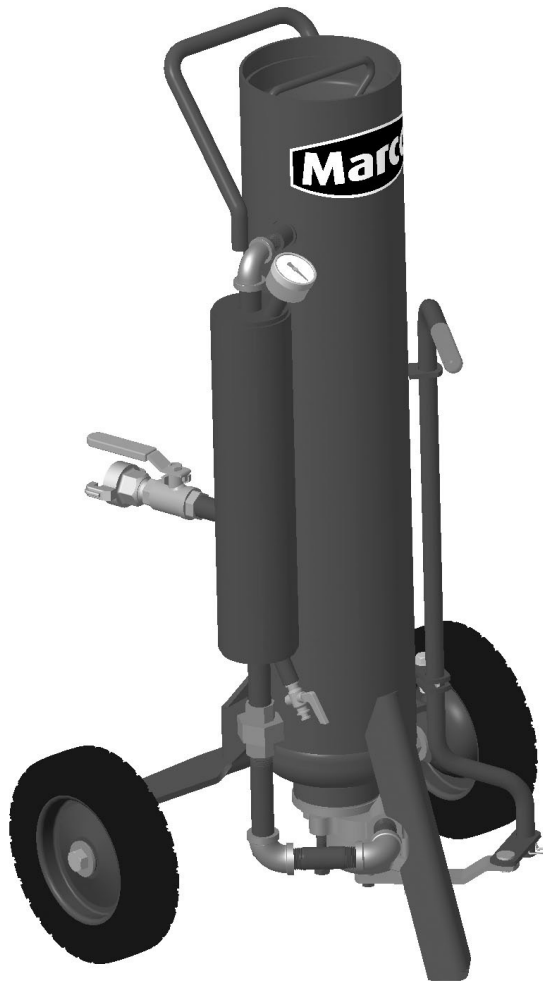


OPERATOR'S MANUAL

BLASTMASTER® .35 CU. FT. L-SERIES ABRASIVE BLASTING POT



**BUILT MARCO
TOUGH**
MARCO MANUFACTURED

⚠ WARNING

Before using this equipment, read, understand and follow all instructions in the Operator's Manuals provided with this equipment. If the user and/or assistants cannot read or understand the warnings and instructions, the employer of the user and/or assistants must provide adequate and necessary training to ensure proper operation and compliance with all safety procedures pertaining to this equipment. If Operator's Manuals have been lost, please visit www.allredi-us.com, or contact Allredi at 563.324.2519 for replacements. Failure to comply with the above warning could result in death or serious injury.

Marco®

Company Profile

Since 1944, Marco has developed a strong tradition of providing innovative and reliable products and services to the surface preparation and protective coatings industries. We are the world's premier provider of Abrasives, Blasting, Coating, Dust Collectors, Engineered Systems, Rental, Safety, Service, Repair, & Modernization, and Vacuums.

Through innovative designs and a total commitment to quality, Marco manufactures products that increase production rates, create a safer workplace, and reduce maintenance costs. Marco's industry experience, manufacturing capabilities, legendary customer service, product availability, logistics services, and technology leadership is your assurance that we deliver high quality products and services, providing the best value to you, our customer.

The Marco Difference

- **Industry Experience** – With Marco on your team, you have access to expertise which can only come from decades of industry leadership. We have organized our engineering department, production specialists, customer operations, and safety support into a “Center of Competence.” As a Marco customer, you have access to hundreds of years of cumulative experience related to your operations.
- **Manufacturing Excellence** – Marco is a manufacturer of equipment for the Surface Preparation and Protective Coatings industries. Marco's engineers benchmark the industry to ensure that we design and manufacture superior products that set the “Gold Standard” for performance, safety, and quality.
- **Legendary Customer Service** – Marco's legendary customer service team is staffed by friendly, highly-trained individuals who are focused on providing the highest level of product support, order accuracy, and customer satisfaction.
- **Product Availability** – We stock over 10,000 SKU's and have more than 45 shipping locations to serve North American and International markets for all major brands of blasting and coating equipment. As the largest provider of surface preparation and protective coatings equipment in the world, our inventory levels and product availability are unmatched.
- **Logistics Services** – Marco's in-house logistics team is dedicated to moving your shipment anywhere in the world. We move more than 14,000 truckloads every year, allowing you to save on freight costs by leveraging our buying power. Lower your process costs with a single invoice, which includes product and freight.
- **Technology Leadership** – Our website provides: Operator's Manuals, Part Numbers and Schematics Guides, SDS information, and Features & Specifications Guides, providing access to information 24/7. Our Extranet application allows you to receive quotes and place orders online. Our Intranet maintains a complete record of your purchase history to assist with ongoing support of your existing equipment and future purchasing decisions.

Vision Statement

Marco is the world's premier provider of Abrasives, Blasting, Coating, Dust Collectors, Engineered Systems, Rental, Safety, Service, Repair, & Modernization, and Vacuums.

Mission Statement

Marco provides strong leadership and innovation to the surface preparation and protective coatings industries. We dedicate our efforts to the continuous improvement of our products, services, processes, people, and most importantly, the quality of our customer's experience.

Quality Statement

Marco is committed to providing superior quality in the design, manufacturing, distribution, rental, service, and repair of our products. Continuous improvement of our processes and supply chain Integration comprise the core of our business strategy for delivering exceptional quality and value in all Marco products and services.

Management Philosophy

We are a company dedicated to the success of every customer and associate. We discuss, debate, challenge, measure, and test our ideas. We will be boundless and limitless in our passion to improve. Through sound leadership and dedicated associates, we will ensure a long term, profitable future for Marco, our associates, customers, and suppliers.

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DEFINITION OF TERMS

DANGER

This is an example of danger. This indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

CAUTION

This is an example of a caution. This indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It can also be used to alert against unsafe practices.

WARNING

This is an example of a warning. This indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

This is an example of a notice. This indicates policy or practice directly related to safety of personnel or protection of property.

HAZARD IDENTIFICATIONS

WARNING

Failure to comply with ANY WARNING listed below could result in death or serious injury.

- ▶ OSHA sets exposure limits to protect workers from exposure to respirable crystalline silica, 29 CFR 1910.1053. Airborne dust could increase the exposure levels beyond permissible limits. Breathing dust containing silica could cause silicosis, a fatal lung disease. Breathing dust during abrasive blasting operations, post-blast cleaning operations, and/or servicing equipment within the abrasive blasting area may expose an individual to conditions that could cause asbestosis, lead poisoning and/or other serious or fatal diseases. Harmful dust containing toxic material from abrasives or surfaces being abrasive blasted can remain suspended in the air for long periods of time after abrasive blasting has ceased. A NIOSH-approved, well-maintained, respirator designed for the specific operation being performed must be used by anyone abrasive blasting, handling or using the abrasive, and anyone in the area of the dust.
- ▶ Contact NIOSH and OSHA offices to determine the proper respirator for your specific application. The air supplied to the respirator must be at least Grade D quality as described in Compressed Gas Association Commodity Specification G-7.1 and as specified by OSHA Regulation 1910.134. Ensure air filter and respirator system hoses are not connected to non-air sources or in-plant lines that may contain nitrogen, oxygen, acetylene or other non-breathable gases. Before removing respirator, use an air monitoring instrument to determine if the atmosphere is safe to breathe.
- ▶ You must comply with all OSHA, local, City, State, Province, Country and jurisdiction regulations, ordinances and standards, related to your particular work area and environment. Keep unprotected individuals out of the work area.
- ▶ Abrasive blasting operators must receive thorough training on the use of abrasive resistant attire which includes: supplied-air respirator, abrasive blasting suit, safety shoes, gloves, ear protection and eye protection. Protect the operator and bystanders by complying with NIOSH and OSHA Safety Standards.
- ▶ Inspect all equipment for wear or damage before and after each use. Failure to use Original Equipment Manufacturer repair parts and failure to immediately replace worn or damaged components could void warranties and cause malfunctions.
- ▶ OSHA requires abrasive blasting nozzles be equipped with an operating valve, which shall be designed to be held open only by continuous hand pressure and shall close immediately upon release of hand pressure (i.e., a “deadman” control). The valve shall not be modified in any manner that would allow it to remain open without the application of continuous hand pressure by the operator. Failure to comply with the above warning could result in release of high speed abrasive and compressed air resulting in death or serious injury. OSHA 29CFR 1910.244(b)
- ▶ Point the abrasive blasting nozzle only at the surface being abrasive blasted. Never point the abrasive blasting nozzle or abrasive stream at yourself or others.
- ▶ Unless otherwise specified, maximum working pressure of abrasive blasting pots and related components must not exceed 150 psi. Exceeding maximum working pressure of 150 psi could cause the abrasive blasting pot and components to burst. Failure to comply with the above warning could result in death or serious injury.
- ▶ Never weld, grind or drill on the abrasive blasting pot (or any pressure vessel). Doing so will void ASME certification and manufacturer’s warranty. Welding, grinding or drilling on the abrasive blasting pot (or any pressure vessel) could weaken the vessel causing it to burst. Failure to comply with the above warning could result in death or serious injury. (ASME Pressure Vessel Code, Section VIII, Division 1)
- ▶ This equipment is not intended for use in any area that might be considered a hazardous location, as described in the National Electric Code NFPA 70, Article 500. Use of this equipment in a hazardous location could cause an explosion or electrocution.
- ▶ Never attempt to move an abrasive blasting pot containing abrasive. Never attempt to manually move abrasive blasting pots greater than 6.5 cubic foot capacity. Always use at least two capable people to manually move an abrasive blasting pot on flat, smooth surfaces. A mechanical lifting device must be used if an abrasive blasting pot is moved in any other manner.

