



# Stiffener Retrofit Kit for Centrifugal Fans

Installation Manual

PNEG-1961

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GSI GROUP



PNEG-1961



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### Safety Guidelines

This manual contains information that is important for you, the owner/operator, to know and understand. This information relates to protecting **personal safety** and **preventing equipment problems**. It is the responsibility of the owner/operator to inform anyone operating or working in the area of this equipment of these safety guidelines. To help you recognize this information, we use the symbols that are defined below. Please read the manual and pay attention to these sections. Failure to read this manual and its safety instructions is a misuse of the equipment and may lead to serious injury or death.



**This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.**



**DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION**, used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



**NOTICE** is used to address practices not related to personal injury.

## General Safety Statement

Our foremost concern is your safety and the safety of others associated with grain handling equipment. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, you are responsible to know what requirements, hazards, and precautions exist and inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment, which may produce a very dangerous situation, where **SERIOUS INJURY** or **DEATH** may occur.

You should consider the location of the bin site relative to power line locations or electrical transmission equipment. Contact your local power company to review your installation plan or for information concerning required equipment clearance. Clearance of portable equipment that may be taken to the bin site should also be reviewed and considered. Any electrical control equipment in contact with the bin should be properly grounded and installed in accordance with National Electric Code provisions and other local or national codes.

This product is intended for the use of grain storage only. Any other use is a misuse of the product.



This product has sharp edges, which may cause serious injury. To avoid injury, handle sharp edges with caution and always use proper protective clothing and equipment.

Sidewall bundles or sheets must be stored in a safe manner. The safest method of storing sidewall bundles is laying horizontally with the arch of the sheet upward, like a dome. Sidewall sheets stored on edge must be secured so that they cannot fall over and cause injury. Use care when handling and moving sidewall bundles.

Personnel operating or working around equipment should read this manual. This manual must be delivered with equipment to its owner. Failure to read this manual and its safety instructions is a misuse of the equipment.

## 1. Safety

### Safety Instructions

Our foremost concern is your safety and the safety of others associated with this equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards, and precautions exist, and to inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment. Such alterations may produce a very dangerous situation where **SERIOUS INJURY** or **DEATH** may occur.

This equipment shall be installed in accordance with the current installation codes and applicable regulations which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

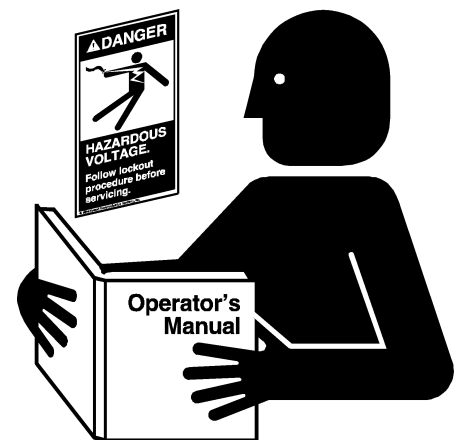
#### Follow Safety Instructions

Carefully read all safety messages in this manual and safety signs on your machine. Keep signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from the manufacturer.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machinery in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

If you do not understand any part of this manual or need assistance, contact your dealer.



**Read and Understand Manual**

#### Practice Safe Maintenance

Understand service procedures before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is in operation. Keep hands, feet, and clothing away from rotating parts.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any built-up grease, oil, and debris.



**Maintain Equipment and Work Area**

## Install and Operate Electrical Equipment Properly

Electrical controls should be installed by a qualified electrician and must meet the standards set by the National Electrical Code and all local and state codes.

Disconnect and lock out all power sources before installing wires/cables or servicing equipment.



**Electric Shock Hazard**

## Install and Operate Gas-Fired Equipment Properly

Fuel supply should be installed by a qualified gas technician and must meet local and state codes for gaseous fuel supplies.

Disconnect and lock out all fuel sources before servicing equipment.



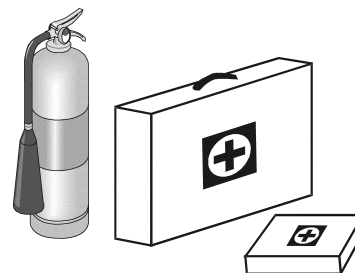
**Explosive Gases**

## Prepare for Emergencies

Be prepared if fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



**Keep Emergency Equipment Quickly Accessible**

# 1. Safety

## Wear Protective Clothing

Ear plugs or muffs should be worn at all times to protect ears from high noise levels.

Wear close-fitting clothing and safety equipment appropriate to the job.

Remove all jewelry.

Tie long hair up and back.

Wear safety glasses at all times to protect eyes from debris.

Wear gloves to protect your hands from sharp edges on plastic or steel parts.

Wear steel-toed boots to help protect your feet from falling debris. Tuck in any loose or dangling shoestrings.

A respirator may be needed to prevent breathing potentially toxic fumes and dust.

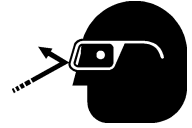
Wear a hard hat to help protect your head.

Wear appropriate fall protection equipment when working at elevations greater than six feet (6').

**Hearing Protection**



**Eye Protection**



**Gloves**



**Steel-Toed Boots**



**Respirator**



**Hard Hat**



**Fall Protection**





### 3500 RPM Centrifugal Fans

Model	HP	Wheel Diameter	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0
CHS-3	3	15"	3350	2900	2450	2150	1750	950						
CHS-5	5	15"	4900	4450	4000	3500	2900	1500						
CHS-7.5	7.5	18"	5000	4700	4500	4200	3900	3700	3250	2300				
CHS-10	10	18"	7250	6900	6300	5800	5450	4900	4300	3000				
CHS-15	15	18"	10100	9500	9000	8400	7900	7400	6600	4600				
CHS-20	20	22"	10900	10400	9850	9350	8800	8100	7550	6800	6500	5900	4000	
CHS-30	30	22"	14500	13750	13100	12350	11500	10900	10400	9800	9100	8300	6000	
CHS-40	40	22"	19000	18400	17750	17125	16500	15750	15000	14125	13125	12000	9000	
CHS-50	50	24"	22600	21100	20500	19750	19000	18400	17600	16800	16000	15000	13500	11500

