle washer from the nozzle holder.

WARNING

REMOVING THE ABRASIVES WITHOUT A NOZZLE COULD CAUSE POSSIBLE EROSIONS TO THE THREADING OF THE NOZZLE HOLDER. ALWAYS CHECK THE THREADS ON THE NOZZLE, THREADS ON THE NOZZLE HOLDER AND THE NOZZLE WASHER FOR WEAR. A LOOSE FITTING NOZZLE MAY EJECT UNDER PRESSURE AND CAN RESULT IN PERSONAL INJURY, PROPERTY DAMAGE OR DEATH.

8.1.3 Point the blast hose end into a drum, container or wherever the abrasive disposal site is.

8.1.4 Close the mini ball valve on the remote control unit. Make sure the operator maintains control of the blast hose, and pressurize the blast machine to 40-50 psi. Close the choke valve (valve handle should be perpendicular to the piping) and adjust the abrasive control valve to a full open position.

8.1.5 Press down on the deadman handle. Abrasive will begin to expel.

8.2 Depressurize the Machine

Once the blast machine is emptied out, then release the deadman handle and depressurize the blast machine.

Make sure the blast machine and blast hose is depressurized before releasing the blast hose. Open the mini ball valve on the remote control unit and open the choke valve on the blast machine.

8.2.1 If the nozzle was removed for emptying out the machine in step 8.1, re-install the nozzle washer and attach the nozzle to the nozzle holder.

WARNING

THE THREADS ON THE NOZZLE AND NOZZLE HOLDER MUST BE INSPECTED EACH TIME THE NOZZLE IS SECURED TO THE HOLDER. MAKE SURE THE NOZZLE HOLDER SECURELY HOLDS THE NOZZLE.

8.3 Close the compressor outlet valve and depressurize the air hose connected to the blast machine. Shut down the compressor.

8.4 Drain the air receiver, moisture separators, air cooled after coolers and any other water collecting equipment used in the blast system.

8.5 The blast machine should be covered and located in a sheltered area when not in use. Blast hose and air hose should be loosely coiled and tied when not in use.

9.0 Maintenance Chart

Daily

- Check for deterioration in the blast hose and air hoses by looking for soft spots, cracking and thinning wall thickness.
- Check the blast machine filler port Pop-up valve and O-Ring.
- Check the condition of all the hose coupling gaskets.
- Check blast nozzle and nozzle holders for wear, damage or air leaks.
- Check the condition of the blast nozzle gasket.
- Check if all hoses and couplings are secured with safety clips and whip checks.

Weekly

- Check the conditions of all couplings on hoses and the coupling screws for wear.
- Check the moisture separator on the remote control. Remove and purge moisture as is necessary.

Monthly

- Remove inspection door and clean out the blast machine.
- Remove any materials that might cause blockages.
- Check the conditions of the inspection door gasket.

Quarterly

- Replace breathing air filter elements.
- Disassemble, clean and lubricate all operating valves.
- Check for interior damage, corrosion and pitting in the blast machine.

Manual Blast Machine with Flat Sand Valve

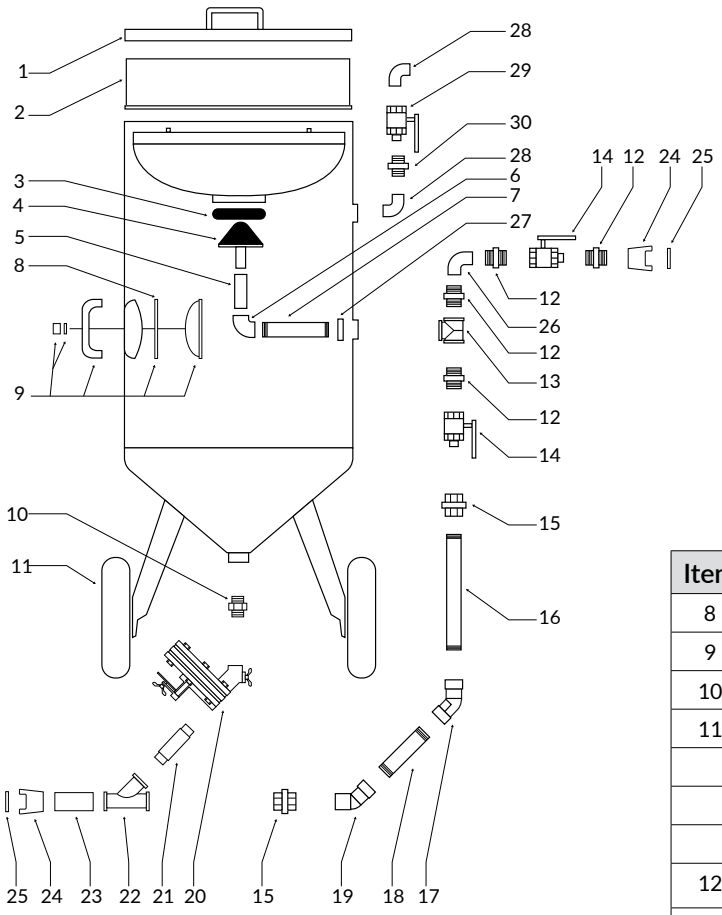


Figure: 5

Parts List - Blast Machine (Manual)			
Item	Part no.	Description	Qty
1	BL14101	Cover for BL-14160 (50L)	1
	BL20101	Cover for BL-20300 (100L)	1
	BL24101	Cover for BL-24650 (200L)	1
	BL25101	Cover for BL-24800 (300L)	1
2	BL14102	Screen for BL-14160 (50L)	1
	BL20102	Screen for BL-20300 (100L)	1
	BL24102	Screen for BL-24650 (200L)	1
	BL25102	Screen for BL-24800 (300L)	1
3	BL14103	Pop-up Valve O ring (OR-1)	1
4	BL14104	Pop-up Valve	1
		Shaft	1
5	BL14105	Inner Pipe 1" for BL-14160(50L)	1
	BL20105	Inner Pipe 1" for BL-20300(100L)	1
	BL24105	Inner Pipe 1" for BL-24650(200L)	1
	BL25105	Inner Pipe 1 " for BL-24800(300L)	1
6	BL14106	900 Threaded Elbow 1 1/4" x 1" - FF	1
7	BL14107	Inner Pipe 1 1/4" for BL-14160(50L)	1
		Inner Pipe 1 1/4" for BL-20300(100L)	1
		Inner Pipe 1 1/4" for BL-24650(200L)	1
		Inner Pipe 1 1/4" for BL-24800(300L)	1

Table 6

Item	Part no.	Description	Qty
8	BL14108	Inspection Door Gasket	1
9	BL14109	Inspection Door Assembly	1
10	BL14110	Hex nipple 1 1/4" rubber lined	1
11	BL14111	Wheel for BL-14160 (50L)	2
	BL14111	Wheel for BL-20300 (100L)	2
	BL24111	Wheel for BL-24650 (200L)	2
	BL24111	Wheel for BL-24800 (300L)	2
12	BL14112	Hex Nipple 1 1/4" - MM	4
13	BL14113	Threaded equal Tee 1 1/4" - FFF	1
14	BL14114	Ball Valve 1 1/4"	2
15	BL14115	Threaded Union 1 1/4", Flat Seat - MF	2
16	BL14116	Pipe 1 1/4" for BL-14160 (50L)	1
	BL20116	Pipe 1 1/4" for BL-20300 (100L)	1
	BL24116	Pipe 1 1/4" for BL-24650 (200L)	1
	BL25116	Pipe 1 1/4" for BL-24800 (300L)	1
17	BL14117	450 Threaded Elbow 1 1/4" (Long Radius) - FF	1
18	BL14118	Pipe 1 1/4" for BL-14160 (50L)	1
	BL20118	Pipe 1 1/4" for BL-20300 (100L)	1
	BL24118	Pipe 1 1/4" for BL-24650 (200L)	1
	BL25118	Pipe 1 1/4" for BL-24800 (300L)	1
19	BL14119	450 Threaded Elbow 1 1/4" (Long Radius) - MF	1
20	BLSV60	Flat Sand Valve 1 1/4"	1
21	BL14121	Pipe 1 1/4" x 100mm, rubber lined	1
22	BL14122	450 Threaded Lateral Tee 1 1/4", Rubber lined (Y branch)	1
23	BL14123	Pipe nipple 1 1/4", rubber lined	1
24	BL14124	4 Jaw Coupling 1 1/4"	2
25	BL14125	CQG Rubber coupling gasket	2
26	BL14126	900 Threaded Street Elbow 1 1/4" - MF	1
27	BL14127	Check Nut 1 1/4"	1
28	BL14128	900 Threaded Street Elbow 3/4" - MF	2
29	BL14129	Hex nipple 3/4" - MM	1
30	BL14130	Ball valve 3/4"	1

