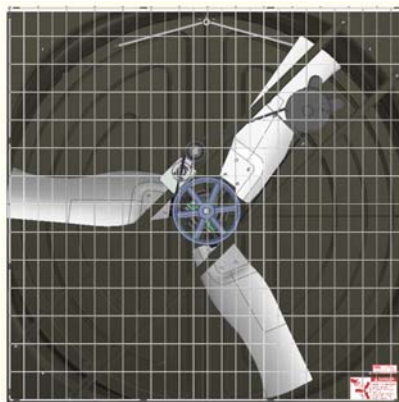
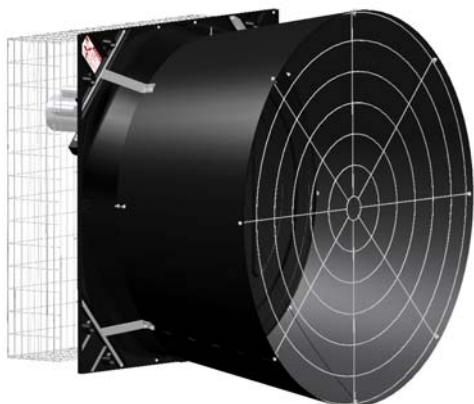




57" Endura® Fan Installation & Operator's Instruction Manual

Thank You The employees of CTB Inc. would like to thank you for your recent Chore-Time purchase. If a problem should arise, your Chore-Time distributor can supply the necessary information to help you.



Fan Part Numbers and Specifications

Fan Part No.	Bess Lab Test No.	Voltage	Phase	Hz	Nominal RPM	Amps	Starting Amps	Static Pressure at .10" w.c. [25 Pa]		Static Pressure at .15" w.c. [37.5 Pa]	
								CFM [cmh]	CFM/W [cmh/W]	CFM [cmh]	CFM/W [cmh/W]
53464-21 53464-21S	12615	230	1	60	542	6.9	36.0	30400 [51600]	20.4 [34.7]	28400 [48200]	18.1 [30.7]
53464-22 53464-22S	12614	230	1	60	543	5.4	27.5	27100 [46100]	23 [39.1]	25100 [42700]	20.1 [34.2]
53464-41 53464-41S	12616	230	3	60	534	4.8	40.0	30000 [51100]	20.9 [35.6]	27800 [47200]	18.1 [30.8]
53464-42 53464-42S	12619	230	3	60	539	4.1	40.0	26900 [45600]	23.3 [39.6]	24800 [42200]	20.4 [34.6]
53464-51 53464-51S	12617	230	3	50	527	5.2	45.0	29500 [50100]	20.8 [35.3]	27200 [46200]	18.1 [30.8]
53464-52 53464-52S	12618	230	3	50	534	4.7	45.0	26500 [45100]	22.9 [38.9]	24500 [41600]	20.1 [34.1]



Operating static pressure should be less than 0.15 inches water column [37.5 Pa].

The Fan Inlet and exhaust must be kept clear of obstructions. Failure to keep the Fan airflow path clear of obstructions could cause loss of Fan performance and Fan damage.

Safety Information

Carefully read all safety messages in this manual and on your equipment safety signs. Follow recommended precautions and safe operating practices. Keep safety signs in good condition. Replace missing or damaged safety signs.

DANGER: Electrical Hazard

Disconnect electrical power before inspecting or servicing equipment. Ground all electrical equipment for safety. All electrical wiring must be done by a qualified electrician in accordance with local and national electric codes. Ground all non-current carrying metal parts to guard against electrical shock. With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.



DANGER: Rotating Fan Blade

Keep Hands away. Disconnect power before servicing. Fan may start automatically. Do not operate the Fan without the screens in place. Disregard to these things will cause serious injury including death.



Warranty

CTB, Inc. ("CTB") warrants new CHORE-TIME ENDURA® Fans ("Product") manufactured by CTB to be free from defects in material or workmanship under normal usage and conditions, for One (1) year from the date of installation by the original purchaser ("Warranty"). CTB provides for an extension of the aforementioned Warranty period ("Extended Warranty Period") with respect to certain Product parts ("Component Part") as set forth in the table below. If such a defect is determined by CTB to exist within the applicable period, CTB will, at its option, (a) repair the Product or Component Part free of charge, F.O.B. the factory of manufacture or (b) replace the Product or Component Part free of charge, F.O.B. the factory of manufacture. This Warranty is not transferable, and applies only to the original purchaser of the Product.

Component Part	Extended Warranty Period
Endura® Fan Cast Aluminum Blades	Lifetime
Endura® Fan Housing and Cones (Including Composite Shrouds, Composite Doors and HDPE Cone Panels)	Five (5) Years

CONDITIONS AND LIMITATIONS

THIS WARRANTY CONSTITUTES CTB'S ENTIRE AND SOLE WARRANTY AND CTB EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES. CTB shall not be liable for any direct, indirect, incidental, consequential or special damages which any purchaser may suffer or claim to suffer as a result of any defect in the Product. Consequential or Special Damages as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs, and operational inefficiencies. Some jurisdictions prohibit limitations on implied warranties and/or the exclusion or limitation of such damages, so these limitations and exclusions may not apply to you. This warranty gives the original purchaser specific legal rights. The original purchaser may also have other rights based upon your specific jurisdiction.

Compliance with federal, state and local rules which apply to the location, installation and use of the Product are the responsibility of the original purchaser, and CTB shall not be liable for any damages which may result from non-compliance with such rules.

The following circumstances shall render this Warranty void:

- "Modifications made to the Product not specifically delineated in the Product manual published by CTB.
- "Product not installed and/or operated in accordance with the instructions published by CTB.
- "All components of the Product are not original equipment supplied by CTB.
- "Product was not purchased from and/or installed by a CTB authorized distributor or certified representative.
- "Product experienced malfunction or failure resulting from misuse, abuse, mismanagement, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity.
- "Product experienced corrosion, material deterioration and/or equipment malfunction caused by or consistent with the application of chemicals, minerals, sediments or other foreign elements.
- "Product was used for any purpose other than for the care of poultry and livestock.

The Warranty and Extended Warranty may only be modified in writing by an officer of CTB. CTB shall have no obligation or responsibility for any representations or warranties made by or on behalf of any distributor, dealer, agent or certified representative.

* CTB warrants to the original purchaser that certain Component Parts shall be free from defects in material or workmanship under normal usage and conditions, for the duration of the Product's useful lifetime.

Un-assembled Fan Parts Packages



(53843-XX)
Component Package

Fan Blade Part No.
(on Blade Spider)



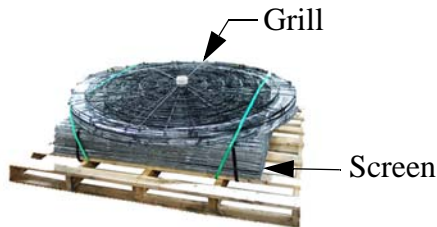
(53219-XX, 53532-XX, 54529-XX, or 54530-XX)
Fan Blade Package



(53850-XX)
Shroud and Door Package



(See Table Below)
Motor Pallet



(53129) Grill
(48794) Inlet Screen



(53788-AAXX, or -AAXXS)
Hardware Package



(53753-1, -2, -1S, -2S)
Drive Assembly
1 or 2 Drives per Box

Un-Assembled 57" Endura® Fan Component Part Numbers

Fan Part No.	Drive Assembly	Motor	Hardware Pkg.	Fan Blade
53464-21	53753-1	50496	53788-21XX	53219
53464-21S	53753-1S	50496	53788-21XXS	54529
53464-22	53753-1	49903	53788-22XX	53532
53464-22S	53753-1S	49903	53788-22XXS	54530
53464-41	53753-1	48608	53788-41XX	53219
53464-41S	53753-1S	48608	53788-41XXS	54529
53464-42	53753-1	48608	53788-42XX	53532
53464-42S	53753-1S	48608	53788-42XXS	54530
53464-51	53753-2	48608	53788-51XX	53219
53464-51S	53753-2S	48608	53788-51XXS	54529
53464-52	53753-2	48608	53788-52XX	53532
53464-52S	53753-2S	48608	53788-52XXS	54530

XX= Number of Fans that can be built with components in Package.

Hardware Needed Per Fan (Un-Assembled)

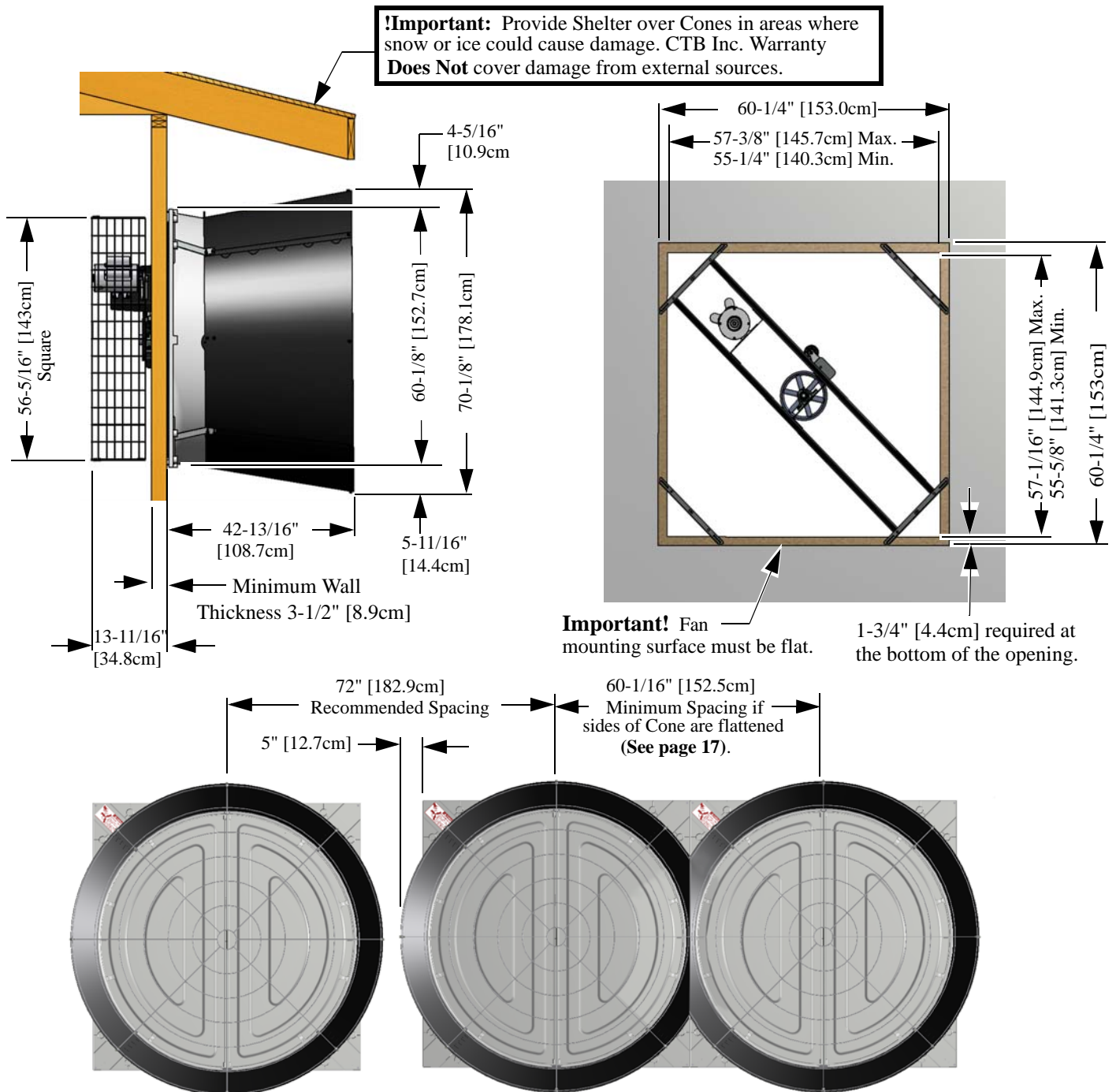
57" Endura® Fan Hardware Items Per Fan			
Items are Bulk packed in 53788-AAXX, or 53788-AAXXS (See previous page).			
Item	Qty.	Description	Part No.
1	1	Bottom Pivot Plate	53036
2	1	Top Pivot Plate	53037
3	4	Door Hinge Pin	53038
4	1	1/4 x 1-1-8" Sq. Key (For Blade)	2419-2
5	20	5/16-18 x HHBS Bolt	39-20073
6	56	5/16-18 Hx. Serrated SS Flange Nut	46764
7	20	5/16-18 x .1.0 SS Carriage Bolt	54184
8	2	.38 SS Flat Washer	ST99070
9	1	72.5" Fan Cone Cable	53399
10	1	5/16-18 x 3" Eye Bolt	30663
11	2	Ø1/2" x 11" Door Spring	49629
12	24	1/4-10 x 1-1/2 Lag Screw SS	41561
13	9	Open Eye Hook	1214
14	1	Screen Spring (4 pc. per package)	54480-4
15	6	Orifice Frame Bracket	53611
16	2	Cable Clamp	732
17	1	Fan Description Decal	39002-XXX
18	1/3	Anti-Seize Lubricant	47749
19	--	57" Endura® Fan Instruction Manual	MV2406

Tools Needed and Supplies

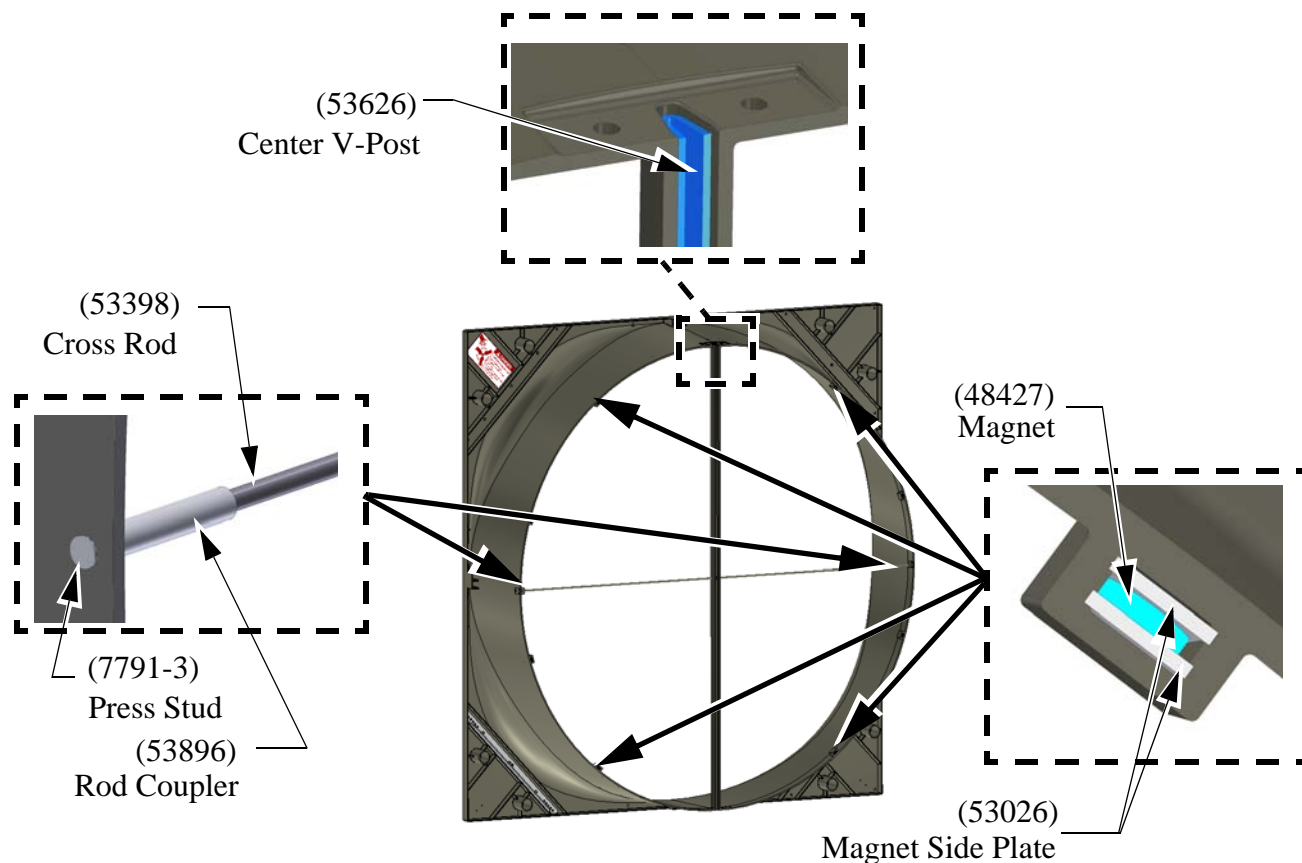
3/8" socket, 1/2" socket or wrench, Side cutters, 1/4" nut driver, Motor power cord, Wire nuts / terminals, Optional screw hook installation tool (CTB part number 13150-1), Caulking, 5/32" allen wrench (un-assembled)

New Installation Planning

Planning the layout of the spacing between Fans is very important. Spacing too close together will cause interference between the discharge Cones.