HAZARD IDENTIFICATIONS

WARNING

Failure to comply with ANY WARNING listed below could result in death or serious injury.

- ▶ This product is not for use in wet environments. Always use a Ground Fault Interrupter Circuit (GFI) for all electrical power source connections. Use of this product in wet environments could create a shock or electrocution hazard.
- ▶ Frozen moisture could cause restrictions and obstructions in pneumatic control lines. Any restriction or obstruction in the pneumatic control lines could prevent the proper activation and deactivation of the remote control system, resulting in the release of high speed abrasive and compressed air. In conditions where moisture may freeze in the control lines an antifreeze injection system approved for this application can be installed.
- ▶ Do not cut, obstruct, restrict or pinch pneumatic control lines. Doing so could prevent the proper activation and deactivation of the remote control system, resulting in the release of high speed abrasive and compressed air.
- ▶ Use of Marco remote control switches with other manufacturer's remote control systems could cause unintended activation of remote control systems resulting in the release of high speed abrasive and compressed air. Only Marco remote control switches should be used with Marco remote control systems.
- ▶ Always be certain to have secure footing when abrasive blasting. There is a recoil hazard when abrasive blasting starts that may cause user to fall and misdirect the abrasive stream at operator or bystander.
- ▶ Never use an abrasive blasting pot or attachments as a climbing device. The person could slip and fall. The abrasive blasting pot could become unstable and tip over.
- ▶ For equipment manufactured by entities other than Marco, you must consult the Original Equipment Manufacturer operator's manuals, information, training, instructions and warnings, for the proper and intended use of all equipment.
- ▶ Flammable fumes, such as solvent and paint fumes in the work area can present an ignition or explosion hazard if allowed to collect in adequate concentrations. To reduce conditions that could result in a fire or an explosion, provide adequate ventilation, eliminate all ignition or spark sources, keep the work area free of debris, store solvents and solvent contaminated rags in approved containers, follow proper grounding procedures, do not plug/unplug power cord or turn on/off power switches when flammable fumes are present, keep a working fire extinguisher or provide another fire suppression system in the work area. Cease all operations and correct condition if a spark or ignition source is identified during operation.
- ▶ Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.
- ▶ Moving parts can present an area where crushing, pinching, entanglement or amputation may occur. Do not place body parts or foreign objects in any area where there are moving parts.
- ▶ Surfaces of heated supply tanks, drums and/or lines as well as the adjoining plumbing may become hot during normal use. Do not touch these heated surfaces without proper protection. Deactivate and allow sufficient time for all surfaces to cool before attempting any maintenance.
- ▶ High-pressure fluid from gun, hose leaks, or ruptured components can pierce skin and can cause a serious injury that may result in amputation. Do not point gun or spray tip at anyone or at any part of the body. Keep clear of any leaks or ruptures. Depressurize the entire system before attempting cleaning, inspecting, or servicing equipment.
- ▶ Exposure to toxic fluids or fumes may occur during the normal operation of this system. Before attempting to fill, use, or service this system, read SDS's to know the specific hazards of the fluids you are using. Always use proper Personal Protective Equipment when attempting to fill, use, or service this system.
- ▶ The use of this product for any purpose other than originally intended or altered from its original design is prohibited.
- ▶ Never hang objects from the abrasive blasting pot handle. Doing so may cause the abrasive blasting pot to become unstable and tip over.

HAZARD IDENTIFICATIONS

CAUTION

Failure to comply with ANY CAUTION listed below may result in minor or moderate injury.

- ▶ Static electricity can be generated by abrasive moving through the abrasive blasting hose causing a shock hazard. Prior to use, ground the abrasive blasting pot and abrasive blasting nozzle to dissipate static electricity.
- ▶ High decibel noise levels are generated during the abrasive blasting process which may cause loss of hearing. Ensure appropriate Personal Protective Equipment and hearing protection is in use.

NOTICE

Failure to comply with ANY NOTICE listed below could pose a hazard to personnel or property.

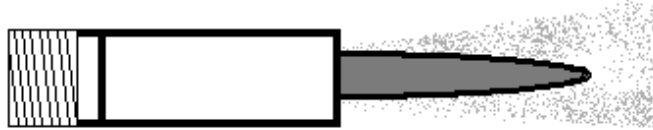
- ▶ See Air & Abrasive Consumption Chart for estimated abrasive consumption rates and required air flow (cubic feet per minute). Your system must meet these minimum requirements to ensure proper function and performance.
- ▶ Always use abrasive that is dry and properly screened. This will reduce the potential for obstructions to enter the remote control system, abrasive metering valve and abrasive blasting nozzle.
- ▶ Moisture build-up occurs when air is compressed. Any moisture within the abrasive blasting system will cause abrasive to clump, clogging metering valves, hoses and nozzles. Install an appropriately sized moisture separator at the inlet of the abrasive blasting system. Leave the moisture separator petcock slightly open to allow for constant release of water. If insufficient volume of air exists and petcock is unable to be left open (at all times) petcock should be opened frequently to release water.
- ▶ To reduce abrasive intrusion in the air supply hose, depressurize the abrasive blasting pot before shutting off air supply from compressor.
- ▶ Inspect abrasive blasting nozzle before placing into service. Damage to abrasive blasting nozzle liner or jacket may occur during shipping. If you receive a damaged abrasive blasting nozzle, contact your distributor immediately for replacement. Abrasive blasting nozzles placed into service may not be returned. Abrasive blasting nozzle liners are made of fragile materials and can be damaged by rough handling and striking against hard surfaces. Never use a damaged abrasive blasting nozzle.
- ▶ Abrasive blasting at optimal pressure for the abrasive used is critical to productivity. Example: For an abrasive with an optimal abrasive blasting pressure of 100 psi at the abrasive blasting nozzle, one pound per square inch of pressure loss will reduce abrasive blasting efficiency by 1.5%. A 10 psi reduction in air pressure will cause a 15% loss of efficiency. Use a Needle Pressure Gauge to identify pressure drops in your system. Consult with your abrasive supplier for the requirements of your abrasive.
- ▶ Replace abrasive blasting nozzle if liner or jacket is cracked or damaged. Replace abrasive blasting nozzle if original orifice size has worn 1/16" or more. Determine abrasive blasting nozzle wear by inserting a drill bit 1/16" larger than original size of abrasive blasting nozzle orifice. If the drill bit passes through abrasive blasting nozzle, replacement is needed.

AIR & ABRASIVE CONSUMPTION CHART

NOTICE

Failure to comply with ANY NOTICE listed below could pose a hazard to personnel or property.

- ▶ See Air & Abrasive Consumption Chart for estimated abrasive consumption rates and required air flow (cubic feet per minute). Your system must meet these minimum requirements to ensure proper function and performance.
- ▶ When it comes to air & abrasive mixtures, more is not necessarily better. Optimum abrasive blasting efficiency takes place when a lean air & abrasive mixture is used. To correctly set the abrasive metering valve, begin with the valve fully closed and slowly increase the amount of abrasive entering the airstream. As you increase the abrasive flow, watch for a “blue flame” at the exit of the abrasive blasting nozzle. Faster cutting, reduced abrasive consumption and lower clean up costs, are benefits of the “blue flame”.
- ▶ Abrasive blasting at optimal pressure for the abrasive used is critical to productivity. Example: For an abrasive with an optimal abrasive blasting pressure of 100 psi at the abrasive blasting nozzle, one pound per square inch of pressure loss will reduce abrasive blasting efficiency by 1.5%. A 10 psi reduction in air pressure will cause a 15% loss of efficiency. Use a Needle Pressure Gauge to identify pressure drops in your system. Consult with your abrasive supplier for the requirements of your abrasive.



“Blue Flame”

NOTICE

Inspect abrasive blasting nozzle before placing into service. Damage to abrasive blasting nozzle liner or jacket may occur during shipping. If you receive a damaged abrasive blasting nozzle, contact your distributor immediately for replacement. Abrasive blasting nozzles placed into service may not be returned. Abrasive blasting nozzle liners are made of fragile materials and can be damaged by rough handling and striking against hard surfaces. Never use a damaged abrasive blasting nozzle.