Automatic Blast Machine with Flat Sand Valve

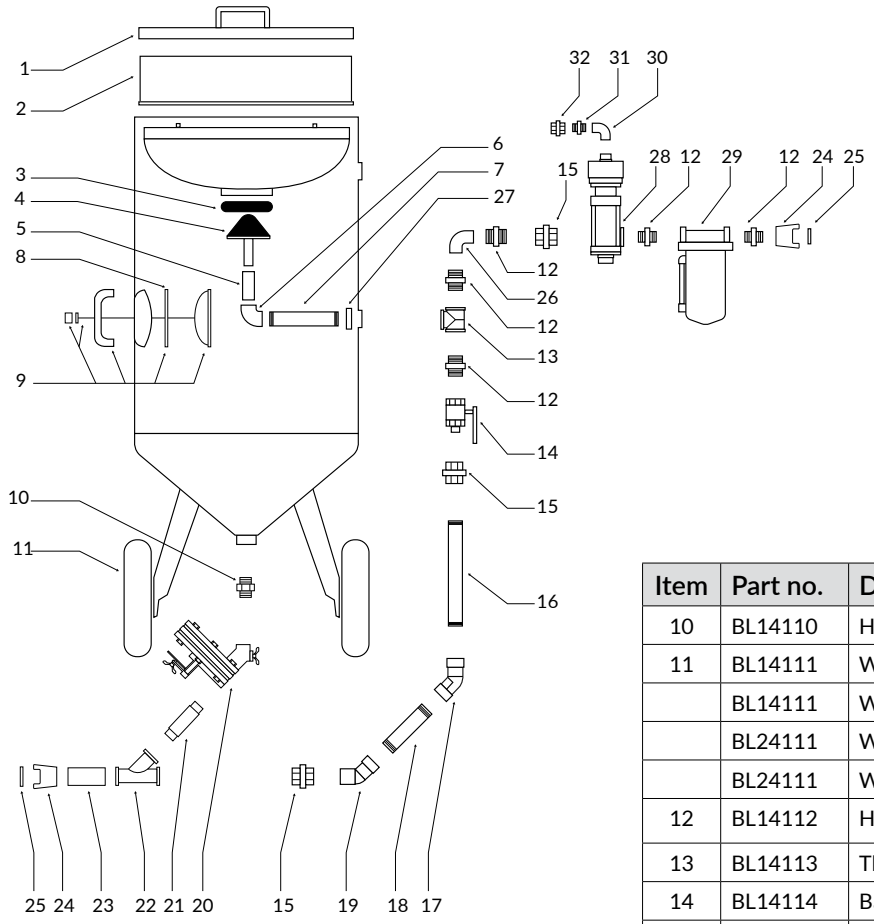


Figure: 6

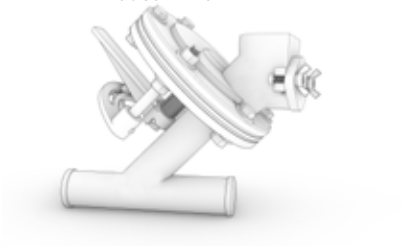
Parts List - Blast Machine (Automatic)			
Item	Part no.	Description	Qty
1	BL14101	Cover for BL-14160 (50L)	1
	BL20101	Cover for BL-20300 (100L)	1
	BL24101	Cover for BL-24650 (200L)	1
	BL25101	Cover for BL-24800 (300L)	1
2	BL14102	Screen for BL-14160 (50L)	1
	BL20102	Screen for BL-20300 (100L)	1
	BL24102	Screen for BL-24650 (200L)	1
	BL25102	Screen for BL-24800 (300L)	1
3	BL14103	Pop-up Valve O ring (OR-1)	1
4	BL14104	Pop-up Valve	1
		Shaft	1
5	BL14105	Inner Pipe 1" for BL-14160(50L)	1
	BL20105	Inner Pipe 1" for BL-20300(100L)	1
	BL24105	Inner Pipe 1" for BL-24650(200L)	1
	BL25105	Inner Pipe 1" for BL-24800(300L)	1
6	BL14106	900 Threaded Elbow 1 1/4" x 1" - FF	1
7	BL14107	Inner Pipe 1 1/4" for BL-14160(50L)	1
		Inner Pipe 1 1/4" for BL-20300(100L)	1
		Inner Pipe 1 1/4" for BL-24650(200L)	1
		Inner Pipe 1 1/4" for BL-24800(300L)	1
8	BL14108	Inspection Door Gasket	1
9	BL14109	Inspection Door Assembly	1

Table 7

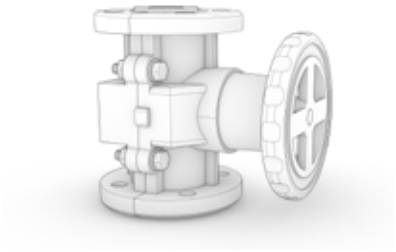
Item	Part no.	Description	Qty
10	BL14110	Hex nipple 1 1/4" rubber lined	1
11	BL14111	Wheel for BL-14160 (50L)	2
	BL14111	Wheel for BL-20300 (100L)	2
	BL24111	Wheel for BL-24650 (200L)	2
	BL24111	Wheel for BL-24800 (300L)	2
12	BL14112	Hex Nipple 1 1/4" - MM	5
13	BL14113	Threaded equal Tee 1 1/4" - FFF	1
14	BL14114	Ball Valve 1 1/4"	1
15	BL14115	Threaded Union 1 1/4", Flat Seat -MF	3
16	BL14116	Pipe 1 1/4" for BL-14160 (50L)	1
	BL20116	Pipe 1 1/4" for BL-20300 (100L)	1
	BL24116	Pipe 1 1/4" for BL-24650 (200L)	1
	BL25116	Pipe 1 1/4" for BL-24800 (300L)	1
17	BL14117	450 Threaded Elbow 1 1/4" (Long Radius) - FF	1
18	BL14118	Pipe 1 1/4" for BL-14160 (50L)	1
	BL20118	Pipe 1 1/4" for BL-20300 (50L)	1
	BL24118	Pipe 1 1/4" for BL-24650 (50L)	1
	BL25118	Pipe 1 1/4" for BL-24800 (50L)	1
19	BL14119	450 Threaded Elbow 1 1/4" (Long Radius) - MF	1
20	BLSV60	Flat Sand Valve 1 1/4"	1
21	BL14121	Pipe 1 1/4" x 100mm, rubber lined	1
22	BL14122	450 Threaded Lateral Tee 1 1/4", Rubber lined (Y branch)	1
23	BL14123	Pipe nipple 1 1/4" - rubber lined	1
24	BL14124	4 Jaw Coupling 1 1/4"	2
25	BL14125	CQG Rubber coupling gasket	2
26	BL14126	900 Threaded Street Elbow 1 1/4" - FF	1
27	BL14127	Check Nut 1 1/4"	1
28	BLRC90	Remote Control Valve - 1 1/4"	1
29	BLMS50	Moisture Seperator - 1 1/4"	1
30	BL14130	Elbow 3/4" end types - FF	1
31	BL14131	Hex Nipple 3/4" - end types - MM	1
32	BL14132	Union 3/4" - MF	1