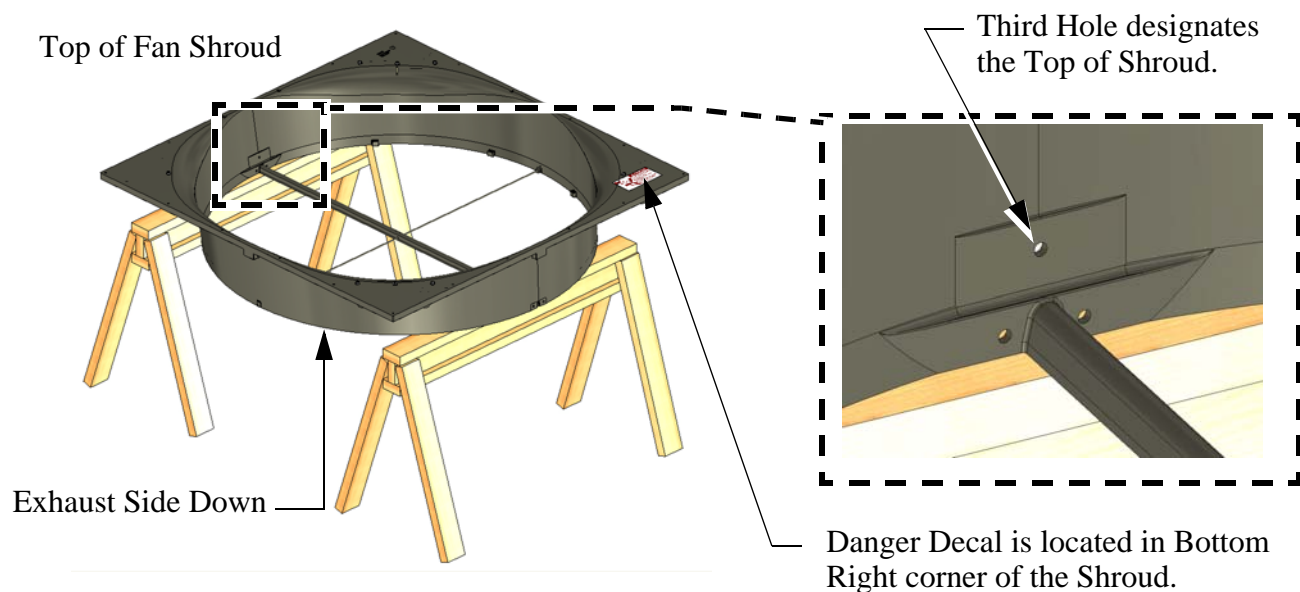


Inspect Shroud Assembly for hardware as it is received

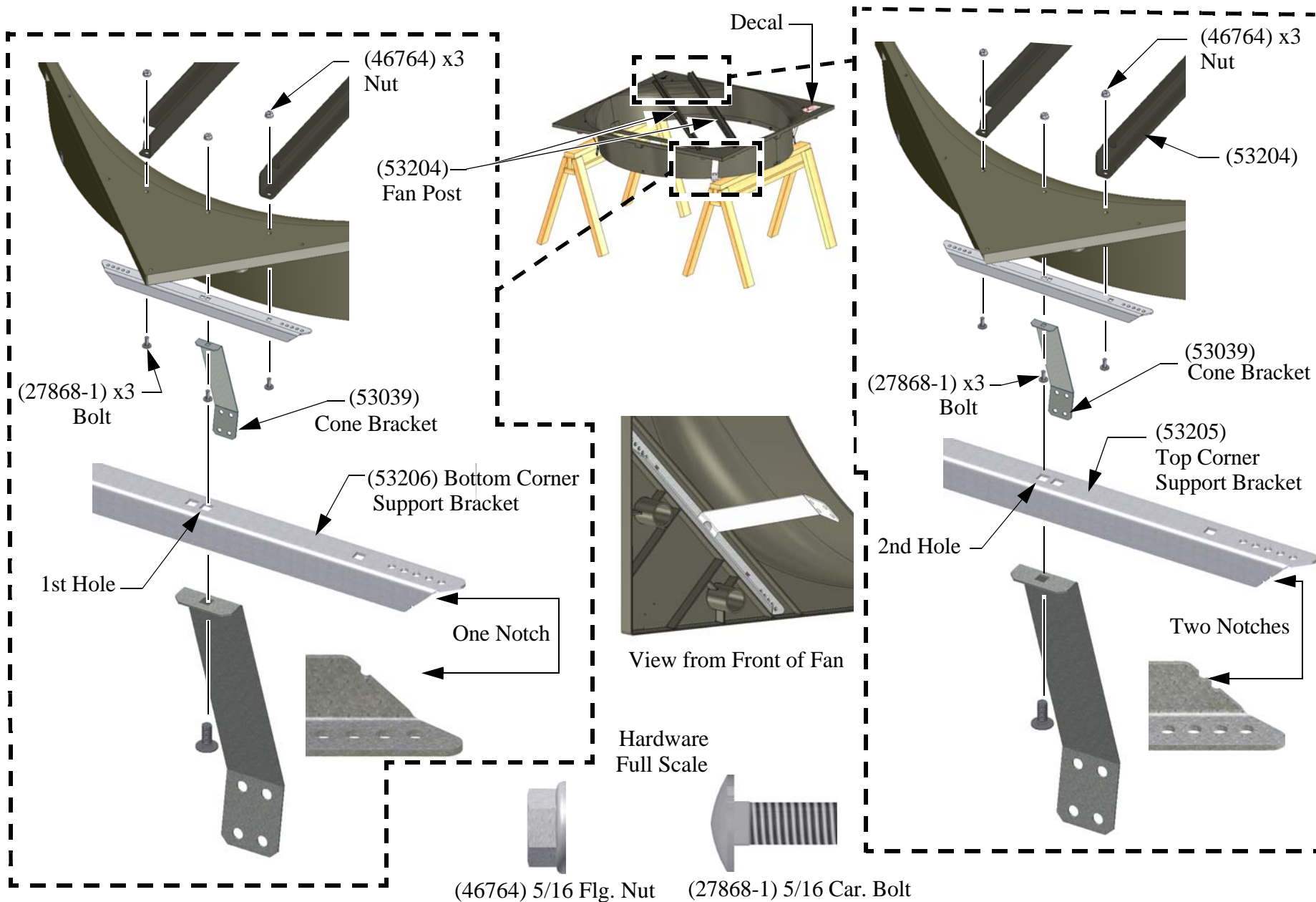


Installation

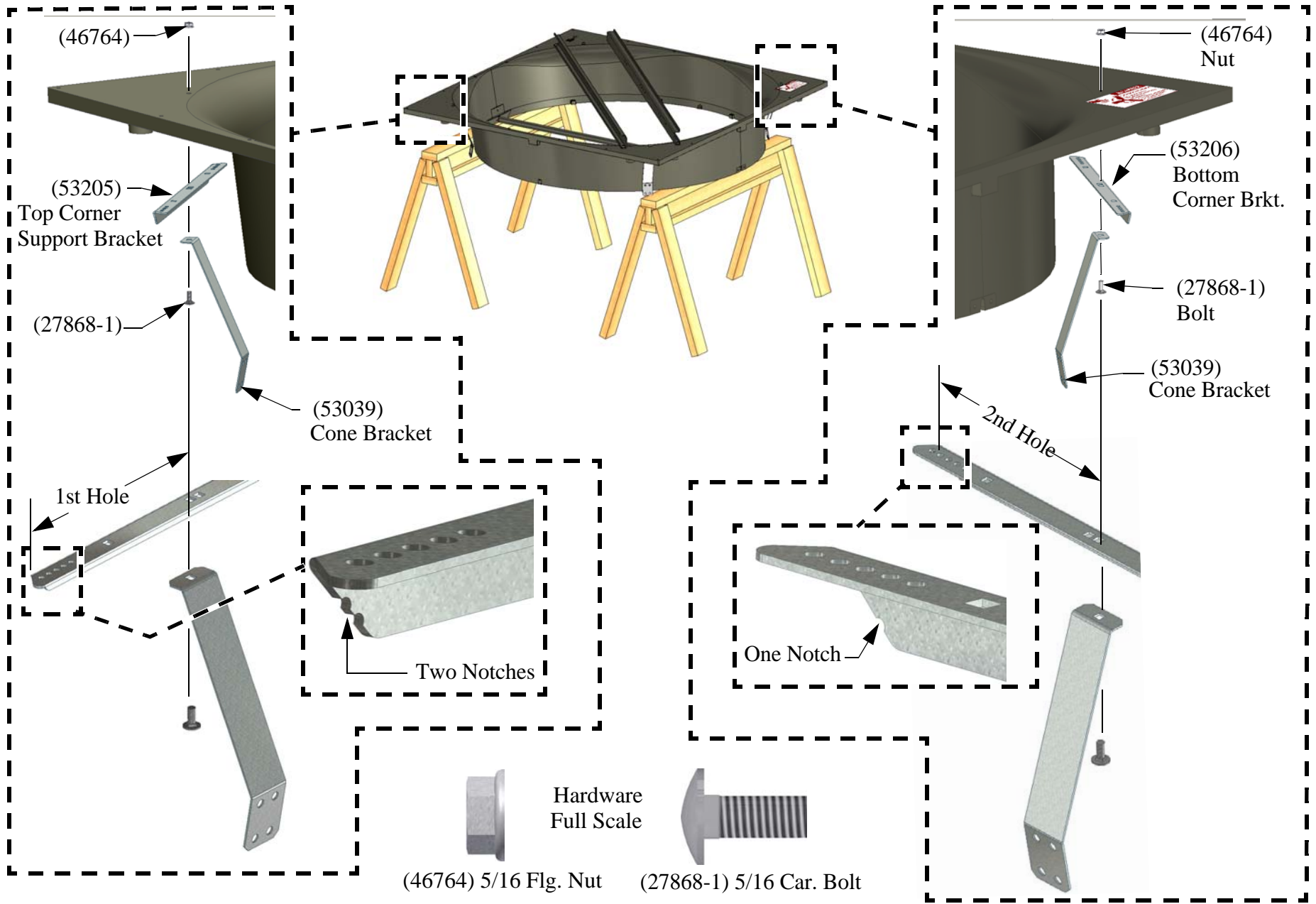
Rest Fan Shroud on Saw Horses for ease of Assembly



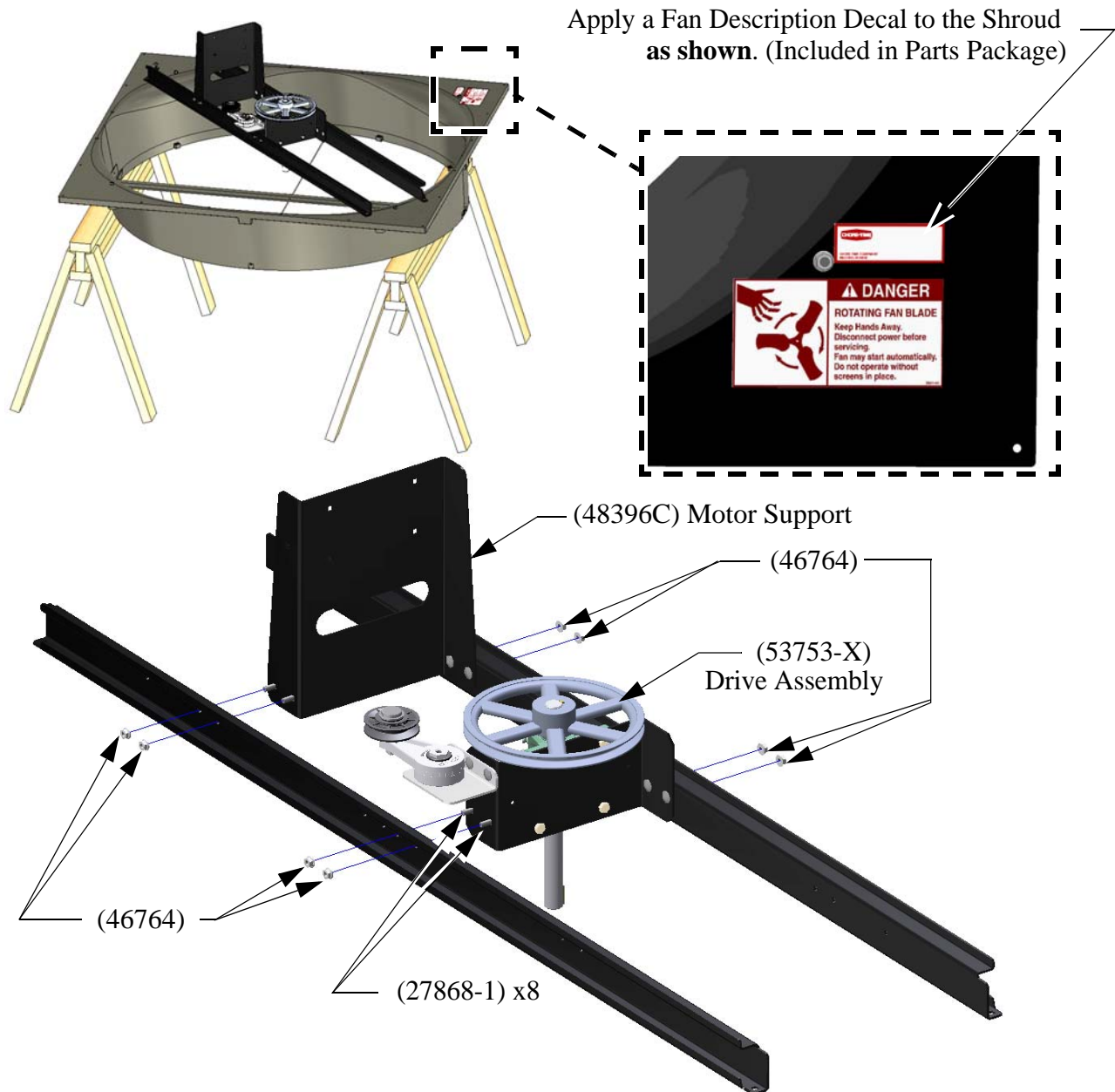
Attaching Fan Posts



Cone Brackets, Corner Brackets (Corners without Posts)



Installing the Drive Assembly and Motor Mount



Use the Bottom Set of Holes in the Posts as shown.