Air & Abrasive Consumption Chart*

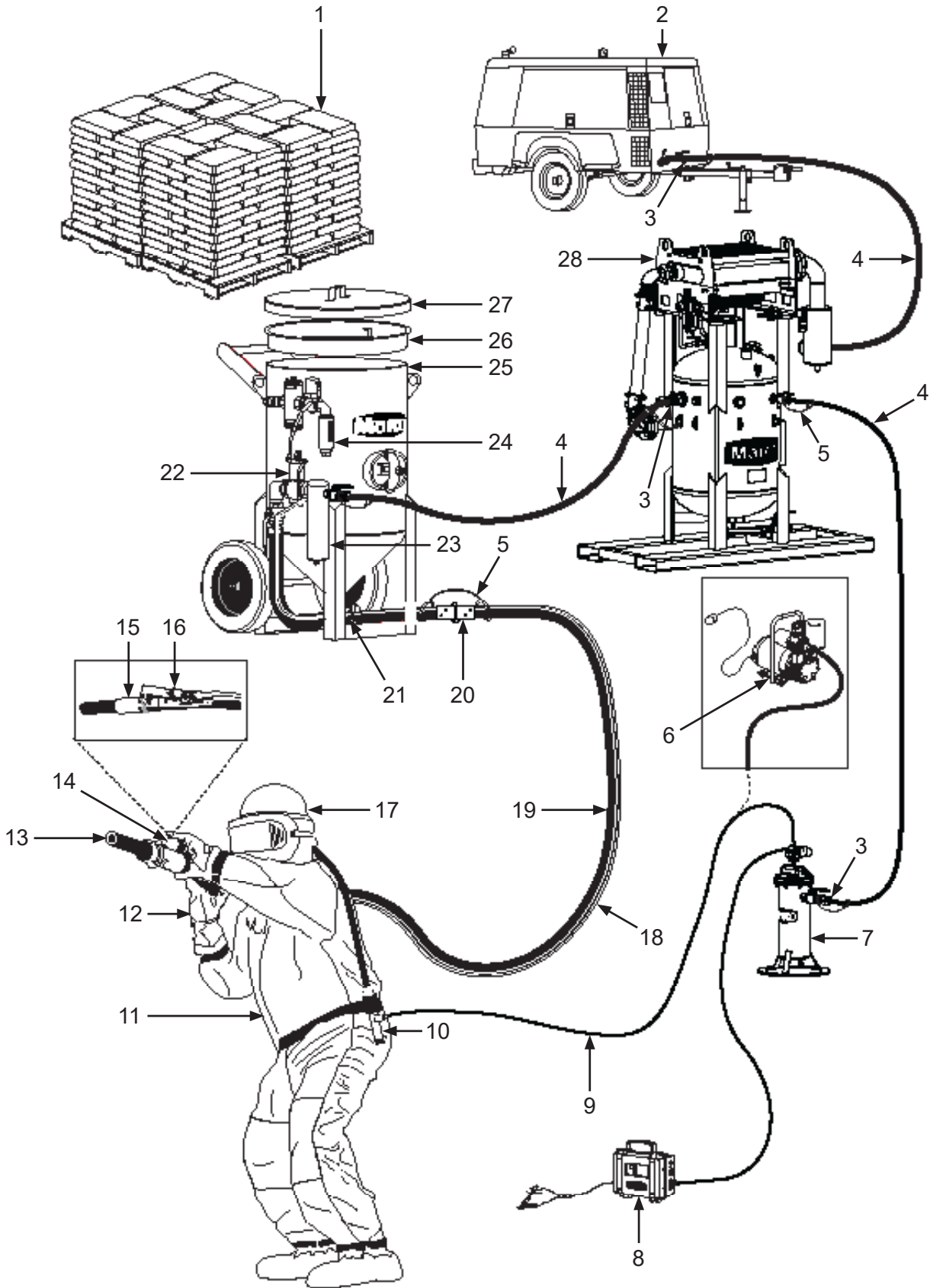
Nozzle Orifice	Pressure at the Nozzle (PSI)								Air (in cfm), Abrasive & Compressor Requirements
	50	60	70	80	90	100	125	140	
No. 2 (1/8")	11	13	15	17	18	20	25	28	Air (cfm)
	67	77	88	101	112	123	152	170	Abrasive (lbs/hr)
	2.5	3	3.5	4	4.5	5	5.5	6.2	Compressor Horsepower
No. 3 (3/16")	26	30	33	38	41	45	55	62	Air (cfm)
	150	171	196	216	238	264	319	357	Abrasive (lbs/hr)
	6	7	8	9	10	10	12	13	Compressor Horsepower
No. 4 (1/4")	47	54	61	68	74	81	98	110	Air (cfm)
	268	312	354	408	448	494	608	681	Abrasive (lbs/hr)
	11	12	14	16	17	18	22	25	Compressor Horsepower
No. 5 (5/16")	77	89	101	113	126	137	168	188	Air (cfm)
	468	534	604	672	740	812	982	1100	Abrasive (lbs/hr)
	18	20	23	26	28	31	37	41	Compressor Horsepower
No. 6 (3/8")	108	126	143	161	173	196	237	265	Air (cfm)
	668	764	864	960	1052	1152	1393	1560	Abrasive (lbs/hr)
	24	28	32	36	39	44	52	58	Compressor Horsepower
No. 7 (7/16")	147	170	194	217	240	254	314	352	Air (cfm)
	896	1032	1176	1312	1448	1584	1931	2163	Abrasive (lbs/hr)
	33	38	44	49	54	57	69	77	Compressor Horsepower
No. 8 (1/2")	195	224	252	280	309	338	409	458	Air (cfm)
	1160	1336	1512	1680	1856	2024	2459	2754	Abrasive (lbs/hr)
	44	50	56	63	69	75	90	101	Compressor Horsepower
No. 10 (5/8")	308	356	404	452	504	548	663	742	Air (cfm)
	1875	2140	2422	2690	2973	3250	3932	4405	Abrasive (lbs/hr)
	68.5	79.5	90	100.5	112	122	146	165	Compressor Horsepower
No. 12 (3/4")	432	504	572	644	692	784	948	1062	Air (cfm)
	2672	3056	3456	3840	4208	4608	5570	6238	Abrasive (lbs/hr)
	96	112	127	143	154	174.5	209	236	Compressor Horsepower

*Abrasive consumption is based on abrasive with a bulk density of 100 lbs per Cubic Foot

NOTICE

Replace abrasive blasting nozzle if liner or jacket is cracked or damaged. Replace abrasive blasting nozzle if original orifice size has worn 1/16" or more. Determine abrasive blasting nozzle wear by inserting a drill bit 1/16" larger than original size of abrasive blasting nozzle orifice. If the drill bit passes through abrasive blasting nozzle, replacement is needed.

"THE BIG PICTURE"



DAILY PRE-OPERATION CHECKLIST

Daily Pre-operation Checklist

- 1. Abrasive
- 2. Air Compressor
- 3. Air Hose Couplings & Gaskets
- 4. Air Hose
- 5. Safety Cable
- 6. Ambient Air Pump*
- 7. Breathing Air Filter
- 8. CO Monitor
- 9. Breathing Line
- 10. Climate Control Device
- 11. Abrasive Blasting Suit
- 12. Gloves
- 13. Abrasive Blasting Nozzle
- 14. Lighting System*
- 15. Abrasive Blasting Nozzle Holder
- 16. Remote Control Switch
- 17. Supplied-Air Respirator
- 18. Control Line
- 19. Abrasive Blasting Hose
- 20. Abrasive Blasting Hose Couplings & Gaskets
- 21. Abrasive Metering Valve
- 22. Remote Control System
- 23. Moisture Separator
- 24. Abrasive Blasting Pot Exhaust Muffler
- 25. Abrasive Blasting Pot
- 26. Abrasive Blasting Pot Screen
- 27. Abrasive Blasting Pot Lid
- 28. Aftercooler*

* *Optional or alternative device. Ask your Marco Representative for more details.*

Abrasive – Select the correct Abrasive (1) for the application. Review the SDS (*Safety Data Sheet*) to ensure the correct PPE (*Personal Protective Equipment*) and Environmental Controls have been selected and are in place.

Air Compressor – Select an Air Compressor (2) of adequate size to support all equipment requirements. Refer to “Air & Abrasive Consumption Chart” for Abrasive Blasting Nozzle (13) air consumption requirements. Before connecting Air Hose (4), sample the air being produced by the air compressor (2) to ensure it is free of petroleum contaminants.

Air Hose, and Air Hose Couplings & Gaskets – Select Air Hoses (4) of sufficient size to support all subsequent volumetric requirements and with a sufficient PSI (*pound per square inch*) rating. Inspect all Air Hoses (4), and Air Hose Couplings & Gaskets (3) for damage or wear. Repair or replace damaged or worn components.

Abrasive Blasting Hose, Abrasive Blasting Hose Couplings & Gaskets, and Abrasive Blasting Nozzle Holder – Select an Abrasive Blasting Hose (19) that has an inner diameter 3 to 4 times larger than your Abrasive Blasting Nozzle (13). Inspect Abrasive Blasting Hose (19), Abrasive Blasting Hose Couplings & Gaskets (20), and Abrasive Blasting Nozzle Holder (15) for damage or wear. Repair or replace damaged or worn components.

Safety Cables – Install a Safety Cable (5) at each Abrasive Blasting Hose (19), and Air Hose (4) connection points.

Aftercooler and Moisture Separator – Ensure Aftercooler (28) is positioned on stable ground. Keep petcock drain of Moisture Separator (23) slightly open during use. Drain both devices after each use.

Supplied-Air Respirator, Breathing Line, Breathing Air Filter, Climate Control Device, CO Monitor, Ambient Air Pump – You MUST consult the Operator’s Manual supplied with your Respiratory Equipment (6, 7, 8, 9, 10, 17) for ALL applicable instructions and warnings. Inspect all Respiratory Equipment components for damage or wear. Repair or replace damaged or worn components.

Abrasive Blasting Suit and Gloves – Select an abrasive-resistant Abrasive Blasting Suit (11) that is slightly oversized to allow ease of movement and allows air to flow around your body. Select abrasive-resistant Gloves (12) with a tight fit and a long cuff that overlaps the sleeve of the Abrasive Blasting Suit (11).

Abrasive Metering Valve and Abrasive Blasting Pot – Confirm Abrasive Blasting Pot (25) is positioned on stable ground. Inspect Abrasive Blasting Pot (25) and Abrasive Metering Valve (21) for damage or wear. Repair or replace damaged or worn components.

Abrasive Blasting Pot Screen and Abrasive Blasting Pot Lid – Always use an Abrasive Blasting Pot Screen (26) when filling Abrasive Blasting Pot (25) with Abrasive (1) to prevent debris from entering the Abrasive Blasting Pot (25). Remove Abrasive Blasting Pot Lid (27) before operating the Abrasive Blasting Pot (25). Install Abrasive Blasting Pot Lid (27) after use to protect the Abrasive Blasting Pot’s (25) interior.

Remote Control System, Remote Control Switch, Control Line, – Inspect Remote Control System (22) and Control Line (18) for damage or wear. Repair or replace damaged or worn components. Ensure Control Line (18) fittings connected to the Remote Control System (22) are tight and free of leaks. Ensure Remote Control Switch (16) is functioning properly. Consult Remote Control Switch Operator’s Manual for applicable instructions.