### 1750 RPM Centrifugal Fans

Model	HP	Wheel Diameter	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0
CF-3	3	24"	6000	5500	5000	4500	4000	2500						
CF-5	5	24"	9500	8950	7750	6750	6100	5350						
CF-7.5	7.5	24"	12200	11600	10800	10000	9100	8000						
CF-10	10	27"	16050	15000	14150	13300	12400	11350	10000	7800	3400			
CF-15	15	27"	18200	17100	16250	15300	14250	12700	11750	11000	8750			
CF-20	20	30"	23700	22850	21850	20600	19550	18600	17200	15850	14600			
CF-25	25	30"	24000	23750	22750	21750	21000	20000	19000	17750	16000	14000		
CF-30	30	33"	28100	26900	25600	24600	23600	22500	21000	20100	19700	17800	16000	11500
CF-40	40	33"	32750	31750	30750	29750	28750	27750	26750	25750	24250	22750	20250	15000
CF-50	50	33"	36680	35560	34440	33320	32200	31080	29960	28840	27160	25480	22680	16800
CF-40*	40	33"	47400	45700	43700	41200	39100	37200	34400	31700	29200			
CF-50*	50	33"	48000	47500	45500	43500	42000	40000	38000	35500	32000	28000		

\* = Double inlet fan

### 3. Installation Instructions

The Stiffener Retrofit Kit is for Centrifugal Fans that are showing signs of significant vibration of the inlet face. In order to install the retrofit kit, you will need a tape measure, drill, 3/8" drill bit, impact driver with 1/2" and 9/16" socket and a 1/2" wrench.



**Disconnect and lock out all power sources before servicing equipment.**

### Identifying the Fan Model

Use the chart [below](#) to identify the fan model and the correct stiffener package for the fan.

**Inlet Face Stiffener Retrofit Kits for Centrifugal Fans**

HP	RPM	Type	Retrofit Kit #
3	1750	Standard	C-8847
5	1750	Standard	C-8848
7.5	1750	Standard	C-8848
10	1750	Standard	C-8849
15	1750	Standard	C-8849
20	1750	Standard	C-8850
25	1750	Standard	C-8850
30	1750	Standard	C-8851
40	1750	Standard	C-8851
50	1750	Standard	C-8851
3	1750	Down Blast	C-8852
5	1750	Down Blast	C-8853
7.5	1750	Down Blast	C-8853
10	1750	Down Blast	C-8854
15	1750	Down Blast	C-8853
20	1750	Down Blast	C-8855
25	1750	Down Blast	C-8855
30	1750	Down Blast	C-8856
40	1750	Down Blast	C-8856
50	1750	Down Blast	C-8856
3	3450	Standard	C-8857
5	3450	Standard	C-8857
7.5	3450	Standard	C-8858
10	3450	Standard	C-8858
15	3450	Standard	C-8858
20	3450	Standard	C-8847
30	3450	Standard	C-8847
40	3450	Standard	C-8847
50	3450	Standard	C-8848
3	3450	Down Blast	C-8859
30	3450	Down Blast	C-8852
40	3450	Down Blast	C-8852
50	3450	Down Blast	C-8860

## Removing the Grill Guard and Inlet Cone

1. Use an impact driver and 9/16" socket to loosen the flange nuts and washers from the grill guard.
2. Remove the grill guard and inlet cone.

**NOTE:** *The inlet cone must be removed before the holes can be drilled to mount the face stiffeners.*

3. Locate the drawing in these instructions that corresponds to the retrofit kit for the fan.
4. Drill the holes through the inlet face according to the [Figures 4A-4N on Pages 13-16](#).
  - a. Choice 1: The holes can be measured and drilled individually.
  - b. Choice 2: Clamp the stiffener to the inlet face and use the stiffener as a template.

5. Attach the stiffeners to the inlet face using the provided hardware.

**NOTE:** *The heads of the bolts must be positioned on the outside of the fan and the flange nuts on the inside.*

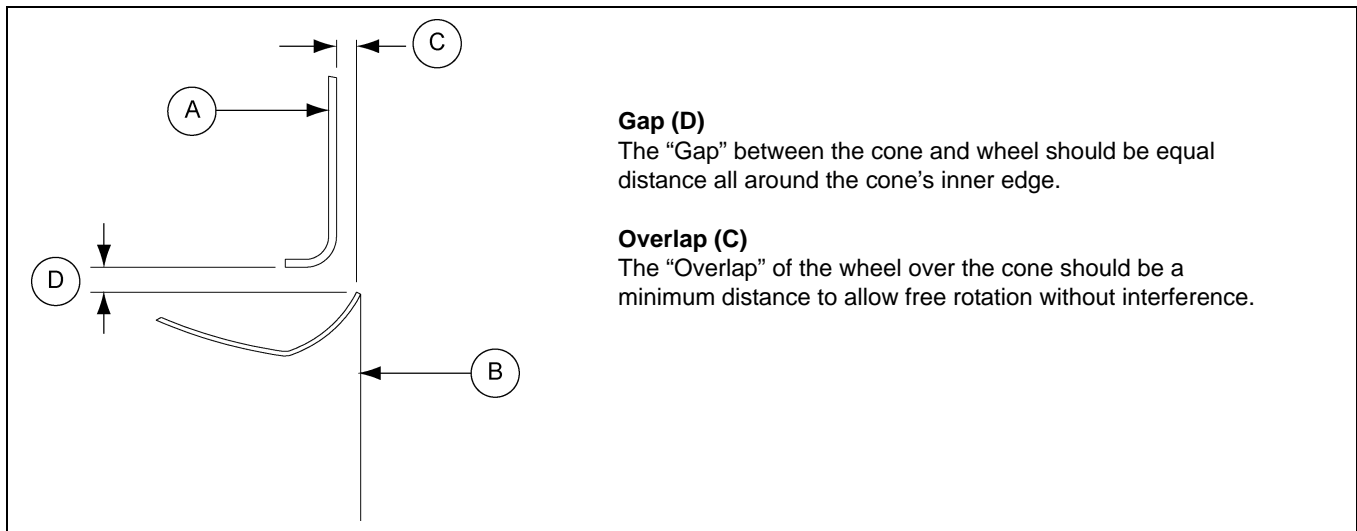
## Re-Installing the Inlet Cone and Grill Guard

**IMPORTANT:** *It is very important to use the provided instructions for re-installing the inlet cone to ensure there is a proper gap between the inlet cone and blade assembly. Failure to do so will result in poor fan performance and possibly interference issues between the inlet cone and blade.*