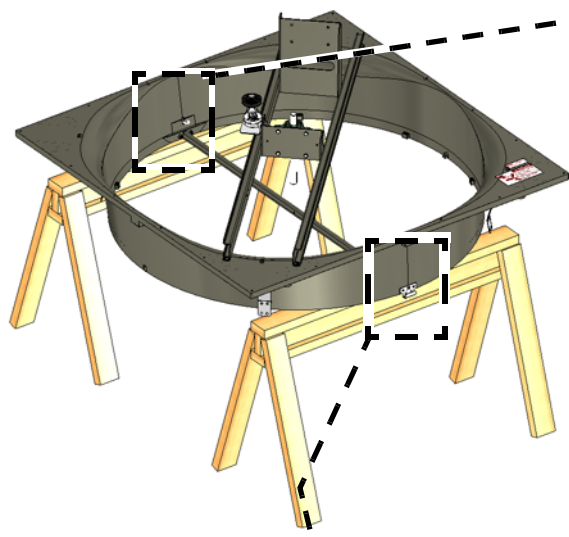
(46764) 5/16 Flg. Nut

Hardware
Full Scale



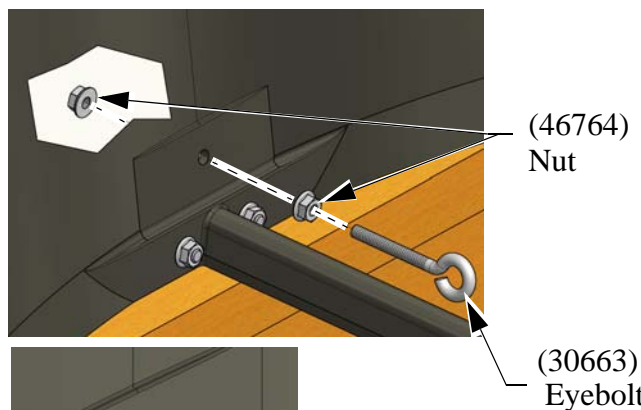
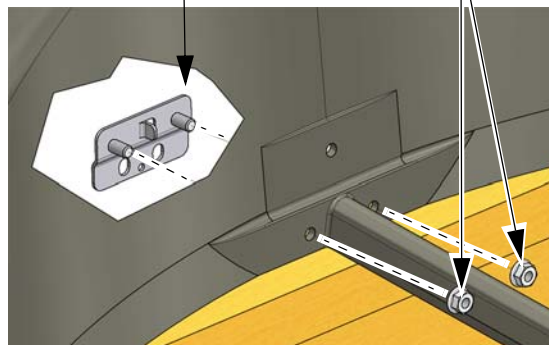
(27868-1) 5/16 Car. Bolt

Top and Bottom Pivot Plates and Eyebolt, Door Stop Cable



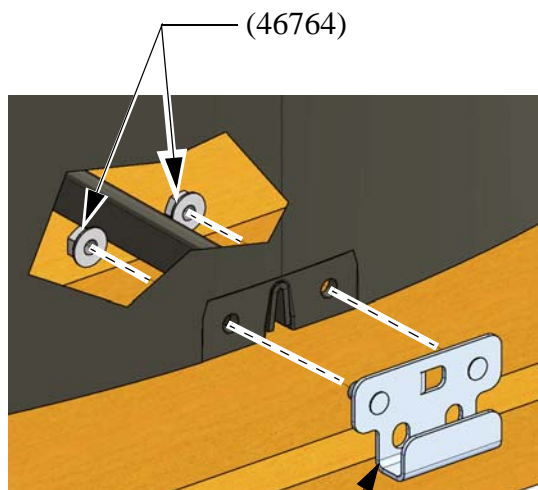
(53037)
Top Pivot Plate

(46764)
Nut



(46764)
Nut

(30663)
Eyebolt

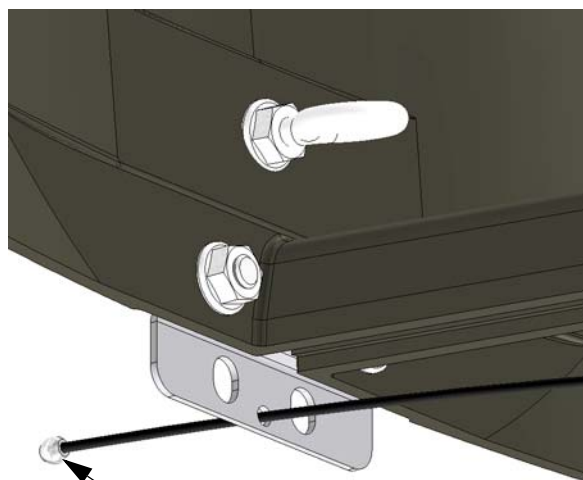


(46764)

(53036)
Bottom Pivot Plate

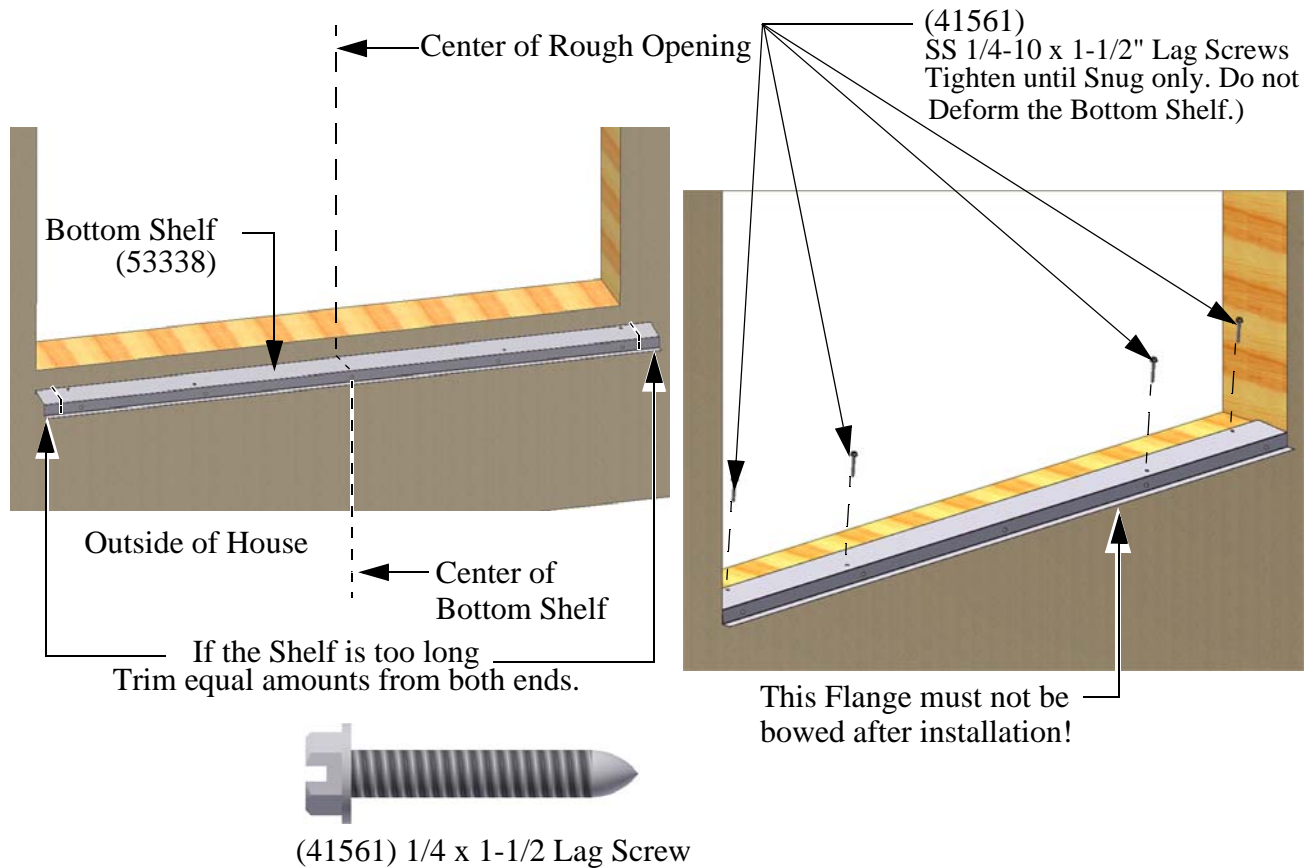


(46764) 5/16 Flg. Nut

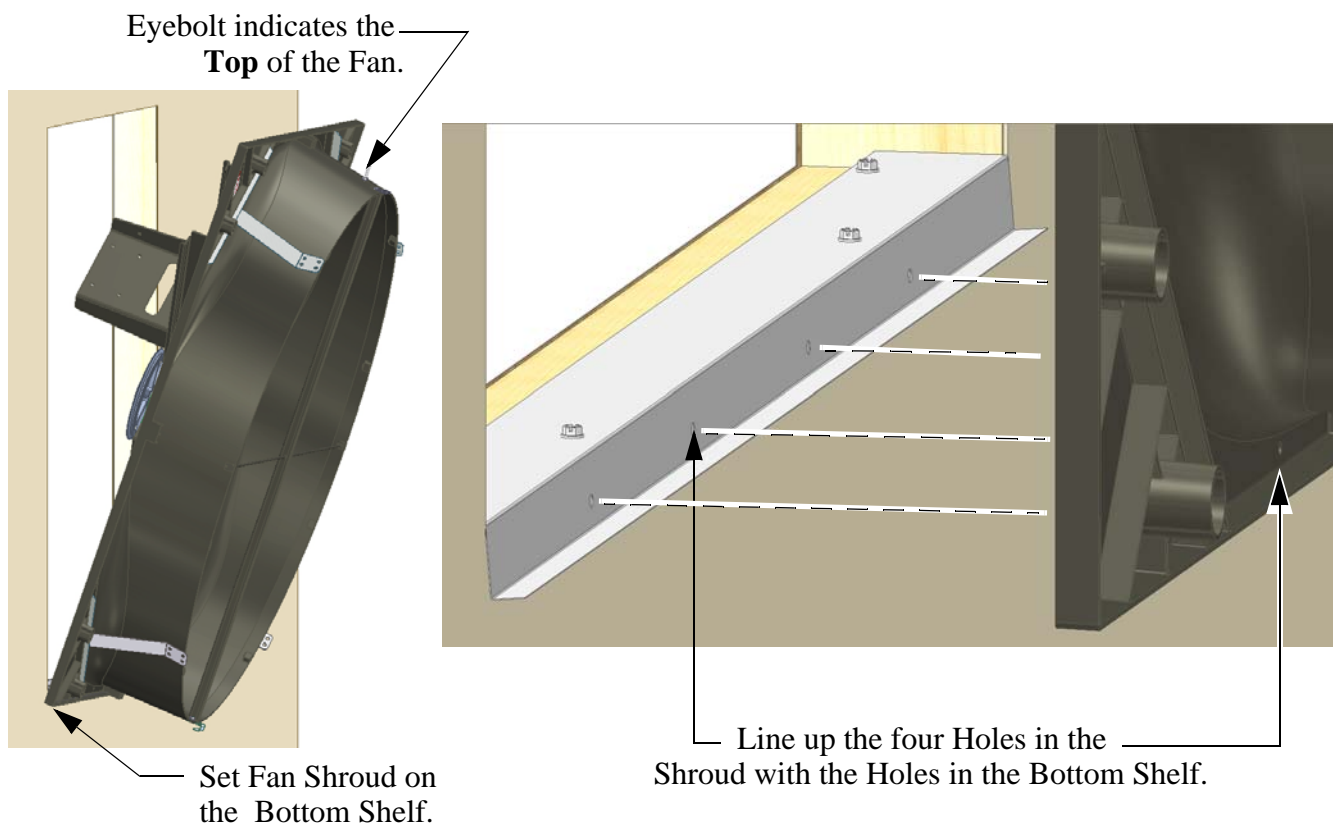


Insert (53399) Door Stop Cable
Assembly into Top Pivot Plate

Bottom Shelf Installation

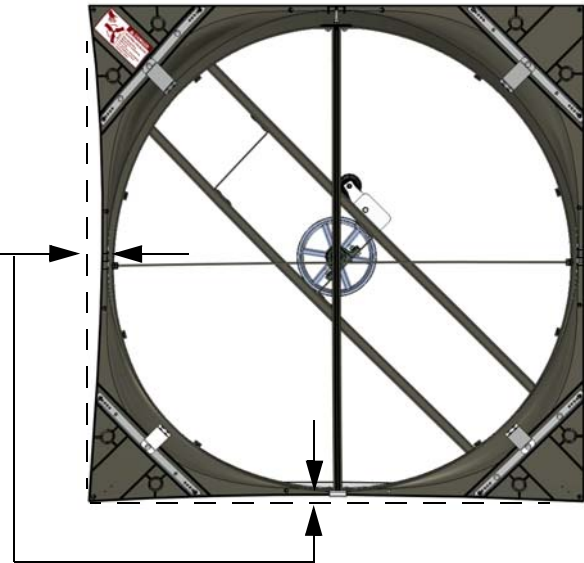


Attaching the Fan to the Wall

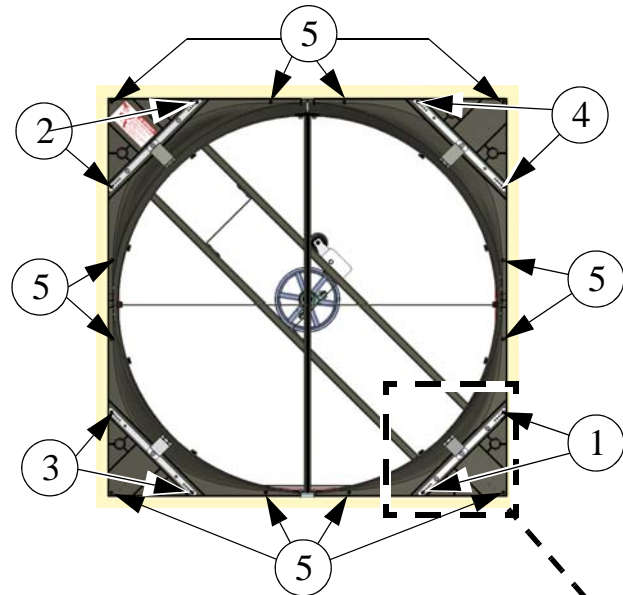


It is important when attaching the Fan to the Wall to keep edges of Shroud straight.

Keep Edges of Shroud Straight. **Do not** allow Shroud to bow inward.



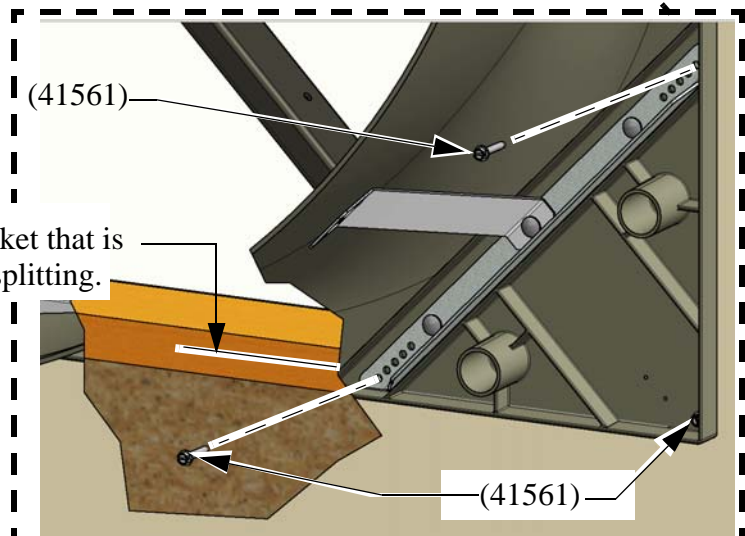
Pre-drill holes to 3/16" [4.8 mm] to avoid splitting lumber. If holes do not line up with the lumber it may be necessary to put Screws through Shroud. **Important! Attach the Fan to the Wall with 1/4 x 1-1/2" Lag Screws (41561) in the specific order shown. Attach with a total of 20 Lag Screws.**



Use the Hole in the Corner Bracket that is centered with Lumber to avoid splitting.