Abrasive Blasting Pot Exhaust Muffler – Inspect Abrasive Blasting Pot Exhaust Muffler (24) at start and end of daily use. Replace element of Abrasive Blasting Pot Exhaust Muffler (24) per Operator’s Manual instructions.

Lighting System – Ensure the Lighting System (14) is connected to a proper power supply before use.

OPERATING INSTRUCTIONS

DANGER

D-507

Do not operate this equipment without the proper pressure relief device in place. Exceeding maximum working pressure could cause vessel or components to burst. Failure to comply with the above warning will result in death or serious injury. ASME STANDARD PTC25-2014. OSHA Standard 1910.169 (B)(3)(i).

WARNING

W-594

Read, understand, and follow the Original Equipment Manufacturer operator's manuals, information, training, instructions, and warnings, for the proper and intended use of all equipment. Failure to comply with the above warning could result in death or serious injury.

WARNING

W-505

Inspect all equipment for wear or damage before and after each use. Failure to use Original Equipment Manufacturer repair parts and failure to immediately replace worn or damaged components could void warranties and cause malfunctions. Failure to comply with the above warning could result in death or serious injury.

Description

The Blastmaster® .35 Cu. Ft. L-Series Abrasive Blasting Pot is a pressure vessel used as part of an abrasive blasting system to deliver a mixture of abrasive and compressed air to a work surface. Marco blast pots are proudly engineered and manufactured in the USA and built in accordance with ASME guidelines. Each Marco blast pot is designed with added features to enhance work site safety. Blastmaster® Abrasive Blasting Pots are manufactured using higher quality materials that resist wear, reducing costly downtime and increasing production rates. Typical applications include blast rooms, blast yards, bridges, oil refineries, pipelines, railcar shops, storage tanks, and water towers. Common abrasives used include aluminum oxide, crushed glass, garnet, mineral abrasives, slags, and steel shot & grit.

Operational Requirements

- Proper air supply to provide a minimum of 30 psi to a maximum of 125 psi working pressure.

The following may cause safety hazards or reduced performance:

- Improper installation and/or maintenance of components.
- Failure to place Blast Pot on a secure, flat surface.
- Improper air supply pressure (minimum 30 psi, maximum 125 psi).
- Incorrect lifting/transporting of Blast Pot or incorrect or worn lifting devices.
- Use of abrasive too coarse for nozzle orifice.
- Use of abrasive coarser than 20 mesh will cause clogging in the Two Hole Junior Metering Valve

Initial Setup

- Place Blastmaster® .35 Cu. Ft. L-Series Abrasive Blasting Pot on a secure level surface that can withstand the weight of a full Blast Pot. Be aware of possible erosion of surface and load shifting.
- Connect air supply hose from compressor to Inlet (7) of the Blast Pot. To provide best performance, an air supply hose with an inner diameter five to six times the size of blast nozzle orifice is recommended.
- Connect Blast Hose to Two Hole Junior Metering Valve (6).

Operating Instructions

Operating Instructions are limited to the instructions found in the Original Equipment Manufacturer's Operator's Manuals. Please refer to all literature included with your Blastmaster® .35 Cu. Ft. L-Series Abrasive Blasting Pot at time of delivery. If this literature is unavailable, please contact Marco for a replacement set before use.

Before use:

Note: Do Not operate this equipment without a pressure relief device installed. OSHA and ASME Code require that all pressure vessels be operated with pressure relief devices in place., It is the responsibility of the owner of the abrasive blast pot to install a pressure relief valve that meets all regulations as set forth by local, state, and federal governments.

OPERATING INSTRUCTIONS

WARNING

W-516
Never weld, grind or drill on the abrasive blasting pot (or any pressure vessel). Doing so will void ASME certification and manufacturer's warranty. Welding, grinding or drilling on the abrasive blasting pot (or any pressure vessel) could weaken the vessel causing it to burst. Failure to comply with the above warning could result in death or serious injury. (ASME Pressure Vessel Code, Section VIII, Division 1)

WARNING

W-520
The use of this product for any purpose other than originally intended or altered from its original design is prohibited. Failure to comply with the above warning could result in death or serious injury.

CAUTION

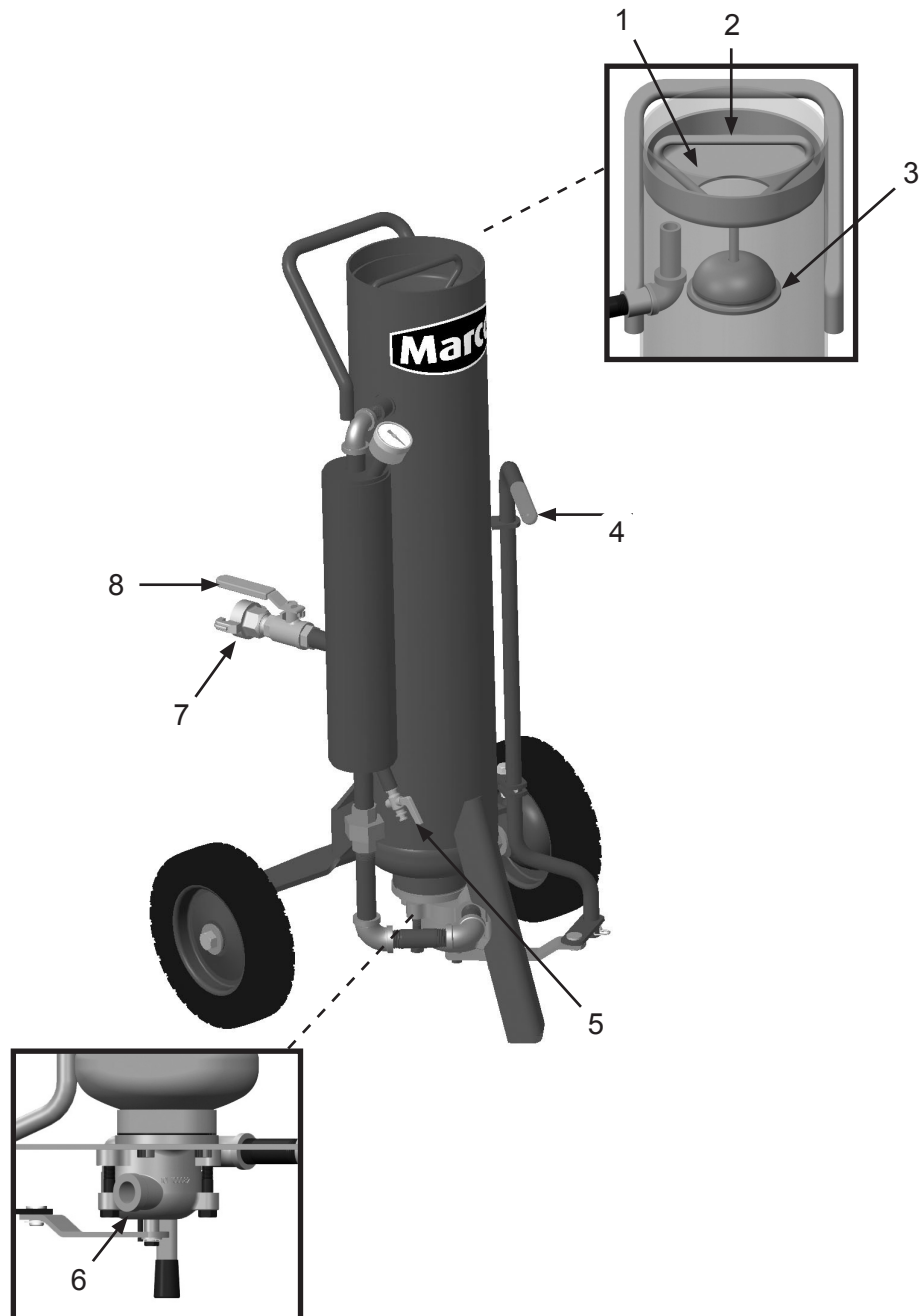
C-501
High decibel noise levels are generated during the abrasive blasting process which may cause loss of hearing. Ensure appropriate Personal Protective Equipment and hearing protection is in use. Failure to comply with the above caution may result in minor or moderate injury.

NOTICE

N-512
Never use the filler plug to lift or move the abrasive blasting pot.

Before use: (cont.)

- Inspect entire system for air leaks or damage. Repair or replace damaged components.
- Ensure sufficient compressed air supply volume and/or pressure.
- Inspect Blast Pot (1) for damage. Do not use Blast Pot if damaged.
- Confirm Air Inlet Ball Valve (8) is closed and Moisture Separator Petcock (5) is open.
- Inspect Filler Plug O-ring (3) and Filler Plug (2) for damage.
- Test movement of Abrasive/Air Control Lever (4) by rotating to "Purge" position, then back to "Off" (see label on side of Blast Pot). Do not use Blast Pot if the Abrasive/Air Control Lever does not completely return to the "Off" position. See Two Hole Junior Metering Valve Operator's Manual for troubleshooting instructions.



OPERATING INSTRUCTIONS

WARNING

W-505
Inspect all equipment for wear or damage before and after each use. Failure to use Original Equipment Manufacturer repair parts and failure to immediately replace worn or damaged components could void warranties and cause malfunctions. Failure to comply with the above warning could result in death or serious injury.

WARNING

W-563
Moving parts can present an area where crushing, pinching, entanglement or amputation may occur. Do not place body parts or foreign objects in any area where there are moving parts. Failure to comply with the above warning could result in death or serious injury.

