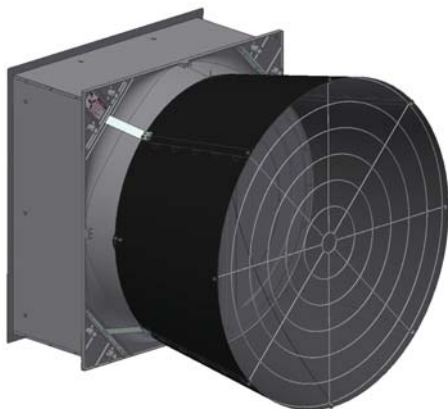




57" Endura® Flush Mount Fan

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 [m³/hr]	CFM/W [m³/hr/w]	CFM [m³/hr]	CFM/W [m³/hr/w]
54659-21 54659-21S	13592	230	1	60	537	7.1	36.0	29600 [50200]	19.2 [32.7]	27300 [46400]	16.8 [28.5]
54659-22 54659-22S	13591	230	1	60	538	5.6	27.5	26400 [44900]	21.7 [36.8]	24300 [41200]	18.8 [32.0]
54659-41 54659-41S	13566	230	3	60	532	4.9	40.0	29200 [49600]	19.6 [33.4]	26800 [45600]	17.1 [29.0]
54659-42 54659-42S	13569	230	3	60	536	4.2	40.0	26300 [44700]	22.2 [37.6]	24200 [41000]	19.2 [32.7]
54659-51 54659-51S	13567	230	3	50	526	5.3	45.0	28800 [49000]	19.6 [33.3]	26500 [45000]	17.1 [29.1]
54659-52 54659-52S	13568	230	3	50	532	4.7	45.0	26000 [44200]	22 [37.3]	23700 [40300]	18.9 [32.1]



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 air-flow 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 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.

Unassembled Fans Parts Packages



(54671-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



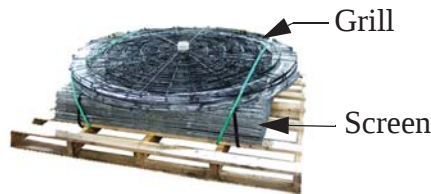
(53753-1, -2, -1S, -2S)
Drive Assembly
1 or 2 Drives per Box



(54661-AAXX, or -AAXXS)
Hardware Package



(See Table Below)
Motor Pallet



(53129) Grill
(54464) Inlet Screen

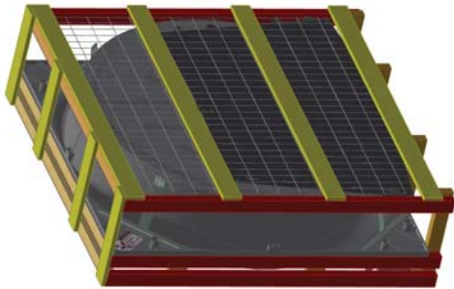


(54470)
Housing Extension Kit

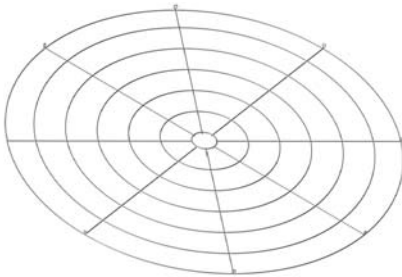
Unassembled 57" Endura® Fan Component Part Numbers

Fan Part No.	Drive Assembly	Motor	Hardware Pkg.	Fan Blade
54659-21	53753-1	50496	54661-21XX	53219
54659-21S	53753-1S	50496	54661-21XXS	54529
54659-22	53753-1	49903	54661-22XX	53532
54659-22S	53753-1S	49903	54661-22XXS	54530
54659-41	53753-1	48608	54661-41XX	53219
54659-41S	53753-1S	48608	54661-41XXS	54529
54659-42	53753-1	48608	54661-42XX	53532
54659-42S	53753-1S	48608	54661-42XXS	54530
54659-51	53753-2	48608	54661-51XX	53219
54659-51S	53753-2S	48608	54661-51XXS	54529
54659-52	53753-2	48608	54661-52XX	53532
54659-52S	53753-2S	48608	54661-52XXS	54530
XX= Number of Fans that can be built with components in Package.				

Assembled Fans Parts Packages



(54659-XXXXP)
Fan Assembly



(53129)
57" Fan Grill



(54470)
Flush Mount Kit

Assembled 57" Endura® Fan Component Part Numbers

Part Number	54659-21	54659-21S	54659-22	54659-22S	54659-41	54659-41S	54659-42	54659-42S	54659-51	54659-51S
	Qty									
Fan Assembly	1	54659-21P	54659-21PS	54659-22P	54659-22PS	54659-41P	54659-41PS	54659-42P	54659-51P	54659-51PS
Fan Grill	1	53219	53219	53219	53219	53219	53219	53219	53219	53219
Flush Mount Kit	1	54470	54470	54470	54470	54470	54470	54470	54470	54470

Assembled 57" Endura® Fan Component Part Numbers

Part Number	54659-52	54659-52S	54659-015	54659-015S	54659-025	54659-025S	54659-016	54659-016S	54659-026	54659-026S
	Qty									
Fan Assembly	1	54659-52P	54659-52PS	54659-015P	54659-015PS	54659-025P	54659-016P	54659-016PS	54659-026P	54659-026PS
Fan Grill	1	53219	53219	53219	53219	53219	53219	53219	53219	53219
Flush Mount Kit	1	54470	54470	54470	54470	54470	54470	54470	54470	54470

Hardware Needed Per Fan (Unassembled)

57" Endura® Fan Hardware Items per Fan Items are bulk packed in 54661-AAXX, or 54661-AAXXS (See page 3).			
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	40	5/16-18 x 1" SS Bolt	54287
6	55	5/16-18 Hx. Serrated SS Flange Nut	46764
7	1	Fan Description Decal	39002-XXX
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	12	1/4-10 x 1-1/2" Lag Screw SS	41561
13	1/3	Anti-Seize Lubricant	47749
14	--	57" Endura® Fan Instruction Manual	MV2423
15	6	Orifice Frame Bracket	53611
16	2	Cable Clamp	732

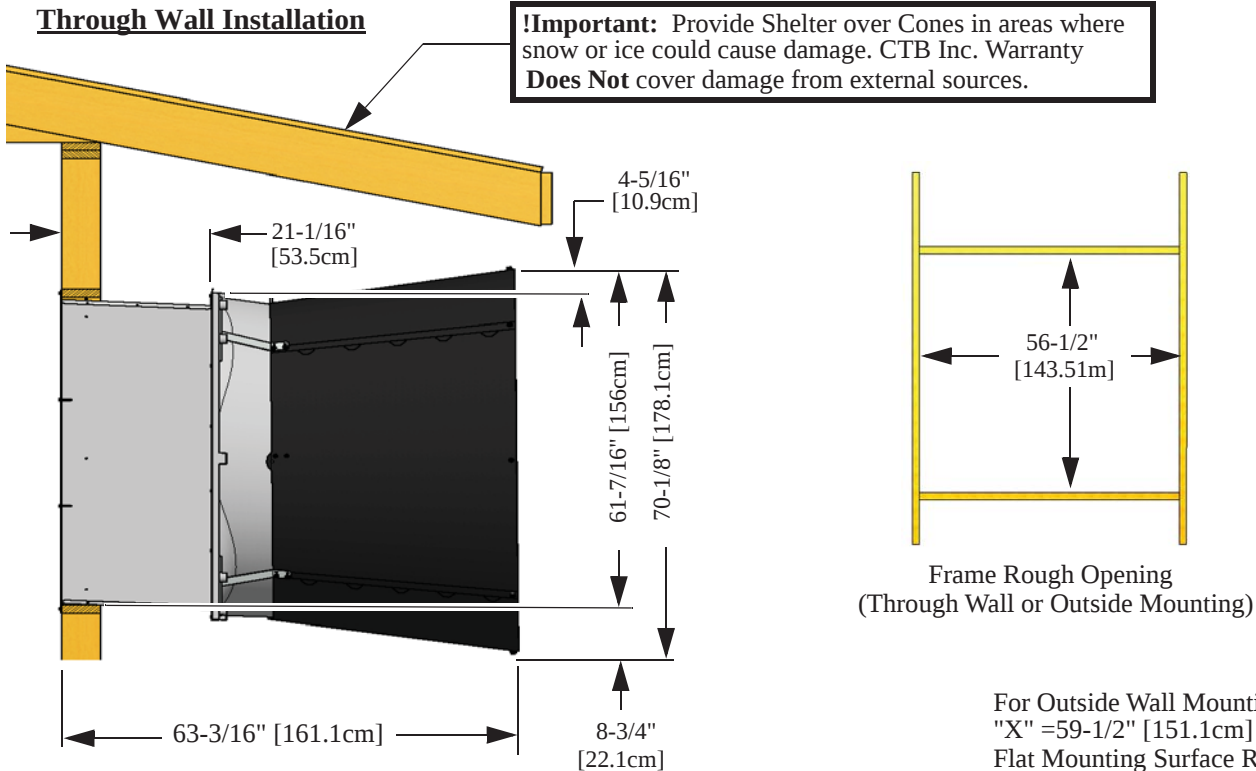
Tools Needed and Supplies

3/8", 1/2", and 7/16" sockets or wrenches, side cutters, 1/4" nut driver, motor power cord, wire nuts / terminals, 5/32" allen wrench (un-assembled)

New Installation Planning

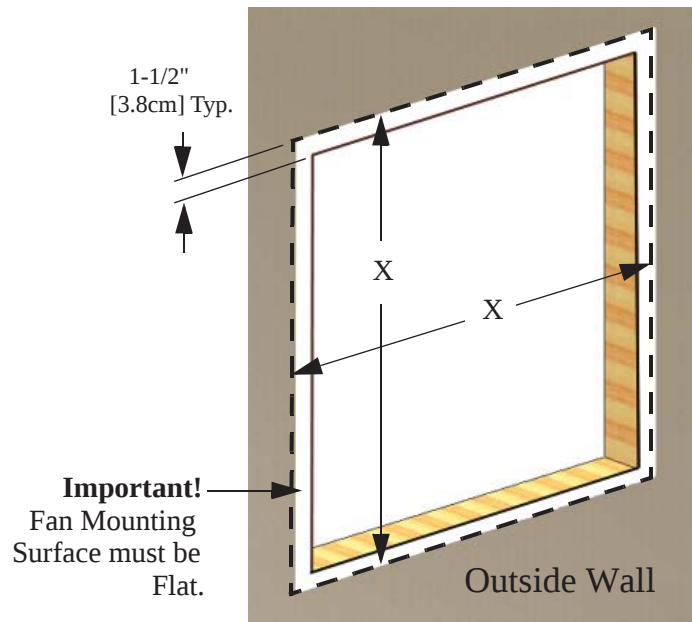
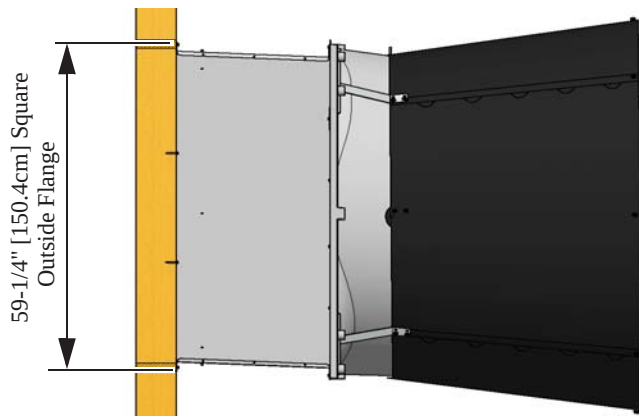
Fans can be installed with the Extension Box through the wall or outside the wall. The Figure below shows dimensioning for both installations.

Through Wall Installation



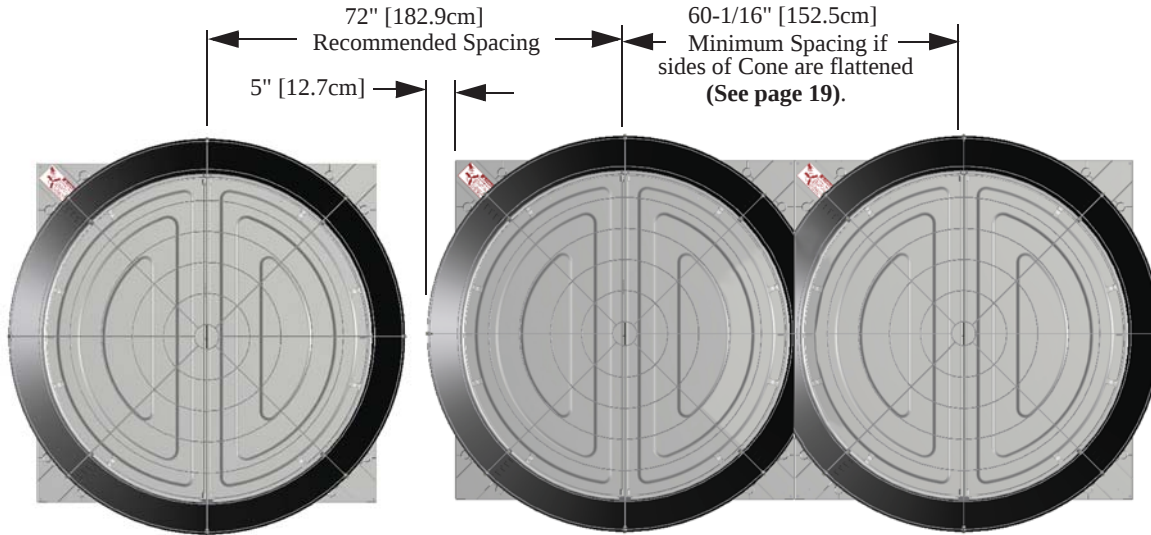
For Outside Wall Mounting
"X" = 59-1/2" [151.1cm] Minimum
Flat Mounting Surface Required