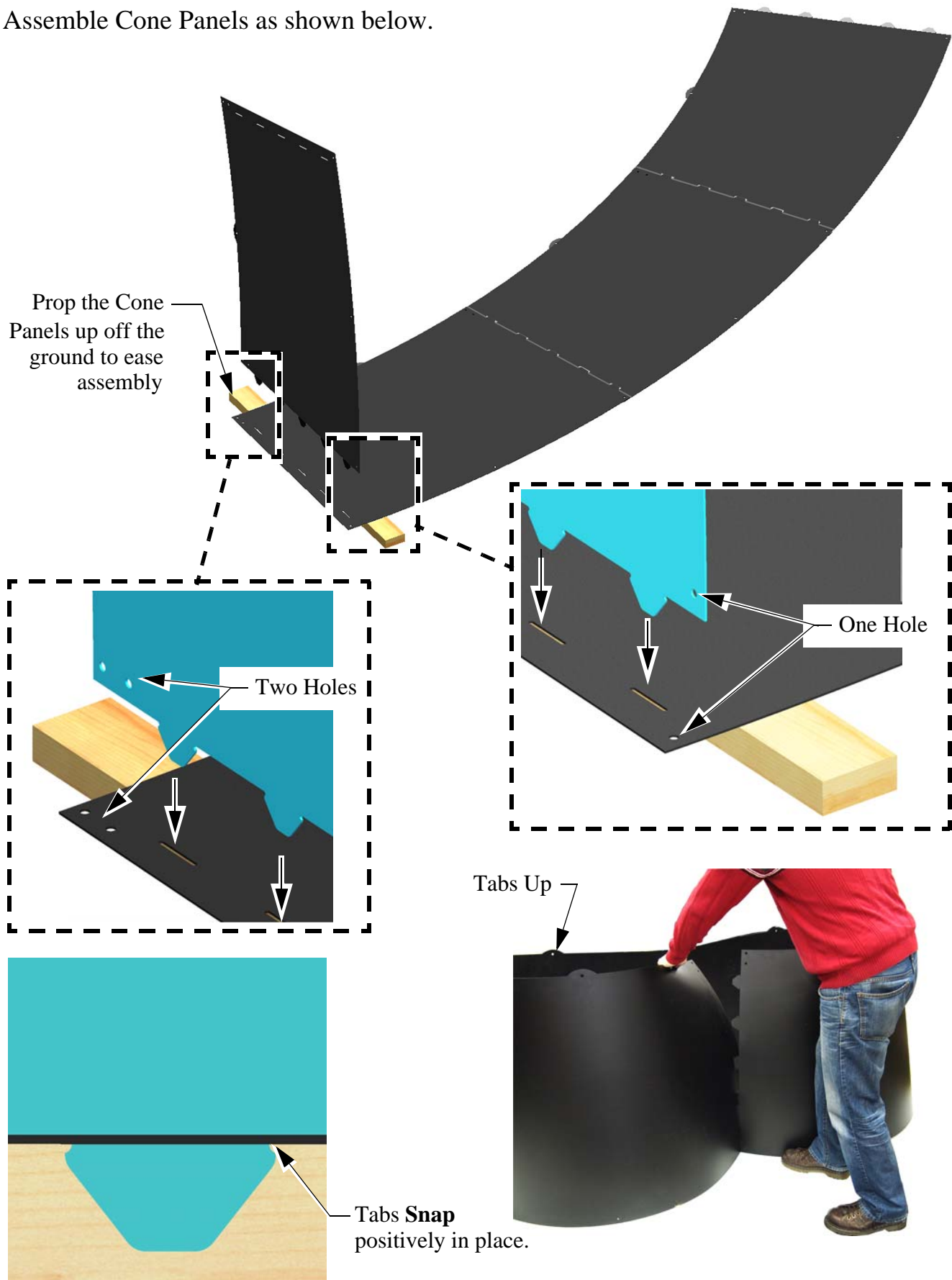


(41561) 1/4 x 1-1/2 Lag Screw

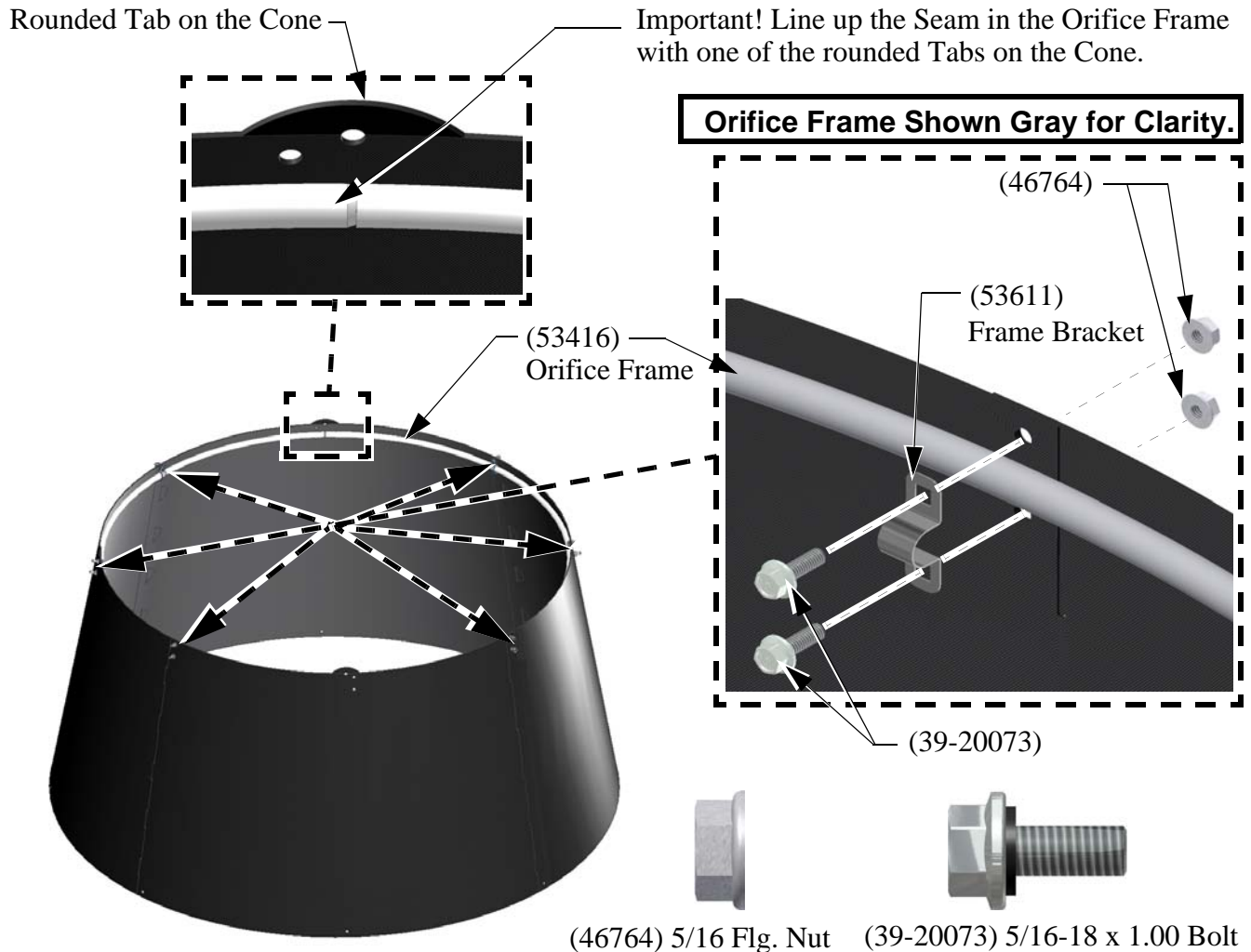


Cone Assembly

Assemble Cone Panels as shown below.

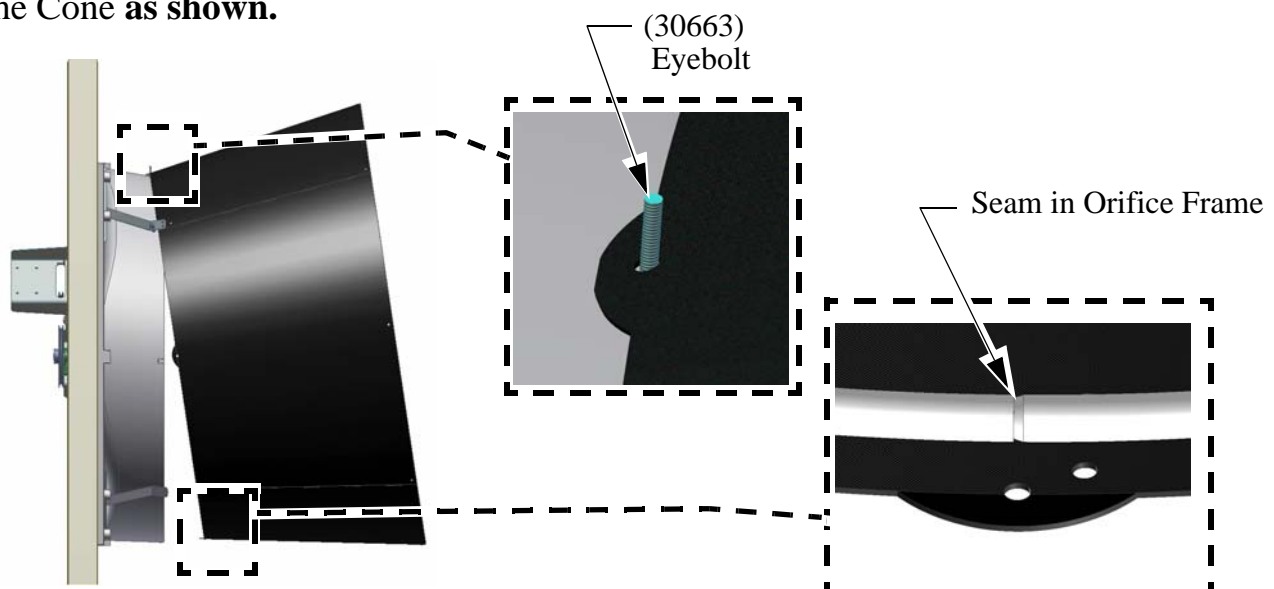


Installing the Orifice Frame

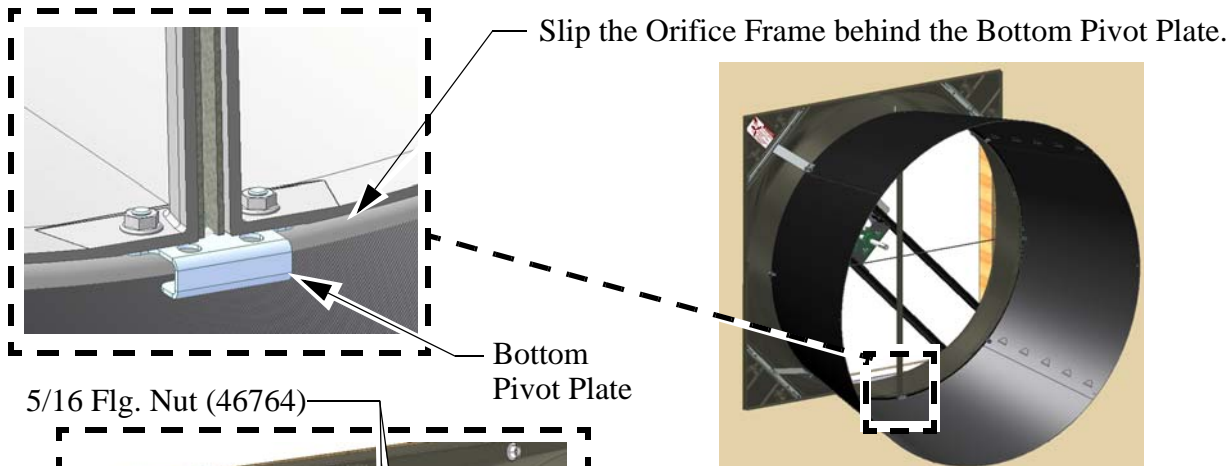


Cone Installation

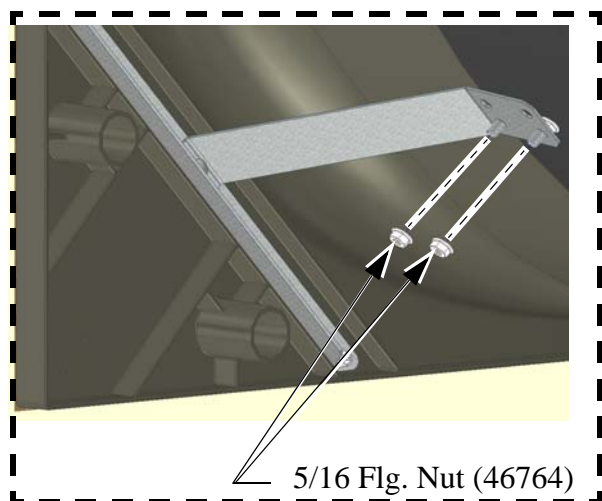
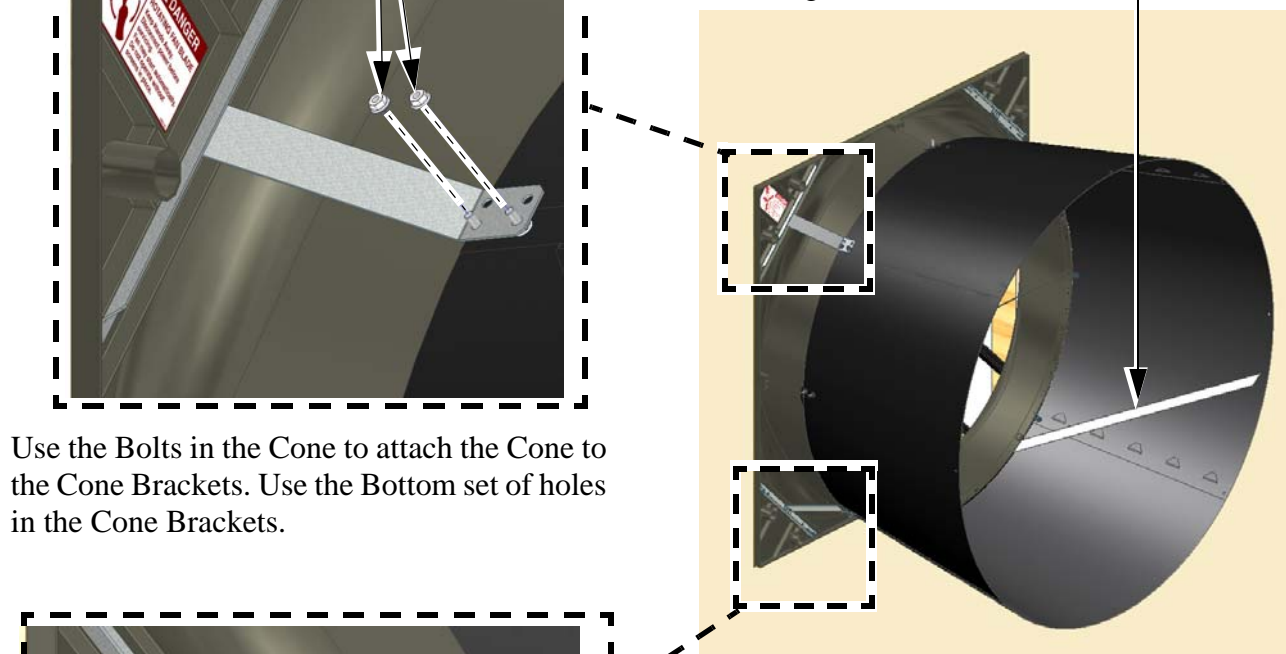
Hang the Cone on the Eye-Bolt extruding from the top of the Shroud using the hole in the Cone as shown.



