GALISO®
INCORPORATED
GASES LIQUIDS SOLIDS

!!!DANGER!!!

DO NOT USE THIS EQUIPMENT TO PURGE TOXIC OR FLAMMABLE GAS

AND

DO NOT USE THIS EQUIPMENT UNDER FLAMMABLE, VOLATILE OR TOXIC ENVIRONMENTAL CONDITIONS

ISB SERIES

INTERNAL SHOT BLASTING MACHINES

INSTRUCTION MANUAL

GALISO® INCORPORATED

GASES LIQUIDS SOLIDS

MANUAL NUMBER 21-11-1019

22 Ponderosa Ct., Montrose, CO 81401
(970) 249-0233 www.galiso.net (800) 854-3789

Revision C Issued October 2005

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1.0 INTRODUCTION

Galiso ISB series internal shot blasting machines are designed to provide a fast, efficient means for removing rust, scale and corrosion from inside compressed gas cylinders. The ISB systems will thoroughly clean a cylinder within two to ten minutes, depending on the size and condition of the cylinder. ISB system components, features and specifications are discussed in Section 2.0. The Galiso VST-9 cylinder tumbler as well as other accessories are also available, in addition to the cylinder cleaning components provided with the ISB system.

2.0 SPECIFICATIONS AND OPERATING DATA:

2.1 ISB-1 Components and Equipment

The standard ISB-1 system includes the following components and equipment:

One 30 gallon, 250 psig max. W.P. Shot Reservoir with Air Inlet Filter, Flow Control Valve and 25 lbs. Steel Shot. See figure 2-1 for reservoir dimensions.

6 ft. long Blasting Hose Assembly, including Control Valve.

2 ea. Blasting Lances; One 36” Lg., and one 72” Lg.

Three ea. Blasting Lance Nozzles, one straight through, one 70^{o} deflection and one 90^{o} deflection.

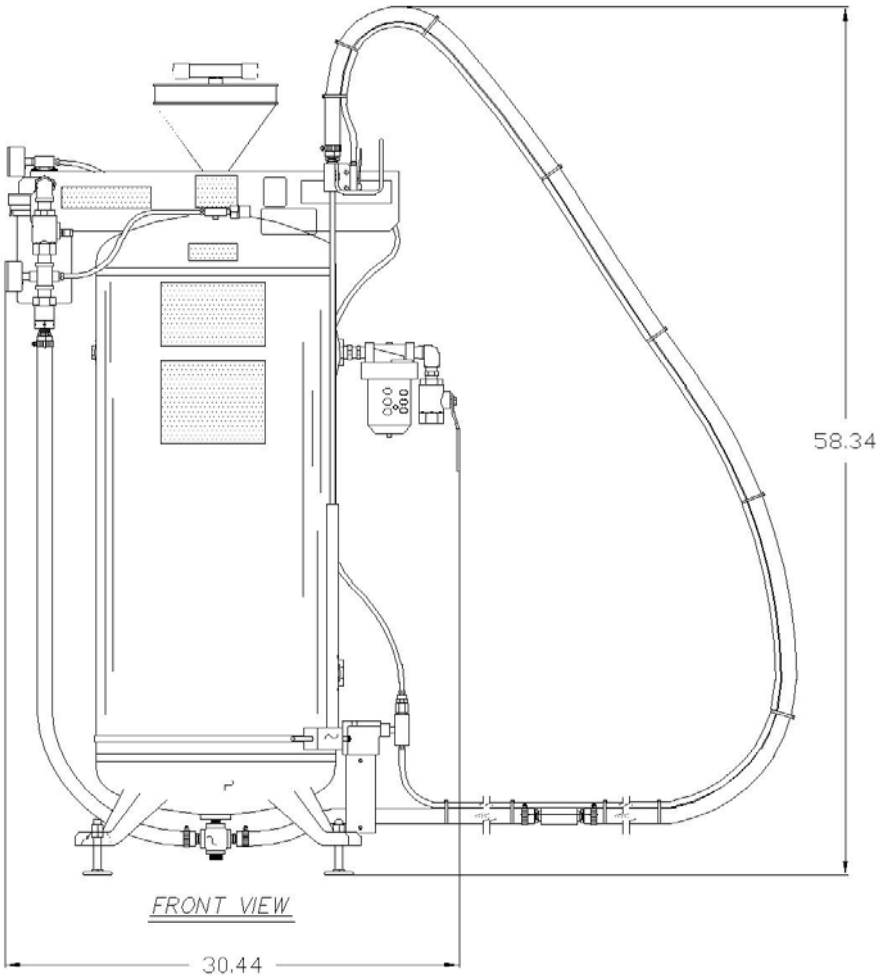


Figure 2 - 1

2.2 Auxiliary Equipment

A Cincinati Fan, model 100S, dust collector system capable of retaining dust particles greater than 5 microns (including a shot recovery box) is available for use with the standard ISB unit. The dust collector system is depicted in figure 2-2, and includes the following items:

A. 700 cfm Fan Blower (with 1 hp 3450 rpm electric motor) for 55 gal. drum mounting, (55 gal. drum not included).

B. One Dust Filter Bag.

C. Galvanized steel attachment nozzles and fittings.

D. 5 ft. wire reinforced rubber hose and shot catcher box.

2.3 Equipment Options and Specifications

The part numbers and specifications for the available internal shot blasting and dust collector system options are shown in Tables 2-1 and 2-2.