Outside the Wall Installation



Spacing

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

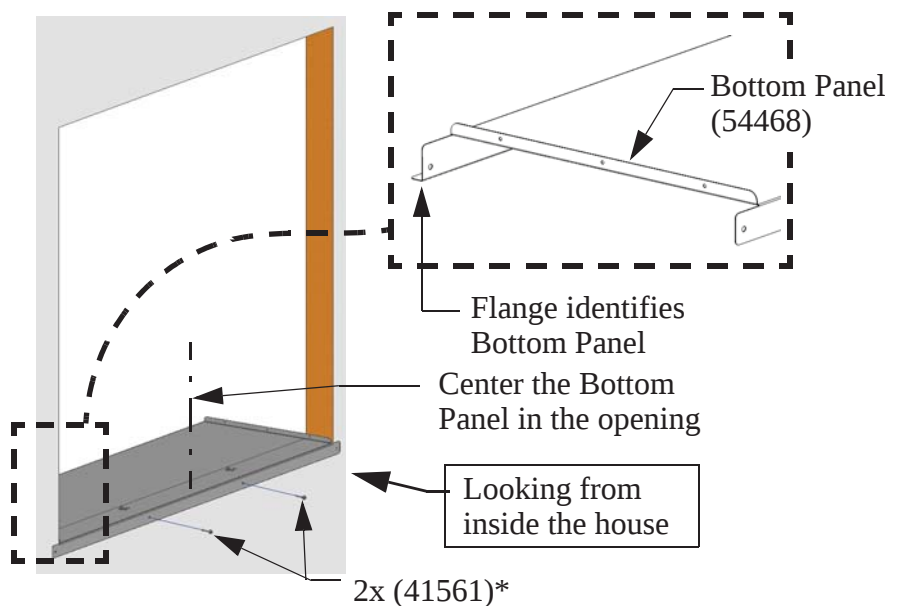


Installation

Assembling the Extension Housing

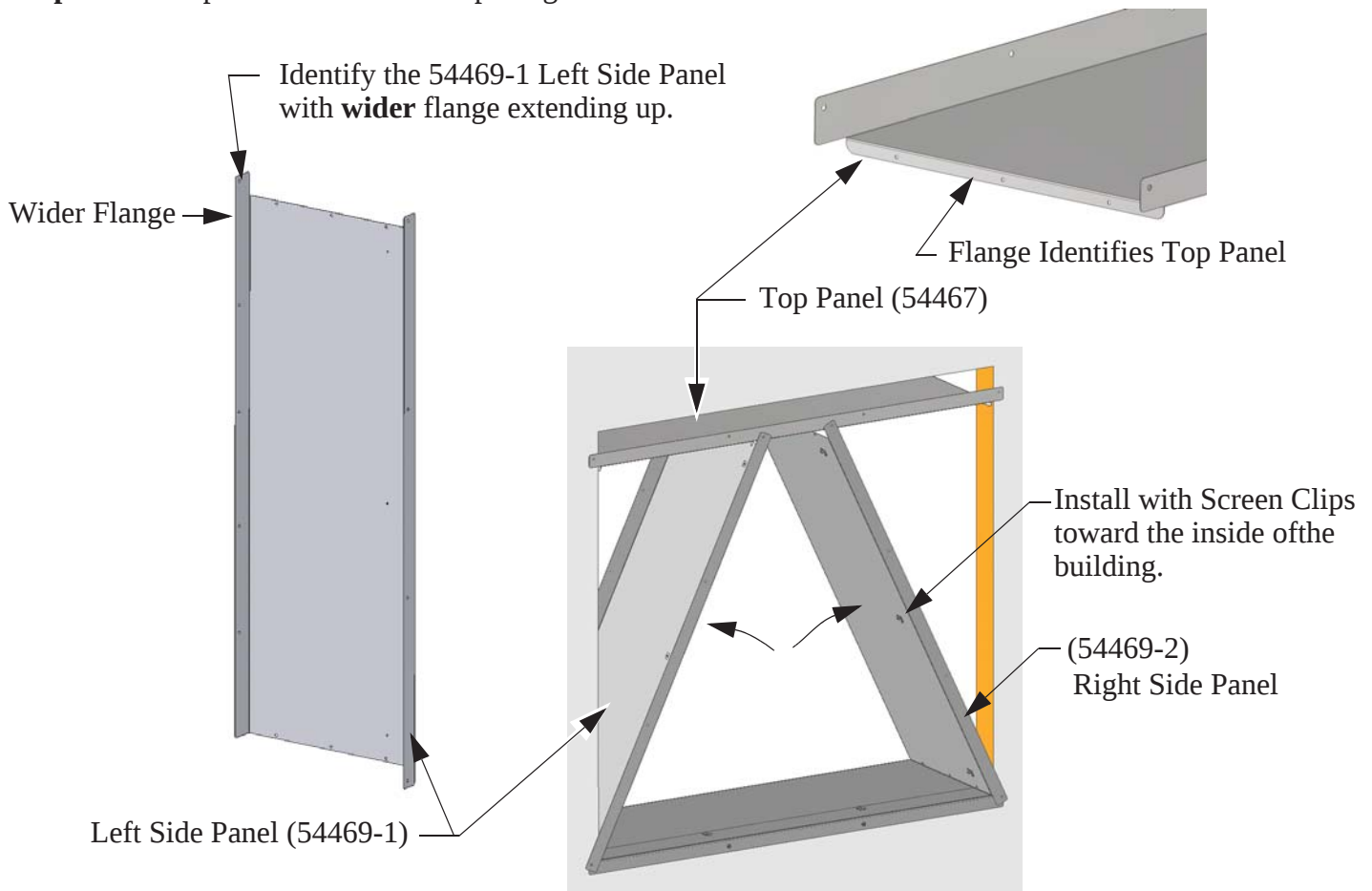
Note: panels in this manual are shown gray for clarity. Actual panels are black.

Step 1: Locate the Bottom Extension Panel and attach to the framed opening as shown.

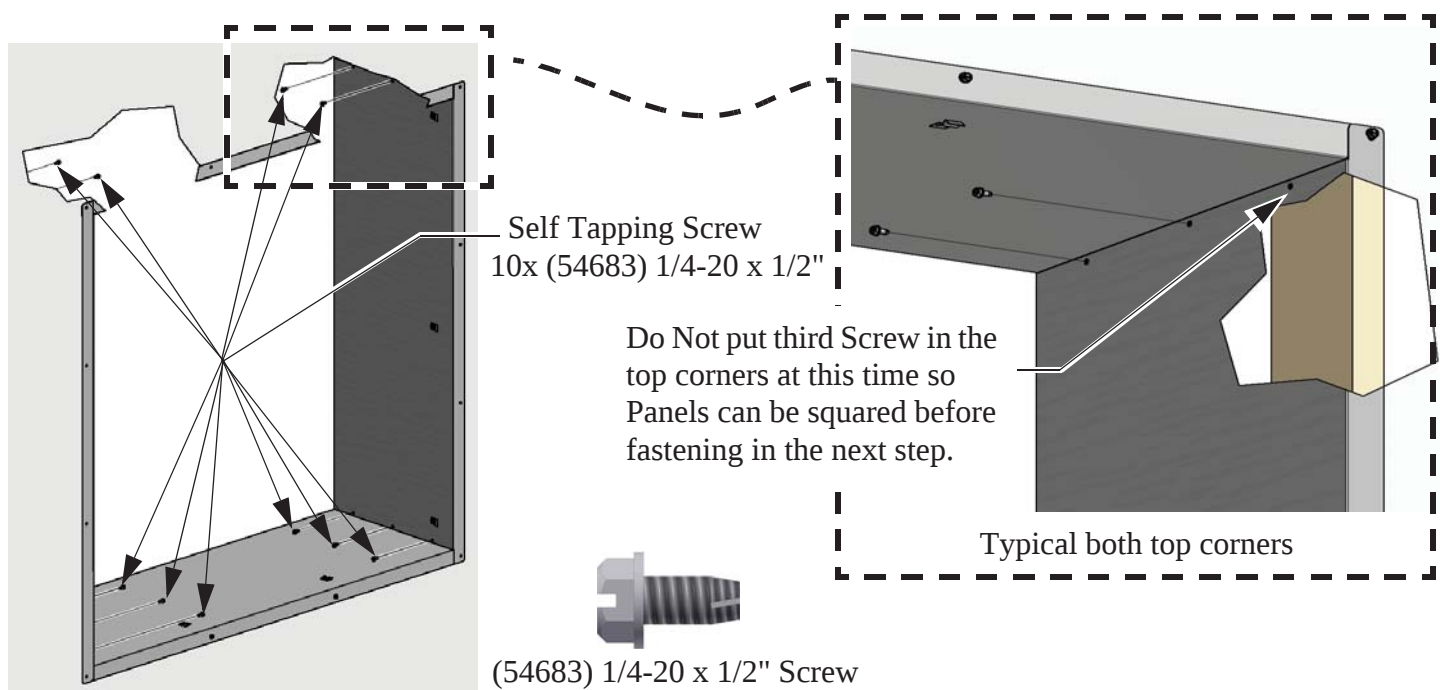


*(41561) 1/4-10 x 1-1/2" Lag Screw
provided with 57" Endura® Fan

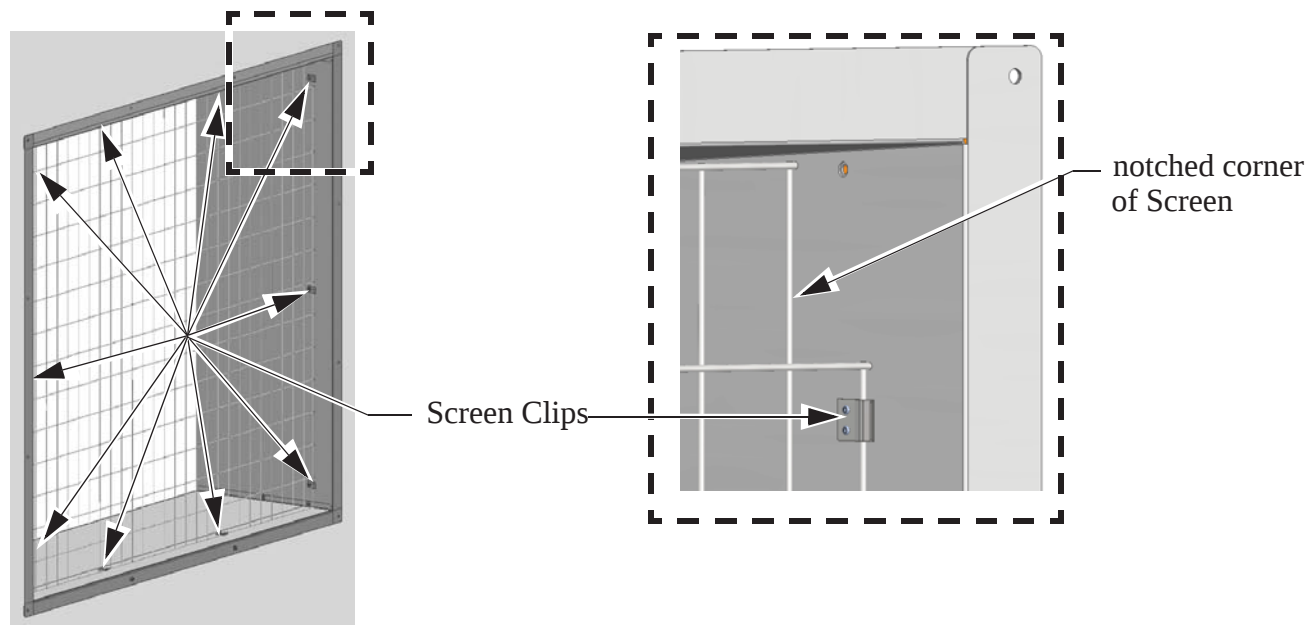
Step 2: Set the panels in the framed opening as shown.



Step 3: Attach the four Panels together with Self Tapping Screws (54683), Use 3 Screws in the bottom corners but only two in the upper corners **as shown**.

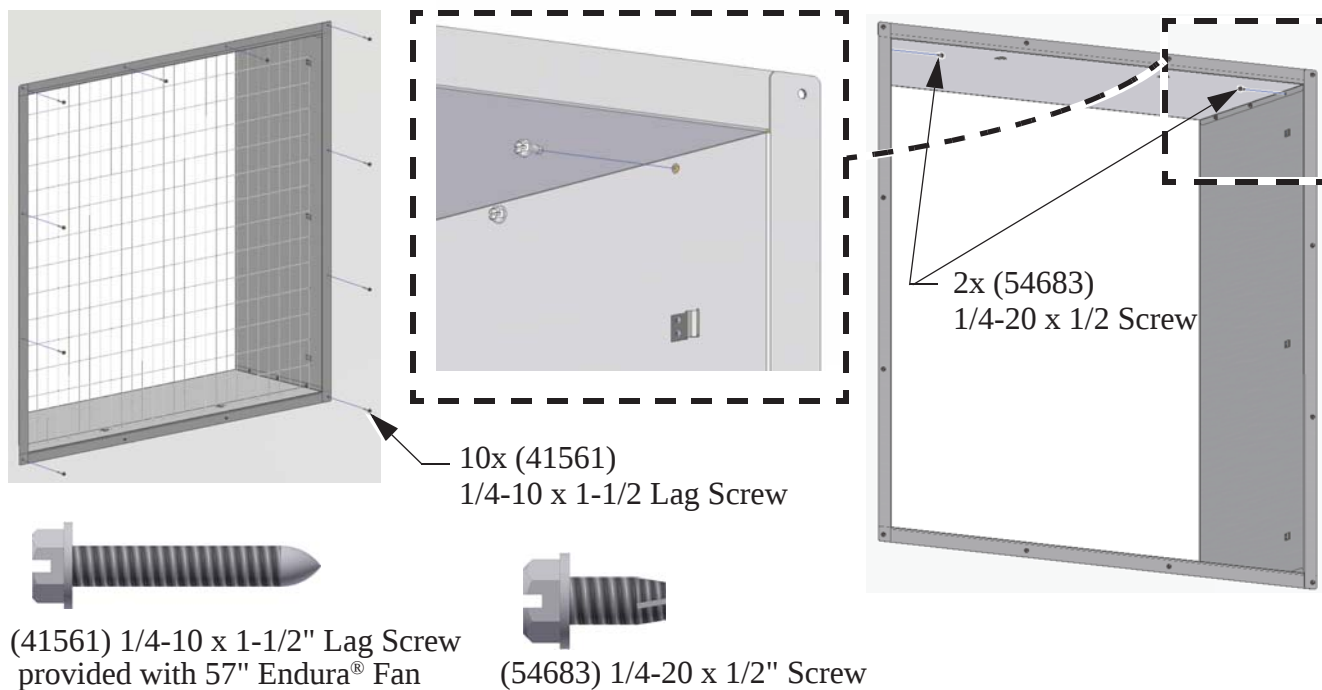


Step 4: Orient the Screen with the notched corner top right and snap the Screen into the Screen Clips as shown.