Attach the cone to the Shroud as shown below.



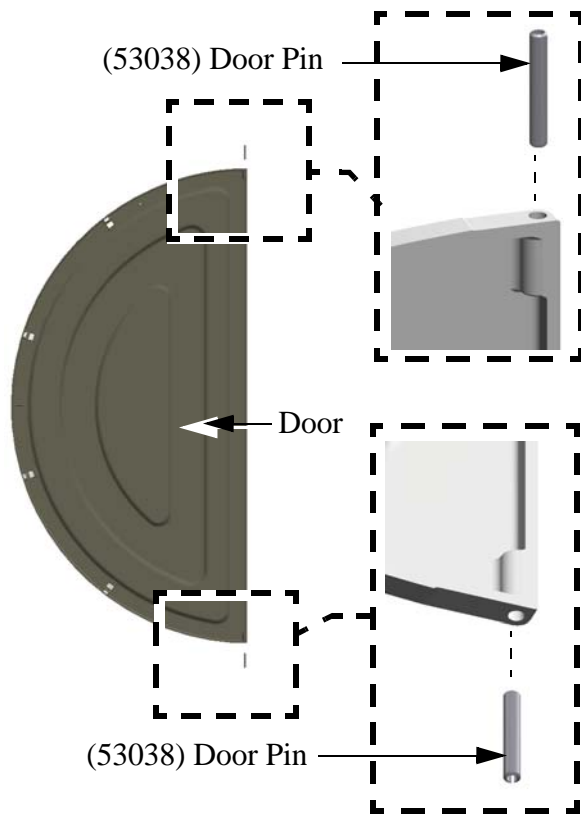
If necessary, slip a piece of metal between the the Shroud and Cone and work it around the Cone to get it on.



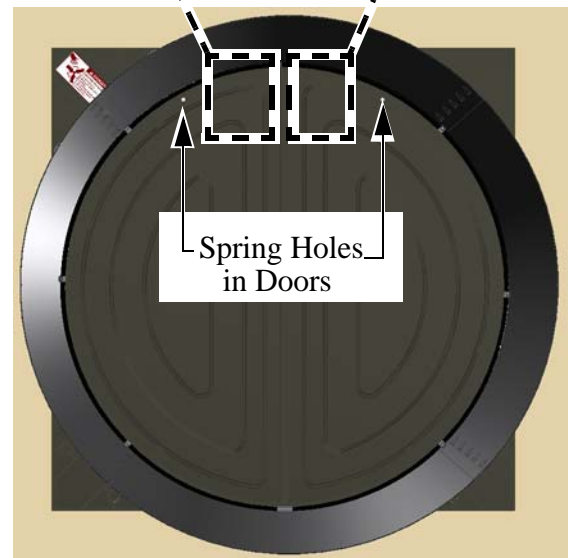
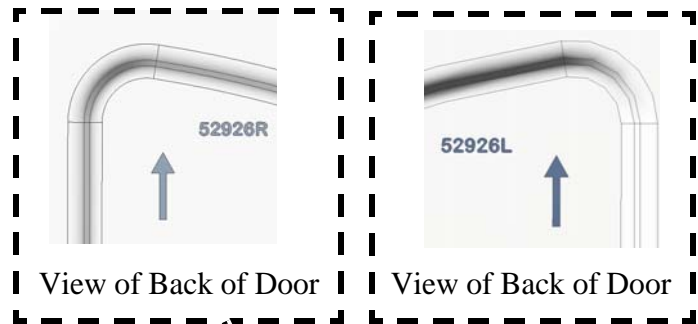
(46764) 5/16 Flg. Nut

Door Assembly and Installation

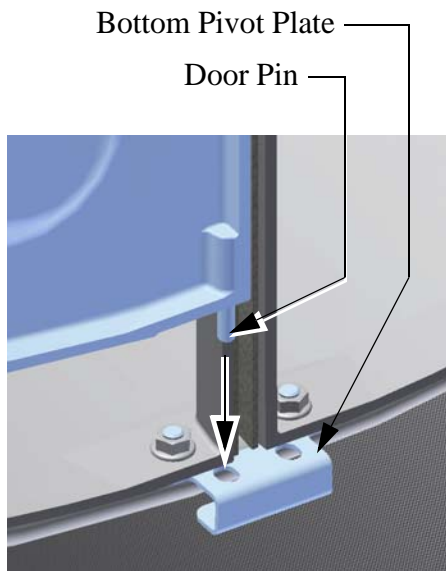
Insert Door Pins in both Doors as shown.
Push Pins in until they bottom out.



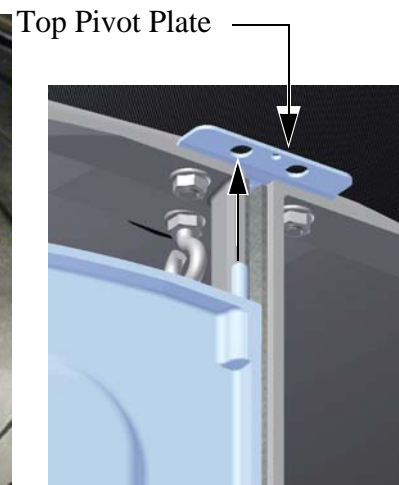
Doors are Left and Right specific.



Insert Door Pins into Bottom Pivot Plate.

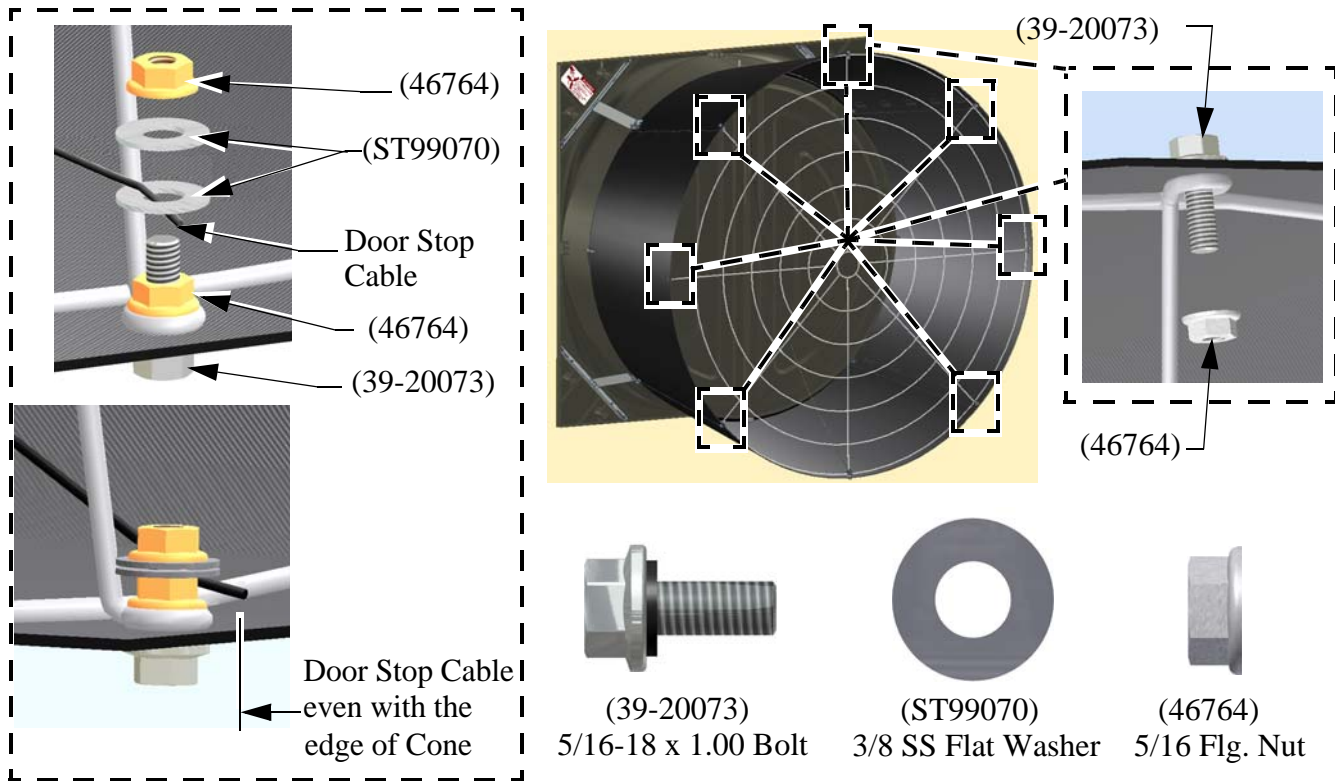


Grab the Door in the Center, Bow the Door, and insert the Top Door Pin into the Top Pivot Bracket as shown.
Do not Overbow the Doors!

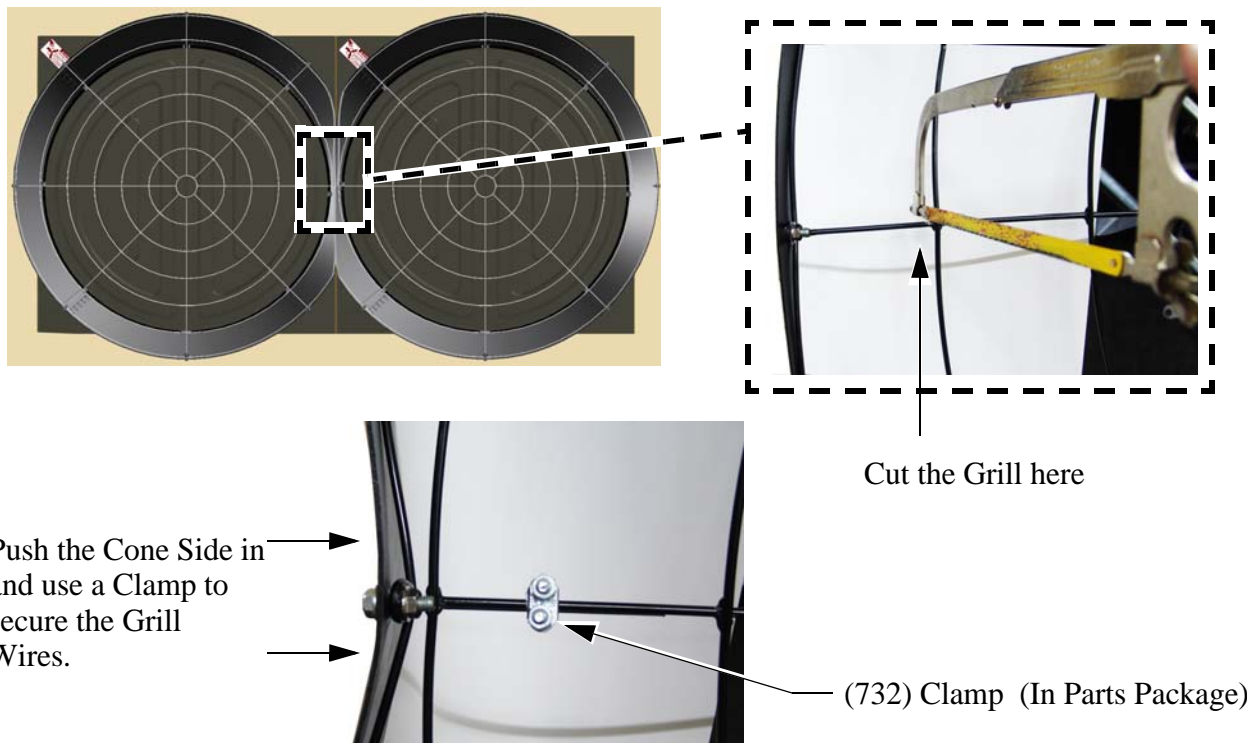


Grill Installation

Install the Fan Cone Grill (as shown). Attach the end of the Door Stop Cable to the bottom Grill Leg as shown.

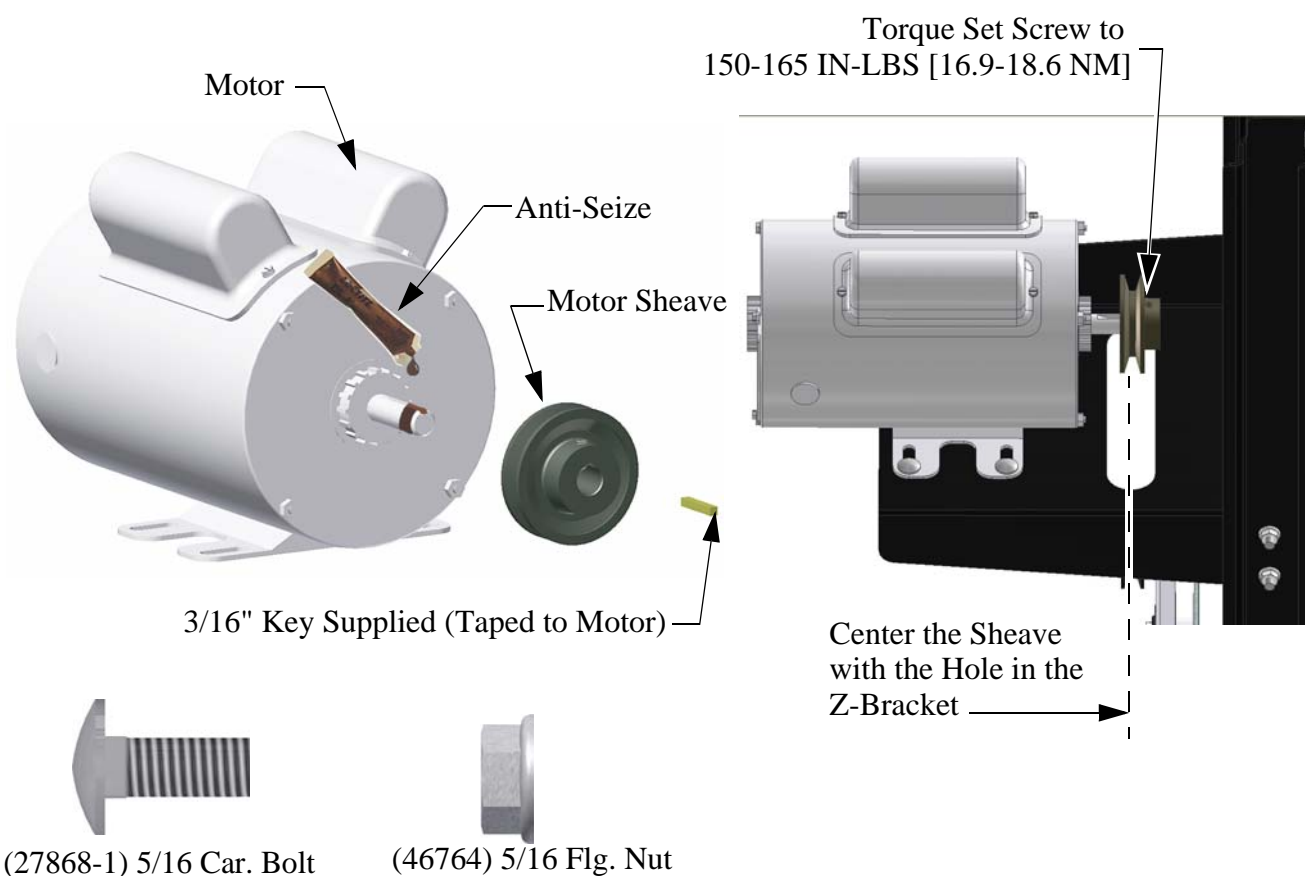
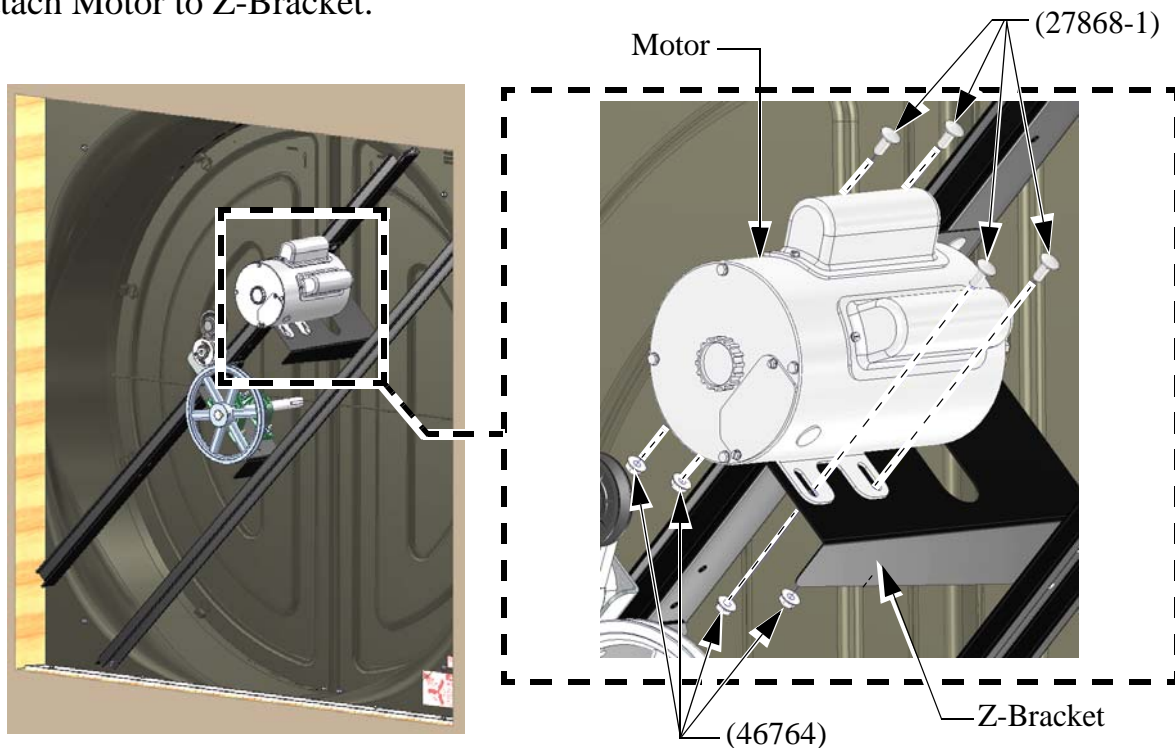


