

**OPERATIONS
AND
MAINTENANCE MANUAL**

**GIBSON 48x84 SPINNER HANGER
S/N 134884SH-868-1933**

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48X84 SPINNER HANGER

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GENERAL DESCRIPTION

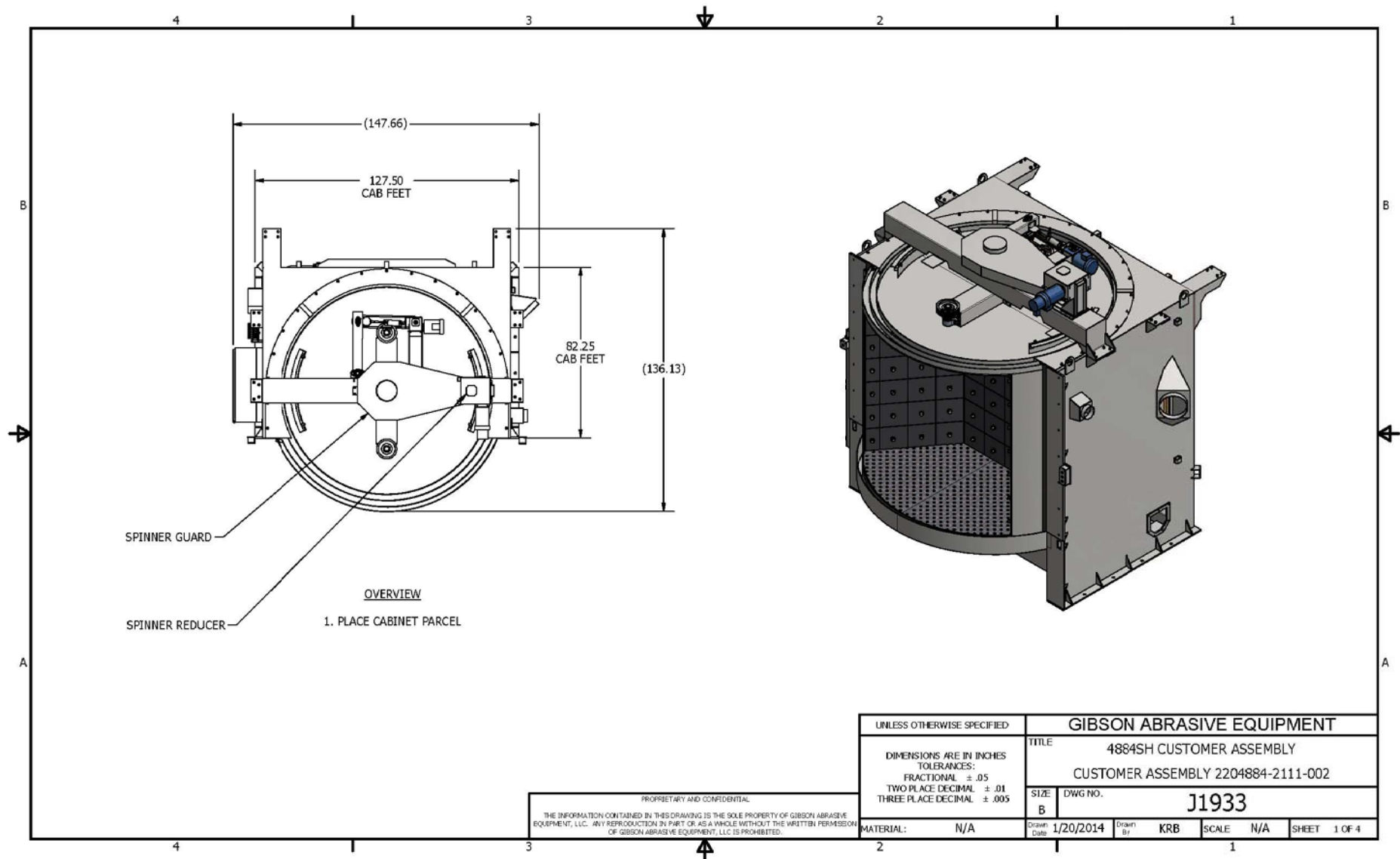
The Gibson 48X84 Spinner Hanger cabinet contains a structurally reinforced dual blast chamber fabricated from 1/4" steel plate. The chamber is revolved at a speed of 3.6 rpm by an electric motor and gear reducer activating a low speed-high torque 'HTD' type drive assembly. Adjustable stops on chamber top, working in conjunction with automatic electrical switching provides variable indexing. The number of stops vary for customer application. One hook spindle is provided for each chamber. Each spindle is capable of supporting 1500 pounds and continually rotates at a speed of 10.4 rpm during the blast operating cycle of each chamber. Other fixtures are available to accommodate various blasting needs.

At each indexing stop abrasive is fed into two direct drive blast wheels. The blast wheels, revolving at 3450 rpm, throw a controlled blast stream of abrasive at the rotating parts with a high velocity.

The used abrasive falls through specially designed drain holes in the bottom of the chamber and into the primary abrasive screen below. The abrasive is moved by screw conveyor from the cabinet to the elevator where it is picked up and transported to the abrasive separator by buckets attached to heavy duty belting.

The separator utilizes a rotary screen and air wash separation system to remove contaminants from the cycling abrasive. The clean abrasive is then deposited into the abrasive storage hopper. The hopper is located on top of the cabinet and has the capacity to store a sufficient quantity of usable abrasive to maintain an even flow to the blast wheels.

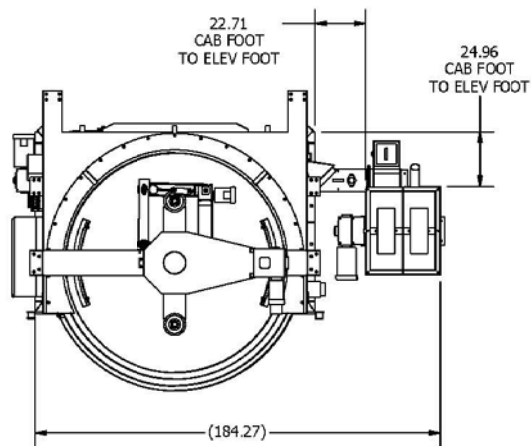
The dust is drawn out of the separator and into the dust collector system for disposal and heavier contaminants are funneled away to drain hoses. The 48X84 Spinner Hanger utilizes an optional dust collector system.



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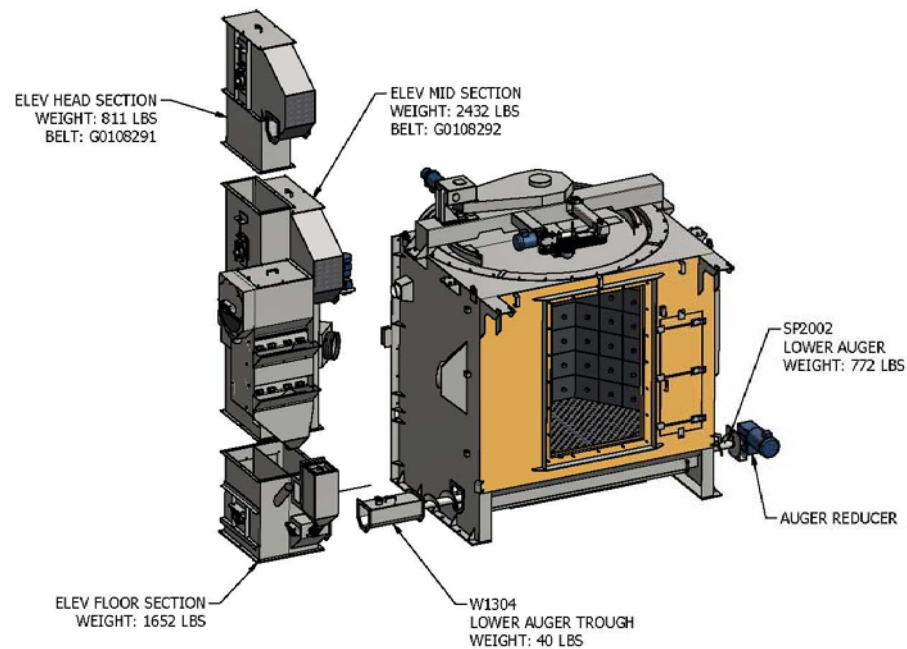
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		4884SH CUSTOMER ASSEMBLY			
		CUSTOMER ASSEMBLY 2204884-2111-002			
MATERIAL: N/A		SIZE: B	DWG NO. J1933		
		Drawn Date: 1/20/2014	Drawn By: KRB	SCALE: N/A	SHEET: 1 OF 4



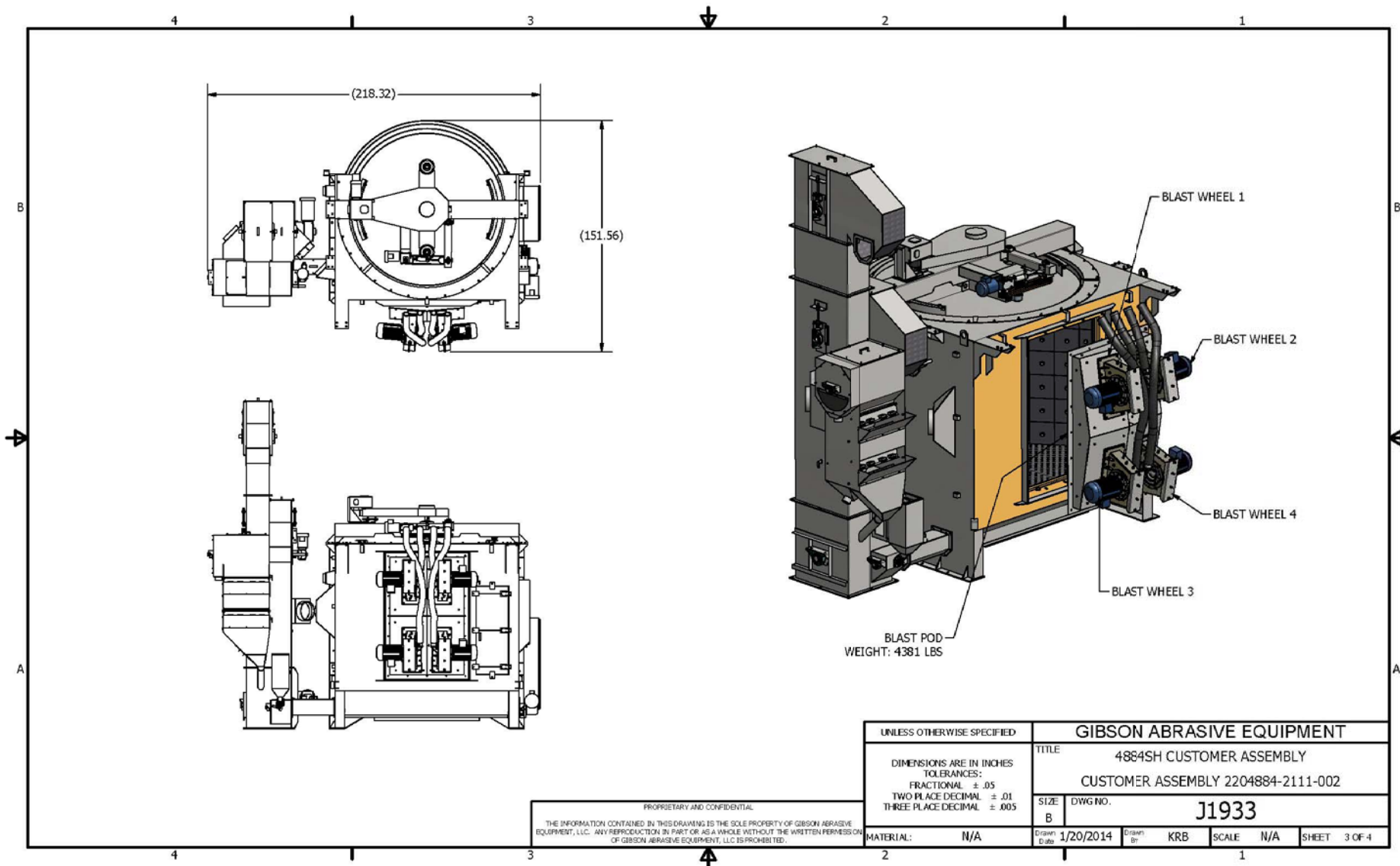
OVERVIEW

1. PLACE ELEVATOR FLOOR SECTION AND LOWER AUGER TROUGH (W1304)
2. PLACE ELEVATOR MID SECTION
3. PLACE ELEVATOR HEAD SECTION
4. PLACE LOWER AUGER (SP2002)
5. ASSEMBLE ELEVATOR BELTS
SHORT ELEV: G0108292
TALL ELEV: G0108291



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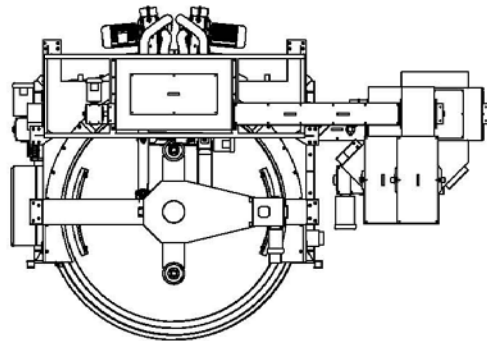
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Drawn By	1/20/2014	Checked By	KRB	SCALE	N/A
				SHEET	2 OF 4



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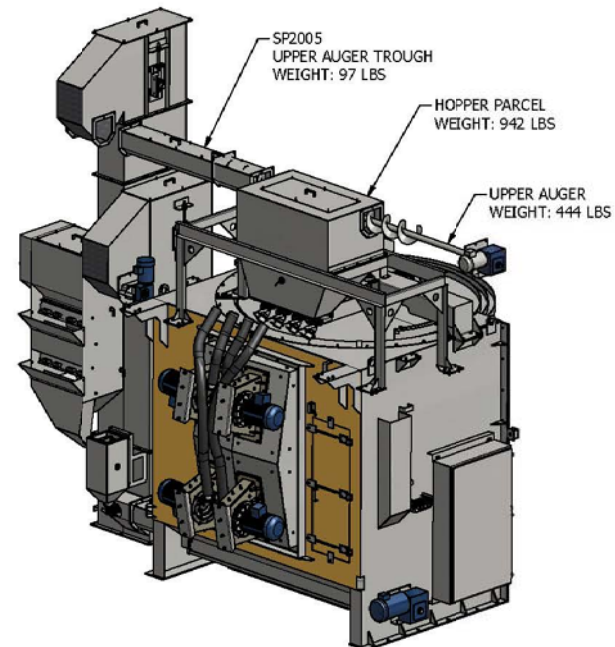
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OVERVIEW

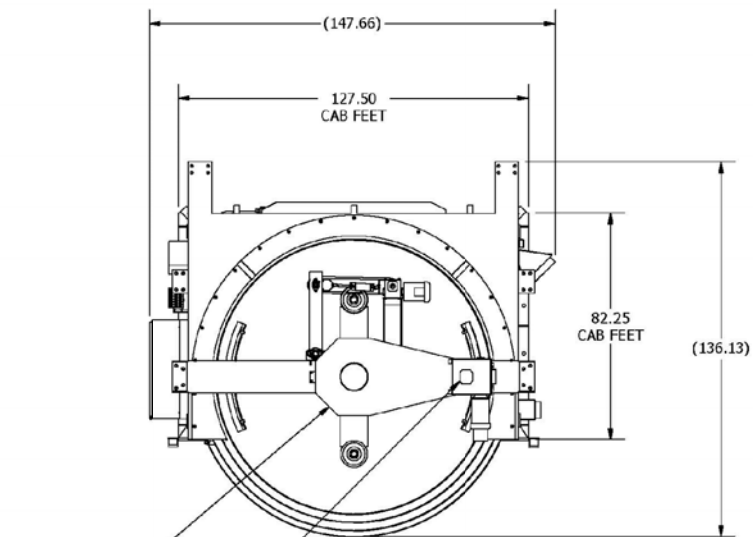
1. PLACE HOPPER PARCEL AND UPPER AUGER TROUGH (SP2005)
2. PLACE UPPER AUGER



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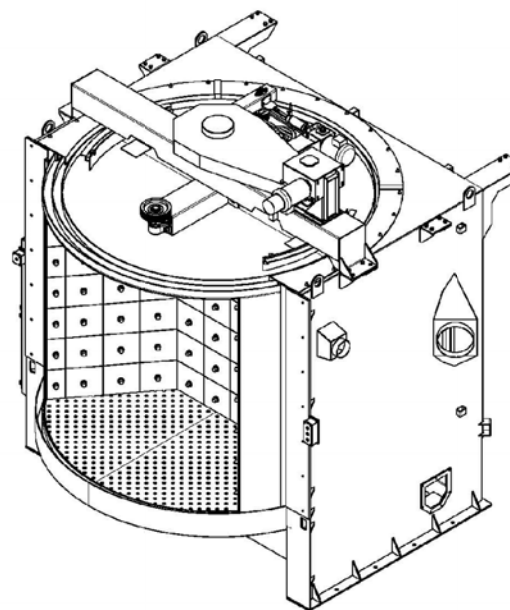


SPINNER GUARD

SPINNER REDUCER

OVERVIEW

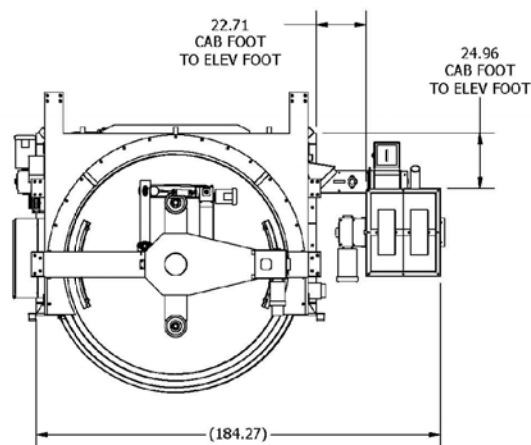
1. PLACE CABINET PARCEL



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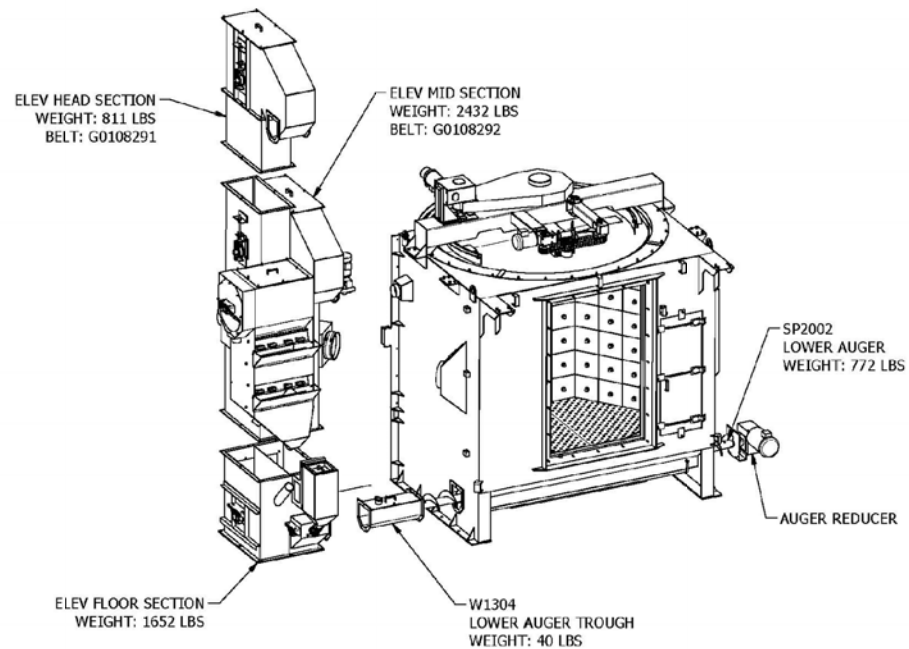
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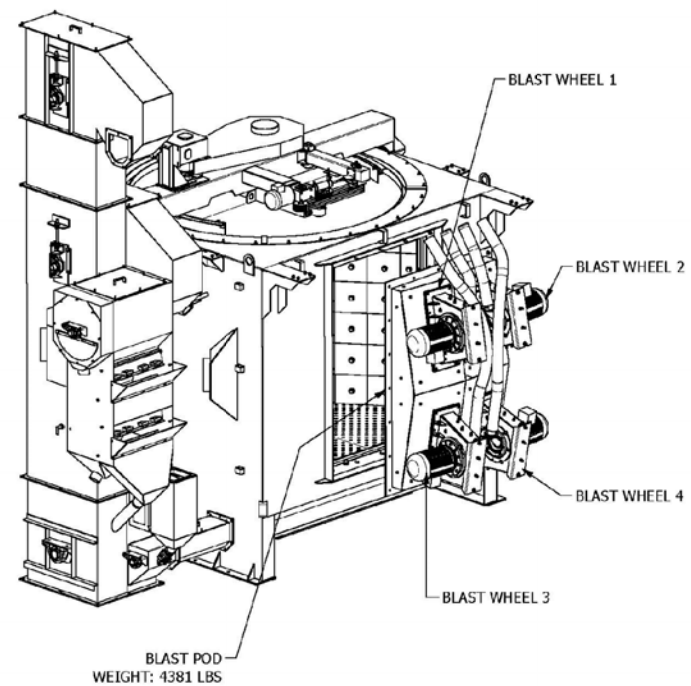
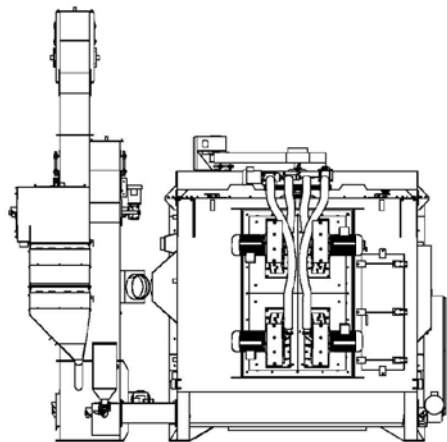
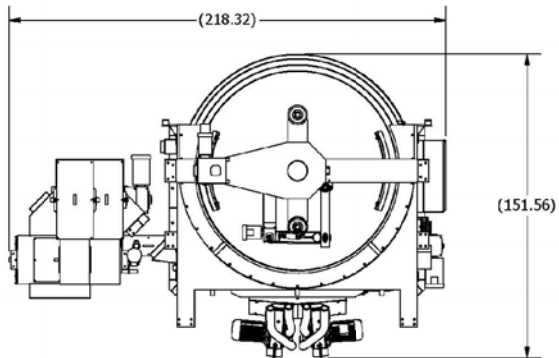