Table 2 - 1 ISB System

Model No.	Description	Galiso Part No.	Air Req'd	Power Req'd
ISB-1	Standard Internal Shot Blasting System	25-54-9010	50 scfm @ 100 psig	None

Table 2 - 2 Dust Collector System

Model No.	Description	Galiso Part No.	Air Req'd	Power Req'd
GDCA-1	Dust Collector Ass'y	46-41-6007	None	208-230 Volt, Three phase, 50/60 Hz
GDCA-2	Dust Collector Ass'y	46-41-6008	None	380-440 Volt, Three phase, 50/60 Hz
GDCA-3	Dust Collector Ass'y	46-41-6009	None	115 Volt, Single phase, 60 Hz.
GDCA-4	Dust Collector Ass'y	46-41-6010	None	208-230 Volt, Single phase, 60 Hz.

3.0 SAFETY

Read all instructions before attempting to install or operate ISB and/or dust collector systems. GALISO INC. IS NOT RESPONSIBLE FOR DAMAGE OR INJURY CAUSED BY UNSAFE USE, MAINTENANCE, OR APPLICATION OF THESE MACHINES. Please contact Galiso for guidance when you are in doubt regarding the proper safety precautions to be taken when installing or operating these machines.

3.1 Personnel Safety

⚠ WARNING ⚠

DO NOT USE THE ISB TOOL ON CYLINDERS WHICH CONTAIN REACTIVE METALS, INCLUDING ALUMINUM, OR HAVE CONTAINED FLAMMABLE, TOXIC OR CORROSIVE GASES. SUCH USE CAN RESULT IN SEVERE EQUIPMENT DAMAGE, EXTREME BODILY INJURY, OR DEATH.

A. Goggles, face shield, ear protection, gloves and respiratory protection must be worn when preparing or operating the ISB tool.

B. Establish, label and maintain an area surrounding the ISB equipment sufficient to provide protection for general shop personnel.

C. Ensure that a three prong grounding plug is used for the dust collector electrical power supply.

D. Do not attempt to refill the Shot Reservoir or service this equipment without disconnecting the electrical power and compressed air supply, and venting the reservoir.

⚠ WARNING ⚠

ISB SYSTEM UTILIZES COMPRESSED AIR CAPABLE OF GENERATING VERY POWERFUL ENERGY RELEASES. OPERATORS MUST BE CAREFUL TO KEEP CLEAR OF LANCES/NOZZLES. DO NOT POINT THE BLASTING LANCE AT PERSONNEL OR IN THE DIRECTION OF PERSONNEL. NEVER TRIGGER THE BLASTING LANCE OUTSIDE OF A CYLINDER.

3.2 Equipment Precautions

To increase unit life, and maintain proper safety feature operation of the ISB System, keep the assembly clean and dry. Report any malfunctions, or minor repairs needed, to your supervisor or Safety Officer at once. With proper attention, years of trouble free, reliable service will be provided by the Galiso ISB System. Always observe the following precautions.

! CAUTION !

FAILURE TO OBSERVE THE FOLLOWING PRECAUTIONS COULD RESULT IN SEVERE EQUIPMENT DAMAGE, PERSONNEL INJURY OR DEATH.

A. Verify that the Shot Reservoir Filler Plug, Bleed Valve and Blasting Lance Control Trigger are closed before turning on the compressed air supply to the Shot Reservoir.

B. When venting the air pressure from the Shot Reservoir, open the Bleed Valve SLOWLY.

C. Inspect the Hose Assembly, Blasting Lance and Trigger daily. Replace or repair all worn, damaged or malfunctioning parts immediately.

D. The dust collector/drum assembly is slightly top-heavy when empty. Take adequate precautions to ensure the assembly remains in the upright position.

E. Keep all loose clothing, hair, fingers, jewelry etc. clear of the dust collector cooling fan and blower while it is operating.

F. Take care to keep work area around the ISB System clean, dry, and free of debris.

4.0 INSTALLATION

Read all instructions before attempting to install or operate the ISB/Dust Collector system .

4.1 Receiving and Placement

A. Carefully uncrate the ISB and Dust Collector equipment and remove all packing materials.

B. Select a suitable location for the ISB and Dust Collector Systems. Move the equipment to the installation location.

4.2 Dust Collector Assembly

Refer to the instructions provided with the dust collector unit (attached) as necessary to complete dust collector installation.

NOTE:

The Dust Collector system includes a shot collector specifically designed for mounting to a Galiso VST-9 Cylinder Tumbler. Reference Galiso document 21-11-1021 for VST-9 information.

A. Attach the fan intake cylinder to the under-side of the drum lid and place the motor/blower/drum lid assembly on the 55 gallon dust collector drum (not supplied).