If it is desired to Mount Fans at the minimum spacing cutting the Grills is required as shown.

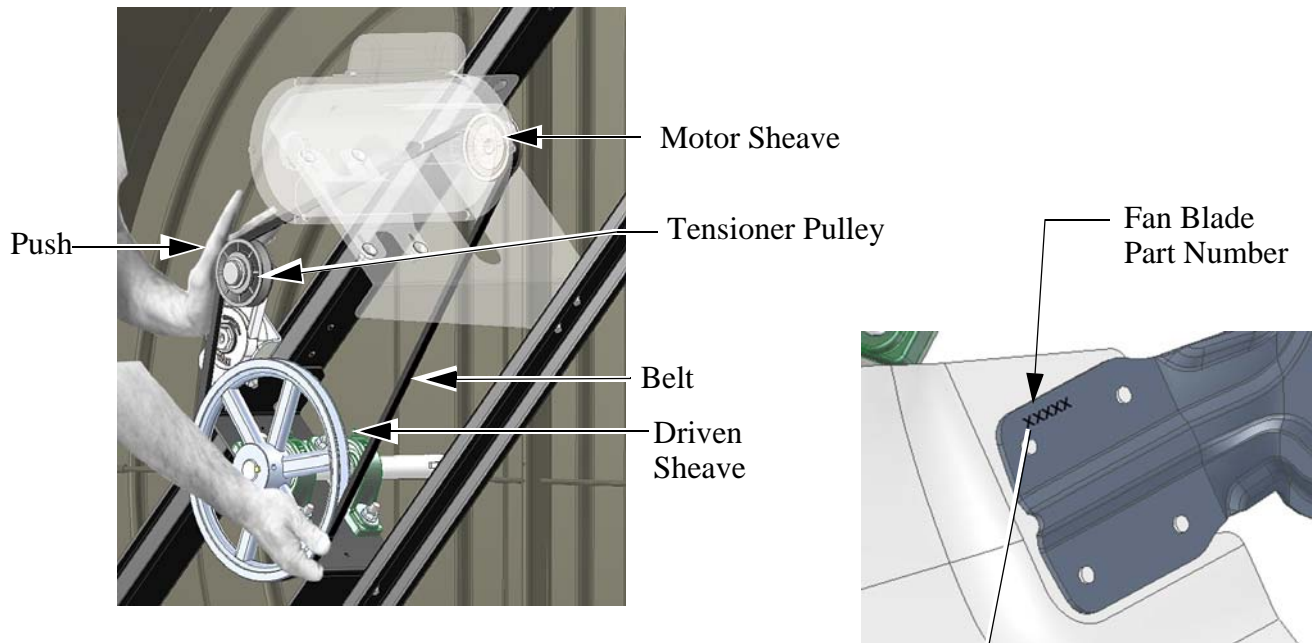


Motor Installation

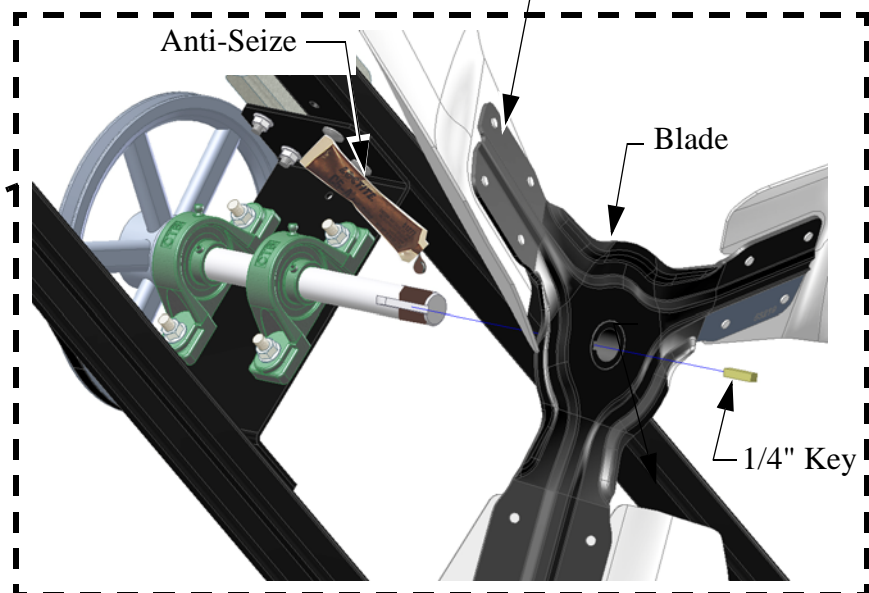
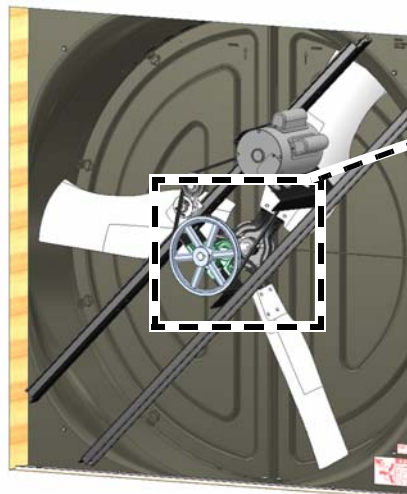
Attach Motor to Z-Bracket.



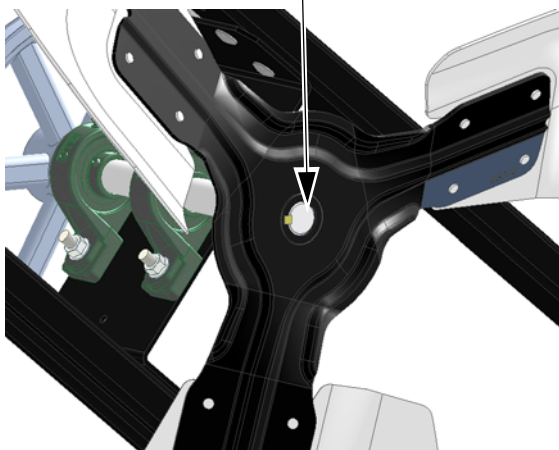
Belt Installation



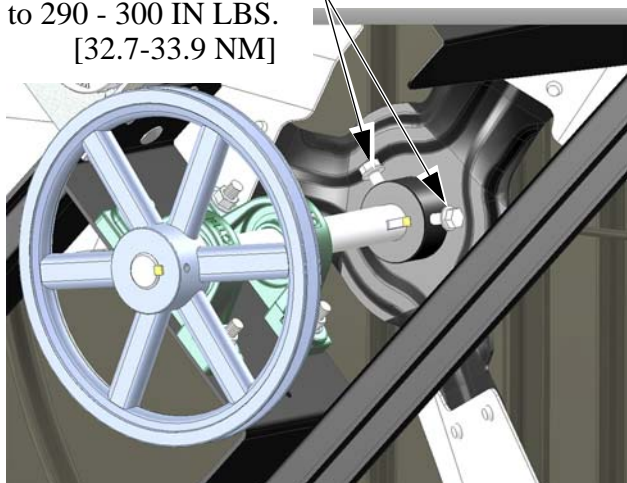
Blade Installation

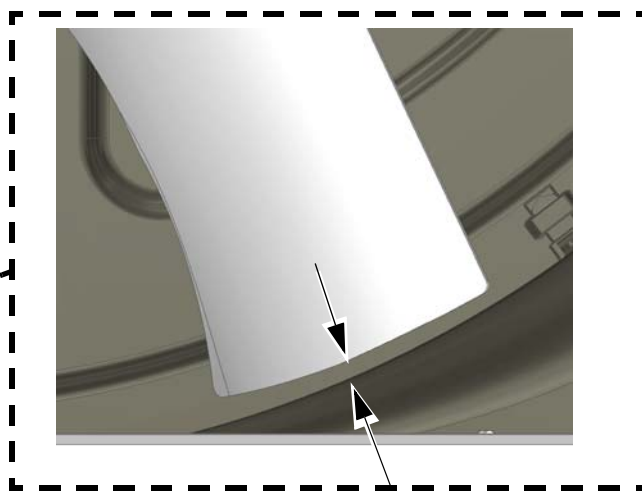
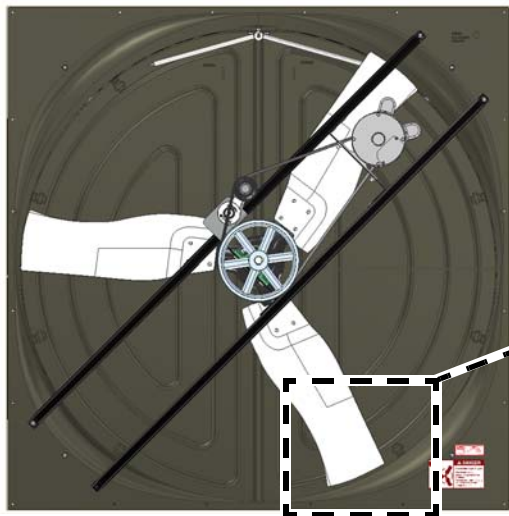


Fan Blade Flush
with the End of Shaft.



Torque Blade Set Screws
to 290 - 300 IN LBS.
[32.7-33.9 NM]

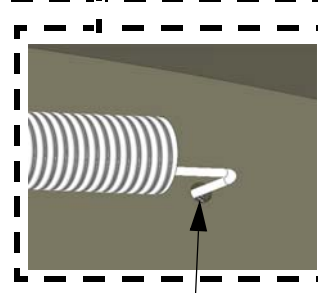
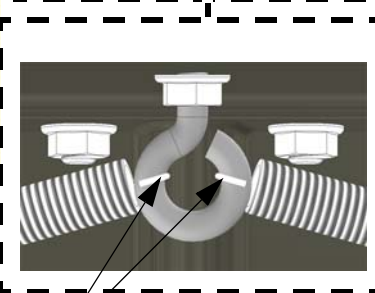
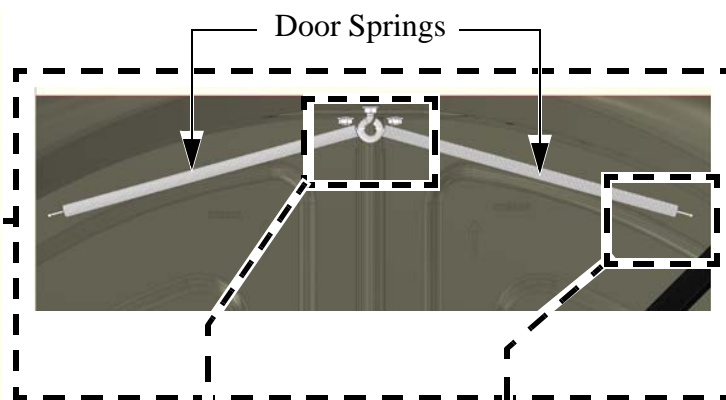
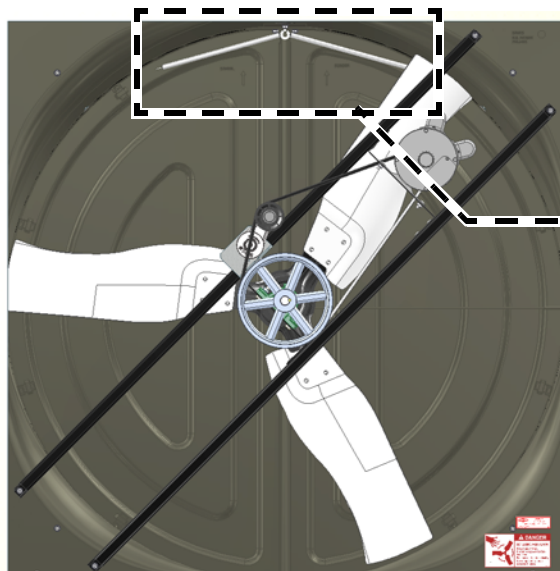




Spin the Blade by hand and check that there is minimum of 1/8" [3 mm] Clearance from the Shroud all the way around orifice.

If Clearance is insufficient, check that the mounting surface is flat, and that the sides of the Shroud are straight. To Gain more Tip Clearance, remove the Lag Screws from the side with inadequate clearance, push out on the Shroud orifice and re-install Lag Screws in new holes.