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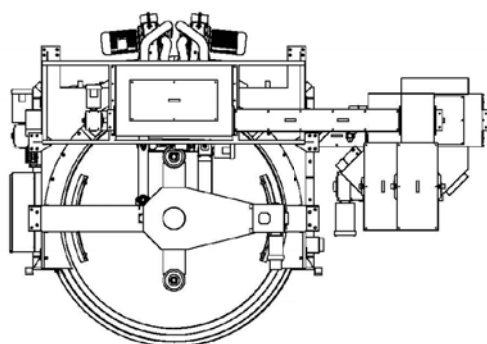
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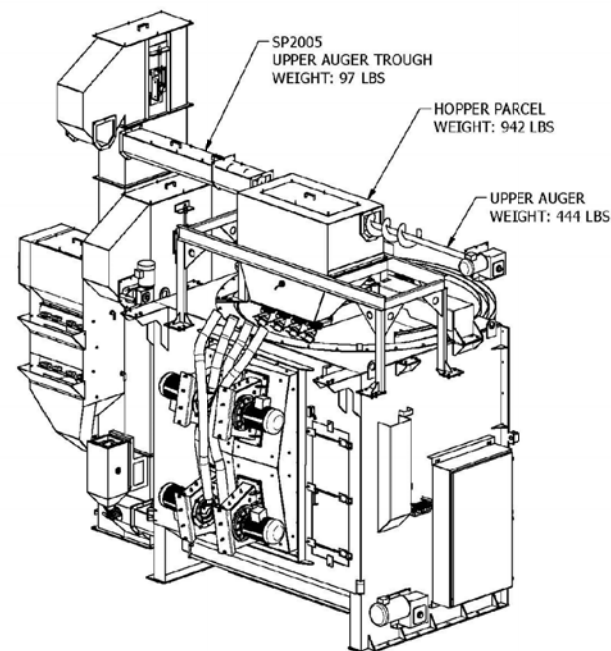
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OVERVIEW

1. PLACE HOPPER PARCEL AND UPPER AUGER TROUGH (SP2005)
2. PLACE UPPER AUGER



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		SCALE N/A	SHEET 4 OF 4		

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GENERAL DESCRIPTION

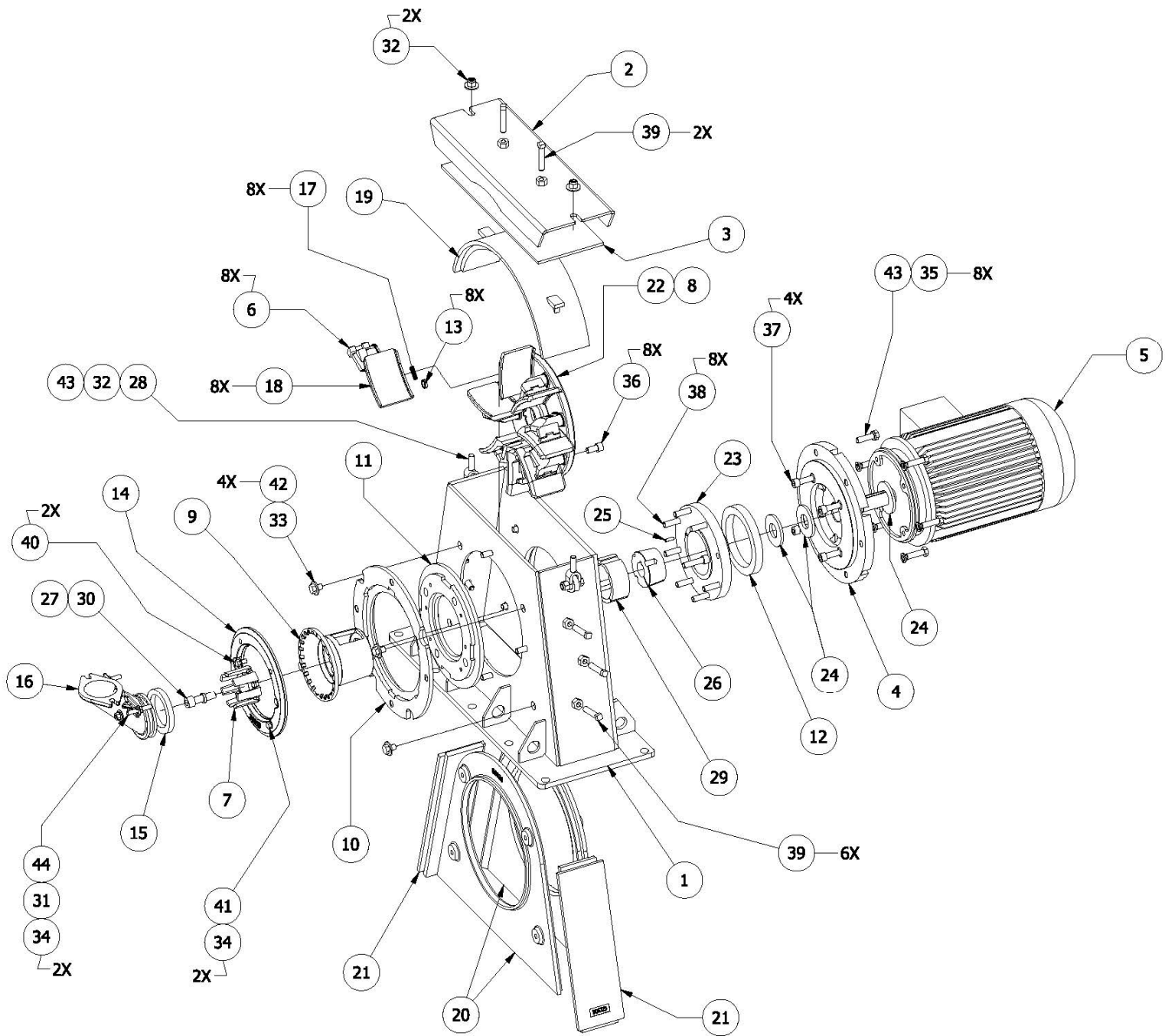
The Blast Wheel Assembly is the most vital part of any airless blast cleaning system; thus the operating efficiency depends entirely upon the proper inspection, assembly, and adjustment of the blast wheel components. Due to the abrasive nature of the material handled by the Blast Wheel, there will be constant wear on internal parts, making periodic inspection and replacement essential.

It is important to keep in mind that the very nature of this device requires that some of the parts be extremely hard and wear resistant. This hardness cannot be attained without making the wear parts brittle. When handling these parts (blades, impeller, control cage and liners) they should be considered as cast glass. A sharp blow with a drift or pry bar can result in chips flying off with explosive force. Chips may also result from accidentally or carelessly knocking hardened parts together. When working with Blast Wheel components, always wear gloves and safety glasses.

The efficiency of this equipment, the blast cycle time and the production requirements will all depend largely on the conditions under which the Blast Wheel is operated and maintained. Compliance with the instructions and suggestions given in this manual should result in a highly efficient and productive blast cleaning system.

In brief, the Blast Wheel assembly functions as follows: the Abrasive Valve feeds a controlled amount of abrasive (steel shot or steel grit) through the Feed Spout to the Impeller. The Impeller, rotating at a high speed, moves the abrasive through the Control Cage opening into the path of the rotating Blades. The Blades, by means of centrifugal force, throw a controlled pattern of abrasive at the work surface. The Blast Wheel, by throwing a large quantity of abrasive per minute at a high velocity, provides an economical and thorough method of cleaning.

BLAST WHEEL ASSEMBLY – EXPLODED VIEW (8001078)

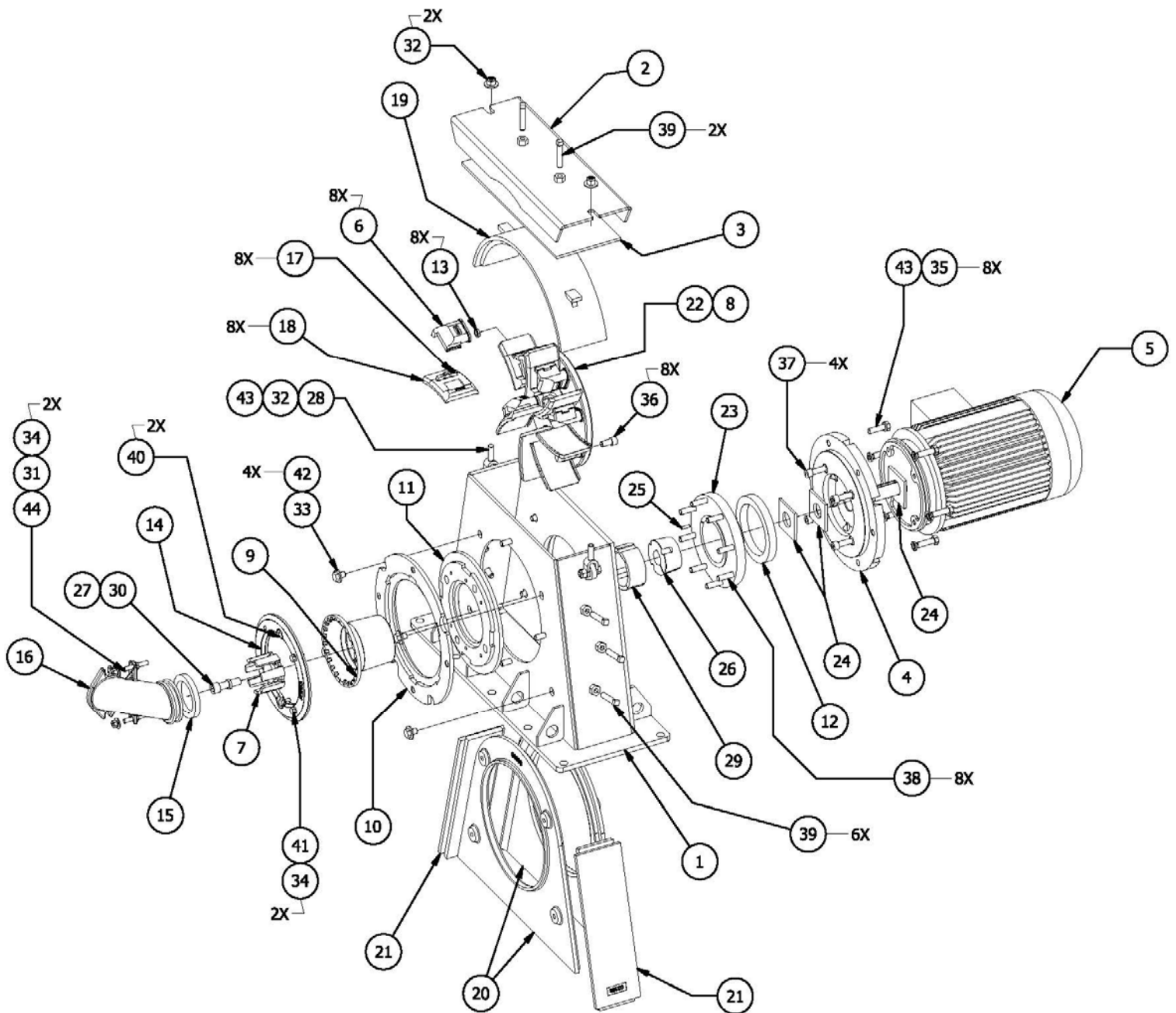


REPLACEMENT PARTS LIST – CW BLAST WHEEL ASSEMBLY (8001078 -CW)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	200417	HOUSING	1
2	200418	LID - C-FACE HOUSING	1
3	200418-B	LINER- C-FACE HOUSING LID	1
4	200419	PLATE - C-FACE MOTOR ADAPTOR	1
5	601193	MOTOR-FACE	1
6	G1543-8	BLADE BLOCK – CW	1
7	G0136	IMPELLER	1
8	G0137	CENTERING PLATE	1
9	G0138	CONTROL CAGE	1
10	G0143627	PLATE - ACCESS	1
11	G0143669	RETAINER- C-FACE CAGE	1
12	G0293	SEAL - HUB FELT	1
13	G0294	RING- SHEAR	8
14	G0301	ADAPTOR- OUTER CAGE	1
15	G0302	SEAL - FEED SPOUT	1
16	G0303	FEED SPOUT	1
17	G0651-8	SPRING -BW BLADE	1
18	G5101542-8	BLADES- SET	1
19	G1936	LINER- TOP CURVE	1
20	G1938	LINER- REAR SIDE	2
21	G2308	LINER- LONG END	2
22	G44559	BARE WHEEL	1
23	G44560	HUB	1
24	G52496-R	SEAL	3
25	G60531	ROLL PIN	1
26	G60857	BUSHING	1
27	G60962	LOCKWASHER	1
28	G61159	CLEVIS	2
29	G61204	ADAPTOR	1
30	G7004122	SCREW	1
31	G72707	HEX NUT	4
32	G72807	LOCKNUT	4
33	G73008	FLAT WASHER	6
34	G73106	LOCKWASHER	4
35	G73108	LOCKWASHER	6
36	G73910	SCREW	8
37	G73914	SCREW	4
38	G73920	SCREW	8
39	G74274	SCREW	8
40	G75706	HEX BOLT	2
41	G75710	HEX BOLT	2
42	G75906	HEX BOLT	4
43	G75916	HEX BOLT	8
44	G79523	STUD	2

REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

(8001079)



REPLACEMENT PARTS LIST – CW BLAST WHEEL ASSEMBLY (8001079 -CCW)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	200417	HOUSING	1
2	200418	LID - C-FACE HOUSING	1
3	200418-B	LINER- C-FACE HOUSING LID	1
4	200419	PLATE - C-FACE MOTOR ADAPTOR	1
5	601193	MOTOR-FACE	1
6	G1544-8	BLADE BLOCK – CW	1
7	G0136	IMPELLER	1
8	G0137	CENTERING PLATE	1
9	G0138	CONTROL CAGE	1
10	G0143627	PLATE - ACCESS	1
11	G0143669	RETAINER- C-FACE CAGE	1
12	G0293	SEAL - HUB FELT	1
13	G0294	RING- SHEAR	8
14	G0301	ADAPTOR- OUTER CAGE	1
15	G0302	SEAL - FEED SPOUT	1
16	G0303	FEED SPOUT	1
17	G0651-8	SPRING -BW BLADE	1
18	G5101542-8	BLADES- SET	1
19	G1936	LINER- TOP CURVE	1
20	G1938	LINER- REAR SIDE	2
21	G2308	LINER- LONG END	2
22	G44559	BARE WHEEL	1
23	G44560	HUB	1
24	G52496	SEAL	3
25	G60531	ROLL PIN	1
26	G60857	BUSHING	1
27	G60962	LOCKWASHER	1
28	G61159	CLEVIS	2
29	G61204	ADAPTOR	1
30	G7004122	SCREW	1
31	G72707	HEX NUT	4
32	G72807	LOCKNUT	4
33	G73008	FLAT WASHER	6
34	G73106	LOCKWASHER	4
35	G73108	LOCKWASHER	6
36	G73910	SCREW	8
37	G73914	SCREW	4
38	G73920	SCREW	8
39	G74274	SCREW	8
40	G75706	HEX BOLT	2
41	G75710	HEX BOLT	2
42	G75906	HEX BOLT	4
43	G75916	HEX BOLT	8
44	G79523	STUD	2

REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

INSPECTION OF THE WEARING PARTS

1. Disconnect the power to the control panel and tag switch so that machine cannot be energized.
2. Remove Blast Housing Cover by loosening nuts of each end of the cover, rotate clevis brackets and lift lid upward.
3. Remove the Top Liner to give access to the Blast Wheel Assembly.
4. Rotate Blades by hand and inspect them for wear. Vibration of the Blast Wheel when operating is usually an indication of excessive Blade wear or a broken Blade. Whenever vibration is excessive, all Blades and springs should be removed and replaced. When Blades are deeply grooved or worn to half their original thickness, they should be replaced. Never attempt to replace anything less than a full set of Blades and springs. The Blades are carefully weighed and balanced in matched sets and should never be separated. If Blades will not remain on Blade Blocks when rotating by hand, then Blade Blocks may be excessively worn and should be replaced.
5. Make a visual inspection of the Control Cage opening. The sides of the openings are beveled and when the bevel width is reduced to half its original size, the Control Cage should be replaced.
6. While rotating the Blades by hand, it is possible to see the leading edge of the Impeller fingers. If fingers are grooved or worn to half their original size, the Impeller should be replaced.

7. The Feed Spout wears very slowly, so the inspection of this part usually involves checking for cracks or other physical abuse.

8. Blast Wheel Liners should be replaced when they become worn to half their original thickness. If Liners are allowed to wear through, serious damage could occur to the Blast Housing.

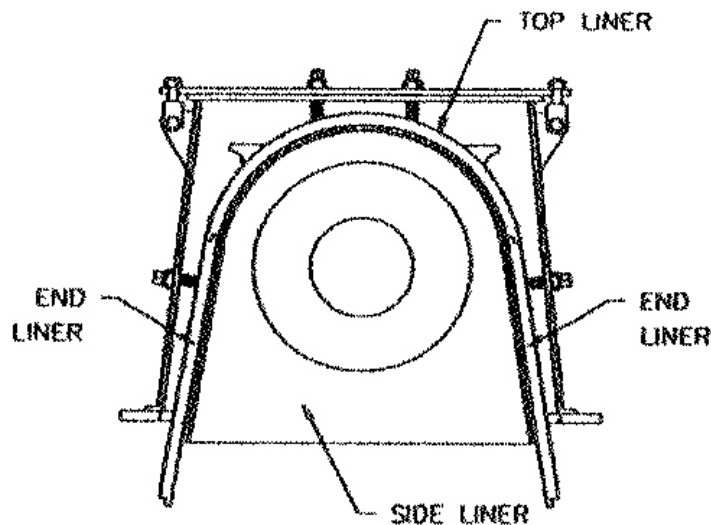
NOTE: The wearing parts of the Blast Wheel should be inspected daily. This daily inspection can be done without any disassembly with the aid of a flashlight. Shine the flashlight up through the bottom of the Blast Wheel Assembly and visually inspect the Blades, Blade Blocks, Impeller and Control Cage. The Liners can be inspected visually or by feeling the surface of the various Liners.

BLAST WHEEL HOUSING LINERS

The Blast Housing Liners are identified as follows: Top Liner, End Liners and Side Liners. These Liners are made of an extremely hard cast alloy. The Blast Wheel Liners are positioned around the Blast Wheel to protect the Blast Wheel Housing. Since these Liners are in the path of abrasive, wear is to be expected. Thus Liners should be inspected often to determine when replacement is necessary. All Liners should be inspected on a regular basis. If Liners are allowed to wear through, the Housing itself will quickly develop wear holes, causing abrasive leakage on and around the machine.

ALWAYS OPEN ELECTRICAL DISCONNECT PRIOR TO LINER INSPECTION.

The Top Liner is located in the uppermost section of the housing and is held in place by the Housing cover. The Side Liners are located in the front and back sides of the housing. The End Liners are located in the right and left ends of the Blast Wheel Housing. End Liners are a slip fit between the Side Liners.