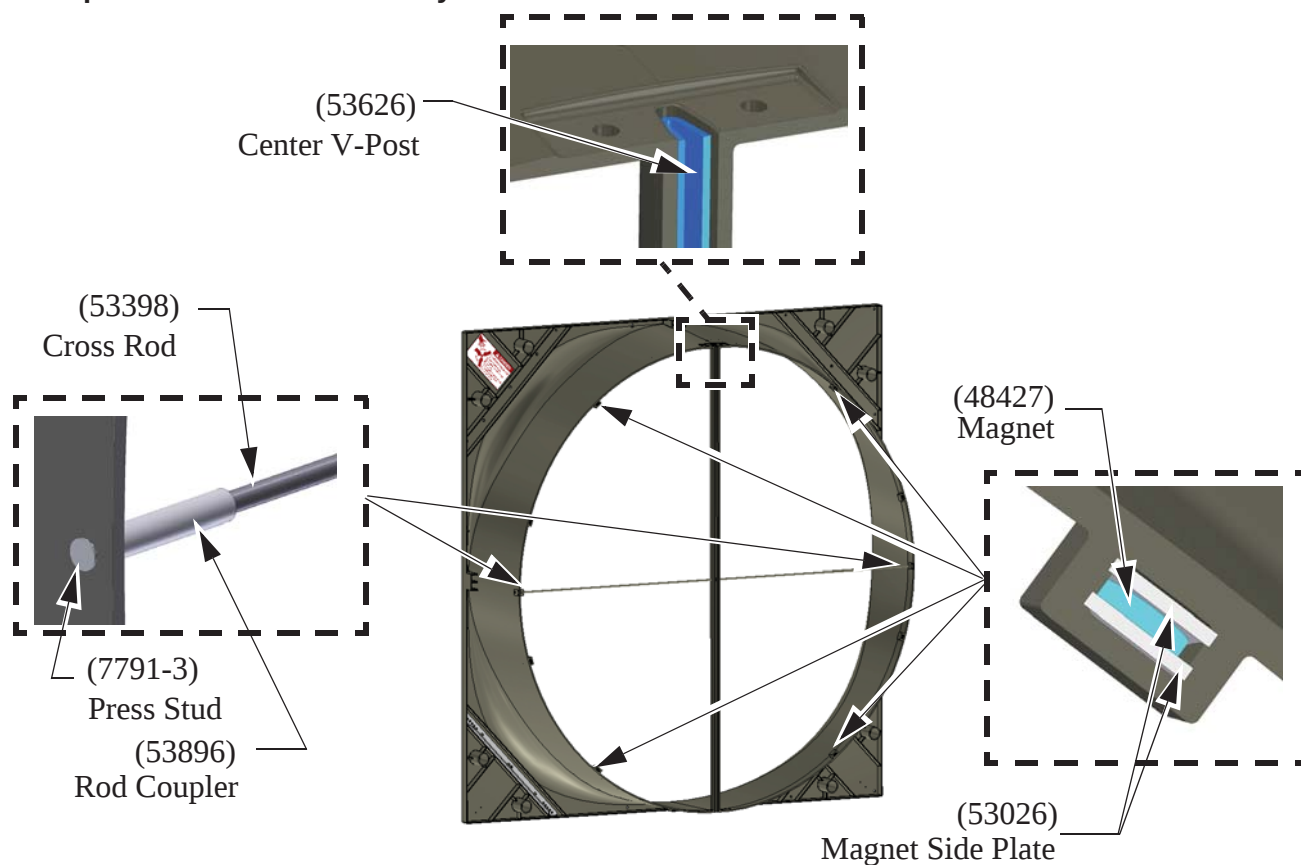
Step 5: With the Screen In place attach the Panels with 1/4-10 x 1-1/2" Lag Screws (41561) as shown.

Step 6: Remove the Screen and finish fastening the Panels with two (54683) 1/4-20 x 1/2" Screws.



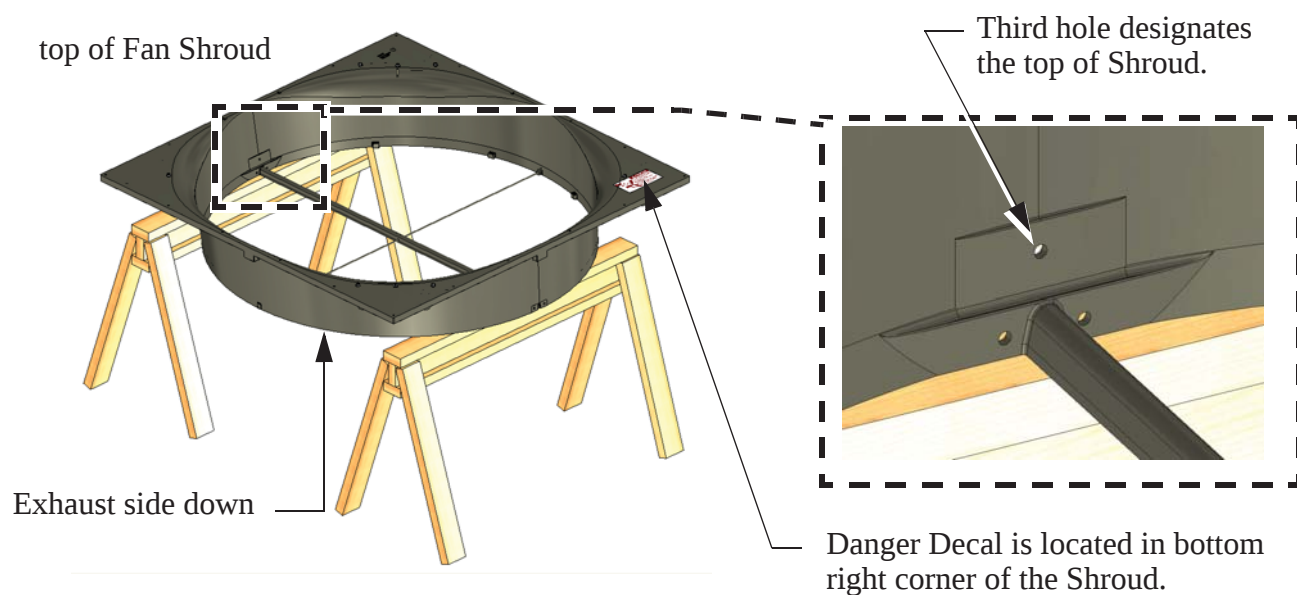
Inspecting the Shroud (For assembled versions skip to pg. 15)

Inspect the Shroud Assembly for hardware as it is received

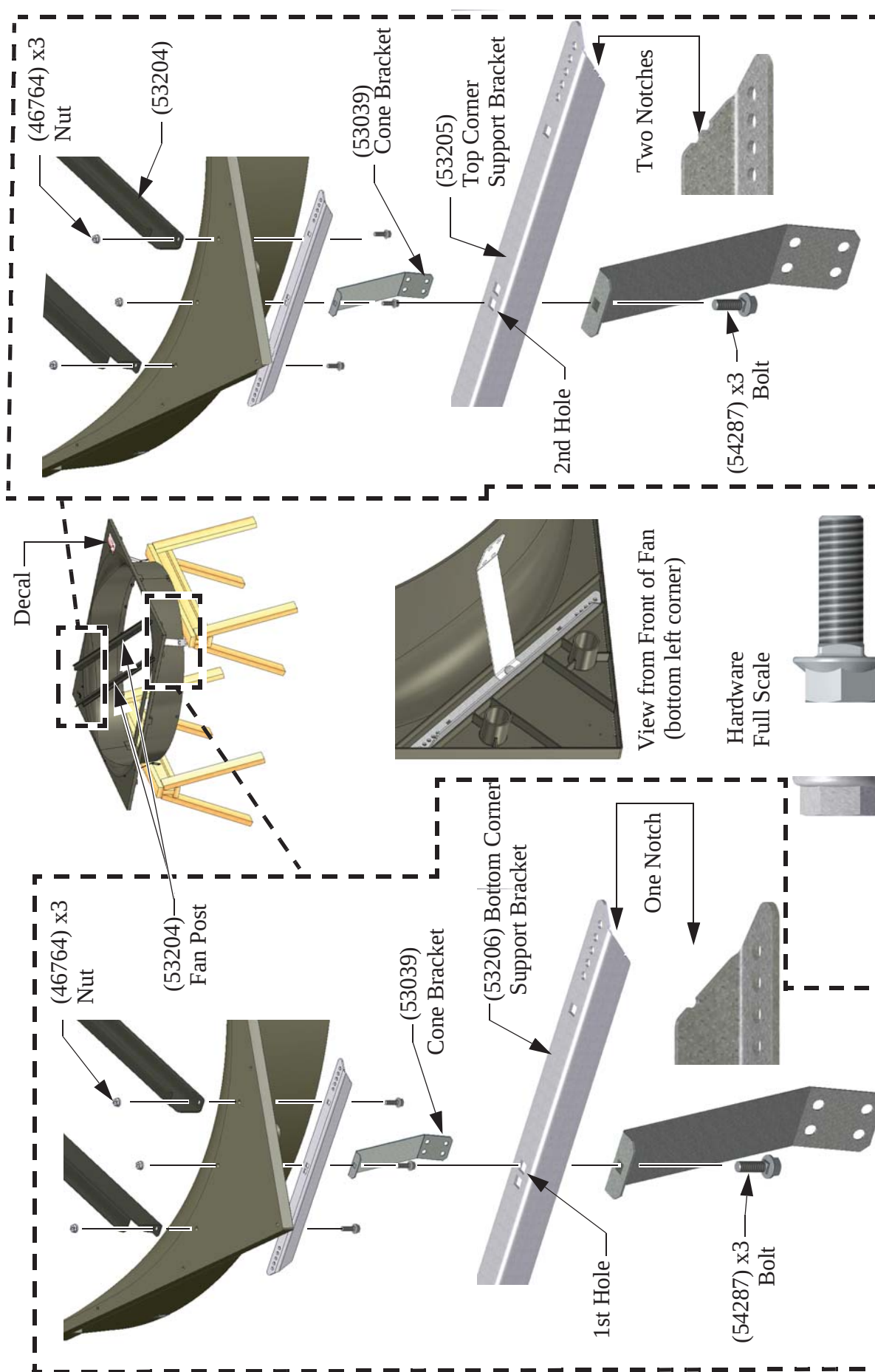


Fan Shroud Assembly (Unassembled version)

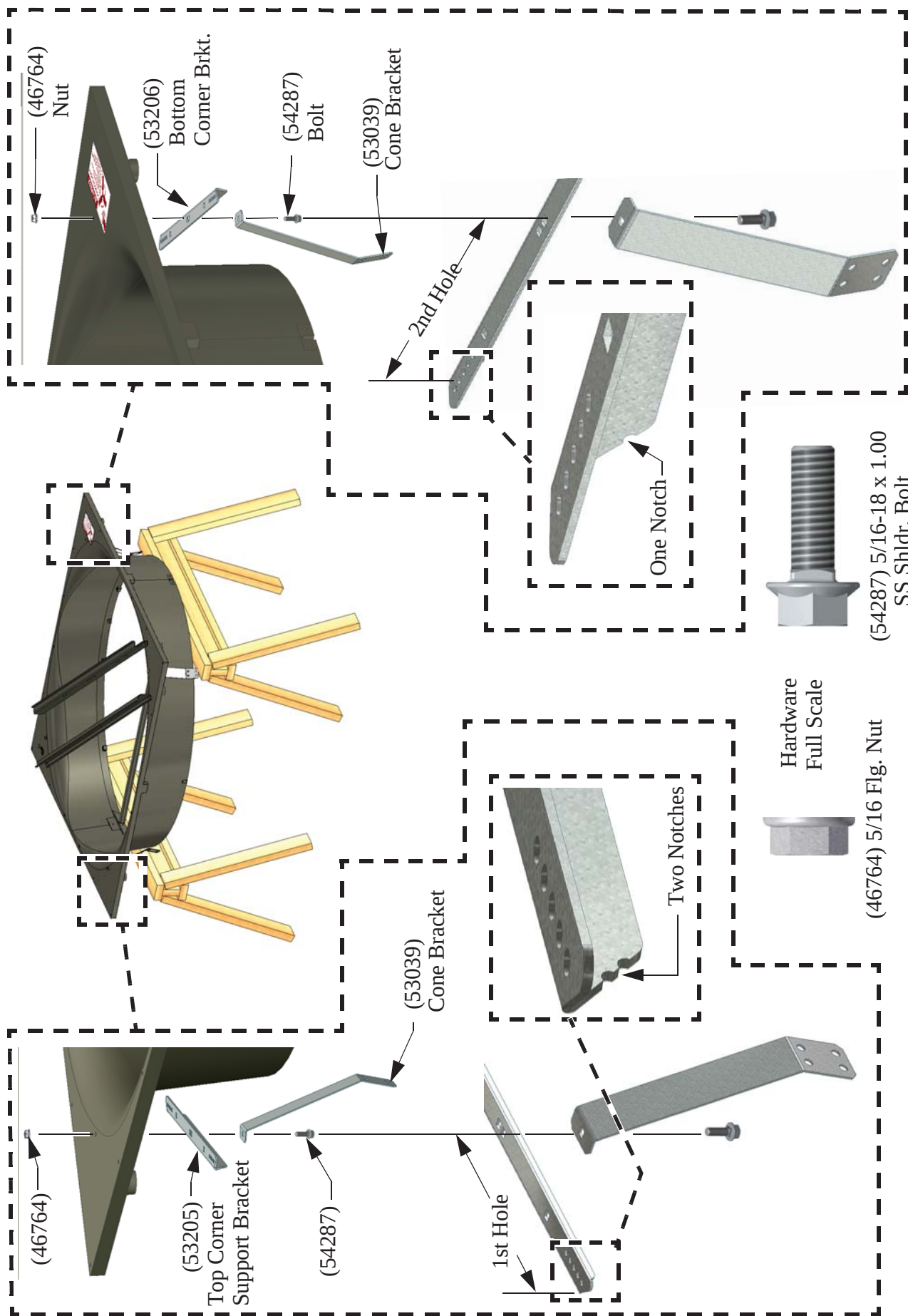
Rest the Fan Shroud on saw horses for ease of Assembly



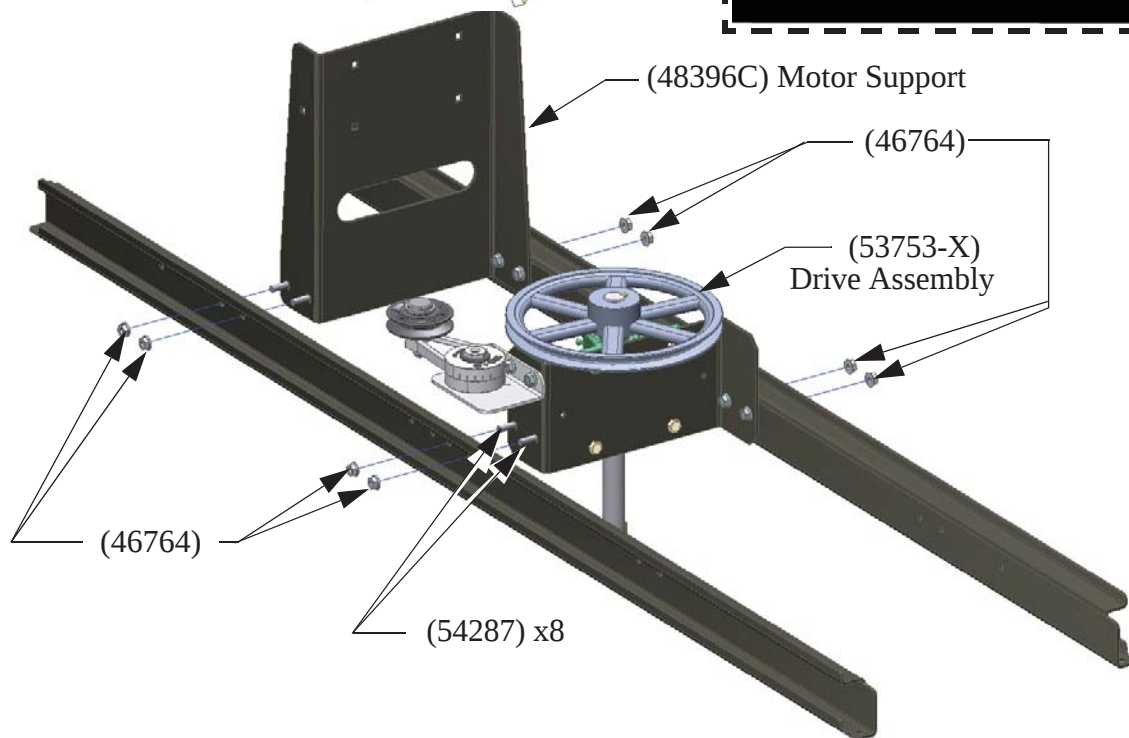
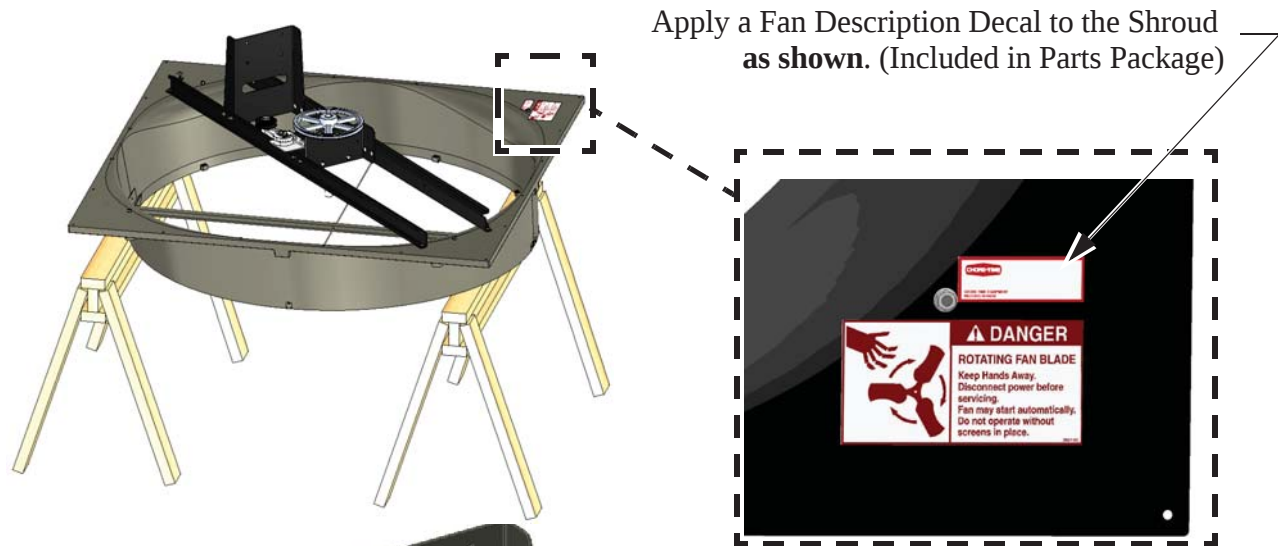
Attaching Fan Posts



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.