WARNING

W-513
Never hang objects from the abrasive blasting pot handle. Doing so may cause the abrasive blasting pot to become unstable and tip over. Failure to comply with the above warning could result in death or serious injury.

CAUTION

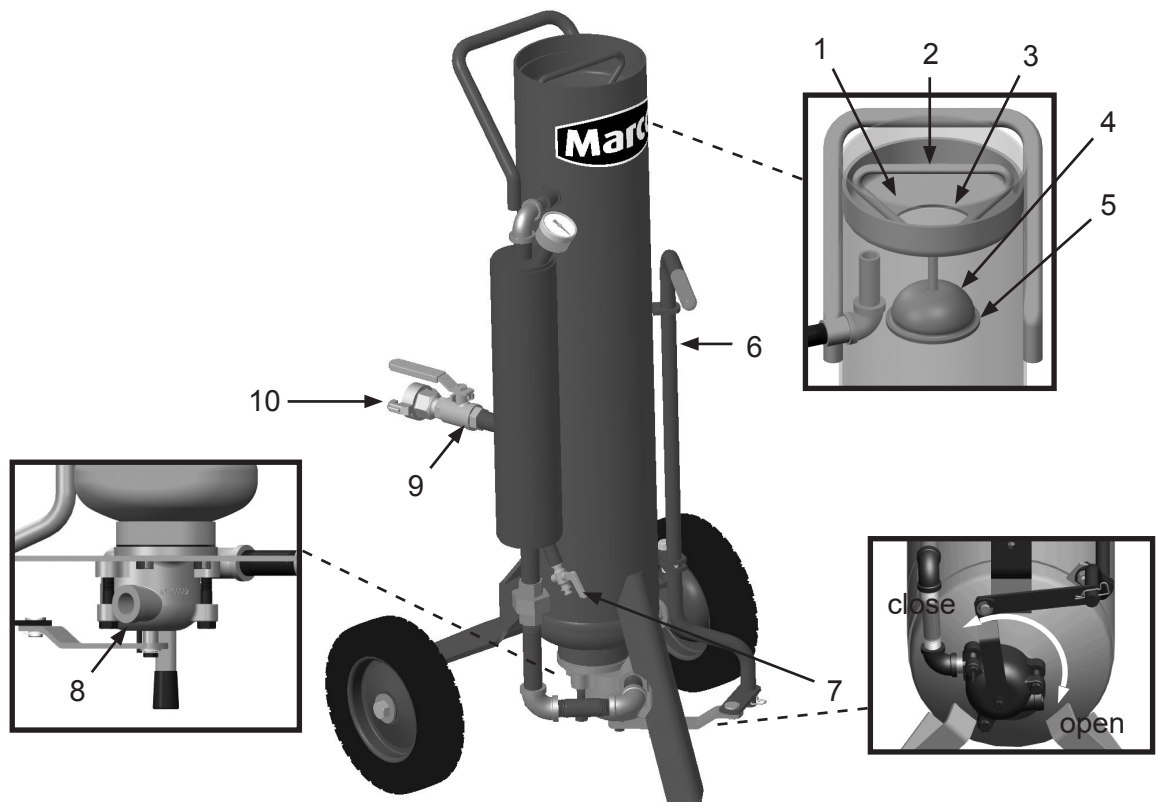
C-501
High decibel noise levels are generated during the abrasive blasting process which may cause loss of hearing. Ensure appropriate Personal Protective Equipment and hearing protection is in use. Failure to comply with the above caution may result in minor or moderate injury.

During use:

- Fill Blast Pot (1) through hole in top of Blast Pot. Do not overfill, the capacity of the Blast Pot is .35 cubic feet of abrasive.
- Clear any remaining abrasive from around Filler Plug Opening (3), shake Filler Plug (4) to clear abrasive and pull up on Filler Plug Handle (2) to test sealing of Filler Plug O-ring (5).
- Close Moisture Separator Petcock (7).
- Pull Filler Plug Handle (2) up and hold securely in place.
- Open Ball Valve (10), wait for Blast Pot to fully pressurize.
- Slowly pull Abrasive/Air Control Lever (6) towards purge position. Adjust flow until optimal air/abrasive ratio is achieved.

After use:

- Empty abrasive from Blast Pot when blasting is concluded for the day. To remove abrasive, place Metering Valve (8) in the FULL OPEN position by rotating Abrasive/Air Control Lever (6) to "Purge" (full open) position. Close Ball Valve (10). Remove blast nozzle. Ensure blast hose is placed in a container suitable for catching the abrasive. Ensure Operator is prepared for strong recoil, the blast hose will provide strong recoil as the abrasive exits the blast hose. Activate by slowly opening Ball Valve (10). When Blast Pot is empty, only air will exit the blast hose.
- Place Metering Valve (8) in the CLOSED position by rotating Abrasive/Air Control Handle (6) to the "Off" position.
- Close Ball Valve (10).
- Open Moisture Separator Petcock (7).
- When air no longer exits Blast Pot, move Filler Plug handle (2) back and forth to release.
- Inspect Blast Pot components for damage. Replace damaged components before use.
- Cover Blast Pot when not in use to reduce debris and water intrusion.



OPERATING INSTRUCTIONS

Blast Hoses and Connections

WARNING

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

CAUTION

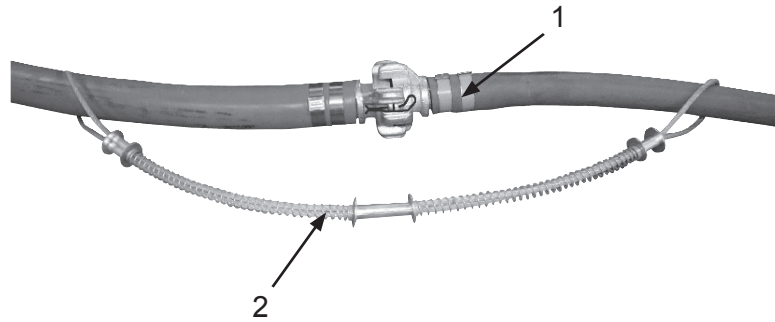
Worn blast hose assemblies can fail while blasting. Check the full length of blast hose assembly for soft spots caused by wear. Replace blast hoses that show signs of excessive wear. Failure to comply with the above caution may result in minor or moderate injury.

CAUTION

Leaks around couplings and nozzle holders indicate worn or loose fitting parts. They could disconnect while under pressure. Inspect all couplings and nozzles daily for worn or loose fitting parts. Inspect nozzle threads for wear. Failure to comply with the above caution may result in minor or moderate injury.

Blast hoses are a high wear component of the abrasive blast system. Sharp bends in the blast hose create high wear points resulting in soft spots that can fail while blasting. Check the full length of the blast hose assembly for soft spots caused by wear. To protect against serious injury to personnel replace blast hoses with soft spots.

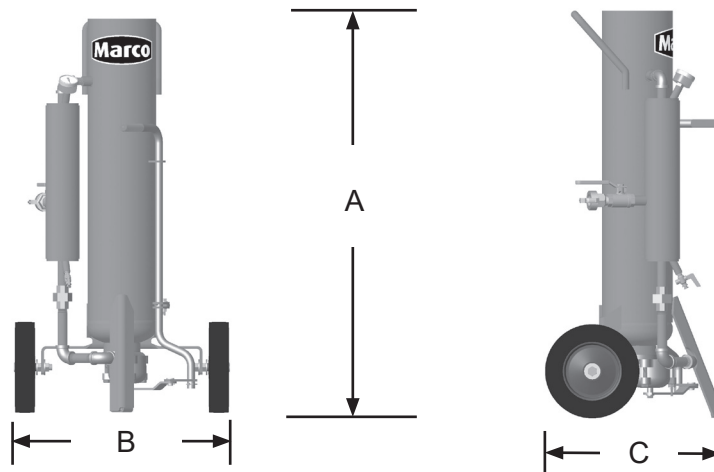
All air hose, blast hose, and threaded couplings have pin holes that align when connected. To protect against accidental hose disconnections, four Safety Pins (1) must be installed through these holes. As a secondary safety measure each hose connection should also include a Hose Whip Check (2) that will hold the hose if there is an accidental disconnection. Connect one loop to each side of connection and stretch out as shown below.



All air hose, blast hose, and threaded couplings have gaskets that seal the connection. To reduce loss of air pressure and/or premature abrasive wear replace these gaskets when leaks are found. Replace gaskets when visible wear or leaks are found.

Leaks around couplings and nozzle holders could indicate worn or loose fitting parts. They could disconnect while under pressure. Inspect all couplings and nozzles daily for worn or loose fitting parts. Check nozzle threads for wear.