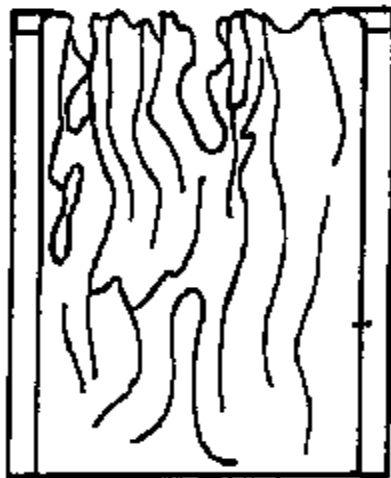


BLAST WHEEL LINER LOCATION

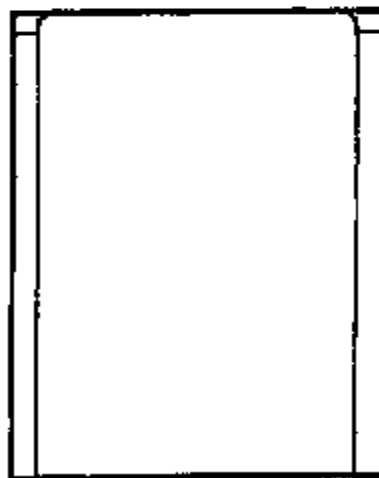
BLADES

The Blades used in the Gibson Airless Blast Wheel have been weighed and matched at the factory to insure minimum vibration on the Blast Wheel Assembly. Blades should always be replaced in matched sets. Partial replacement will result in excessive vibration.

Blades should be checked on a regular basis for wear and breakage. Although a set of Blades may be wearing evenly and may not be causing any abnormal vibrations, they should not be allowed to wear all the way through. Holes in the Blades will allow abrasive to enter the area in back of the Blades, causing wear on internal Blast Wheel parts. This will cause the Blast Wheel to be "out of balance" as well as disrupt the controlled blast pattern. If a new set of Blades will not remain on the Blade Blocks when rotated by hand, the Blade Blocks are worn and will require replacement.



OLD BLADE



NEW BLADE

WORN BLADE DETAIL

CHECKING THE ROTATING ASSEMBLY FOR BALANCE AND NOISE

The Blast Wheel Assembly should always run smooth with very little vibration or noise. Excessive vibration of the Blast Wheel or unusual noise during operation should be investigated immediately. Vibration is an indication of an “out of balance” wheel. An “out of balance” Blast Wheel is caused by worn or broken blades, blade blocks, impeller, bare wheel or damaged internal parts. When investigating an “out of balance” wheel, blades should be inspected first, followed by impeller, blade blocks and bare wheel.

Damage to the internal rotating parts of the Blast Wheel usually occurs when blades are allowed to become worn through or broken and abrasive enters the area behind the blade. To inspect and replace the blades or other parts of the rotating assembly, it will be necessary to partially or completely disassemble the Blast Wheel depending on the cause and remedy of the vibration or noise.

Motor failure or improper motor rotation could also cause excessive vibration or noise. Any motor repairs or replacements should be done by a qualified electrical serviceman.

BLAST WHEEL MAINTENANCE

WHEEL DISASSEMBLY

1. Check to make sure the disconnect switch is open and tagged or locked open. Lock-out and tag-out machine before proceeding.
2. Remove Blast Housing Cover by loosening the nuts on each end of the cover, rotate clevis brackets and lift lid upward.
3. Lift Top Liner out.
4. Remove the Feed Spout by removing the two 3/8" hex head nuts holding it in place.
5. Remove the two 3/8-16 NC x 1" hex head cap screws from the recessed slotted holes in the Cage Adapter.
6. Unscrew and remove the socket head cap screw inside the Impeller. A special lock washer locks the screw in place. The Impeller is usually quite tight in the register due to the fill of shot wedged into the clearances. To remove the Impeller, tap lightly on alternate sides of the outside ends of the fingers with a soft drift or plastic mallet. Do not strike with heavy hammer blows or apply extreme wedging force against the Impeller fingers. Repeated light tapping will usually loosen the Impeller so that it may be removed from the front of the assembly. The Control Cage and Centering Plate can now be removed.
7. The Blast Wheel Blades can now be removed. If Blades are not badly worn, they can be used again. To remove blade, push blade toward center of wheel and rotate bottom of blade out until it is free from block, then lift out. Remove all Blades in this manner.

8. Inspect all parts which have been removed to determine whether they are worn or damaged to the extent that replacement is necessary.

9. Replace Top Liner and Housing Cover. Bolt cover in place and run Blast Wheel Assembly (no abrasive).

NOTE: If the Assembly runs smoothly and there are no noticeable noises or excessive vibrations, no further disassembly will be necessary. The worn parts can be replaced and the Blast Wheel re-assembled. However, if vibration or noise is still present it will be necessary to complete the disassembly and remove the remaining rotating parts.

10. Remove Housing cover and lift out Top Liner.

11. Loosen the compression cap screws on the right and left side of the Blast Housing. The End Liners can now be removed through the top or bottom of the Blast Housing. Tap Liner gently with a rubber or plastic mallet to ease removal.

12. Remove the four hex head cap screws holding the Hub Seal in place.

13. Remove the eight socket head cap screws from the outer bolt circle. These socket head screws are accessible through cut-outs 180 degrees apart in the Blast Wheel Housing.

14. Hold one of the Blade Blocks from inside the housing and remove the socket head screw, which fastens it to the Bare Wheel. These screws are located on the inner bolt circle. Remove each of the remaining Blade Blocks in the same manner.

15. After all eight Blade Blocks have been moved, the Bare Wheel will be free to fall away from the Hub. Tilt the Bare Wheel forward and remove through the top of the housing.

16. Remove the two allen head screws in the taper lock bushing. Lightly oil one of the allen head screws and re-install it in the third hole on the bushing. Be sure the hole is free of any abrasive. This hole is threaded only on the bushing side, the side nearest the Motor Shaft. Tighten this screw until the Hub is released from the taper lock bushing. If the Hub does not release, tap on the face of the Hub using a bronze drift and tighten the screw again. Hub is loose on the bushing. Slide the Taperlock bushing forward into the Blast Housing and off the end of the Motor shaft.
17. The Hub can now be removed.
18. Remove the Key from the Motor Shaft.
19. Clean the Motor Shaft and all Blast Wheel Components. Inspect the keyway in the Motor Shaft and the key for wear.
20. Inspect Front and Back Side Liners for wear. If Liners are worn to one half their original thickness, they should be replaced. Remove the retaining bolts holding the Front Side Liner and remove. Repeat this step on the Back Side Liner. The Side Liners must be removed through the bottom of the Blast Housing.
21. If the Blast Wheel Motor runs smoothly, the Blast Wheel can be re-assembled. All badly worn parts should be replaced to assure a smooth running final assembly. If vibration still exists, the Motor may need to be repaired or replaced. Be sure all motor or electrical repairs or replacements are done by a qualified electrician or serviceman.

WHEEL ASSEMBLY

1. Place key in the keyway on the Motor Shaft. Key should fit snugly in the keyway.
2. Install the taper lock bushing adapter into the hub. Slide the hub over the motor shaft.
3. Slide the taper lock bushing over the motor shaft and into the taper lock adapter. Align the taper lock assembly with the two opposite threaded half holes in the bushing. Also align the keyway in the taper lock bushing with the key seat in the motor shaft. Install the key.
4. Lightly oil the two set screw threads. Start the set screws in the holes which are diametrically opposite each other. Check the location of the Hub and Bushing. The face of the taper lock bushing should be flush with the end of the motor shaft. This relationship is critical and must be maintained. Tighten the set screws evenly. First snug up one side and then the opposite side until they are as tight as possible. If there is a round tube available with an inner diameter large enough to go over the Motor Shaft, use it as a drift and tap the bushing several times. Between each blow try to tighten the set screws, check to make sure the face of the hub and the end of the motor shaft are flush several times during the tightening procedure to make sure the assembly is not sliding out of position. Final tightening should be done with a 6" pipe extension on a 1/4" allen wrench. (Refer to Blast Wheel Assembly, Top View on Page 2 - 9).
5. Slide the Bare Wheel over the end of the Shaft and onto the register of the Hub. Fit Shear Rings into each counter bore of each threaded hole of the Blade Block with the beveled side of the Blade Block facing toward the center of the Hub. Align the Shear Ring with the counter bored hole in the Bare Wheel and Hub together using a 1/2-13 NC x 2" socket head cap screw. Continue this procedure with each Blade Block until all eight are mounted on the Bare Wheel. Continue around using the outer bolt circle and

eight 1/2-13 NC x 1" socket head cap screws. The holes in the outer bolt circle are accessible through cut-outs in the Blast Wheel Housing. When the Blade Blocks are properly mounted and faced flush with the Bare Wheel, block the Blast Wheel against rotation with a wooden block and tighten the fourteen socket head cap screws with a 1/2" allen wrench and extension handle. These allen head screws should be tightened to 80 ft. lbs. torque.

6. Place the Rear Side Liner in position. Center the Liner around the Bare Wheel and bolt in place.
7. Place the Cage Retainer inside the Housing centering it with the large center hole of the Housing front. Attach the Cage Adapter to the Cage Retainer using two 3/8-16 NC x 1" hex head bolts on the outer bolt circle.
8. Install the Front Side Liner making sure it is in perfect alignment with the Rear Side Liner. This alignment is essential for the Top Liner and End Liners to seal correctly.
9. Attached the Blades to the Blade Blocks in such a way as to have the Blade face with the wide parts of the shoe toward the inside next to the Impeller.
10. Install the Centering Plate over the end of the motor shaft and slide into bore of the Bare Wheel.
11. Place the Control Cage inside the Cage Adapter. The notch in the outside rim of the Control Cage should be facing 180 degrees away from the shot pattern.
12. Install the Impeller inside the Control Cage, matching up the notches in the Impeller with the lugs on the Centering Plate. Install 5/8-11 NC x 1-1/2" socket head cap screw and the special Lock washer in the threaded motor shaft. Block the blast wheel rotation with a wooden block and tighten the screw to 60 ft. lb. torque.

13. The Control Cage can now be adjusted and bolted in place. The control Cage is held in place by two 3/8-16 NC 1" hex head screws with flat and lock washers. The screws and washers should be installed in the two recessed slotted holes in the Cage Adapter at the 3 o'clock and 9 o'clock position. Move the assembly up and down and side to side until the spacing between the Impeller and the Control Cage is equal all around. Rotate blades by hand to check for cage clearance. Repositioning the Cage Adapter and Cage Retainer to obtain proper cage clearance may be necessary. Tighten the two 3/8" nuts and cage bolts.

14. Rotate the blast wheel assembly by hand and check for noise or binding.

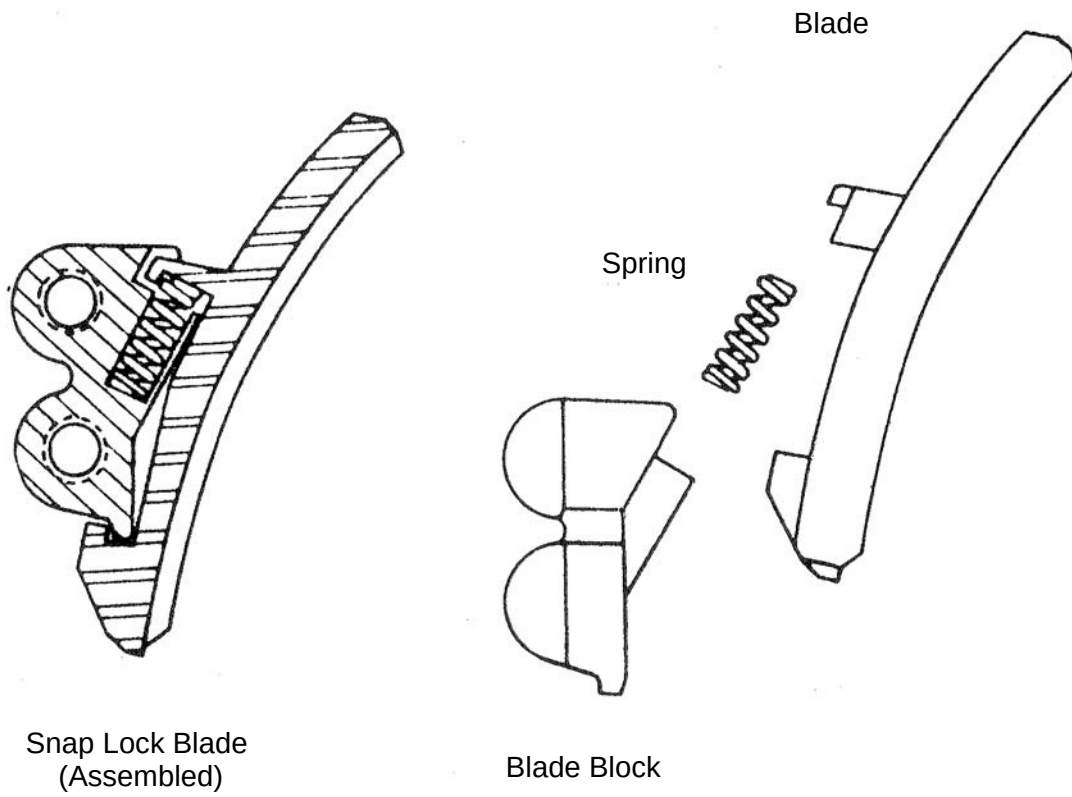
15. Install top liner and replace blast housing cover.

16. The End Liners have sides and ends that interlock. They are located in the right and left ends of the blast wheel housing. End Liners are a slip fit between the side liners. They should be installed with the offset arranged in such a way as to have the inside overlap extending at the top and placed flush with the top of the side liner. End Liners can be positioned from the top or bottom to the housing. The longer end liner should be placed in the bottom of the Housing, facing in the direction of the blade rotation. When End Liners are in place, tap lightly with a plastic mallet to insure proper fit against the Top Liner. Tighten the compression cap screws to hold End Liners in place.

17. Install the two support studs into Cage Retainer. Make sure the studs do not extend past the Cage Retainer into the Blast Wheel area. Install the two 3/8" heavy hex nuts followed by the two washers.

18. Inspect the Feed Spout Seal and replace if necessary. Slide the slotted ears of the Feed Spout into place over the two support studs and fix in place using two flat washers, two lock washers and two 3/8" hex head nuts.

19. Rotate the Blast Wheel Assembly by hand and check for noise or binding.
 20. Close manually operated disconnect switch. After installation of the Abrasive Valve, the Blast Wheel will be ready for operation. (Instructions on Abrasive Valve Adjustment are on Page 2 - 18).
 21. Proper rotation of the Blast Wheel motor should always be checked during initial installation, after any change to electrical supply lines, electrical circuits or blast wheel motor. The Blast Wheel should always rotate so that the abrasive is discharged from the front or face of the Blades.
- Whenever the Blast Wheel is started for the first time, be sure to jog (momentarily start and stop) the Blast Motor to insure that the direction or rotation is correct and that positioning of the Blades, Cage and Impeller are correct. Following the jog test, run the wheel "no load" test (no abrasive), checking for noise or vibration. Unit should run smoothly with little or no vibration.
22. Always check the Blast Pattern after installation of new Blades. (Refer to Page 2 - 21 for information on Blast Pattern Test and Adjustment.)



SNAP LOCK BLADE & BLOCK DETAIL

ABRASIVE CONTROL VALVE

Correct adjustment of the Control Valve is essential for maximum cleaning efficiency and maximum blast motor life.

The abrasive flow adjustment is determined by the Motor Load Ammeter. The ammeter registers the amperage load on the Blast Wheel Motor. (To determine the full load rating of the motor, check the motor manufacturer nameplate.) To obtain full Blast Wheel efficiency from an ammeter, the meter should always show a full load reading during the blast cycle. This can vary with different abrasives.

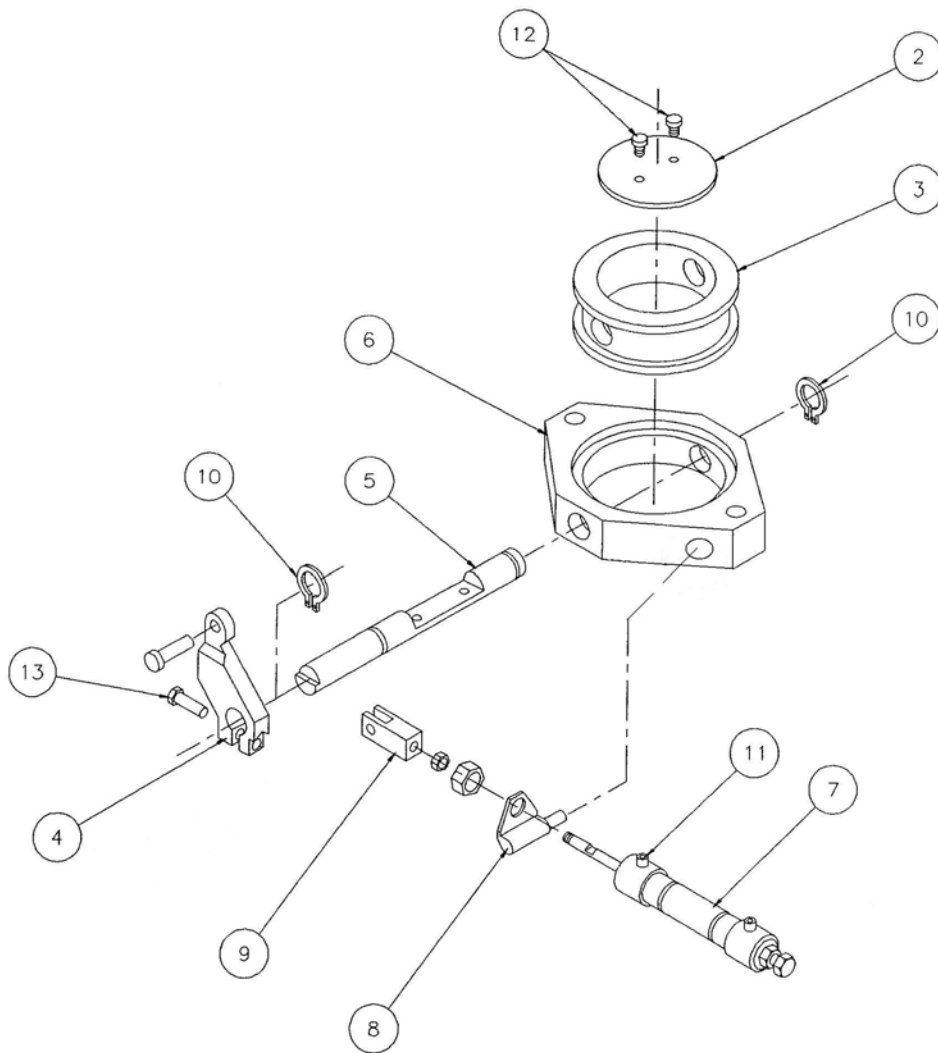
When the Blast Wheel is running, the ampere reading should be constant and steady. Any severe fluctuations can be interpreted as an indication of bearing trouble, “drag” in some moving parts of the Blast Wheel, motor trouble, or electrical supply variances.

While the machine is in actual operation, any fluctuations in the ammeter reading should be investigated. Changes could indicate shortage of abrasive, stalled elevator, clogged screen, or foreign objects in the Impeller. The ammeter serves as a prime indicator of proper or improper operation.

As the Abrasive Valve is opened, the amperage load will increase. The valve should be set so that the motor will draw maximum rated amperage or run at 100 percent efficiency. Always run the Blast Motor at maximum efficiency (never overload). Monitor and adjust amperage as necessary.

The Abrasive Control Valve is operated by an adjustable air cylinder. The cylinder has an adjustable bolt mounted in the end of the air cylinder. By adjusting this bolt, in or out, you can increase or decrease amperage. To increase amperage, loosen the jam nut on the bolt adjustment and back the bolt out until desired amperage is obtained. Re-tighten the jam nut. To decrease amperage, the bolt should be tightened.

2-1/4" ABRASIVE VALVE ASSEMBLY EXPLODED VIEW



(Refer to replacement parts list on Page 2 - 21)

REPLACEMENT PARTS LIST
2-1/4" ABRASIVE VALVE ASSEMBLY
(G15763)

Item Number	Part Number	Qty	Description
2	G2058	1	Butterfly Disc
3	G5121	1	Valve Body Insert
4	G5139	1	Lever, Abrasive Valve
5	G3943	1	Shaft, Abrasive Valve
6	G5103	1	Valve Body, Abrasive 2-1/4"
7	G60136	1	Air Cylinder
8	G5190	1	Cylinder Mount Bracket
9	G60142	1	Clevis Rod
10	G60936	2	Ring Retainer
11	G61165	2	Air Fitting
12	G78878	2	Screw BH 10-24
13	G73310	1	Bolt, Allen HD 1/4-20 x 1

(Replacement parts lists are subject to change without notice)

ADJUSTING AND CHECKING THE BLAST PATTERN

The adjustment of the Blast Pattern is of the utmost importance. A poor adjustment will not only reduce cleaning efficiency but also increase maintenance and replacement costs. A Blast Pattern Test should be made when the equipment is first put in operation; when any decrease in blast efficiency is noted; after replacement or major maintenance have taken place; if a change is made in the size or type of abrasive material used.