B. Mount the shot collector on the VST-9 cylinder tumbler.

C. Attach the intake hose to the shot collector box and then connect the suction hose. (In place of the nozzles supplied, parts 13A and 13B.)

D. Attach the other end of the suction hose to the inlet elbow on the drum lid.

E. Attach the exhaust elbow assembly to the blower discharge guard and clamp on the dust filter bag.

4.3 Utility Connections

A. Close the air inlet valve on the ISB Shot Reservoir inlet air filter, and connect a compressed air supply line (1/2" dia. Minimum) to the ½" FPT air inlet port. The air supply should provide 50 scfm for maximum cleaning efficiency. The operating air pressure should be between 100 and 150 psig.

⚠ WARNING ⚠

DO NOT OVER PRESSURIZE THE SHOT RESERVOIR. THE MAXIMUM RECOMMENDED OPERATING PRESSURE OF THE TANK IS 175 PSIG.

B. Plug the dust collector power cord into a suitable grounded electrical outlet. Note that the phase and voltage specifications for the unit purchased must be observed for proper system operation.

4.4 Blast Flow Adjustment

Refer to figures 4-1 and 4-2 as necessary.

A. Verify the following valve/component line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

! CAUTION !

VERIFY THAT THE SHOT RESERVOIR IS EMPTY BEFORE PROCEEDING WITH AIR FLOW ADJUSTMENT.

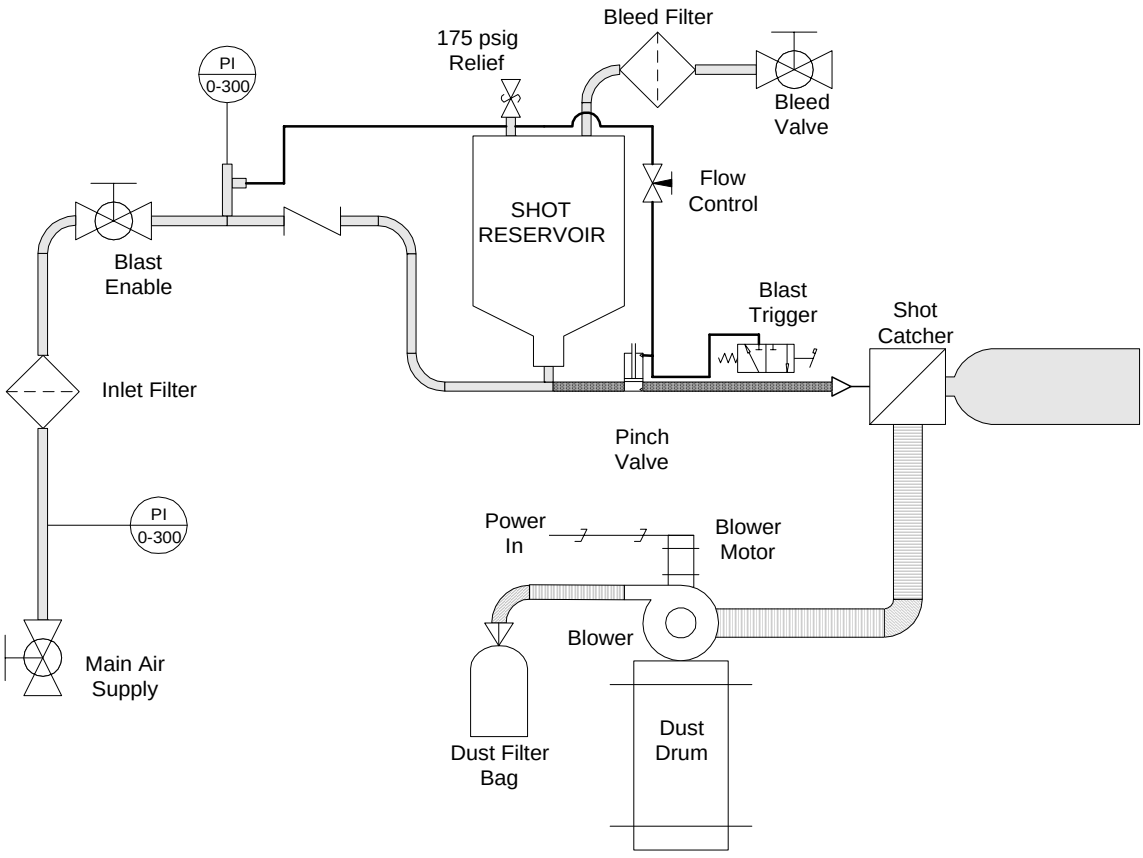


Figure 4 - 1

B. Open the Main Air Supply Valve, then slowly open the Blast Enable valve. Observe the Reservoir Pressure Gauge until the pressure reading stabilizes.

Place the Blast Lance in a safe position, press and hold the Blast Trigger and begin to open the Flow Control valve. Continue to open the Flow Control valve until a steady stream of air exits the Blast Lance. Release the Blast Trigger.