Hardware
Full Scale

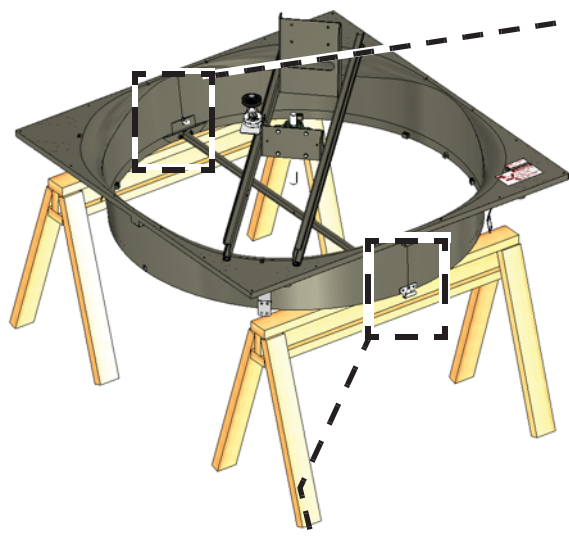


(46764) 5/16 Flg. Nut



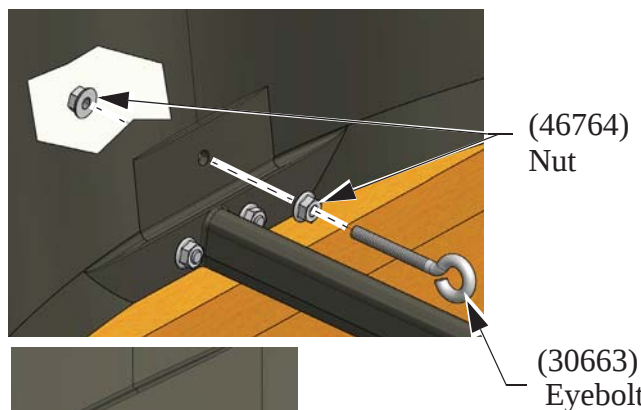
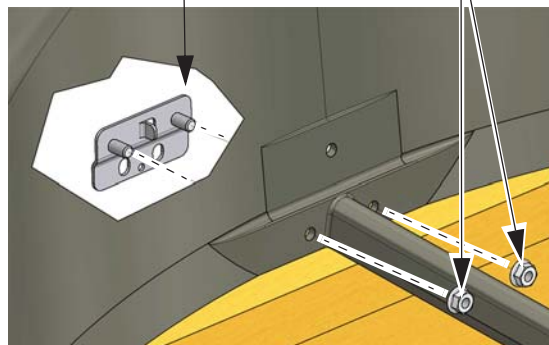
(54287) 5/16-18 x 1.00
SS Shldr. Bolt

Top and Bottom Pivot Plates and Eyebolt, Door Stop Cable



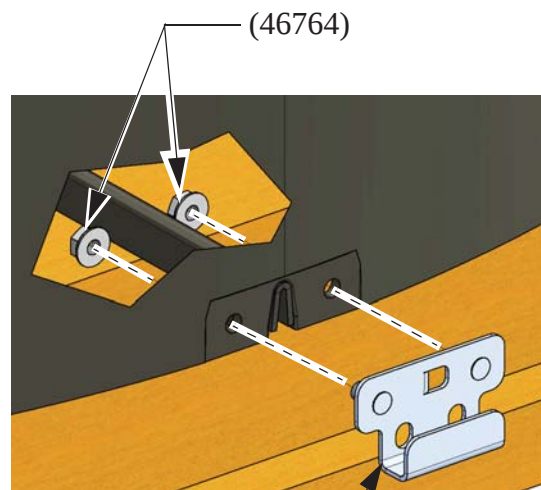
(53037)
Top Pivot Plate

(46764)
Nut



(46764)
Nut

(30663)
Eyebolt

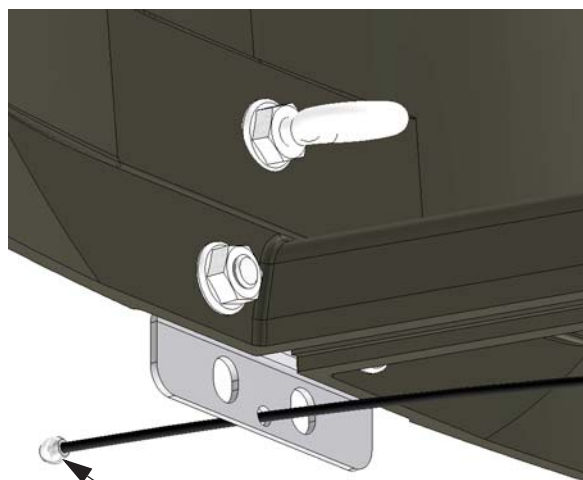


(46764)

(53036)
Bottom Pivot Plate



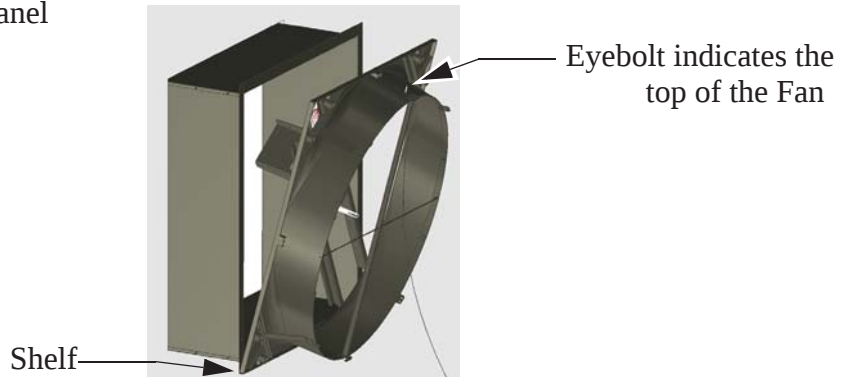
(46764) 5/16 Flg. Nut



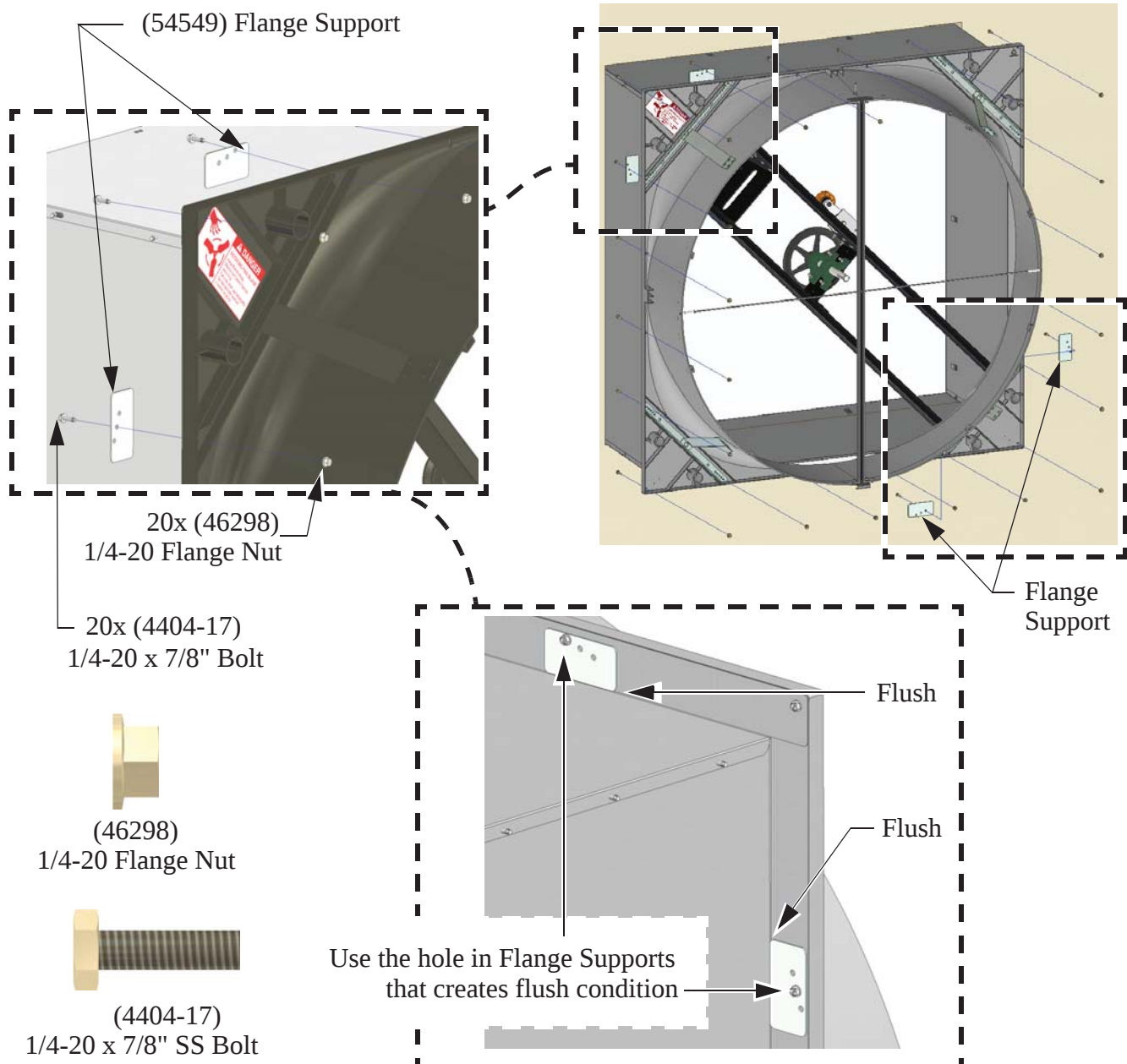
Insert (53399) Door Stop Cable
Assembly into Top Pivot Plate

Attaching the Fan to the Extension Housing (shown with doors removed)

Step 1: Set the Fan on the Bottom Panel Shelf as shown.

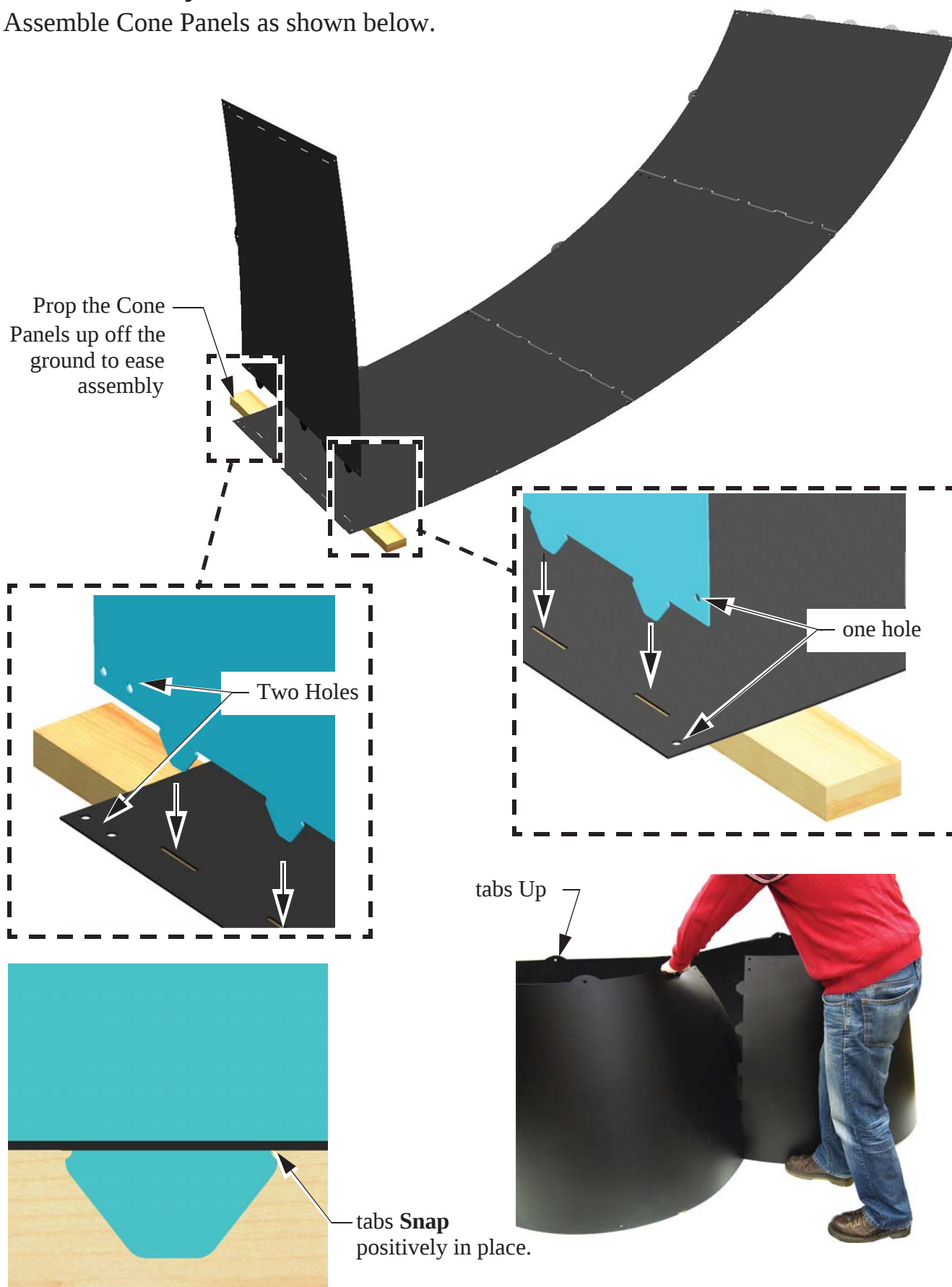


Step 2: Attach the Shroud to the Extension Box Panels with 1/4-20 x 7/8" SS Bolt (4404-17) and 1/4-20 Flange Nuts (46298). Use four Extension Panel Flange Supports (54549) at **Post Corners** as shown.