SPECIFICATIONS



Empty Weight: 60 lbs

Overall Dimensions:

A: 35"
B: 19"
C: 16"

MAINTENANCE

Remove & Install Blastmaster® 2-Hole Junior Abrasive Mixing Valve

WARNING

W-562

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

WARNING

W-605

For proper operation, maintenance should be performed with the assistance of a qualified technician. Failure to comply with the above

NOTICE

N-519

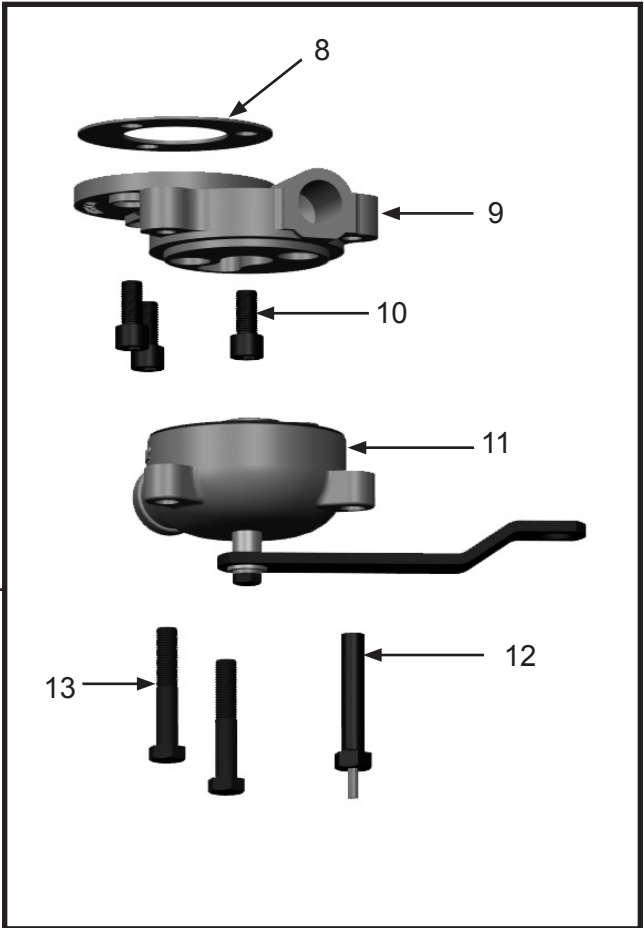
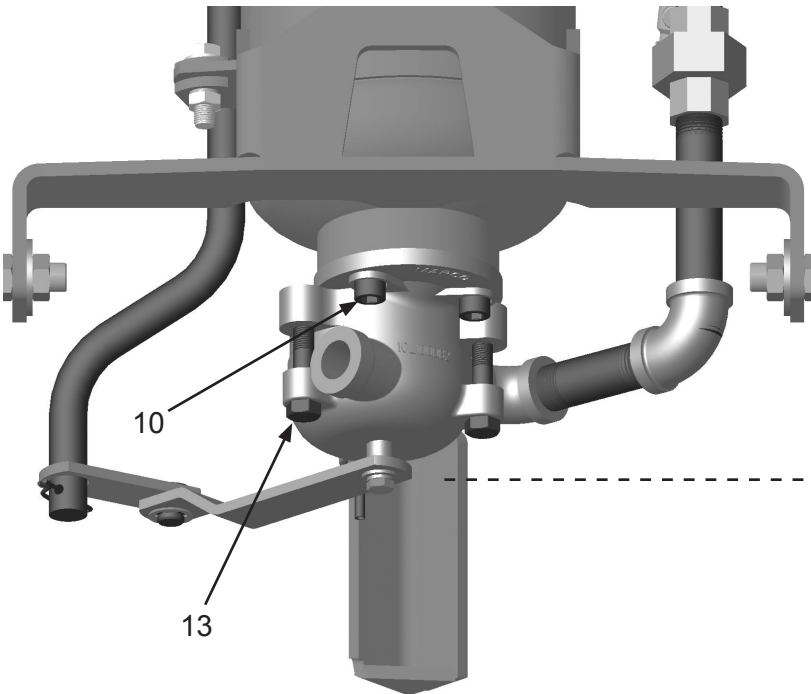
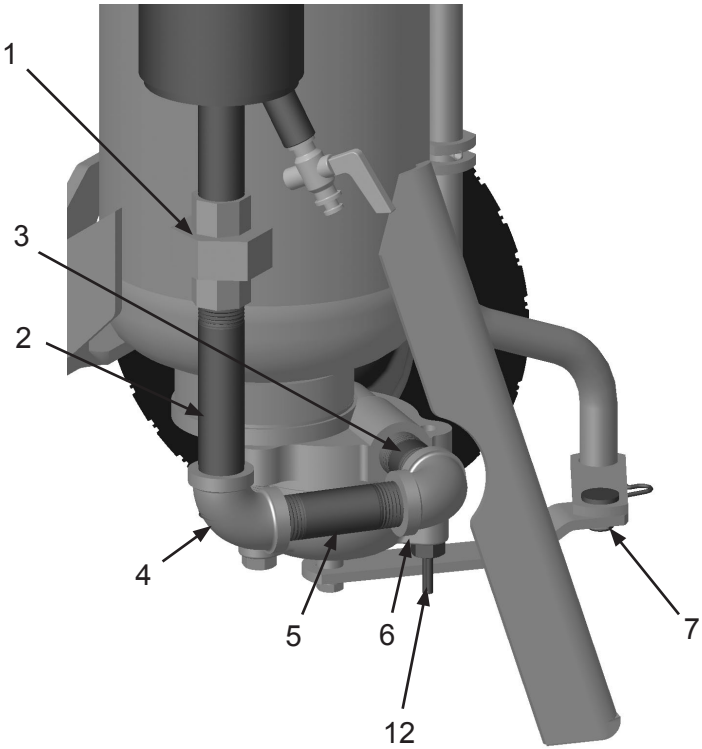
Apply pipe thread sealant to all pipe threads to ensure an airtight seal.

- 1) Depressurize the system and empty tank.
- 2) Remove Pipe Union (1), Pipe Nipple (2), Elbow (6), Pipe Nipple (5), Elbow (40 and Nipple (3).
- 3) Remove Pivot Assembly (7).
- 4) Remove two Bolts (13) and Cover Bolt/Pin (12).
- 5) Remove Lower Valve Body Assembly (11).
- 6) Remove three Bolts (10), Upper Valve Body (9) and Gasket (8).
- 7) Install a 1-1/4" Pipe Nipple (1) into fitting on bottom of abrasive blasting pot.
- 8) Install parts in reverse order using the following special instructions:
 - Tighten Valve Body Bolts (12,13) in a circular pattern, 1/2 turn at a time, to ensure an even fit.

Note: Apply pipe thread sealant to all pipe threads to ensure an airtight seal.

MAINTENANCE

Remove & Install Blastmaster® 2-Hole Junior Abrasive Mixing Valve (cont.)



MAINTENANCE

Disassemble And Assemble Blastmaster® 2-Hole Junior Abrasive Mixing Valve

Maintenance of the Blastmaster® 2-Hole Junior Abrasive Mixing Valve is limited to the daily cleaning and the immediate replacement of damaged or worn parts.

WARNING

W-562

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

WARNING

W-605

For proper operation, maintenance should be performed with the assistance of a qualified technician. Failure to comply with the above warning could result in

Disassemble:

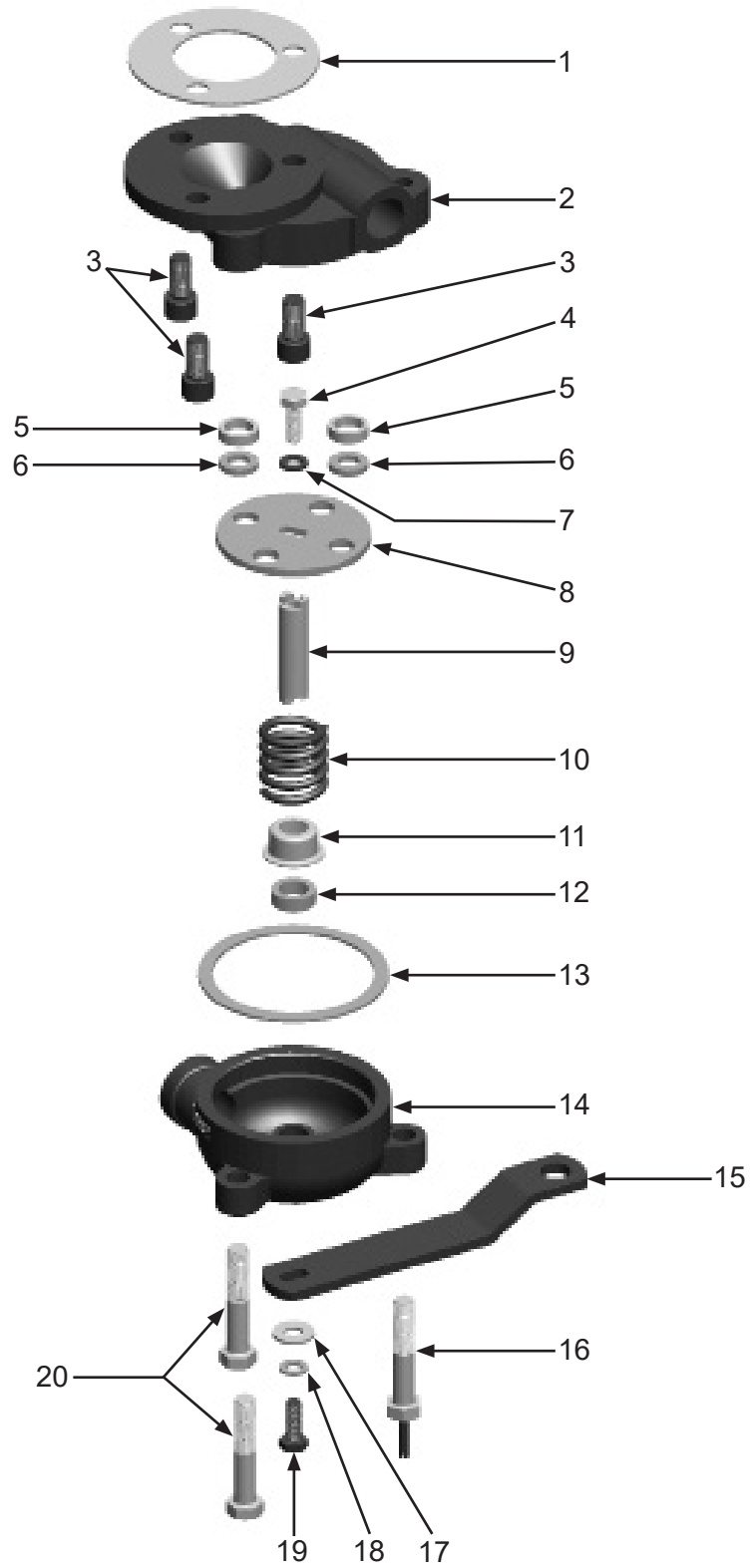
- 1) Remove connecting device from Control Lever (15). Do not remove Bolt (4) from Spindle (9) at bottom of Valve.
- 2) Remove the Stop Pin Bolt (16) and Valve Cover Bolts (20).
- 3) Remove Valve Cover (14) from Valve Body (2). Inspect Gasket (13) for wear or damage.
- 4) Remove the Valve Washers (6) and Valve Cushions (5).
- 5) Inspect Valve Body (2) for wear. Clean any debris from recesses of Valve Body (2).
- 6) Install Valve Cushions (5) and Valve Washers (6) into each recess and ensure proper fit. If Valve Washers (6) do not protrude above Valve Body (2) face, replace Valve Washers (6).
- 7) Remove bottom Spindle Bolt Assembly (17,18,19) then remove Valve Plate Assembly (4,7-12).
- 8) Remove Spring (10), Packing Gland (11) and Packing (12) from Spindle (9).
- 9) Separate Plate (8) from Spindle (9), remove Spindle Bolt (4) and Lock Washer (7).