Press (and release) the Blast Trigger momentarily several times. If the Blast Lance does not respond immediately with a jet of compressed air, continue to close the Flow Control valve. Continue to check the blast flow by pressing and releasing the Blast Trigger for each Flow Control valve adjustment. When the Blast Lance responds immediately to the Blast trigger (with a jet of compressed air) the Flow Control valve is properly adjusted.

Turn off (close) the Main Air Supply and Blast Enable valves. Slowly open the Bleed valve to vent all air pressure from the Reservoir.

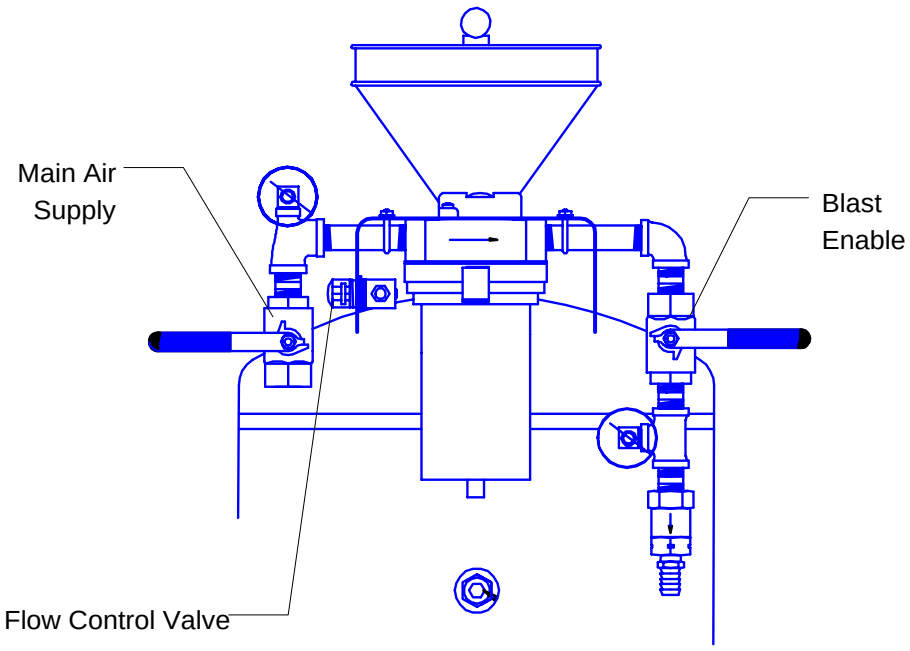


Figure 4 - 2

4.5 Reservoir Shot Fill

To fill the Shot Reservoir, proceed as follows:

A. Prior to beginning shot fill, verify the following valve line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Lance Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

Check the Shot Reservoir Pressure Gauge, and slowly Open the Bleed valve to verify that there is no pressure remaining in the shot reservoir.

B. Remove (unscrew) the Shot Reservoir Filler Plug, and fill the reservoir with #3-30 steel shot. Fill the reservoir approximately one-quarter full or a maximum of 200 pounds of shot.

C. Replace the Shot Reservoir Filler Plug, and verify that it is secure. Close the bleed valve. The system should now be ready for blasting.

⚠ WARNING ⚠

APPLYING AIR PRESSURE TO THE ISB SYSTEM WITH A LOOSE RESERVOIR FILLER PLUG CAN RESULT IN SEVERE EQUIPMENT DAMAGE, EXTREME BODILY INJURY OR DEATH

5.0 OPERATIONS

5.1 Cylinder Shot Blasting

Proceed as follows to initiate shot blasting for cylinder cleaning;

A. Verify that the unit is filled with shot, see Section 4.4.

B. Verify that the system valve line-up is as follows:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

Load a dry cylinder on to the rack to be used to rotate the cylinder. The Galiso VST-9 is specifically designed to be used in conjunction with the ISB and Dust Collector systems. See Galiso document 21-11-1021 for VST-9 information.

If the Galiso VST-9 is used, place the rack/cylinder in the horizontal position and engage the Directional Control Lever to begin rotating the cylinder.

Insert the Blast Lance through the Shot Collector box and into the cylinder. Turn on the air supply to the unit, and then open the Main Air Supply valve. Observe the Shot Reservoir pressure gauge until the pressure stabilizes.

⚠ WARNING ⚠

DO NOT PRESS THE BLAST TRIGGER IF THE BLAST LANCE IS NOT INSIDE A CYLINDER. OPERATING THE SHOT BLASTER WITH THE BLAST LANCE OUTSIDE OF A CYLINDER CAN RESULT IN SEVERE EQUIPMENT DAMAGE, EXTREME BODILY INJURY OR DEATH

C. Turn the dust collector switch to On.

5.1 Cylinder Shot Blasting, continued

D. Firmly grasp the Blast Lance handle and press the Blast Trigger. Move the Blast Lance into the cylinder at a rate of approximately one foot per minute. Retract the lance at the same rate until the lance is in it's original (starting) position. **DO NOT ALLOW THE BLAST LANCE TIP TO COME OUT OF THE CYLINDER WITH THE BLAST TRIGGER ENGAGED**.

NOTE:

Generally, only two passes are necessary to completely clean a cylinder. The process may need to be repeated for excessively dirty or corroded cylinders.