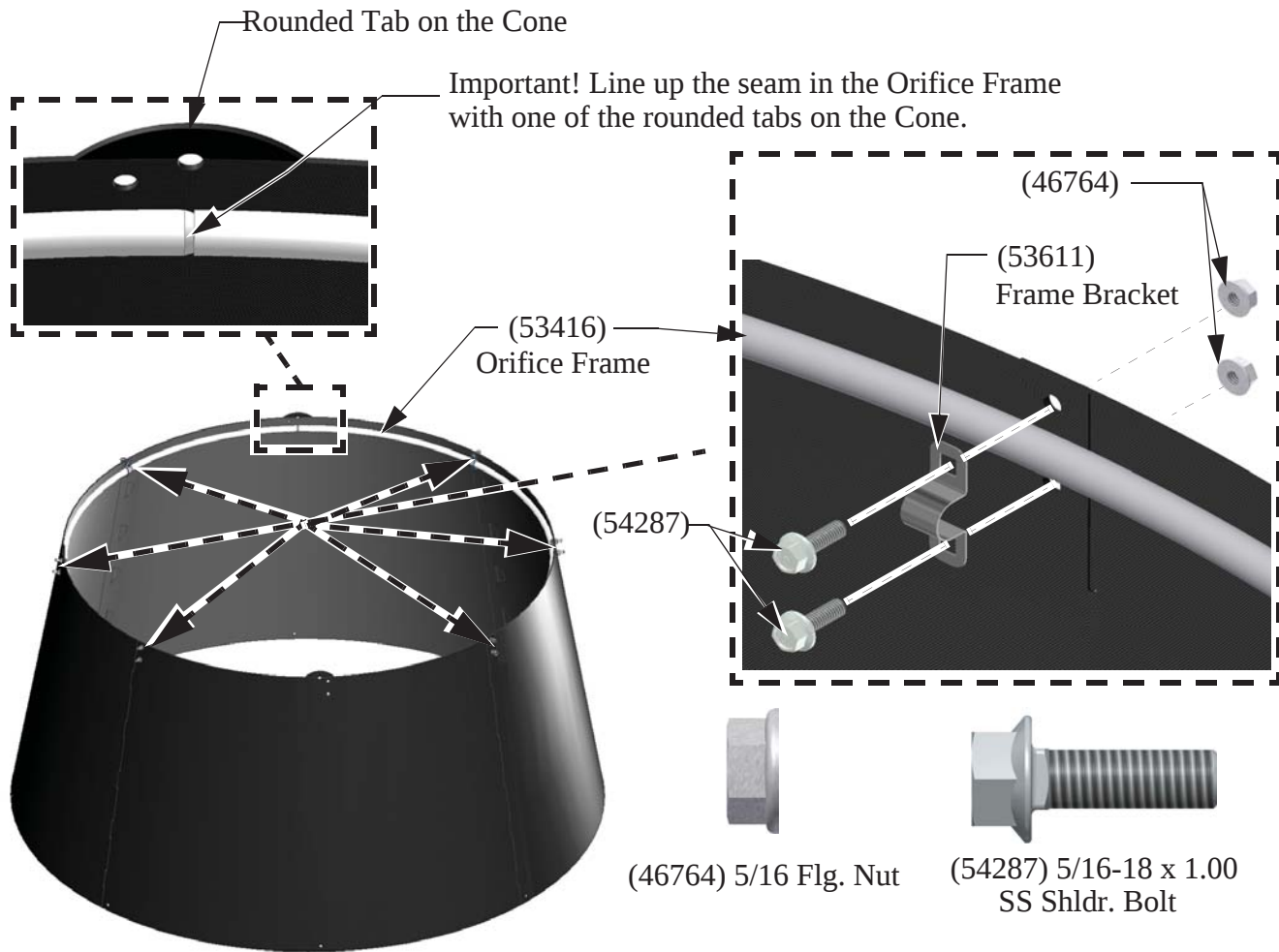


Cone Assembly

Assemble Cone Panels as shown below.



Installing the Orifice Frame



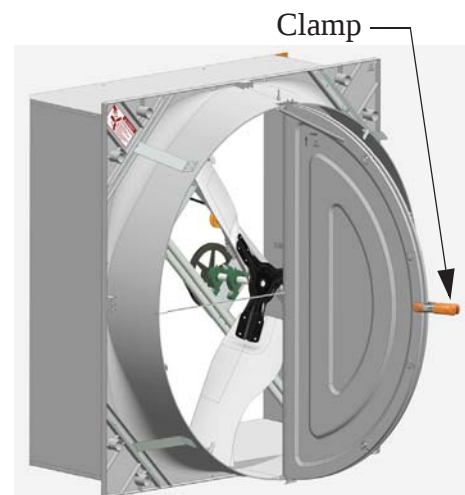
Cone Installation

Important! Before installing a Cone on assembled fan models do either **A** or **B** below.

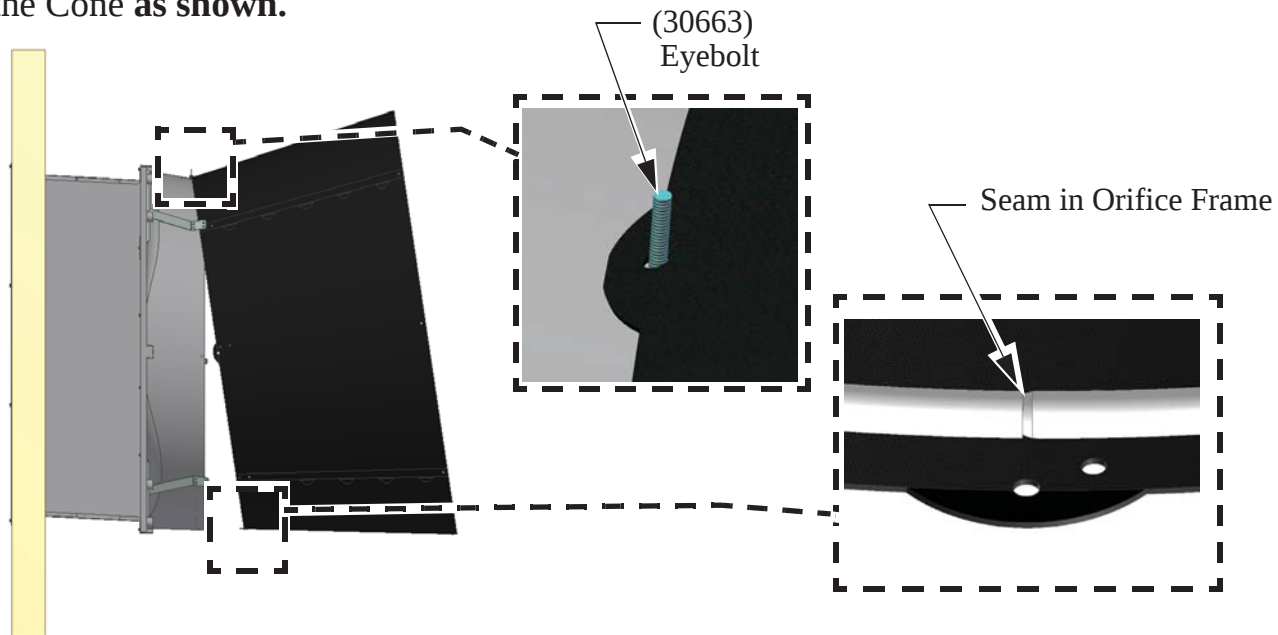
A: Remove the Doors (Below): To remove the Doors Pull near the center of the Door to allow the Door Pins to slide out of the top Door Pivot Bracket. Once the Door is clear of the Top Pivot Bracket lift it from the Bottom Pivot Plate and set aside somewhere safe to be reinstalled later.



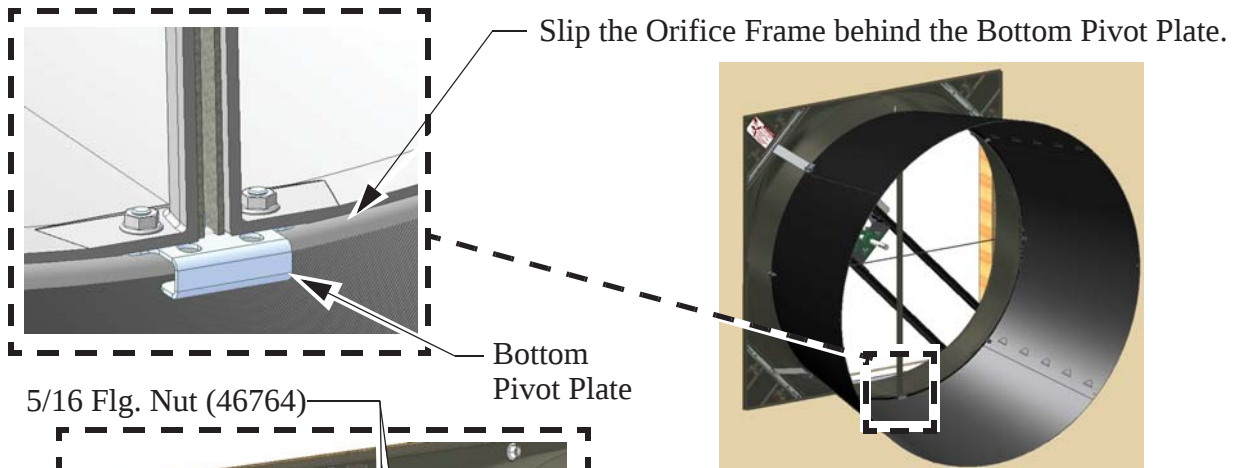
B: Clamp the Doors (Right)



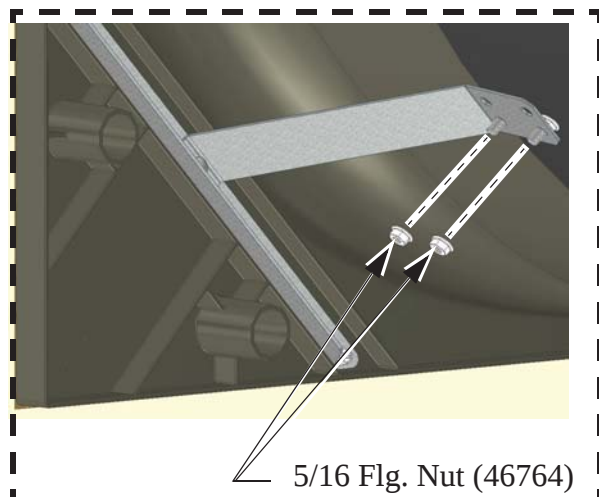
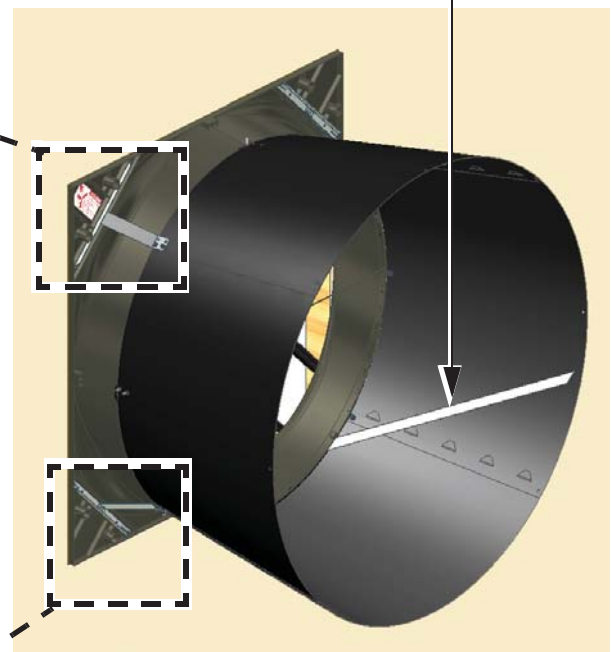
Hang the Cone on the Eye-Bolt extruding from the top of the Shroud using the hole in the Cone **as shown**.



Attach the cone to the Shroud **as shown below.**



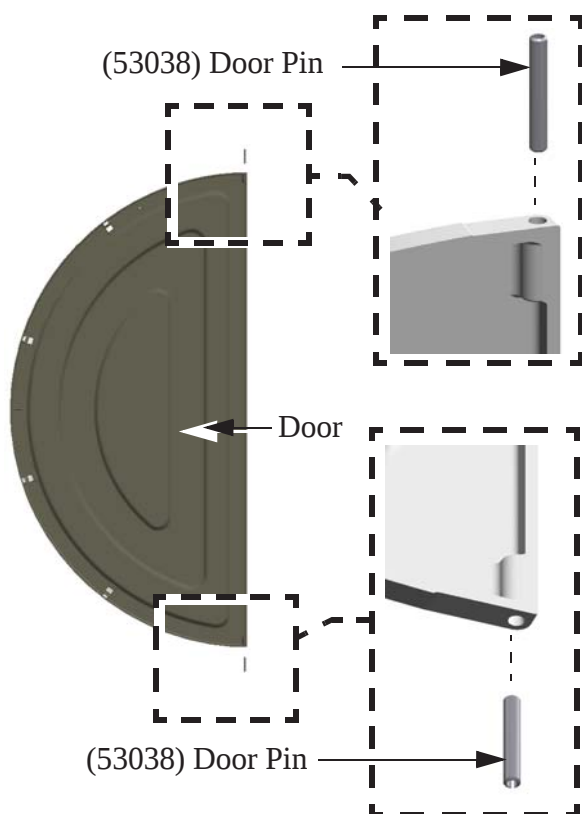
If necessary, slip a thin piece of metal between the Shroud and Cone and work it around the Cone to get it on.