Types of Valves

Flat Sand Valve



Grit Valve



Micro Valve

Figure: 7

Grit Valve Mounting

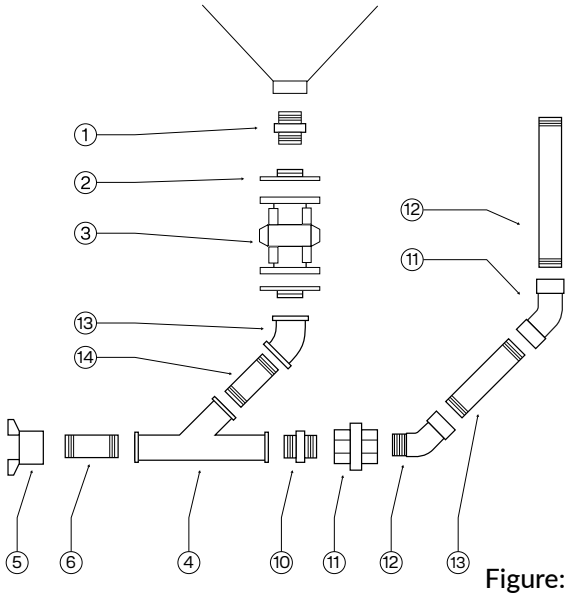


Figure: 8

Table 8

Grit Valve Mounting Parts List			
Item	Part no.	Description	Qty
1.	BL14110	Hex nipple 1 1/4" rubber lined	1
2.	BL14201	Grit Valve Top Flange	1
3.	BLGV30	Grit Valve	1
4.	BL14202	Rubberised Y Piece	1
5.	BL14124	CFT Coupling 1 1/4"	1
6.	BL14203	Rubberized Pipe Nipple	1
7.	BL14112	Hex Nipple 1 1/4"	1
8.	BL14204	F&F Union with Rubber Gasket	1
9.	BL14119	450 Threaded Elbow 1 1/4" (Long Radius) - MF	1
10.	BL14118	Pipe 1 1/4" for BL-14160 (50L)	1
		Pipe 1 1/4" for BL-20300 (100L)	
		Pipe 1 1/4" for BL-24650 (200L)	
		Pipe 1 1/4" for BL-24800 (300L)	
11.	BL14117	F&F Bend Long	1
12.	BL14116	Pipe 1 1/4" for BL-14160 (50L)	1
		Pipe 1 1/4" for BL-20300 (100L)	
		Pipe 1 1/4" for BL-24650 (200L)	
		Pipe 1 1/4" for BL-24800 (300L)	
13.		450 Elbow	
14.		1 1/4" Full Thread	

Micro Valve Mounting

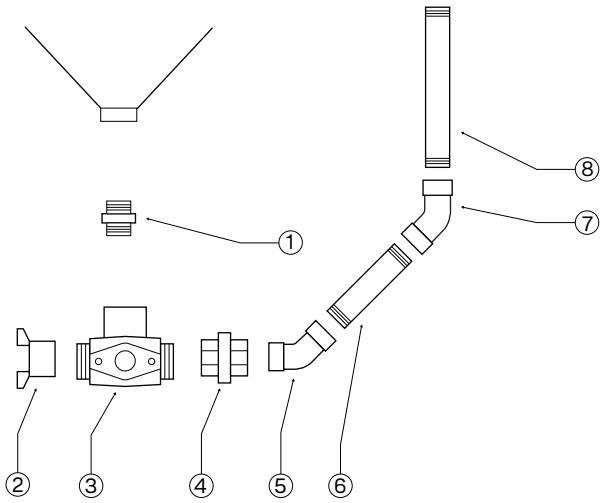


Figure: 9

Table 9

Micro Valve Mounting Parts List			
Item	Part no.	Description	Qty
1.	BL14110	Hex nipple 1 1/4" rubber lined	1
2.	BL14124	CFT Coupling 1 1/4"	1
3.	BLMV10	Micro Valve	1
4.	BL14204	F&F Union with Rubber Gasket	1
5.	BL14119	450 Threaded Elbow 1 1/4" (Long Radius) - MF	1
6.	BL14118	Pipe 1 1/4" for BL-14160 (50L)	1
		Pipe 1 1/4" for BL-20300 (100L)	1
		Pipe 1 1/4" for BL-24650 (200L)	1
		Pipe 1 1/4" for BL-24800 (300L)	1
7.	BL14117	450 Threaded Elbow 1 1/4" (Long Radius) - FF	1
8.	BL14116	Pipe 1 1/4" for BL-14160 (50L)	1
		Pipe 1 1/4" for BL-20300 (100L)	1
		Pipe 1 1/4" for BL-24650 (200 L)	1
		Pipe 1 1/4" for BL-24800 (300L)	1