Door Spring Installation



Round end of Springs
attached to Eyehook

Elongated end of Spring
attached to Door Hole

Caulking

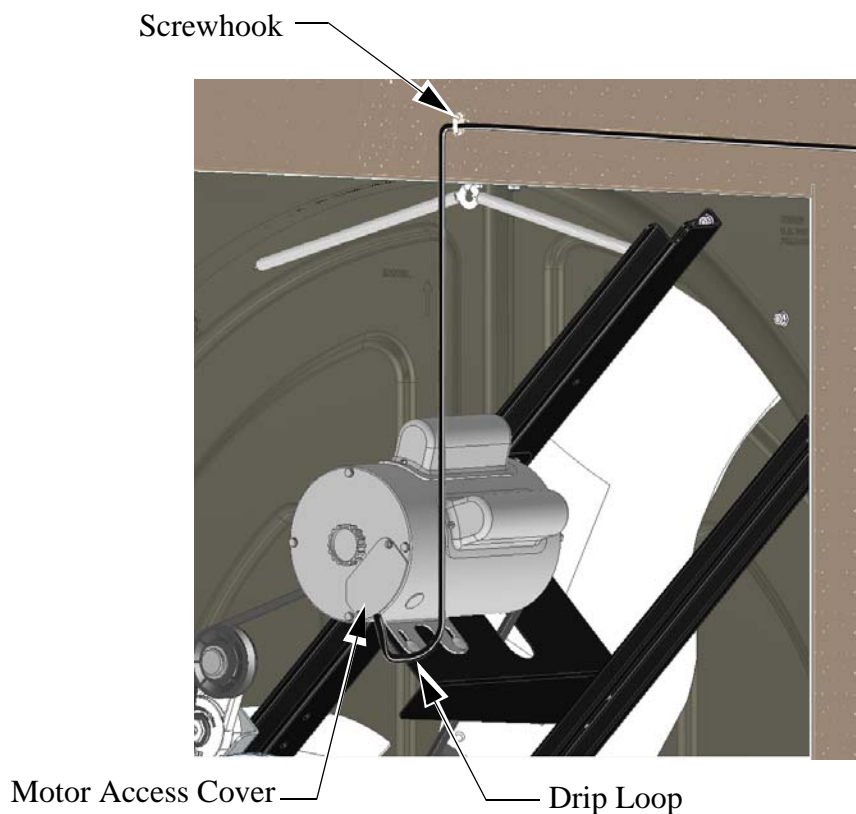
Caulk both Ends of the Bottom Shelf and as needed to fill any gaps between the Shroud and the Framed opening.



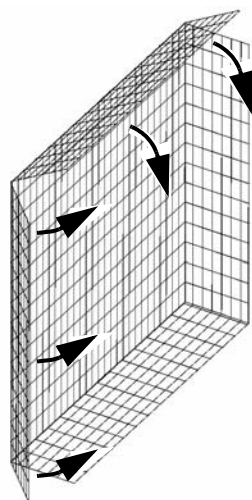
Caulk Both Ends of the Bottom Shelf

Motor Wiring

1. Check that the electrical power being supplied to the Fan matches the electrical Specifications on the Fan and Motor Decals.
2. Remove the Motor Access Cover.
3. Install an electrical disconnect within reach of each Fan installed.
4. Connect the cord to the motor according to the wiring diagram on the motor. Verify that the motor is connected for counter clockwise rotation (viewing the back of the motor, opposite the shaft end.)
5. Follow local, state, and national electrical codes for wiring.
6. Attach the Cord to the Wall using a Screwhook **as shown**. Allow enough slack in the cord to form a "drip loop" for moisture to fall away from the cord and not into the motor.

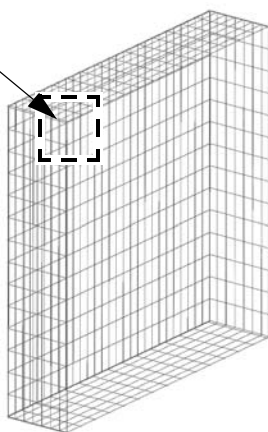


Screen Assembly

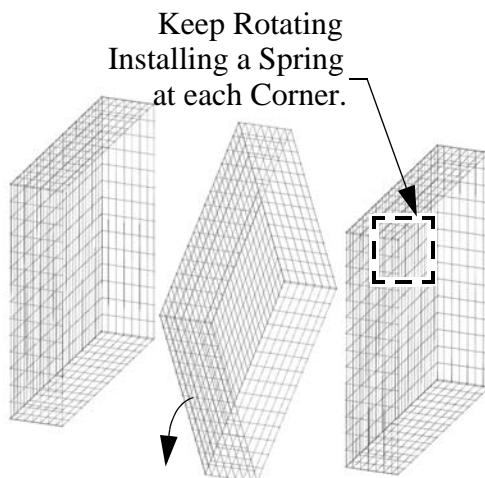


1. Fold the Screen Sides as shown.

Install Spring
per steps
A-D below.



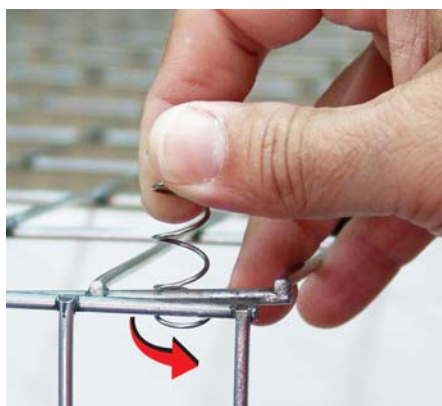
2. Install a spring (54480) **in the upper left corner** following steps A through D below. After Step D is complete go to step 3.



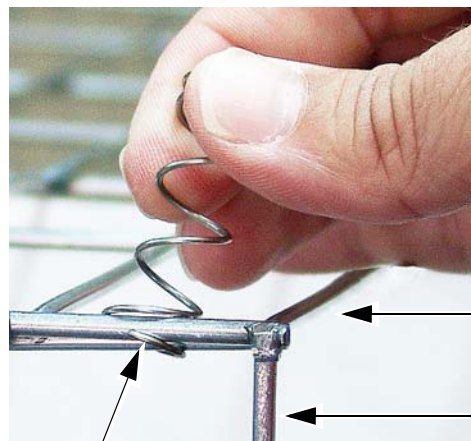
3. Rotate the Screen in the direction shown installing a Spring at a second corner. **Repeat for remaining Corners.**



A) Slide a Spring (54480) over both Screen Panel Wires exactly as shown.

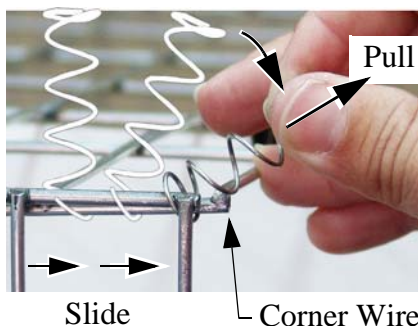


B) Rotate the Spring Counter-Clockwise until the end of the Spring snaps over the Side Panel Wire.

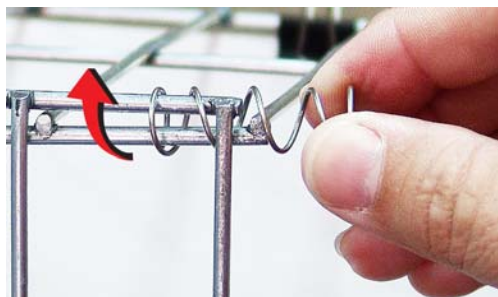


Adjust Screen Panels
so they are as even
as possible

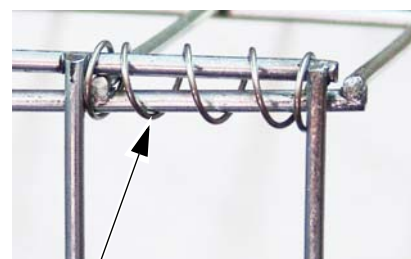
Snapped over Side Panel Wire



C) Slide and Pull Spring over Corner Panel Wire.

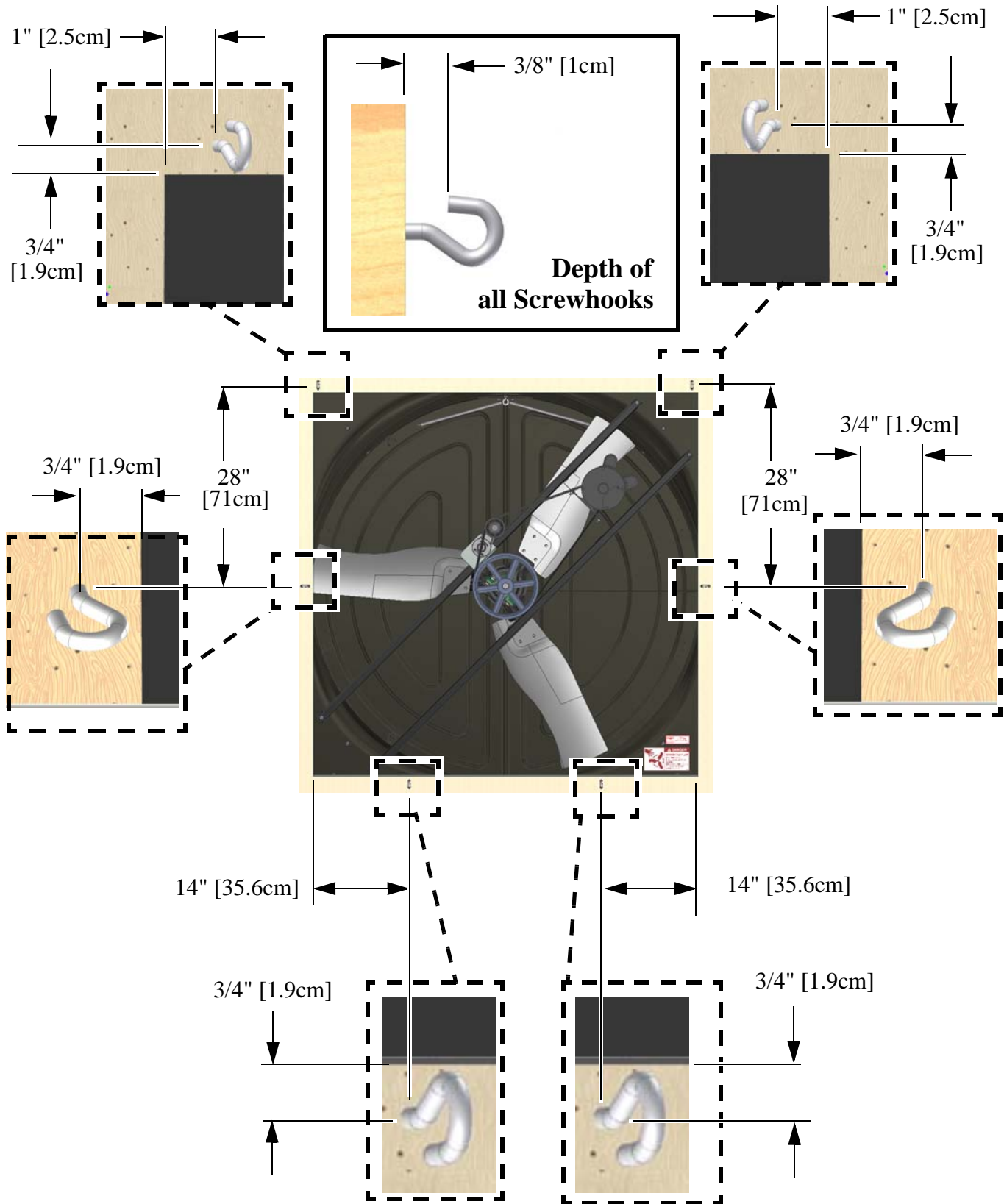


D) Twist Spring Clockwise until it is passed the outside wire and snapped firmly in place.



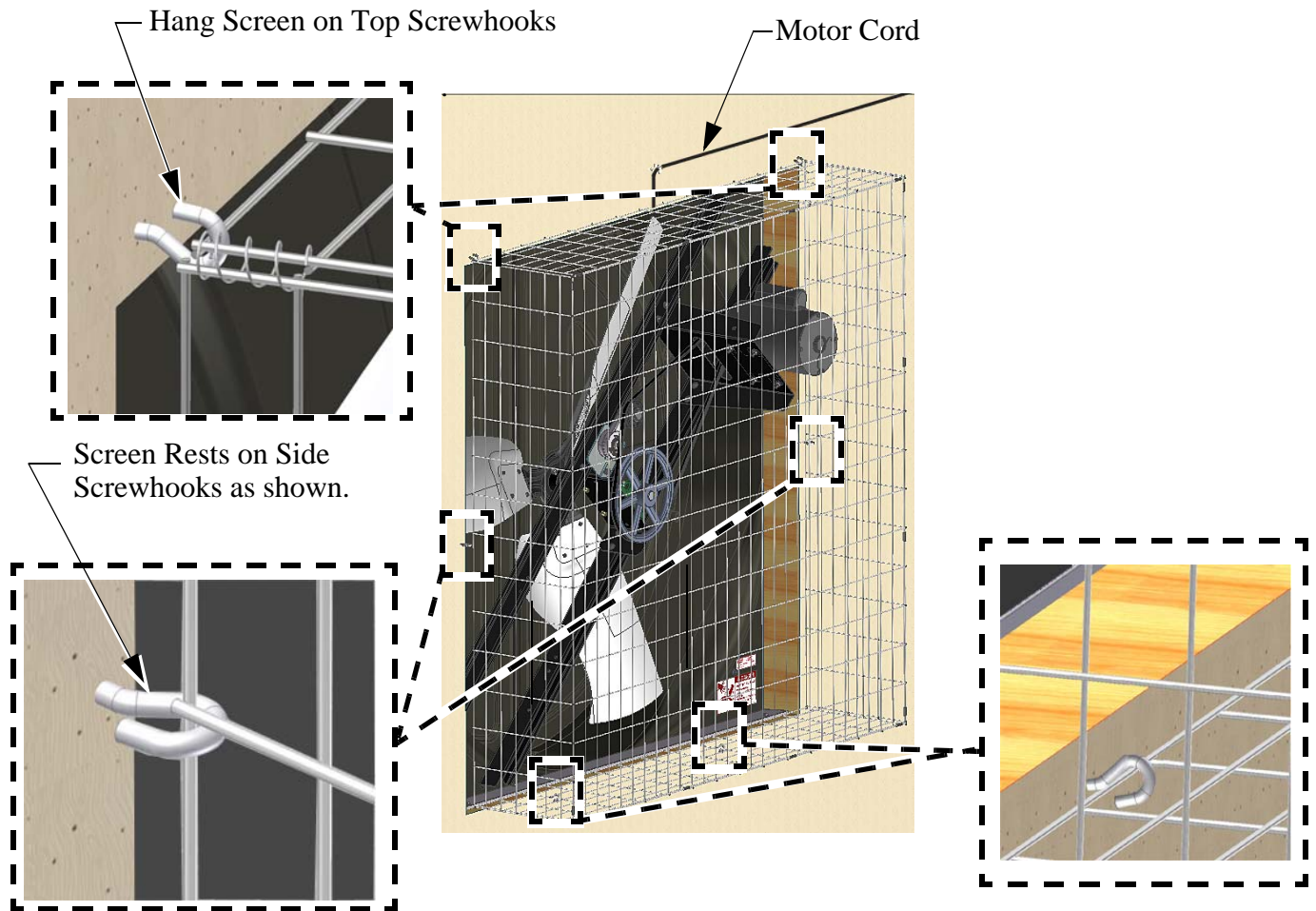
Spring snapped firmly
between wires.

Screen Installation



Continued on next page.....

Screen Installation Continued



Test Fan for proper operation.

Plug the Fan in and test for proper operation

Maintenance

IMPORTANT! Disconnect Power Prior To Maintaining Or Cleaning The Fan. The fan may start automatically causing serious injury or death.