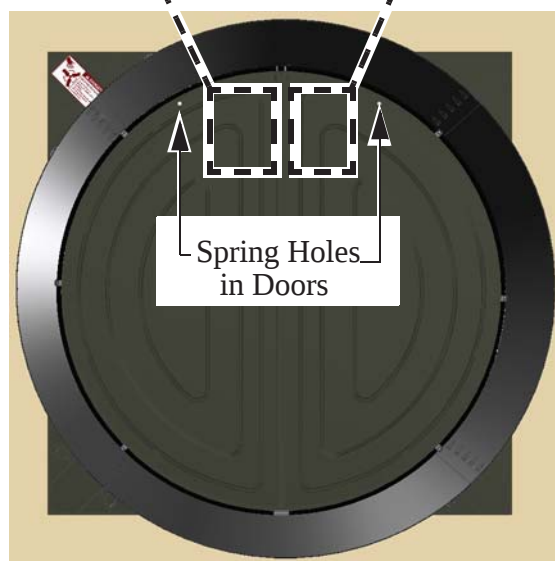
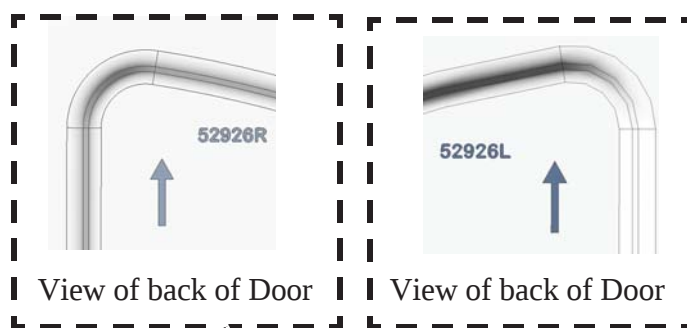
(46764) 5/16 Flg. Nut

Door Assembly and Installation

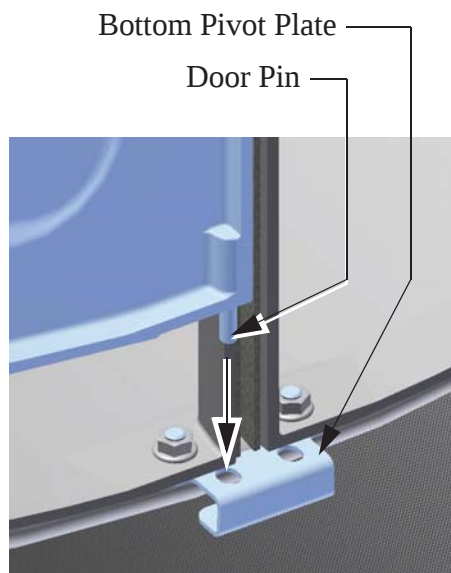
Insert Door Pins in both Doors as shown.
Push Pins in until they bottom out.



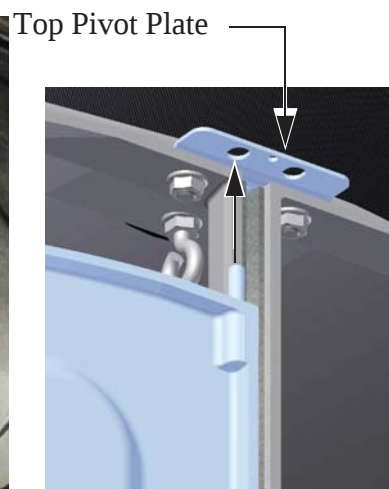
Doors are Left and Right specific.



Insert Door Pins into Bottom Pivot Plate.

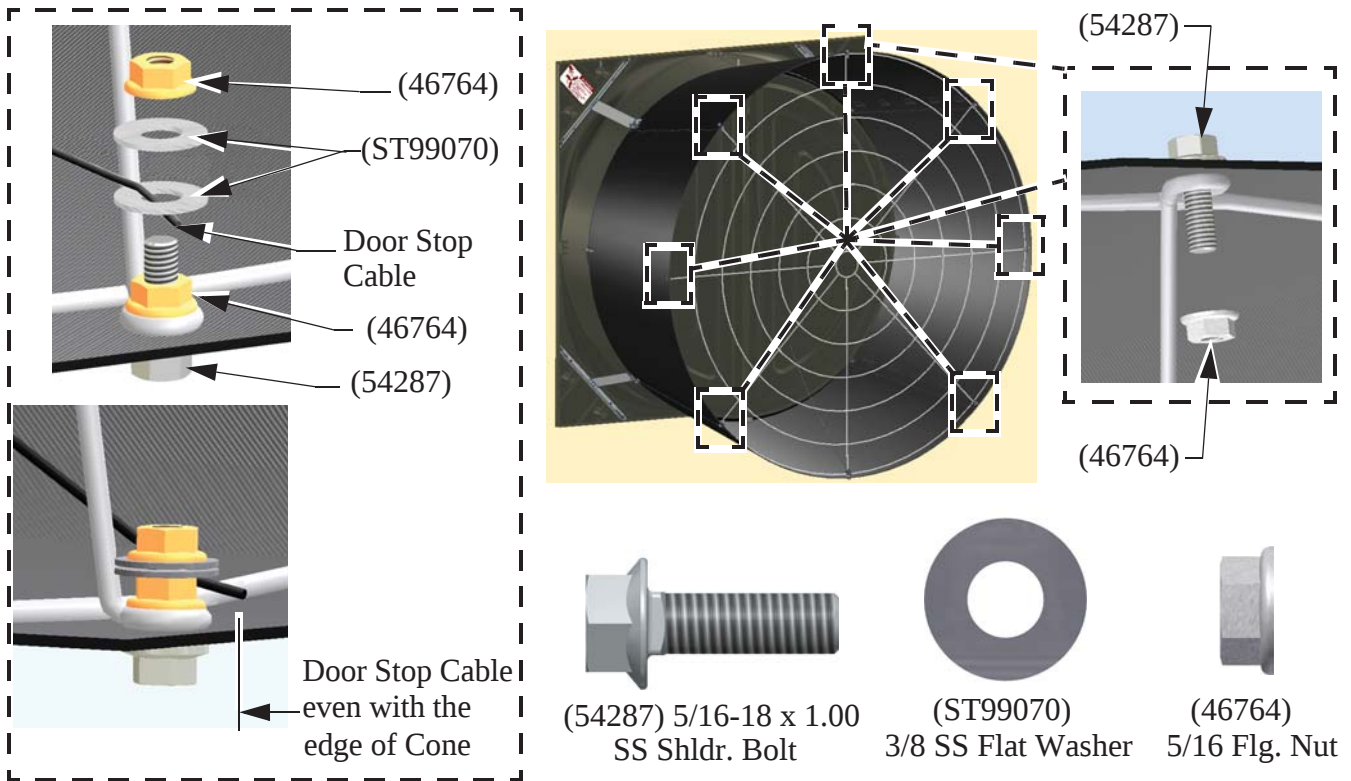


Grab the Door in the center, bow the Door outward, and insert the Top Door Pin in the Top Pivot Bracket as shown. **Do not Overbow the Doors!**

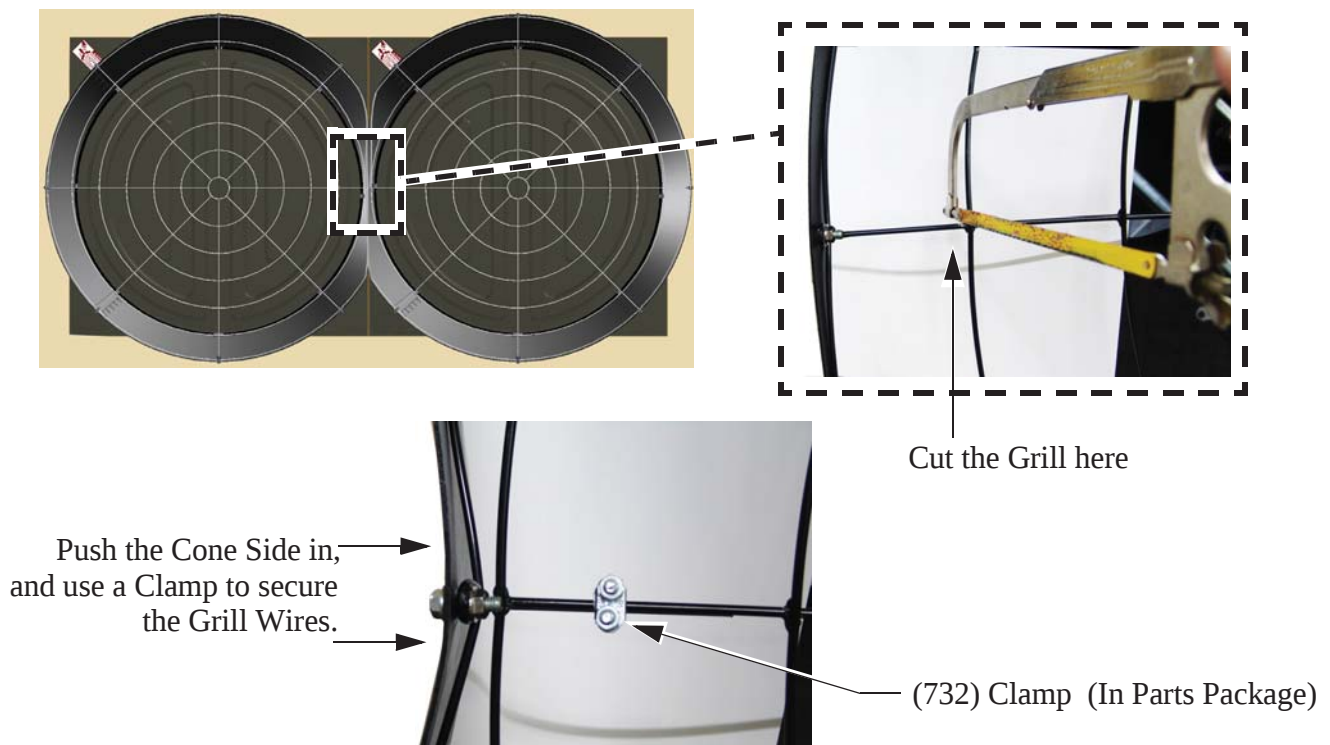


Grill Installation

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



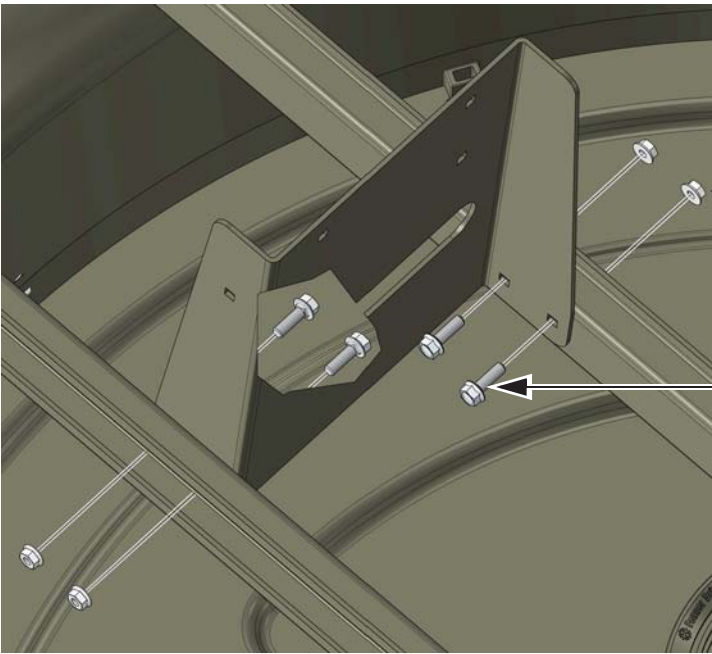
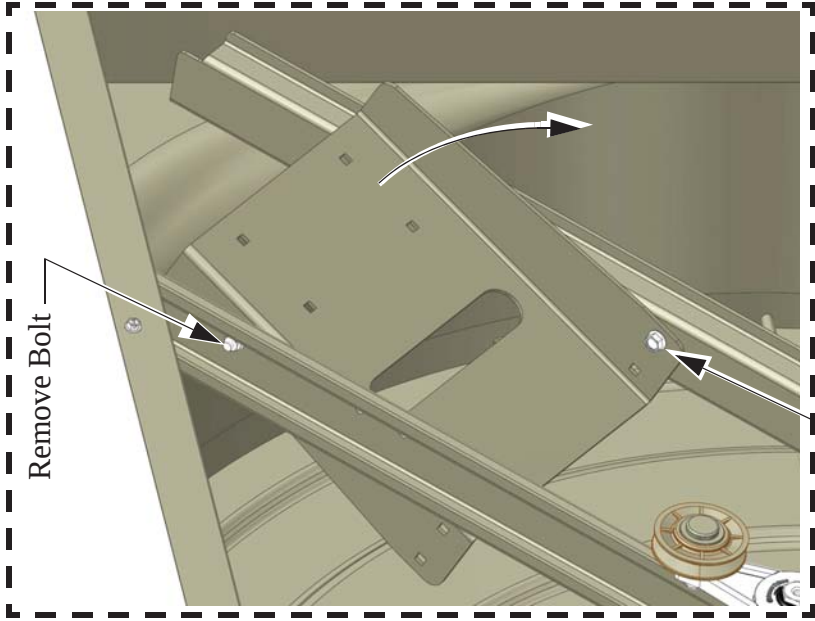
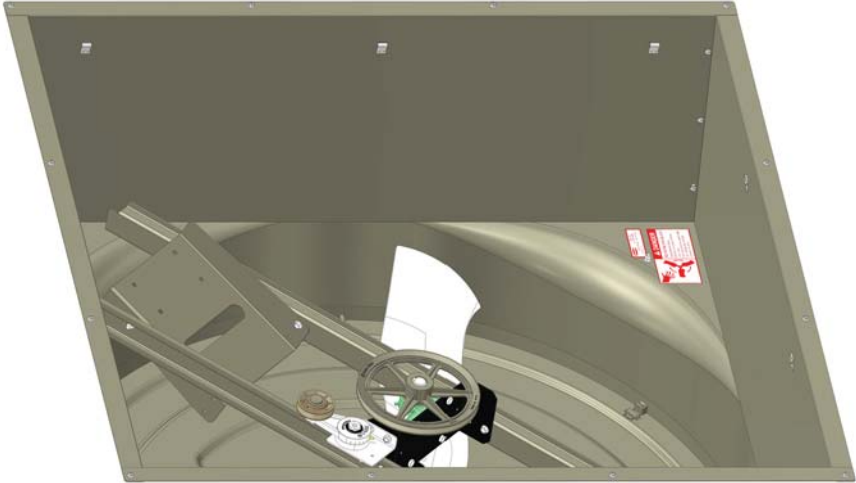
If it is desired to mount Fans at the minimum spacing, cutting the Grills is required **as shown.**



Rotate Motor Support (Assembled Fans)

Rotate the Motor Support Bracket into the upright position by removing the **upper** Bolt and Nut, and loosening the **lower** Bolt and Nut.

Attach the Motor Support Bracket to the Posts with 5/16 Bolts (54287) and 5/16 Flange Nuts (46764).