Flat Sand Valve

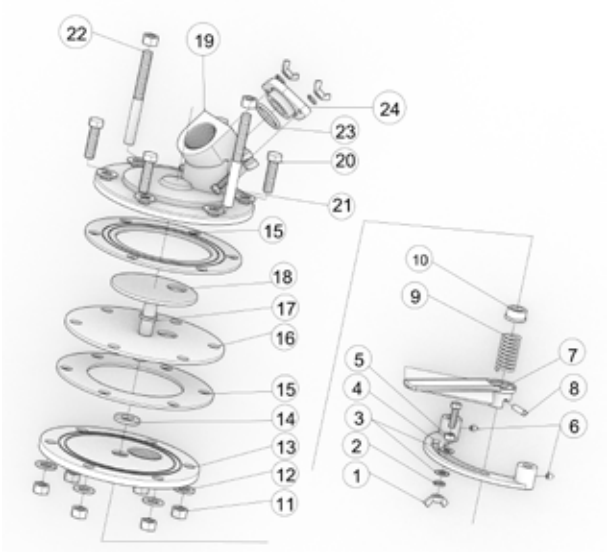


Figure: 10

Grit Valve

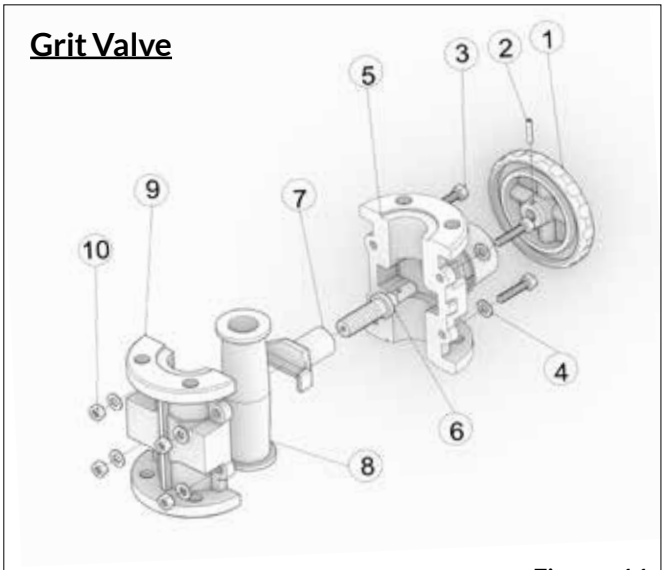


Figure: 11

Micro Valve

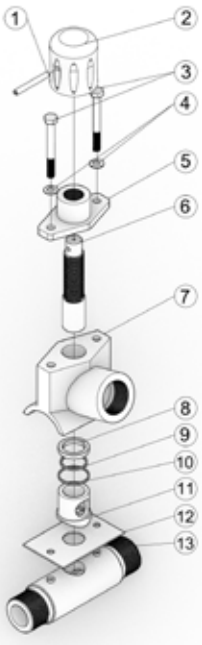


Figure: 12

Table 10

Flat Sand Valve Parts List			
Item	Part no.	Description	Qty
1.	SV-60000015	M8 Wing Nut	3
2.	SV-60000014	M8 Spring Washer	3
3.	SV-60000013	M8 Washer	2
4.	SV-60000003	Half Ring	1
5.	SV-60000012	M8 Nut	1
6.	SV-60000022	M6 Grub Screw	2
7.	SV-60000006	Handle	1
8.	SV-60000010	Dowel Pin	1
9.	SV-60000023	2.6mm Wire Spring	1
10.	SV-60000009	Brass Spacer	1
11.	SV-60000019	M12 Golden Nut	8
12.	SV-60000018	M12 Golden Washer	12
13.	SV-60000002	Top Body	1
14.	SV-60000021	Small Washer	1
15.	SV-60000024	Gasket	2
16.	SV-60000007	SS Big Disc	1
17.	SV-60000025	Small O Ring	1
18.	SV-60000008	SS Small Disc	1
19.	SV-60000001	Bottom Body with Brass Insert	1
20.	SV-60000017	M12 x 40 Golden Bolt	4
21.	SV-60000011	M8 x 25 SS Bolt	3
22.	SV-60000016	M12 x 115 GI Stud	2
23.	SV-60000020	Big O Ring	1
24.	SV-60000004	Dummy Flange	1

Table 11

Grit Valve Parts List			
Item	Part no.	Description	Qty
1.	GV-30000003	Handle	1
2.	GV-30000010	4 x 25 Spring Dowel Pin	1
3.	GV-30000007	M8 x 35 Golden Bolt	4
4.	GV-30000009	M8 GI Washer	8
5.	GV-30000001	Grit Valve Top	1
6.	GV-30000004	Brass Fitting Male	1
7.	GV-30000005	Brass Fitting Female	1
8.	GV-30000006	Grit Valve Liner 1”	1
9.	GV-30000002	Grit Valve Bottom	1
10.	GV-30000008	M8 Golden Nut	4

Table 12

Micro Valve Parts List			
Item	Part no.	Description	Qty
1.	MV-10000007	Roll Pin	1
2.	MV-10000009	Knob	1
3.	MV-10000012	M8 x 75 Hex Bolt	2
4.	MV-10000013	M8 Washer	2
5.	MV-10000001	Cap	1
6.	MV-10000004	Plunger	1
7.	MV-10000002	Housing	1
8.	MV-10000010	Plunger Seal	1
9.	MV-10000011	27 x 2 O Ring	1
10.	MV-10000008	35 x 1.6 O Ring	1
11.	MV-10000006	PU Sleeve	1
12.	MV-10000005	PU Gasket	1
13.	MV-10000003	Pipe Nipple 1 1/4”	1

Remote Control Valve with Moisture Seperator

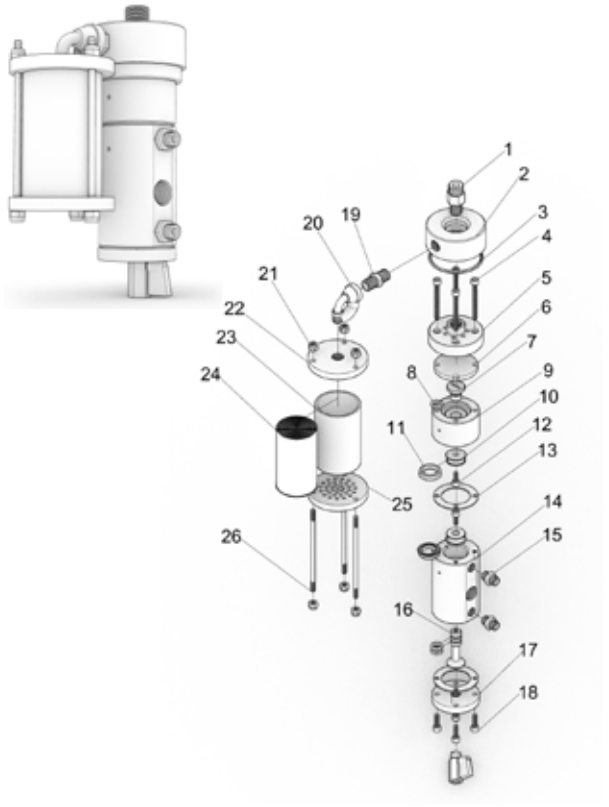


Figure: 13

Moisture Seperator

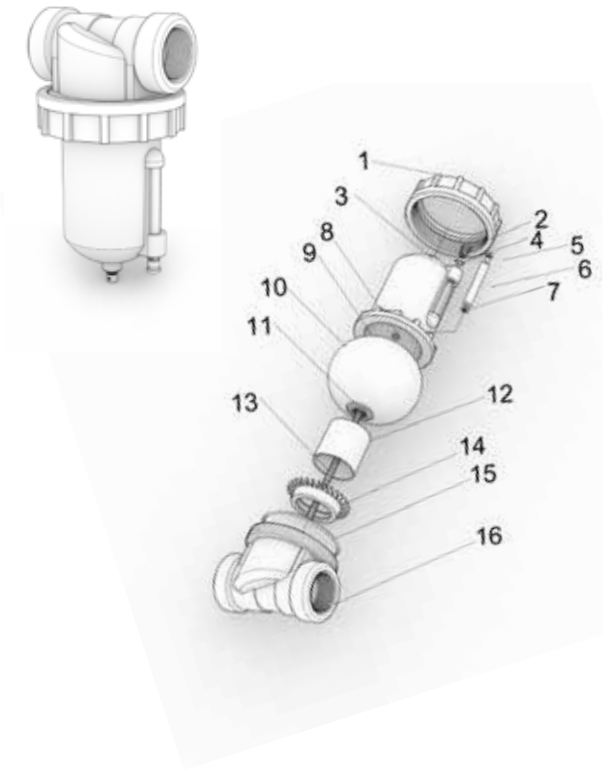


Figure: 14

Table 13

Remote Control Valve Parts List			
Item	Part no.	Description	Qty
1.	RC-90000017	Nipple	1
2.	RC-90000001	Top Manifold	1
3.	RC-RUB-9001	Big O Ring	1
4.	RC-90000022	M8 x 25 Bolt	12
5.	RC-90000004	Top Cover	1
6.	RC-RUB-9002	Diaphram	1
7.	RC-90000008	Outlet Piston	1
8.	RC-RUB-9004	O Ring	3
9.	RC-90000005	Exhaust Cylinder	1
10.	RC-90000009	Piston Head	2
11.	RC-RUB-9003	U Seal	2
12.	RC-90000023	M8 x 20 Bolt	2
13.	RC-RUB-9005	Cover Gasket	2
14.	RC-90000006	Valve Body	1
15.	RC-90000019	Brass Nipple - 1	2
16.	RC-90000016	Hex Bolt	1
17.	RC-90000007	Inlet Piston	1
18.	RC-90000010	Bottom Cover	1
19.	RC-90000020	Ball Valve	1
20.	RC-90000021	Union Elbow	1
21.	RC-90000024	Hex Nut	6
22.	RC-90000011	Top Plate	1
23.	RC-90000018	Silencer Pipe	1
24.	RC-90000025	Catridge	1
25.	RC-90000012	Bottom Plate	1
26.	RC-90000026	Studs	3