1. Install the inlet cone by alternating the bolts in every other hole.

**NOTE:** *Make sure it is positioned with the proper clearance.*

2. Install the grill guard using the holes not used in the inlet cone.



**Figure 3A** *Inlet Cone to Wheel Clearances*

Ref #	Description
A	Wheel Front Plate
B	Inlet Cone
C	Overlap
D	Gap

## Re-Installing the Inlet Cone and Grill Guard (Continued)

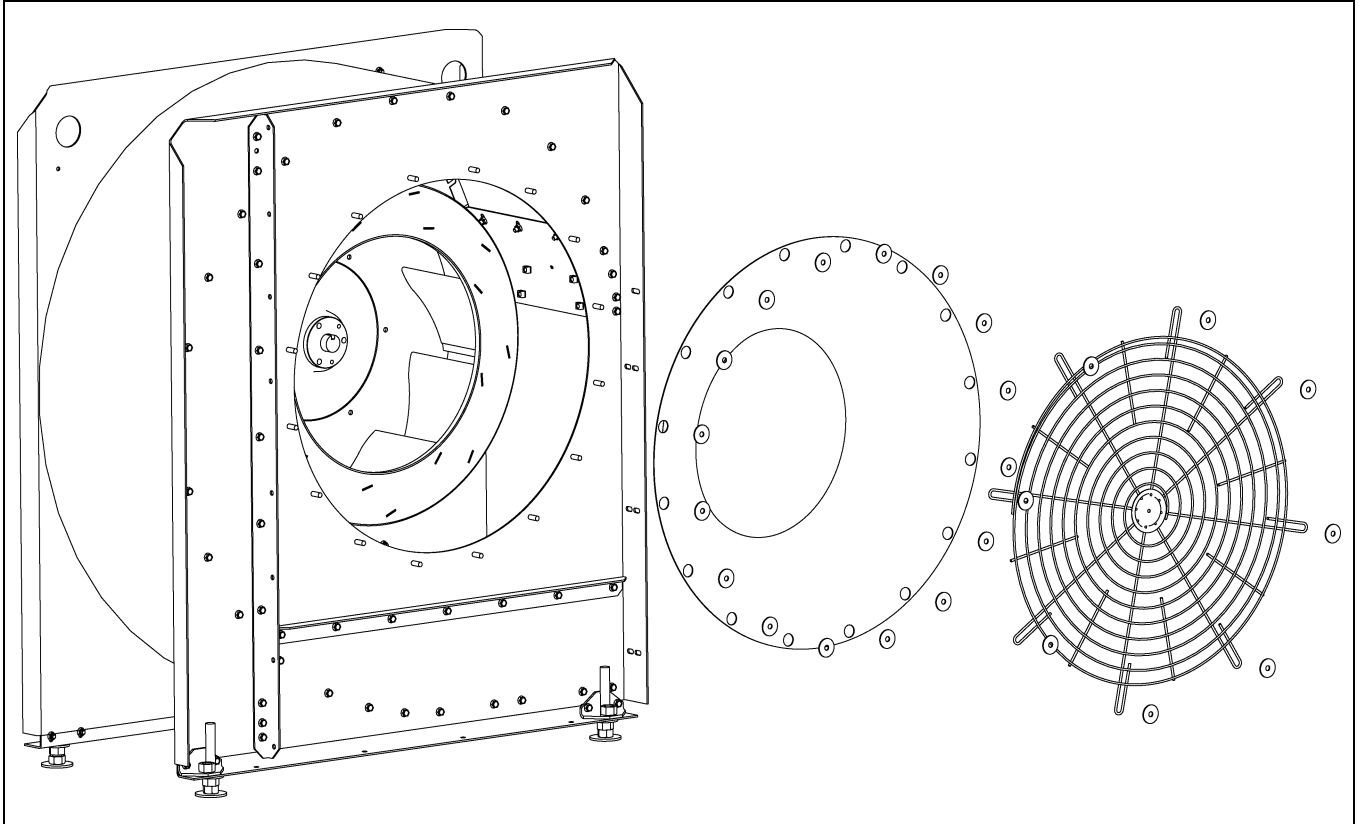
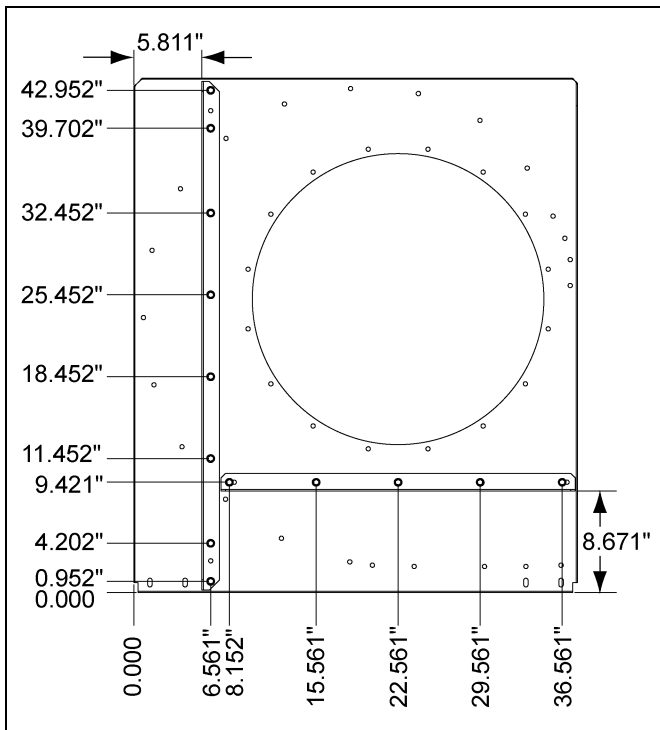


Figure 3B Centrifugal Fan

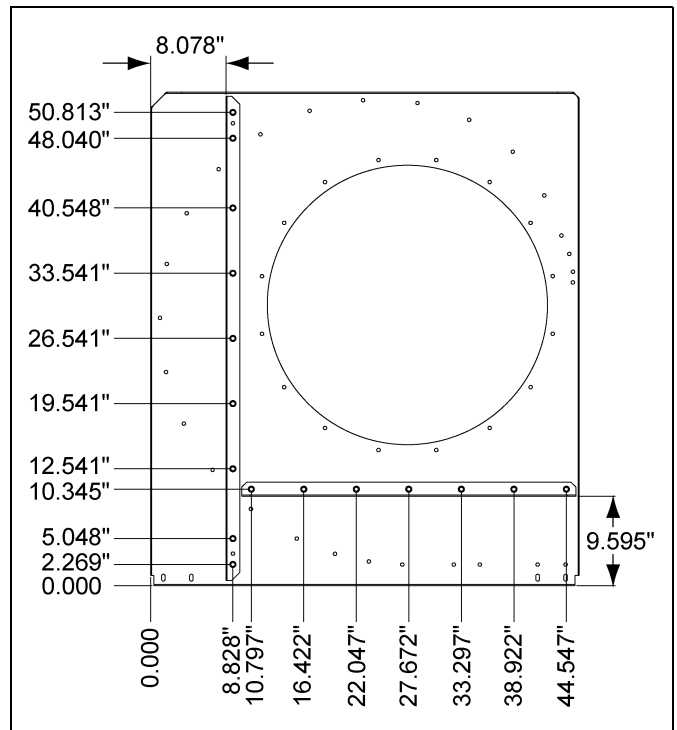
### Testing the Fan

1. Start the fan.
2. Make sure the fan vibration has been reduced.
3. If there is still a severe vibration issue, used the attached troubleshooting matrix [on Page 18](#) to isolate the problem.