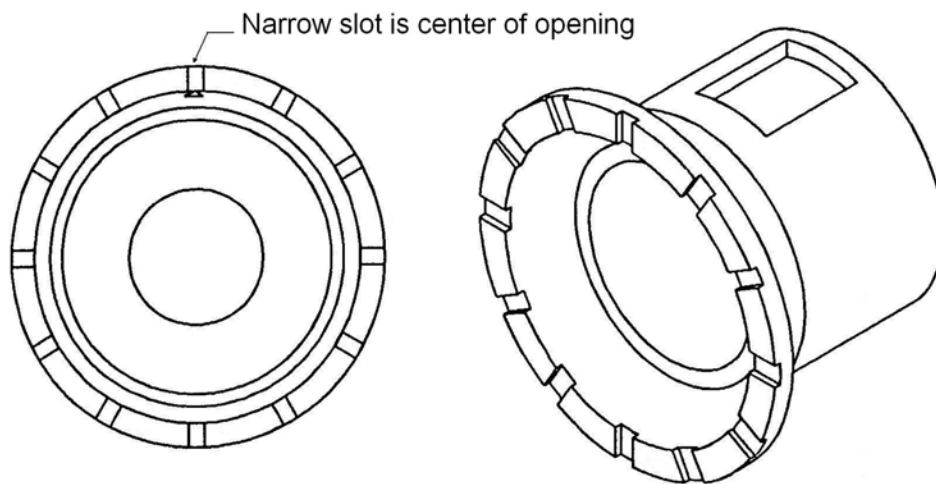
The "Hot Spot" is that area of the work surface receiving the greatest portion of the abrasive blast. It is visible by the discoloration caused by frictional heat. The "Hot Spot" should be directed toward the center of the blast chamber to give the most effective cleaning pattern. If not properly directed, abnormal wear of the equipment and parts could occur.

To check the location of the "Hot Spot," place a metal plate (approximately 1/8" thick) in the direct path of the Blast Pattern at the average work height position. Start the machine as normal. Blast the plate for 30 seconds and then immediately feel to locate the hottest spot. The plate after blasting could be very hot and care should be used when feeling for the "Hot Spot."

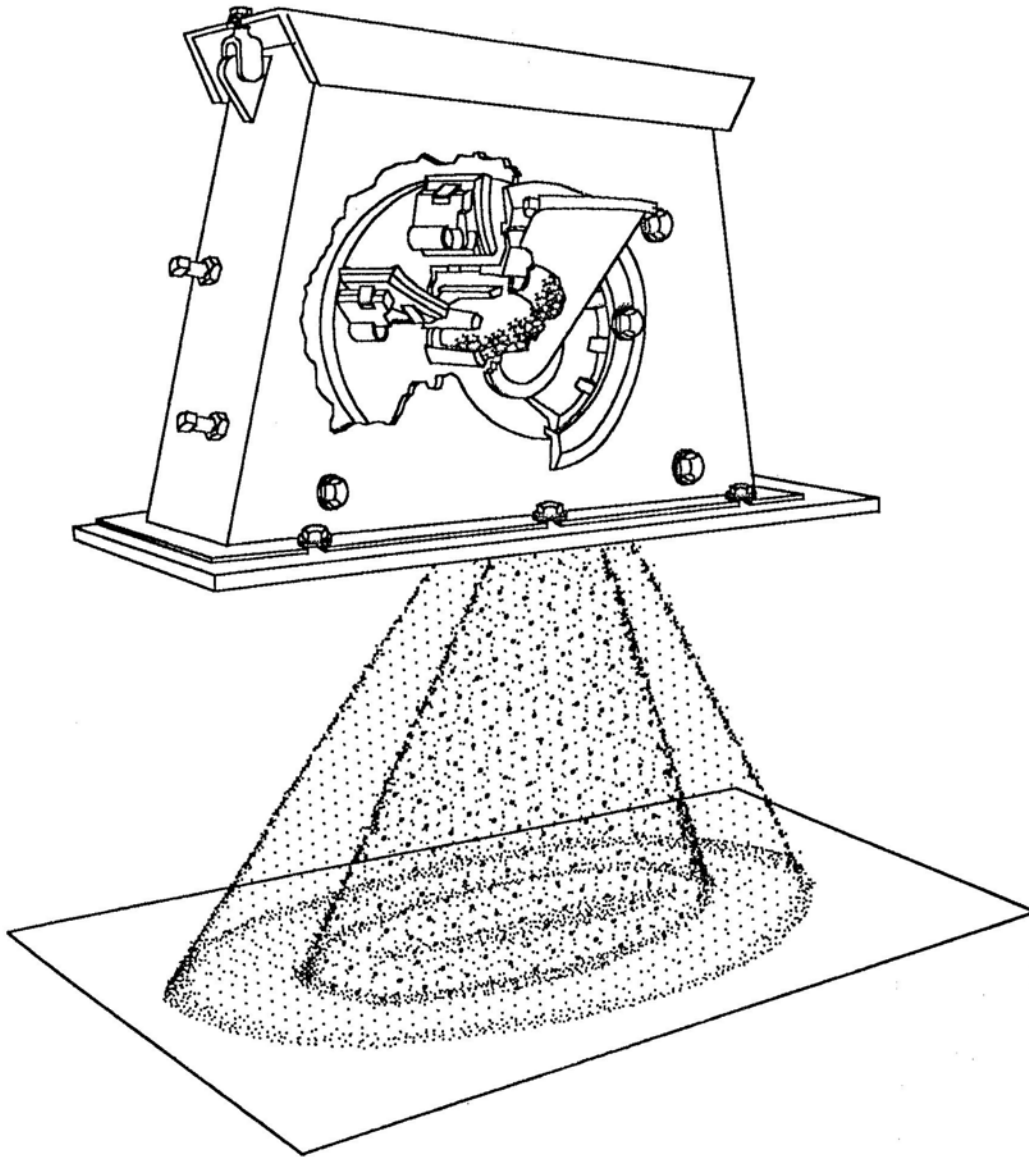
The Control Cage, located at the center of the Blast Wheel, receives the abrasive from the Storage Hopper through the Feed Spout. The Control Cage, through the location of its opening, controls the point of delivery of the abrasive to the Blast Wheel Blades. If the notch in the Control Cage is set in a 12 o'clock position, then each Blade will pick up abrasive at this point and deliver it in a downward thrust at a point below the Blast Wheel (approximately 6 o'clock). The point of delivery may vary with different types and sizes of abrasive.

To adjust the blast stream ("Hot Spot"), the Control Cage must be rotated clockwise or counter-clockwise. The notch in the Cage should always be facing approximately 180 degrees away from the Blast Pattern. Rotating the Control Cage in a clockwise direction will move the "Hot Spot" the same direction. Initial adjustment should begin with the notch in the 12 o'clock position. Final adjustment will usually be less than 1" from this point. Be sure to reconnect the Drive Motor before putting the Blast Machine back into productive operation.

The Blast Pattern is always set during factory testing prior to shipment, but testing is not always done with the same type and size of abrasive which will be used at the customer's facility. Therefore, the pattern must always be checked at initial setup under the condition the equipment will be operating.



CONTROL CAGE DIAGRAM



BLAST PATTERN DETAIL

SECTION 3 – CABINET ASSEMBLY

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REPLACEMENT PARTS LISTING – CABINET ASSEMBLY
(2204884-2111-002)

ITEM	PART NUMBER	DESCRIPTION	QTY
1	8001078	BLAST WHEEL - CW	2
2	8001079	BLAST WHEEL - CCW	2
3	G15763	ABRASIVE VALVE	4
4	G0108291	BELT ASM - HOPPER	1
5	G0108292	BELT ASM - SEPARATOR	1
6	100436	SCREW - TAKE-UP	4
7	200264	ABRASIVE VALVE	1
8	200404	BASKET - SCREENING	1
9	400168	BEARING	2
10	400169	BEARING	2
11	400202-42.1	HOSE	1
12	400202-87.2	HOSE	1
13	400219	BEARING	1
14	400226	BEARING	10
15	400233	BEARING	2
16	400241	BEARING	2
17	400247	BEARING	1
18	400386	FLOW CONTROL	1
19	400400	PULLEY	2
20	400401	PULLEY	2
21	400545	MUFFLER - BREATHER	1
22	400684	CLAMP	4
23	400737	BUSHING	1
24	400751	SHIELD - SENSOR	1
25	400990	CLAMP	8
26	400995-34	HOSE	2
27	400995-88.5	HOSE	2
28	401564	CYLINDER	1
29	401782	BEARING	2
30	401865	BUSHING	1
31	401866	SHEAVE	2
32	401867	SHEAVE	2
33	SP2033	ADAPTOR - ELBOW FEED	4
34	600131	MOTOR	1
35	6001497	SWITCH - SAFETY	1

ITEM NUMBERS MAY SKIP SEQUENCES IN SOME PLACES
REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

REPLACEMENT PARTS LISTING – CABINET ASSEMBLY (CONT'D)
(2204884-2111-002)

ITEM	PART NUMBER	DESCRIPTION	QTY
36	600158	REDUCER	1
37	600328	SENSOR - PROXIMITY	1
38	600403	MOTOR	1
39	600406	MOTOR	1
40	600417	MOTOR	1
41	600605	REDUCER	1
42	600617	REDUCER	1
43	600746	LEVER - LIMIT SWITCH	1
44	600756	SWITCH - LIMIT	1
45	601081	MOTOR	1
46	601104	PNEUMATIC VALVE	1
47	601415	REDUCER	1
48	601416	REDUCER	1
49	601461	REDUCER	1
50	660550	BELT - SPINNER	3
51	B1604	ADAPTOR - FEED HOSE	2
52	B9000	VALVE - DRIBBLE	2
53	C1028	BOTTOM PAN MOUNT	2
54	C2014	TOP SHAFT	1
55	C2015	SHAFT	2
56	E1085-C	SHAFT - AUGER IDLER	1
57	G1000	LINER	126
58	G1001	LINER	28
59	G601102	BUSHING	2
60	G601295	PLUNGER - SPRING	4
61	G60858	BUSHING	1
62	G61019	PULLEY	1
63	G61021	PULLEY	1
64	G61023	BELT -	1
65	G61075	SEAL	1
66	G61307	BUSHING	2
67	G80917-L	MOTOR	1
68	GW220040	NUT - CAST	255
69	P1056	HOSE - ABRASIVE RETURN FABRICATED	1
70	RJ1315-T	BAR - RS ACCESS RETAINER	1

ITEM NUMBERS MAY SKIP SEQUENCE IN SOME PLACES
REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

REPLACEMENT PARTS LISTING – CABINET ASSEMBLY (CONT'D)
(2204884-2111-002)

ITEM	PART NUMBER	DESCRIPTION	QTY
71	RJ1315-U	FLAP - RS RUBBER ACCESS	1
72	RJ1315-Y	PLATE - SEPARATOR SPREADER	2
73	RJ1333	GATE - SWING	2
74	RJ1335	BAFFLE - FRONT AIR	2
75	RJ1342	ROTARY SCREEN	1
76	RJ1342-A	SHAFT - ROTARY SCREEN DRIVE	1
77	RJ1344	SHAFT - MIDDLE ELEVATOR	1
78	RJ1345	SHAFT - UPPER ELEVATOR	1
79	RJ1354	SEAL - SHAFT FELT	2
80	RJ1355	PLATE - SHAFT SEAL	2
81	S1078	SHAFT - SPINNER DRIVE	1
82	S80729	SENSOR - PROX SWITCH	2
83	SD1004	PLATE - TAKE-UP CLAMPING	16
84	SD1057	RETAINER - SHAFT SEAL	10
85	SD1075	PLATE - SHAFT SEAL	10
86	SD1076	SEAL - SHAFT FELT	10
87	W1303	BRACKET PILLOW BLOCK MTG	1
88	SP1203	PIPE - VENTILATION	1
89	SP1204	WRAP - VENTILATION CONN	2
90	SP1600	LINER - CHAMBER FLOOR UPPER - RH	2
91	SP1601	LINER - CHAMBER FLOOR UPPER LH	2
92	SP1602	LINER - CHAMBER FLOOR LOWER	2
93	SP1603	LINER - CHAMBER CEILING RH	2
94	SP1604	LINER - CHAMBER CEILING LH	2
95	SP1605	LINER - LH WALL RUBBER	1
96	SP1606	LINER - RH WALL RUBBER	1
97	SP1607	LINER - BLAST POD FACE	4
98	SP1608	LINER - BLAST POD SIDE	4
99	SP1609	LINER - BLAST POD TOP	2
100	SP1612	DEFLECTOR - SPINNER HUB EXT	2
101	SP1613	LINER - CABINET DOOR MANG	1
102	SP2002	AUGER - LOWER	1
103	W2012	SHAFT - ELEVATOR LOWER PULLEY	1

ITEM NUMBERS MAY SKIP SEQUENCE IN SOME PLACES

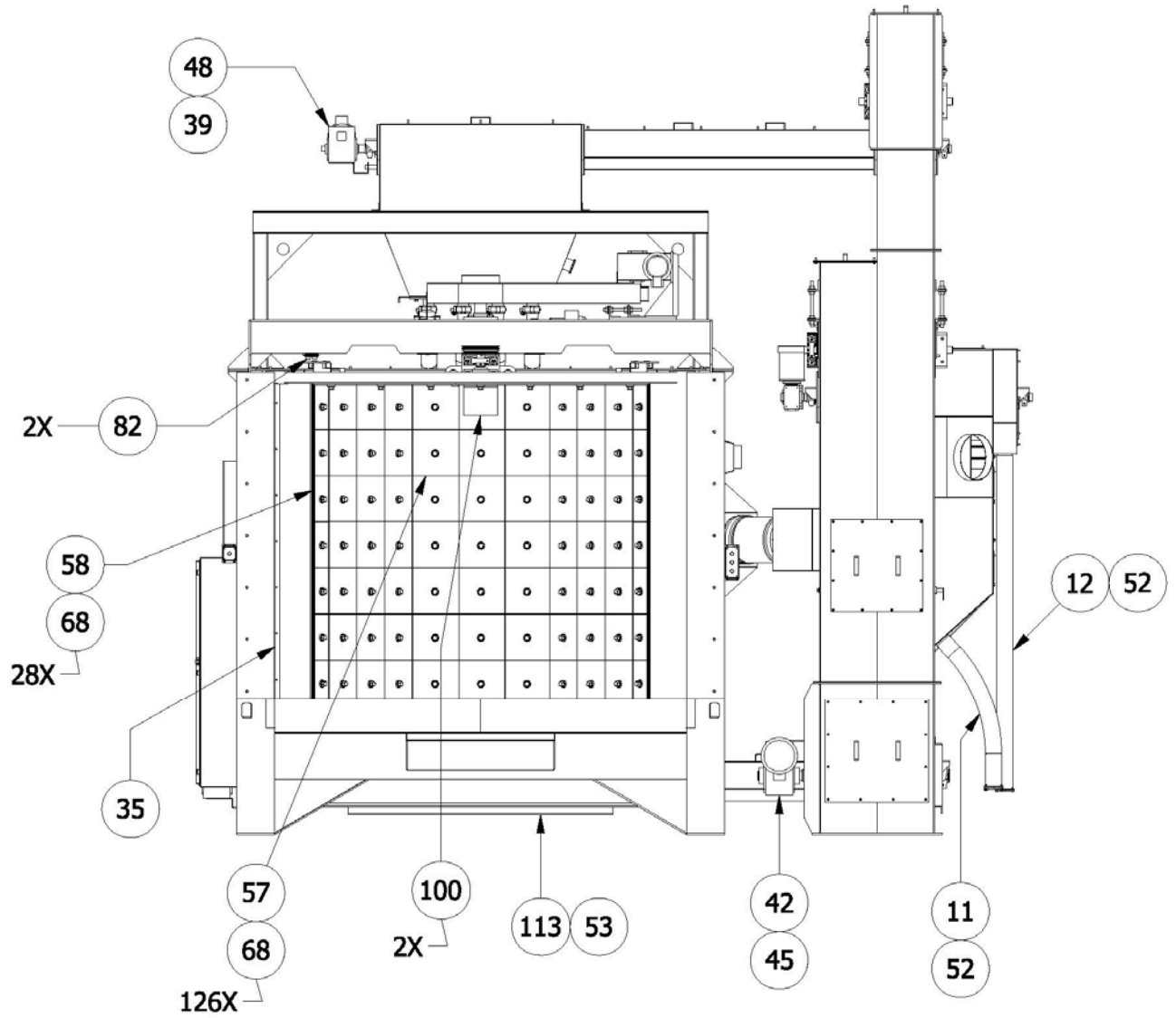
REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

REPLACEMENT PARTS LISTING – CABINET ASSEMBLY (CONT'D)
(2204884-2111-002)

ITEM	PART NUMBER	DESCRIPTION	QTY
104	SP2006	AUGER - UPPER	1
105	SP2007	BRACKET - VALVE MTG	1
106	SP2007-B	GUIDE - VALVE GATE	2
108	SP2007-C	SLIDE GATE	1
109	SP2011	SHAFT - TOP SPAN PIVOT TUBE PULLEY SHAFT	1
110	SP2012	SHAFT - TOP SPAN PIVOT ARM - SHAFT	1
111	SP2013	CABINET VENT COVER -MANG	1
112	SP2020	SHAFT - CHAMBER LOWER	1
113	SP2021	PAN - AUGER SHOT LOWER	1
114	SP2026	PLATE - CABINET EXHAUST COVER - MANG	1
115	SP2027	CABINET TOP LINER - MANG	1
116	SP2028	SEAL - CHAMBER FOLDED	2
117	SP2029	SEAL - FRONT CHAMBER	2
118	SP2030	RET BAR - FRONT CHAMBER SEAL	2
119	SP2032	RET BAR - FOLDED CHAMBER SEAL	2
120	RJ1310	RETAINER - ELEVATOR SEAL	2
121	401856	BEARING	1

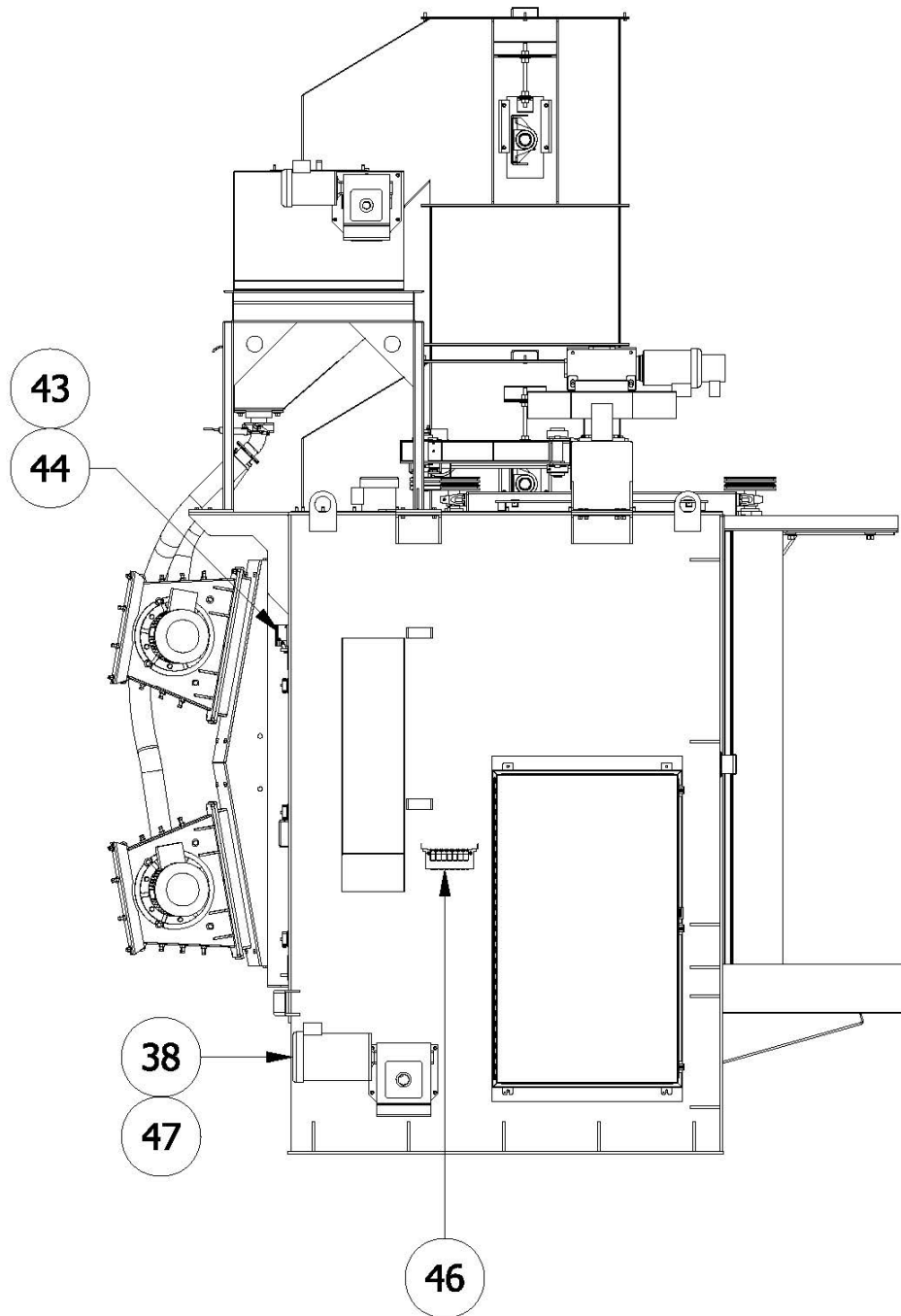
ITEM NUMBERS MAY SKIP SEQUENCE IN SOME PLACES
REPLACEMENT PARTS LISTS ARE SUBJECT TO CHANGE WITHOUT NOTICE