E. Release the Blast Trigger and remove the Blast Lance from the cylinder and Shot Collector. If cylinder shot blasting operations are completed, close the Main Air Supply and Blast Enable valves, and **SLOWLY** open the Bleed valve to release all pressure from the Shot reservoir.

F. If the VST-9 is used, turn the Directional Control Lever on the VST-9 unit to the Off (center) position.

G. Turn the Dust Collector switch to Off. To refill the Shot reservoir, see Section 4.5.

5.2 Shot Recovery

The Dust Collector assembly is supplied with a Shot Screen Box for shot recovery. The following instructions refer to the Galiso VST-9 Cylinder Tumbler, see Galiso document 21-11-1021 for additional VST-9 information.

A. Position the Shot Screen Box beneath the cylinder neck at the end of the VST-9.

B. Unlatch the rack and rotate the cylinder into the Drain position. Relatch the cylinder rack.

C. Engage the Directional Control Lever to begin rotating the cylinder. Continue cylinder rotation until all shot is drained from the cylinder.

D. Turn the Directional Control Lever on the VST-9 unit to the Off (center) position.

E. Empty the Shot Collector into the Shot Screen Box.

F. Screen the shot to remove all dirt and blast residue. The screened shot may be re-used.

G. Unlatch the VST-9 cylinder rack and rotate the cylinder to the vertical (loading) position. Remove and inspect the cylinder as necessary.

6.0 MAINTENANCE

6.1 Inspection

A. Check the Dust Drum and Dust Bag daily and empty as required. Refer to the attached specification sheet for additional Dust Collector system information.

B. Check the inlet and bleed air filters periodically and replace the filter elements if they appear dirty or damaged.

C. Check the Blast Lance shot nozzle daily to verify that no damage has occurred. If a hole has been worn in the nozzle, replace the nozzle immediately to avoid injury.

D. Check the Blast Hose assembly for excessive wear. In particular, the portion of the hose passing through the Pinch Valve assembly at the base of the Shot Reservoir

E. Check the Blast Trigger and Pinch Valve assembly daily for damage, excessive wear and proper functionality. The Pinch Valve should close immediately when the Blast Trigger is released, **when the Flow Control Valve is properly adjusted**. In addition, the pneumatic control hose must be securely attached to the trigger valve assembly. Replace the Blast Trigger and/or Pinch Valve assemblies immediately if excessive wear or damage is identified, to prevent personnel injury.

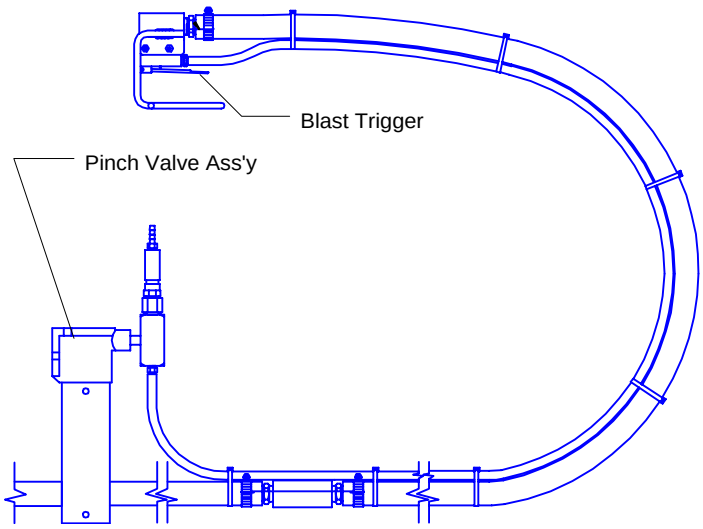


Figure 6 - 1

6.2 System Lay-up

If the ISB system is not to be used for an extended period (1-2 weeks or more) the shot should be removed from the Shot Reservoir. The shot may be emptied by blasting it into a suitable storage container until only compressed air exits the Blast Lance , or as described below.

A. Verify the following ISB system valve/component line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Lance Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

B. Slowly open the Bleed valve to vent all air pressure from the Shot Reservoir. Note that the Shot Reservoir Pressure Gauge should read zero psig when the Shot Reservoir is completely vented.

C. Elevate or tilt the Shot Reservoir (18-24 inches) to obtain access to the drain plug.

! CAUTION !

The Shot Reservoir must be properly secured during the shot draining process. Failure to properly secure the Shot reservoir could result in equipment damage or personnel injury.

D. Remove the Shot Reservoir drain plug and allow the shot to drain into a suitable container. Note that the reservoir may require some shaking/jostling to insure all shot is drained.

E. Verify that all shot has been drained and the drain plug threads are clear and replace and secure the drain plug.

F. Place the Shot Reservoir in it’s original position and close the Bleed Valve.

6.3 Troubleshooting

The two most common problems associated with the ISB unit are shot feed assembly blockage and improper flow control valve adjustment. Section 4.4 describes the flow control adjustment procedure. To unblock the shot feed assembly, proceed as follows:

A. Verify the following ISB system valve/component line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Lance Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

B. Slowly open the Bleed valve to vent all air pressure from the Shot Reservoir. Note that the Shot Reservoir Pressure Gauge should read zero psig when the Shot Reservoir is completely vented.