Table 14

Moisture Separator Parts List			
Item	Part no.	Description	Qty
1.	MS-50000001	In Out Nut Zinc	1
2.	MS-50000005	Brass Glass Tube	1
3.	MS-50000004	Aluminum Cup	1
4.	MS-50000015	8 x 2 O Ring	1
5.	MS-50000012	Ball	1
6.	MS-50000011	Pipe	1
7.	MS-50000013	5 x 2.5 O Ring	2
8.	MS-50000014	7 x 2.5 O Ring	1
9.	MS-50000006	Brass Cup Top	1
10.	MS-50000008	Black Tapper Fan	1
11.	MS-50000010	Aluminum Washer	1
12.	MS-50000009	Bronze Filter	1
13.	MS-50000017	M8 Threaded Rod	1
14.	MS-50000007	Aluminum Fan	1
15.	MS-50000016	O Ring Big	1
16.	MS-50000003	In Out Zinc Bottom Body	1

Dead Man Handle

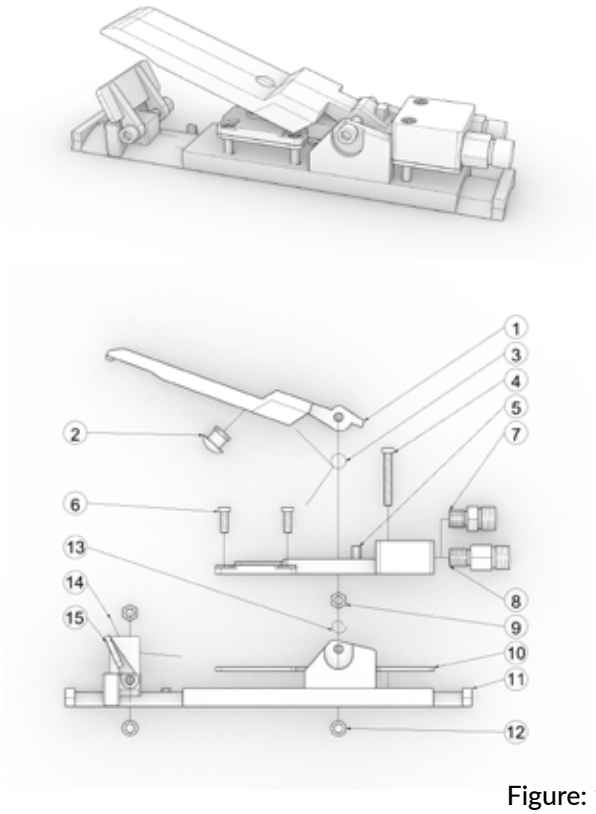


Figure: 15

Universal Air Couplings

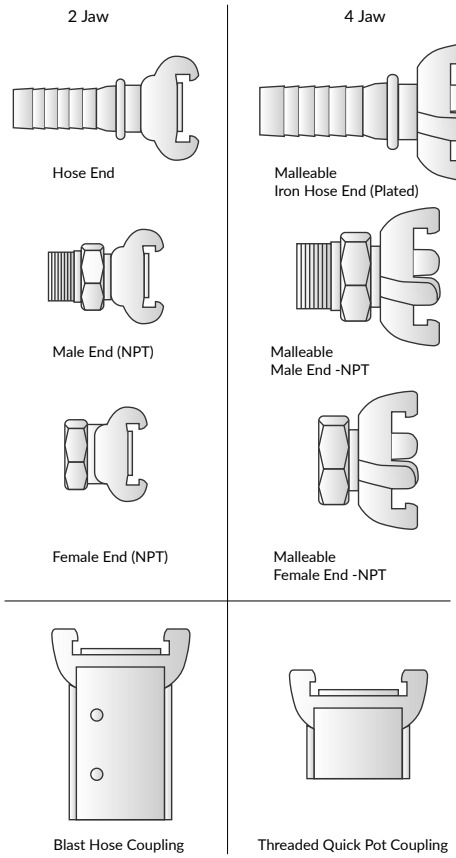


Figure: 16

Table 15

Dead Man Handle Parts List			
Item	Part no.	Description	Qty
1.	DH-70000003	Handle	1
2.	DH-70000012	Stop Button	1
3.	DH-70000006	WRE Spring	1
4.	DH-70000008	M4 x 30 SS Bolt	2
5.	DH-70000002	Middle Part	1
6.	DH-70000009	M4 x 12 SS Bolt	4
7.	DH-70000013	Brass Hex Nipple - 07 A	1
8.	DH-70000014	Brass Hex Nipple - 08 B	1
9.	DH-70000011	M5 Nylock Nut	2
10.	DH-70000004	Long Gasket	1
11.	DH-70000001	DH Bottom	1
12.	DH-70000010	M5 x 40 Allen Bolt	2
13.	DH-70000015	M5 SS Spring Washer	1
14.	DH-70000007	WRE Spring (Short)	1
15.	DH-70000005	Lever Safety Lock	1

Table 16

Universal Air Couplings Parts List			
Item	Part no.	Size	Description
1.	HE 038	3/8”	2 Jaw Hose End Coupling
2.	HE 050	1/2”	2 Jaw Hose End Coupling
3.	HE 075	3/4”	2 Jaw Hose End Coupling
4.	HE 100	1”	2 Jaw Hose End Coupling
5.	ME 025	1/4”	2 Jaw Male End (NPT) Coupling
6.	ME 038	3/8”	2 Jaw Male End (NPT) Coupling
7.	ME 050	1/2”	2 Jaw Male End (NPT) Coupling
8.	ME 075	3/4”	2 Jaw Male End (NPT) Coupling
9.	ME 100	1”	2 Jaw Male End (NPT) Coupling
10.	FE 025	1/4”	2 Jaw Female End (NPT) Coupling
11.	FE 038	3/8”	2 Jaw Female End (NPT) Coupling
12.	FE 050	1/2”	2 Jaw Female End (NPT) Coupling
13.	FE 075	3/4”	2 Jaw Female End (NPT) Coupling
14.	FE 100	1”	2 Jaw Female End (NPT) Coupling
15.	HE 125	11/4”	4 Jaw Iron Hose End Coupling
16.	HE 150	11/2”	4 Jaw Iron Hose End Coupling
17.	HE 200	2”	4 Jaw Iron Hose End Coupling
18.	ME 125	11/4”	4 Jaw Male End (NPT) Coupling
19.	ME 150	11/2”	4 Jaw Male End (NPT) Coupling
20.	ME 200	2”	4 Jaw Male End (NPT) Coupling
21.	FE 125	11/4”	4 Jaw Female End (NPT) Coupling
22.	FE 150	11/2”	4 Jaw Female End (NPT) Coupling
23.	FE 200	2”	4 Jaw Female End (NPT) Coupling