CABINET ASSEMBLY - FRONT VIEW DETAIL



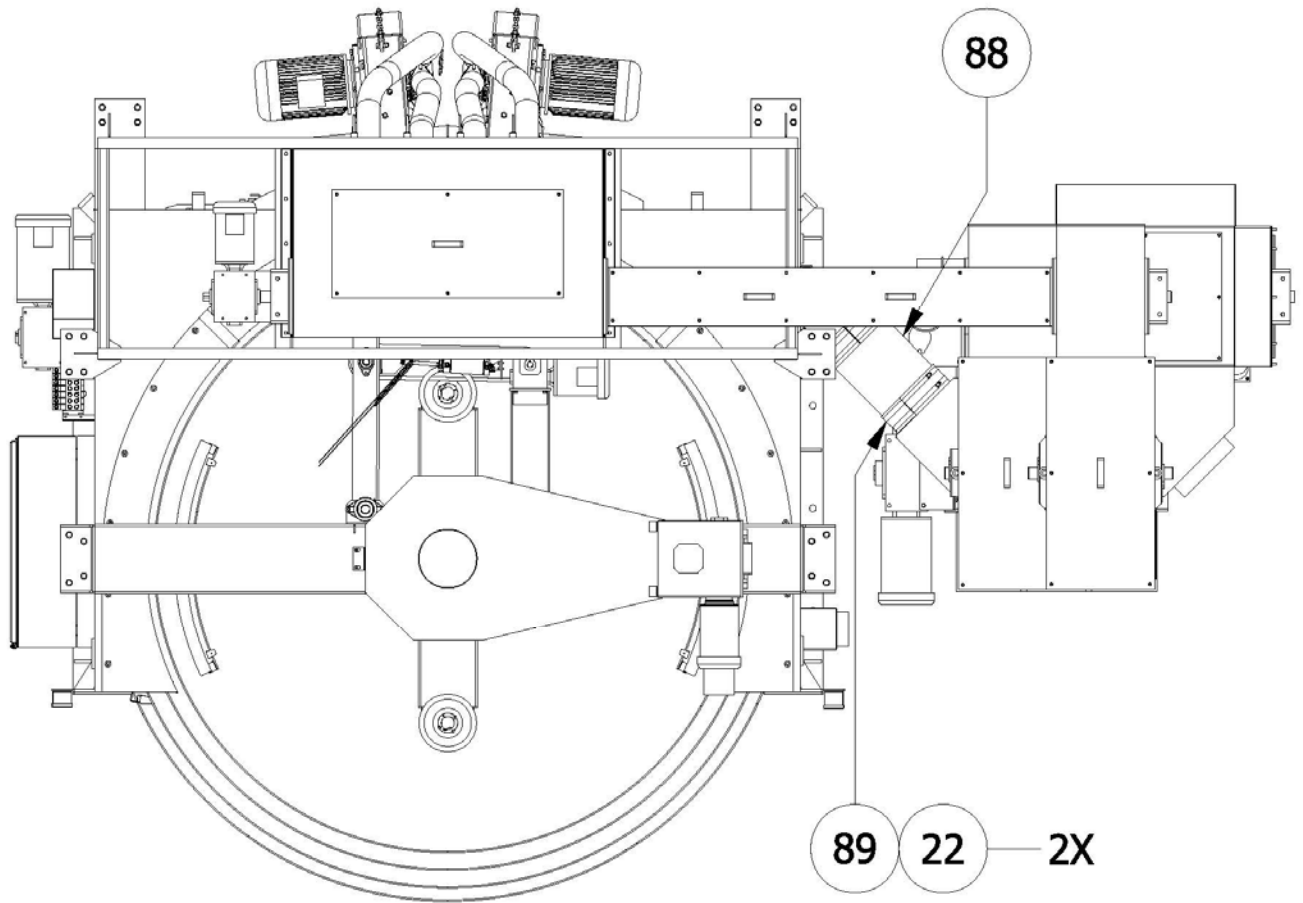
(Refer to replacement parts list on page 3-1)

CABINET ASSEMBLY - SIDE VIEW DETAIL



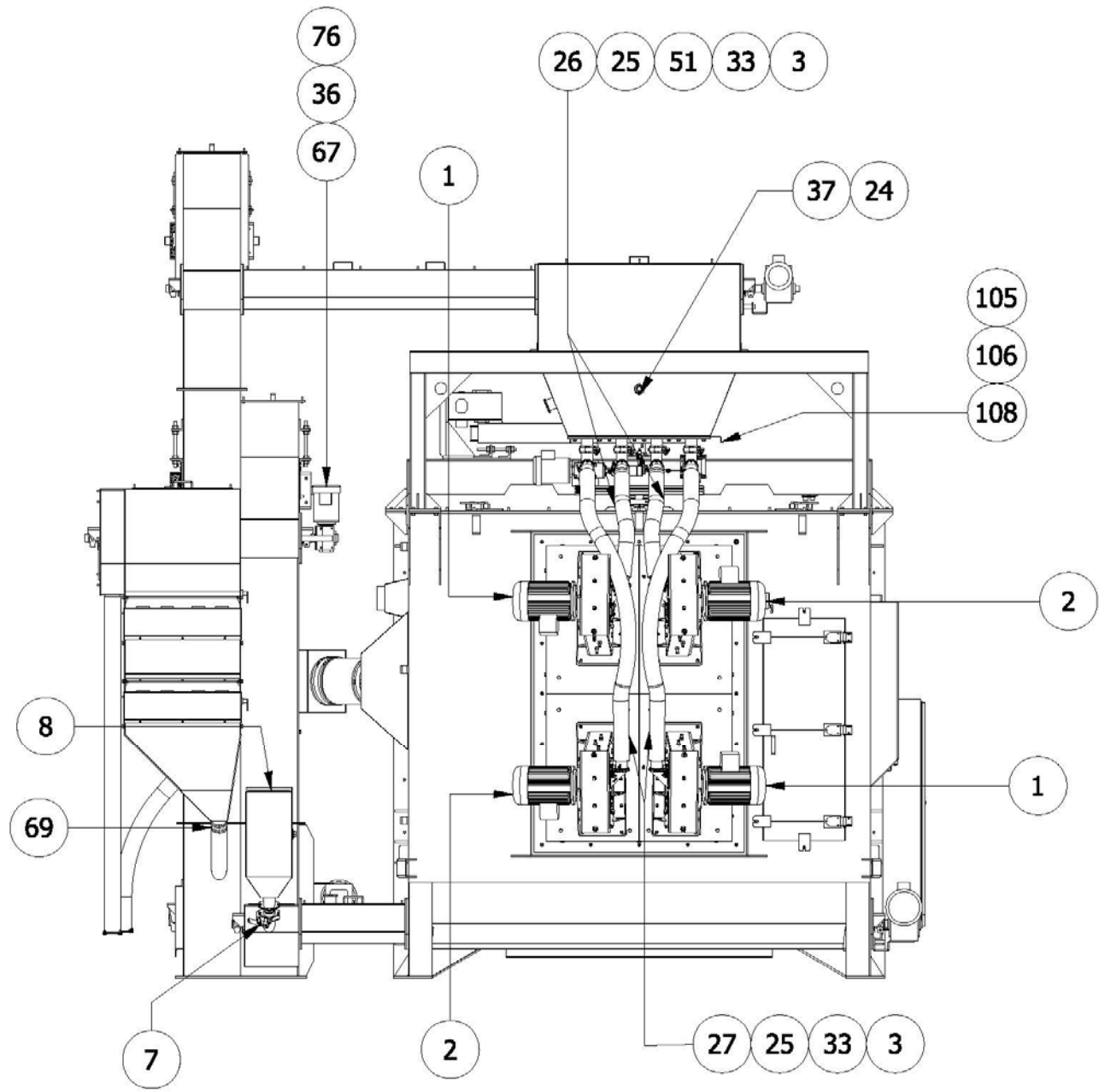
(Refer to replacement parts list on page 3-1)

CABINET ASSEMBLY - PLAN VIEW DETAIL



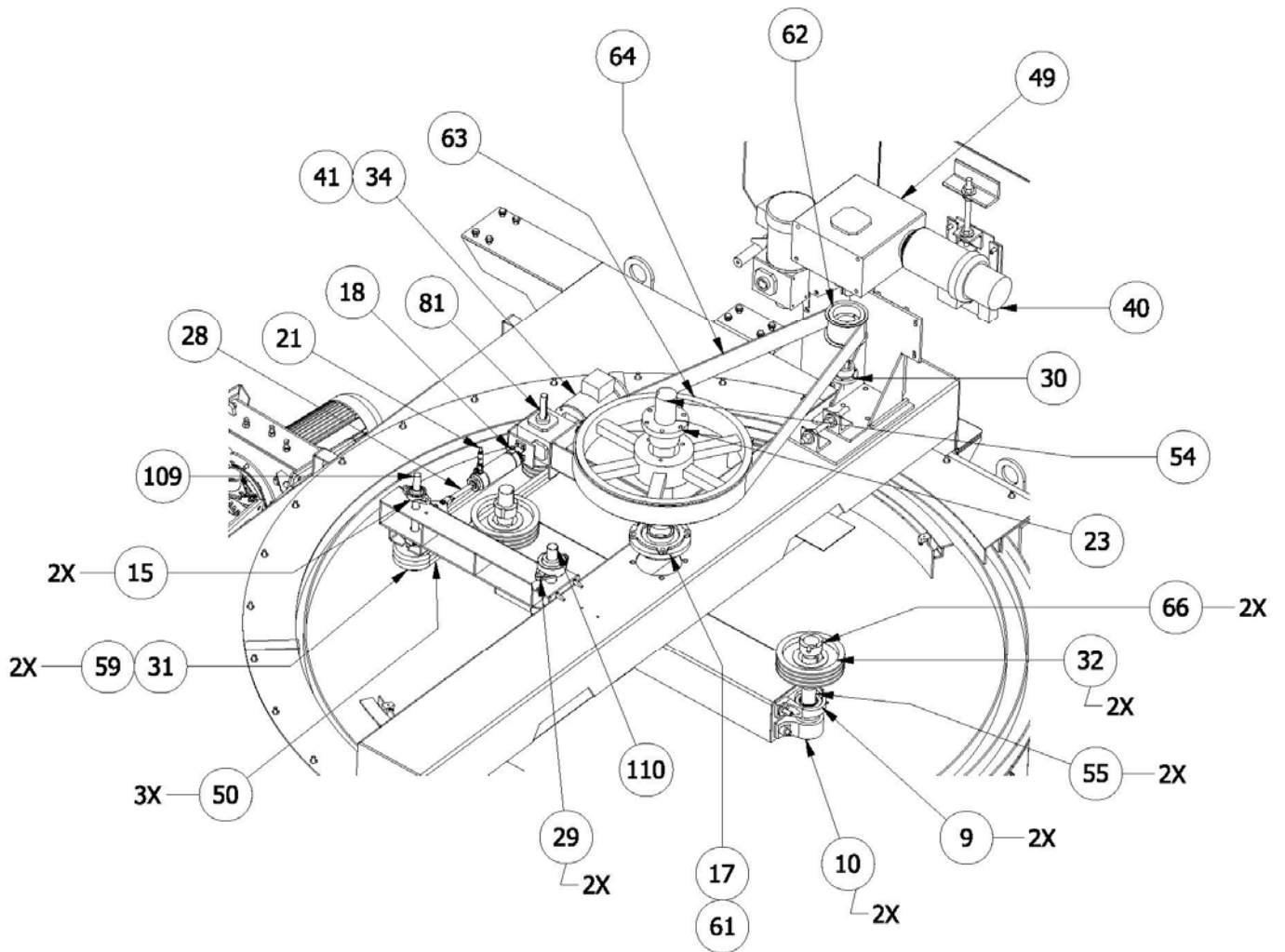
(Refer to replacement parts list on page 3-1)

REAR VIEW DETAIL



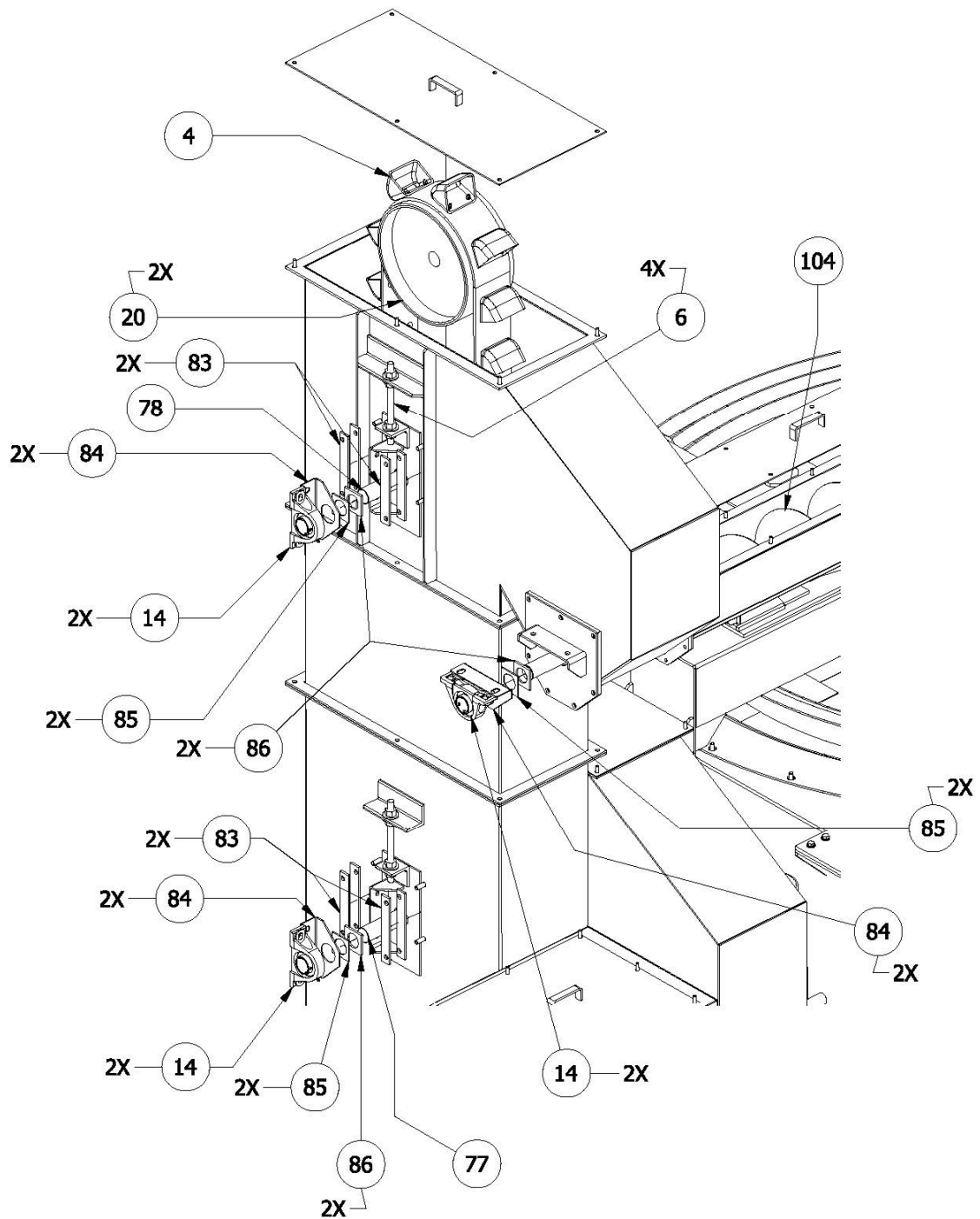
(Refer to replacement parts list on page 3-1)

SPAN ASSEMBLY – EXPLODED VIEW



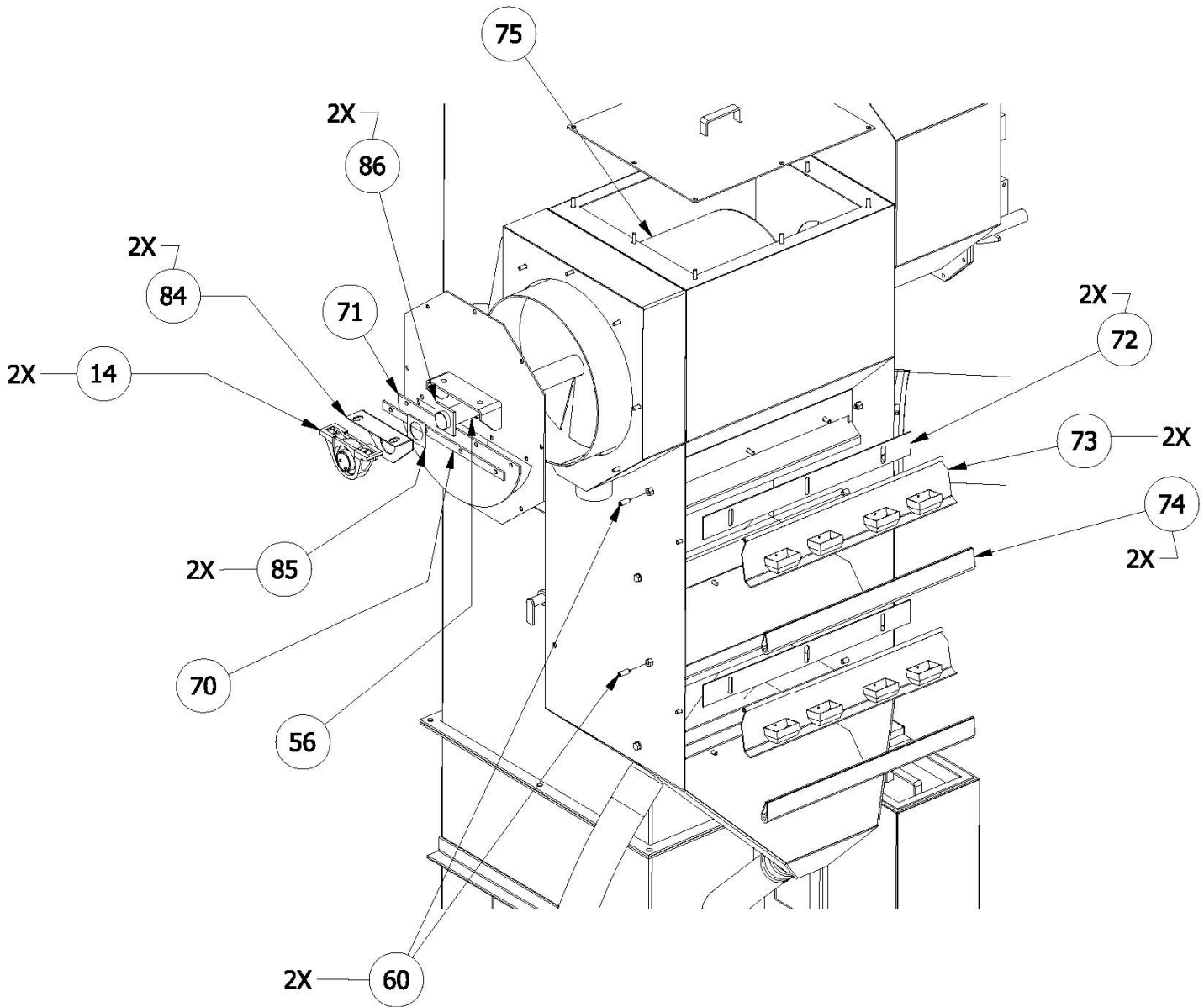
(Refer to replacement parts list on page 3-1)