C. Elevate or tilt the Shot Reservoir (18-24 inches) to obtain access to the drain plug.

! CAUTION !

The Shot Reservoir must be properly secured during the shot draining process. Failure to properly secure the Shot reservoir could result in equipment damage or personnel injury.

D. Remove the drain plug and inspect the shot feed bushing. If clumped shot has obstructed the opening, use a suitable rod to break loose the obstruction(s). When the obstruction has been cleared, shot should run freely from the drain plug hole.

E. Verify that all shot has been drained and the drain plug threads are clear and replace and secure the drain plug.

F. Place the Shot Reservoir in it's original position and close the Bleed Valve.

6.4 Blast Hose Replacement

Proceed as follows to replace the Blast Hose:

A. Verify the following ISB system valve/component line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Lance Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

Slowly open the Bleed valve to vent all air pressure from the Shot Reservoir. Note that the Shot Reservoir Pressure Gauge should read zero psig when the Shot Reservoir is completely vented.

Carefully remove the ties connecting the pneumatic control tube to the trigger valve assembly. Do not damage the pneumatic control tube.

Remove the hose clamps from each end of the hose section and retain them for installation of the new hose section. Pull each end of the hose section off of the barb fitting(s).

Slip the hose clamps over the new hose section, and push the hose ends over the barb fittings. Tighten the hose clamps.

Re-attach the pneumatic control tube to the Blast Trigger.

⚠ WARNING ⚠

FAILURE TO PROPERLY CONNECT THE PNEUMATIC CONTROL TUBE TO THE BLAST TRIGGER COULD RESULTIN LOSS OF BLAST FLOW SHUTOFF CAPABILITY.

6.5 Pinch Valve/Short Hose Section Replacement

Generally, the short hose section passing through the Pinch Valve will experience significant wear. Replace the Pinch Valve hose section as needed and whenever work is performed on the Pinch Valve. Proceed as follows for Pinch Valve and short hose section replacement.

A. Verify the following ISB system valve/component line-up:

VALVE/COMPONENT	POSITION/STATE
Main Air Supply	Closed
Blast Enable	Closed
Flow Control	Closed
Blast Lance Trigger	Closed
Bleed	Closed
Reservoir Fill Plug	In and Secured
Blower	OFF

Lay the ISB Shot Reservoir over on it's side. Be careful not to lay the reservoir on the air filters, pinch valve or hose assemblies.

NOTE:

The shot may have to be drained from the reservoir, see Section 6.3.

Remove the hose clamps from the short hose section, and remove the two bolts securing the Pinch Valve to the reservoir. Pull the hose ends off of the barb fittings.

Remove the Pinch Valve/short hose assembly. Remove the two Allen screws at the base of the Pinch Valve assembly.

Remove the stationary plug from the Pinch Valve assembly. The short hose section can now be removed and replaced. If the Pinch Valve assembly requires no further maintenance, re-assemble and re-install the pinch Valve assembly with the new hose section.

To replace the Pinch Valve assembly, remove the two Allen screws and the stationary plug from the new assembly, slide in a new short hose section, and re-assemble and re-install the unit.