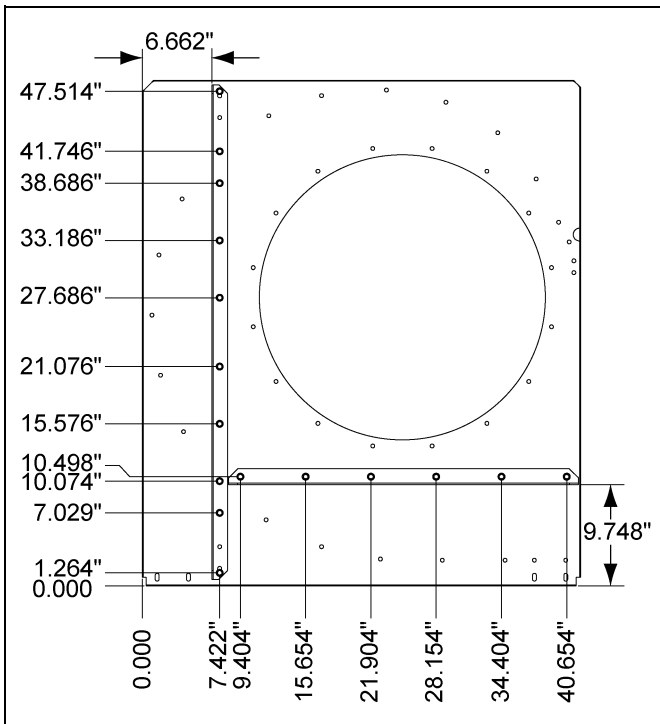
## 4. Reference Drawings for Location of the Stiffeners



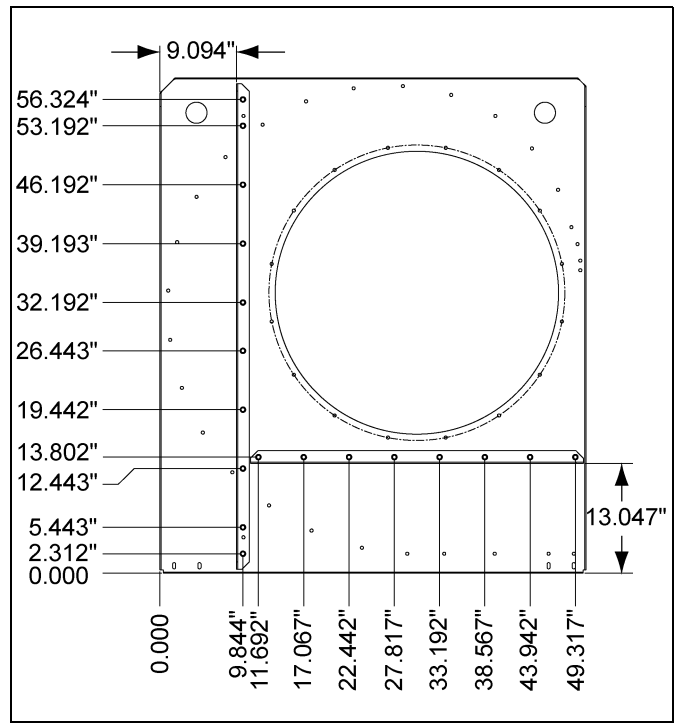
**Figure 4A** Retrofit Kit (C-8847)



**Figure 4C** Retrofit Kit (C-8849)



**Figure 4B** Retrofit Kit (C-8848)



**Figure 4D** Retrofit Kit (C-8850)

**NOTE:** Drill 3/8" diameter holes in specified locations and bolt stiffeners to inlet face using the provided hardware.

## 4. Reference Drawings for Location of the Stiffeners

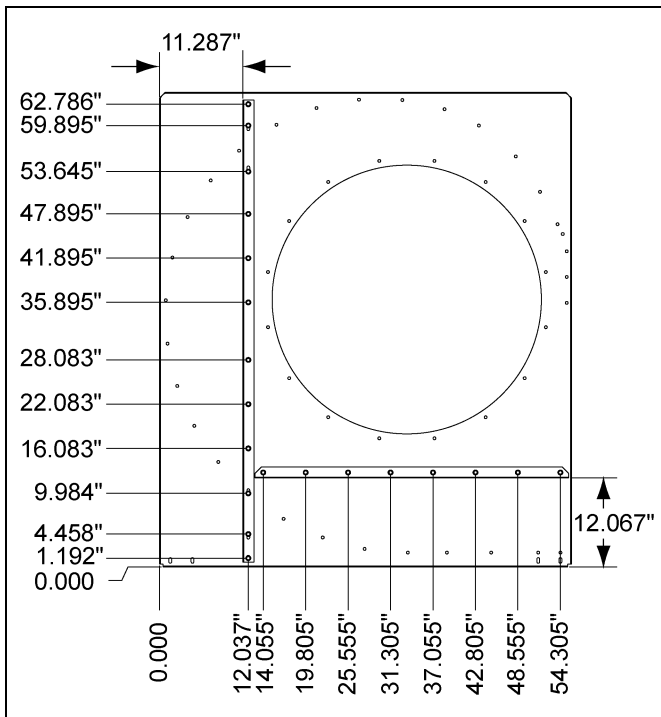


Figure 4E Retrofit Kit (C-8851)

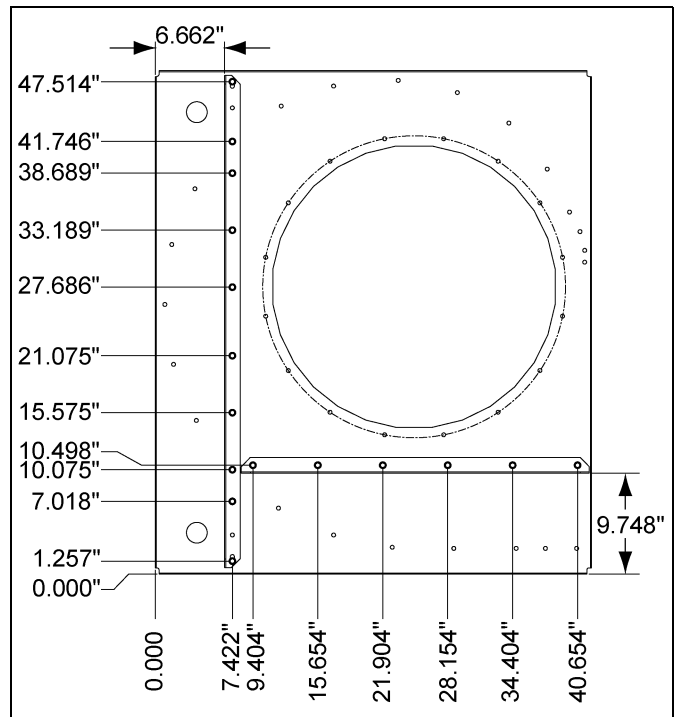


Figure 4G Retrofit Kit (C-8853)