UPPER ELEVATOR DETAIL



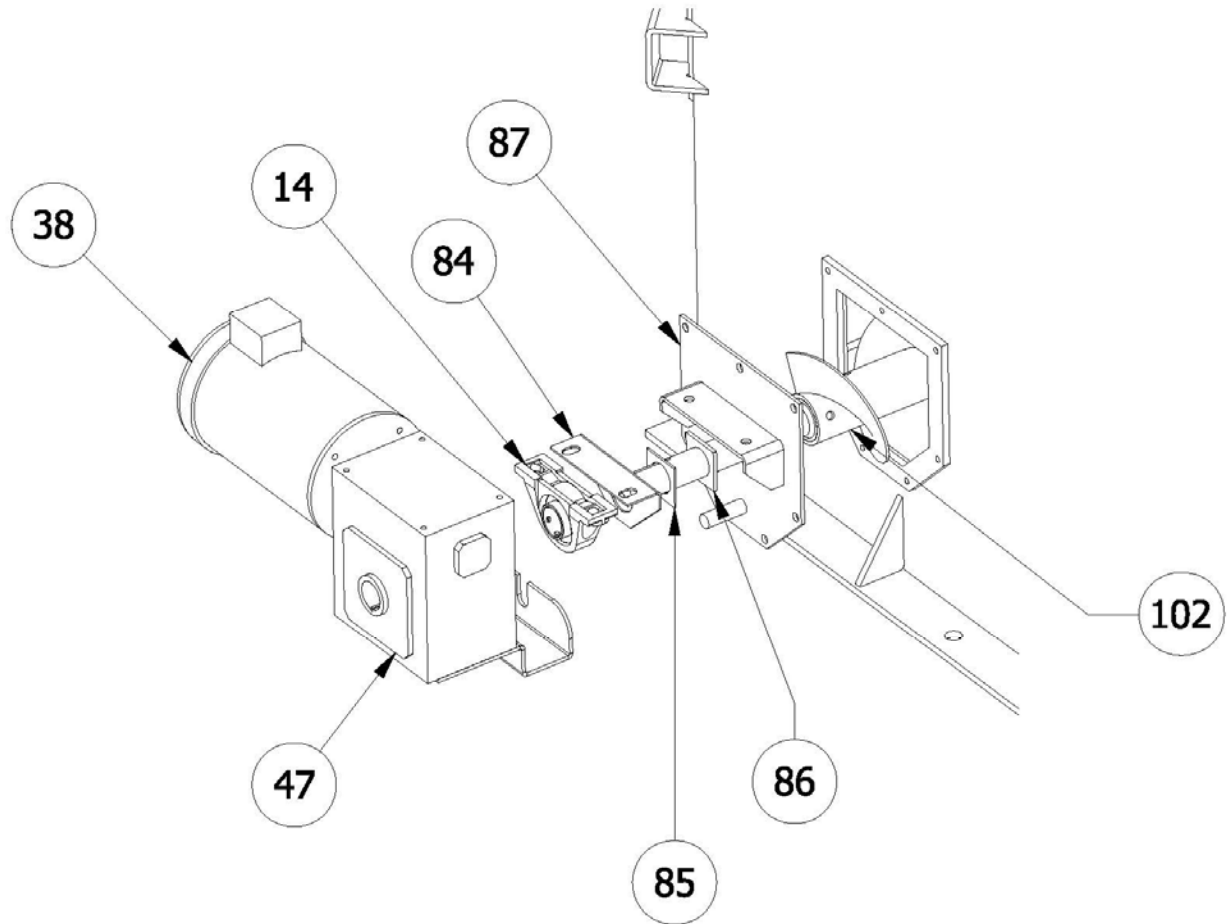
(Refer to replacement parts list on page 3-1)

ROTARY SCREEN/UPPER AUGER DETAIL



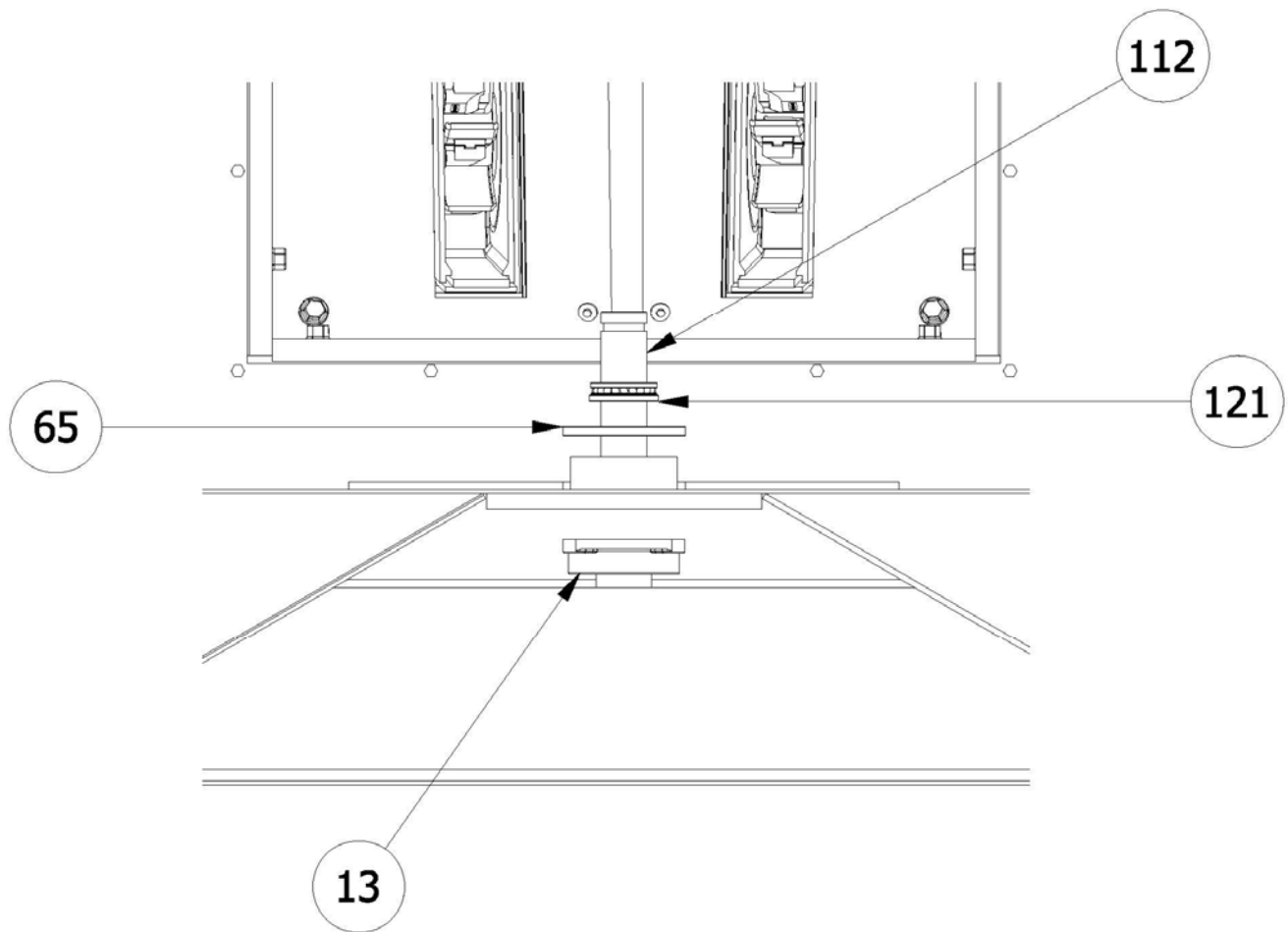
(Refer to replacement parts list on page 3-1)

LOWER AUGER DETAIL



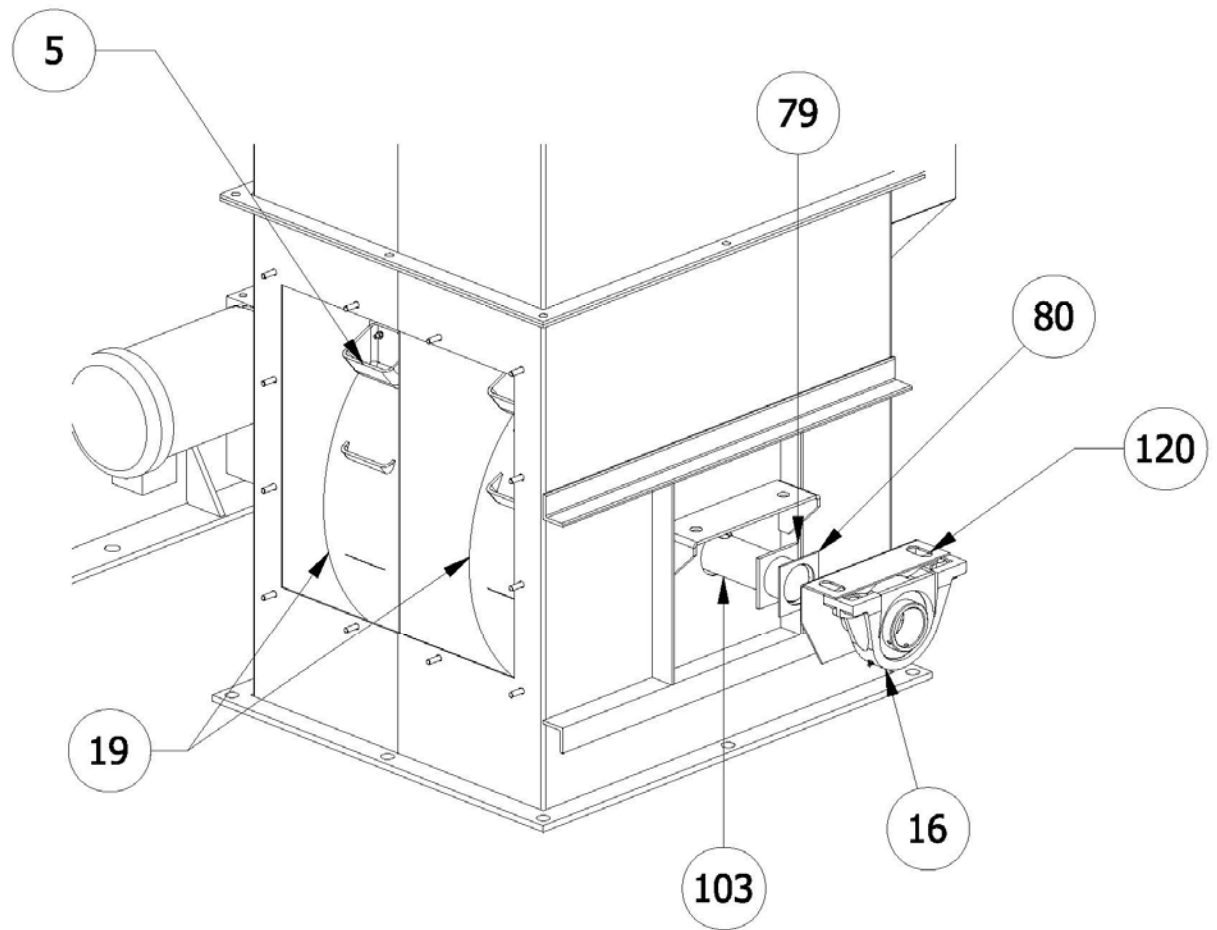
(Refer to replacement parts list on page 3-1)

BEARING DETAIL



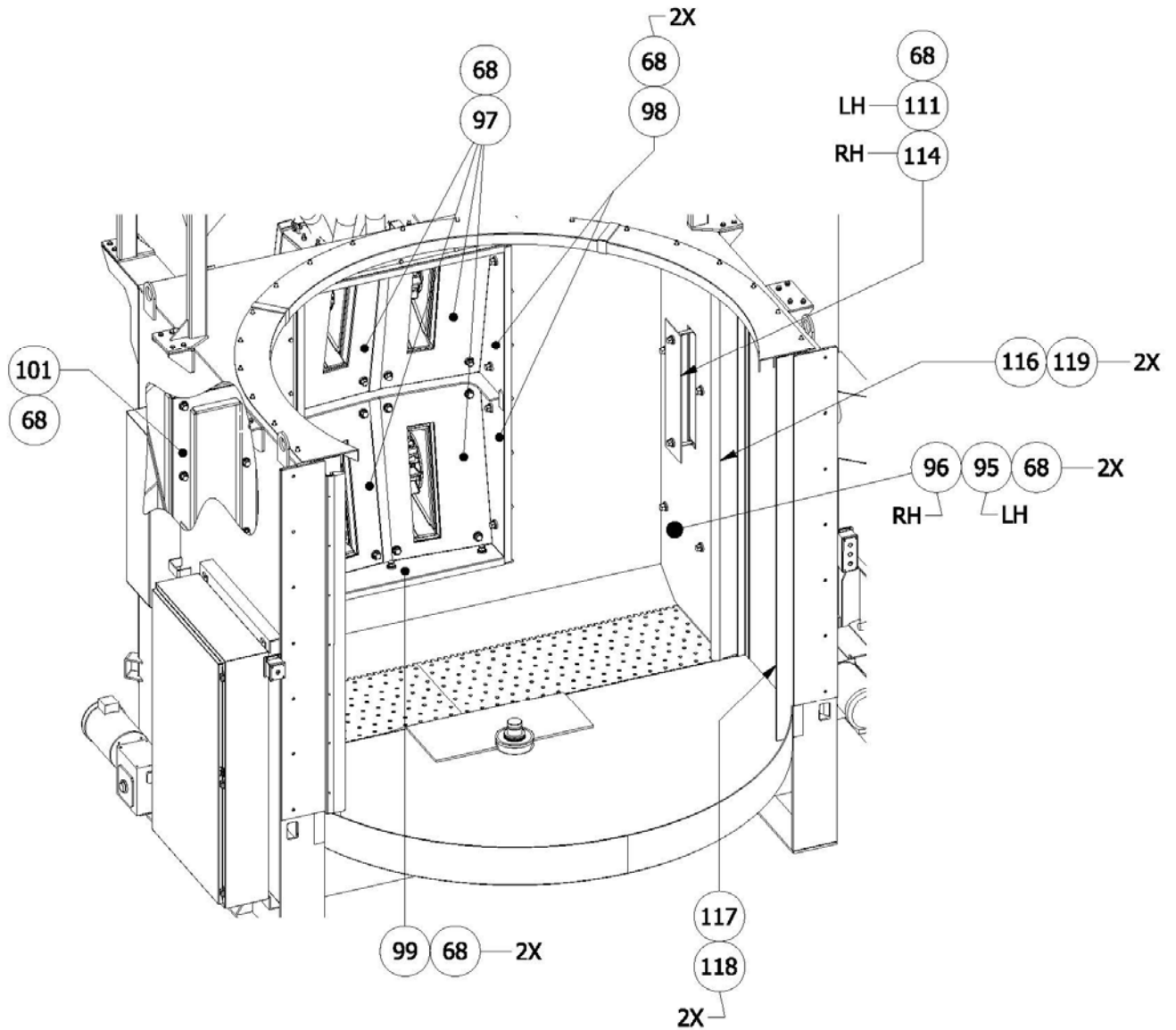
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LOWER ELEVATOR DETAIL



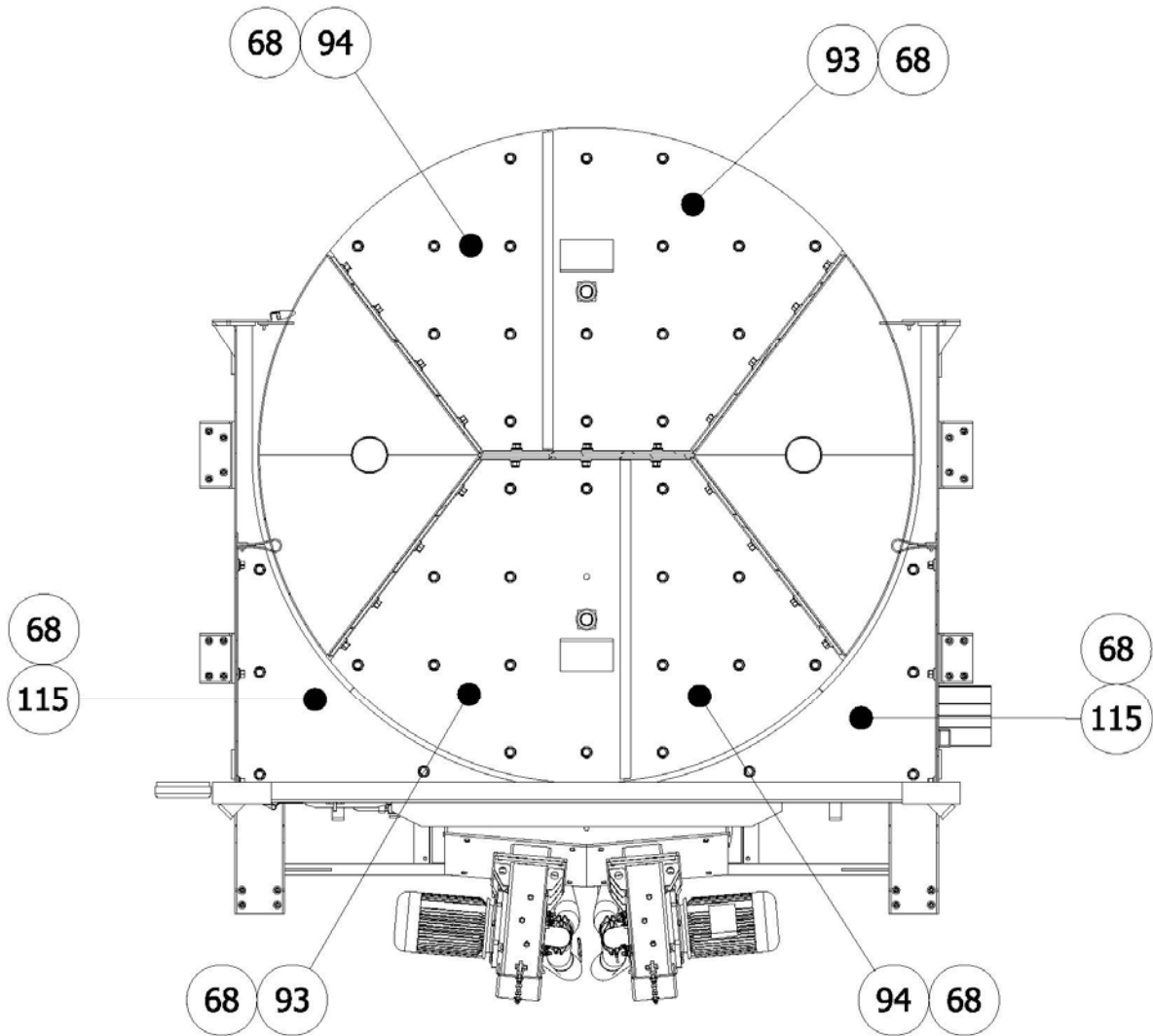
(Refer to replacement parts list on page 3-1)

LINER DETAIL - BLAST CHAMBER



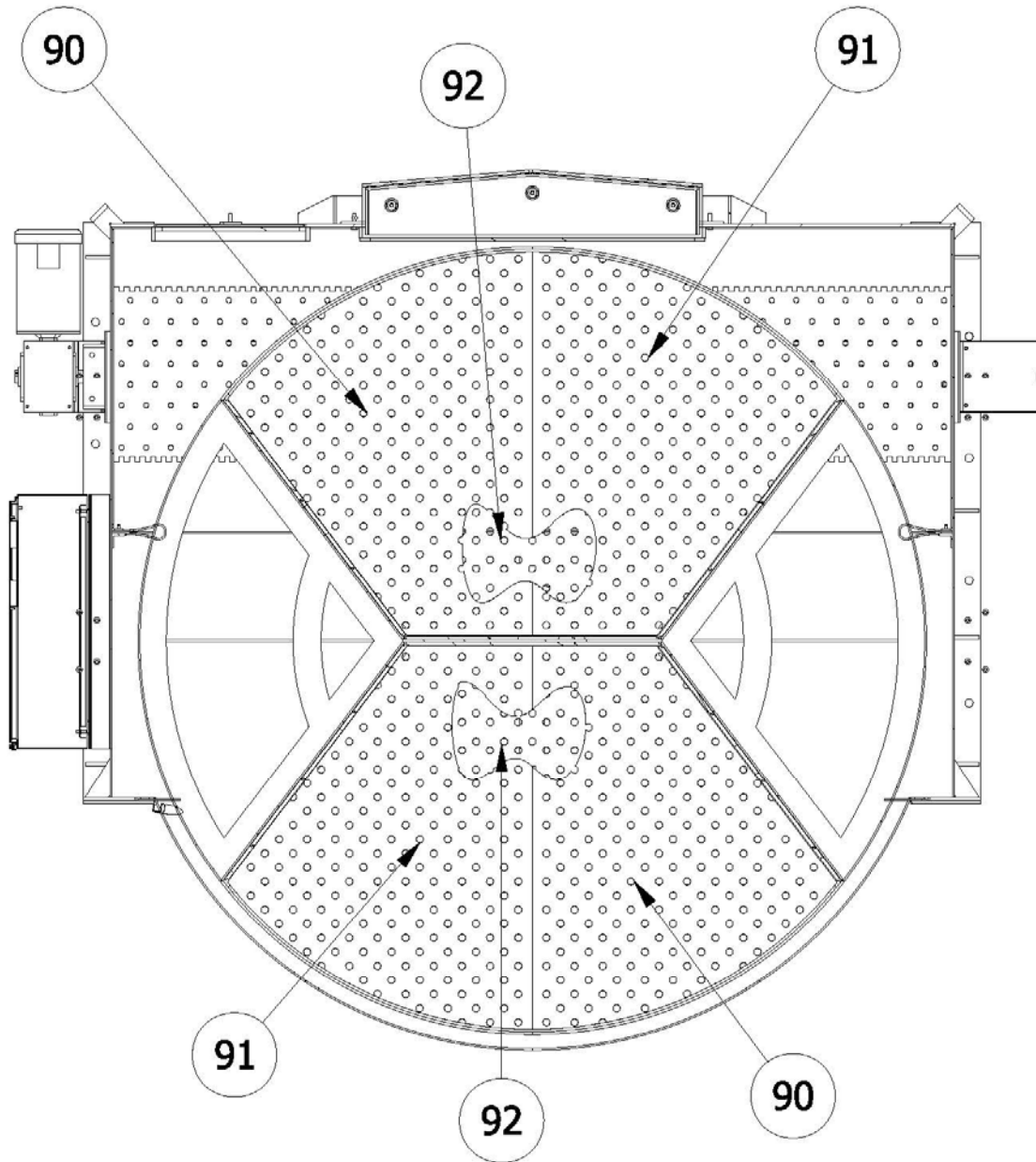
(Refer to replacement parts list on page 3-1)

LINER DETAIL – CEILING



(Refer to replacement parts list on page 3-1)

FLOOR LINER DETAIL



Refer to replacement parts list on page 3-1)

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Abrasives Chart	4-8

ABRASIVE RECYCLING SYSTEM

The purpose of the Abrasive Separator is to separate the contaminants from the reusable abrasive. This separation takes place before the usable abrasive is deposited into the Abrasive Storage Hopper for delivery to the Blast Wheel. To function properly the Abrasive Separator must have an adequate air flow.