Common Blasting Operation Parts

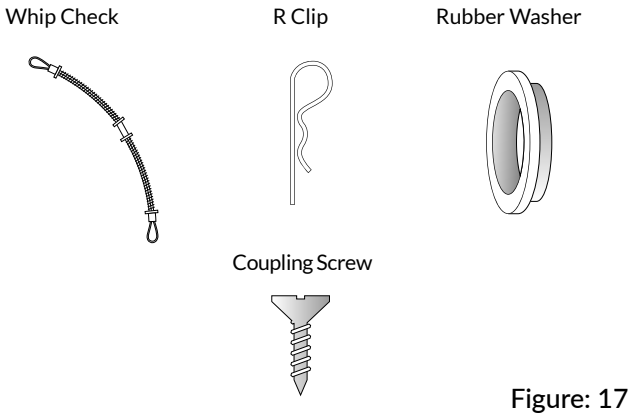


Figure: 17

Interlocking Clamps

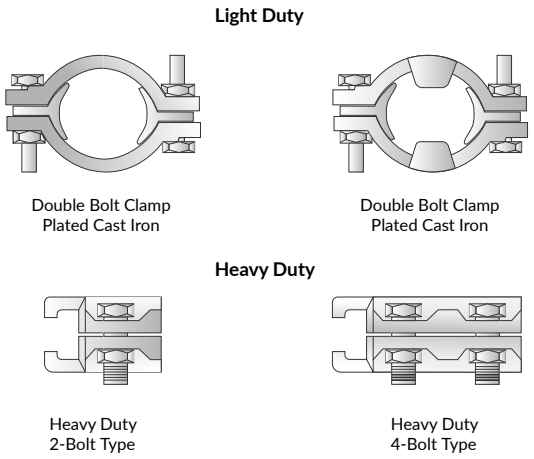


Figure: 18

Table 17

Interlocking Clamps Parts List			
Item	Part no.	Size	Description
1.	SL29	1/2”	Double Bolt Clamp Plated Cast Iron
2.	SL 34	3/4”	Double Bolt Clamp Plated Cast Iron
3.	SL 40	1”	Double Bolt Clamp Plated Cast Iron
4.	SL 49	1 1/4”	Double Bolt Clamp Plated Cast Iron
5.	SL 60	1 1/2”	Double Bolt Clamp Plated Cast Iron
6.	SL 76	2”	Double Bolt Clamp Plated Cast Iron
7.	SL 94	2 1/2”	Double Bolt Clamp Plated Cast Iron
8.	2BC050	1/2”	Heavy Duty 2-Bolt Type
9.	2BC075	3/4”	Heavy Duty 2-Bolt Type
10.	2BC100	1”	Heavy Duty 2-Bolt Type
11.	4BC100	1”	Heavy Duty 4-Bolt Type
12.	4BC125	1 1/4”	Heavy Duty 4-Bolt Type
13.	4BC150	1 1/2”	Heavy Duty 4-Bolt Type
14.	4BC200	2”	Heavy Duty 4-Bolt Type

Hose Clips

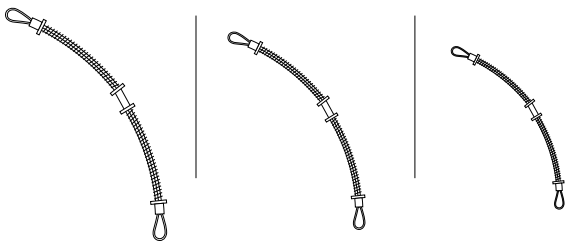
Figure: 19

O Clip for
1/4" and 3/8" hoses

Jubilee Clip for
¼",3/8",1/2",3/4"&1"hoses

Whip Checks

Figure: 20



38" Whip Check
for hoses above 2"

20" Whip Check
for hoses b/w 1"
& 2"

12" Whip Check
for 1" & lesser
hoses

11.0 Re-order/Moving Parts List

Table 18

Sl.No	Parts
1.	Rubber lined hex nipple 1¼”
2.	Rubber lined pipe nipple 1¼” x 100mm
3.	Pop-up Valve w/ shaft
4.	Pop-up O-ring
5.	Nozzle holder rubber Washer
6.	Blast Hose Coupling rubber washer
7.	Threaded Pot coupling rubber washer
8.	Remote Control Repair Kit
9.	Moisture Separator Repair Kit
10.	Deadman Handle Repair Kit
11.	Blast Hose (replace after 500 hours of operation)
12.	Air Filter Catridge (replace after 3 months)
13.	Blast Nozzle
14.	R-Clip
15.	Coupling Screws
16.	Whip Check

12.0 Troubleshooting

Table 19

Sl.No	Problem	Possible Cause	Corrective Action
1	Blast machine will not pressurize	No compressed air supply	Check air compressor
		Main air supply inlet valve is closed	Open air inlet ball valve
		Pop up valve or O-ring is worn or damaged	Inspect and replace as required
		Inadequate compressed air supply	Check compressor output Check dia. of air hose to the blast machine
2	No air and /or abrasive flow from blast nozzle	Blast nozzle blocked	Depressurize the blast machine, remove blast nozzle from nozzle holder, clear blockage and re-fit blast nozzle.
		Choke valve fully closed.	Open and adjust choke valve as required.
		Abrasive metering valve fully closed.	Open and adjust abrasive metering valve as required.
		Pop up valve and seating ring worn or damaged.	Inspect and replace as required.
		Insufficient abrasive media in blast pot.	Re-fill with abrasive media as required.
		Excessive dust and fine media in abrasive mix.	Drain abrasive media from blast pot and re-fill with clean abrasive media.
		Damp or wet abrasive media in blast pot.	Drain abrasive media from blast pot and re-fill with clean abrasive media.
		Leak or loose fittings in twinline hose.	Inspect twinline hose and tighten fittings as required.
		Remote control valves not operating.	Disassemble valves; inspect seals and diaphragms for wear. Replace as necessary.
3	Intermittent abrasive media flow	Excessive dust and fine media in abrasive mix.	Drain abrasive media from blast pot and re-fill with clean abrasive media.
		Insufficient abrasive media in blast pot.	Re-fill with abrasive media as required.
		Damp or wet abrasive media in blast pot.	Drain abrasive media from blast pot and re-fill with clean abrasive media.
		Compressed air supply pressure too low.	Check and adjust air pressure as required.
4	Excessive abrasive flow	Choke valve fully closed	Open and adjust choke valve as required.
		Abrasive metering valve fully opened.	Adjust abrasive metering valve as required.
5	Excessive wear on blast hose	Blast hose kinked or coiled	Keep blast hose as straight as possible without being tightly coiled
		Blast nozzle excessively worn.	Check blast nozzle internal diameter and replace as required.
6	Excessive wear on remote control valve parts	Blast pot being overfilled.	Only re-fill blast pot to specified level.
		Blast pot being depressurized and re- pressurized too frequently.	Operate blast pot as efficiently as possible to keep cycling to a minimum.