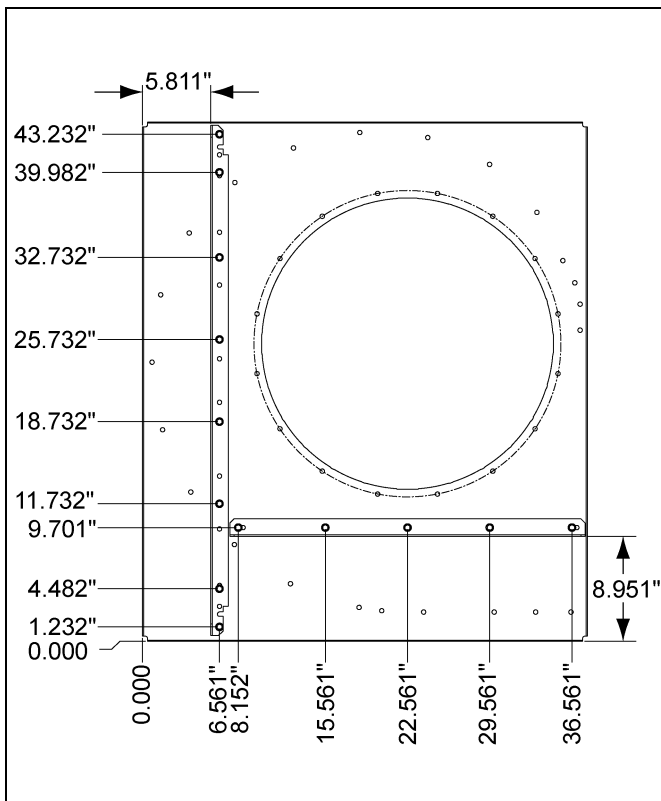


Figure 4F Retrofit Kit (C-8852)

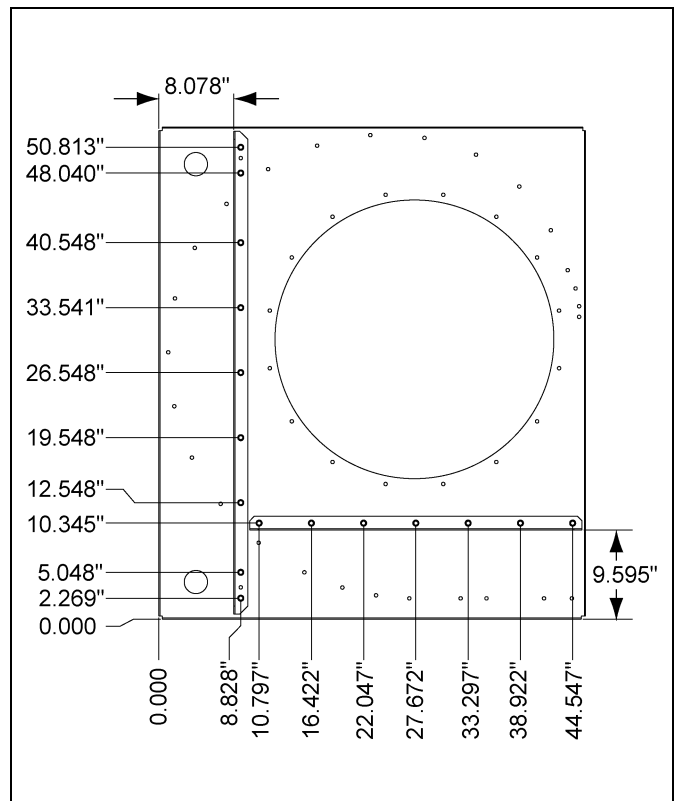


Figure 4H Retrofit Kit (C-8854)

**NOTE:** Drill 3/8" diameter holes in specified locations and bolt stiffeners to inlet face using the provided hardware.

## 4. Reference Drawings for Location of the Stiffeners

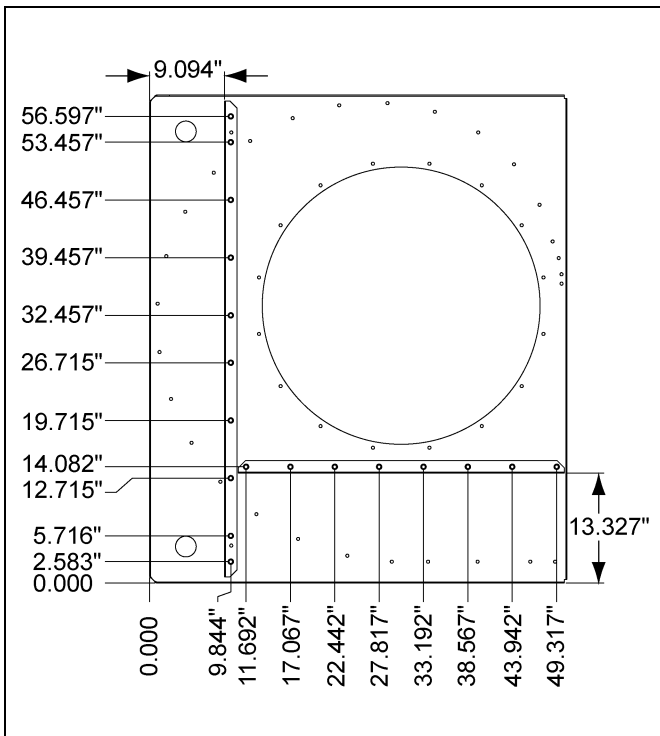


Figure 4I Retrofit Kit (C-8855)

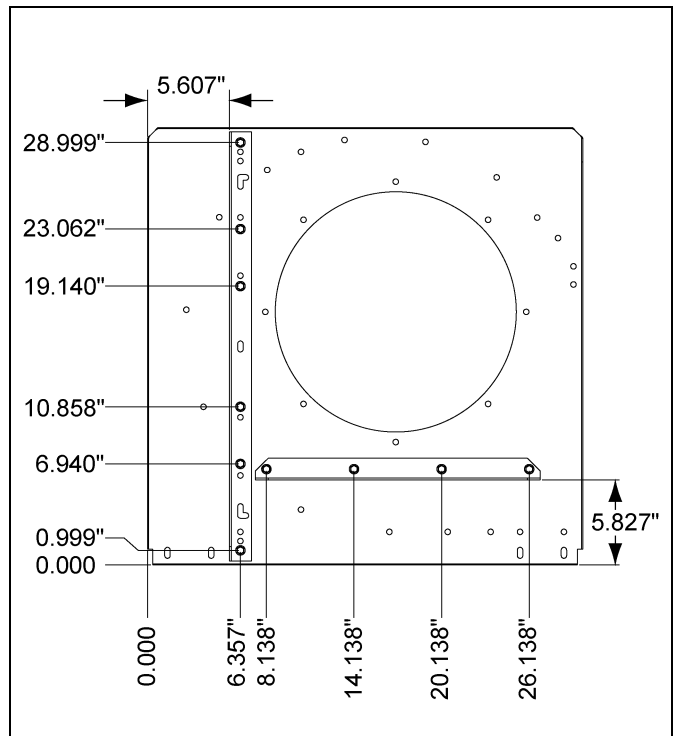


Figure 4K Retrofit Kit (C-8857)