The rotary screen rotates in the separator section and allows abrasive to fall through while large objects are trapped. These trapped objects are then ejected from the system through the large refuse spout. The rotary screen and refuse spout should be checked periodically for accumulation and cleaned if necessary.

The abrasive falls down against an adjustable Spreader Plate. This gate should be adjusted up or down to spread the abrasive $\frac{3}{4}$ of the width of the Separator. If the area around the abrasive screen should fill, good abrasive could be forced through the Refuse Pipe. When this occurs, the Spreader Plate should be raised slightly to allow more abrasive flow.

With the Swinging Gate in place an even curtain of abrasive should be formed across the entire width of the Separator. The thickness of the Abrasive Curtain is determined by the size of abrasive being used. The Abrasive Curtain is controlled by an abrasive cup located on the face of the Swinging Gate. Adding abrasive to the cup increases the weight of the Swinging Gate against the Spreader Plate thus decreasing the thickness of the Abrasive Curtain. Removing abrasive from the cup decreases the weight of the Swinging Gate thus increasing the thickness of the Abrasive Curtain. When a large size abrasive mixture is used, the thickness of the curtain should be increased. With a finer abrasive mixture the thickness should be decreased. Always maintain an even flow of abrasive in the curtain.

REFUSE GATE AND BLAST GATE ADJUSTMENT

As the abrasive falls through the Swinging Gate, air is being pulled through the Abrasive Curtain by the Dust Collector. This air flow removes sand and fine contaminants from the abrasive. The size and amount of contaminant removed is determined by the adjustment of the Refuse Gate and Blast Gate. The Refuse Gate and Blast Gate must be set in combination with size and type of abrasive used.

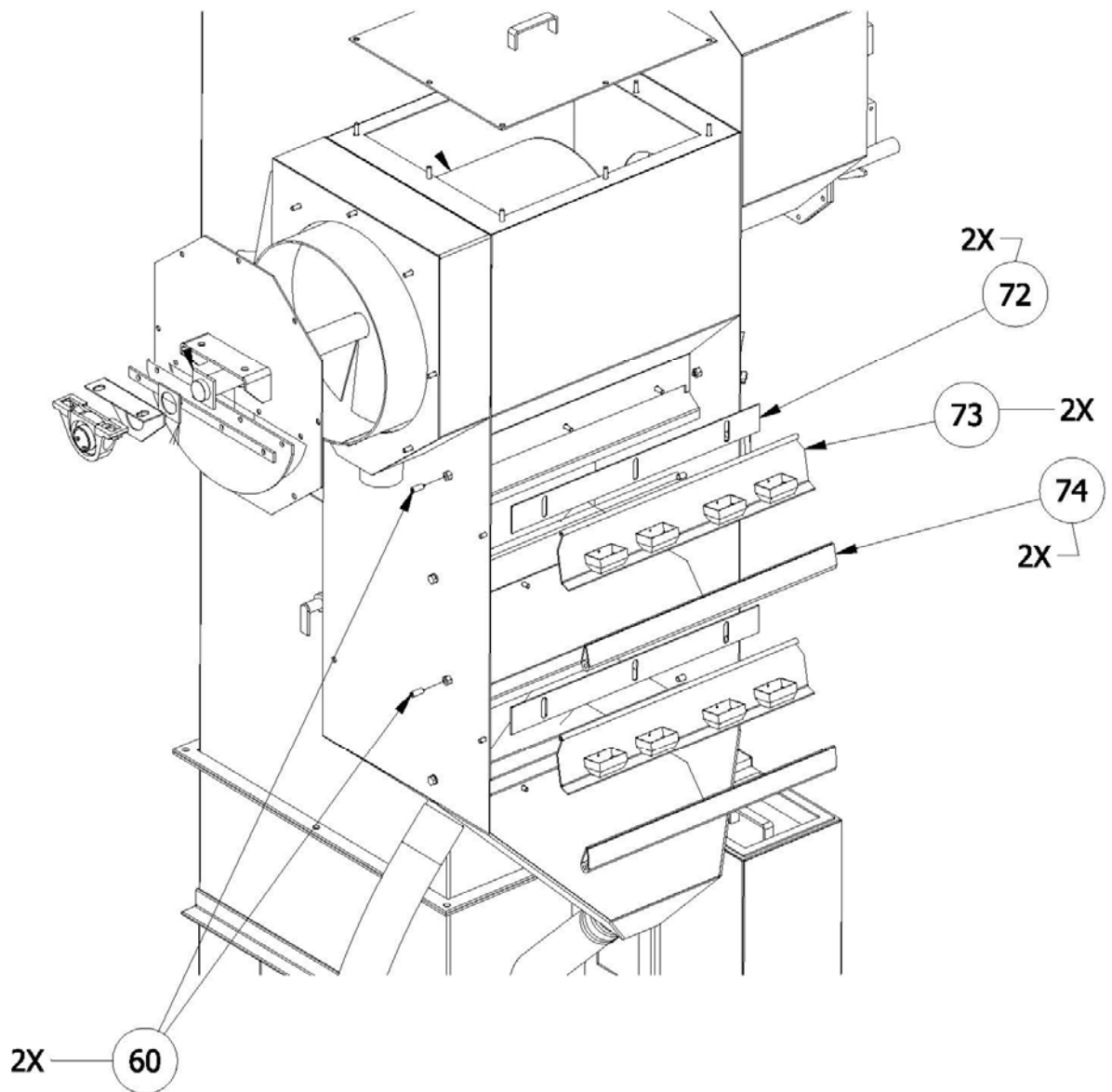
Adjusting the Refuse Gate toward the falling curtain of abrasive will increase the size and quantity of particles removed from the abrasive. Moving the Refuse Gate away decreases the size and quantity of particle removed. The short refuse spout is for discharge of dirt and contaminants removed from the abrasive during air wash separation.

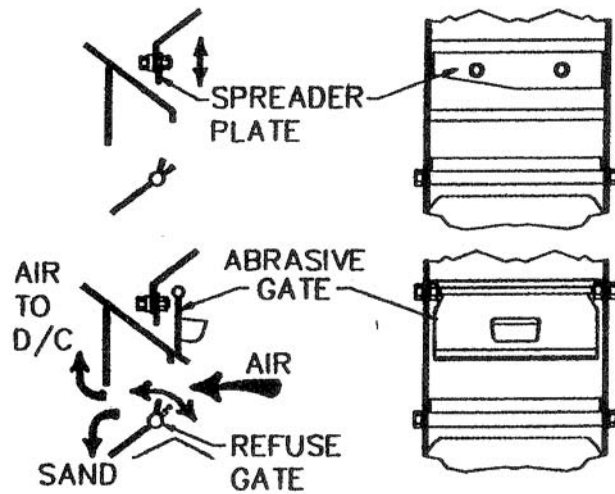
The Blast Gate controls the amount of air passing through the Separator. Start adjustment with the Blast Gate completely open (maximum air flow) and slowly close the Blast Gate (decreases air flow) until desired air flow is obtained. If usable abrasive is being pulled into the Dust Collector, the air flow should be decreased. If trash or dirty abrasive is falling into the Abrasive Storage Hopper, the air flow should be increased. Adjust both the Refuse Gate and Blast Gate until as much sand and unusable abrasive as possible are removed, but no usable abrasive is removed. Blast Gate adjustment will vary depending on abrasive size, material to be blasted, and operating environment.

After any repairs or replacements all hoppers, conveyors, buckets, screens and spouts should be inspected and cleaned out to remove any bolts, nuts, tags or other foreign objects that might have fallen into the system. Foreign objects will not only obstruct the abrasive flow and jam the moving parts, but could enter the rotating parts causing serious damage to the Blast Wheel.

Screens should be inspected on a regular basis to remove any accumulation of objects or debris that could disrupt the cycle of abrasive flow to the Blast Wheel.

ABRASIVE SEPARATOR DETAIL





REPLACEMENT PARTS LIST – ABRASIVE RECYCLING SYSTEM

Item Number	Part Number	Qty	Description
60	G601295	2	Spring Ball Plunger
72	RJ1315-Y	1	Spreader Plate
73	RJ1333	1	Swing Gate
74	RJ1335	1	Baffle –Front Air

ABRASIVE STORAGE HOPPER

The Abrasive Storage Hopper abrasive level should remain constant at approximately 3/4 full. An adequate accumulation of abrasive in the Hopper will not only insure a steady flow of abrasive to the Blast Wheel, but will also prevent wear on the Hopper itself by keeping the sides of the Hopper protected against the abrading action of cascading abrasive particles. The correct abrasive level in the Hopper should be maintained by periodic additions of new abrasive to compensate for abrasive breakdown.

AUTO ABRASIVE ADDER HOPPER

(Optional)

The auto abrasive adder hopper adds abrasive to the machine's abrasive recycling system while the machine is blast cleaning parts. A sensor in the abrasive storage hopper alerts the auto abrasive adder hopper's abrasive control valve to add more abrasive into the recycling system when the abrasive volume in the storage hopper becomes too low. At the end of each shift make sure the auto abrasive adder hopper is full.

ELEVATOR BELT MAINTENANCE

Belt tension should be checked regularly to insure proper operation of the Abrasive Recycling System. The following information should be considered when checking belt tension.

- 1) The pulley in the elevator bottom section should rotate constantly without slippage or hesitation.
- 2) The unloaded belt should run generally in the center of the pulleys with minimum movement from side to side.
- 3) Elevator buckets should not strike the side of the casing.
- 4) It should not be possible to manually slide the elevator belt off the pulley when the elevator is stopped. However, the tension on the elevator belt should not be so great that belt and bearing life is shortened.

The Elevator may become stalled or jammed for several reasons:

- 1) If the blasting operation is started without the Elevator on.
- 2) If the Elevator Belt slips because of improper tension adjustment.
- 3) If abrasive is added without the Elevator System operating.
- 4) If abrasive is added to the machine at a rate faster than the Elevator is capable of handling.

If a stalled Elevator condition exists, the abrasive feed to the Blast Wheel and all power sources to the machine should be cut off immediately. It is advisable to use a scoop or scraper for removing abrasive from a jammed Elevator.

DO NOT USE YOUR HANDS The rubber Elevator Belt in this jammed condition has been stretched and is probably under tension. At some point while the excess abrasive is being removed, the tension in the stretched belt will be released causing the pulley to rotate very rapidly in the reverse direction. Serious personal injury could result if a hand or forearm were in the path of the rotating elevator buckets.

ABRASIVES

The proper selection of abrasive is important not only from the standpoint of blasting results, but also from a maintenance standpoint. An abrasive of good quality will help to keep operating costs at a minimum. Abrasives are generally classified in shape as being either "shot" or "grit" and are designated as such by the letters "S" for shot and "G" for grit preceding the size number.

Grit is angular in shape, presenting numerous sharp cutting edges, especially adaptable for matte or etched finishes. Shot is spherical in shape, which produces peening to provide a smooth, more attractive finish. Many different sizes and types of shot and grit are available in today's market to meet various requirements and applications. If you have any problems in abrasive selection, one of our representatives will be glad to help you make the selection best suited for your needs. The table on the following pages lists various shot and grit sizes and their applications. Your 48X84 Spinner Hanger requires approximately 2,000 lbs. of abrasive at initial startup.

STEEL ABRASIVES – SIZES AND GENERAL APPLICATIONS

<u>SHOT SIZE</u>	<u>CORRESPONDING GRIT SIZE</u>	<u>APPROX. SIZE OF ABRASIVE</u>	<u>SHOT FINISH PRODUCED</u>	<u>GRIT FINISH PRODUCED</u>	<u>GENERAL APPLICATIONS</u>
(None)	G-200	.002"		Very light,	Blasting of small ferrous & nonferrous
(None)	G-120	.004"		etch-matte or satin finish	work & machined parts. Removal of very light scale. Removal of light rust.
S-70	G-80	.007"	Fine, smooth	Medium etch	Blasting relatively small ferrous & non-
S-110	G-50	.011"	shot finish		ferrous castings. Removal of light scale
S-170	G-40	.017"	Excellent Coverage		from forgings and heat treated parts. Blasting of machined parts. Removal of mill scale, rust and other deposits.
S-230		.023"	Medium light		Blasting of gray iron, mall iron, light steel
S-280	G-25	.028"	shot finish.	Sharp etch	castings, medium forgings, heat treat parts
S-330		.033"	Good coverage		and heavy mill scale, rust and other deposits.
S-390	G-18	.038"	Average to		Blasting of steel, heavy mall, and gray iron
S-460	G-16	.046"	heavy shot	Deep etch,	castings. Removal of scale from large
S-550	G-14	.055"	finish, Average to Poor coverage	rough	forgings, steel plate, large billets, and slabs.
S-660	G-12	.066"	Rough or poor		Heavy steel castings. Removal of tough
S-780	G-10	.078"	coverage	Very rough	heavy scale.

SECTION 5 – ELECTRICAL SYSTEM

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ELECTRICAL SYSTEM

BUTTON DESCRIPTION

ELECTRICAL PANEL:

- o EMERGENCY STOP – Stops the entire system
- o MASTER START – Enables machine for normal operation
- o RECOVERY START – Starts the abrasive recycling system
- o RECOVERY STOP – Stops the abrasive recycling system.
- o ABRASIVE ON/OFF – To blast parts, set to “ABRASIVE ON”. To index parts through the blast chamber without blasting them, set to “ABRASIVE OFF”.
- o SPINNER START – Starts the spinner drive.
- o SPINNER STOP – Stops the spinner drive
- o CHAMBER ON/OFF – Allows the chamber rotation to be stopped during a cycle.
- o BLAST WHEEL START #1 & #2 – Starts the selected blast wheel motor.
- o BLAST WHEELS STOP – Stops the blast wheel motors
- o CHAMBER REVERSE OFF/ON – Enables chamber reverse pushbutton
- o CHAMBER REVERSE - Press and hold to reverse the chamber. When chamber has reversed to desired position, release button and switch chamber reverse to the off position. Press Chamber Index button to continue the chamber indexing forward.
- o PATTERN TEST OFF/ON –Enables pattern test to be performed
- o PATTERN TEST #1 - Test blast pattern of blast wheel #1
- o PATTERN TEST #2 Test blast pattern of blast wheel #2
- o PATTERN TEST #3 - Test blast pattern of blast wheel #3
- o PATTERN TEST #4 - Test blast pattern of blast wheel #4
- o CANCEL PATTERN TEST – Cancels any pattern test while in progress

3-HOLE ENCLOSURE:

- o EMERGENCY STOP - Stops the entire system
- o BLAST CYCLE OVERRIDE - Starts rotation of the chambers forward for as long as the button is pressed. This will interrupt a current blast sequence.
- o CHAMBER INDEX - Starts rotation of the chamber until all chambers are advanced forward one position. The previous blast sequence must have finished.

- o **1-HOLE ENCLOSURE:**

- o EMERGENCY STOP - Stops the entire system

SEQUENCE OF OPERATIONS

4884 SPINNER HANGER

START UP: (MAIN PANEL)

1. TURN ON MAIN DISCONNECT
2. PULL PANEL EMERGENCY STOP AND BOTH REMOTE EMERGENCY STOPS
3. PRESS MASTER START BUTTON ON PANEL
4. PRESS RECOVERY START BUTTON ON PANEL
5. PRESS SPINNER HANGER START BUTTON ON PANEL
6. CONFIRM THAT THE ABRASIVE SELECTOR SWITCH AND THE CHAMBER SELECTOR SWITCH IS ON
7. PRESS BLAST WHEELS START BUTTON ON PANEL
8. SET BLAST TIMER TO DESIRED BLAST TIME

OPERATION: (RIGHT SIDE REMOTE ENCLOSURE)

1. LOAD PARTS ON TREE
2. VERIFY THERE IS NO COLLISION WITH THE SIDE WALLS OF BLAST CHAMBER
3. VERIFY CHAMBER OPENING IS FREE AND CLEAR FROM ANY OBSTRUCTIONS
4. PRESS CHAMBER INDEX ON THE REMOTE ENCLOSURE UNTIL CHAMBER REACHES AT BLAST PROX (BLAST IN PROGRESS LIGHT WILL ILLUMINATE) AND THE CHAMBER WILL AUTOMATICLY ROTATE TO THE 1ST CHAMBER STOP AND BLAST CYCLE WILL BEGIN.
5. ONCE THE BLAST TIMER TIMES OUT THE CHAMBER WILL MOVE TO 2ND POSITION AND 3RD AND SO ON RESTARTING THE BLAST TIMER AT EACH POSITION UNTIL THE CHAMBER HAS FINISHED ITS LAST POSITION AND MOVES FROM THE AT BLAST ZONE.
6. LOAD PARTS IN THE CHAMBER (OPERATOR SIDE) WHILE THE BACK CHAMBER IS BEING BLASTED
7. PRESS CHAMBER INDEX AT THE END OF THE BLAST CYCLE TO ROTATE CHAMBER TO THE NEXT BLAST ZONE.
8. CONTINUE THESE STEPS FOR CONTINUOUS OPERATION
9. TO CANCEL A BLAST CYCLE ALREADY IN PROGRESS PRESS AND HOLD THE BLAST CYCLE OVERRIDE BUTTON UNTIL THE CHAMBER IS NO LONGER IN THE BLAST ZONE (BLAST IN PROGRESS LIGHT WILL GO OUT)

SHUTDOWN:

1. ALLOW THE BLAST CYCLE TO COMPLETE AND CHAMBER TO MOVE FORM THE BLAST ZONE
2. ALLOW RECOVERY SYSTEM TO RUN FOR AT LEAST 2 MINUTES AFTER BLAST CYCLE IS COMPLETE TO ALLOW RECOVERY SYSTEM TO RECOVER ALL MEDIA BACK TO THE ABRASIVE HOPPER. THIS WILL PREVENT HE AUGERS AND ELEVATOR FROM OVERLOADING AT NEXT START UP
3. PRESS BLAST WHEEL STOP BUTTON ON MAIN PANEL
4. PRESS SPINNER HANGER STOP BUTTON ON MAIN PANEL
5. PRESS RECOVERY STOP BUTTON ON MAIN PANEL
6. PRESS THE EMERGENCY STOP ON MAIN PANEL OR ANY REMOTE ENCLOSURE
7. TURN OFF MAIN DISCONNECT

REPLACEMENT PARTS LIST – ELECTRICAL COMPONENTS

(EP-610425)