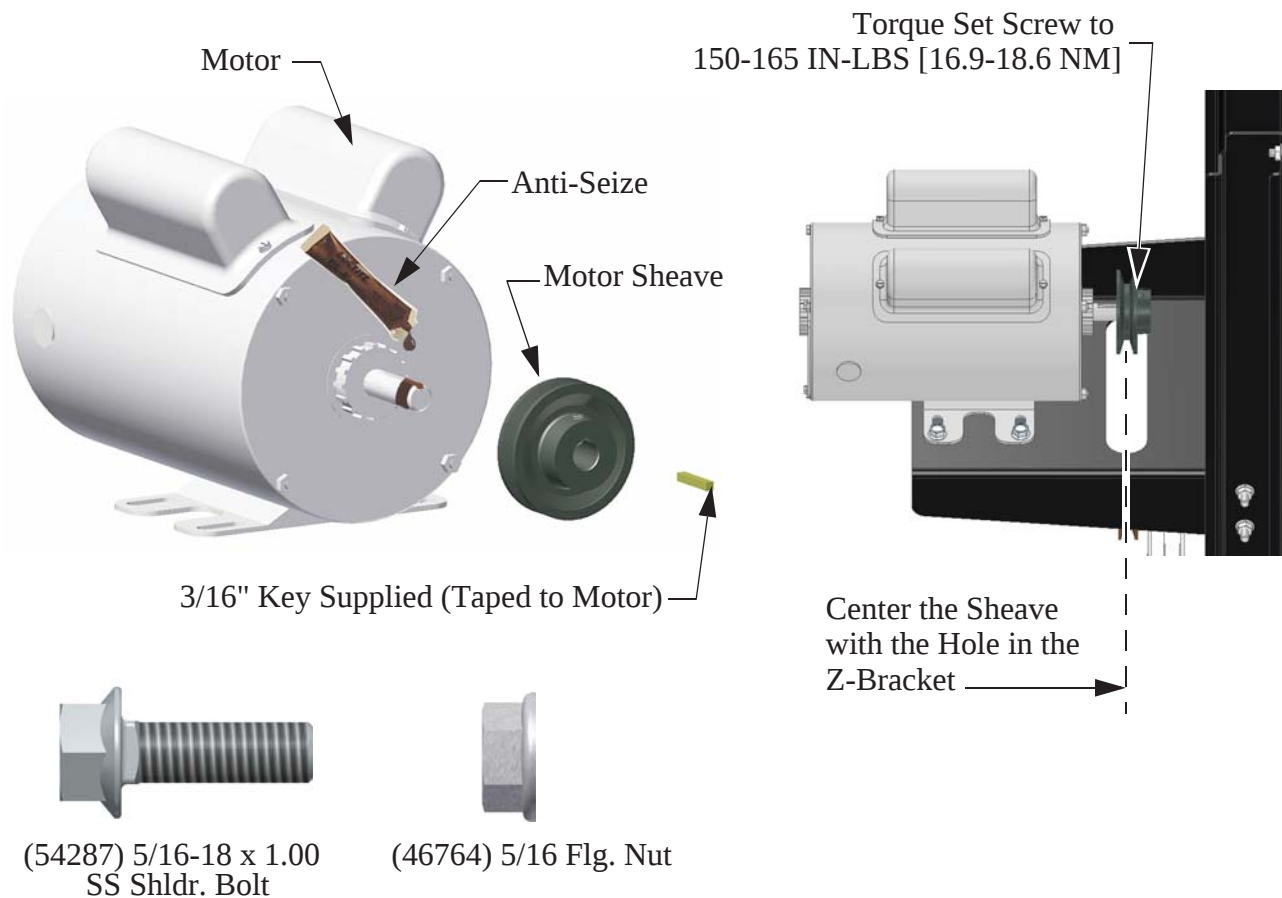
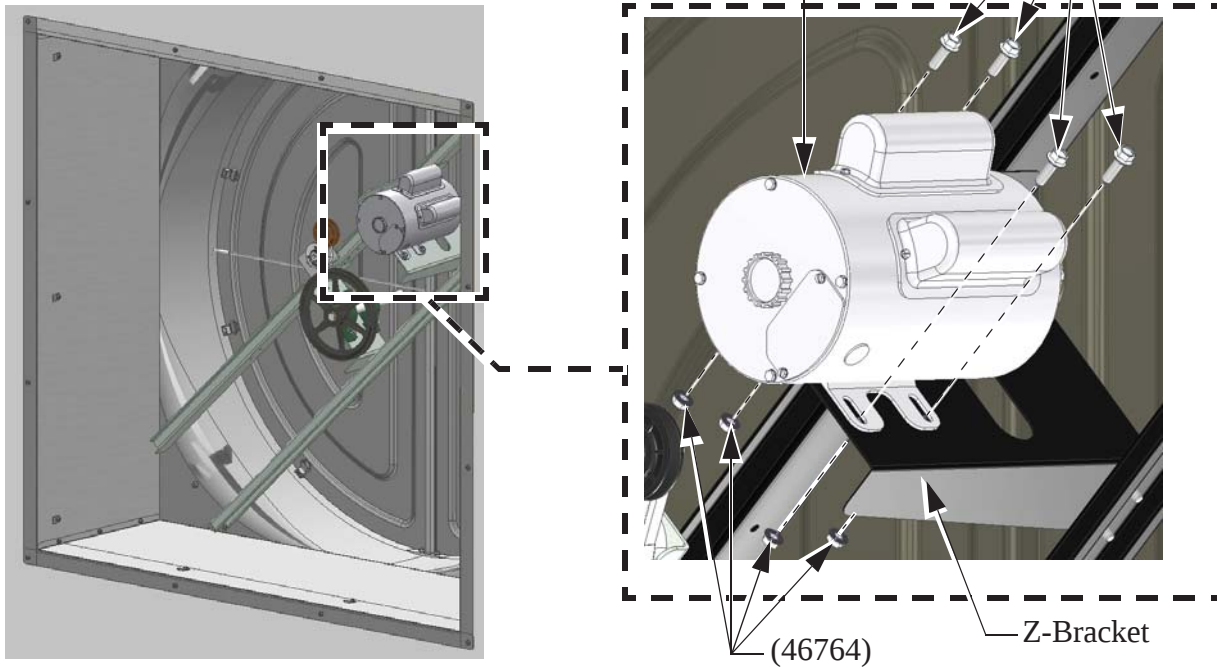
(54287) 5/16-18 x 1.00
SS Shldr. Bolt



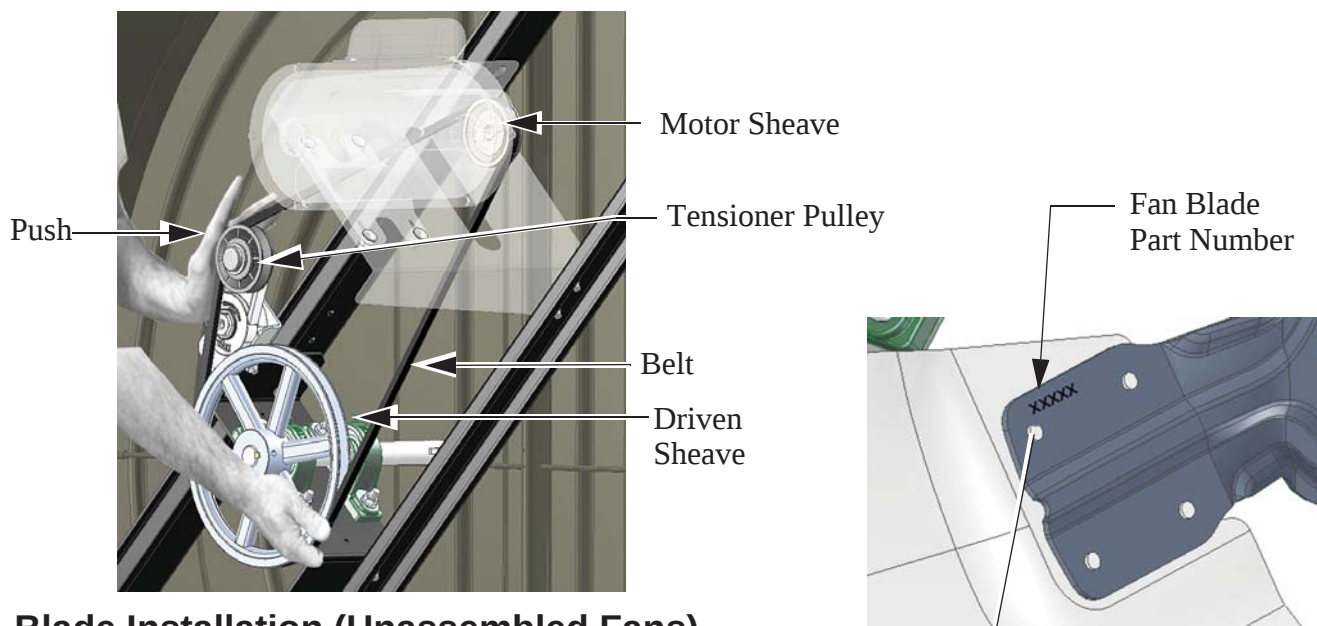
(46764) 5/16 Flg. Nut

Motor Installation

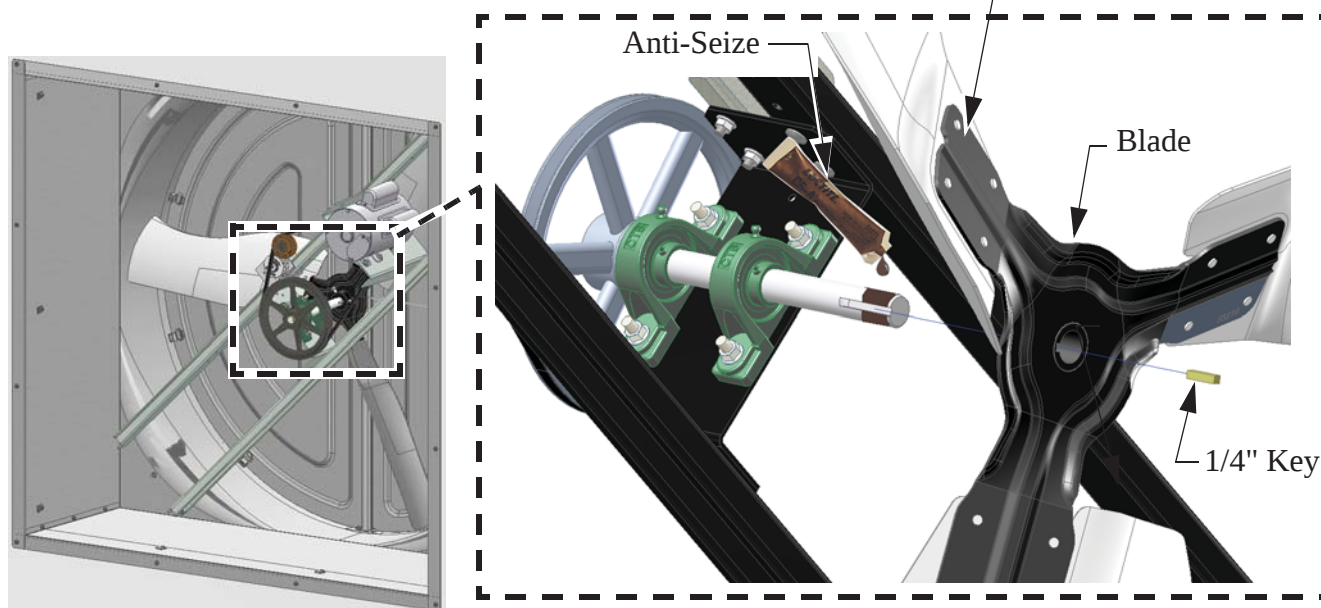
Attach Motor to Z-Bracket.



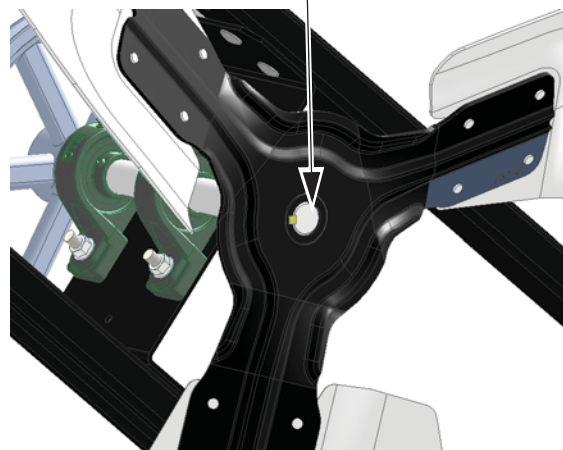
Belt Installation



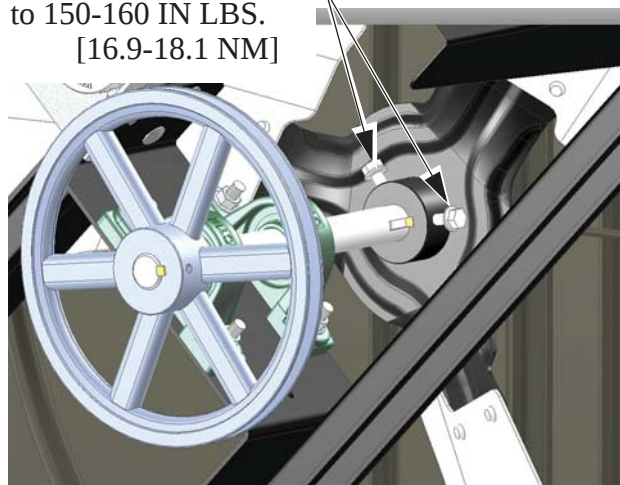
Blade Installation (Unassembled Fans)



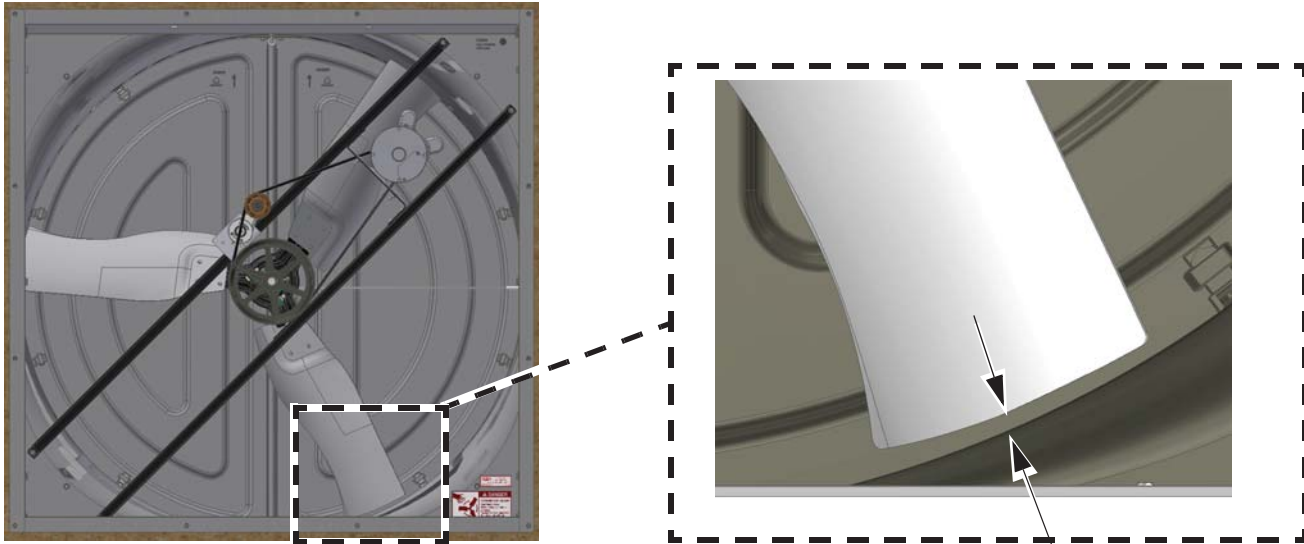
Fan Blade Flush
with the End of Shaft.