Technical Reference Section

Ideal Blast System Setup

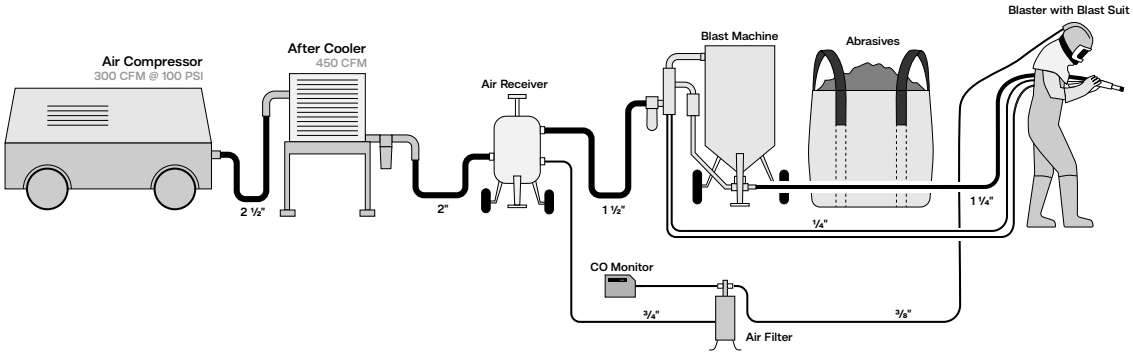


Figure 21

Configuration for double loading hopper

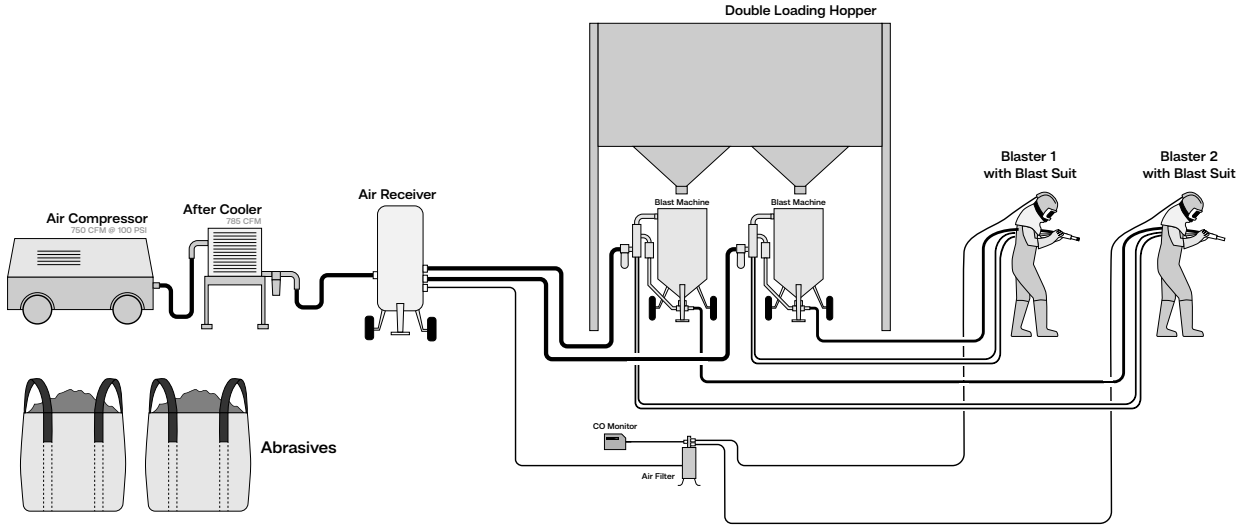


Figure 22

Unit Conversion

Table 20

Conversion Formulas		
To Convert...	Into...	Multiply by...
Air Volume:		
Cubic Feet	Cubic Meters	0.0283
Cubic Meters	Cubic Feet	35.31
Feet4/Minute(CFM)	Meters4/hour	1.699
Meters4/Hour(CMH)	Feet4/Minute	0.5882
Temperature:		
Fahrenheit	Celsius	(1F32) x .56
Celsius	Fahrenheit	(1.8 x °C) +32
Pressure:		
Bar	PSI	14.5038
PSI	Bar	0.0689476

Hose Fixing Safety Procedure

1. Coupling gaskets should be checked prior to each connection and immediately replaced if worn, distorted or too soft.

Figure 23

2. Make sure the hose ends are properly inserted in the coupling. If hoses must be cut and re-coupled, make sure to cut the hose ends straight edged to ensure a tight seal in the coupling.

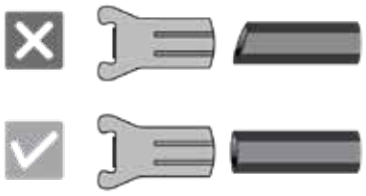


Figure 24

3. Screws and couplings should be checked and tightened each interval.

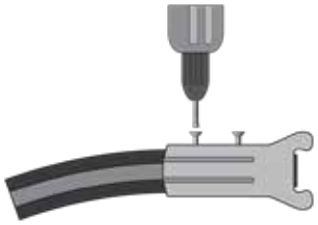


Figure 25

4. Lock couplings using a safety R-Clip to prevent disconnection.

Figure 26

5. Use a whip check to arrest the hose and prevent disengagement in the occurrence of accidental twisting.

Figure 27

6. Avoid using undersized blast hose or oversized couplings to ensure tight fitting. Longer couplings can also be used along with more screws for better fitting. Couplings should be of the same brand for secure locking of jaws.

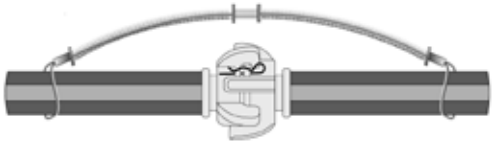


Figure 28

7. Correct screws should be used for the screw holes in the coupling. Ensure a tight seal between the hose and the coupling, but avoid over tightening the screws. Pay attention to the length of the screws as longer screws could pierce through the inner lining of the hose and accelerate the wear of the coupling.

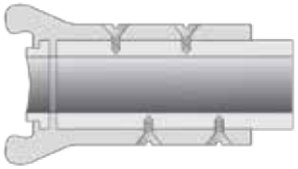


Figure 29

8. Blast hoses should always be kept straight, avoiding bends, curves and tight rolling.

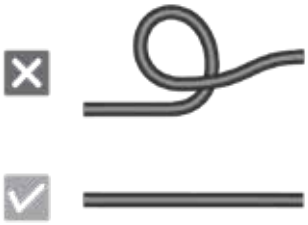


Figure 30

WARNING

Figure 31

Don't allow anything to pass over the hose while in pressure. A heavy load over the hose can potentially lead the coupling to disengage due to extreme pressure.

CAUTION

Inspection of the blast hose should be done daily. Worn out areas on the inner rubber tube or soft spots on the tube require immediate replacement. The life of the blast hose life is approximately 200 hours however determining factors include type of abrasives, air pressure, air temperature, ambient air temperature etc.

Figure 32

ASME Sec VIII D1 Specifications

ASME has established procedures to authorize qualified organizations to perform various activities in accordance with the requirements of the ASME Sec VIII Div.1 Code. We "Jolly Industries" holding authorization to perform various activities in accordance with the requirements of the ASME Code. ASME approved authorized inspection agency (HSB) will witness all the stages right from design review till name plate stamping to meet the ASME code requirement.

1. ASME pressure vessels requires a qualified pressure vessel design engineer to prepare design calculation and drawing to.
2. Design conditions such as MAWP,MDMT and corrosion allowance will be considered by the design engineer based upon the client requirements.
3. ASME pressure vessel requires a qualified WPS,PQR & WPQ in accordance with ASME Sec IX for each and every welding.
4. A detailed ITP, Welding & NDE plan will be prepared by QCE and approved by authorized inspector for joint wise identification and stage wise inspection.
5. Approved materials as per table UCS-23 of ASME Sec VIII Div.1 to be used for pressure vessel construction.
6. All pressure parts and welding consumable materials will be witnessed by authorized inspector.
7. ASME Sec V qualified NDE personnel must perform NDE activities in ASME pressure vessel.
8. In process inspection stages (Fit Up, Welding Visual Inspection, Final Dimensional Inspection and Hydrotest) will be witnessed by the authorized inspector.
9. ASME marking will be stamped in the name plate in the presence of authorized inspector.
10. Dually signed by Jolly Industries representative and authorized inspector a ASME data report form will be provided.