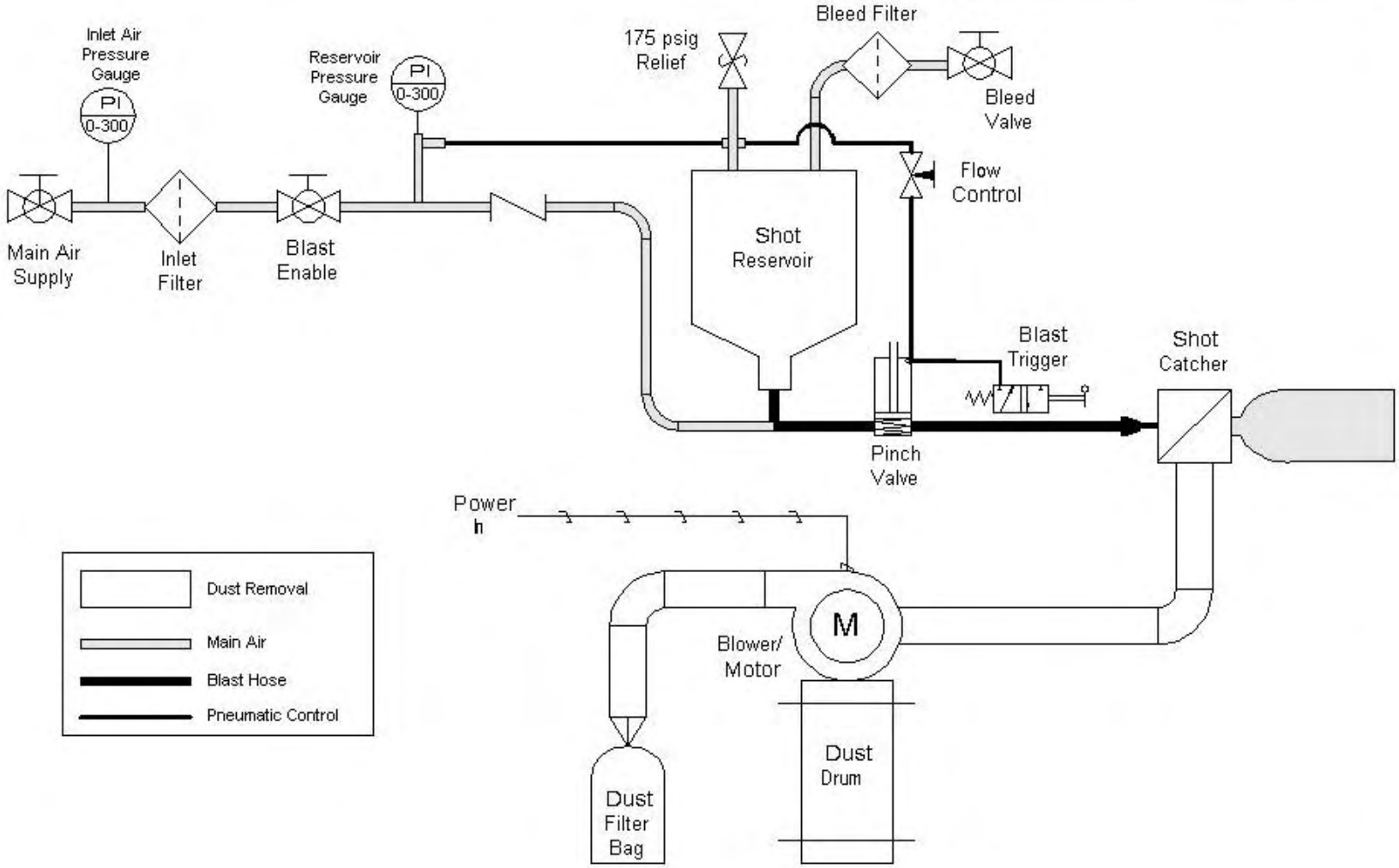
6.6 Spare Parts

The table below shows the part numbers of components that may require replacement.

Galiso P/N	Description
25-31-9059	Nozzle, Straight Discharge
25-31-9058	Nozzle, 90 Deg. Discharge
25-31-9057	Nozzle,70 Deg. Discharge
25-42-9061	Blasting Lance, 72”
25-42-9062	Blasting Lance, 36”
25-43-9029	Shot Collector
25-41-9079	Pinch Valve Assembly
25-42-9055	Blast Trigger Ass’y
25-42-9056	Shot Strainer Ass’y
25-42-9053	Shot Feed Ass’y
25-41-9082	T-Handle
25-41-9081	Funnel Ass’y
41-11-2514	Trigger Hose
41-11-2520	Blasting Lance Hose
46-11-6003	Dust Bag
59-11-0004	#3-30 Steel Shot
80-11-0042	Filter Element, Wilkerson
80-11-0051	Filter Element, (M30-40-MXD)
81-11-0125	Flow Control Valve

Contact your Galiso Customer Service representative at (800) 854-3789 if you have any questions regarding servicing of the unit or to order spare parts.

REV	AUTHORIZ	DATE	BY:
A	Redrawn from 25-91-9010	5/14/99	DST



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(970)PHONE607
FAX.

INTERPRET THIS DRAWING IN ACCORDANCE WITH ANSI Y14.5

DIMENSIONS ARE IN INCHES. TOLERANCES:
.X = ±
.XX = ±
.XXX = ±
ANGLE ±
SURFACE ROUGHNESS

APPROVAL		
SIGNATURE	DATE	
DRAWN BY	DST	
PRODUCTION		
ENGINEERING		
QUAL. ASSURANCE		

ISB with Dust Collector

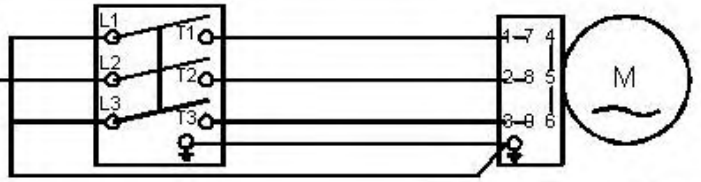
PIPING AND INSTRUMENT DIAGRAM

DRAWING NUMBER	REVISION	EXTENSION	SHEET
21-61-1019	A	VS D	1 OF 1

21-91-1019

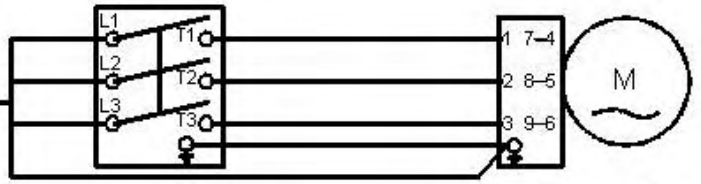
REV.	AUTHORITY	DATE	BY:
A	PRODUCT RELEASE	5/12/1999	CWH