Assemble:

- 1) Place Valve Plate (8) over end of Spindle (9) so smooth surface of Valve Plate is facing away from Spindle. Secure with Bolt (4) and Lock Washer (7) and hand tighten.
- 2) Place Spring (10) and Packing Gland (11) over Spindle (9). With concave side of Packing Gland facing away from Valve Plate (8), seat Packing Gland into Spring.
- 3) Place Packing (12) over Spindle (9) so Packing seats in bottom of Packing Gland (11).
- 4) Place Valve Plate Assembly (4,7-12) into Valve Cover (14) so that Spindle (9) rests in center hole.
- 5) Place lock Washer (17) and Flat Washer (7) over bolt (4).
- 6) Place Valve Control Arm (15) over Spindle (9) and secure with Spindle Bolt Assembly (17,18,19). Tighten both Spindle Bolt Assemblies.
- 7) Place Body Gasket (1) between abrasive blasting pot and Valve Body (2) and secure Valve Body to abrasive blasting pot using the three Hex Head Cap Screws (3). Align Valve Body with abrasive blasting pot by orienting Air Inlet to the air supply or moisture separator.
- 8) Place Valve Cover Gasket (13) over Lip on Valve Cover (14). Install Valve Cushions (5) and Valve Washers (6), smooth side facing plate, into recesses in Valve Body (2). Hold Valve Washers in place and install Valve Cover Assembly on Valve Body, ensuring the abrasive blasting hose port is opposite the Air Inlet.
- 9) Locate Stop Pin Bolt (16) through hole in Valve Cover (14) and thread into Valve Body (2).
- 10) Stop Pin Bolt must be towards front of abrasive blasting pot when assembled.
- 11) Insert Valve Bolts (20) through Valve Cover (14) and into Valve Body (2). Tighten bolts in a circular pattern to draw Valve Cover to Valve Body evenly. Align Control Linkage to fit with Control Lever (15) while securing Valve Cover to Valve Body.
- 12) When secure, actuate Control Lever (15) through full range of motion to ensure the Valve Assembly moves freely and does not bind. Replace Connecting Device through Control Lever to secure Control Link.

MAINTENANCE

Disassemble and Assemble Blastmaster® 2-Hole Junior Abrasive Mixing Valve (cont.)



MAINTENANCE

WARNING

W-562

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

WARNING

W-516

Never weld, grind or drill on the abrasive blasting pot (or any pressure vessel). Doing so will void ASME certification and manufacturer's warranty. Welding, grinding or drilling on the abrasive blasting pot (or any pressure vessel) could weaken the vessel causing it to burst. Failure to comply with the above warning could result in death or serious injury. (ASME Pressure Vessel Code, Section VIII, Division 1)

WARNING

W-605

For proper operation, maintenance should be performed with the assistance of a qualified technician. Failure to comply with the above

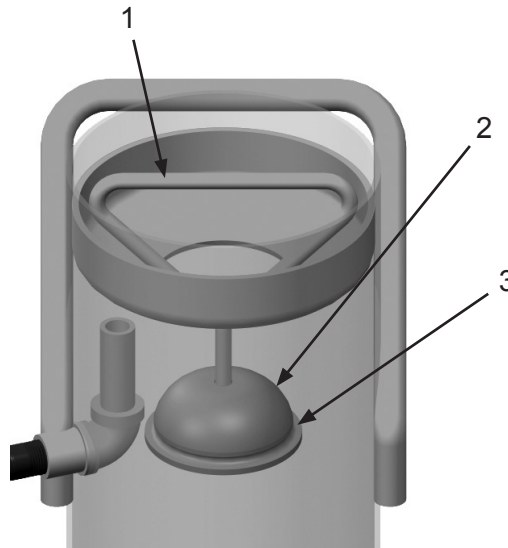
Remove & Install Filter Plug O-ring

Disassembly:

- 1) Lift Filler Plug Handle (1) close to Filler Plug Opening, leaning assembly to one side for access to Filler Plug O-Ring (3).
- 2) Pull Filler Plug O-Ring (3) from recessed area on Filler Plug (2)
- 3) Pull Filler Plug O-Ring (3) over Filler Plug Handle (1) one side at a time.

Assembly:

- 1) Slip Filler Plug O-ring (2) over Filler Plug Handle (1) one side at a time, taking care to not over stretch or otherwise damage Filler Plug O-ring (3).
- 2) Lift Filler Plug (1) close to the opening, leaning to one side to access recessed area that receives the Filler Plug O-Ring (3).
- 3) Starting on exposed face, roll Filler Plug O-ring (3) into recessed area on Filler Plug (2), rotating Filler Plug Handle (1) until Filler Plug O-ring is completely seated.
- 4) Pull Filler Plug (2) in to place to test Filler Plug O-ring (3) seating.



MAINTENANCE

Maintenance Schedules Quick Reference Charts

BLAST POT MAINTENANCE SCHEDULE				
Perform inspections at the intervals specified. Repair or replace damaged parts as needed.				
Item	Maintenance Required	Daily	Weekly	Monthly
Blast Pot Exterior	Visually inspect exterior of blast pot for any damage (corrosion, dents, bulges, cracks etc.). Remove from service and contact Marco.	X		
Blast Pot External Piping & Pipe Fittings	Visually inspect external pipe & pipe fittings for damage (wear, cracks, air leaks etc.). Replace as needed.	X		
Filler Plug and Filler Plug O-Ring	Visually inspect sealing surfaces. Replace O-Ring as needed.	X		
Identification Decals	Visually inspect for presence and condition of all identification decals. Replace as needed.		X	
Blast Pot	Hydrostatic Test	Every 5 years unless otherwise directed by local, state, or jurisdictional requirements.		

TROUBLESHOOTING

WARNING

W-562

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

WARNING

W-563

Moving parts can present an area where crushing, pinching, entanglement or amputation may occur. Do not place body parts or foreign objects in any area where there are moving parts. Failure to comply with the above warning could result in death or serious injury.

NOTICE

N-501

Moisture build-up occurs when air is compressed. Any moisture within the abrasive blasting system will cause abrasive to clump, clogging metering valves, hoses and nozzles. Install an appropriately sized moisture separator at the inlet of the abrasive blasting system. Leave the moisture separator petcock slightly open to allow for constant release of water. If insufficient volume of air exists and petcock is unable to be left open (at all times) petcock should be opened frequently to release water.

If the Blastmaster® .35 Cu. Ft. L-Series Abrasive Blasting Pot does not function properly, check the following:

SYMPTOM (Cause)

ACTION

Abrasive Blasting Pot will not pressurize

(Improper Air Supply, Damaged components)

Insufficient air supply. Ensure a minimum of 30 psi is supplied to Blast Pot and sufficient air volume to support Blast nozzle.

Filler Plug or Filler Plug O-ring damaged. Inspect Filler Plug and Filler Plug O-ring for wear or damage. Replace damaged Filler Plug O-ring. If Filler Plug is damaged remove Blast Pot from service.

Filler Plug not seated. Ensure Filler Plug is in proper position and a proper seal has been achieved.

External Piping is damaged or loose. Inspect external piping for damage. Confirm all fittings are tight and free from damage.

No Air or Abrasive exits the Blast Nozzle

(Blockages, Wet Abrasive, Abrasive Metering Valve, Improperly sized Abrasive)

With Blast Pot pressurized, rotate Abrasive/Air Control Lever to "Purge" to clear minor obstruction in Two Hole Junior Metering Valve, Blast Hose or Nozzle.

Depressurize Blast Pot. Inspect Blast nozzle and abrasive blasting hose for blockage. Remove blockage or remove components from use.

Damp or wet abrasive. Remove all abrasive from Blast Pot and Metering Valve. Ensure dry abrasive is used.

Slightly open Moisture Separator Petcock to allow collected moisture to escape while Blast Pot is in use.

See Figure 3 - Ceramic Nozzles Chart for compatible abrasive and nozzle selection.

Refer to Two Hole Junior Metering Valve Operator's Manual for proper instructions.

TROUBLESHOOTING

WARNING

W-562

Always depressurize the entire system, disconnect all power sources and lockout/tagout all components before any maintenance or troubleshooting is attempted. Failure to comply with the above warning could cause electrical shock and inadvertent activation of equipment resulting in death or serious injury.