Table 21

Sl.No	Model No	Volume	Material Of Construction	Corrosion Allowance	MAWP at Max Temp	MDMT	Hydro test Pressure
1	BL-U-14160	50Ltrs	ASME SA36	0.5mm	162PSI @65°C	-5°C	250PSI
2	BL-U-20300	100Ltrs					
3	BL-U-24650	200Ltrs					
4	BL-U-24800	300Ltrs					

Notes:

CAUTION

Do not fill abrasives to the brim

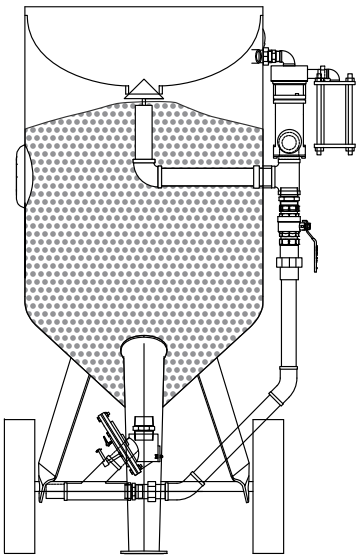


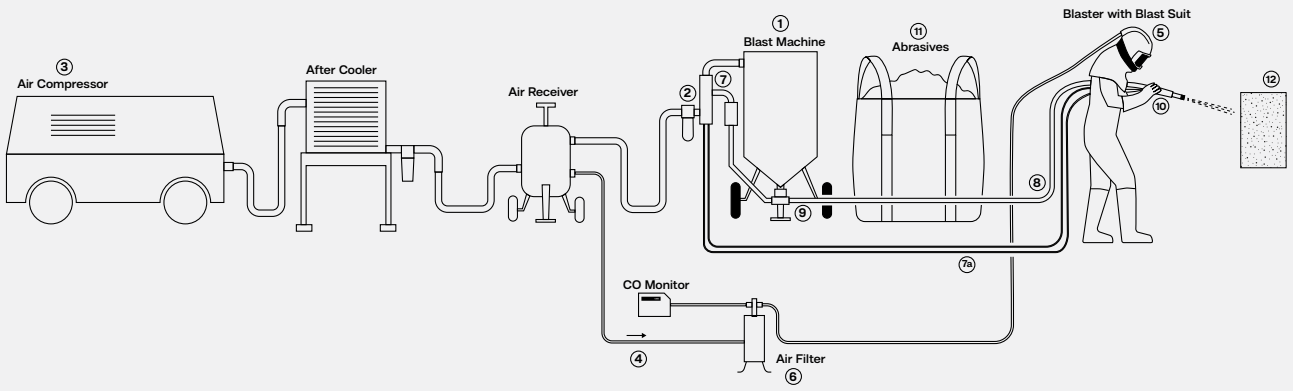
Figure 33

WARNING

1. Do not completely fill the blast machine with abrasives. Fill only 75% of the blast machine for maximum operational efficiency. By filling the blast machine 100%, there is risk of abrasives entering and getting trapped inside the remote control, causing excessive wear and damage to the remote control.
2. Avoid filling abrasives in the dish while the machine is in use. Do this to avoid abrasives falling into the blast machine through the popup valve when the deadman handle is not being operated.
3. Avoid using non-standard machines with less than 6mm steel thickness plate.
4. Avoid using non-certified machines. Only use blast machines that have been inspected and certified by a third party.
5. Recertify your machine after 3 years since the date of operation. After 3 years, conduct a thorough third-party inspection by hydrotesting, NDT Testing etc.

Notes:

Ideal Blast System Setup



PRIOR TO STARTING EACH WORK SHIFT, THE FOLLOWING STEPS SHOULD BE COMPLETED BEFORE BEGINNING THE BLASTING OPERATION. Read all instructions, literature, labels, specifications and warnings sent with and affixed to all the equipment. If operation of the equipment is unclear after reading the instruction manual, contact your supervisor for instructions.

1. INSPECT THE CONDITION OF BLAST MACHINE. Check the pop-up valve, pop-up valve seat gasket, inspection door components, remote control components, piping, and compression coupling fittings. Prior to operating the blast machine replace excessively worn or damaged parts, and tighten all fitting connections. Ground the blast machine to eliminate static electricity hazards. Always use a blast machine screen and cover to prevent the entry of debris and moisture in the blast machine.

2. CHECK THE AIR LINE MOISTURE SEPARATOR. Install the unit as close as possible to the blast machine air inlet. Drain the moisture separator daily (or more often if required), and keep the filter clean.

3. CHECK THE AIR COMPRESSOR. For productive blasting, the air compressor must be sized to provide sufficient volume (cubic feet per minute, CFM) for the nozzle, and other attached air tools, PLUS a 50% RESERVE for nozzle liner wear. The compressor air outlet and connected air hose inner diameter should be FOUR TIMES the nozzle orifice size. Follow all the instructions provided by the compressor manufacturer.

4. CHECK THE BREATHING AIR SOURCE. The source of breathing air MUST meet the requirements for Type 1 gaseous air described in the Compressed Gas Association Commodity Specification G-7.1 (Grade D or higher quality). The source of air must be located in a dust free, contaminant free environment to ensure a continuous source of Grade D or higher quality breathing air at all times. If an oil-lubricated air compressor is used to supply breathing air, it MUST be equipped with a high temperature monitor and carbon monoxide alarm. Follow manufacturers maintenance instructions.

5. INSPECT THE NIOSH APPROVED AIR RESPIRATOR (HELMET). Replace all worn, damaged, or excessively dirty components. Be certain all the components including the cape, inner and outer lenses, breathing hose, breathing air supply hose, air control valve, air conditioner (if applicable) and gaskets are in perfect operating condition. Follow manufacturers maintenance instructions.

6. INSPECT THE BREATHING AIR FILTER AND FILTER CARTRIDGE. The filter cartridge should be replaced immediately if the following signs are noticed: Contamination or visible discoloration of the filter cartridge (visible only when the filter is disassembled); The presence of objectionable odor(s) and/or tastes in the air being supplied to the air supplied respirator; The presence of moisture at the outlet fitting(s); There is a large pressure drop in the system, even though the compressor and other components appear to be operating correctly. If conditions are not improved after replacing the used cartridge, DO NOT USE the filter unit until appropriate corrective measures have been taken. WARNING THE BLASTLINE AIR FILTER WILL NOT REMOVE CARBON MONOXIDE (CO), CARBON DIOXIDE (CO2), OR OTHER TOXIC VAPORS. ALWAYS USE A CARBON MONOXIDE ALARM.

7. INSPECT THE REMOTE CONTROL SYSTEM for damaged, or excessively worn components. Use only genuine Blastline replacement parts, including Twinline hose (7a). The complete system should be thoroughly TESTED PRIOR TO PLACING MEDIA IN THE BLAST MACHINE. DO NOT USE A REMOTE CONTROL SYSTEM THAT IS NOT IN PERFECT OPERATING CONDITION. NON-COMPLIANCE WITH THE ABOVE CAN CAUSE INVOLUNTARY ACTIVATION OF THE REMOTE CONTROL SYSTEM, AND CAUSE SERIOUS INJURY, DEATH, AND/OR PROPERTY DAMAGE.

8. INSPECT THE BLAST HOSE for damage, soft spots, or excessively worn internal wear. For productive blasting, blast hose should have NO sharp bends, and be aligned as straight as possible. The blast hose inner diameter should be THREE TO FOUR times the nozzle orifice size.

9. CHECK THE BLAST HOSE COUPLINGS AND NOZZLE HOLDER for a snug fit. Be certain that all coupling connections are firmly snapped together into locking position, and that safety clips are inserted through all fittings. Check that all couplings are equipped with gaskets and form a positive sea!. Always use safety cables on all blast hose and air hose connections. Replace any component that shows signs of excessive wear, damage, distortion, or softness.

10. INSPECT THE NOZZLE JACKET, NOZZLE LINER AND NOZZLE GASKET prior to each work shift. Replace any component that show signs of excessive wear, damage, distortion, or fractures. The nozzle should be replaced when the orifice is 1/16" larger than the original orifice size.

11. USE ONLY ABRASIVE manufactured, processed, and approved for abrasive blast cleaning. Abrasives should be free of harmful substances such as free silica, lead, cyanide, or arsenic. Check the safety material data sheet supplied with the abrasive.

12. CHECK THE SURFACE COATING to be blasted for toxic substances. All NIOSH, EPA, OSHA, and ACGIH regulations and recommendations should be followed to protect operators and bystanders from toxic dust and debris.