- Service and repair of fans should be done only by a qualified technician.
- Minimize contact of moisture or corrosive chemicals to the surfaces of the fan components to maximize fan life.
- After washing fans, operate fans long enough to remove moisture from all fan surfaces.
- Keep the fan clean for maximum life and best performance. **Do Not spray water on the Fan Shaft Bearings, the Belt Tensioner, or the Motor.**
- Periodically check the V-Belt and replace if necessary. A worn Belt will cause a substantial drop in Fan performance or it can break and cause Fan failure. If a Belt rides below the Sheave edge, replace the belt. (See below)

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Good Belt

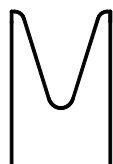
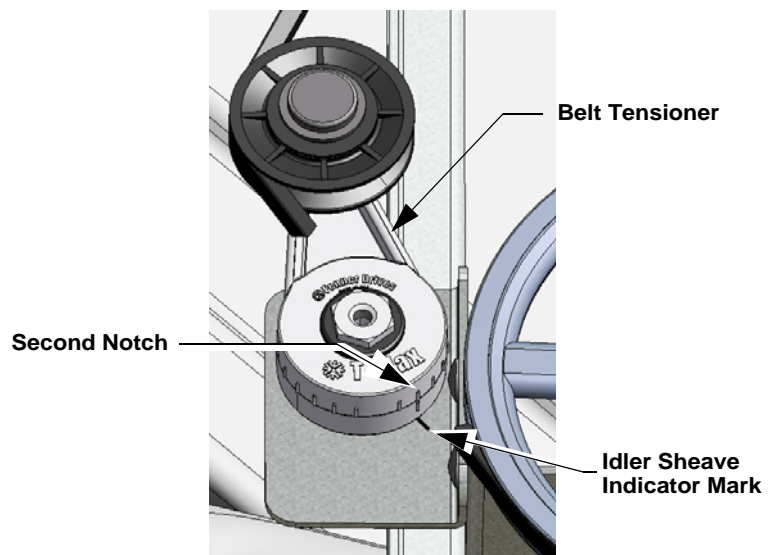


Bad Belt

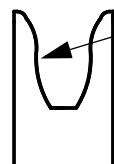
Bad Belt (Needs Replaced)

- Check Belt Tension. The Belt should be tensioned just tight enough to minimize Belt slippage. Over tensioning the belt will cause premature Belt and Bearing wear. With a new Belt the Idler Sheave indicator mark should line up with the Second notch in the Tensioner Housing as shown.

- The motor and Fan Shaft Bearings are pre-lubricated. Grease zerks are provided on the fan shaft bearings for installations where re-lubrication is needed. Add only a small amount of grease to purge impurities out of the bearing seals. Use only high quality lithium soap base grease and clean all dirt from zerk before applying grease. Chore-Time recommends using Shell Alvania # 2 in the fan shaft bearings.
- Check Sheaves for wear. Replace if a Sheave groove is worn.



Good Sheave



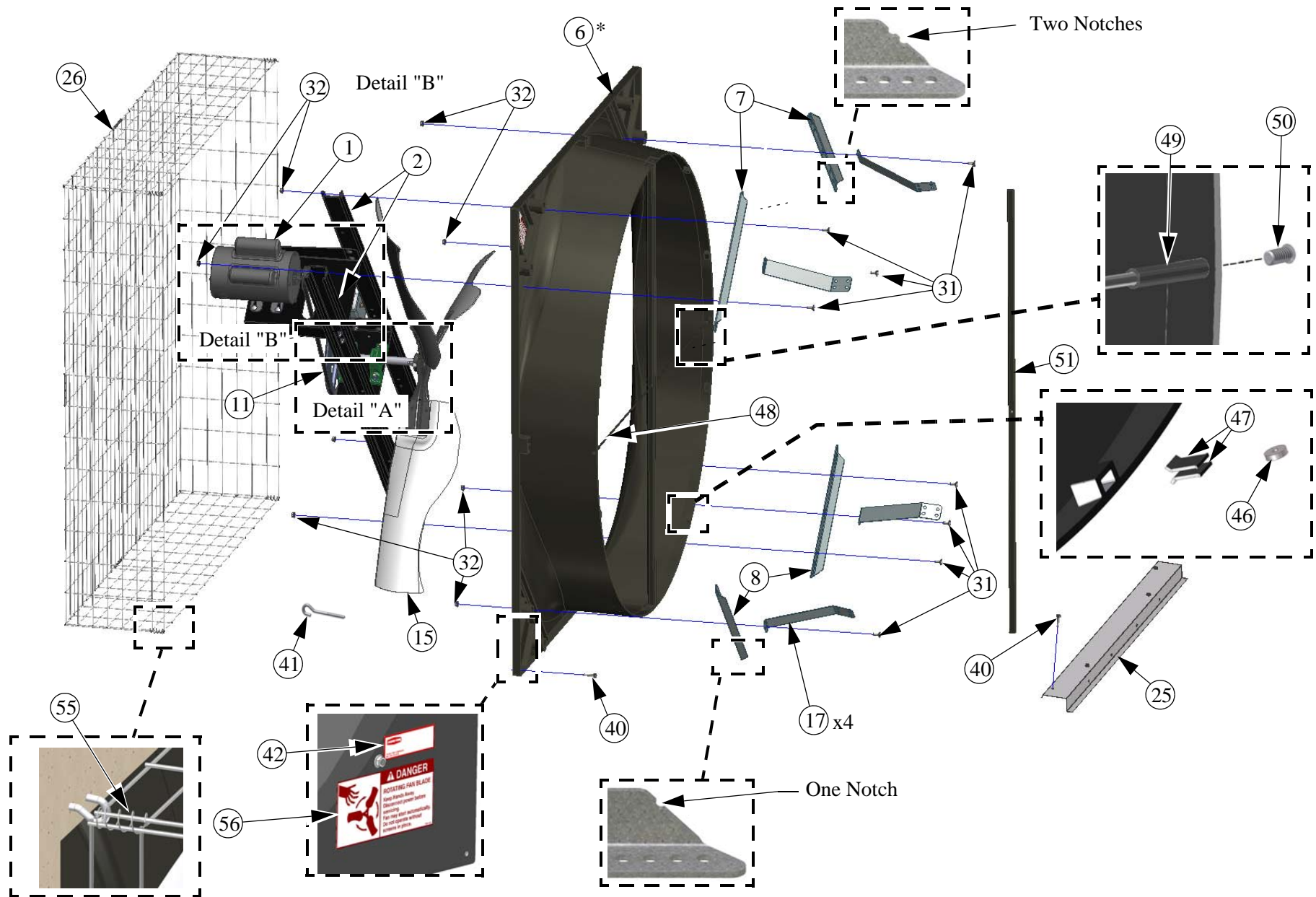
Bad Sheave

Bad Sheave (Needs Replaced)

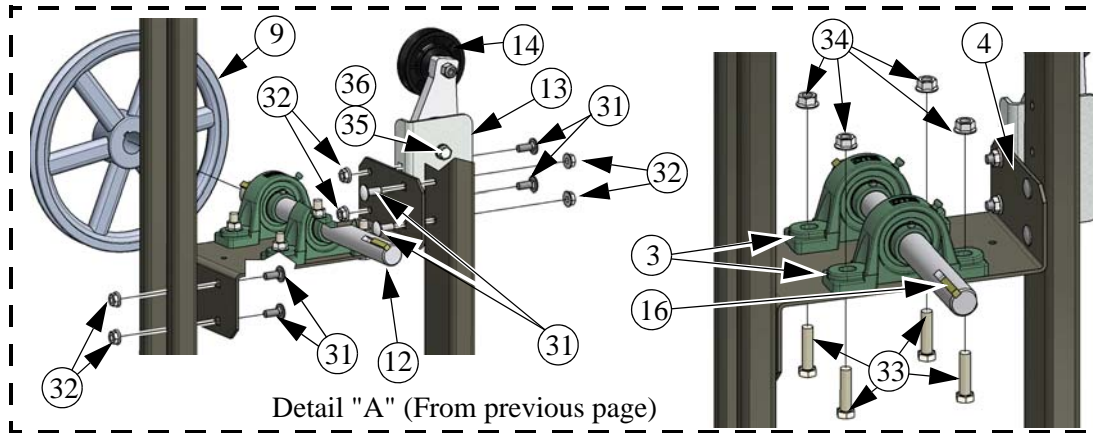
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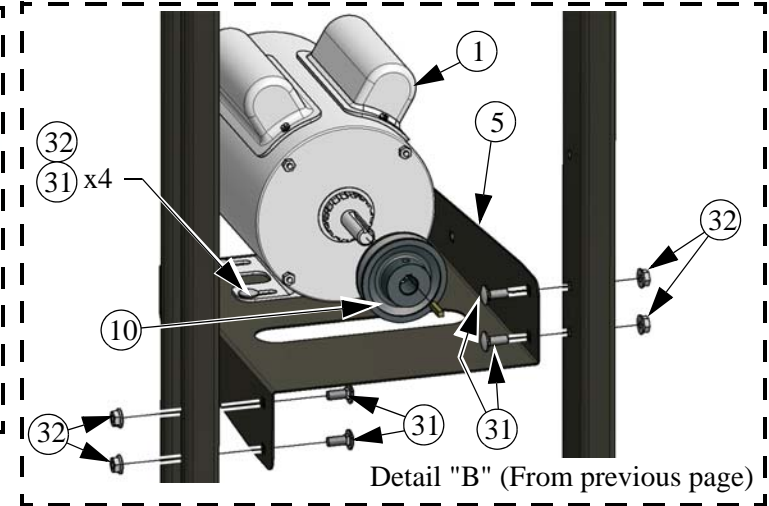
Part Numbers (Itemized)



Part Numbers



Detail "A" (From previous page)



Detail "B" (From previous page)

57" Endura® Fan Part Numbers 53464-XX, -XXS

Item	Qty.	Description	Part No.	Models
1	1	Motor, 1.5H 1PH-60HZ-230V	49903	-22, -22S
		Motor, 1.5H 3PH-60/50HZ-200/380-460V	48608	-41,-42,-51,-52,-41S,-42S,-51S,-52S
		Motor, 1.5H 1PH-60HZ-230V	50496	-21,-21S
2	2	57" Fan Post	53204	All
3	2	1" Pillow Block Bearing	50553	All
4	1	Idler Drive Bearing Support	48395C	All
5	1	Idler Drive Motor Support	48396C	All
*6	1	57" Fan Shroud Assembly	52925	All
7	2	Upper Corner Support (2 Notches)	53205	All
		Lower Corner Support (1 Notch)	53206	All
9	1	AFD99100 Composite Sheave	54118	-21,-22,-41,-42,-21S,-22S,-41S,-42S
		AK94 x 1.00" Bore Driven Sheave	40274	-51,-52,-51S,-52S
10	1	AK30 3" O.D. x 5/8 Bore Motor Sheave	8773	-21,-22,-41,-42
		AK34	37919	-51,-52
11	1	AX60 V-Belt	48541	All
12	1	1" x 11.97" Fan Shaft	52083	-21,-22,-41,-42,-51,-52
		1" x 11.97 SS Fan Shaft	54438	-21S,-22S,-41S,-42S,-51S,-52S
13	1	Tensioner Support	49737	All
14	1	Tensioner Assembly 3.5" Arm 3" Dia.	48429	All
15	1	57" Galv. High Capacity Fan Blade	53219	-21,-41,-51
		57" Galv. E. Efficiency Fan Blade	53532	-22,-42,-52
		57" High Capacity SS Fan Blade	54529	-21S,-41S,-51S
		57" E. Efficiency SS Fan Blade	54530	-22S,-42S,-52S

Item	Qty.	Description	Part No.	Models
16	2	1/4" Sq. 1.13" Key	2419-2	All
17	4	Cone Bracket	53039	All
25	1	57" Fan Support Shelf	53338	All
26	1	56 x 56 x 12.35 Inlet Screen	48794	All
31	22	5/16-18 x 1.0 SS Carriage Bolt	27868-1	All
32	57	5/16-18 Hx. Serrated SS Flange Nut	46764	All
33	4	3/8-16 x 1.50 SS HH Bolt	4413-10	All
34	4	3/8-16 SS Serrated Flange Nut	50191	All
35	1	3/8-16 x .75 SS Hx. Bolt	ST99277	All
36	1	3/8 SS Lock Washer	ST99780	All
40	24	1/4-10 x 1-1/2 Lag Screw SS	41561	All
41	9	Open Eye Hook	1214	All
42	1	Fan Decal	39002-XXX	All
46	4	.125 x .50 Magnet	48427	All
47	8	Magnet Side Plate	53026	All
*48	1	57" Fan Cross Rod	53398	All
*49	2	57" Fan Cross Rod Coupler	53896	All
50	2	1/4-20 x 1/2 Press Stud	7791-3	All
*51	1	57" Center V-Post	53626	All
55	1	Screen Spring (Package of 4)	54480-4	All
*56	2	Fan Danger Decal	2527-50	All

* Fan Shroud Assembly (Item 6) Includes items 48,49,50,51, and 56

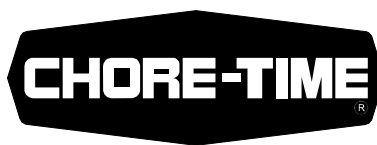
This exploded view diagram illustrates the assembly of a washing machine door. The central components are the door panel (27), the door frame (20 x4), and the door seal (28). The diagram shows the following parts and their assembly sequence:

- Door Panel (27):**** The main outer door panel.
- Door Frame (20 x4):** The structural frame of the door.
- Door Seal (28):** The rubber gasket that provides a watertight seal.
- Hinges (18, 19, 32):** Components that attach the door to the machine body. Part 18 is the hinge pin, 19 is the hinge bracket, and 32 is the hinge screw.
- Door Lock (38):** The mechanism that locks the door.
- Door Lock Assembly (32, 37, 38, 53):** The components that secure the door lock, including the lock pin (32), lock cylinder (37), lock body (38), and lock handle (53).
- Door Seal Components (21, 22, 23, 24, 29, 30, 31, 39, 52):** Various parts of the door seal assembly, including the seal lip (21), seal support (22), seal gasket (23), seal clip (24), seal bracket (29), seal ring (30), seal pin (31), seal screw (39), and seal handle (52).

The diagram includes several detailed insets showing the specific installation steps for these components, such as attaching the hinges, installing the door lock, and fitting the door seal.

Part Numbers (Continued)

57" Endura® Fan Part Numbers 53464-XX, or 53464-XX,XXS				
Item	Qty.	Description	Part No.	Models
18	1	Orifice Frame	53416	All
19	6	Orifice Frame Bracket	53611	All
20	4	57" Cone Panel	53163	All
21	1	Top Pivot Plate	53037	All
22	1	Bottom Pivot Plate	53036	All
23	1	Ø1/2" x 11" Door Spring	49629	All
24	1	72.5" Fan Cone Cable	53399	All
27**	1	Left 57" Door Assembly	52926L	All
28**	1	Right 57" Door Assembly	52926R	All
29	4	1/4 x 1-3/4 420 SS Spring Pin	53038	All
30	1	70" Cone Grill	53129	All
32	57	5/16-18 Hx. Serrated Flange Nut	46764	All
37	2	3/8 SS Flat Washer	ST99070	All
38	20	5/16-18 x 1 HHBS Gr8 Bolt	39-20073	All
39	1	5/16-18 x 2 SS Eye Bolt	30663	All
52	4	Striker Plate	53027	All
53	2	Cable Clamp	732	All
54	1/3	Anti-Seize (Not Shown)	47749	All
**Doors Include 53027 Striker Plates (Item 52)				



**Made to work.
Built to last.**

Revisions to this Manual

Page No.	Description of Change
Various	Added Stainless Steel Blade Option
5	Added Overhang for Snow and Ice Info

Contact your nearby Chore-Time distributor or representative for additional parts and information.

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