CAUTION

C-504

Release of high speed abrasive and compressed air occurs during depressurization of the abrasive blasting pot. Ensure appropriate Personal Protective Equipment is in use. Failure to comply with the above caution may result in minor or moderate injury.

WARNING

W-563

Moving parts can present an area where crushing, pinching, entanglement or amputation may occur. Do not place body parts or foreign objects in any area where there are moving parts. Failure to comply with the above warning could result in death or serious injury.

NOTICE

N-508

Piping may loosen during transit. Ensure all internal and external piping is aligned and tightened before use. Ensure Pop-up Valve will seal properly with Pop-up Valve Seat at opening in top of abrasive blasting pot.

SYMPTOM (Cause)

Intermittent abrasive flow
(*Wet Abrasive, Abrasive Metering Valve, Blast Nozzle*)

ACTION

Insufficient air supply. Ensure a minimum of 30 psi is supplied to Blast Pot and sufficient air volume to support Blast nozzle.

Filler Plug or Filler Plug O-ring damaged. Inspect Filler Plug and Filler Plug O-ring for wear or damage. Replace damaged Filler Plug O-ring. If Filler Plug is damaged remove Blast Pot from service.

Damp or wet abrasive. Remove abrasive from Blast Pot by cleaning out the vessel. Ensure dry abrasive is used.

Slightly open Moisture Separator Petcock to allow collected moisture to escape while Blast Pot is in use.

See Ceramic Nozzles Chart for compatible abrasive and nozzle selection.

Open abrasive mixing valve to fully open position. Pressurize abrasive blasting pot, and rapidly open and close abrasive mixing valve until obstruction is cleared, and abrasive is flowing smoothly.

Abrasive Blasting Nozzle is worn, or too large for compressor size. Replace Abrasive Blasting Nozzle.

Air exits the abrasive blasting nozzle but abrasive does not
(*Blockage, Excessive moisture in system*)

Ensure Blastmaster® 2-Hole Junior Abrasive Mixing Valve abrasive inlet port is clear of obstructions. Clean area and ensure abrasive is free of debris, properly screened, and free of moisture.

Inspect Blastmaster® 2-Hole Junior Abrasive Mixing Valve for damaged components. Replace damaged components.

Open abrasive mixing valve fully. Pressurize abrasive blasting pot. Depressurize abrasive blasting pot and reset abrasive mixing valve to “blue flame” setting.

ADDITIONAL TECHNICAL DATA

The associations listed below offer information, materials and videos pertaining to abrasive blasting and safe operating practices.

- **American Society for Testing and Materials (ASTM)**

100 Barr Harbor Drive
West Conshohocken,
PA 19428-2959

Phone: (610) 832-9585
FAX: (610) 832-9555
www.astm.org

- **Occupational Safety & Health Administration (OSHA)**

United States
Department of Labor
200 Constitution Avenue
Washington, DC 20210

Phone: (800) 321-OSHA
(800) 321-6742
www.osha.gov

- **The National Board of Boiler & Pressure Vessel Inspectors**

1055 Crupper Avenue
Columbus, Ohio 4322

Phone: (614) 888-8320
FAX: (614) 888-0750
www.nationalboard.org

- **The Association for Materials Protection and Performance (AMPP)**

800 Trumbull Drive
Pittsburgh, PA 15205
Phone: (277) 281-7772

15835 Park Ten Place
Houston, TX 77084
Phone: (800) 797-6223

4501 Mission Bay Drive
Suite 2G
San Diego, CA 92109
Phone: (858) 768-0828
www.ampp.org

- **American National Standards Institute (ANSI)**

1899 L Street, NW, 11th Floor
Washington, DC 20036

Phone: (202) 293-8020
FAX: (202) 293-9287
www.ansi.org

LIMITED WARRANTY

Seller warrants to the original purchaser that the Product covered by this Limited Warranty will remain free from defects in workmanship or material under normal commercial use and service for a period of one year from the date of shipment to the original Purchaser. This Warranty shall not apply to defects arising, in whole or in part, from any accident, negligence, alteration, misuse or abuse of the Product, operation of the Product which is not in accordance with applicable instructions or manuals or under conditions more severe than, or otherwise exceeding, those set forth in the written specifications for the Product, nor shall this Warranty extend to repairs or alterations of the Product and/or any maintenance part by persons other than Seller or Seller's authorized representatives. This warranty does not apply to accessory items. Further, this Warranty does not apply to damage or wear to the surface finish or appearance of the Product or normal wear and tear to the Product. This Warranty is limited to a purchaser who purchases the Product either directly from the Seller or from one of Seller's "Authorized Distributors". An Authorized Distributor is a Seller approved distributor that purchases the Product directly from the Seller for the sole purpose of re-selling the Product at retail, without any use or modifications whatsoever, to an end-purchaser. This warranty is specifically non-assignable and non-transferable.

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The foregoing Limited Warranty is exclusive and is in lieu of all other warranties, whether oral or written and whether express, implied, or statutory. SELLER HEREBY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE AND ALL SUCH OTHER WARRANTIES ARE HEREBY EXCLUDED AND ARE INAPPLICABLE TO THE PRODUCT. Seller makes no warranties or representations of any kind concerning respirators, or equipment made by other manufacturers. Seller's agents and representatives are not authorized to offer any further warranties.

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THE SOLE AND EXCLUSIVE REMEDY UNDER THE FOREGOING LIMITED WARRANTY, AND TO THE EXTENT PERMITTED BY LAW, ANY WARRANTY OR CONDITION IMPLIED BY LAW, COVERING THIS PRODUCT SHALL BE, AT THE SELLER'S OPTION, THE REPAIR OR REPLACEMENT, FREE OF CHARGE, F.O.B. POINT OF MANUFACTURE, OF ANY DEFECTIVE PART OR PARTS OF THE PRODUCT THAT WERE MANUFACTURED BY SELLER, AND WHICH ARE RETURNED TO SELLER AT SELLER'S PRINCIPAL PLACE OF BUSINESS, POSTAGE PREPAID BY THE PURCHASER. THIS SOLE AND EXCLUSIVE REMEDY IS CONDITIONED UPON PURCHASER'S PROMPT WRITTEN NOTICE TO SELLER AT SELLER'S PLACE OF BUSINESS THAT A DEFECT HAS BEEN DISCOVERED, TOGETHER WITH A REASONABLY DETAILED DESCRIPTION OF THE DEFECT IN THE PRODUCT, PROOF OF PURCHASE OF THE PRODUCT, AND THE MODEL AND IDENTIFICATION NUMBER OF THE PRODUCT WITHIN THIRTY (30) DAYS AFTER DISCOVERY OF THE DEFECT, OTHERWISE SUCH CLAIMS SHALL BE DEEMED WAIVED. NO ALLOWANCE WILL BE GRANTED FOR ANY REPAIRS OR ALTERATIONS MADE BY PURCHASER OR OTHERS WITHOUT SELLER'S PRIOR WRITTEN CONSENT. IF SUCH NOTICE IS TIMELY GIVEN, SELLER WILL HAVE THE OPTION TO EITHER MODIFY THE PRODUCT OR COMPONENT PART THEREOF TO CORRECT THE DEFECT, REPLACE THE PRODUCT OR PART WITH COMPLYING PRODUCTS OR PARTS, OR REFUND THE AMOUNT PAID FOR THE DEFECTIVE PRODUCT, ANY ONE OF WHICH WILL CONSTITUTE THE SOLE LIABILITY OF SELLER AND FULL SETTLEMENT OF ALL CLAIMS. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY OBLIGATION GREATER THAN THE ORIGINAL PURCHASE PRICE OF THE PRODUCT UNDER THIS WARRANTY. PURCHASER SHALL AFFORD SELLER PROMPT AND REASONABLE OPPORTUNITY TO INSPECT THE PRODUCT FOR WHICH A CLAIM IS MADE. THE SOLE PURPOSE OF THE FOREGOING STIPULATED EXCLUSIVE REMEDY SHALL BE TO REPAIR OR REPLACE DEFECTIVE PRODUCTS OR COMPONENTS THEREOF, OR TO REFUND PURCHASER THE PURCHASE PRICE THEREOF. THIS STIPULATED EXCLUSIVE REMEDY SHALL NOT BE DEEMED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE SO LONG AS SELLER IS WILLING AND ABLE TO REPAIR OR REPLACE THE DEFECTIVE PARTS OR REFUND THE PURCHASE PRICE IN ACCORDANCE WITH THE TERMS HEREOF. PRODUCTS THAT HAVE BEEN REPAIRED OR REPLACED UNDER THIS WARRANTY DO NOT RECEIVE A NEW WARRANTY AND ARE ONLY COVERED BY THE REMAINING PORTION OF THE ORIGINAL WARRANTY.

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The foregoing stipulated exclusive remedy is in lieu of all other remedies for breach of contract, warranty, and/or tort or otherwise. Seller shall not be liable, either directly or indirectly, for any consequential, incidental or special losses or damages of Purchaser, including but not limited to the Purchaser's expenses for downtime or for making up downtime, damages for which the Purchaser may be liable to other persons and/or entities, damages to property, and injury to or death of any persons and/or any claims for incidental or consequential damages, including but not limited to loss of profits, regardless of whether Seller has been informed of the possibility of such damages. Seller neither assumes, nor authorizes any person to assume for it, any other liability in connection with the sale or use of any Products covered by the foregoing Warranty and Disclaimers, and there are no oral agreements relating to remedies which are collateral to or which affect this limitation.

CONTACT CENTER

- 3425 East Locust Street
Davenport, IA 52803

ph: 800.BLAST.IT (800.252.7848)
ph: 563.324.2519
fax: 563.324.6258

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563.324.2519
FAX: 563.324.6258

WWW.MARCO.US
SALES@MARCO.US