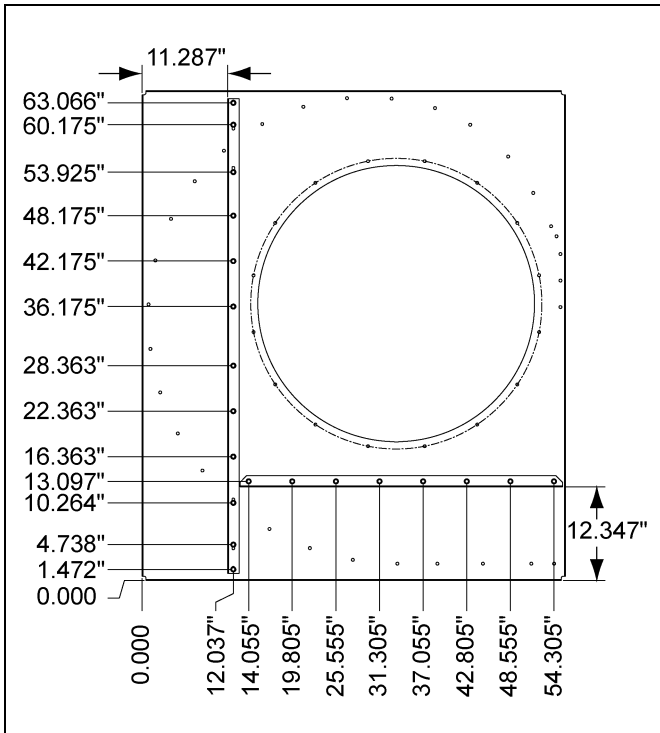


Figure 4J Retrofit Kit (C-8856)

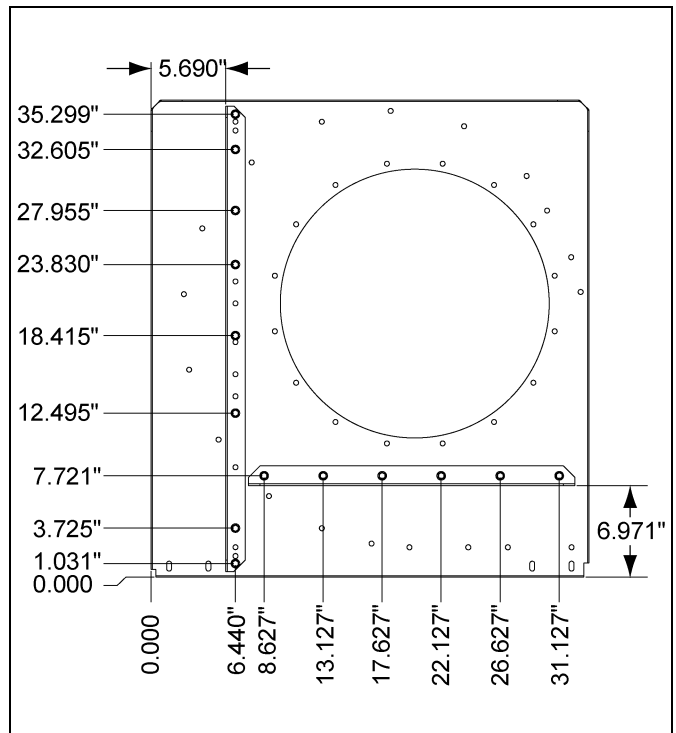


Figure 4L Retrofit Kit (C-8858)

**NOTE:** Drill 3/8" diameter holes in specified locations and bolt stiffeners to inlet face using the provided hardware.

## 4. Reference Drawings for Location of the Stiffeners

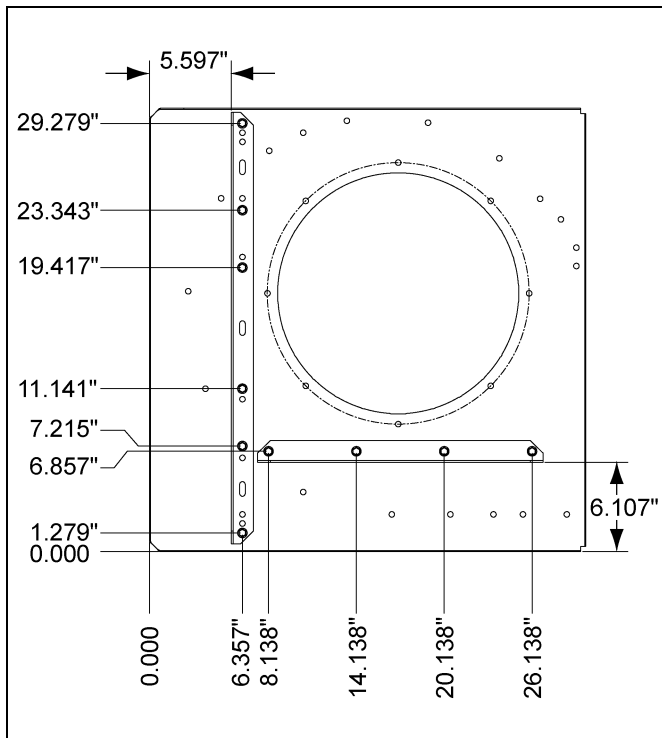


Figure 4M Retrofit Kit (C-8859)