Torque Blade Set Screws
to 150-160 IN LBS.
[16.9-18.1 NM]

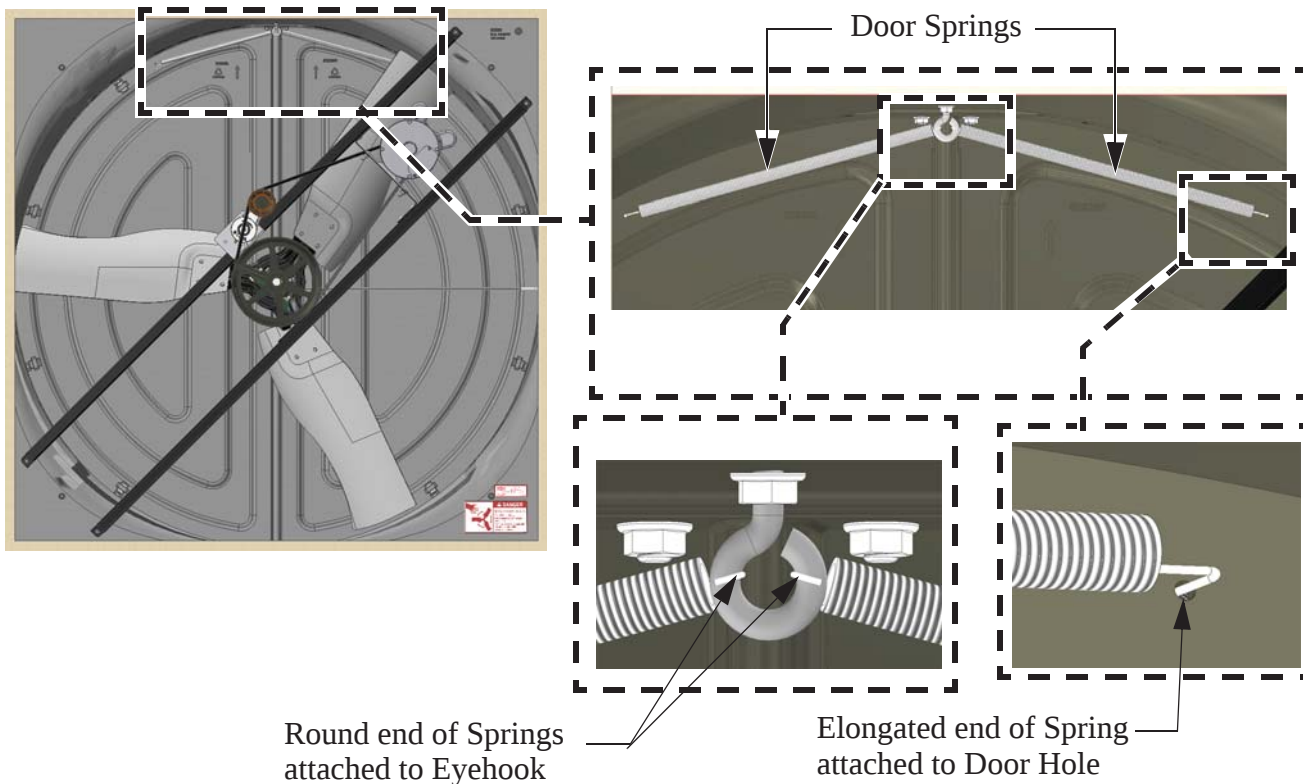


Checking Fan Blade Tip Clearance



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.

Door Spring Installation (Unassembled versions)

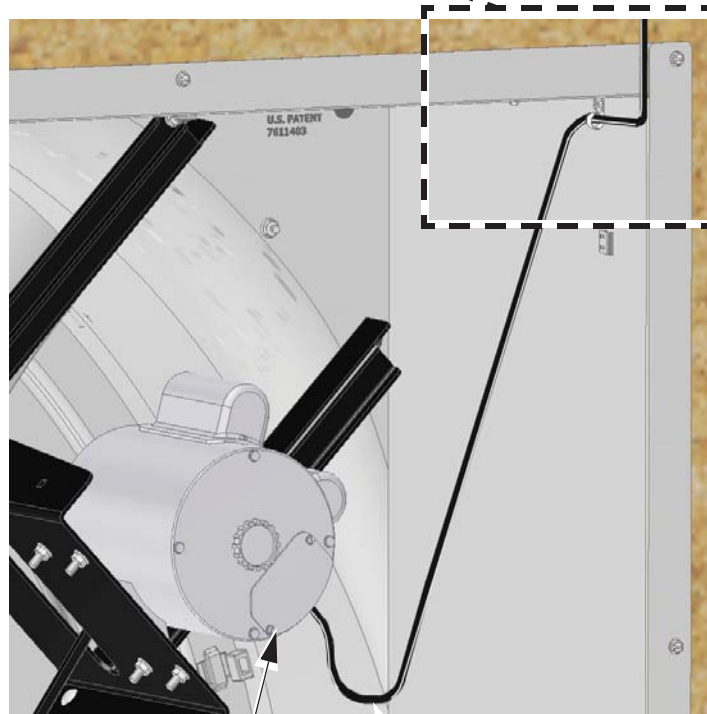
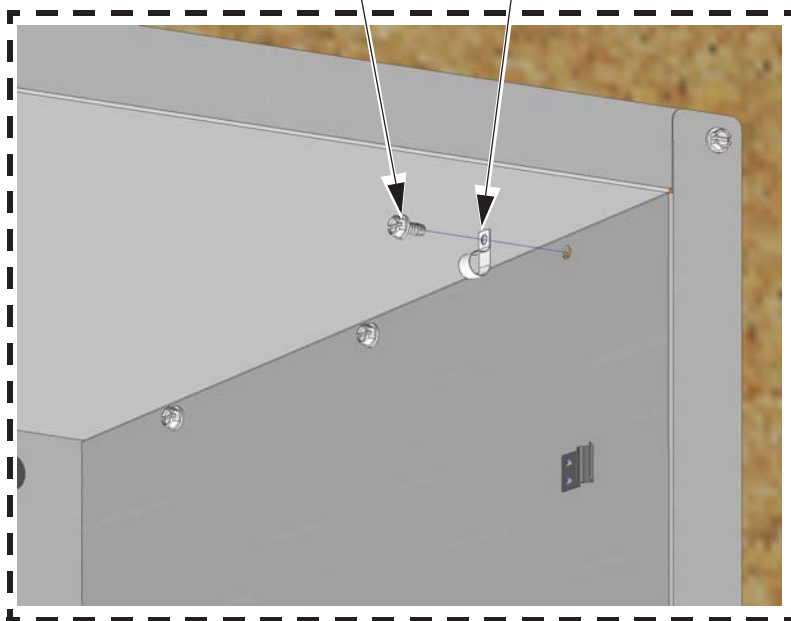


Motor Wiring

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. Remove the (46689) Self Tapping Screw in the front corner of the Extension Box Panel and attach the Cord to the Side Panel with a (565) Cord Clip **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.

(54683) 1/4-20 x 1/2
Self Tapping Screw

(565) Cord Clip



Motor Access Cover

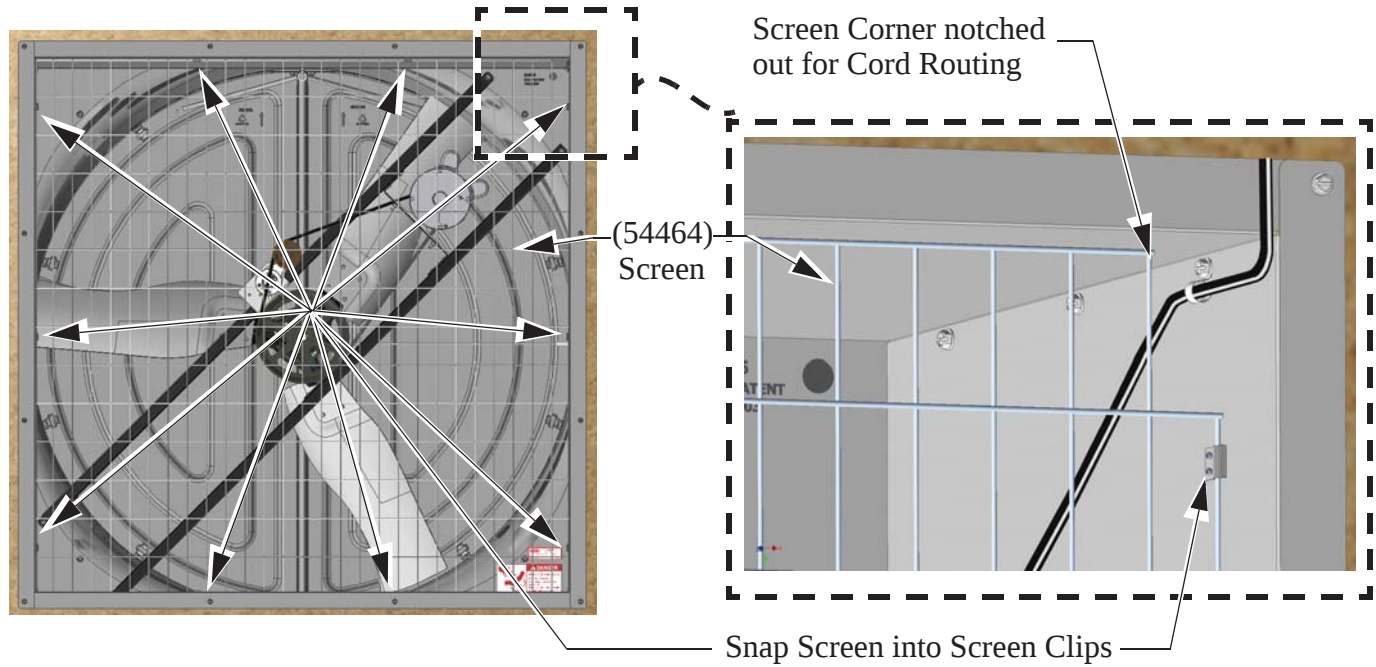
Drip Loop



(54683) 1/4-20 x 1/2 Screw

Screen Installation

Attach the Screen **as shown**. Orient the Screen so the notched corner is upper right for Cord Routing.



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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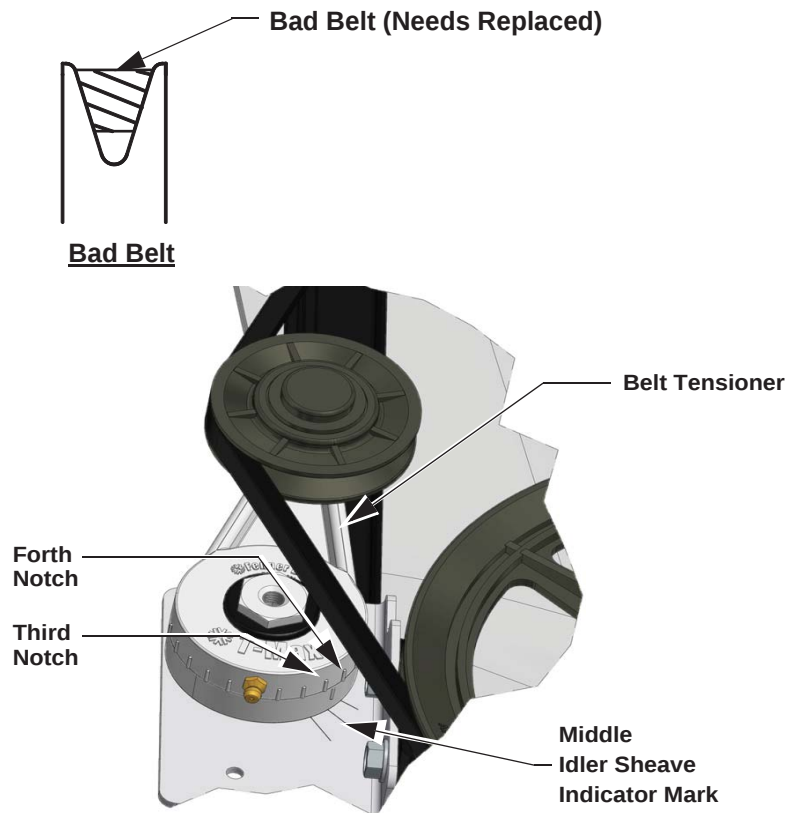


Good Belt



Bad Belt

- 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 Middle Idler Sheave indicator mark should fall between the 3rd and 4th notch of the 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



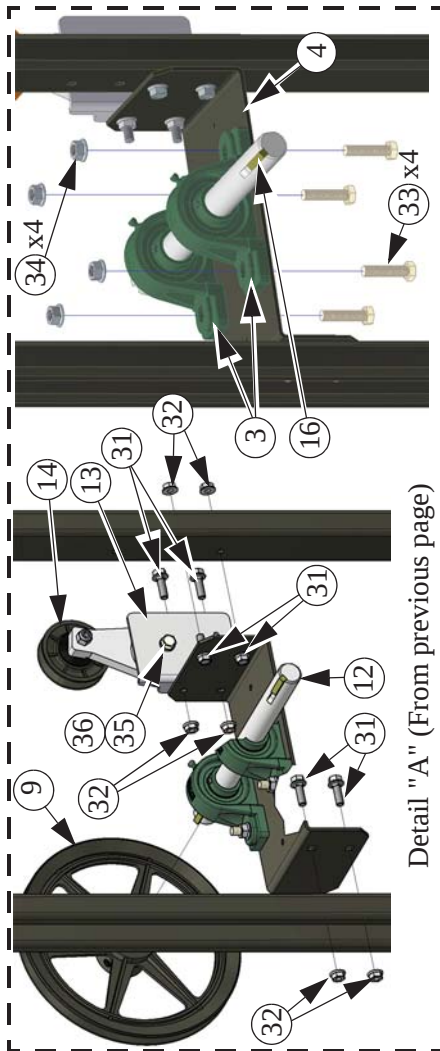
Bad Sheave

1747-053 04/03

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Part Numbers



Detail "A" (From previous page)

Item	Qty.	Description	Part No.	Models
15	1	57" Galv. High Cap. 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
16	2	1/4" Sq. 1.13" Key	2419-2	All
17	4	Cone Bracket	53039	All
***25	10	Extension Panel Screen Clip	54466	All
26	1	Extension Box Screen	54464	All
31	42	5/16-18 x 1 SS Shoulder Bolt	54287	All
32	57	5/16-18 Hx. Serr. 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	12	1/4-10 x 1-1/2 Lag Screw SS	41561	All
***41	4	Extension Panel Flange Support	54549	All
42	1	Fan Decal	39002-X	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	2	Fan Danger Decal	2527-50	All
***56	1	Housing Extension Top Panel	54467	All
***57	1	Housing Extension Bottom Panel	54468	All
***58	1	Housing Ext. (RH) Side Panel	54469-2	All
***59	1	Housing Ext. (LH) Side Panel	54469-1	All
***60	20	1/4-20 Hex Serrated Flange Nut	46298	All
***61	12	1/4-20 x 1/2 SS HXWH Screw	54683	All
***62	20	1/4-20 x 7/8 SS Bolt	4404-17	All
***63	1	Nylon Cord Clip	565	All
64	1	3/16 x 1-3/8 Key (w/motor)	--	All

* Fan Shroud Assembly (Item 6) Includes items 46,47,48,49,50,51, and 55
 ***Included in Box Extension Kit (54470)

57" Endura® Fan Part Numbers 54659-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	Bearing Support	48395C	All
5	1	Motor Support	48396C	All
*6	1	57" Fan Shroud Assembly	52925	All
7	2	Upper Corner Support (2 Notches)	53205	All
8	2	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 3.45 O.D. x .625 Bore Sheave	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

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Part Numbers (Continued)

57" Endura® Fan Part Numbers 54659-XX, or 54659-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	2	Ø1/2" x 11" Door Spring	49629	All
24	1	3/32" SS 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
31	42	5/16-18 x 1 SS Shoulder Bolt	54287	All
32	57	5/16-18 Hx. Serrated Flange Nut	46764	All
37	2	3/8 SS Flat Washer	ST99070	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)				

Leadership Through Innovation®

Revisions to this Manual

Page No.	Description of Change
1	Added "Amps" Column

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



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