SYMBOL	QTY	PART NO.	DESCRIPTION
ETM	1	G82780	HOUR METER
LS1	1	600746	ROLLER LEVER
LS1	1	600756	LIMIT SWITCH
T1	1	600330	TRANSFORMER
AM1,2,3,4	4	G80970	AMP METER
FU40,41	2	600770	FUSE
FU39	1	600212	FUSE
FU37,38	2	600772	FUSE
FU34-36	3	600846	FUSE
FU31-33	3	600357	FUSE
FU25-30	6	600585	FUSE
FU22-24	3	600780	FUSE
FU19-21	3	600845	FUSE
FU4-15	12	600847	FUSE
FU1-3	3	600594	FUSE
FU34-37	4	600762	FUSE BLOCK
FU19-36	6	600763	FUSE BLOCK
FU4-15	4	600598	FUSE BLOCK
PDB1	3	600814	POWER DIST BLOCK
DISC1	1	400495	DISCONNECT HANDLE
DISC1	1	400503	DISCONNECT SHAFT
DISC1	1	600420	DISCONNECT
DISC1	1	600464	TERMINAL LUG KIT
DISC1	6	601034	FINGER SAFE LUG COVER
ENC3	1	601287	3 HOLE ENCLOSURE
ENC2	1	600545	SINGLE HOLE ENCLOSURE
ENC1	2	400421	EXHAUST GRILL
ENC1	2	400422	FILTER FAN
ENC1	1	600590	MOUNTING PANEL

REPLACEMENT PARTS LIST – ELECTRICAL COMPONENTS (Cont'd)

(EP-610425)

SYMBOL	QTY	PART NO.	DESCRIPTION
ENC1	1	600540	ENCLOSURE
7,8,10OL	3	600224	OVERLOAD
7,8,10M	3	600261	CONTACTOR
6OL	1	600225	OVERLOAD
6M	1	600257	CONTACTOR
PLC1	1	601288	PLC
SLOT1-3	3	600670	PLC INPUT CARD
SLOT4	1	600671	PLC OUTPUT CARD
MCR	1	601284	CONTROL RELAY
CR-	8	600570	RELAY SOCKET
CR-	8	600705	CONTROL RELAY
CR10	1	600261	CONTACTOR
VFD6	1	600803	VFD
VFD5	1	600793	VFD
VFD1-4	4	600439	VFD
LT-	1	600681	BLUE INDICATOR LIGHT
LT-	1	600680	AMBER INDICATOR LIGHT
SR1	1	601289	SAFETY RELAY
SR1	1	601290	SAFETY RELAY STRIP
SS-	4	600189	SELECTOR SWITCH
PB-	1	400267	BLACK PUSHBUTTON
PB-	7	400560	BLACK PUSHBUTTON
PB-	3	400563	RED PUSH BUTTON
PB-	4	400558	GREEN PUSHBUTTON
PB-	3	400562	RED PUSH/TWIST RELEASE

SECTION 6 – GENERAL MAINTENANCE

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Pulleys, Sheaves and HTD Sprockets	6-5

GENERAL MAINTENANCE

ELECTRIC MOTOR MAINTENANCE

The greatest cause of motor bearing failure is over greasing rather than under greasing. Electric motors are basically dependable and require little maintenance. Too much attention may be worse than none. Motor bearings are packed with grease by the manufacturer and should operate at least one year without needing lubrication. However, should re-lubrication become necessary, the grease most commonly used by motor manufacturers are:

Robalube	Continental Oil Co.
Ayprina #3	Shell Oil Co.
BRB Lifetime	Socony Vacuum
Andok "C"	Std. Oil of New Jersey
Regal	Texas Co.

Motor bearings should be lubricated using the following procedure:

1. Disconnect machine from all power sources.
2. Thoroughly clean off and remove pipe plugs from bearing housing.
3. Remove hardened grease from drains with a stiff wire or rod.
4. Add grease to inlet with hand gun until a small amount of new grease is forced out of the drain.
5. Remove excess grease from ports and replace inlet plugs. Allow motor to drain an adequate amount of time before replacing drain plug.
6. Motor may now be put back into full operation.

Do not lubricate motor while in operation or excess grease could be forced into the motor. Excess grease accumulation reduces insulation life.

GEAR REDUCERS

MAINTENANCE

The Leeson reducer requires no periodic maintenance, but an occasional visual inspection to check for hardware security, leakage, and the general overall condition of the reducer is good practice.

LUBRICATION

The reducer is factory filled with a synthesized hydrocarbon lubricant that is formulated for a broad operating temperature range and long life.

Do not add or remove any oil during installation or change oil after break-in. Change oil only when performing maintenance that requires gearbox disassembly. If oil must be replaced, contact the factory for recommended oil volumes and use only synthetic grease for lubrication. The use of another lubricant may impair the performance of the system.

WARNING: GEARCASE MAY BE UNDER PRESSURE WHEN OPENED, CAUSING OIL TO SPRAY. REMOVE COVERS OR SEALS CAREFULLY AND PROVIDE AN OIL DEFLECTOR WHEN DOING SO. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

SCREENS

The abrasive undergoes a screening process to remove any objects or trapped metal that might have been mixed into it during the blasting operation. The screen system permits the abrasive to pass but removes trash and tramp material from the system. If trash and tramp material were to pass through the blast wheel, severe damage could occur to the blast wheels.

The primary screen, located immediately under the blast chamber, stops any large objects from getting into the screw conveyors and/or elevator section. This screen is accessible through the access door. The operator should inspect the screen regularly and remove any accumulation. A clogging up of foreign material at this primary screen could disrupt or obstruct the cycle of abrasive flow to the storage hopper.

The rotary screen rotates in the separator section and allows abrasive to fall through while large objects are trapped. These trapped objects are then ejected from the system through the refuse spout. The rotary screen should be checked periodically for accumulation and cleaned if necessary.

The long refuse spout is for discharge of trapped objects in the rotary screen. The short refuse spout is for discharge of dirt and contaminants removed from the abrasive during air wash separation. Both refuse spouts should be inspected periodically for accumulation and cleaned if necessary.

CHAMBERS

The 48X84 Spinner Hanger has a chamber drum that is divided into two equal sections. The chamber drum is driven by an electric motor and reducer situated on top of the chamber. This configuration allows the operator to unload and load one section of the drum while the other section with parts are being blasted with abrasive. While being blasted, parts are spun in a circle in each section while resting on spinning hanger fixtures.

ROLLER CHAIN DRIVES

Normal chain wear is caused by a joining of the pins in the bushings. In a properly lubricated chain drive, separating film of fluid lubricant is formed in the operating chain joints. Without adequate lubrication, wear in the chain joints is usually the limiting factor in the life of the chain. Such wear results in increased chain pitch. This increase in pitch allows the chain to ride out on the sprocket teeth. When excessive stretching occurs, the chain must be replaced before it overrides the sprocket teeth. Proper lubrication of the bearing surfaces of the chain is of major importance in retarding wear. Installation of a new chain or badly worn sprockets will result in excessive chain wear and serious shortening of the life of the drive.

Chain drives should be protected against dirt and moisture and the oil supply kept free of contamination. A fluid lubricant must be applied to assure an oil supply to the joints and minimize metal-to-metal contact. Periodic cleaning and oil change is recommended. A good grade of a petroleum based oil is recommended. Heavy oils and greases are generally too stiff to enter and fill the chain joints.

PULLEYS, SHEAVES, HTD SPROCKETS & BELTS

Pulleys/sheaves are a slow wear item so only periodic inspection will be necessary. When the pulley/sheave becomes worn down to 20% of its pitch diameter or outer diameter, the pulley/sheave must be replaced. To replace pulleys/sheaves, release belt tension by loosening the torque arm on the reducer, loosen set screws on shaft bearings and slide pulley/sheave off shaft.

HTD sprockets and rubber belt are used to drive the chamber drum. Inspect these sprockets and belt periodically and replace if the teeth are worn, chipped or cracked.

The proper alignment of the drive must be checked and maintained at all times. If the drive is misaligned, the belts will rub on the sheaves/HTD sprockets causing reduced belt and sheave/HTD sprocket life. Keep sheaves/HTD sprockets and belt free from dirt, oil and grease. The locking devices on the sheaves/HTD sprockets should be checked to assure and maintain proper tightness on the shaft. Vibration or improper alignment could cause set screws, taperlock bushings or locking caps to become loose. They should be checked and tightened periodically.

Urethane belts are orange and round. They drive the spinner hanger mechanism above the chamber. Replace belts when worn or cracked. Always release the belt tension before removing the belt.

SECTION 7 – SAFETY AND PREVENTIVE MAINTENANCE

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SAFETY

There are several advantages to an effective safety program which include: lower operating costs, lower workman compensation, less work time lost, high employee morale and fewer problems. No one can work safely without knowing what precautions one must take to ensure one's personal safety. One must know what equipment to wear, which job practices are safe and which are not, and one must be aware of what hazards are possible in one's work area. A regular schedule of Preventive Maintenance on your equipment is the best protection against unpleasant surprises that slow production and sometimes result in injuries. Here are a few suggested safety tips.

1. The first step before any maintenance or inspection takes place should be to disconnect the power. This includes removing all electric, pneumatic and hydraulic power sources. Then LOCK-OUT and TAG-OUT the machine.
2. Wear proper eye protection at all times.
3. Practice good Preventive Maintenance.
4. Practice good housekeeping.
5. Replace worn parts when necessary.
6. Do not reach into elevator access while machine is in operation.
7. Do not attempt to open blast cabinet access doors until blast wheels have come to a complete stop.
8. Be sure all electrical inspections or changes are done by a qualified electrician.
9. Routine inspections usually require climbing onto your machine. Loose abrasive can cause dangerous footing. Be alert and careful.
10. Be sure to read Operation and Maintenance Manual fully and carefully before attempting any operation or repairs to this equipment.

11. Use a scoop or scraper when removing abrasive from a jammed elevator. **Do not use hands.** If a jammed Elevator Belt is stretched tight, the tension in the belt will release when excessive abrasive is removed, causing the pulley to rotate rapidly in the reverse direction. Serious personal injury could result if a hand or forearm were in the path of the rotating buckets.
12. During an electrical power shortage or failure, disconnect the main power switch and manually operate the pneumatic solenoid valve to close the abrasive flow.
13. An adequate Dust Collection System should be used to ensure a safe working environment.
14. After replacing parts make sure all tools used are removed from the machine. Be sure all bolts and nuts are tightened. The loose connection of a rotating part could cause the part to fly off with explosive force, causing serious damage to the equipment and possible injury to the operator.
15. If the system should malfunction during cycle, immediately depress the emergency stop.

PREVENTIVE MAINTENANCE

Routine inspection is the key to preventive maintenance. This assures that needed repairs are discovered while they are still minor. Here is a suggested maintenance checklist.

1. CHECK ALL LINERS IN THE BLAST WHEEL ASSEMBLY FOR WEAR

Liners should be kept in good shape to get the full effect of the blast from the wheel and to prevent extensive wear to the wheel and cabinet.

2. CHECK BLADES REGULARLY

Blade wear will eventually cause an "out of balance" condition in the Blast Wheel. When this occurs, replace Blades with a new, complete set.

3. CHECK AND REPLACE CONTROL CAGE AND IMPELLER WHEN NECESSARY

If the Control Cage or Impeller fingers become worn too thin or break, serious damage to the Blast Wheel could occur.

4. CHECK BLAST WHEEL FOR BALANCE AND NOISE

Running the Blast Wheel with the Blades removed will test for balance. A vibrating wheel indicates improper balance or possible motor bearing failure.

5. CHECK THE BLAST PATTERN PERIODICALLY

If improperly directed, the blast pattern will cause an increase in blast time as well as abnormal wear on the equipment. The Blast pattern should always be checked after Blade replacement or any change in abrasive being used.

6. CHECK FANS AND MOTORS TO INSURE CORRECT ROTATION

Improper rotation could cause a loss in power or severe damage to motor or machine. Keep motors as free of oil, dust, dirt, water and chemicals as possible.

7. CHECK SCREENS

A hole in the abrasive screen could allow large material to recirculate and reach the Blast Wheel, causing severe damage. Keeping screens clean and free of debris will insure constant flow of abrasive through the machine.

8. CHECK GEAR DRIVES AND CONVEYOR DRIVES

All drives should have proper alignment and tension. Check for wear on sprockets, sheaves, belts, chains and pulleys.

9. CHECK SEPARATOR AIR FLOW REGULARLY

This is done by inspecting the abrasive. If it is dirty or dusty, increase the air. Dirt and dust allowed to build up in the abrasive will use up power in the Blast Wheel causing a decrease in cleaning quality.

10. CHECK ELEVATOR FOR PROPER OPERATION

Replace belts when worn and/or frayed or when stretched to point where belt will not "take up" or will not track. Replace buckets when cracked or worn where 60% capacity cannot be held.

11. CHECK ELECTRICS

Check all electrical connections periodically. Inspect button controls for proper operation.

12. CHECK DUST COLLECTOR

Inspect fan, blower, duct work, housing and filters regularly. Improper operation of the dust collector causes a buildup of dust on the working parts of the machine and could cause work environment hazards. Refuse from the dust collector should be inspected periodically for any traces of good usable abrasive. The dust collector should keep the machine dustless but should not draw out any usable abrasives.

13. BEARING LUBRICATION

All bearings in this equipment, with the exception of the motor bearings, are "Lubricated for Life". They should never require lubrication because of the low speed applications. Excess lubricant can cause abrasive contamination in the bearing and result in premature bearing failure.

MALFUNCTION**CAUSE****SUGGESTED REMEDY**

Excessive
Vibration

1. Unevenly worn blades.
2. Chipped or broken Blades.
3. Improperly mounted Blast Wheel.

1. Replace Blades with a new complete set.
2. Usually caused by abrasive rebound action. Replace Blades with complete new set. If frequent chipping or breakage is noted, your abrasive mixture may be too large for your needs. A small size mixture could be more economical and just as effective.
3. Blast wheel unit should not wobble or vibrate excessively. Unit should be tightened down evenly. If Blast Wheel Unit develops severe leakage or wear holes in Housing, unit may need replacement.

Excessive Noise

1. Improper clearance between the rotating parts.
2. Abrasive size.
3. Loose bolts or set screws.
4. Defective bearing.

1. Check alignment and mounting of rotating parts. Parts should not be allowed to knock against each other during rotation.
2. Be sure to use the abrasive mixture that best meets your needs, provides good blast coverage, quieter operation, and more efficient cleaning or shot peening.
3. Check base plates, motor bearings, housings and sheaves. Make certain all components are firmly secured. Check belt tension.
4. Check **ALL** bearings (motor & drive), a smooth free rotation should exist. Replace worn or defective bearings. Lubricate motor bearings if necessary. **DO NOT OVER-LUBRICATE.**

MALFUNCTION

Increased Cleaning Time

(A) Reduced efficiency of equipment

(B) Denotes a malfunction which, even though it permits production to continue, it might eventually cause serious machine damage.

CAUSE

1. Improper abrasive feed to Blast Wheel.

2. Loss of directional control of the Blast Pattern. This will cause abrasive to strike sections of the Blast chamber rather than the work to be blasted, increased cleaning time, wear and maintenance.

SUGGESTED REMEDY

1. If Ammeter indicates a lower ampere reading than the normal full load rating:

(a) Check Storage Hopper and add abrasive if level is low.

(b) Check abrasive for dirt or other contaminants which should have been removed by the separator.

(c) Check separator adjustment.

(d) Check feed lines for obstructions that could reduce abrasive flow through the Feed Spout or Abrasive Valve. Clean or blow out if necessary.

(e) Check Impeller for wear. Replace if necessary.

(f) Check Motor and Blast Wheel rotation for proper operation.

(g) Make sure wheel is not overloaded with more abrasive than it can handle. Check and adjust the Abrasive Valve accordingly.

(h) Check screens for any accumulation of objects or debris that could disrupt the cycle of abrasive flow.

2. Conduct an accurate Blast Pattern Test. Check "Hot Spot" location and adjust Control Cage accordingly. (Hot Spot should be directed onto the work to be blasted at the most beneficial angle.) Inspect Control Cage and Impeller for wear. Replace if necessary.

<u>MALFUNCTION</u>	<u>CAUSE</u>	<u>SUGGESTED REMEDY</u>
Elevator Belt Slippage	1. Loose belt. 2. Worn sheaves or pulleys.	1. Check belt alignment and tension. Tighten if necessary. 2. Inspect and replace sheaves/pulleys when worn.
Elevator Motor Malfunction	1. Elevator is overloaded by too great an abrasive load causing motor to overload. 2. Belt hits against or rubs the Elevator Casing causing motor overload. 3. Trapped metal in Boot Section. Belt jams causing motor overload. 4. Belt tension too tight causing motor overload. 5. Bearing failure.	1. Make abrasive additions slowly. Be sure Elevator is running <u>before</u> adding abrasive or starting blast operation. Do not load equipment above rated capacity. 2. Check belt alignment. Belt should be centered on pulley/sheave. 3. Clean out Boot Section and screens. 4. Loosen belt and realign. 5. Check motor bearings for wear. Lubricate when needed.

<u>MALFUNCTION</u>	<u>CAUSE</u>	<u>SUGGESTED REMEDY</u>
Fuses Blow Out	Could be loose in fuse holder, slightly undersized or overloaded.	Check fuse connections. Check for grounded circuit, bare wire or poorly taped joints.
Push Button Stuck	Abrasive dust or dirt. Broken spring.	Remove button cover and blow out. Check contacts for dirt, broken or out of place springs, or improper alignment.
Ammeter Malfunction	Dirty or bent point. Ammeter is burned out.	If careful, Ammeter may be brushed out with a fine brush. Reseal case tightly. Carefully adjust points if necessary. If pointer is bent or meter is burned out, meter will have to be replaced.
Motor Will Not Start	1. No power to starter. 2. Coil is not wired for proper voltage. 3. Overload relay tripped. 4. Coil is bad. 5. Contacts on starter or buttons are bad.	1. Check electrical source for proper hookup. 2. Check and rewire if necessary. 3. Reset relay and check for cause. 4. Replace or repair. 5. Replace or repair.

<u>MALFUNCTION</u>	<u>CAUSE</u>	<u>SUGGESTED REMEDY</u>
Stalled Elevator	1. Worn elevator buckets.	1. If buckets are worn, they will no longer carry their predetermined load. Replace buckets when necessary. If belt shows considerable wear, replace complete assembly.
	2. Clogged screen.	2. Clean screens regularly. When screens become clogged, abrasive backs up into the Elevator causing a jammed condition. Inspect and replace screens when worn.
	3. Storage Hopper overflows.	3. If too much abrasive has been added to the system or an accumulation of dust and contaminants has been delivered to the Storage Hopper, it will fill above capacity level causing abrasive material to back up and jam. Drain off excessive abrasive and check abrasive for excessive dust and dirt accumulation. If dust and dirt are present, check Separator for proper operation and adjustment. Storage Hopper should be maintained at 3/4 full.
	4. Abrasive added too fast.	4. When making abrasive additions, especially when machine is in operation, do not overload elevator by adding large quantities of abrasive in a short period of time.
Elevator Belt Breakage	1. Belt tension is too tight.	1. Check belt for proper alignment and tension. Belt should be tight but care should be taken not to add too much stress.
	2. Worn belt.	2. A badly worn belt may suddenly fail. Inspect belt and replace when necessary.
	3. Foreign objects in boot could cause jamming.	3. Sudden jams should be avoided. Keep elevator boot clear of working parts or tramp metal.

<u>MALFUNCTION</u>	<u>CAUSE</u>	<u>SUGGESTED REMEDY</u>
Excessive Wear on Liners	1. Improper Control Cage setting.	1. Abrasive is being directed onto liners instead of Work. Readjust Control Cage and make a Blast Pattern Test.
Increased Operating Costs	2. Worn Control Cage.	2. Good directional control is lost by using a worn Cage. Control Cage should be inspected and replaced on a regular basis.
Abrasive Usage	1. Improper sealing.	1. Maintain and replace all worn seals in the Blast Wheel Housing and Feed Spout. Check Chamber Seals and replace if necessary.
	2. Worn Liners.	2. Inspect Liners on a daily basis and replace when necessary. If Liners are allowed to become too worn, abrasive wear or damage could occur to the Blast Wheel Housing, Blast Chamber or Blast Doors allowing abrasive to leak out.
Insufficient Air Pressure	1. Faulty Air Cylinder.	1. Check and replace Air Cylinder if necessary.
	2. Faulty Air Solenoid.	2. Check and repair or replace.
	3. Faulty Air Lines.	3. Air hoses could become clogged causing air flow to be obstructed. Blow hoses and clean lines. Check for any leaks. Repair or replace if necessary.

MALFUNCTION

Variable
Exposure Time
and Material
Finish

CAUSE

1. Worn or loose belt.
2. Worn sheave.
3. Worn bearings.
4. Faulty Air Cylinder.

SUGGESTED REMEDY

1. Check belts for wear and tension. Replace if necessary.
2. Check sheaves and replace if necessary.
3. Check bearings for wear and replace if necessary.
4. Check Air Cylinders for proper operation and pressure. Replace or repair if necessary.