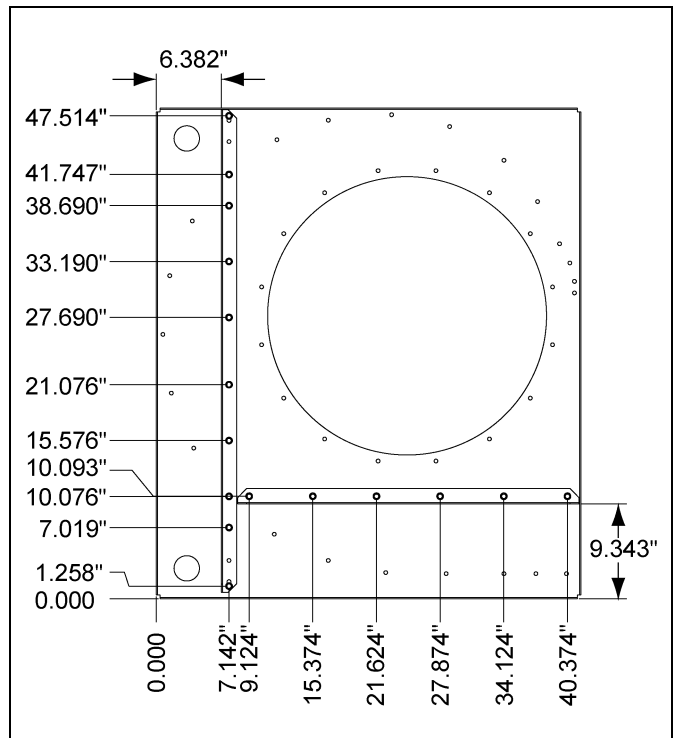


Figure 4N Retrofit Kit (C-8860)

**NOTE:** Drill 3/8" diameter holes in specified locations and bolt stiffeners to inlet face using the provided hardware.

### Torque Reference Table

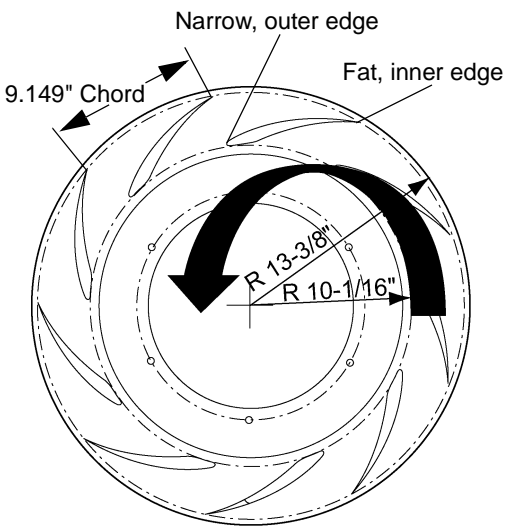
Bushing	Torque (in.-lbs.)	Torque (ft.-lbs.)
P1	192	16
P2	192	16
B	192	16
Q1	348	29
Q2	348	29
R1	348	29
R2	348	29
S1	840	70
S2	840	70
HQ	90	7-1/2



## 5. Centrifugal Stiffener Retrofit Kits

Stiffener Package	Part #			Description	Qty	
	Retrofit Kit	Short Stiffener	Long Stiffener		S-6606	S-3611
1	C-8847	401-5078-1	401-5077-3	Inlet Face Stiffener Retrofit Kit: 22" Wheel Standard	13	13
2	C-8848	401-5057-5	401-5056-7	Inlet Face Stiffener Retrofit Kit: 24" Wheel Standard	16	16
3	C-8849	401-4987-4	401-4988-2	Inlet Face Stiffener Retrofit Kit: 27" Wheel Standard	16	16
4	C-8850	401-5038-8	401-5037-7	Inlet Face Stiffener Retrofit Kit: 30" Wheel Standard	18	18
5	C-8851	401-5159-9	C-8123	Inlet Face Stiffener Retrofit Kit: 33" Wheel Standard	20	20
6	C-8852	401-5078-1	C-8189	Inlet Face Stiffener Retrofit Kit: 22" Wheel Down Blast	13	13
7	C-8853	401-5057-5	401-5056-7	Inlet Face Stiffener Retrofit Kit: 24" Wheel Down Blast	16	16
8	C-8854	401-4987-4	401-4988-2	Inlet Face Stiffener Retrofit Kit: 27" Wheel Down Blast	16	16
9	C-8855	401-5038-8	401-5037-7	Inlet Face Stiffener Retrofit Kit: 30" Wheel Down Blast	18	18
10	C-8856	401-5159-9	C-8123	Inlet Face Stiffener Retrofit Kit: 33" Wheel Down Blast	20	20
11	C-8857	401-5412-2	C-8220	Inlet Face Stiffener Retrofit Kit: 15" Wheel Standard	10	10
12	C-8858	401-5220-9	401-5218-3	Inlet Face Stiffener Retrofit Kit: 18" Wheel Standard	14	14
13	C-8859	401-5412-2	401-5410-6	Inlet Face Stiffener Retrofit Kit: 15" Wheel Downblast	10	10
14	C-8860	401-5057-5	401-5056-7	Inlet Face Stiffener Retrofit Kit: 50 HP, 3500R, Downblast	16	16

## 6. Troubleshooting

Potential Cause	How to Check?	How to Correct?
<p>Aerodynamic vibration - reversed rotation.</p>	<p>A wheel spinning the wrong way causes turbulence and much higher noise and vibration at the fan inlet. If one fan is much louder than the other or has lots of grill guard flutter, turn the fan OFF and let it coast to a stop. Watch the wheel as it spins down to a stop. The wheel rotation should always be with the fat, inner edge being the leading edge (the edge cutting into the air). If the outside edge is the leading edge, the fan is rotating in reverse.</p>  <p>Correct rotation on fan wheel shown is counterclockwise.</p>	<p>De-energize the fan and lock out/tag out the power. For 3 phase fans, open the weatherhead or control panel and switch any two (2) phases. For single phase fans, group the leads according to the name plate to correct the rotation on the output side of the contactor. Re-energize the fan and turn it ON and verify the rotation of the wheel now has the inner, fat edge leading into the air first.</p>
<p>Mech. Vibe: Rubbing cone/wheel.</p>	<p>De-energize and lock out/tag out power to fan. Remove grill guard. If any studs come loose, grab them with vice-grips to prevent them from falling in fan during work. Visually and manually inspect the interior edge of the cone. If there has been rubbing, you should see a rubbed/scorched area on the interior edge of the cone. Spin the wheel by hand gently and listen for any rubs.</p>	<p>Remove the bushing bolts and replace them in the threaded jacking holes and use an impact to gradually tighten them and push the bushing out of the hub. A gear puller may be required. With the bushing loosely in the hub, pull the wheel outwards until the cone interior edge is inside the wheel by 1/4" to 1/2". The bushing will be marked for its type (Ex. P1). Find the bushing type and get the required tightening torque from the table <a href="#">on Page 16</a>. Clean the bushing, hub and motor shaft with a no-residue cleaner like brake parts cleaner and wait for it to dry. Tighten the bushing bolts gradually at first and then to the correct torque with a clicker torque wrench, making three (3) final tightening passes around the bushing with the wrench.</p>