Wired for:
208-220V 50/60Hz, 3 phase
Note: Motor overload customer supplied in accordance with all applicable codes and standards



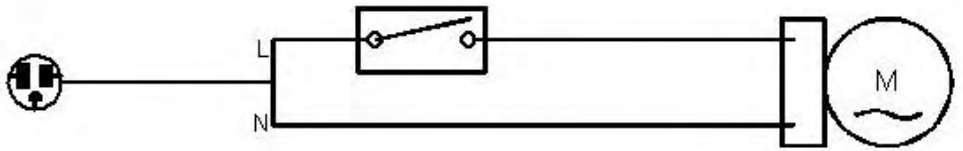
3 Phase Blower Motor

Wired for:
380-460V 50/60Hz, 3 phase
Note: Motor overload customer supplied in accordance with all applicable codes and standards



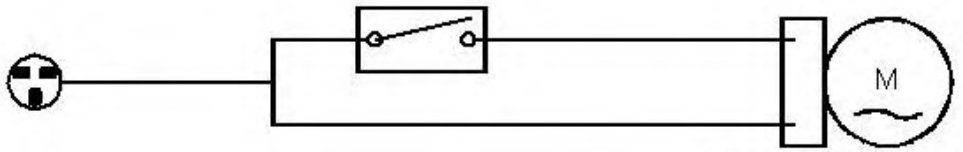
3 Phase Blower Motor

Wired for:
115V 60Hz 1 phase



1 Phase Blower Motor

Wired for:
208-230V 60Hz 1 phase



1 Phase Blower Motor

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(970) [illegible]607
FAX:

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INTERPRET THIS DRAWING IN ACCORDANCE WITH ANSI Y14.5

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
.X = ±
.XX = ±
.XXX = ±
ANGLE ±
SURFACE ROUGHNESS

APPROVAL	SIGNATURE	DATE
DRAWN BY:		
PRODUCTION		
ENGINEERING		
QUAL. ASSURANCE		

TITLE:
ISB-1 (DUST COLLECTOR)
WIRING DIAGRAM

DRAWING NUMBER	REVISION	EXTENSION	SHEET
21-91-1019	A	VSD	1 OF 1

PRODUCT WARRANTY

1. **DURATION:** Galiso extends a one-year warranty from date of purchase, to the original purchaser, for all its manufactured products. For all spare parts purchases, Galiso extends the manufacturer's warranty or 90 days, whichever is longer. Soft goods parts, such as speed seals, washers, and O-rings, which are subject to wear in the normal course of operation, are not covered under this warranty. Collar Tooling products are warranted for six months.

2. **COVERAGE:** Galiso manufactured equipment is warranted against defective materials or workmanship. THIS WARRANTY IS VOID IF:

   A) THE EQUIPMENT HAS BEEN DAMAGED BY ACCIDENT OR UNREASONABLE USE, IMPROPER SERVICE/MAINTENANCE, IMPROPER INSTALLATION, ABNORMAL OPERATING CONDITIONS, NEGLECT, REPAIR BY ANY PERSON NOT AUTHORIZED BY GALISO, INC. OR OTHER CAUSES NOT RELATED TO MATERIAL DEFECTS OR WORKMANSHIP.

   B) THE SERIAL NUMBER HAS BEEN ALTERED OR DEFACED.

3. **PERFORMANCE:** Galiso reserves the right to make warranty determination only after inspecting the item at the Galiso manufacturing facility. If the warranty determination indicates that the defective item is covered under warranty, the item will be repaired or replaced with same parts/items or parts/items of equivalent quality, at the option of Galiso. In the event of replacements, the replacement unit will continue under the original equipment warranty or carry a 90-day warranty, whichever is longer. No charge will be made for warranty repairs, and/or replacements. All freight charges are the responsibility of the customer requesting warranty service.

   If the warranty determination indicates that the item is not covered by warranty, a repair/replacement cost estimate will be submitted to the purchaser for approval prior to initiating any repair work.

4. **CLAIMS:** In the case of equipment malfunction, notify Galiso (1-800-854-3789) and provide the Model Name, Model Number, Serial Number and a description of the problem. Return Authorization Number, shipping and/or service information will be provided on receipt of the required information.

5. **SERVICE EQUIPMENT:** Galiso attempts to make available, whenever possible, a limited amount of service equipment at a minimal use charge, plus freight expense, for those customers wishing to avoid downtime during repair of their equipment. Such items are available on a first come, first served basis and are billable at the specific service charge applying with a one-month minimum.

6. **MODEL CHANGES:** Galiso reserves the right to make changes in materials and specifications, without notice. Galiso may offer, for a stipulated fee, the opportunity to upgrade your equipment to the latest configuration.

7. **DISCLAIMERS:** Galiso provides technical data and assistance to aid customers in the selection and use of our products. There are no implied warranties of merchantability nor suitability for a particular purpose associated with the transmittal of technical data and/or customer assistance.

   Galiso does not assume liability for any consequential, incidental, or special damages. Liability under this warranty is limited to repairing, or replacing Galiso equipment items returned to the factory or an authorized facility.