Potential Cause	How to Check?	How to Correct?
<p>Mech. Vibe: Unbalanced wheel.</p>	<ol style="list-style-type: none"> <li>1. <b>Quick Check:</b> De-energize and lock out/tag out power to fan. Remove grill guard. If any studs come loose, grab them with vice-grips to prevent them from falling in fan during work. Temporarily block the outlet of the fan with a piece of cardboard to prevent airflow through the bin from rotating the wheel. Mark the bottom dead center of the wheel with a white or yellow marker. Rotate the wheel 90° until the mark is at the 3:00 or 6:00 clock position. Release the wheel. If it rotates back down to the marked spot, the wheel has a heavy spot and may need re-balancing.</li> <li>2. <b>Precise Check 1:</b> Remove wheel and take to balancing shop for unbalance check.</li> <li>3. <b>Precise Check 2:</b> Use a vibration meter and place it on the top of the motor as close to the wheel as possible. The factory maximum reading is 0.30 inch/second (velocity).</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean wheel. Dirt and ice can cake on a wheel and cause very large unbalances from a very slight weight.</li> <li>2. Have wheel balanced locally. This may be an option in some areas.</li> <li>3. Replace wheel.</li> </ol>
<p>Mech. Vibe: Poor centering of wheel on motor shaft.</p>	<p>No clear field diagnostic method identified at this time, but there are several cases where wheels have been removed and re-mounted and drastically reduced vibration.</p>	<p>De-energize the fan and lock out/tag out the power. Remove the bushing bolts and replace them in the threaded jacking holes and use an impact to gradually tighten them and push the bushing out of the hub. A gear puller may be required. With the bushing loosely in the hub, pull the wheel outwards until the cone interior edge is inside the wheel by 1/4" to 1/2". The bushing will be marked for its type (Ex. P1). Find the bushing type and get the required tightening torque from the table <a href="#">on Page 16</a>. Clean the bushing, hub and motor shaft with a no-residue cleaner like brake parts cleaner, and wait for it to dry. Tighten the bushing bolts gradually at first and then to the correct torque with a clicker torque wrench, making three (3) final tightening passes around the bushing with the wrench.</p>

## 6. Troubleshooting

Potential Cause	How to Check?	How to Correct?
<p>Aerodynamic Vibe: High pressure - above inflection point on fan performance curve.</p>	<ol style="list-style-type: none"> <li><b>Quick Check:</b> Turn fan ON and verify that the vibration is present. Take a sturdy piece of cardboard or plywood/OSB and gradually cover a portion of the fan inlet. Be careful about pinched fingers, as the suction will pull the board in strongly. Move the board down slowly and cover more and more of the inlet. If the vibration and objectionable noise decrease or cease entirely from reducing the airflow and static pressure, it could be a pressure issue.</li> <li><b>Precise Check:</b> You must have a manometer for this method. Drill a hole in the transition as far from the fan as possible. Insert the plastic tube or fitting of the manometer in the hole and turn the fan ON. Check the static pressure as the fan is running alone and again with all other fans running. If the vibration is not seen with only one fan running, or the pressure on either reading is above the rated fan pressure shown in the GSI literature for that fan (attached), high pressure is a likely cause.</li> </ol>	<p><b>Quick Fix 1:</b> Using the wheel removal/re-mounting procedure above, pull the wheel all the way out until the bushing is level with the end of the motor shaft and there is a large gap between the wheel and interior surface of the cone. This will reduce the static pressure generated by the fan and may prevent it from stalling.</p> <p><b>Quick Fix 2:</b> Empty the bin and verify that the floor air duct perforations are as clean and open as possible. Check for crusting on the grain, which can stop airflow and cause high pressure. Check the exhaust ducts or fans and make sure they are clean or working properly.</p> <p><b>Quick Fix 3:</b> Partially empty the bin to reduce the system resistance from the grain.</p>

## Limited Warranty — N.A. Grain Products

The GSI Group, LLC. ("GSI") warrants products which it manufactures, to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months from the date of shipment (or, if shipped by vessel, 14 months from the date of arrival at the port of discharge). If, in GSI's sole judgment, a product is found to have a defect in materials and/or workmanship, GSI will, at its own option and expense, repair or replace the product or refund the purchase price. This Limited Warranty is subject to extension and other terms as set forth below.

**Warranty Enhancements:** The warranty period for the following products is enhanced as shown below and is in lieu of (and not in addition to) the above stated warranty period. (Warranty Period is from date of shipment.)

	Product	Warranty Period
<b>Storage</b>	Grain Bin Structural Design • Sidewall, roof, doors, platforms and walkarounds • Flooring (when installed using GSI specified floor support system for that floor) • Hopper tanks (BFT, GHT, NCHT, and FCHT)	5 Years
<b>Conditioning</b>	Dryer Structural Design – (Tower, Portable and TopDry) • Includes (frame, portable dryer screens, ladders, access doors and platforms)	5 Years
	All other Dryer parts including: • Electrical (controls, sensors, switches and internal wiring)	2 Years
	All Non-PTO Driven Centrifugal and Axial Fans	3 Years
	Bullseye Controllers	2 Years
<b>Material Handling</b>	Bucket Elevators Structural Design	5 Years
	Towers Structural Design	5 Years
	Catwalks Structural Design	5 Years
	Accessories (stairs, ladders and platforms) Structural Design	5 Years

### Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH HEREIN; SPECIFICALLY, GSI DISCLAIMS ANY AND ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) ANY PRODUCT MANUFACTURED OR SOLD BY GSI, OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

The sole and exclusive remedy for any claimant is set forth in this Limited Warranty and shall not exceed the amount paid for the product purchased. This Warranty only covers the value of the warranted parts and equipment, and does not cover labor charges for removing or installing defective parts, shipping charges with respect to such parts, any applicable sales or other taxes, or any other charges or expenses not specified in this Warranty. GSI shall not be liable for any other direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. Expenses incurred by or on behalf of a claimant without prior written authorization from the GSI warranty department shall not be reimbursed. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor. Prior to installation, the end-user bears all responsibility to comply with federal, state and local codes which apply to the location and installation of the products.

This Limited Warranty extends solely to products sold by GSI and does not cover any parts, components or materials used in conjunction with the product, that are not sold by GSI. GSI assumes no responsibility for claims resulting from construction defects, unauthorized modifications, corrosion or other cosmetic issues caused by storage, application or environmental conditions. Modifications to products not specifically delineated in the manual accompanying the product at initial sale will void all warranties. This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained.

#### Notice Procedure:

In order to make a valid warranty claim a written notice of the claim must be submitted, using the RMA form, within 60 days of discovery of a warrantable nonconformance. The RMA form is found on the OneGSI portal.

#### Service Parts:

GSI warrants, subject to all other conditions described in this Warranty, Service Parts which it manufactures for a period of 12 months from the date of purchase unless specified in Enhancements above.

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.

G S I G R O U P



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